

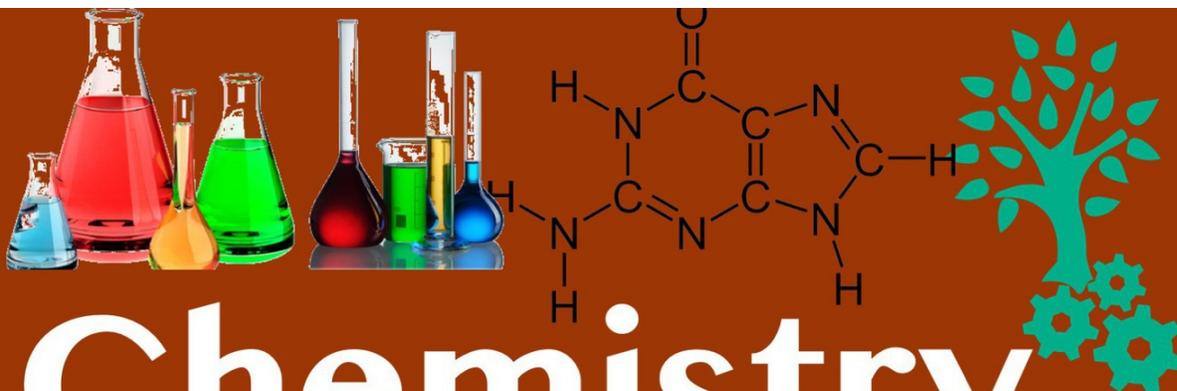
# Chemistry Dictionary



Explained Terms

Terminology



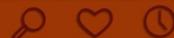


# Chemistry Dictionary



Explained Terms

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# **Dictionary of Chemistry**

**All Terms of Chemistry.**

# **Introduction**

**This is Dictionary of chemistry. It have all the terms used in the chemistry.**

**It will help to find and understand the meaning of terms used in Different branches of Chemistry.**

**It helps Students, teachers and Professional in Research work.**

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Use the Kindle **Search feature** to search any word in book.

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Read it as usually people read books

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Tell the world in comments how you are using this book.

# Contents

It include the terms related to every branch of Chemistry.

All Terms can be find alphabetically

Organic chemistry,  
Medicinal chemistry,  
Organometallic chemistry,  
Physical organic chemistry,  
Stereochemistry,  
Inorganic chemistry,  
Bioinorganic chemistry,  
Geochemistry,  
Organometallic chemistry,  
Solid-state chemistry,  
Analytical chemistry,  
Forensic chemistry,  
Environmental chemistry,  
Bioanalytical Chemistry,  
Physical Chemistry,  
Photochemistry,  
Surface chemistry,

Chemical kinetics,  
Quantum chemistry,  
Spectroscopy,  
Biochemistry,  
Molecular biology,  
Genetics,  
Pharmacology,  
Toxicology,  
Clinical biochemistry,  
Agricultural biochemistry.

**Z (zusammen):** Z the notation for the stereochemical arrangement in which the higher-ranked substituent groups are on the same side of the double bond.

**"E" Dimension:** The outside diameter of neck on a threaded bottle neck (finish). The diameter of the neck (finish) is measured across the root of the threads.

**"F" style can:** A rectangular base can fitted with a screw cap.

**"H" Dimension:** the height of the bottle finish measured from the sealing surface, in a line parallel to the axis of the finish and tangent to the threads on the finish, down to a point where the line intersects the body (shoulder)

of the container. The inside height of the closure measured from the bottom of the closure, in a line tangent to the threads of the closure and terminating at the inside, top of closure.

**"I.D.":** an abbreviation for inside diameter.

**"I" dimension:** a specified minimum diameter inside the bottle neck. A minimum diameter is specified to allow sufficient clearance for filling tubes to enter the bottle neck easily.

**"I" style thread:** a type of thread contour (cross-section) roughly trapezoidal in outline. The outermost part is radiussed a "general purpose" thread contour designed for use with metal or plastic closures.

**"S" dimension:** locates the position of the bottle thread with respect to the sealing surface. The "s" dimension is the vertical distance from the sealing surface to the intersection of the finish wall and the top part of the first part of bottle thread where full depth contour exists.

**"T" dimension:** the outside diameter of the thread helix on a bottle finish.

**(61)Cu-ATSM:** A lipophilic copper(II)bis(thiosemicarbazone) labeled with the positron-emitting isotope (61)Cu with hypoxia-selective and radioisotopic activities. With a high membrane permeability and redox potential, (61)Cu-ATSM easily enters and selectively resides in hypoxic cells. The extent of (61)Cu-ATSM retention in tissue is inversely related to the state of tissue oxygenation allowing the quantitation of tissue hypoxia with positron emission tomography (PET).

**(pi) bond:**  $\pi$  a bond formed by the side-to-side overlap of atomic orbitals. A  $\pi$  bond is weaker than a  $\sigma$  bond because of poor orbital overlap caused by nuclear repulsion. Unsaturated molecules are created by  $\pi$  bonds.

**(sigma) antibonding molecular orbital:** a  $\sigma$  molecular orbital in which one or more of the electrons are less stable than when localized in the isolated atomic orbitals from which the molecular orbital was formed.

**(sigma) bond:**  $\sigma$  a bond formed by the linear combination of orbitals in such a way that the maximum electron density is along a line joining the two nuclei of the atoms.

**(sigma) bonding molecular orbital:**  $\sigma$  a  $\sigma$  molecular orbital in which the electrons are more stable than when they are localized in the isolated atomic orbitals from which the molecular orbital was formed.

**[18F]-labeled substance P antagonist receptor quantifier:** A radioconjugate consisting of the positron emitting radioisotope fluorine F 18 conjugated to the substance P antagonist receptor quantifier (SPA-RQ) used in radioimaging. [18F]-labeled substance P antagonist receptor quantifier is an antagonist of the neurokinin 1 (substance P) receptor (NK1R) and can function as a positron emission tomography (PET) imaging agent for detecting NK1R-expressing cells and tissues. NK1Rs are frequently expressed on the plasma membranes of tumor cells from glioblastoma and breast and pancreatic carcinomas.

**[18F]-ML-10:** A small molecular-weight, malonic acid-based probe [(2-(5-fluoro-pentyl)-2-methyl-malonic acid or ML-10] labeled with the radioactive isotope fluorine F 18 with potential apoptosis radioimaging use. Upon administration, [F18]-ML-10 binds selectively to apoptotic cells due to apoptotic cell membrane features that differ from those of normal, healthy and necrotic cell membranes. Upon entering the apoptotic cell, this agent accumulates within the cytoplasm where it can be imaged using positron emission tomography (PET). Detection of apoptotic cells using this imaging technology may be useful in monitoring tumor responses to cytotoxic therapies. ML-10 appears to mimic the alkyl-malonic acid motif present in gamma -carboxyglutamic (Gla), an amino acid that plays a crucial role in the binding of clotting factors to negatively-charged phospholipids exposed on the surfaces of apoptotic cells.

**[18F]L-FAC:** A deoxycytidine analog and high-affinity substrate for deoxycytidine kinase (DCK), labeled with fluorine F 18, with potential diagnostic activity upon positron emission tomography (PET) imaging. [18F]L-FAC is preferentially taken up by and accumulated in cells with high deoxycytidine kinase (DCK) levels, such as in tumor cells with dysregulated nucleoside metabolism. Upon uptake through the nucleoside transporter, [18F]L-FAC is phosphorylated by DCK and, subsequently, the 18F moiety can be visualized upon PET imaging. As many nucleoside analog prodrugs are chemotherapeutic agents that require DCK for activation, [18F]L-FAC can potentially be used as a marker to predict chemotherapeutic efficacy of these prodrugs. In addition, as DCK is upregulated in certain immune cells, such as activated T-cells, [18F]L-FAC can also be used to measure immune activation in response to immunomodulating agents. DCK, a rate-limiting enzyme in the nucleoside salvage pathway for DNA synthesis, is overexpressed in certain solid

tumors, lymphoid and myeloid malignancies and certain immune cells, such as proliferating T-lymphocytes.

**[18F]L-FMAC:** A radioconjugate composed of 2'-deoxy-2'-18F-fluoro-5-methyl-beta-L-arabinofuranosylcytosine ([18F]L-FMAC), a L-deoxycytidine analog and high-affinity substrate for deoxycytidine kinase (DCK), labeled with fluorine F 18, with potential diagnostic activity during positron emission tomography (PET) imaging. Upon administration, [18F]L-FMAC is preferentially taken up by and accumulated in cells with high DCK levels, including tumor cells with dysregulated nucleoside metabolism. After phosphorylation by DCK, the 18F moiety can be visualized by PET imaging. As many nucleoside analog prodrugs are chemotherapeutic agents that require DCK for their phosphorylation and activation, [18F]L-FMAC can potentially be used as a marker to measure DCK activity and to predict the chemotherapeutic efficacy of DCK-dependent prodrugs. DCK, a rate-limiting enzyme in the deoxyribonucleoside salvage pathway for DNA synthesis, is overexpressed in certain solid tumors, lymphoid and myeloid malignancies and certain immune cells, such as proliferating T-lymphocytes. The L-enantiomer is less susceptible to deamination by cytidine deaminase (CDA) than the D-enantiomer and increases the stability of this radioconjugate. Check for active clinical trials using this agent.

**[F-18]HX4:** A 2-nitroimidazole labeled with the positron-emitting radioisotope fluorine F 18. HX4, the 2-nitroimidazole moiety of [F-18]HX4, is selectively bioreduced and bound in hypoxic tumor cells, permitting the imaging of hypoxic tumor cells with positron emission tomography (PET).

**[F18]VM4-037:** A radiopharmaceutical consisting of a sulfonamide covalently attached to the positron-emitting isotope fluorine F 18 with CA-IX-binding and radioisotopic activities. Upon administration, the sulfonamide moiety of [F18]VM4-037 binds to the cell-surface tumor-associated antigen (TAA) carbonic anhydrase IX isoenzyme (CA-IX); CA-IX-expressing tumor cells can then be visualized using positron emission tomography (PET). CA-IX has been found to be elevated in a variety of hypoxic tumors; elevated CA-IX has been positively correlated with tumor growth, tumor invasion and poor prognosis.

**11C topotecan:** A semisynthetic derivative of camptothecin, a cytotoxic, quinoline-based alkaloid extracted from the Asian tree *Camptotheca acuminata* radiolabeled with carbon 11 (11C) with antineoplastic and radiotracer properties. During the S phase of the cell cycle, topotecan inhibits topoisomerase I activity by stabilizing the cleavable complex between topoisomerase I and DNA, resulting in DNA breaks that inhibit DNA replication and trigger apoptotic cell death. Quantitation of 11C topotecan accumulated in tumor tissues by positron emission tomography (PET) may help predict responses to topotecan therapy.

**123-I-MIP-1095:** An iodine 123-radiolabeled small molecule that exhibits high affinity for prostate-specific membrane antigen (PSMA) with potential use in molecular imaging. 123-I-MIP-1095, a radiolabeled glutamate-urea-lysine analogue, selectively binds PSMA, which allows imaging of PSMA-expressing prostate cancer cells with gamma scintigraph. PSMA is a transmembrane glycoprotein highly expressed by malignant prostate epithelial cells and vascular endothelial cells of various solid tumors.

**131I-TM-601:** An iodine 131 (I 131) radioconjugate of the synthetic chlorotoxin (CTX) TM-601 with potential antiangiogenic and antineoplastic activities. CTX is a 36 amino acid neurotoxin found in the venom of the giant yellow scorpion *Leiurus quinquestriatus* that preferentially binds malignant cells of neuroectodermal origin. The recombinant version of this peptide, TM-601, is expressed in and purified from *E. coli* and then covalently linked to I 131 to produce 131I-TM-601. 131I-TM-601 binds to tumor cells of neuroectodermal origin and is internalized; administered once, it may be used as a radioimaging agent; repeated administration may result in a tumor-specific, cumulative radiocytotoxic dose of I 131. In addition, TM-601 alone, similar to native CTX, may inhibit angiogenesis due to its ability to bind to and inhibit matrix metalloproteinase 2 (MMP-2), an endopeptidase involved in tissue remodeling processes such as angiogenesis.

**14C BMS-275183:** The orally bioavailable C-4 methyl carbonate analogue of paclitaxel, labeled with radioactive carbon 14, with radioisotope and potential antineoplastic activities. 14C BMS-275183 binds to tubulin and inhibits microtubule disassembly, which may result in cell cycle arrest at the G2/M phase and inhibition of cell division, and subsequently cell death.

This agent may be useful for treating multi-drug resistant (MDR) tumors because it does not appear to be a substrate for P-glycoprotein.

**16, 16-dimethyl prostaglandin E2:** A stable derivative of prostaglandin E2 (PGE2) with potential hematopoietic activity. Administration of 16,16 dimethyl-prostaglandin E2 (dmPGE2) appears to lead to increased formation of hematopoietic stem and progenitor cells. Even though the exact mechanism of action has yet to be fully elucidated, this agent may stimulate hematopoiesis by activating the Wnt signaling pathway, which increases cellular levels of beta-catenin, a subunit of the cadherin protein complex.

**18-F-fluoroacetate:** A radioconjugate and an acetate analog labeled with fluorine F 18 ((18)F-FAC), a positron-emitting isotope, with potential prostate tumor tracer property using positron emission tomography (PET). Although the mechanism of action is unclear, fluorine F 18 acetate preferentially accumulates in tumor tissue, serving as a tracer for imaging tumors with PET. Fluorine 18 has a longer radioactive half-life (110 min) vs. the half-life of carbon-11 acetate (20.4 min). Furthermore, (18)F-FAC showed a rapid clearance from liver and extensive excretion to bile and urine in comparison with carbon-11 acetate, therefore this tracer may be a useful alternative to C-11 acetate for the detection of prostate tumors by PET.

**18F-FHBG:** A fluorine-18-labeled acycloguanosine derivative substrate for herpes simplex virus type-1 thymidine kinase (HSV1-tk). 18F-FHBG is used as a reporter probe to image the expression of the herpes simplex virus type-1 thymidine kinase (HSV1-tk) gene in gene transfer therapy. HSV1-tk and HSV1-tk-metabolized 18F-FHBG co-localize, allowing positron emission tomography (PET) localization of HSV1-tk gene-transfected tissue and the assessment of gene transfer efficiency.

**18F-fluoroazomycin arabinoside:** A radiofluorinated 2-nitroimidazole derivative with hypoxia-specific tracer activity. 18F-fluoroazomycin arabinoside is reduced under hypoxic conditions and is often seen in various malignant tumors, forming highly reactive intermediates. In its reduced form, 18F-fluoroazomycin arabinoside covalently binds to macromolecules, thereby accumulating in hypoxic cells and allowing radioisotopic imaging of these particular cells. Compared to 18F-misonidazole, 18F-fluoroazomycin arabinoside has a lower octanol:water partition coefficient;

it therefore has less tendency to accumulate in lipophilic tissues and exhibits a faster renal clearance, leading to an improved imaging ability of hypoxic tissue. Check for active clinical trials using this agent.

**18F-fluoromethylcholine:** A radiotracer consisting of methylcholine labeled with the positron-emitting radioisotope fluorine F 18 (18F-FMCH) with potential imaging use. Upon administration, 18F-fluoromethylcholine incorporates into tumor cells through an active, carrier-mediated transport mechanism for choline and then is phosphorylated intracellularly by choline kinase, an enzyme frequently upregulated in human tumors, yielding phosphoryl 18F-fluoromethylcholine. In turn, phosphoryl 18F-fluoromethylcholine is integrated into phospholipids in the cell membrane as part of phosphatidylcholine. As the proliferation of cancer cells is much higher than normal cells, tumor cells exhibit an increased rate of 18F-FMCH uptake and incorporation, allowing tumor imaging with positron emission tomography (PET).

**18F-fluoromisonidazole:** A radiofluorinated 2-nitroimidazole derivative with hypoxia-specific tracer activity. Misonidazole is reduced under hypoxic conditions and in reduced form covalently binds to macromolecules in hypoxic cells. 18F (fluorine-18) radiofluorination of misonidazole to form 18F-fluoromisonidazole allows radioisotopic imaging of reduced misonidazole bound to macromolecules in hypoxic cells.

**18F-labeled mini-PEG spaced RGD dimer:** A radiotracer containing a pegylated dimeric Arg-Gly-Asp (RGD) peptide (NH<sub>2</sub>-mini-PEG-E[c(RGDyK)]<sub>2</sub> or PRGD<sub>2</sub>) radiolabeled with fluorine 18F-fluorobenzoate (18F-FB), with potential alphaVbeta3 integrin imaging activity upon positron emission tomography (PET). Upon administration, the RGD moiety of 18F-labeled mini-PEG spaced RGD dimer (18F-FPRGD<sub>2</sub>) binds to alphaVbeta3 integrin. Upon PET, alphaVbeta3-expressing tumor cells can be visualized and the degree of tumor angiogenesis can be determined. This agent exhibits increased integrin receptor binding affinity, tumor cell uptake and increased radiolabeling yield as compared to the non-pegylated form (18F-FRGD<sub>2</sub>). Integrins, transmembrane glycoproteins, may be upregulated on proliferating tumor vessel endothelial cells and various cancer cells; their overexpression has been associated with neovascularization, differentiation, proliferation of tumor cells, metastasis and an overall poor prognosis.

**2-O, 3-O desulfated heparin:** A non-anticoagulant heparin derivative in which the 2-O and 3-O sulfate groups of heparin are removed, with potential anti-inflammatory and antineoplastic activity. Upon administration, 2-O, 3-O desulfated heparin (ODSH) prevents the interaction of the receptor for advanced glycation end-products (RAGE) to its ligands, such as advanced glycation end-products (AGEs), Mac-1 (CD11b/CD18), the nuclear protein high mobility group box protein-1 (HMGB-1), carboxymethyl lysine-bovine serum albumin (CML-BSA) and members of the S100 calgranulin family. In addition, this agent inhibits the enzymes heparanase, cathepsin G, and human leukocyte elastase, which are involved in inflammation and metastasis. ODSH also inhibits selectins, thereby preventing the adhesion of tumor cells to endothelium and platelets. Altogether, this may inhibit tumor cell invasiveness and metastasis. Unlike heparin, this agent does not induce heparin-induced thrombocytopenia (HIT). RAGE, a receptor belonging to the immunoglobulin superfamily, plays a key role in inflammation and is overexpressed in a variety of cancers.

**2-Component Molding:** A means of producing a part with two or more materials, 1st part is generally thermoplastic injection molded part or a plastic or metal part inserted into the mold. Liquid silicone rubber or plastic is then injected onto to the part, attaching by means of mechanical or chemical bond

**2-fluoropropionyl-labeled pegylated dimeric RGD peptide:** A radiopharmaceutical agent comprised of a pegylated dimeric arginine-glycine-aspartic acid (RGD)-based peptide labeled with 2-fluoropropionyl, with potential  $\alpha V\beta 3$  integrin imaging activity upon positron emission topography (PET). The RGD moiety of 2-fluoropropionyl-labeled pegylated dimeric RGD peptide targets and binds to  $\alpha V\beta 3$  integrin. Upon PET imaging,  $\alpha V\beta 3$  integrin-expressing tumor cells can be visualized and expression levels can be quantified. Compared to other fluorine F 18 labeled RGD-containing peptides, this agent shows increased affinity to  $\alpha V\beta 3$  integrin, enhanced tumor uptake as well as improved pharmacokinetics.  $\alpha V\beta 3$  integrin, overexpressed on certain tumor cells and tumor endothelial cells, plays a key role in angiogenesis, tumor proliferation and survival.

**2-hydroxyflutamide depot:** A depot formulation containing a bioresorbable, controlled-release, calcium sulphate-based paste of the nonsteroidal antiandrogen 2-hydroxyflutamide (2-HOF) with potential antineoplastic activity. Upon injection into the tumor site in the prostate, 2-hydroxyflutamide depot slowly releases 2-HOF, which competitively binds to androgen receptors (ARs), blocking the binding of dihydrotestosterone (DHT). This may inhibit androgen-dependent DNA and protein synthesis, resulting in tumor cell growth arrest and decreased cellular proliferation. In addition, 2-HOF inhibits nuclear uptake of androgen in androgen-responsive tissues.

**2-hydroxyoleic acid:** An orally bioavailable, synthetic analog of the fatty acid oleic acid, with potential antitumor activity. Upon administration, 2-hydroxyoleic acid (2OHOA) activates sphingomyelin synthase (SMS), thereby increasing the concentration of sphingomyelin (SM) and diacylglycerol (DAG) in the tumor cell membrane and decreasing membrane levels of phosphatidylethanolamine (PE) and phosphatidylcholine (PC). This restores the normal, healthy levels and ratios of membrane lipids. By restoring normal membrane lipid structure and composition, this agent inhibits membrane-protein associated signaling and the aberrant activity of signaling pathways in certain tumor cells, including the Ras/MAPK and PI3K/Akt pathways. This inhibits tumor cell proliferation, induces tumor cell differentiation, and eventually can cause cell death.

**2-methoxyestradiol:** An orally bioavailable estradiol metabolite with potential antineoplastic activity. 2-Methoxyestradiol inhibits angiogenesis by reducing endothelial cell proliferation and inducing endothelial cell apoptosis. This agent also inhibits tumor cell growth by binding to tubulin, resulting in antimetabolic activity, and by inducing caspase activation, resulting in cell cycle arrest in the G2 phase, DNA fragmentation, and apoptosis.

**2'-F-ara-deoxyuridine:** A deoxyuridine prodrug with potential antineoplastic activity. Upon cellular uptake, 2'-F-ara-deoxyuridine (FAU) is phosphorylated by thymidine kinase to FAU monophosphate and subsequently methylated in the 5'-position by thymidylate synthase (TS) to its activated form, 1-(2-deoxy-2-fluoro-beta-D-arabinofuranosyl) 5-methyluracil monophosphate (FMAUMP). FMAUMP is incorporated into

DNA leading to an inhibition of DNA synthesis and so cell growth. The catalytic activity of TS is critical to activation of FAU and subsequent incorporation into DNA. FAU may be beneficial in the case of tumors with high TS activity that are resistant to TS inhibitors.

**2G-1 TCR retroviral vector-transduced lymphocytes:** A preparation of autologous human T-lymphocytes isolated from renal cell cancer (RCC) patient and transduced with 2G-1 TCR, a retroviral vector encoding the alpha and beta chains of a T-cell receptor that recognizes TNF-related apoptosis inducing ligand (TRAIL) bound to death receptor 4 (DR4), with potential immunostimulating and antineoplastic activities. After transduction, expansion in culture, and introduction into the RCC patient, 2G-1 TCR retroviral vector-transduced lymphocytes may stimulate a cytotoxic T lymphocyte (CTL) response against RCC cells with TRAIL bound to DR4 on their surfaces. TRAIL, a member of the TNF superfamily, is a homotrimeric type II membrane protein that rapidly induces oligomerization of receptor intracellular death domains and apoptosis in a variety of tumor cells when bound to its receptors; DR4 (TRAIL receptor 1), a member of the TNF receptor family, is overexpressed by a variety of malignant cell types.

**3-21G:** A VDZ basis set. See also 6-31G.

**3-21G\*:** The asterisk indicates that a set of polarizing d-functions (6D) is included to supplement the 3-21G basis, but only on second-row and heavier atoms (beyond neon). Also denoted 3-21G(\*) or 3-21G(d).

**3-deazauridine:** A synthetic analogue of nucleoside uridine lacking a ring nitrogen in the 3-position. 3-deazauridine inhibits cytidine synthase, thereby reducing intracellular levels of cytidine and deoxycytidine and disrupting DNA and RNA synthesis. This agent may trigger apoptosis and enhance differentiation of neoplastic cells..

**3,4-methylenedioxymethamphetamine:** A ring-substituted amphetamine derivative, structurally related to the hallucinogen mescaline, with entactogenic, neurotoxic, and motor-stimulatory activities. 3,4-methylenedioxymethamphetamine (MDMA) produces an acute, rapid enhancement in both the release of serotonin from and the inhibition of serotonin reuptake by serotonergic nerve endings in the brain. Once within the cell, MDMA depletes stores of tryptophan hydroxylase (TPH) via acute oxidative inactivation; in turn, depleted stores of TPH leave cell terminals

open to damage from oxidative stress, possibly a source of MDMA neurotoxicity. This agent also induces norepinephrine, dopamine, and acetylcholine release and can act directly on a number of receptors, including alpha 2-adrenergic and 5-hydroxytryptamine (5-HT) 2A receptors. MDMA may suppress the dyskinesia associated with long-term use of L-dopamine (L-DOPA) without affecting the efficacy of L-DOPA treatment.

**3' end:** The end of a nucleic acid that lacks a nucleotide bound at the 3' position of the terminal residue.

**3'-aminomethyl nicotine-P. aeruginosa r-exoprotein A conjugate vaccine:** A hapten-carrier immunoconjugate composed of the hapten trans-3'-aminomethyl nicotine conjugated to a recombinant P. aeruginosa exoprotein A, rendered nontoxic through amino acid depletion, with potential immunostimulating activity. Upon vaccination with 3'-aminomethyl nicotine-P. aeruginosa r-exoprotein A conjugate vaccine, the immune system may produce anti-nicotine antibodies. Antibody-bound nicotine cannot pass the blood brain barrier (BBB) to activate brain nicotine receptors. Nicotine, a small organic molecule that is not immunogenic, must be haptenized and conjugated to a carrier protein, such as nontoxic recombinant P. aeruginosa exoprotein A, to induce an antibody response. Aluminium hydroxide may be used as an adjuvant for this vaccine.

**3'-C-ethynylcytidine:** A synthetic cytidine nucleoside containing a covalently bound ethynyl group with potential antineoplastic and radiosensitizing activities. 3'-C-ethynylcytidine is metabolized in tumor cells to ethynylcytidine triphosphate (ECTP), which inhibits RNA synthesis by competitive inhibition of RNA polymerases I, II and III; subsequently, RNase L is activated, resulting in apoptosis. RNase L is a potent antiviral and antiproliferative endoribonuclease that cleaves singled stranded RNA, causes 28s rRNA fragmentation, and activates Janus Kinase (JAK), a mitochondrial-dependent apoptosis signaling molecule. Check for active clinical trials using this agent.

**3D QSAR:** Three-Dimensional quantitative structure-activity relationships are QSAR studies which analyses the biological activities of a series of compounds with respect to their spatial properties using statistical methods.

**4-nitroestrone 3-methyl ether:** A synthetic derivative of estradiol. 4-nitroestrone 3-methyl ether inhibits estrogen sulfotransferase (EST), a

progesterone-induced secretory endometrial enzyme which affects estrogen receptor levels. This agent has been shown to be an effective growth inhibitor of some chemically induced animal mammary tumors.

**4-peptide melanoma vaccine:** An emulsion of 4 melanoma peptides with potential immunomodulating and antineoplastic activities. Upon vaccination, 4-peptide melanoma vaccine may stimulate an immune response against 4 different melanoma associated antigens. This may lead to a reduction in tumor cell proliferation of cancer cells expressing these antigens. Check for active clinical trials using this agent.

**4-thio-2-deoxycytidine:** An orally bioavailable 4-thio modified 2-deoxycytidine analog, with potential antineoplastic activity. Upon administration of 4-thio-2-deoxycytidine (TdCyd), this cytidine analog is incorporated into DNA during replication and inhibits the activity of DNA methyltransferase 1 (DNMT1), which blocks DNA hypermethylation. This results in DNMT1 depletion, hypomethylation of DNA, and the reactivation of tumor suppressor genes that were silenced by hypermethylation; this results in antitumor activity and an inhibition of tumor cell proliferation.

**4'-iodo-4'-deoxydoxorubicin:** An iodinated doxorubicin analogue with anti-amyloid activity. 4'-Iodo-4'-deoxydoxorubicin (IDOX) binds with high affinity to five types of natural amyloid fibrils including immunoglobulin light chains, amyloid A, transthyretin (methionine-30 variant),  $\beta$ -protein (Alzheimer), and  $\beta$ 2-microglobulin. This agent may inhibit fibril growth, increasing the solubility of amyloid tissue deposits and facilitating their clearance. IDOX has also been shown to inhibit insulin amyloid fibrillogenesis in vitro.

**4H11-28z/fIL-12/EGFRt-expressing autologous T lymphocytes:** A preparation of genetically modified autologous T-lymphocytes transduced with a retroviral vector expressing a chimeric antigen receptor (CAR) targeting the human tumor-associated antigen (TAA) MUC16ecto and encoding the human pro-inflammatory cytokine interleukin-12 (IL-12), fused to the signaling domain of the zeta chain of the TCR/CD3 complex (28z), and a truncated form of the human epidermal growth factor receptor (EGFRt), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, 4H11-28z/fIL-12/EGFRt-expressing autologous T-lymphocytes are directed to and induce selective toxicity in MUC16-expressing tumor cells. In addition, the T-cells secrete IL-12 which

induces secretion of interferon-gamma, promotes the activation of natural killer cells (NKs), and induces cytotoxic T-cell responses against tumor cells, which may result in immune-mediated tumor cell death and inhibition of tumor cell proliferation. Devoid of both ligand binding domains and tyrosine kinase activity, the expressed EGFRt both facilitates in vivo detection of the administered, transduced T-cells and can promote elimination of those cells through a cetuximab-induced antibody-dependent cellular cytotoxicity (ADCC) response. MUC16, a transmembrane protein and glycosylated mucin, is overexpressed on the cell surface of the majority of ovarian cancer cells but not on healthy cells. MUC16ecto is the extracellular portion of MUC-16 and is the part that is retained by cells after cleavage of CA-125.

**4SCAR-GD2-modified T lymphocytes:** Genetically modified autologous T lymphocytes transduced with a lentiviral vector encoding a fourth generation specific chimeric antigen receptor (4SCAR) specific for the disialoganglioside GD2 and which includes the CD3zeta chain and the signaling domains of the co-stimulatory molecules CD28, CD137, and CD27 fused with the suicide gene inducible caspase 9 (iCasp9), with potential immunomodulating and antineoplastic activities. Upon intravenous administration of 4SCAR-GD2 T cells, these cells target the GD2 antigen on tumor cells to induce selective toxicity against GD2-expressing tumor cells. The tumor-associated antigen (TAA) GD2 is overexpressed on the surface of neuroblastoma cells and by other neuroectoderm-derived neoplasms, while it is minimally expressed on normal cells. iCasp9 consists of a human FK506 drug-binding domain with an F36V mutation (FKBP12-F36V) linked to human caspase 9. If the administered T cells lead to unacceptable side effects, the chemical homodimerizer AP1903 can be administered; this binds to the drug binding FKBP12-F36V domain and activates caspase 9, which results in the apoptosis of the administered T cells and enhances safety of this agent. CD28, CD137 and CD27, T-cell surface-associated co-stimulatory molecules, are required for full T cell activation. Check for active clinical trials using this agent.

**5-[18F]fluorouracil:** The fluorine-18 (18F)-radiolabeled pyrimidine analog 5-fluorouracil (5-FU) with positron-emitting activity. Upon administration, 5-[18F]fluorouracil distribution in tumor tissue may be measured with positron emission tomography (PET). The degree of 5-

[18F]fluorouracil uptake in tumor tissue may help to predict the response to 5-fluorouracil-based chemotherapy or to determine the response to other therapeutic agents used to treat 5-FU-sensitive tumors.

**5-FITC-labeled colon-heptapeptide:** A radioconjugate consisting of a 7 amino acid peptide sequence, KCCFPAQ, that specifically targets human colon cancer and that is labeled, via the linker, GGGSK, with the fluorescent dye, fluorescein isothiocyanate (5-FITC), with potential imaging activity. Following spray application to the colon wall during colonoscopy in areas that look abnormal, the colon heptapeptide moiety of 5-FITC-labeled colon-heptapeptide specifically targets and binds to a cell surface target overexpressed on pre-cancerous or cancerous colon cells. Upon internalization, the FITC moiety allows for fluorescent imaging and the area of interest for biopsies can then be visualized.

**5-FITC-labeled GI-heptapeptide:** A radioconjugate consisting of the 7 amino acid peptide sequence ASYNYDA (GI heptapeptide) and labeled with the fluorescent dye fluorescein isothiocyanate (5-FITC), with potential imaging activity. Upon topical application to the esophageal mucosa using a spray, the heptapeptide moiety of 5-FITC-labeled GI-heptapeptide binds to abnormal cells in the esophagus; the FITC moiety allows for imaging with white light and the area of interest for biopsies can then be visualized.

**5-fluoro-2-deoxycytidine:** A fluorinated pyrimidine analogue antimetabolite with potential antineoplastic activity. As a prodrug, 5-fluoro-2-deoxycytidine is converted by intracellular deaminases to the cytotoxic agent 5-fluorouracil (5-FU). 5-FU is subsequently metabolized to active metabolites including 5-fluoro-2-deoxyuridine monophosphate (FdUMP) and 5-fluorouridine triphosphate (FUTP). FdUMP binds to and inhibits thymidylate synthase, thereby reducing the production of thymidine monophosphate, which leads to depletion of thymidine triphosphate and the inhibition of DNA synthesis and cell division. FUTP competes with uridine triphosphate (UTP) for incorporation into the RNA strand, which results in the inhibition of RNA and protein synthesis and cell proliferation. Other fluorouracil metabolites also get incorporated into both DNA and RNA, with further inhibition of cellular growth.

**5-fluorouracil/salicylic acid topical solution:** A topical formulation containing 0.5 % of antimetabolite 5-fluorouracil (5-FU) and 10% of salicylic acid, with potential antimitotic and keratolytic activity. Upon

cutaneous application, 5-FU in the 5-fluorouracil/salicylic acid topical solution impedes pyrimidine metabolism thereby inhibiting cell growth, while the salicylic acid induces anti-inflammatory response and results in keratolytic effect. This may result in the breakdown of keratinocytes and prevent proliferation of keratinocytes locally.

**5' end:** The end of a nucleic acid that lacks a nucleotide bound at the 5' position of the terminal residue.

**50% oxygen/50% nitrous oxide premix:** An equimolar gas mixture of oxygen (O<sub>2</sub>) and nitrous oxide (N<sub>2</sub>O) with potential analgesic activity. Upon inhalation, 50% oxygen/50% nitrous oxide premix produces rapidly reversible analgesia. The exact mechanism through which nitrous oxide exerts its analgesic effect has yet to be fully elucidated, but it appears to be associated with the neuronal release of endogenous opioid peptides.

**50% Probability level:** A scale factor used for Ortep representations in which the instantaneous position of the atomic center will be within the ellipsoid 50% of the time.

**5D:** Indicates that five functions are used in each d-set.

**6-31++G\*:** Augmented 6-31+G\* basis; the second "+" indicates that a set of diffuse s-functions has been added to each hydrogen atom. Also denoted 6-31++G(d).

**6-31+G\*:** Augmented 6-31G\* basis; the single "+" indicates that a set of diffuse s-functions and a set of diffuse p-functions has been added to each heavy atom. Also denoted 6-31+G(d).

**6-311+G(3df,2p):** In addition to the 6-311G basis, the "+" indicates that diffuse s- and p-functions are added to heavy atoms, the "3df" indicates that three sets of polarization d-functions and one set of polarization f-functions are added to heavy atoms, and the "2p" indicates that two sets of polarization p-functions are added to hydrogen.

**6-311G:** A popular VTZ basis set similar to the small 6-31G set. Usually supplemented with polarization functions. Built like 6-31G but with a third layer of valence functions composed of a single, uncontracted primitive set. Some workers consider this basis to be less flexible than a "real" triple-zeta basis.

**6-311G\*:** The asterisk indicates that a set of polarization d-functions (5D) has been added to heavy atoms to supplement the 6-311G basis; also

denoted 6-311G(d).

**6-311G\*\*:** The second asterisk indicates that a set of polarization p-functions has been added to hydrogen; also denoted 6-311G(d,p).

**6-31G:** A VDZ basis set from the Pople school. Very popular, often used with a set of heavy-atom polarization functions (see 6-31G\*). The "6" indicates that each core basis function is built using six primitives. The "3" indicates that the inner valence basis functions are each built using three primitives. The "1" indicates that the outer valence basis functions are each built using a single uncontracted primitive. The "G" stands for "Gaussian", indicating the type of primitive function. (Recently-developed basis sets don't include the "G" or its equivalent since they are essentially all based upon Gaussian functions.)

**6-31G\*:** A polarized VDZ basis set from the Pople school. Maybe the most popular basis set in use today. The single asterisk indicates that a set of polarizing d-functions (6D) is included on "heavy" atoms (beyond helium). Also denoted 6-31G(d).

**6-31G\*\*:** A polarized VDZ basis set from the Pople school. A set of polarizing d-functions (6D) is included on "heavy" atoms and a set of p-functions on hydrogen. Also denoted 6-31G(d,p).

**6-azauridine:** A synthetic triazine analogue of uridine with antimetabolite activity. 6-azauridine inhibits de novo pyrimidine synthesis and DNA synthesis and is converted intracellularly into mono-, di-, and triphosphate derivatives, which incorporate into RNA and inhibit protein synthesis.

**6-phosphofructo-2-kinase/ fructose-2,6-bisphosphatases isoform 3 inhibitor ACT-PFK-158:** An inhibitor of 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatases (PFK-2/FBPase) isoform 3 (PFKFB3) and derivative of 3-(3-pyridinyl)-1-[4-pyridinyl]-2-propen-1-one (3PO), with potential antineoplastic activity. Upon administration, PFKFB3 inhibitor PFK-158 binds to and inhibits the activity of PFKFB3, which leads to the inhibition of both the glycolytic pathway in and glucose uptake by cancer cells. This prevents the production of macromolecules and energy that causes the enhanced cellular proliferation in cancer cells as compared to that of normal, healthy cells. Depriving cancer cells of nutrients and energy leads to the inhibition of cancer cell growth. PFKFB3, an enzyme that catalyzes the conversion of fructose-6-phosphate to fructose-2,6-bisphosphate, is highly expressed and active in human cancer cells; it plays

a key role in increasing both glycolytic flux in and proliferation of cancer cells.

**6,8-bis(benzylthio)octanoic acid:** A racemic mixture of the enantiomers of a synthetic alpha-lipoic lipoic acid analogue with potential chemopreventive and antineoplastic activities. Although the exact mechanism of action is unknown, 6,8-bis(benzylthio)octanoic acid has been shown to inhibit metabolic and regulatory processes required for cell growth in solid tumors. Both enantiomers in the racemic mixture exhibit antineoplastic activity.

**6D:** Indicates that six (cartesian) functions are used in each d-set. This includes the s-like combination ( $x^2 + y^2 + z^2$ ).

**7-cyanoquinocarcinol:** A semisynthetic analogue of the Streptomyces melanovinaceus-derived tetracyclic antitumor antibiotic quinocarmycin with potential antineoplastic activity. Quinocarmycin belongs to the naphthyridinomycin/saframycin class of antitumor antibiotics. These antibiotics appear to act through DNA alkylation.

**7-hydroxystaurosporine:** A synthetic derivative of staurosporine with antineoplastic activity. 7-hydroxystaurosporine inhibits many phosphokinases, including the serine/threonine kinase AKT, calcium-dependent protein kinase C, and cyclin-dependent kinases. This agent arrests tumor cells in the G1/S of the cell cycle and prevents nucleotide excision repair by inhibiting the G2 checkpoint kinase chk1, resulting in apoptosis.

**8-hydroxyquinoline sulfate ointment:** An ointment formulation containing the sulfate salt of 8-hydroxyquinoline in a petrolatum and lanolin base with skin-protecting activity. Upon topical application, 8-hydroxyquinoline sulfate exhibits antiseptic activity while lanolin moisturizes and softens skin. Check for active clinical trials using this agent.

**851B gel:** A topical gel containing a peptide derived from the human papillomavirus (HPV). Application of 851B gel may stimulate the host immune system to trigger a cytotoxic T-lymphocyte response to cells that express HPV.

**852A:** A synthetic imidazoquinoline Toll-like receptor 7 (TLR7) agonist with immunostimulating and potential antitumor activities. TLR7 agonist 852A binds to and activates TLR7, thereby stimulating plasmacytoid dendritic cells (pDC) through the TLR7-MyD88-dependent signaling

pathway. Activation of pDC results in secretion of interferon alpha, the production of proinflammatory cytokines, the upregulation of co-stimulatory molecules, and enhanced T and B-cell stimulatory responses.

**A form:** A form. A duplex DNA structure with right-handed twisting in which the planes of the base pairs are tilted about 70° with respect to the helix axis.

**A horizon:** the uppermost soil horizon; characterized by the downward movement of water.

**A-Hydrocort:** (Other name for: hydrocortisone sodium succinate)

**A-Side:** Often referred to the “cavity,” this is the half of the mold that usually creates the exterior of a cosmetic part. The A-side generally does not have moving parts built into it.

**A-stage:** This is a very early stage in the reaction of certain thermosetting resins where the molecular weight is low and the resin is still soluble in some liquids and still fusible.

**A33:** A type of monoclonal antibody used in cancer detection or therapy. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells.

**A5SC Flat Wire Belt:** The A5SC belt was specifically designed for the can industry by Ashworth Bros., Inc. Its special construction allows it to run under inverted cans, without pinching and upsetting them, which can occur at the discharge of the dryer section in a can washer, where the cans transfer onto the take-away conveyor.

**A6:** A substance being studied in the treatment of cancer. A6 is a small piece of a protein called urokinase (an enzyme that dissolves blood clots or prevents them from forming). It is a type of antiangiogenesis agent and a type of antimetastatic agent. Also called urokinase plasminogen activator (uPA)-derived peptide A6.

**AAP:** An enzyme that is normally found in healthy kidneys. It may be found at high levels in the urine when there are kidney problems. It is used as a biomarker to detect damage to the kidneys caused by drugs and other agents. It may also be used to diagnose certain kidney and liver disorders. Also called alanine aminopeptidase.

**Ab initio:** (Latin: from the beginning) in chemistry means computational chemistry predictions or calculations solely based on quantum theory rather

than experimental data.

**abacavir sulfate:** A sulfate salt form of abacavir, a nucleoside reverse transcriptase inhibitor analog of guanosine. This agent decreases HIV viral loads, retards or prevents the damage to the immune system, and reduces the risk of developing AIDS. Check for active clinical trials using this agent.

**abagovomab:** A murine IgG1 monoclonal anti-idiotypic antibody, containing a variable antigen-binding region that functionally mimics the three-dimensional structure of a specific epitope on the ovarian cancer tumor-associated antigen CA-125, with potential antineoplastic activity. With a variable antigen-binding region that acts as a surrogate antigen for CA-125, abagovomab may stimulate the host immune system to elicit humoral and cellular immune responses against CA-125-positive tumor cells, resulting in inhibition of tumor cell proliferation.

**abarelix:** A synthetic decapeptide and antagonist of naturally occurring gonadotropin-releasing hormone (GnRH). Abarelix directly and competitively binds to and blocks the gonadotropin releasing hormone receptor in the anterior pituitary gland, thereby inhibiting the secretion and release of luteinizing hormone (LH) and follicle stimulating hormone (FSH). In males, the inhibition of LH secretion prevents the release of testosterone. As a result, this may relieve symptoms associated with prostate hypertrophy or prostate cancer, since testosterone is required to sustain prostate growth. OR A drug used to reduce the amount of testosterone made in patients with advanced symptomatic prostate cancer for which no other treatment options are available. It belongs to the family of drugs called gonadotropin-releasing hormone (GnRH) antagonists. Also called Plenaxis.

**abatacept:** A soluble fusion protein consisting of the extracellular domain of human cytotoxic T lymphocyte-associated antigen 4 (CTLA-4) linked to a modified Fc (hinge, CH2, and CH3 domains) portion of human immunoglobulin G1 (IgG1) with immunosuppressive activity. Abatacept binds CD80 and CD86 on antigen presenting cells (APCs), blocking interaction with CD28 on T lymphocytes, which initiates a co-stimulatory signal required for full activation of T lymphocytes.

**ABBV-221:** An intravenously-administered agent capable of modulating the activity of epidermal growth factor receptor (EGFR), with potential antineoplastic activity.

**ABCA1 pathway :** Describes a group of proteins in a cell that work together to help remove extra cholesterol and certain fats from tissue in the body. Changes in the ABCA1 pathway may lead to diseases of the heart and blood vessels. Drugs or substances that affect this pathway are being studied in the prevention and treatment of some diseases.

**ABCD rating :** A staging system for prostate cancer that uses ABCD. “A” and “B” refer to cancer that is confined to the prostate. “C” refers to cancer that has grown out of the prostate but has not spread to lymph nodes or other places in the body. “D” refers to cancer that has spread to lymph nodes or to other places in the body. Also called Jewett staging system and Whitmore-Jewett staging system.

**abdomen :** The area of the body that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

**abdominal :** Having to do with the abdomen, which is the part of the body between the chest and the hips that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs.

**abdominal ultrasound :** A procedure used to examine the organs in the abdomen. An ultrasound transducer (probe) is pressed firmly against the skin of the abdomen. High-energy sound waves from the transducer bounce off tissues and create echoes. The echoes are sent to a computer, which makes a picture called a sonogram. Also called transabdominal ultrasound.

**abdominal x-ray :** An x-ray of the organs inside the abdomen. An x-ray is a type of radiation that can pass through the body and onto film, making pictures of areas inside the body. X-rays may be used to help diagnose disease.

**abdominoperineal resection :** Surgery to remove the anus, the rectum, and part of the sigmoid colon through an incision made in the abdomen. The end of the intestine is attached to an opening in the surface of the abdomen and body waste is collected in a disposable bag outside of the body. This opening is called a colostomy. Lymph nodes that contain cancer may also be removed during this operation.

**Abegrin :** A substance being studied in the treatment of some types of cancer and other conditions. Abegrin binds to a protein on the surface of blood vessels and may prevent the growth of new blood vessels that tumors need to grow. It may also prevent the spread of cancer. It is a type of antiangiogenesis agent, a type of metastasis inhibitor, and a type of

monoclonal antibody. Also called etaracizumab, humanized monoclonal antibody MEDI-522, and MEDI-522.

**Abelcet:** (Other name for: liposomal amphotericin B)

**abemaciclib:** An orally available cyclin-dependent kinase (CDK) inhibitor that targets the CDK4 (cyclin D1) and CDK6 (cyclin D3) cell cycle pathway, with potential antineoplastic activity. Abemaciclib specifically inhibits CDK4 and 6, thereby inhibiting retinoblastoma (Rb) protein phosphorylation in early G1. Inhibition of Rb phosphorylation prevents CDK-mediated G1-S phase transition, thereby arresting the cell cycle in the G1 phase, suppressing DNA synthesis and inhibiting cancer cell growth. Overexpression of the serine/threonine kinases CDK4/6, as seen in certain types of cancer, causes cell cycle deregulation. Check for active clinical trials using this agent.

**Aberel:** (Other name for: tretinoin)

**aberrant crypt foci :** Clusters of abnormal tube-like glands in the lining of the colon and rectum. Aberrant crypt foci form before colorectal polyps and are one of the earliest changes that can be seen in the colon that may lead to cancer. Also called ACF.

**abexinostat:** A novel, broad-spectrum hydroxamic acid-based inhibitor of histone deacetylase (HDAC) with potential antineoplastic activity. Abexinostat inhibits several isoforms of HDAC, resulting in an accumulation of highly acetylated histones, followed by the induction of chromatin remodeling; the selective transcription of tumor suppressor genes; and the tumor suppressor protein-mediated inhibition of tumor cell division and induction of tumor cell apoptosis. HDAC, upregulated in many tumor types, is an enzyme that is responsible for the deacetylation of chromatin histone proteins.

**ABI-007:** A drug used to treat breast cancer that has come back or spread to other parts of the body. It is also used with carboplatin to treat advanced non-small cell lung cancer in patients who are not able to have surgery or radiation therapy. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that has spread to other parts of the body. It is being studied in the treatment of other types of cancer. ABI-007 is a form of the anticancer drug paclitaxel and may cause fewer side effects than paclitaxel. It stops cancer cells from growing and dividing, and may kill them. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called

Abiraterone, nanoparticle paclitaxel, paclitaxel albumin-stabilized nanoparticle formulation, and protein-bound paclitaxel.

**abiotic:** This is a term used to describe anything which is characterized by the absence of life or incompatible with life. In toxicology and ecotoxicology it refers to physical (e.g. heat, sunlight) or chemical processes (e.g. hydrolysis) that are capable of modifying chemical structures.

**Abiotic Disintegration:** The disintegration of plastic materials by means other than by the biological process such as dissolving, heat ageing or ultraviolet aging.

**Abiotic factors:** Non living; moisture, soil, nutrients, fire, wind, temperature, climate

**abiotic transformation:** Any process in which a chemical in the environment is modified by non-biological mechanisms (see also biotransformation) (WHO, 1979).

**abiraterone acetate:** An orally active acetate salt of the steroidal compound abiraterone with antiandrogen activity. Abiraterone inhibits the enzymatic activity of steroid 17alpha-monooxygenase (17alpha-hydroxylase/C17,20 lyase complex), a member of the cytochrome p450 family that catalyzes the 17alpha-hydroxylation of steroid intermediates involved in testosterone synthesis. Administration of this agent may suppress testosterone production by both the testes and the adrenals to castrate-range levels. or A drug used with prednisone to treat prostate cancer that has spread to other parts of the body and has not gotten better with other hormone therapy. It is also being studied in the treatment of other types of cancer. Abiraterone acetate lowers the amount of androgens (male hormones), such as testosterone, made by the body. This may stop the growth of cancer cells that need androgens to grow. Abiraterone acetate is a type of antiandrogen. Also called Zytiga.

**Abitrexate:** (Other name for: methotrexate)

**ablation :** In medicine, the removal or destruction of a body part or tissue or its function. Ablation may be performed by surgery, hormones, drugs, radiofrequency, heat, or other methods.

**ablation (glacial):** All processes, which include melting, evaporation (sublimation), wind erosion, and calving (breaking off of ice masses), that

remove snow or ice from a glacier or snowfield. The term also refers to the amount of snow or ice removed by these processes.

**Ablavar:** (Other name for: gadofosveset trisodium)

**abnormal :** Not normal. Describes a state, condition, or behavior that is unusual or different from what is considered normal. An abnormal lesion or growth in or on the body may be benign (not cancer), precancerous or premalignant (likely to become cancer), or malignant (cancer).

**ABO blood group system :** A system used to group human blood into different types, based on the presence or absence of certain markers on the surface of red blood cells. The four main blood types are A, B, O, and AB. For a blood transfusion, the ABO blood group system is used to match the blood type of the donor and the person receiving the transfusion. People with blood type O can donate blood to anyone and are called universal donors. People with blood type AB can accept blood from all donors and are called universal recipients. People with type A or B can receive matching blood or type O blood.

**ABR test :** A test used to detect some types of hearing loss, such as hearing loss caused by injury or tumors that affect nerves involved in hearing. Electrodes are placed on the head and certain tones or clicking sounds are made. The electrodes measure nerve signals in the brain when it reacts to the sounds. Also called auditory brain stem response test, BAER test, and brain stem auditory evoked response test.

**Abrading:** The use of materials such as glasspaper, wet-or-dry paper, sanding discs, etc. to smooth down a surface prior to painting, or to matt down existing coatings to provide a 'key' for subsequent coats of paint.

**Abrasion:** Wearing, grinding, or rubbing away by friction. OR Surface wear caused by relative motion between two or more contacting objects or Rocks bang into each other and become smaller and more rounded.

**Abrasion Resistance:** Resistance to being worn away by rubbing or friction; related more to toughness than to hardness. A necessary quality for floor finishes, enamels and varnishes. OR The ability to withstand the effects of repeated wearing, rubbing, scraping, etc., that tend to remove material from its surface. OR The ability of a material to withstand rubbing, scraping or erosion from mechanical systems, that ultimately ruin a metal surface. Ability of a plastic to withstand mechanical action that tends to wear material from its surface. Or The ability of a rubber compound to

resist surface wearing by mechanical action or the ability to withstand the effects of repeated wearing, rubbing, scraping, etc., that tend to remove material from its surface. or the ability to withstand the effects of repeated wearing, rubbing, scraping, etc., that tend to remove material from its surface. The ability of a material to withstand mechanical actions such as rubbing, scraping, or erosion, that tend progressively to remove material from its surface. OR Capability of material to resist mechanical actions such as rubbing, scraping, erosion which wear down material. In general, the abrasion behaviour of plastics is good, especially in the case of sliding surfaces where foreign particles, as well as particles generated through abrasion, are pressed into the surface and thus lose their abrasive effect. This is why plastics mostly withstand sliding abrasion, grain abrasion and frictional abrasion better than metallic materials. or Abrasion Resistance The ability a material has to withstand rubbing and scraping. Fre-Thane™ Polyurethane Tubing has a high level of abrasion resistance.

**ABRASIVE:** Used for wearing away a surface by rubbing. Examples are powdered pumice, rottenstone, sandpaper, sandpaper, steel wool. OR A very hard, brittle, heat-resistant substance that is used to grind the edges or rough surfaces of an object. boron carbide, diamond, and corundum are abrasives.

**Abraxane :** A drug used to treat breast cancer that has come back or spread to other parts of the body. It is also used with carboplatin to treat advanced non-small cell lung cancer in patients who are not able to have surgery or radiation therapy. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that has spread to other parts of the body. It is being studied in the treatment of other types of cancer. Abraxane is a form of the anticancer drug paclitaxel and may cause fewer side effects than paclitaxel. It stops cancer cells from growing and dividing, and may kill them. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called ABI-007, nanoparticle paclitaxel, paclitaxel albumin-stabilized nanoparticle formulation, and protein-bound paclitaxel.

**ABS:** Acrylonitrile-butadiene-styrene or Acrylonitrile Butadiene Styrene is a thermoplastic copolymer that can withstand high temperatures and has good adhesive properties. It is one of the most widely used engineering thermoplastic . ABS extrusions are mainly used for indoor purposes. The plastic product has excellent surface appearance, strength and

stiffness, toughness and chemical resistance—as well as its processing ease and versatility. ABS is often used for refrigerator door liners, interior automotive trims, and housings for business machines, small appliances, telephones, and other consumer electronics. Furthermore, ABS offers a broad processing window with resins tailored for plastic extrusion manufacture, injection moulding, sheet extrusion and coextrusion, plating, roto moulding, compression, cold forming, and blow moulding.

**abscess :** An enclosed collection of pus in tissues, organs, or confined spaces in the body. An abscess is a sign of infection and is usually swollen and inflamed.

**abscission:** Shedding by a plant of its parts, such as leaves, flowers, fruits, or seeds. The process is regulated by the plant hormone abscisic acid.

**absolute configuration:** The configuration of four different substituent groups around an asymmetric carbon atom, in relation to D- and L-glyceraldehyde. Or The configuration of four different substituent groups around an asymmetric carbon atom, in relation to D- and L-glyceraldehyde. absolute configuration The configuration of four different substituent groups around an asymmetric carbon atom, in relation to D- and L-glyceraldehyde.

**Absolute Density:** The absolute density is a measure of the mass of one milliliter of gas at standard temperature and pressure.

**absolute error:** absolute uncertainty. Compare with relative error. The uncertainty in a measurement, expressed with appropriate units. For example, if three replicate weights for an object are 1.00 g, 1.05 g, and 0.95 g, the absolute error can be expressed as  $\pm 0.05$  g. Absolute error is also used to express inaccuracies; for example, if the "true value" is 1.11 g and the measured value is 1.00 g, the absolute error could be written as  $1.00 \text{ g} - 1.11 \text{ g} = -0.11 \text{ g}$ . Note that when absolute errors are associated with indeterminate errors, they are preceded with " $\pm$ "; when they are associated with determinate errors, they are preceded by their sign.

**Absolute mV mode:** a mode of operation of a pH/mV meter, which allows the actual true potential of the electrode to be displayed. In the absolute millivolt mode the calibration control (asymmetry potential control) does not change the readings.

**absolute neutrophil count :** A measure of the number of neutrophils in the blood. Neutrophils are a type of white blood cell. They help the body fight

infection. An absolute neutrophil count may be used to check for infection, inflammation, leukemia, and other conditions. The lower a person's absolute neutrophil count is, the higher the risk is of getting an infection. Having an absolute neutrophil count of less than 500 means there is a high risk of getting an infection. Cancer treatment, such as chemotherapy, may reduce the absolute neutrophil count. Also called ANC.

**absolute risk :** A measure of the risk of a certain event happening. In cancer research, it is the likelihood that a person who is free of a specific type of cancer at a given age will develop that cancer over a certain period of time. For example, a woman 35 years of age, with no known risk factors for breast cancer, has an absolute risk of getting breast cancer over a lifetime of 90 years of about 13.5%, meaning one out of every seven women will develop breast cancer.

**absolute temperature:** Temperature measured on a scale that sets absolute zero as zero. In the SI system, the kelvin scale is used to measure absolute temperature.

**Absolute Viscosity:** The tangential force on unit area of either of two parallel planes at unit distance apart when the space between the planes is filled with the fluid in question and one of the planes moves with unit differential velocity in its own plane. The C.G.S. unit for absolute (or dynamic) viscosity is poise (dyne-sec./sq. cm.). Centipoise (0.01) is often used.

**absolute zero:** The temperature at which the volume of an ideal gas becomes zero; a theoretical coldest temperature that can be approached but never reached. Absolute zero is zero on the Kelvin scale,  $-273.15^{\circ}\text{C}$  on the Celsius scale, and  $-459.67^{\circ}\text{F}$  on the Fahrenheit scale.

**absorbable adhesion barrier gel:** An isotonic, sterile, absorbable adhesion barrier gel composed of polyethylene oxide and sodium carboxymethylcellulose, with protective activity. Upon application of a single layer into the uterine cavity at the end of any hysteroscopic surgery, the absorbable adhesion barrier gel may provide a protective barrier which protects the traumatized tissue and allows for healing. This gel may therefore prevent the formation of post-surgical intrauterine adhesions.

**absorbable fibrin sealant patch:** A sterile, absorbable surgical sealing patch composed of an equine collagen sponge coated with the coagulation factors human fibrinogen and human thrombin, with potential hemostatic

activity. Applied on the wound tissue, the absorbable fibrin sealant patch adheres to the tissue and the solid fibrinogen and thrombin dissolve upon contact with the physiological fluid. In turn, fibrinogen is converted to fibrin monomers by thrombin, and polymerize to form a fibrin clot at the wound surface. This causes the patch to adhere to the wound surface and promotes tissue sealing. This may reduce lymphatic drainage and prevent seroma formation.

**absorbable gelatin sponge:** A sterile hemostatic agent composed of purified porcine-derived gelatin. In regional chemotherapy, absorbable gelatin sponge may be used to embolize arteries in the region of a tumor in order to block or retard blood flow; this blockage results in a locally increased concentration of chemotherapeutic agents delivered to the tumor when chemotherapeutic agents are infused into the embolized arterial circulation upstream of the blockage.

**absorbable modified polymer hemostatic powder:** A hemostatic powder composed of hydrophilic, absorbable modified polymers (AMPs) derived from plant starch, with potential anti-hemorrhagic activity. Upon local administration of the AMP hemostatic powder directly sprayed over the bleeding surface, this powder adheres to the bleeding area, and the AMPs are able to absorb fluid and therefore soak up blood at the bleeding site. This leads to the formation of a gelled matrix that seals the affected site, and allows platelets, red blood cells and clotting factors in the blood to concentrate at the wound. In turn, this promotes the coagulation cascade, helps to stop or control bleeding, and prevents further blood loss. The AMP particles are naturally degraded by human enzymes over time.

**absorbance:** (A, D, E) optical density; extinction; decadic absorbance. A measure of the amount of light absorbed by a sample. The absorbance (A) equals minus the base-10 log of the transmittance.

**Absorbance (A) :** a physical quantity, which expresses the amount of light absorbed by a sample solution. When a light beam passes through a sample, the amount of light absorbed is the difference between the incident radiation ( $I_0$ ) and the transmitted radiation (I). Absorbance is defined:  $A = \log I_0/I$ .

**absorbed dose (in radiation):** The energy imparted to matter in a suitably small element of volume by ionizing radiation divided by the mass of that element of volume (ISO, 1972). The SI unit for absorbed dose is joule per kilogram ( $J\ kg^{-1}$ ) and its special name is gray (Gy) (ISO, 1972).

**absorbed dose (in toxicology):** The amount of a chemical absorbed into the body or into organs and tissues of interest (WHO, 1978a).

**Absorbency:** The degree to which a surface can soak up a liquid. Some surfaces have varying absorbency, for instance, softwoods vary in grain pattern. One of the requirements of a primer is to produce a non-absorbent surface.

**absorption:** Transport of the products of digestion from the intestinal tract into the blood. OR Not to be confused with adsorption, absorption is one substance is taken up into the interior of another - adsorption with a 'd' is entirely a surface effect. Examples are the swelling of a poly(acrylamide) polymer with aqueous solution (in a disposable nappy) or the dissolution of carbon dioxide in seawater (one of the possible antidotes to global warming that crops up in models of world climate. OR A process in which a gas mixture contacts a liquid solvent and a component (or several components) of the gas dissolves in the liquid. In an absorption column or absorption tower (or simply absorber), the solvent enters the top of a column, flows down, and emerges at the bottom, and the gas enters at the bottom, flows up (contacting the liquid), and leaves at the top OR The taking in or soaking up of one substance into the body of another by molecular or chemical action (as tree roots absorb dissolved nutrients in the soil). OR absorb; absorbent. Compare with adsorption and sorption.

1. Penetration of molecules into the bulk of a solid or liquid, forming either a solution or compound. Absorption can be a chemical process (a strong solution of NaOH absorbs CO<sub>2</sub> from the air) or a physical process (palladium absorbs hydrogen gas). 2. Capture and transformation of energy by a substance; for example, copper looks reddish because it absorbs blue light. An absorbent captures another material and distributes it throughout; an adsorbent captures another material and distributes it on its surface only.

**absorption :** The process of taking nutrients from the digestive system into the blood so they can be used in the body.

**absorption (in colloid and surface chemistry):** A process whereby, when two phases are brought into contact, a given component is transferred from one phase to the other (after IUPAC, 1972). Experimental differentiation of absorption and adsorption (q.v.) may be difficult, and sometimes the two processes occur simultaneously; in such cases the term ``sorption" is used (WHO, 1979).

**absorption (in radiation):** A phenomenon in which radiation transfers to matter which it traverses some or all of its energy (ISO, 1972).

**absorption coefficient:** A measure of the amount of radiant energy, incident normal to a planar surface, that is absorbed per unit distance or unit mass of a substance.

**Absorption Field:** A system of properly sized and constructed narrow trenches partially filled with a bed of washed gravel or crushed stone into which perforated or open joint pipe is placed. The discharge from the septic tank is distributed through these pipes into trenches and surrounding soil. While seepage pits normally require less land area to install, they should be used only where absorption fields are not suitable and well-water supplies are not endangered.

**absorption spectroscopy:** Compare with absorption spectrum. A technique for determining the concentration and structure of a substance by measuring the amount of electromagnetic radiation the sample absorbs at various wavelengths.

**absorption spectrum:** absorption spectra. Compare with absorption spectroscopy. A plot that shows how much radiation a substance absorbs at different wavelengths. Absorption spectra are unique for each element and compound and they are often used as chemical "fingerprints" in analytical chemistry. The spectrum can be represented by a plot of either absorbance or transmittance versus wavelength, frequency, or wavenumber.

**Absorption spectrum :** a plot of absorption light wavelength versus the amount of light absorbed by the molecules.

**absorptivity:** (a) extinction coefficient; absorption cross section; decadic absorptivity. Compare with molar absorptivity and absorbance. The absorbance of a solution per unit of path length and per unit concentration;  $a = A/(bc)$  where  $a$ ,  $A$ ,  $b$ , and  $c$  are the absorptivity, absorbance, path length, and concentration, respectively. Absorptivity varies with wavelength of the incident light.

**ABT-263:** A substance being studied in the treatment of lymphomas and other types of cancer. It blocks some of the enzymes that keep cancer cells from dying. It is a type of Bcl-2 family inhibitor. Also called navitoclax.

**ABT-510:** A synthetic peptide that mimics the anti-angiogenic activity of the endogenous protein thrombospondin-1 (TSP-1). ABT-510 inhibits the actions of several pro-angiogenic growth factors important to tumor neovascularization; these pro-angiogenic growth factors include vascular endothelial growth factor (VEGF), basic fibroblast growth factor (bFGF), hepatocyte growth factor (HGF), and interleukin 8 (IL-8). Check for active clinical trials using this agent. OR A substance being studied in the treatment of cancer. It is a type of angiogenesis inhibitor.

**ABT-751:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called sulfonamides. OR An orally bioavailable antimitotic sulfonamide. ABT-751 binds to the colchicine-binding site on beta-tubulin and inhibits the polymerization of microtubules, thereby preventing tumor cell replication. This agent also disrupts tumor neovascularization, reducing tumor blood flow and so inducing a cytotoxic effect.

**ABT-869:** A substance being studied in the treatment of several types of cancer. ABT-869 blocks the action of several growth factors. It may also block the growth of new blood vessels that tumors need to grow and may cause cancer cells to die. It is a type of receptor tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called multitargeted receptor tyrosine kinase inhibitor ABT-869.

**ABT-888:** A substance being studied in the treatment of breast cancers caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is also being studied in the treatment of other types of cancer. It blocks an enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. ABT-888 may cause cancer cells to die. It is a type of poly(ADP-ribose) polymerase inhibitor. Also called PARP-1 inhibitor ABT-888 and veliparib.

**ABVD:** An abbreviation for a chemotherapy combination used to treat Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vinblastine sulfate, and dacarbazine. Also called ABVD regimen.

**ABVD regimen :** An abbreviation for a chemotherapy combination used to treat Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vinblastine sulfate, and dacarbazine. Also

called ABVD. OR A chemotherapy regimen consisting of doxorubicin hydrochloride (Adriamycin), bleomycin, vinblastine and dacarbazine, used alone or in combination with radiation therapy, for the primary treatment of Hodgkin lymphoma.

**ABVE:** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vincristine sulfate, and etoposide. Also called ABVE regimen, DBVE, and DBVE regimen.

**ABVE regimen :** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vincristine sulfate, and etoposide. Also called ABVE, DBVE, and DBVE regimen. OR A regimen containing doxorubicin hydrochloride, bleomycin sulfate, vincristine sulfate and etoposide used in combination with radiation therapy for the treatment of low-risk, childhood Hodgkin lymphoma.

**ABVE-PC:** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vincristine sulfate, etoposide, prednisone, and cyclophosphamide. Also called ABVE-PC regimen, DBVE-PC, and DBVE-PC regimen.

**ABVE-PC regimen :** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vincristine sulfate, etoposide, prednisone, and cyclophosphamide. Also called ABVE-PC, DBVE-PC, and DBVE-PC regimen. OR A regimen consisting of doxorubicin, bleomycin, vincristine, etoposide, prednisone and cyclophosphamide, given in combination with radiation therapy and used for the treatment of high-risk, childhood Hodgkin's lymphoma.

**ABX-EGF:** A human monoclonal antibody that is being used to treat colorectal cancer that has spread to other parts of the body. It is used in patients whose disease has not gotten better during or after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. ABX-EGF

binds to the epidermal growth factor receptor (EGFR) and may block tumor cell growth. Also called panitumumab and Vectibix.

**abyssal fan:** a fan-shaped accumulation of sediment that forms at the mouth of submarine canyons.

**abyssal plain:** a very flat expanse of horizontally deposited sediment that accumulates on the ocean floor at the base of a continental rise.

**AC:** An abbreviation for a chemotherapy combination used with other types of therapy to treat breast cancer, including breast cancer that has spread or come back. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide. Also called AC regimen.

**AC regimen :** An abbreviation for a chemotherapy combination used with other types of therapy to treat breast cancer, including breast cancer that has spread or come back. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide. Also called AC. OR A chemotherapy regimen consisting of doxorubicin hydrochloride (Adriamycin) and cyclophosphamide used in the adjuvant setting for the primary treatment of breast cancer. This regimen is also used for the treatment of recurrent and metastatic breast cancer.

**AC-T:** An abbreviation for a chemotherapy combination used to treat breast cancer. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by treatment with paclitaxel (Taxol). Also called AC-T regimen and AC-Taxol regimen.

**AC-T regimen :** An abbreviation for a chemotherapy combination used to treat breast cancer. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by treatment with paclitaxel (Taxol). Also called AC-T and AC-Taxol regimen. OR A chemotherapy regimen consisting of doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by paclitaxel (Taxol), administered on either a dose-dense or sequential schedule and used as an adjuvant treatment for breast cancer.

**AC-T-T:** An abbreviation for a chemotherapy combination used to treat breast cancer. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by treatment with paclitaxel (Taxol) and trastuzumab (Herceptin). Also called AC-T-T regimen, AC-TH regimen, and sequential AC/Taxol-Trastuzumab regimen.

**AC-T-T regimen :** An abbreviation for a chemotherapy combination used to treat breast cancer. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by treatment with paclitaxel (Taxol) and trastuzumab (Herceptin). Also called AC-T-T, AC-TH regimen, and sequential AC/Taxol-Trastuzumab regimen.

**AC-Taxol regimen :** An abbreviation for a chemotherapy combination used to treat breast cancer. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by treatment with paclitaxel (Taxol). Also called AC-T and AC-T regimen.

**AC-TH regimen :** An abbreviation for a chemotherapy combination used to treat breast cancer. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by treatment with paclitaxel (Taxol) and trastuzumab (Herceptin). Also called AC-T-T, AC-T-T regimen, and sequential AC/Taxol-Trastuzumab regimen.

**acadesine:** A 5-aminoimidazole-4-carboxamide (AICA) riboside, a purine nucleoside analog, and a nucleotide biosynthesis precursor with B cell proapoptotic activity. Following cellular uptake, acadesine is phosphorylated to AICA ribotide (ZMP), which mimics 5'-adenosine monophosphate (AMP). Both AMP-activated protein kinase (AMPK) and AMPK kinase (AMPKK) are activated by ZMP, which appears to be necessary for the induction of apoptosis. Acadesine-induced apoptosis also appears to require cytochrome c release from mitochondria and caspase activation and is p53-independent. However, the exact mechanism of acadesine-induced apoptosis is unknown. T cells are significantly less susceptible than B cells to acadesine-induced apoptosis. AMPK regulates several cellular systems including the cellular uptake of glucose, the beta-oxidation of fatty acids, protein synthesis, and the biogenesis of glucose transporter 4 (GLUT4) and mitochondria.

**acai berry juice:** A juice product obtained from the fruit of the acai palm tree (*Euterpe oleracea*) with anti-inflammatory, antioxidant and potential chemopreventive activities. Besides high amounts of vitamins, minerals and fatty acids, acai berry is rich in phytonutrients such as anthocyanins and flavones which are potent scavengers of reactive oxygen species. The fruit also contains high amounts of the flavone velutin which exhibits potent anti-inflammatory properties. Velutin is able to inhibit the degradation of the inhibitor of nuclear factor kappa-B (NF-kB), thereby blocking the activation of NF-kB, as well as inhibiting phosphorylation of mitogen-

activated protein kinase p38 and JNK. Inhibition of these processes results in suppression of the production of proinflammatory cytokines, such as tumor necrosis factor alpha and interleukin 6.

**acalabrutinib:** An orally available inhibitor of Bruton's tyrosine kinase (BTK) with potential antineoplastic activity. Upon administration, acalabrutinib inhibits the activity of BTK and prevents the activation of the B-cell antigen receptor (BCR) signaling pathway. This prevents both B-cell activation and BTK-mediated activation of downstream survival pathways. This leads to an inhibition of the growth of malignant B cells that overexpress BTK. BTK, a member of the src-related BTK/Tec family of cytoplasmic tyrosine kinases, is overexpressed in B-cell malignancies; it plays an important role in B lymphocyte development, activation, signaling, proliferation and survival.

**ACAPHA :** A mixture of six herbs that has been used in China to prevent and treat diseases such as lung and esophageal cancers. It is being studied in the United States and Canada in the prevention of lung cancer in people who used to smoke.

**acarbose:** A pseudotetrasaccharide and inhibitor of alpha-glucosidase and pancreatic alpha-amylase with antihyperglycemic activity. Acarbose binds to and inhibits alpha-glucosidase, an enteric enzyme found in the brush border of the small intestines that hydrolyzes oligosaccharides and disaccharides into glucose and other monosaccharides. This prevents the breakdown of larger carbohydrates into glucose and decreases the rise in postprandial blood glucose levels. In addition, acarbose inhibits pancreatic alpha-amylase which hydrolyzes complex starches to oligosaccharides in the small intestines.

**Accelerated Life Test:** Any set of test conditions designed to reproduce, in a short time, the deteriorating effect obtained under normal service conditions

**accelerated partial-breast irradiation :** A type of radiation therapy given only to the part of the breast that has cancer in it. Accelerated partial-breast irradiation gives a higher dose over a shorter time than is given in standard whole-breast radiation therapy. Accelerated partial-breast irradiation may be given using internal or external sources of radiation. Also called partial-breast irradiation.

**accelerated phase chronic myelogenous leukemia :** A phase of chronic myelogenous leukemia in which the disease is progressing. In this phase, 10% to 19% of the cells in the blood and bone marrow are blast cells (immature blood cells).

**accelerated radiation therapy :** Radiation treatment in which the total dose of radiation is given over a shorter period of time (fewer days) compared to standard radiation therapy.

**Accelerated stability tests:** A series of tests using high temperatures and/or humidities over the course of several months. These data are used to estimate the expiration date of the drug product.

**Accelerated weathering:** Laboratory or field tests intended to simulate natural outdoor weathering in an intensified or accelerated degree. There is no generally accepted type of laboratory test and expert opinion does not accept that such artificial tests give a true reflection of natural behaviour.

**accelerated-fraction radiation therapy :** Radiation treatment in which the total dose of radiation is divided into small doses and the treatments are given more than once a day. The total dose of radiation is also given over a shorter period of time (fewer days) compared to standard radiation therapy.

**acceleration:** Measure of how fast velocity is changing, so we can think of it as the change in velocity over change in time. The most common use of acceleration is acceleration due to gravity, which can also appear as the gravitational constant (9.8 m/s<sup>2</sup>).

**accelerator:** 1. A substance that makes vulcanization of rubber occur more quickly or at a lower temperature. 2. A substance that makes crosslinking in a polymer occur more quickly or at a lower temperature, e. g., accelerators are added to Super Glue to make it set up quickly. OR A substance that hastens a reaction, particularly one which speeds up the vulcanization of rubber. Also known as Promoter. Or A substance that speeds up curing or vulcanization of natural/synthetic rubbers

**acceptable daily intake:** This is an estimate of the amount of substance in the food that can be ingested daily over a lifetime by humans without appreciable health risk. The concept of the ADI has been developed principally by WHO and FAO and is relevant to chemicals such as additives to foodstuffs, residues of pesticides and veterinary drugs in foods. ADIs are derived from laboratory toxicity data, and from human experiences of such chemicals when this is available, and incorporate the safety factor.

**acceptable daily intake (pesticide residues):** The acceptable daily intake of a chemical is the daily intake which, during an entire life time, appears to be without appreciable risk to the health of the consumer on the basis of all the known facts at the time when a toxicological assessment is carried out. It is expressed in milligrams of the chemical per kilogram of body weight (Vettorazzi, 1980).

**acceptable daily intake for man (ADI) (food additives):** The acceptable daily intake (ADI) for man, expressed on a body weight basis (mg/kg body weight) is the amount of a food additive that can be taken daily in the diet, even over a lifetime, without risk. It is allocated only to substances for which the available data include either the results of adequate short-term and long-term toxicological investigations, or satisfactory information on the biochemistry and metabolic fate of the compound, or both (Vettorazzi, 1980).

**acceptable daily intake not specified:** An ADI without an explicit indication of the upper limit of intake may be assigned to substances of very low toxicity, especially those that are food constituents or that may be considered as foods or normal metabolites in man. This expression was adopted as a more suitable expression than "ADI not limited", which was previously used. An additive having an "ADI not specified" must meet the criteria of good manufacturing practices. For example, it should have proved technological efficacy and be used at the minimum level of technological efficacy, it should not conceal inferior food quality or adulteration, and it should not create a nutritional imbalance. The above expression means that, on the basis of available data (chemical, biochemical, and toxicological), the total daily intake of the substance arising from its use or uses at levels necessary to achieve the desired effect and from its acceptable background in food, does not represent a hazard to health. For this reason, and for reasons stated in the individual evaluations, the establishment of an acceptable daily intake expressed in mg/kg body weight is not deemed necessary (Vettorazzi, 1980).

**acceptable daily intake not specified (pesticide residues):** An ADI without an explicit indication of the upper limit of intake may be assigned to substances of very low toxicity, especially those that are food constituents or that may be considered as foods or normal metabolites in man. This expression was adopted as a more suitable expression than "ADI

not limited" which was previously used. An additive having an "ADI not specified" must meet the criteria of good manufacturing practices, for example, it should have proved technological efficacy and be used at the minimum level of technological efficacy, it should not conceal inferior food quality or adulteration, and it should not create a nutritional imbalance. The above expression means that, on the basis of available data (chemical, biochemical, and toxicological), the total daily intake of the substance arising from its use or uses at levels necessary to achieve the desired effect and from its acceptable background in food, does not represent a hazard to health. For this reason, and for reasons stated in the individual evaluations, the establishment of an acceptable daily intake expressed in mg/kg body weight is not deemed necessary (Vettorazzi, 1980).

**acceptable level of treatment:** Acceptable daily intakes are usually expressed as milligrams of the substance in question per kilogram of body weight. There are, however, certain food additives that are more appropriately limited in terms of levels of treatment applied (Vettorazzi, 1980).

**acceptable residue:** Acceptable residues in human food that have been established for antibiotics found in foods (Vettorazzi, 1980).

**acceptable risk:** This concept relates to the probability of suffering disease or injury that will be tolerated by an individual, group or society. Acceptability of risk depends on the scientific data, social, economic and political factors, and on the perceived benefits arising from the a chemical or process.

**Acceptable Runner/Cavity Ratio:** Runner systems designed for high pressure drops to minimize material usage and increase frictional heating in the runner.

**acceptor control:** The regulation of the rate of respiration by the availability of ADP as phosphate group acceptor.

**Access hatch:** An airtight door system that preserves the pressure integrity of the containment structure of a nuclear reactor, while allowing access to personnel and equipment.

**accessory pigments:** Visible lightabsorbing pigments (carotenoids, xanthophyll, and phycobilins) in plants and photosynthetic bacteria that complement chlorophylls in trapping energy from sunlight.

**acclimation (acclimatization):** Change that occurs in an organism to allow it to tolerate a new environment.

**Accolate :** A drug used to prevent and treat symptoms of asthma. It blocks substances that cause inflammation in the lungs. It is a type of antiasthmatic agent and a leukotriene receptor antagonist. Also called zafirlukast.

**accreted terrane:** a terrane that appears to have formed in place along a continent's margin through accumulation and orogeny.

**accretionary wedge:** an accumulation of marine sediment, derived from the subducting plate, that builds up at the edge of a subduction zone.

**accumulation:** Successive additions of a substance to a target organism, or organ, or to part of the environment, resulting in an increasing quantity or concentration of the substance in the organism, organ, or environment.

**accumulation (glacial):** All processes, which include snowfall, condensation, avalanching, snow transport by wind, and freezing of liquid water, that add snow or ice to a glacier, floating ice, or snow cover. The term also includes the amount of snow or other solid precipitation added to a glacier or snowfield by these processes.

**Accumulator:** A term used mainly with reference to blow molding equipment which designates an auxiliary ream extruder which is used to provide extremely fast parison delivery. The accumulator cylinder is filled with plasticated melt coming from the extruder between parison deliveries or "shots" and is stored or "accumulated" until the plunger is required to deliver the next parison.

**accuracy:** (i) The closeness of agreement between the "true" value and the measured values (ISO, 1981); (ii) the degree to which a measurement, or an estimate based on measurements, represents the true value of the attribute that is being measured (Last, 1988). OR the closeness of a measured value to the known "true" value of the measurand. OR comparison to an accepted standard. OR Accuracy is the correctness of a single measurement. The accuracy of a measurement is assessed by comparing the measurement with the true or accepted value, based on evidence independent of the measurement. The closeness of an average to a true value is referred to as "trueness".

**Accutane:** (Other name for: isotretinoin)

**ACE inhibitor :** A drug that is used to lower blood pressure. An ACE inhibitor is a type of antihypertensive agent. Also called angiotensin-converting enzyme inhibitor.

**Acelarin:** (Other name for: gemcitabine-phosphoramidate NUC-1031)

**acelular cadaveric dermal matrix:** A human dermis-derived allograft material. Acellular cadaveric dermal matrix (ACDM) is derived from human cadaveric dermis from which the epidermis, all viable cells and major histocompatibility class (MHC) II antigens have been removed to minimize alloimmunogenicity, while the dermal collagen matrix is preserved. ACDM may be placed over wounds to aid as a substitute for skin when necessary such as for surgical reconstruction or for protection against wound exposure and breakdown and wound infection. Check for active clinical trials using this agent.

**acenocoumarol:** A 4-hydroxycoumarin derivative with anticoagulant activity. As a vitamin K antagonist, acenocoumarol inhibits vitamin K epoxide reductase, thereby inhibiting the reduction of vitamin K and the availability of vitamin K<sub>1</sub>. This prevents gamma carboxylation of glutamic acid residues near the N-terminals of the vitamin K-dependent clotting factors, including factor II, VII, IX, and X and anticoagulant proteins C and S. This prevents their activity and thus thrombin formation. Compared to other coumarin derivatives, acenocoumarol has a short half-life.

**Aceon:** (Other name for: perindopril erbumine)

**ACES II:** An ab initio software package that emphasizes coupled-cluster methods (3,4).

**Acetal:** The product formed by the successive condensation of two alcohols with a single aldehyde. It contains two ether-linked oxygens attached to a central carbon atom.

**Acetal (POM):** Acetal is a highly crystalline thermoplastic engineering resin that offers high mechanical properties and resists many chemicals. There are two basic types of Acetal resins: homopolymer and copolymer. Acetal is known for its high strength, creep resistance, resilience, surface hardness and lubricity, toughness, and excellent solvent and petrol resistance. Additionally, it absorbs little water. Acetals can be processed by conventional extrusion and injection moulding techniques. Applications: Acetals are widely used for plastic pipes

and tubes in plumbing and irrigation because they resist scale build-up, and have excellent thread strength. Furthermore this material is used for moulded and machined rollers, bearings, gears, conveyor chains, and housings. Automotive applications include, door handles, ventilation and cooling system parts, fuel system components, and many more.

**Acetaldehyde:** Oops, I should have used the systematic name, ethanal! This is a good example of a case where the IUPAC system may be logical, but can easily engender no end of confusion.

**Acetaldehyde or ethanal:** Acetaldehyde (or ethanal) is a two-carbon aldehyde used as an intermediate in the production of acetic acid. Acetaldehyde is produced by direct oxidation of ethylene. Acetic acid used to be the major derivative for acetaldehyde, but except in China, this is no longer the case. Major end-uses include ethyl acetate, isobutyl acetate, synthetic pyridine derivatives and peracetic acid.

**acetaminophen:** A p-aminophenol derivative with analgesic and antipyretic activities. Although the exact mechanism through which acetaminophen exert its effects has yet to be fully determined, acetaminophen may inhibit the nitric oxide (NO) pathway mediated by a variety of neurotransmitter receptors including N-methyl-D-aspartate (NMDA) and substance P, resulting in elevation of the pain threshold. The antipyretic activity may result from inhibition of prostaglandin synthesis and release in the central nervous system (CNS) and prostaglandin-mediated effects on the heat-regulating center in the anterior hypothalamus. or A drug that reduces pain and fever (but not inflammation). It belongs to the family of drugs called analgesics.

**acetate:** ( $\text{CH}_3\text{COO}^-$ ,  $\text{C}_2\text{H}_3\text{O}_2^-$ ) acetate ion. 1. an ion formed by removing the acidic hydrogen of acetic acid,  $\text{HC}_2\text{H}_3\text{O}_2$ . 2. a compound derived by replacing the acidic hydrogen in acetic acid. 3. A fiber made of cellulose acetate. Or A form of acetic acid (an acid found in vinegar).

**Acetic Acid:** Acetic acid is a colourless liquid traditionally made by fermentation (vinegar is mainly acetic acid). It is a raw material for several key petrochemical intermediates and products, including vinyl acetate monomer (VAM) for coatings and adhesives, purified terephthalic acid (PTA) for polyester production, acetate esters, cellulose acetate, acetic anhydride and monochloroacetic acid (MCA). Acetic acid is now mainly produced via methanol carbonylation, but ethane, ethylene or acetaldehyde

oxidation processes are also commercially employed. or A synthetic carboxylic acid with antibacterial and antifungal properties. Although its mechanism of action is not fully known, undissociated acetic acid may enhance lipid solubility allowing increased fatty acid accumulation on the cell membrane or in other cell wall structures. Acetic acid, as a weak acid, can inhibit carbohydrate metabolism resulting in subsequent death of the organism. OR An acid found in vinegar. Acetic acid is also used to dissolve substances needed to make some medicines and other products, such as plastics.

**acetohexamide:** An intermediate-acting, first-generation sulfonylurea with hypoglycemic activity. Acetohexamide is metabolized in the liver to its active metabolite hydroxyhexamide.

**Acetone:** Acetone is a commodity solvent commonly produced as a co-product during cumene oxidation for phenol, which consumes benzene and propylene, and for this reason on-purpose acetone production has declined. On purpose production consumes either propylene or isopropanol. Acetone is used in the production of bisphenol A and methyl methacrylate, intermediates to PMMA and Polycarbonate engineering resins, respectively, along with methyl isobutyl ketone (MIBK) and others. It also has major use as a solvent in industrial and household applications, e.g., paints and ink. Acetone is produced in all regions. or A chemical substance found naturally in small amounts in plants, trees, volcanoes, and forest fires. Acetone is also made by the body when fats are broken down. It is also found in tobacco smoke, car exhaust, and trash landfills. In industry, acetone is used in some plastics, fibers, medicines, household cleaners, glues, and nail polish removers. Being exposed to high levels of acetone may irritate the skin, eyes, nose, throat, and lungs. It can cause headaches, nausea, vomiting, dizziness, confusion, loss of consciousness, and other health problems.

**Acetyl CoA:** Acetyl-coenzyme A, a high-energy ester of acetic acid that is important both in the tricarboxylic acid cycle and in fatty acid biosynthesis.

**acetyl group :** A small molecule made of two carbon, three hydrogen, and one oxygen atoms. Acetyl groups are added to or removed from other molecules and may affect how the molecules act in the body.

**acetyl-L-carnitine :** A form of the natural substance carnitine that is being studied as a way to prevent tissue damage caused by chemotherapy. Carnitine is made in muscle and liver tissue and is found in certain foods,

such as meat, poultry, fish, and some dairy products. It is used by many cells in the body to make energy from fat. Also called acetyl-L-carnitine hydrochloride and ALCAR.

**acetyl-L-carnitine hydrochloride :** A form of the natural substance carnitine that is being studied as a way to prevent tissue damage caused by chemotherapy. Carnitine is made in muscle and liver tissue and is found in certain foods, such as meat, poultry, fish, and some dairy products. It is used by many cells in the body to make energy from fat. Also called acetyl-L-carnitine and ALCAR.

**acetylation :** A chemical reaction in which a small molecule called an acetyl group is added to other molecules. Acetylation of proteins may affect how they act in the body.

**acetylcholine :** A chemical made by some types of nerve cells. It is used to send messages to other cells, including other nerve cells, muscle cells, and gland cells. It is released from the nerve ending and carries signals to cells on the other side of a synapse (space between nerve cells and other cells). Acetylcholine helps control memory and the action of certain muscles. It is a type of neurotransmitter.

**acetylcysteine:** A synthetic N-acetyl derivative of the endogenous amino acid L-cysteine, a precursor of the antioxidant enzyme glutathione. Acetylcysteine regenerates liver stores of glutathione. This agent also reduces disulfide bonds in mucoproteins, resulting in liquification of mucus. Some evidence suggests that acetylcysteine may exert an anti-apoptotic effect due to its antioxidant activity, possibly preventing cancer cell development or growth. In addition, acetylcysteine has inhibited viral stimulation by reactive oxygen intermediates, thereby producing antiviral activity in HIV patients. OR A drug usually used to reduce the thickness of mucus and ease its removal. It is also used to reverse the toxicity of high doses of acetaminophen. Also called N-acetyl-L-cysteine and N-acetylcysteine.

**acetylglutamate:** N An allosteric activator of mammalian carbamoyl phosphate synthetase, which catalyses the synthesis of urea.

**Acetyls:** The Acetyls family are those chemicals derived from acetic acid, the simplest carboxylic acid.

**acetylsalicylic acid:** An orally administered non-steroidal antiinflammatory agent. Acetylsalicylic acid binds to and acetylates serine

residues in cyclooxygenases, resulting in decreased synthesis of prostaglandin, platelet aggregation, and inflammation. This agent exhibits analgesic, antipyretic, and anticoagulant properties.

**acetylsalicylic acid/simvastatin/atenolol/ramipril/thiazide capsule:** An orally bioavailable combination pill containing aspirin, simvastatin, atenolol, ramipril and thiazide with preventive activity against cardiovascular disease (CVD). Aspirin is a cyclooxygenase inhibitor with antiplatelet, analgesic, antipyretic and anti-inflammatory activities; simvastatin is a statin with a cholesterol lowering effect; and the beta-blocker atenolol as well as the ACE inhibitor ramipril and the thiazide diuretic all have blood pressure lowering activity. Upon oral administration of aspirin/simvastatin/atenolol/ramipril/thiazide capsule, the combined effects of the active ingredients in this formulation lower the risk of CVD.

**ACF:** Clusters of abnormal tube-like glands in the lining of the colon and rectum. ACF form before colorectal polyps and are one of the earliest changes that can be seen in the colon that may lead to cancer. Also called aberrant crypt foci.

**achiral:** Describes any molecule or object that is superimposable upon its mirror image.

**achlorhydria :** A lack of hydrochloric acid in the digestive juices in the stomach. Hydrochloric acid helps digest food.

**Achromycin:** (Other name for: tetracycline hydrochloride)

**Acicular Habit:** An acicular habit describes the shape of a large crystal that looks like spikes coming out from one point. Think about those koosh balls for this example.

**Acid:** 1. a compound which releases hydrogen ions ( $H^+$ ) in solution (Arrhenius). 2. a compound containing detachable hydrogen ions (Bronsted-Lowry). 3. a compound that can accept a pair of electrons from a base (Lewis)..OR There are three definitions - Arrhenius, Bronsted, and Lewis Acids. In the Lewis conception, which is the most general and useful, an acid is essentially any compound that needs electrons, and a base is basically any compound that wants to give them away. OR An acid is a substance that forms a solution with a pH value of less than 7. Acidic solutions contain an excess of hydrogen ions,  $H^+(aq)$ . OR A compound that produces hydrogen ions in water solution. OR Compound that gives off  $H^+$  ions in solution. OR any substance capable of giving up a proton; a

substance that ionizes in solution to give the positive ion of the solvent; a solution with a pH measurement less than 7. OR A substance that dissolves in water with the formation of hydrogen ions, contains hydrogen which may be replaced by metals to form salt, and/or is corrosive.

**acid :** A chemical that gives off hydrogen ions in water and forms salts by combining with certain metals. Acids have a sour taste and turn certain dyes red. Some acids made by the body, such as gastric acid, can help organs work the way they should. An example of an acid is hydrochloric acid. Acidity is measured on a scale called the pH scale. On this scale, a value of 7 is neutral, and a pH value of less than 7 to 0 shows increasing acidity.

**Acid anhydride:** Take two carboxylic acid molecules - for example, salicylic acid - and remove water to give a molecule containing a  $-(C=O)-O-(C=O)-$  link - this molecule will be an acid anhydride. For example: ethanoic anhydride: OR Nonmetallic oxides or organic compounds that react with water to form acids. For example,  $SO_2$ ,  $CO_2$ ,  $P_2O_5$ , and  $SO_3$  are the acid anhydrides of sulfurous, carbonic, phosphoric, and sulfuric acids, respectively. Acetic anhydride  $(CH_3CO)_2O$  reacts with water to form acetic acid.

**Acid chloride:** Take a carboxylic acid and replace the OH group with a Chlorine atom. What you now have is an acid chloride. Acid chlorides react readily with water to regenerate carboxylic acid + HCl. For example, ethanoyl chloride:

**acid dissociation constant:** The equilibrium constant for the dissociation of an acid into a hydrogen ion and an anion. For example, the acid dissociation constant for acetic acid is the equilibrium constant for  $HC_2H_3O_2(aq) \rightleftharpoons H^+(aq) + C_2H_3O_2^-(aq)$ , which is  $K_a = \frac{[H^+][C_2H_3O_2^-]}{[HC_2H_3O_2]}$ .

**acid error:** A systematic error that occurs when glass pH electrodes are used in strongly acidic solutions. Glass electrodes give pH readings that are consistently too high in these solutions.

**acid halide:** acid chloride; acyl halide; acyl chloride. Compounds containing a carbonyl group bound to a halogen atom.

**Acid rain:** All rainfall is slightly acidic because of the dissolved carbon dioxide. The term acid rain refers to rain that is extra acidic because of large amounts of dissolved gases such as nitrogen oxides and sulfur oxides. These can make nitric acid and sulfuric acid as well as many others. OR an

environmentally harmful acidic rain that results from rain mixing with chemical pollutants in the atmosphere. OR The deposition of acids (sulphuric and nitric) in rain. An environmental problem resulting from certain industrial activities and the burning of petroleum based fuels (traffic exhaust gases). OR Acid rain is so called because it has a pH value below 5 due to acidic pollutant gases in the atmosphere.

**Acid Resistance:** Withstands the action of acid

**acid test:** tests a mineral or rock for calcite or calcium in its composition.

**acid-base balance :** In medicine, the state of having the right amount of acid and base in the blood and other body fluids. Keeping a normal acid-base balance is important for the body to work the way it should. Also called acid-base equilibrium.

**acid-base equilibrium :** In medicine, the state of having the right amount of acid and base in the blood and other body fluids. Keeping a normal acid-base equilibrium is important for the body to work the way it should. Also called acid-base balance.

**acid-base indicator:** A weak acid that has acid and base forms with sharply different colors. Changes in pH around the acid's pKa are "indicated" by color changes.

**acid-base reaction:** a neutralization reaction in which the products are a salt and water.

**acidic:** Describes a solution with a high concentration of H<sup>+</sup> ions. OR Forming or containing an acid.

**acidic solution:** A solution in which the hydrogen ion activity is higher than that of the hydroxide ion, when the solvent is water.

**acidification:** The process of increasing the hydrogen ion concentration. Or The process of making or becoming an acid. An acid is a substance that gives off hydrogen ions in water and forms salts by combining with certain metals.

**Acidity:** the quantitative capacity of aqueous solutions to react with hydroxyl ions. It is measured by titration with a standard solution of base to a specified end point. OR The capacity of water or wastewater to neutralize bases. Acidity is expressed in milligrams per liter of equivalent calcium carbonate. Acidity is not the same as pH.

**acidity :** Describes the amount of acid in a substance. An acid is a chemical that gives off hydrogen ions in water and forms salts by combining with certain metals. Acidity is measured on a scale called the pH scale. On this scale, a pH value of 7 is neutral, and a pH value of less than 7 to 0 shows increasing acidity.

**acidity profile:** The acid concentration in ice core layers as a function of depth as determined from electrical measurements. The magnitudes of some volcanic eruptions in the Northern Hemisphere have been estimated from the acidity of annual layers in ice cores taken in Greenland. This methodology is sometimes referred to as acidity signal or acidity record.

**acidosis:** A metabolic condition in which the capacity of the body to buffer H<sup>+</sup> is diminished; usually accompanied by decreased blood pH.

**Acids:** one of a class of substances compounds of hydrogen and one of more other element, capable of uniting with a base to form a salt, and in aqueous solution, turning blue litmus paper red.

**acidulant:** A substance added to food or beverages to lower pH and to impart a tart, acid taste. Phosphoric acid is an acidulant added to cola drinks.

**Aciphex:** (Other name for: rabeprazole sodium)

**ACIS:** A standard computer file format for exchanging CAD data, typically from AutoCAD programs. ACIS is an acronym that originally stood for “Andy, Charles and Ian's System.”

**acitretin:** An orally-active metabolite of the synthetic aromatic retinoic acid agent etretinate with potential antineoplastic, chemopreventive, anti-psoratic, and embryotoxic properties. Acitretin activates nuclear retinoic acid receptors (RAR), resulting in induction of cell differentiation, inhibition of cell proliferation, and inhibition of tissue infiltration by inflammatory cells. This agent may also inhibit tumor angiogenesis. OR A substance that is used in the prevention of cancer and in the treatment of psoriasis. It belongs to the family of drugs called retinoids.

**acivicin:** A modified amino acid and structural analog of glutamine. Acivicin inhibits glutamine amidotransferases in the purine and pyrimidine biosynthetic pathways, thereby inhibiting tumor growth in cell lines dependent on glutamine metabolism.

**aclarubicin:** An oligosaccharide anthracycline antineoplastic antibiotic isolated from the bacterium *Streptomyces galilaeus*. Aclarubicin

intercalates into DNA and interacts with topoisomerases I and II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. Aclarubicin is antagonistic to other agents that inhibit topoisomerase II, such as etoposide, teniposide and amsacrine. This agent is less cardiotoxic than doxorubicin and daunorubicin.

**ACN53:** A substance that has been studied in the treatment of some types of cancer. ACN53 is a weakened adenovirus that carries the p53 gene into tumor cells, causing them to die. It is a type of gene therapy. Also called rAd/p53, recombinant adenovirus-p53, and SCH-58500.

**acne :** A disorder of the skin in which oil glands and hair glands become inflamed.

**Acnestrol:** (Other name for: diethylstilbestrol)

**ACNU 50:** (Other name for: nimustine)

**acodazole:** A synthetic imidazoquinoline with antineoplastic activity. Acodazole intercalates into DNA, resulting in disruption of DNA replication. Use of this agent has been associated with significant cardiotoxicity.

**acolbifene hydrochloride :** A substance being studied in the prevention of breast cancer in women at high risk of breast cancer. Acolbifene hydrochloride binds to estrogen receptors in the body and blocks the effects of estrogen in the breast. It is a type of selective estrogen receptor modulator (SERM).

**acoustic :** Having to do with sound or hearing.

**acoustic coupling fluid:** A brain mimicking fluid with an attenuation coefficient similar to that found in the adult human brain, which can potentially improve the quality of an image acquired during intraoperative ultrasonography. Upon administration into the resection cavity during surgical removal of a brain tumor, the acoustic coupling fluid may both increase the quality of the ultrasound image and improve the visualization of the tumor. This may facilitate the surgical removal of residual tumor while sparing normal, healthy brain tissue. Check for active clinical trials using this agent.

**acoustic neurofibromatosis :** A genetic condition in which tumors form on the nerves of the inner ear and cause loss of hearing and balance. Tumors may also occur in the brain and on nerves in the skull and spinal

cord, and may cause loss of speech, eye movement, and the ability to swallow. Also called neurofibromatosis type 2 and NF2.

**ACPF:** Averaged coupled-pair functional. Pretty high level of multi-reference electron correlation, requires skill to use.

**acquired immunodeficiency syndrome :** A disease caused by the human immunodeficiency virus (HIV). People with acquired immunodeficiency syndrome are at an increased risk for developing certain cancers and for infections that usually occur only in individuals with a weak immune system. Also called AIDS.

**acquired pure red cell aplasia :** A rare disorder in which the bone marrow makes almost no red blood cells. It may be caused by infection or by certain drugs. Patients with this disorder may also have a thymoma (a tumor of the thymus) or an autoimmune condition such as lupus erythematosus or rheumatoid arthritis.

**acre-foot:** the volume of water, 43,560 cubic feet, that will cover an area of one acre to a depth of one foot; a term used in sewage treatment in measuring the volume of material in a trickling filter.

**acridine carboxamide:** A tricyclic acridine-based (or carboxamide-based) drug with dual topoisomerase inhibitor and potential antineoplastic activities. Acridine carboxamide inhibits both topoisomerases I and II and intercalates into DNA, resulting in DNA damage, the disruption of DNA repair and replication, the inhibition of RNA and protein synthesis, and cell death. or A substance being studied in the treatment of cancer. It is a type of topoisomerase inhibitor. Also called DACA.

**acrochordon :** A small, benign skin growth that may have a stalk (peduncle). Acrochordons most commonly appear on the neck, axillary, groin, and inframammary regions. Also called skin tag.

**acromegaly :** A condition in which the pituitary gland makes too much growth hormone after normal growth of the skeleton is finished. This causes the bones of the hands, feet, head, and face to grow larger than normal. Acromegaly can be caused by a pituitary gland tumor.

**Acrylamide :** Acrylamide is a monomer used primarily as a building block in the production of synthetic water soluble polymers.

**Acrylate resins:** a class of thermoplastic resins produced by polymerization of acrylic acids derivatives.

**Acrylic:** A polymer for which resistance to air and hot oil at temperatures above 30 degrees Fahrenheit is required

**Acrylic:** A waterborne latex used in emulsion paint and universally accepted. A synthetic polymer used in high performance latex or water-based paints as the paint's binder acrylic resins enable the coating to last longer and retain its colour. OR A synthetic resin used in high-performance water-based coatings. A coating in which the binder contains acrylic resins.

**Acrylic Acid:** Acrylic acid is used in the production of acrylate esters, superabsorbent polymers, detergents and flocculants. Acrylate esters are mostly used in coatings, adhesives, and elastomers applications, while superabsorbents are used in diapers etc, and most other derivatives are performance chemicals for cleaning or water treatment, also firefighting. Acrylic Acid is a propylene derivative which is produced by propylene vapor-phase oxidation. Acetylene based production of acrylic acid has now ceased, and new processes based on propane are being developed. Acrylic acid tends to be produced close to major consumers as melting of transportable solid can be hazardous. Alternative names for acrylic acid include: acroleic acid, ethylene carboxylic acid, propenoic acid.

**Acrylic emulsions:** These are prepared from acrylic derivatives and normally show very good toughness and adhesion even under wet conditions as well as very good alkali resistance.

**Acrylic Resin .:** A synthetic resin prepared from acrylic acid or from a derivative of acrylic acid,

**Acrylonitril(e) :** Acrylonitrile is a monomer used as a building block in the production of synthetic polymers and as raw material in production of acrylamide.

**Acrylonitrile:** A monomer with the structure (CH<sub>2</sub>:CHCN). It is most useful in copolymers. Its copolymer with butadiene is nitrile rubber, and several copolymers with styrene exist that are tougher than polystyrene. It is also used as a synthetic fiber and as a chemical intermediate.

**Acrylonitrile:** Acrylonitrile is used as an intermediate in the production of acrylic fibers as well as acrylonitrile butadiene styrene (ABS) and SAN resins, and as monomer for polyacrylonitrile. Acrylonitrile is a propylene derivative which is produced by the reaction of propylene and ammonia. Acrylonitrile is produced in all regions, although most new projects are either located in Asia where demand growth is strongest, or in the Middle

East where there is increasing feedstock availability. OR A common monomer used in free-radical polymerisation. Here is a picture: Acrylonitrile is one of the more toxic monomers, and is a proven carcinogen; one of its main applications is in the production of carbon fibres.

**acrylonitrile** : A substance used to make plastics, rubber, and textiles. Being exposed to acrylonitrile may increase the risk of developing certain cancers, such as lung, brain, or prostate cancer.

**Acrylonitrile butadiene styrene (ABS):** Acrylonitrile butadiene styrene (ABS) is a copolymer made from polymerizing styrene and acrylonitrile in the presence of polybutadiene. ABS is stronger than polystyrene, and is used to make light, rigid products such as pipes and toys. It is a high volume engineering polymer that exhibits good strength and high gloss properties and is used widely in the production of electronics and automotive applications.

**Acrylonitrile-Butadiene-Styrene (ABS):** A rigid thermoplastic polymer common in piping applications. It is the counterpart to off-white PVC pipe; ABS pipes are black. ABS is very durable but breaks down when exposed to acetone. Or Acrylonitrile and styrene liquids and butadiene gas are polymerized together in a variety of ratios to produce the family of ABS resins.

**Actemra:** (Other name for: tocilizumab)

**ACTH:** A hormone made in the pituitary gland. ACTH acts on the outer part of the adrenal gland to control its release of corticosteroid hormones. More ACTH is made during times of stress. Also called adrenocorticotropic hormone and corticotropin.

**ActHIB:** (Other name for: Haemophilus influenzae b vaccine)

**Actigall:** (Other name for: ursodiol)

**Actimmune:** (Other name for: recombinant interferon gamma)

**Actin:** A protein found in combination with myosin in muscle and also found as filaments constituting an important part of the cytoskeleton in many eukaryotic cells. OR A protein making up the thin filaments of muscle; also an important component. of the cytoskeleton of many eukaryotic cells.

**Actinex :** A drug put on the skin to treat growths caused by sun exposure. A form of Actinex that is taken by mouth is being studied in the treatment of prostate cancer. Actinex is an antioxidant, and it may block certain enzymes needed for tumor growth. Also called masoprocol, NDGA, and nordihydroguaiaretic acid.

**actinic keratosis :** A thick, scaly patch of skin that may become cancer. It usually forms on areas exposed to the sun, such as the face, scalp, back of the hands, or chest. It is most common in people with fair skin. Also called senile keratosis and solar keratosis.

**actinide:** Elements 89-102 are called actinides. Electrons added during the Aufbau construction of actinide atoms go into the 5f subshell. Actinides are unstable and undergo radioactive decay. The most common actinides on Earth are uranium and thorium.

**Actinide Series:** The actinide series is one of two series of inner transition elements. Elements 89 through 103 are a part of this series. The elements include uranium, berkelium, and nobelium.

**Actinium:** Symbol:"Ac" Atomic Number:"89" Atomic Mass: 227.03amu. It is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. Actinium is the first element of the actinide series. It is used as a source of neutrons in experiments that involve radioactivity. You will not find the element in regular use anywhere in the natural world.

**actinium Ac 225 lintuzumab:** A radioimmunoconjugate consisting of the humanized monoclonal antibody lintuzumab conjugated to the alpha-emitting radioisotope actinium Ac 225 with potential antineoplastic activity. The monoclonal antibody moiety of actinium Ac 225 lintuzumab specifically binds to the cell surface antigen CD33 antigen, delivering a cytotoxic dose of alpha radiation to cells expressing CD33. CD33 is a cell surface antigen expressed on normal non-pluripotent hematopoietic stem cells and overexpressed on myeloid leukemia cells.

**Actinomycin D:** An antibiotic that binds to DNA and inhibits RNA chain elongation.

**actinomycin D :** A drug used to treat Ewing sarcoma, gestational trophoblastic tumor, Wilms tumor, and certain types of testicular cancer. It is also used to treat rhabdomyosarcoma in children. It is being studied in the treatment of other types of cancer. Actinomycin D comes from the

bacterium *Streptomyces parvulus*. It damages the cell's DNA and may kill cancer cells. It is a type of anticancer antibiotic. Also called Cosmegen and dactinomycin.

**action level:** (i) The level of a pollutant at which specified emergency countermeasures, such as the seizure and destruction of contaminated materials, evacuation of the local population or closing down the sources of pollution, are to be taken (UN, 1972); (ii) the level at which some kind of preventive action (not necessarily of an emergency nature) is to be taken; (iii) a level of exposure of workers to airborne harmful substances in workrooms to be determined by the competent authority; it is distinctly below the exposure limit and consequently such exposures below the action level do not usually necessitate application of all the preventive measures, especially of a medical nature, foreseen for exposures exceeding the action level. This level may lie between a third and a half of the exposure limit (ILO, 1977).

**action study :** In cancer prevention clinical trials, a study that focuses on finding out whether actions people take can prevent cancer.

**Actiq:** (Other name for: fentanyl citrate)

**Activase :** A form of tissue plasminogen activator that is made in the laboratory. It helps dissolve blood clots and is used to treat heart attacks, strokes, and clots in the lungs. It is also being studied in the treatment of cancer. It is a type of systemic thrombolytic agent. Also called Alteplase, r-tPA, and recombinant tissue plasminogen activator.

**activate :** In biology, to stimulate a cell in a resting state to become active. This causes biochemical and functional changes in the activated cell.

**activated charcoal:** A porous form of carbon that acts as a powerful adsorbent, used to decolorize liquids, recover solvents, and remove toxins from water and air.

**activated complex:** molecules at an unstable intermediate stage in a reaction. OR The highest free energy state of a complex in going from reactants to products. OR An intermediate structure formed in the conversion of reactants to products. The activated complex is the structure at the maximum energy point along the reaction path; the activation energy is the difference between the energies of the activated complex and the reactants.

**activated marrow infiltrating lymphocytes:** A preparation of cells, which consists of autologous marrow infiltrating lymphocytes (MILs), that are manipulated in vitro, with potential antitumor and immune stimulating activities. MILs are harvested from autologous bone marrow from multiple myeloma patients and, in vitro, are exposed to and activated by anti-CD3/anti-CD28 monoclonal antibodies covalently attached to super-paramagnetic microbeads. After removal of the beads and expansion of the cells in culture, the activated MILs (aMILs) are re-introduced into the patient. The aMILs possess enhanced myeloma specificity, and are able to infiltrate the tumor microenvironment and initiate tumor cell lysis. CD3 and CD28, co-stimulatory molecules expressed on the surface of T-lymphocytes, play a key role in the activation of T-cells.

**Activated sludge:** removes organic matter from sewage by saturating it with air and microbial organisms. OR Sludge particles produced in raw or settled wastewater (primary effluent) by the growth of organisms (including zooglyphic bacteria) in aeration tanks in the presence of dissolved oxygen. The term "activated" comes from the fact that the particles are teeming with fungi, bacteria, and protozoa. Activated sludge is different from primary sludge in that the sludge particles contain many living organisms which can feed on the incoming wastewater.

**activating group:** a group that increases the rate of electrophilic aromatic substitution when bonded to an aromatic ring.

**activation:** treatment of a substance by heat, radiation, or activating reagent to produce a more complete or rapid chemical or physical change. OR The process of making a radioisotope by bombarding a stable element with neutrons or protons.

**Activation Energy:** When reactions proceed, a certain amount of energy is needed for the whole process to begin. The energy needed to get the reaction started (get it over the hump) is called the activation energy. The energy required to start a chemical reaction. If a reaction is not spontaneous, it requires a specific amount of energy to proceed. That required energy is the activation energy. Enzymes and catalysts can decrease the activation energy of a reaction. OR is the minimum energy required to start a chemical reaction OR The activation energy is the minimum amount of energy required for reactants to form products in a chemical reaction. OR the energy that must be supplied to chemicals to initiate a reaction; the

difference in potential energy between the ground state and the transition state of molecules. Molecules of reactants must have this amount of energy to proceed to the product state. OR The minimum energy required to convert reactants into products; the difference between the energies of the activated complex and the reactants.

**Activation energy (Arrhenius activation energy):** A physicochemical quantity that represents the barrier for a chemical reaction.

**activation energy ( $\Delta G^\circ$ ):** The amount of energy (in joules) required to convert all the molecules in 1 mole of a reacting substance from the ground state to the transition state.

**activator:** (1) A DNA-binding protein that positively regulates the expression of one or more genes; that is, transcription rates increase when an activator is bound to the DNA. (2) A positive modulator of an allosteric enzyme.

**Activator (also accelerator, promotor):** A chemical compound used with a catalyst to permit polymerisation at room temperature.

**Active Centre:** In chain-growth polymerisation, the highly-reactive spot on the growing polymer chain where new monomer is added. The four most common types are a free-radical (atom with an unpaired electron), carbanion (carbon-centred negative ion), carbocation (carbon-centred positive ion) or a metal complex (as in Ziegler-Natta polymerisation).

**active continental margin:** marked by a landward continental shelf, a continental slope that forms a sidewall of an oceanic trench and is much steeper than that of a passive continental margin, and an irregular ocean bottom that may contain volcanic seamounts; an area of earthquake and volcano activity. OR plate boundary where mountains are formed.

**Active fuel length:** The end-to-end dimension of fuel material within a fuel assembly (also known as a "fuel bundle" or "fuel element").

**Active Principle:** The active principle is the compound(s) in the mixture that is responsible for that mixture's biological activity.

**Active site:** the portion of an enzyme that interacts with the substrate. OR The region of an enzyme molecule that contains the substrate binding site and the catalytic site for converting the substrate(s) into product(s). OR A pocket or crevice on an enzyme molecule that fits reactant molecules like a

hand in a glove. The active site lowers the activation energy for reaction.  
OR The region of an enzyme surface that binds the substrate molecule and catalytically transforms it; also known as the catalytic site.

**active surveillance :** A treatment plan that involves closely watching a patient's condition but not giving any treatment unless there are changes in test results that show the condition is getting worse. Active surveillance may be used to avoid or delay the need for treatments such as radiation therapy or surgery, which can cause side effects or other problems. During active surveillance, certain exams and tests are done on a regular schedule. It may be used in the treatment of certain types of cancer, such as prostate cancer, urethral cancer, and intraocular (eye) melanoma. It is a type of expectant management.

**active transport:** the movement of molecules across a membrane from a region of low concentration to a region of high concentration that requires the expenditure of energy (ATP). OR The energy-dependent transport of a substance across a membrane. OR Energy-requiring transport of a solute across a membrane in the direction of increasing concentration.

**active volcano:** volcano that has erupted in recorded history.

**Activella:** (Other name for: estradiol/norethindrone acetate tablet)

**ActiVin:** (Other name for: IH636 grape seed proanthocyanidin extract)

**activin type 2B receptor Fc fusion protein STM 434:** A soluble fusion protein containing the extracellular domain of the activin receptor type 2B (ACVR2B or ActRIIB) fused to a human Fc domain, with potential antineoplastic activity. Upon intravenous administration, STM 434 selectively binds to the growth factor activin A, thereby preventing its binding to and the activation of endogenous ActRIIB. This prevents activin A/ActRIIB-mediated signaling and inhibits the proliferation of activin A-overexpressing tumor cells. Activin A, a member of the transforming growth factor beta (TGF-beta) superfamily, is overexpressed in a variety of cancers and plays a key role in promoting cancer cell proliferation, migration, and survival. Check for active clinical trials using this agent.

**activities of daily living :** The tasks of everyday life. These activities include eating, dressing, getting into or out of a bed or chair, taking a bath or shower, and using the toilet. Instrumental activities of daily living are activities related to independent living and include preparing meals,

managing money, shopping, doing housework, and using a telephone. Also called ADL.

**Activity:** the effective amount of a free ion in solution. The amount and type of other ions in the solution influence the chemical effectiveness of an ion, so that varying the solution composition makes a fixed concentration of a given ion more or less "active". In dilute solutions, ionic activity and concentration are practically identical, but in solutions containing many ions, activity may differ from concentration. Ionic activity, not concentration, determines both the rate and the extent of chemical reactions. OR The rate of disintegration (transformation) or decay of radioactive material per unit time. The units of activity (also known as radioactivity) are the curie (Ci) and the becquerel (Bq). For related information, see Measuring Radiation. OR An effective concentration used in thermodynamic calculations in place of the actual concentration to allow equations developed for ideal solutions to be used to treat real solutions. OR The true thermodynamic activity or potential of a substance, as distinct from its molar concentration.

**Activity coefficient:** a factor, which relates the activity to the concentration of a species in solution, such that:  $A_x = f_x C_x$  (where:  $A_x$  = Activity of the species x;  $f_x$  = Activity coefficient of the species x;  $C_x$  = Concentration of the species x). The activity coefficient is dependent on the ionic strength of the solution (ions of similar size and charge have similar activity coefficients). It becomes progressively lower as the ionic strength increases, due to interionic interactions. The activity coefficient for any ion in solution can be calculated using the DebyeHuckel equation. OR The ratio of activity to concentration;  $a = \gamma c$  where  $a$ ,  $\gamma$ , and  $c$  are the activity, activity coefficient, and concentrations, respectively. Activity coefficients are usually obtained from measurements of the emf of electrochemical cells or the colligative properties of solutions. OR The factor by which the numerical value of the concentration of a solute must be multiplied to give its true thermodynamic activity.

**Actonel:** (Other name for: risedronate sodium)

**Actos :** (Other name for: pioglitazone hydrochloride) OR A drug that is used to treat type 2 diabetes and is being studied in the prevention of head and neck cancer. It may be able to stop leukoplakia (a condition affecting

the mouth ) from developing into cancer. It is a type of thiazolidinedione. Also called pioglitazone.

**Actuation:** to put into mechanical action or motion.

**Actuator:** a device, which uses the signal, from the sensors to perform some action. An example can be an alarm with a smoke detector or a hydraulic valve coupled to a pH electrode.

**acupoint :** A specific spot on the body where an acupuncture needle may be inserted to control pain and other symptoms. Also called acupuncture point.

**acupressure :** The application of pressure or localized massage to specific sites on the body to control symptoms such as pain or nausea. It is a type of complementary and alternative medicine.

**acupuncture :** The technique of inserting thin needles through the skin at specific points on the body to control pain and other symptoms. It is a type of complementary and alternative medicine.

**acupuncture needle :** A stainless steel needle that is slightly thicker than a human hair. Acupuncture needles are inserted through the skin at specific points on the body to control pain and other symptoms.

**acupuncture point :** A specific spot on the body where an acupuncture needle may be inserted to control pain and other symptoms. Also called acupoint.

**acupuncture point injection :** A procedure in which drugs, vitamins, herbal extracts, or other fluids are injected into the body at an acupuncture point using a syringe and needle.

**acupuncture-like transcutaneous electrical nerve stimulation :** A procedure in which mild electric currents are applied to certain acupuncture points (spots on the body where an acupuncture needle may be inserted to control pain and other symptoms) on the skin. It is being studied in the treatment of dry mouth caused by radiation therapy for cancer. Also called ALTENS.

**acupuncturist :** A person trained in acupuncture (therapy that uses thin needles inserted through the skin at specific points on the body to control pain and other symptoms). Acupuncture is a type of complementary and alternative medicine.

**acustimulation :** Mild electrical stimulation of acupuncture points to control symptoms such as nausea and vomiting.

**acute :** Symptoms or signs that begin and worsen quickly; not chronic.

**acute bacterial prostatitis :** Inflammation of the prostate gland that begins suddenly and gets worse quickly. It is caused by a bacterial infection. Symptoms include fever and chills, body aches, pain in the lower back and genital area, a burning feeling during urination, and problems with emptying the bladder all the way.

**acute effects:** Effects that occur rapidly following exposure and are of short duration (WHO, 1979).

**acute leukemia :** A rapidly progressing cancer that starts in blood-forming tissue such as the bone marrow, and causes large numbers of white blood cells to be produced and enter the blood stream.

**acute lymphoblastic leukemia :** A type of leukemia (blood cancer) that comes on quickly and is fast growing. In acute lymphoblastic leukemia, there are too many lymphoblasts (immature white blood cells) in the blood and bone marrow. Also called acute lymphocytic leukemia and ALL.

**acute lymphocytic leukemia :** A type of leukemia (blood cancer) that comes on quickly and is fast growing. In acute lymphocytic leukemia, there are too many lymphoblasts (immature white blood cells) in the blood and bone marrow. Also called acute lymphoblastic leukemia and ALL.

**acute myeloblastic leukemia :** An aggressive (fast-growing) disease in which too many myeloblasts (immature white blood cells that are not lymphoblasts) are found in the bone marrow and blood. Also called acute myelogenous leukemia, acute myeloid leukemia, acute nonlymphocytic leukemia, AML, and ANLL.

**acute myelogenous leukemia :** An aggressive (fast-growing) disease in which too many myeloblasts (immature white blood cells that are not lymphoblasts) are found in the bone marrow and blood. Also called acute myeloblastic leukemia, acute myeloid leukemia, acute nonlymphocytic leukemia, AML, and ANLL.

**acute myeloid leukemia :** An aggressive (fast-growing) disease in which too many myeloblasts (immature white blood cells that are not lymphoblasts) are found in the bone marrow and blood. Also called acute

myeloblastic leukemia, acute myelogenous leukemia, acute nonlymphocytic leukemia, AML, and ANLL.

**acute nonlymphocytic leukemia :** An aggressive (fast-growing) disease in which too many myeloblasts (immature white blood cells that are not lymphoblasts) are found in the bone marrow and blood. Also called acute myeloblastic leukemia, acute myelogenous leukemia, acute myeloid leukemia, AML, and ANLL.

**acute pain :** Pain that comes on quickly, can be severe, but lasts a relatively short time.

**acute promyelocytic leukemia :** An aggressive (fast-growing) type of acute myeloid leukemia in which there are too many immature blood-forming cells in the blood and bone marrow. It is usually marked by an exchange of parts of chromosomes 15 and 17. Also called APL and promyelocytic leukemia.

**acute radiation sickness :** Serious illness caused by being exposed to high doses of certain types of radiation, usually over a short period of time. Symptoms of acute radiation sickness usually occur right after exposure but they may happen over time, and they may come and go. Symptoms include nausea and vomiting, diarrhea, headache, dizziness, weakness, fatigue, bleeding, hair loss, swelling, itching, and redness of the skin, and other skin problems. Very large doses of radiation may cause death. Also called acute radiation syndrome, radiation poisoning, radiation sickness, and radiation sickness syndrome.

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**acute toxicity:** The adverse effects occurring within a short time of administration of a single dose or multiple doses given within 24 hours (Hagan, 1959).

**acute toxicity test:** An experimental animal study in which the adverse effects occur in a short time (from 1-7 days) following the administration of a single or multiple doses of a chemical. The most frequently used acute toxicity test involves determination of the median lethal dose (LD50) of the compound. The LD50 has been defined as "a statistically derived expression of a single administered dose of a material that can be expected to kill 50% of the animals" (WHO, 1978a).

**acyclovir:** A synthetic analog of the purine nucleoside, guanosine, with potent antiviral activity against herpes simplex viruses type 1 and 2, varicella-zoster virus and other viruses. After conversion in vivo to the active metabolite acyclovir triphosphate, acyclovir competitively inhibits viral DNA polymerase, incorporates into and terminates the growing viral DNA chain, and inactivates viral DNA polymerase. The greater antiviral activity of acyclovir against HSV compared to VZV is due to its more efficient phosphorylation by the thymidine kinase of HSV. A substance used to prevent or treat cytomegalovirus and herpes simplex infections that may occur when the body is immunosuppressed. It belongs to the family of drugs called antivirals. OR

**acyclovir sodium:** The sodium salt form of acyclovir, a synthetic analog of the purine nucleoside, guanosine, with potent antiviral activity against herpes simplex viruses type 1 and 2, varicella-zoster virus and other viruses. After conversion in vivo to the active metabolite acyclovir triphosphate, acyclovir competitively inhibits viral DNA polymerase, incorporates into and terminates the growing viral DNA chain, and inactivates viral DNA polymerase. The greater antiviral activity of acyclovir against HSV compared to VZV is due to its more efficient phosphorylation by the thymidine kinase of HSV.

**acyl group:** a group with the following structure, where R can be either an alkyl or aryl group.

**acyl halide:** a compound with the general structural formula:

**acyl phosphate:** Any molecule with the general chemical form

**acylation:** a reaction in which an acyl group is added to a molecule.

**acylium ion:** the resonance stabilized cation:

**Aczone Gel:** (Other name for: dapsone gel, 5%)

**AD 32:** A drug used to treat bladder cancer that does not respond to BCG (Bacillus Calmette Guerin). It is an anthracycline and is a type of antitumor antibiotic. Also called valrubicin.

**Ad-hCMV-Flt3L:** A human serotype 5, replication-defective, first generation adenoviral vector, with the viral E1a and E3 protein encoding regions deleted, which is engineered to express the soluble, immune-mediated stimulatory gene human fms-like tyrosine kinase 3 ligand (Flt3L), under the transcriptional control of the CMV promoter, with potential immunostimulating activity. Upon administration, Ad-hCMV-Flt3L is transduced into tumor cells and Flt3L is expressed. Flt3L stimulates both the proliferation of dendritic cells (DCs) and their migration to the tumor site. Upon exposure to the tumor-associated antigens (TAA) released from dying glioma cells, which were killed by thymidine kinase-mediated valacyclovir-induced tumor cell death, the DCs initiate a specific immune response against any remaining TAA-expressing tumor cells. Flt3L is a hematopoietic growth factor and ligand for the Flt3 tyrosine kinase receptor.

**Ad-hCMV-TK:** A human serotype 5, replication-defective, first generation adenoviral vector, with the viral E1a and E3 protein encoding regions deleted, which is engineered to express the herpes simplex virus thymidine kinase (HSV-tk) gene under the transcriptional control of the CMV promoter. This agent, when administered in conjunction with a synthetic acyclic guanosine analogue, possesses potential antineoplastic activity. Upon administration into the peritumoral region after tumor resection, adenoviral vector encoding HSV thymidine kinase is transduced into tumor cells, and HSV-tk is expressed. Tumor cells expressing HSV-tk are sensitive to synthetic acyclic guanosine analogues. Subsequent administration of a synthetic acyclic guanosine analogue, such as valacyclovir (VCV) or ganciclovir (GCV), kills the tumor cells expressing HSV-tk. The release of tumor-associated antigens (TAA) by dying tumor cells may then stimulate an antitumor cytotoxic T lymphocyte (CTL) response, directed against any remaining tumor cells.

**Ad-ISF35:** A replication-defective adenovirus vector (Ad-ISF35), which encodes a membrane-stabilized, chimeric human-mouse CD40 binding protein (CD40 ligand; CD40L; CD154), with potential immunomodulatory and antineoplastic activities. Upon intratumoral administration, Ad-ISF35 preferentially transduces tumor cells and immunoregulatory cells in the

tumor microenvironment. This increases the expression of CD154 in tumor cells, activates CD40 and stimulates signaling and immunoactivation, which are both mediated by CD40. This increases the expression of co-stimulatory molecules on these cells, which enhances their ability to function as antigen presenting cells (APCs) and increases their apoptotic potential. This leads to an increase in the infiltration of macrophages and neutrophils, which promote direct cytotoxicity, enhances the production of pro-inflammatory cytokines in the tumor microenvironment, and induces a specific cytotoxic T-lymphocyte (CTL) response against the tumor cells. In addition, transduction with Ad-ISF35 induces direct tumor cell death, probably through an anti-viral immune response. Ad-ISF35 also exerts a strong bystander effect in non-transduced cells thereby further inducing tumor cell death. Altogether, this will eradicate tumor cells. CD154, the main ligand for CD40, plays a key role in the activation of APCs, promotes immunoactivation, and increases apoptotic potential. The protein encoded by Ad-ISF35 does not contain the mouse antibody binding domains and does not induce human neutralizing antibodies. The metalloprotease cleavage site is deleted in this chimeric CD154 and thus it resists cleavage; the encoded protein also contains amino acid substitutions within the carboxy-terminal. Both sets of engineered mutations promote cell surface expression. Check for active clinical trials using this agent.

**Ad-REIC/DKK3 vaccine:** A replication incompetent adenoviral vector encoding the full-length tumor suppressor gene Reduced Expression in Immortalized Cells (REIC or DKK3) (ad-REIC/DKK3), with potential antineoplastic activity. Upon intratumoral injection, tumor cells express REIC/DKK3 protein. This may result in the activation of c-Jun-NH2-kinase (JNK) and ultimately apoptosis via Bcl2 suppression and caspase-3 activation. Expression of REIC/DKK3 is normal in healthy cells but reduced or absent in many cancer cells; Forced overexpression of REIC/DKK3 in cancer cells may lead to an induction of tumor cell apoptosis and reduction of tumor cell growth while sparing normal, healthy cells naturally expressing endogenous REIC/DKK3.

**Ad-sig-hMUC-1/ecdCD40L vaccine:** A cancer vaccine consisting of a recombinant adenoviral vector encoding the tumor-associated antigen (TAA) human MUC-1 (hMUC-1) linked to the extracellular domain (ecd) of the co-stimulatory molecule CD40 ligand (CD40L) and an adenovirus signal sequence that encodes a secretory signal peptide (Ad-sig) with

potential immunostimulating and antineoplastic activities. Due to the presence of the secretory signal peptide expressed by Ad-sig in the vaccine construct, transfected cells may secrete a fusion protein composed of hMUC-1 and the CD40L ecd. The CD40L moiety part of the fusion protein binds to CD40 receptors on dendritic cells (DCs). Subsequently, DCs may be activated and migrate, T-cells may expand, and a cytotoxic T lymphocyte (CTL) response against tumor cells that overexpress hMUC-1 may follow. MUC-1 is a hypoglycosylated TAA overexpressed by epithelial cancer cells.

**Ad5-CMV-NIS:** A recombinant type 5 adenovirus (Ad5), encoding the gene for the human sodium-iodide symporter (NIS) linked to the cytomegalovirus (CMV) promoter, with potential gene transfection activity. Upon intratumoral injection, Ad5-CMV-NIS is taken up by tumor cells, resulting in the cellular expression of NIS. Subsequently, orally administered iodine 131 is taken up by NIS-expressing tumor cells, which may result in the selective accumulation of a cytotoxic dose of beta and gamma radiation in non-thyroidal tumor cells, sparing adjacent normal tissue. NIS, an intrinsic membrane glycoprotein, is an ion pump that actively transports iodide into cells which concentrate iodine; in addition to thyroid epithelial cells, it is found in non-thyroidal tissues including the salivary glands, the gastric mucosa, and lactating mammary glands.

**Ad5-yCD/mutTK(SR39)rep-ADP:** A second generation, replication-competent adenovirus type 5 containing a yeast cytosine deaminase(yCD)/mutant sr39 herpes simplex virus thymidine kinase fusion (yCD/mutTKsr39) gene and the 11.6 kDa adenovirus death protein (ADP) gene with potential oncolytic activity. Upon intratumoral administration and transduction of Ad5-yCD/mutTK(SR39)rep-ADP into tumor cells and subsequent expression of cytosine deaminase and viral thymidine kinase, administered prodrugs 5-fluorocytosine (5-FC) and ganciclovir are converted into their respective metabolites 5-fluorouracil (5-FU) and ganciclovir-5-monophosphate (ganciclovir-MP); 5-FU is subsequently metabolized to cytotoxic active metabolites 5-fluoroxymethyluridine monophosphate (F-UMP) and 5-fluoro-2'-deoxyuridine-5'-O-monophosphate (F-dUMP); ganciclovir-TP subsequently is converted by mammalian thymidine kinase to cytotoxic ganciclovir-triphosphate (ganciclovir-TP). Tumor cells adjacent to tumor cells transduced with this agent may be killed through a "bystander effect". ADP may enhance spread

and oncolytic activity of replication-competent adenoviruses. In addition to its oncolytic activity, Ad5-yCD/mutTK(SR39)rep-ADP may exhibit radiosensitizing activity.

**Ad5-yCD/mutTKSR39rep-hIL12:** A replication-competent oncolytic adenovirus encoding the murine pro-inflammatory cytokine interleukin-12 (IL-12) gene and two suicide fusion genes, a yeast cytosine deaminase (yCD) and a mutant form of herpes simplex virus type 1 thymidine kinase (HSV-1 TKSR39), with potential immunomodulating and antineoplastic activities. Upon intratumoral administration of Ad5-yCD/mutTKSR39rep-hIL12, the adenovirus selectively infects and replicates in tumor cells, which results in direct tumor cell lysis. Synergistically, IL-12 expressed by the adenovirus may activate the immune system by promoting the activation of natural killer cells (NKs), inducing secretion of interferon-gamma (IFN-g) and inducing cytotoxic T-lymphocyte (CTL) responses against tumor cells, which may result in immune-mediated tumor cell death, inhibition of tumor cell proliferation and inhibition of tumor angiogenesis. In addition, Ad5-yCD/mutTKSR39rep-hIL12-infected cancer cells express yCD and TKSR39; upon administration of the prodrugs 5-fluorocytosine (5-FC) and valganciclovir (vGCV), the yCD and HSV-1 TKSR39 activate these prodrugs to form 5-fluorouracil (5-FU) and ganciclovir, respectively. 5-FU gets converted to 5-fluoro-uridine monophosphate (5-FUMP) and subsequently to 5-fluoro-deoxyuridine monophosphate (5-FdUMP); 5-FdUMP irreversibly inhibits thymidylate synthase, inhibits deoxythymidine triphosphate (dTTP) formation and halts DNA synthesis. Once phosphorylated intracellularly, ganciclovir triphosphate competitively inhibits deoxyguanosine triphosphate (dGTP) incorporation into DNA and inhibits DNA synthesis.

**Ad5.SSTR/TK.RGD:** An RGD-4C–modified, infectivity-enhanced, bicistronic type 5 adenovirus expressing herpes simplex virus thymidine kinase (HSV-tk) gene, a therapeutic suicide gene, and the somatostatin receptor type 2 (SSTR2) gene with potential antineoplastic activity. Modification with the double cyclic peptide RGD-4C allows the virus to bind to cellular integrins, frequently expressed on the surfaces of ovarian cancer cells, instead of the coxsackie and adenovirus (CAR) receptor, which is often nonfunctional in ovarian cancer cells. Upon intratumoral administration, Ad5.SSTR/TK.RGD transfects tumor cells and expresses the HSV-tk gene. After subsequent administration of a synthetic acyclic

guanosine analogue prodrug like ganciclovir (GCV), expressed HSV-tk phosphorylates and activates the prodrug, which may result in inhibition of DNA synthesis and apoptosis in HSV-tk-expressing cancer cells.

Additionally, as a bystander effect, adjacent non-transfected cells may be killed by the activated antiviral drug. SSTR2 expression allows imaging of gene transfer into tumor cells using a radiolabeled somatostatin analogue.

**Ad5CMV-p53 gene:** A replication-defective adenoviral-CMV vector that encodes a wild-type p53 gene. Ad5CMV-p53 induces tumor cells that have been transfected with the vector to produce wild-type p53, a tumor suppressor gene that is deleted or mutated in a significant number of cancers. In transfected tumor cells, the wild-type p-53 gene product exerts an antitumor effect by blocking cell cycle progression at the G1/S regulation point, activating DNA repair proteins in the presence of DNA damage, and initiating apoptosis when DNA damage is irreparable.

**Ad5F35-LMP1/LMP2-transduced autologous dendritic cells:**

Autologous dendritic cells (DCs) transduced with the replication-deficient adenoviral vector Ad5F53 encoding the Epstein-Barr virus (EBV) transmembrane latent membrane proteins 1 and 2 (LMP1/LMP2) with potential immunostimulatory activity. Vaccination with Ad5F35-LMP1/LMP2-transduced autologous dendritic cells may stimulate a specific cytotoxic T-lymphocyte (CTL) response against LMP1- and LMP2-expressing tumor positive cells, resulting in tumor cell lysis and inhibition of tumor cell proliferation. LMP1 and LMP2 are expressed in various malignancies including nasopharyngeal cancer and EBV-positive Hodgkin disease.

**Adacel:** (Other name for: diphtheria toxoid/tetanus toxoid/acellular pertussis vaccine adsorbed)

**Adanon:** (Other name for: methadone hydrochloride)

**Adapin:** (Other name for: doxepin hydrochloride)

**adaptation:** The adjustment of an organism or population to a new or altered environment through genetic changes brought about by natural selection.

**ADAPTER:** In an extruder, the portion of the die assembly that attaches the die to the extruder and provides a flow channel for the molten plastic between the extruder and the die. OR A long heated cylindrical pipe used to convey molten resin from an extruder into an extrusion die.

**ADC:** A substance made up of a monoclonal antibody chemically linked to a drug. The monoclonal antibody binds to specific proteins or receptors found on certain types of cells, including cancer cells. The linked drug enters these cells and kills them without harming other cells. Some ADCs are used to treat cancer. Also called antibody-drug conjugate.

**ADCC:** A type of immune reaction in which a target cell or microbe is coated with antibodies and killed by certain types of white blood cells. The white blood cells bind to the antibodies and release substances that kill the target cells or microbes. Also called antibody-dependent cell-mediated cytotoxicity and antibody-dependent cellular cytotoxicity.

**Adcetris :** (Other name for: brentuximab vedotin) OR A drug used to treat Hodgkin lymphoma in patients who did not get better with other treatment, cannot be treated with autologous stem cell transplant (ASCT), or have a high risk that the cancer will come back or get worse after ASCT. It is also used to treat systemic anaplastic large cell lymphoma that did not get better with other treatment. It is also being studied in the treatment of other types of lymphoma. Adcetris is made up of a monoclonal antibody linked to an anticancer drug. It binds to a protein called CD30, which is on the surface of some lymphoma cells, and may kill cancer cells. Adcetris is a type of antibody-drug conjugate. Also called brentuximab vedotin and SGN-35.

**Adderall :** (Other name for: dextroamphetamine-amphetamine) OR A combination of drugs used as a treatment for attention deficit hyperactivity disorder (ADHD) and narcolepsy (a sleep disorder). It is a type of stimulant. Also called dextroamphetamine-amphetamine.

**Adderall XR:** (Other name for: dextroamphetamine-amphetamine)

**addiction :** An uncontrollable craving, seeking, and use of a substance, such as a drug or alcohol.

**Addison disease :** A rare disorder in which the adrenal glands do not make enough of certain hormones. Symptoms include weight loss, loss of appetite, nausea and vomiting, diarrhea, muscle weakness, fatigue, low blood sugar, low blood pressure, and patchy or dark skin. Most cases of the disorder are caused by immune system problems, but may also be caused by infection, cancer, or other diseases. Also called adrenal insufficiency.

**addition:** anti the addition of atoms to opposite sides of a molecule. (Compare with "syn addition.") OR a reaction that produces a new compound by combining all of the elements of the original reactants.

**addition compound:** An addition compound contains two or more simpler compounds that can be packed in a definite ratio into a crystal. A dot is used to separate the compounds in the formula. For example,  $\text{ZnSO}_4 \cdot 7 \text{H}_2\text{O}$  is an addition compound of zinc sulfate and water. This represents a compound, and not a mixture, because there is a definite 1:7 ratio of zinc sulfate to water in the compound. Hydrates are a common type of addition compound.

**addition elimination mechanism:** the two-stage mechanism by which nucleophilic aromatic substitution occurs. In the first stage, addition of the nucleophile to the carbon bearing the leaving group occurs. An elimination follows in which the leaving group is expelled.

**addition method:** Sometimes called the elimination method, it is a method for solving a system of two equations. One or both of the equations needs to be modified so that when the two equations are added, one of the variables is eliminated.

**Addition Polymerisation:** Also known as chain-growth polymerisation. The mechanism in which large numbers of usually identical small molecules are joined together to rapidly form a single large molecule. This involves the addition of reactive centre (anion, cation, or unpaired electron) to a multiple bond to form a new bond and a new reactive centre - which reacts with another multiple bond, et cetera... The finished chain then hangs around without reacting while more of the starting material reacts to form new polymer chains.

**Addition polymerisation** : One long single molecule is made from many short chain monomers. All the starting material is incorporated in the final polymer. An addition reaction takes place each time the chain is extended.

**addition property of equations:** An equation is still true if the same term is added to (or subtracted from) both sides of an equation.

**Addition reaction** : A substance is reacted with an alkene to form a compound with a single bond between the two formerly double bonded carbon atoms. An example is the decolourisation of bromine.

**ADDITIVE:** Any material added to a base stock to change its properties, characteristics or performance. OR A substance added to a formulation in relatively small amounts to impart or improve desirable properties or suppress undesirable properties. OR A substance mixed or compounded in a

plastic or resin that improves the quality of the resulting product. Or A substance compounded into a resin to enhance or improve certain characteristics. Or A compound or substance added to polymer to alter or improve its characteristics such as slip, antiblock, or color pigments. Or A substance added to a plastic compound to alter its characteristics. Examples are plasticizers, reinforcements, and flame-retardants. or Any substance compounded into resin to modify its properties. Additives can be antioxidants, colorants, pigments, light stabilizers, etc. or Any substance that is added to another substance. Usually a material added in minor amounts to alter the properties of a resin or compound. Or A compound or substance added to a polymer plastic to improve and alter characteristics of a polymer, such as a lubricant, stabilizer, plasticizer, etc. or A substance compounded into a resin to enhance or improve certain characteristics.

**additive effect:** An additive effect is the overall consequence which is the result of two chemicals acting together and which is the simple sum of the effects of the chemicals acting independently. See also antagonistic effect, synergistic effect.

**Additive manufacturing/ 3D printing:** Commonly used interchangeably, additive manufacturing (3D printing) involves a CAD model or scan of an object that is reproduced, layer by layer, as a physical three-dimensional object. Stereolithography, selective laser sintering, fused deposition modeling and direct metal laser sintering are some of the commonly employed additive processes.

**Additives :** Additives are materials that are added to a polymer to produce a desired change in material properties or characteristics. A wide variety of additives are currently used in thermoplastics, to expand or extend material properties, enhance processability, modify aesthetics, or increase environmental resistance. Additives enhance properties like flame retardancy and UV light stability. OR These compounds are added to resins to improve the overall performance and appearance of finished products. A key trend in this area today is using additives that are made from organic materials such as eggshells, wood pulp, rice hulls or materials that improve the biodegradability of the plastic.

**adduct:** the product of an addition reaction.

**ADE:** An abbreviation for a chemotherapy combination used to treat childhood acute myeloid leukemia (AML). It includes the drugs cytarabine

(Ara-C), daunorubicin hydrochloride, and etoposide phosphate. Also called ADE regimen.

**ADE regimen:** A regimen consisting of cytarabine (Ara-C), daunorubicin and etoposide, that is used as an induction treatment for pediatric acute myeloid leukemia (AML)

**ADE regimen :** An abbreviation for a chemotherapy combination used to treat childhood acute myeloid leukemia (AML). It includes the drugs cytarabine (Ara-C), daunorubicin hydrochloride, and etoposide phosphate. Also called ADE.

**adecatumumab:** A recombinant human IgG1 monoclonal antibody (MoAb) directed against the tumor associated antigen (TAA) epithelial cell adhesion molecule (EpCAM) with potential antitumor activity.

Adecatumumab binds to EpCAM, which may result in antibody-dependent cellular cytotoxicity (ADCC) directed against EpCAM-expressing tumor cells. EpCAM (CD326), a cell surface protein upregulated on many tumor cell types, promotes the proliferation, migration and invasiveness of tumor cells; for some cancers, overexpression has been correlated with decreased survival.

**adefovir dipivoxil:** An acyclic nucleotide adenine analogue with potent antiviral activity. Adefovir is activated in vivo to a diphosphate metabolite which is incorporated into viral DNA, leading to viral RNA-dependent DNA polymerase inhibition, DNA chain termination and impairment of viral replication. This agent inhibits the reverse transcriptases of hepatitis B, herpes and HIV viruses, induces natural killer cell activity, and stimulates endogenous interferon production. Viral resistance to adefovir develops at a slower rate compared to other antivirals.

**Adenine:** A purine base found in DNA or RNA.

**adenine :** A chemical compound that is used to make one of the building blocks of DNA and RNA. It is also a part of many substances in the body that give energy to cells. Adenine is a type of purine.

**adenocarcinoma :** Cancer that begins in glandular (secretory) cells. Glandular cells are found in tissue that lines certain internal organs and makes and releases substances in the body, such as mucus, digestive juices, or other fluids. Most cancers of the breast, pancreas, lung, prostate, and colon are adenocarcinomas.

**adenocarcinoma in situ** : A condition in which abnormal cells are found in the glandular tissue that lines certain internal organs, such as the uterus, cervix, lung, pancreas, and colon. Adenocarcinoma in situ, which occurs most often in the cervix, may become cancer and spread to nearby normal tissue. Also called AIS.

**adenoid cystic carcinoma** : A rare type of cancer that usually begins in the salivary glands.

**adenoma** : A tumor that is not cancer. It starts in gland-like cells of the epithelial tissue (thin layer of tissue that covers organs, glands, and other structures within the body).

**adenopathy** : Large or swollen lymph glands.

**adenosarcoma** : A tumor that is a mixture of an adenoma (a tumor that starts in the gland-like cells of epithelial tissue) and a sarcoma (a tumor that starts in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue). An example of an adenosarcoma is Wilms tumor.

**Adenosine**: A purine nucleoside found in DNA, RNA, and many cofactors.

**adenosine 3',5'-cyclic monophosphate**: See cyclic AMP.

**adenosine A2A receptor antagonist PBF-509**: An orally bioavailable adenosine A2A receptor (A2AR) antagonist, with potential antineoplastic activity. Upon administration, A2AR antagonist PBF-509 selectively binds to and inhibits A2AR expressed on T lymphocytes. This abrogates the adenosine/A2AR-mediated inhibition of T-lymphocytes and activates a T-cell-mediated immune response against tumor cells, thereby reducing proliferation of susceptible tumor cells. A2AR, a G protein-coupled receptor, is highly expressed on the cell surfaces of T-cells and, upon activation by adenosine, inhibits their proliferation and activation.

Adenosine is often produced in excess by cancer cells.

**adenosine A3 receptor agonist CF102**: An orally bioavailable, synthetic, highly selective adenosine A3 receptor (A3AR) agonist with potential antineoplastic activity. Adenosine A3 receptor agonist CF102 selectively binds to and activates the cell surface-expressed A3AR, deregulating Wnt and NF-kB signal transduction pathways downstream, which may result in apoptosis of A3AR-expressing tumor cells. A3AR, a G protein-coupled receptor, is highly expressed on the cell surfaces of various solid tumor cell

types, including hepatocellular carcinoma (HCC) cells, and plays an important role in cellular proliferation.

**adenosine diphosphate:** See ADP.

**Adenosine diphosphate (ADP):** Adenosine diphosphate (ADP). The nucleotide formed by adding a pyrophosphate group to the 5'-OH group of adenosine.

**adenosine triphosphate :** A substance present in all living cells that provides energy for many metabolic processes and is involved in making RNA. Adenosine triphosphate made in the laboratory is being studied in patients with advanced solid tumors to see if it can decrease weight loss and improve muscle strength. Also called ATP.

**adenosine triphosphate (ATP):** the chemical substance that serves as the currency of energy in cells.

**Adenosine triphosphate (ATP):** The nucleotide formed by adding yet another phosphate group to the pyrophosphate group on ADP.

**adenosine-A2A receptor antagonist CPI-444:** A small molecule immune checkpoint inhibitor of the adenosine A2A receptor (ADORA2A) with potential antineoplastic activity. Upon oral administration, adenosine-A2A receptor antagonist CPI-444 binds to adenosine A2A receptors expressed on the surface of immune cells, including T-lymphocytes, natural killer (NK) cells, macrophages and dendritic cells (DCs). This prevents tumor-released adenosine from interacting with the A2A receptors on these key immune surveillance cells, thereby abrogating adenosine-induced immunosuppression in the tumor microenvironment. This may stimulate anti-tumor immune responses, resulting in tumor regression.

**adenosis :** A disease or abnormal change in a gland. Breast adenosis is a benign condition in which the lobules are larger than usual.

**adenosquamous carcinoma :** A type of cancer that contains two types of cells: squamous cells (thin, flat cells that line certain organs) and gland-like cells.

**adenosylmethionine:** S An activated methyl donor that consists of an adenosyl group linked to the sulfur atom of methionine.

**adenovector encoding MDA7:** A nonreplicating adenoviral vector (adenovector) encoding the melanoma differentiation-associated 7 gene (MDA7) with potential antineoplastic activity. After intratumoral injection

and adenovector-mediated gene transfer of MDA7 into tumor cells, the expressed MDA7 transgene may inhibit tumor cell proliferation and induce tumor cell apoptosis. Check for active clinical trials using this agent.

**adenovector-transduced AP1903-inducible MyD88/CD40-expressing autologous PSMA-specific prostate cancer vaccine BPX-201:** A genetically-modified, dendritic cell (DC)-based vaccine in which the autologous cells are transduced with an adenoviral vector expressing the tumor antigen prostate-specific membrane antigen (PSMA) and a fusion protein composed of synthetic ligand inducible adjuvant iMC composed of a drug-inducible costimulatory CD40 receptor (iCD40) and the adaptor protein MyD88, with potential immunomodulating and antineoplastic activities. The iCD40 contains a membrane-localized cytoplasmic CD40 domain fused to the FK506 modified drug-binding protein 12 (FKBP12). Upon intradermal administration of BPX-201, these DCs accumulate in local draining lymph nodes. Twenty-four hours after vaccination, the dimerizing agent AP1903 is administered. AP1903 binds to the drug binding domain, leading to iMC oligomerization and activation of iCD40 and MyD88-mediated signaling in iMC-expressing DCs. This signaling pathway activates the DCs and stimulates a cytotoxic T-lymphocyte (CTL) response against host tumor cells that express PSMA. PSMA, a glycoprotein secreted by prostatic epithelial and ductal cells, is overexpressed in prostate cancer cells and is used as a tumor marker for both diagnosis and treatment evaluation. MyD88 is involved in interleukin 1 receptor (IL1R) and toll-like receptor (TLR) signaling.

**adenoviral vector Ad5-CEA(6D) vaccine:** A replication-defective, E1- and E2b-deleted oncolytic adenoviral serotype 5 (Ad5) encoding an epitope of human carcinoembryonic antigen (CEA) with potential antineoplastic activity. Adenoviral vector Ad5-CEA(6D) vaccine expresses a highly immunogenic analogue of CEA [CAP1-(6D)]. Upon administration, this vaccine may induce both humoral and cellular immune responses against tumor cells expressing the CEA antigen, thereby resulting in the immune-mediated inhibition of tumor cell proliferation and tumor cell death. CEA, a tumor-associated antigen, is overexpressed in various tumor cell types. Deletion of early genes E1 and E2b in Ad5 potentially circumvents pre-existing anti-adenovirus immunity and is capable of inducing strong immune responses.

**adenoviral-transduced hIL-12-expressing autologous dendritic cells INXN-3001 plus activator ligand INXN-1001:** Autologous dendritic cells transduced with a replication incompetent adenovirus encoding human pro-inflammatory cytokine interleukin-12 (IL-12) (INXN-3001) in combination with the proprietary orally bioavailable, small molecule activator ligand INXN-1001, with potential immunomodulating and antineoplastic activities. Production of IL-12 is controlled by an inducible DNA element that allows transcription initiation only in the presence of the ligand inducer INXN-1001. Upon intratumoral injection of INXN-3001 and subsequent oral administration of activator ligand, INXN-1001 is able to induce expression of IL-12 in INXN-3001. IL-12 expressed by the adenovirus may activate the immune system by promoting the activation of natural killer cells, inducing the secretion of interferon-gamma and inducing a cytotoxic T lymphocyte response against tumor cells, which may result in immune-mediated tumor cell death and inhibition of tumor cell proliferation. As INXN-1001 regulates both the timing and the levels of IL-12 expression, IL-12 toxicity can be reduced.

**adenovirus :** A member of a family of viruses that can cause infections in the respiratory tract, eye, and gastrointestinal tract. Forms of adenoviruses that do not cause disease are used in gene therapy. They carry genes that may fix defects in cells or kill cancer cells.

**adenovirus 5-human guanylyl cyclase C-PADRE vaccine:** A replication-defective, recombinant adenoviral serotype 5 (Ad5) encoding human guanylyl cyclase C (hGCC) and the synthetic Pan DR epitope (PADRE), with potential antineoplastic and immunomodulating activities. Upon intramuscular administration, the Ad5-hGCC-PADRE vaccine expresses hGCC, which may induce both humoral and cellular immune responses against tumor cells expressing the hGCC antigen. This results in the immune-mediated inhibition of tumor cell proliferation, and leads to tumor death. The hGCC protein is normally restricted to intestinal epithelial cells but is overexpressed by metastatic colorectal tumors. PADRE is a helper T-lymphocyte epitope that is able to augment the magnitude and duration of the cytotoxic T-lymphocyte (CTL) response.

**adenovirus B7-1:** A gene-viral vector complex comprised of an adenovirus vector and B7-1 gene targeting the CD80 antigen. Adenovirus

B7-1 is used as a component in antineoplastic vaccines to elicit a cytotoxic T-cell response.

**adenovirus encoding E.coli PNP:** A replication-incompetent adenovirus encoding E. coli purine nucleoside phosphorylase (Ad/PNP) used as a prodrug activating agent. Administered intratumorally, Ad/PNP expresses the enzyme PNP, which may catalyze systematically administered fludarabine phosphate prodrug into its active form 2-fluoroadenine (F-Ade). F-Ade inhibits DNA polymerase alpha, ribonucleotide reductase and DNA primase, thereby interrupting DNA synthesis and inhibiting tumor cell growth. Localized prodrug activation provides targeted chemotherapy, thereby potentially reducing systemic side effects. Check for active clinical trials using this agent.

**adenovirus encoding human aquaporin-1:** A replication-deficient, recombinant adenovirus encoding human aquaporin-1 with potential membrane water channel activity. Upon transfection of salivary glands, adenovirus encoding human aquaporin-1 (AdhAQP1) directs human aquaporin-1 (hAQP1) expression in the apical and basolateral plasma membranes of salivary secretory cells, which may result in increased saliva production. hAQP1, a water channel protein, is one of several highly conserved water channel proteins that mediate water permeability in cells of water-transporting tissues.

**adenovirus encoding rat Her-2/neu:** A replication-defective oncolytic adenovirus, encoding rat Her-2/neu (ErbB-2), with potential antineoplastic activity. Upon administration, adenovirus encoding rat HER-2/neu may induce an immune response against tumor cells expressing the HER-2/neu antigen, which may result in the immune-mediated inhibition of tumor cell proliferation and tumor cell death. Her-2/neu, a tumor-associated antigen and member of the epidermal growth factor receptor (EGFR) family of tyrosine kinases, is overexpressed in various tumor cell types.

**adenovirus encoding recombinant human endostatin:** A replication-defective, recombinant oncolytic adenovirus encoding human endostatin with potential antineoplastic activity. Endostatin, a 20 kDa C-terminal proteolytic fragment of collagen XVIII, is an important angiogenesis inhibitor. Upon intratumoral administration, the adenovirus infects and replicates in tumor cells. The expressed endostatin may inhibit endothelial

cell proliferation and angiogenesis which may result in a reduction of tumor growth.

**adenovirus encoding tyrosinase, MART-1/MAGE-A6-transduced autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) transduced with a recombinant adenoviral vector encoding three full-length human melanoma associated antigens (MAAs), tyrosinase, melan-A (MART-1) and the melanoma antigen A6 (MAGEA6), with potential antineoplastic activity. Upon intradermal administration, adenovirus encoding tyrosinase/MART-1/MAGEA6-transduced autologous DC vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tyrosinase/MART-1/MAGEA6-positive tumor cells, which may result in tumor cell death and decreased tumor growth. Tyrosinase, a melanoma-specific differentiation antigen, catalyzes the first step of melanin synthesis in melanocytes. Vaccination with multi-antigen modified DC may improve the efficacy of the DC immunotherapy.

**adenovirus HER2-transduced autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) transduced with a replication-deficient adenovirus vector encoding HER-2 with potential antineoplastic activity. Upon administration, adenovirus HER2-transduced autologous dendritic cell vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against HER-2-positive tumor cells, which may result in tumor cell death and decreased tumor growth. HER-2, a tyrosine kinase receptor for epidermal growth factor (EGF) (also known as neu and ErbB2), is overexpressed by some breast, ovarian, and gastric cancers.

**adenovirus vector:** One of a number of genetically-engineered adenoviruses designed to insert a gene of interest into a eukaryotic cell where the gene of interest is subsequently expressed. Unlike most other vectors, adenovirus vectors have the ability to infect post-mitotic cells. Thus, these agents are especially useful for gene transfer into neuronal cells.

**adenovirus-mediated human interleukin-12:** A replication-incompetent adenovirus encoding human pro-inflammatory cytokine interleukin-12 (IL-12) (Ad.hIL-12), with potential immunomodulating and antineoplastic activities. Upon intratumoral administration, the adenovirus selectively infects and replicates in tumor cells, which may result in tumor cell lysis.

Synergistically, IL-12 expressed by the adenovirus may activate the immune system by promoting the activation of natural killer cells (NKs), inducing secretion of interferon-gamma and inducing cytotoxic T cell responses against tumor cells, which may result in immune-mediated tumor cell death and inhibition of tumor cell proliferation.

**adenovirus-mediated human interleukin-12 INXN-2001 plus**

**veledimex:** A replication incompetent adenovirus encoding the human pro-inflammatory cytokine interleukin-12 (IL-12) (INXN-2001) in combination with the proprietary activator ligand veledimex, with potential immunomodulating and antineoplastic activities. Production of IL-12 is controlled by an inducible DNA element that allows transcription initiation only in the presence of the ligand inducer. Upon intratumoral administration of INXN-2001 and oral administration of veledimex, veledimex is able to induce expression of IL-12 from INXN-2001. IL-12 expressed by the adenovirus may activate the immune system by promoting the activation of natural killer cells (NKs), inducing secretion of interferon-gamma and inducing cytotoxic T cell responses against tumor cells, which may result in immune-mediated tumor cell death and inhibition of tumor cell proliferation. Check for active clinical trials using this agent.

**adenovirus-p53 transduced dendritic cell vaccine:** A cancer vaccine consisting of autologous dendritic cells (DCs) transduced with a recombinant adenovirus encoding p53 peptide, with potential immunomodulating activity. Intradermal vaccination with adenoviral-p53 transduced dendritic cell vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing mutant p53, resulting in tumor cell lysis. p53, a tumor suppressor gene, is mutated in many tumor cells, resulting in the loss of apoptosis regulation and abnormal cell proliferation.

**adenovirus-PSA prostate cancer vaccine:** A cancer vaccine composed of a genetically engineered, replication-deficient type 5 adenovirus carrying the human prostate-specific antigen (PSA), with potential immunostimulating and antineoplastic activities. Upon subcutaneous vaccination with the adenovirus-PSA prostate cancer vaccine, the adenovirus infects cells and expresses PSA. In turn, PSA may activate the immune system and may induce a cytotoxic T-lymphocyte response against PSA-expressing tumor cells. PSA, a tumor associated antigen, is expressed

by prostate epithelial cells and is overexpressed in prostate cancer. Check for active clinical trials using this agent.

**adenovirus/cytomegalovirus/Epstein-Barr virus-specific allogeneic cytotoxic T lymphocytes:** Allogeneic tri-viral specific, adenovirus, cytomegalovirus and Epstein-Barr virus (Adv, CMV and EBV or ACE), cytotoxic T-lymphocytes (CTLs) with potential antiviral activity. Donor-derived T-cells were exposed to dendritic cells nucleofected with DNA plasmids encoding Hexon and Penton (Adv), pp65 and IE1 (CMV), and LMP2, EBNA1 and BZLF1 (EBV), all are critical proteins for the proliferation of these viruses, and subsequently maintained in the presence of interleukins 4 and 7 with a novel culture device to expand and sustain the repertoire of CTLs. After an allogeneic hematopoietic stem cell transplant (HSCT), infusion of these CTLs primed towards Adv, CMV and EBV may prevent viral infection by these pathogens. Check for active clinical trials using this agent.

**Adenylate cyclase:** The enzyme that catalyzes the formation of cyclic 3',5' adenosine monophosphate (cAMP) from ATP.

**AdGMCAIX-transduced autologous dendritic cells:** Autologous dendritic cells (DCs) transduced with a recombinant, replication-defective adenoviral vector expressing the fusion gene granulocyte-macrophage colony-stimulating factor (GM-CSF) and carbonic anhydrase IX (CA-IX or CA9) (GMCA-9), with potential immunomodulating activity. The autologous DCs are transduced *ex vivo* and express the GMCA-9 fusion protein on the cell surface. Upon intradermal administration of the AdGMCAIX-transduced autologous DCs back into the patient, the DCs activate the immune system to both mount a cytotoxic T lymphocyte-mediated response against tumor cells positive for the CA9 antigen, and generate memory T cells. This may result in decreased tumor growth. CA9, also known as G250, is a renal cell carcinoma (RCC)-associated antigen and a member of the carbonic anhydrase family that contains a human leukocyte antigen (HLA)-A2.1-restricted epitope; it is found in a majority of renal cell carcinomas while absent in most normal tissues. The cytokine GM-CSF enhances the immunogenicity of CA9-based DC vaccines.

**ADH:** A benign (not cancer) condition in which there are more cells than normal in the lining of breast ducts and the cells look abnormal under a

microscope. Having ADH increases the risk of breast cancer. Also called atypical ductal breast hyperplasia and atypical ductal hyperplasia.

**ADH-1:** A small, cyclic pentapeptide vascular-targeting agent with potential antineoplastic and antiangiogenic activities. ADH-1 selectively and competitively binds to and blocks N-cadherin, which may result in disruption of tumor vasculature, inhibition of tumor cell growth, and the induction of tumor cell and endothelial cell apoptosis. N-cadherin, a cell-surface transmembrane glycoprotein of the cadherin superfamily of proteins involved in calcium-mediated cell-cell adhesion and signaling mechanisms; may be upregulated in some aggressive tumors and the endothelial cells and pericytes of some tumor blood vessels.

**Adhere:** To cling or stick together

**Adhesion:** The degree of attachment of a paint coating to a surface. Weak adhesion of paint to a surface is a common cause of paint failure. The quality or degree of attachment between a paint coating and the surface or paint beneath it. The ability of dry paint to remain on the surface without blistering, flaking or cracking. Adhesion is probably the single most important property of paint. OR Adhesion is one type of attraction force between the molecules of a substance and the container or another object. You stay wet when you get out of the bathtub because of adhesive forces. Some of the water molecules want to stick to you. OR The ability of dry paint to attach to and remain fixed on the surface without blistering, flaking, cracking or being removed by tape. OR The ability of a coating to stick to a surface. OR the force or attraction that holds two separate objects together. OR Attraction between different substances on either side of a phase boundary. OR Tendency of rubber to bond or cling to a contact surface

**Adhesion failure on metal:** Adhesion failure on metal substrates, resulting in blistering, flaking/delamination and corrosion, is usually due either to surface contamination or poor surface preparation. Among the most common types of surface contamination are grease on new galvanised surfaces, which should be cleaned with Dulux Oil and Grease Remover; and wax residue resulting from the use of chemical paint strippers, which can be removed with Dulux Oil and Grease Remover. Dust and general debris should always be vacuumed away before painting. In terms of surface preparation, the failure to remove millscale from hot rolled mild steel prior to painting can lead to serious problems months or even years

later. Similarly, painting over rust can result in the paint film flaking or the rust breaking through the paint film.

**Adhesion Promoter:** A coating which is applied to the substrate before it is extrusion coated with the plastic and which improves the adhesion of the plastic to the substrate.

**Adhesive:** A substance which applied as an intermediate is capable of holding materials together by surface attachment.

**Adhesive Assembly:** The process of joining two or more plastic parts by means of an adhesive.

**ADI-PEG 20:** A substance being studied in the treatment of melanoma, liver cancer, and other types of cancer. It breaks down the amino acid arginine and may block the growth of cancer cells that need arginine to grow. It is a type of iminohydrolase. Also called pegylated arginine deiminase.

**adiabat:** A line on an indicator diagram that represents an adiabatic process.

**ADIABATIC:** This adjective denotes a process in which no heat is added or removed. The term is used incorrectly to describe an extruder where the mechanical energy from the screw is sufficient to plastify the polymer and the barrel controller set-points are set so that little or no heating or cooling is required.

**Adiabatic Extrusion:** A type of extrusion in which the only source of heat is the conversion of drive energy through the viscous resistance of the plastics mass in the extruder.

**adiabatic ionization energy:** The lowest energy required to remove an electron from an atom, ion, or molecule in the gas phase. The adiabatic ionization energy is the difference between the ground state energy of the ion formed and the energy of the original atom, molecule, or ion.

**adiabatic process:** A thermodynamic change of state of a system such that no heat or mass is transferred across the boundaries of the system. In an adiabatic process, expansion always results in cooling, and compression in warming.

**adiabatic warming:** See adiabatic process.

**Adipocyte:** A specialized cell that functions as a storage depot for lipid.

**adipocyte:** An animal cell specialized for the storage of fats (triacylglycerols).

**adipose tissue:** Connective tissue specialized for the storage of large amounts of triacylglycerols.

**adipose-derived regenerative cells:** A population of cells derived from adipose tissue with stem cell and wound repair activities. Adipose-derived regenerative cells (ADRC) consists of several cell types, such as adult stem cells, vascular endothelial cells, and vascular smooth muscle cells, among others. These cells contribute to wound repair through a variety of mechanisms by promoting blood vessel growth and blocking apoptosis. In addition, ADRC can differentiate into several tissue types, such as bone, cartilage, fat, skeletal muscle, smooth muscle and cardiac muscle.

**adipose-derived stromal vascular fraction cells:** A population of stromal vascular fraction (SVF) cells derived from autologous adipose tissue, with potential tissue regenerative activity. SVF cells are obtained through liposuction and contain multiple cell types, including adipose-derived stem cells (ADSCs), mesenchymal and endothelial progenitor cells, leukocyte subtypes, lymphatic cells, pericytes, and vascular smooth muscle cells. The SVF cells are processed in such a way as to contain a reproducible and consistent composition of heterogeneous cells. Upon processing and administration, the adipose-derived SVF cells can differentiate into different tissue types, support neovascularization, replace cells and repair injured tissue.

**adjacent keywords:** Two keywords that are next to each other (even if a word such as "the" appears between the keywords).

**Adjunct:** A substance added to a drug formulation to improve its pharmaceutical performance.

**adjunct agent :** In cancer therapy, a drug or substance used in addition to the primary therapy.

**adjunct therapy :** Another treatment used together with the primary treatment. Its purpose is to assist the primary treatment. Also called adjunctive therapy.

**adjunctive therapy :** Another treatment used together with the primary treatment. Its purpose is to assist the primary treatment. Also called adjunct therapy.

**adjustment disorder** : A condition in which a person responds to a stressful event (such as an illness, job loss, or divorce) with extreme emotions and actions that cause problems at work and home.

**adjuvant therapy** : Additional cancer treatment given after the primary treatment to lower the risk that the cancer will come back. Adjuvant therapy may include chemotherapy, radiation therapy, hormone therapy, targeted therapy, or biological therapy.

**ADL**: Activities of daily living. The tasks of everyday life. Basic ADLs include eating, dressing, getting into or out of a bed or chair, taking a bath or shower, and using the toilet. Instrumental activities of daily living (IADL) are activities related to independent living and include preparing meals, managing money, shopping, doing housework, and using a telephone. Also called activities of daily living.

**ADME**: Abbreviation for Absorption, Distribution, Metabolism, Excretion. Sometimes referred to as ADMET or ADME-Tox to account for toxicity.

**administration** : In medicine, the act of giving a treatment, such as a drug, to a patient. It can also refer to the way it is given, the dose, or how often it is given.

**admixture mapping** : A method used to identify genetic variants associated with traits and/or diseases in ethnic groups whose genomes resulted from a recent mixture of two or more geographically distinct ancestral populations.

**adnexal mass** : A lump in tissue near the uterus, usually in the ovary or fallopian tube. Adnexal masses include ovarian cysts, ectopic (tubal) pregnancies, and benign (not cancer) or malignant (cancer) tumors.

**ado trastuzumab emtansine**: An antibody-drug conjugate (ADC) consisting of the recombinant anti-epidermal growth factor receptor 2 (HER2) monoclonal antibody trastuzumab conjugated to the maytansinoid DM1 via a nonreducible thioether linkage (MCC) with potential antineoplastic activity. The trastuzumab moiety of this ADC binds to HER2 on tumor cell surface surfaces; upon internalization, the DM1 moiety is released and binds to tubulin, thereby disrupting microtubule assembly/disassembly dynamics and inhibiting cell division and the proliferation of cancer cells that overexpress HER2. Linkage of antibody and drug through a nonreducible linker has been reported to contribute to

the improved efficacy and reduced toxicity of this ADC compared to similar ADCs constructed with reducible linkers.

**ado-trastuzumab emtansine :** A drug used to treat HER2-positive breast cancer that has spread to other parts of the body. It is used in patients who have already been treated with the anticancer drug called trastuzumab and a type of drug called a taxane. It may also be used in patients whose cancer has recurred (come back) after adjuvant therapy with these drugs. It is also being studied in the treatment of other types of cancer. Ado-trastuzumab emtansine contains a monoclonal antibody called trastuzumab that binds to a protein called HER2, which is found on some breast cancer cells. It also contains an anticancer drug called DM1, which may help kill cancer cells. Ado-trastuzumab emtansine is a type of antibody-drug conjugate. Also called Kadcyla and T-DM1.

**adolescent :** A young person who has begun puberty but has not yet become an adult. During adolescence a child experiences physical and hormonal changes that mark the transition into adulthood. Adolescents are generally between the ages of 10 and 19 years.

**adoptive cellular therapy :** A treatment used to help the immune system fight diseases, such as cancer and infections with certain viruses. T cells are collected from a patient and grown in the laboratory. This increases the number of T cells that are able to kill cancer cells or fight infections. These T cells are given back to the patient to help the immune system fight disease. Also called cellular adoptive immunotherapy.

**adozelesin:** An alkylating agent that bind to the DNA minor groove in a sequence-specific manner and form covalent adducts with adenines, resulting in the inhibition of DNA replication and induction of apoptosis.

**ADP:** Adenosine diphosphate. See ATP.

**ADP (adenosine diphosphate):** A ribonucleoside 5'-diphosphate serving as phosphate group acceptor in the cell energy cycle.

**adrenal cancer :** Cancer that forms in the tissues of the adrenal glands (two glands located just above the kidneys). The adrenal glands make hormones that control heart rate, blood pressure, and other important body functions. Adrenal cancer that starts in the outside layer of the adrenal gland is called adrenocortical carcinoma. Adrenal cancer that starts in the center of the adrenal gland is called malignant pheochromocytoma.

**adrenal cortex :** The outer part of the adrenal gland (a small organ on top of each kidney). The adrenal cortex makes androgen and corticosteroid hormones.

**adrenal gland :** A small gland that makes steroid hormones, adrenaline, and noradrenaline. These hormones help control heart rate, blood pressure, and other important body functions. There are two adrenal glands, one on top of each kidney. Also called suprarenal gland.

**adrenal glands:** two glands lying atop the kidneys that produce a family of steroids.

**adrenal insufficiency :** A rare disorder in which the adrenal glands do not make enough of certain hormones. Symptoms include weight loss, loss of appetite, nausea and vomiting, diarrhea, muscle weakness, fatigue, low blood sugar, low blood pressure, and patchy or dark skin. Most cases of the disorder are caused by immune system problems, but may also be caused by infection, cancer, or other diseases. Also called Addison disease.

**adrenal medulla :** The inner part of the adrenal gland (a small organ on top of each kidney). The adrenal medulla makes chemicals such as epinephrine (adrenaline) and norepinephrine (noradrenaline) which are involved in sending nerve signals.

**adrenalectomy :** Surgery to remove one or both adrenal glands (a small organ on top of each kidney).

**adrenaline :** A hormone and neurotransmitter. Also called epinephrine.

**adrenocortical :** Having to do with or made by the outer layer of the adrenal gland, which produces steroid hormones. There is an adrenal gland on top of each kidney.

**adrenocortical cancer :** A rare cancer that forms in the outer layer of tissue of the adrenal gland (a small organ on top of each kidney that makes steroid hormones, adrenaline, and noradrenaline to control heart rate, blood pressure, and other body functions). Also called adrenocortical carcinoma and cancer of the adrenal cortex.

**adrenocortical carcinoma :** A rare cancer that forms in the outer layer of tissue of the adrenal gland (a small organ on top of each kidney that makes steroid hormones, adrenaline, and noradrenaline to control heart rate, blood pressure, and other body functions). Also called adrenocortical cancer and cancer of the adrenal cortex.

**adrenocorticotrophic hormone:** A hormone secreted by the anterior portion of the pituitary gland and regulates hormone, primarily cortisol, secreted by the adrenal gland. OR A hormone made in the pituitary gland. Adrenocorticotrophic hormone acts on the outer part of the adrenal gland to control its release of corticosteroid hormones. More adrenocorticotrophic hormone is made during times of stress. Also called ACTH and corticotropin.

**AdreView :** A drug containing a form of radioactive iodine called I 123 that is used to detect certain types of tumors, including pheochromocytomas and neuroblastomas. Radiation from the I 123 may help show where cancer cells are in the body. AdreView is a type of radioimaging agent and a type of radioconjugate. Also called 123I-MIBG, iobenguane I 123, and iodine I 123 metaiodobenzylguanidine.

**Adriamycin PFS :** A brand name for doxorubicin hydrochloride, which is used to treat many types of cancer. Adriamycin PFS brand has been taken off the market and is no longer available.

**Adriamycin RDF :** A brand name for doxorubicin hydrochloride, which is used to treat many types of cancer. Adriamycin RDF brand has been taken off the market and is no longer available.

**AdRTVP-1-transduced prostate cancer cell-based vaccine:** A cell-based vaccine comprised of prostate cancer cells transduced with an adenoviral vector encoding human RTVP-1 (AdRTVP-1), with potential immunostimulating and antineoplastic activities. RTVP-1, also referred to as glioma pathogenesis-related protein 1 (GLIP1), is down-regulated in prostate tumors. Regulated by tumor suppressor p53, the expression of RTVP-1 functions as a tumor suppressor, and is abundant in normal human prostate epithelial cells as well as in differentiated macrophages. Administration of AdRTVP-1-transduced prostate cancer cell-based vaccine leads to an induction of apoptosis through the expression of RTVP-1, which may result in a reduction in prostate cancer cellular proliferation. In addition, this vaccine may induce a cytotoxic T lymphocyte (CTL) response against prostate specific tumor- associated antigens.

**adsorb:** To collect molecules of a substance on a surface.

**adsorbent:** A substance that collects molecules of another substance on its surface. For example, gases that make water taste bad are strongly adsorbed on activated charcoal granules in water filters.

**Adsorbtion:** A process in which a gas or liquid mixture contacts a solid (the adsorbent) and a mixture component (the adsorbate) adheres to the surface of the solid. OR The gathering of a gas, liquid, or dissolved substance on the surface or interface zone of another substance. OR the adhesion of an extremely thin layer solid, liquid, or vapor molecules to the surface of a solid or liquid. OR The concentration of a substance on the surface of another substance, which is usually solid. OR A process whereby one or more components of an interfacial layer between two bulk phases are either enriched or depleted (IUPAC, 1972). OR In chemistry, often refers to situations where a molecule adheres to a surface. OR Not to be confused with absorption, adsorption is the build up of a molecule at a surface (such as an oil/water interface). Adsorption generally occurs because different parts of a molecule have an affinity for the two different phase on either side of the interface. OR Adsorption is collection of a substance on the surface of a solid or a liquid. For example, gases that make water taste bad are strongly adsorbed on charcoal granules in water filters.

**adsorption chromatography:** A technique for separating or analyzing mixtures that contain at least one component that is preferentially adsorbed by the stationary phase as it moves over it.

**adsorption indicator:** A substance that indicates an excess of a reactant in a precipitation reaction. For example, dichlorofluorescein is added to an NaCl solution being titrated with silver nitrate. Before the endpoint, excess chloride ions make the surface of the AgCl precipitate negative, and dichlorofluorescein anions remain in solution. After the endpoint, the excess silver ions make the surface of the AgCl precipitate positive, and the dichlorofluorescein anions are adsorbed onto their surface. Adsorption changes the color of the indicator from yellow-green to pink.

**adult progeria :** An inherited disorder marked by rapid aging that begins in early adolescence. Patients may be shorter than average, and have health problems such as loss and graying of hair, hardening of the arteries, thinning of the bones, diabetes, and thin, hardened skin. They also have an increased risk of cancer, especially osteosarcoma (a type of bone cancer). Adult progeria is caused by a mutation (change) in a gene involved in cell division. It is a type of autosomal recessive gene disease. Also called Werner syndrome and WS.

**adult rickets :** A condition in adults in which bones become soft and deformed because they don't have enough calcium and phosphorus. It is usually caused by not having enough vitamin D in the diet, not getting enough sunlight, or a problem with the way the body uses vitamin D. Symptoms include bone pain and muscle weakness. When the condition occurs in children, it is called rickets. Also called osteomalacia.

**adult T-cell leukemia/lymphoma :** An aggressive (fast-growing) type of T-cell non-Hodgkin lymphoma caused by the human T-cell leukemia virus type 1 (HTLV-1). It is marked by bone and skin lesions, high calcium levels, and enlarged lymph nodes, spleen, and liver. Also called ATLL.

**adulterant :** A substance added to a product but not listed as an ingredient, or a substance that ends up in a product by accident when the product is made. Adulterants may be in foods, drugs, and other products. An adulterant may cause a product to be harmful, cheaper to make, or not work as it should.

**advance directive :** A legal document that states the treatment or care a person wishes to receive or not receive if he or she becomes unable to make medical decisions (for example, due to being unconscious or in a coma). Some types of advance directives are living wills and do-not-resuscitate (DNR) orders.

**advanced cancer :** Cancer that has spread to other places in the body and usually cannot be cured or controlled with treatment.

**advanced practice nurse :** A registered nurse who has additional education and training in how to diagnose and treat disease. Advanced practice nurses are licensed at the state level and certified by national nursing organizations. In cancer care, an advanced practice nurse may manage the primary care of patients and their families, based on a practice agreement with a doctor. Also called APN, NP, and nurse practitioner.

**advanced waste treatment:** any treatment method or process employed following biological treatment (1) to reduce pollution load (2) to remove substances that may be harmful to receiving waters or the environment (3) to produce a high-quality effluent suitable for reuse in any specific manner or for discharge under critical conditions. The term tertiary treatment is commonly used to denote advanced waste treatment methods.

**advancing glacier:** a glacier that exhibits outward or downslope movement.

**advected fog:** fog caused by air moving from one region to another region with a different surface temperature.

**advection:** movement of air from one area to another, creating unusually warm or cold conditions.

**advection:** The predominately horizontal large-scale movement of air that causes changes in temperature or other physical properties. In oceanography, advection is the horizontal or vertical flow of sea water as a current.

**adverb:** a word that modifies a noun, pronoun, or another adverb.

**adverbial clause:** subordinate clauses that begin with subordinate conjunctions; they function as adverbs within the sentence and cannot stand alone as sentences.

**adverse effect:** This is abnormal, undesirable or harmful effect to an organism, indicated by some result such as mortality, altered food consumption, altered body and organ weights, altered enzyme levels or visible (pathological) change. An effect may be classed as adverse effect if it causes functional or anatomical damage, causes irreversible changes or increases the susceptibility of the organism to other chemical or biological stress. A non-adverse effect will usually be reversed when exposure to the chemical ceases.

**adverse effect :** An unexpected medical problem that happens during treatment with a drug or other therapy. Adverse effects do not have to be caused by the drug or therapy, and they may be mild, moderate, or severe. Also called adverse event.

**adverse event :** An unexpected medical problem that happens during treatment with a drug or other therapy. Adverse events do not have to be caused by the drug or therapy, and they may be mild, moderate, or severe. Also called adverse effect.

**ADVEXIN:** (Other name for: Ad5CMV-p53 gene)

**Advil :** A drug used to treat fever, swelling, pain, and redness by preventing the body from making a substance that causes inflammation. It is a type of nonsteroidal anti-inflammatory drug (NSAID). Also called ibuprofen and Motrin.

**AE-941:** A substance made from shark cartilage that is being studied for its ability to prevent the growth of new blood vessels that tumors need to grow.

It is a type of antiangiogenesis agent.

**AE37 peptide/GM-CSF vaccine:** A vaccine containing HER2/Neu-derived epitope (amino acids 776-790) linked to Ii-Key peptide (Ii-Key/HER2/neu hybrid peptide or AE37), and combined with granulocyte-macrophage colony-stimulating factor (GM-CSF), with potential antineoplastic and immunoadjuvant activities. Upon vaccination, AE37 may activate the immune system and stimulate T-helper cells against HER2/Neu expressing cancer cells. GM-CSF may potentiate the immune response against cancer cells expressing the HER2/Neu antigen. The Ii-Key moiety, a 4-amino acid (LRMK) epitope from the MHC class II-associated invariant chain (Ii protein), increases T-helper cell stimulation against HER2/neu antigen when compared to unmodified class II epitopes. HER2/neu, a tumor associated antigen (TAA), is overexpressed in a variety of tumor cell types and is highly immunogenic.

**AEE788:** An orally bioavailable multiple-receptor tyrosine kinase inhibitor. AEE788 inhibits phosphorylation of the tyrosine kinases of epidermal growth factor receptor (EGFR), human epidermal growth factor receptor 2 (HER2), and vascular endothelial growth factor receptor 2 (VEGF2), resulting in receptor inhibition, the inhibition of cellular proliferation, and induction of tumor cell and tumor-associated endothelial cell apoptosis. Check for active clinical trials using this agent. OR A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called protein tyrosine kinase inhibitors and angiogenesis inhibitors.

**AEG35156:** A second-generation synthetic antisense oligonucleotide with potential antineoplastic activity. AEG35156 selectively blocks the cellular expression of X-linked inhibitor of apoptosis protein (XIAP), a pivotal inhibitor of apoptosis that is overexpressed in many tumors. This agent reduces total levels of XIAP in tumor cells, working synergistically with cytotoxic drugs to overcome tumor cell resistance to apoptosis. XIAP interferes with both the intrinsic and extrinsic program-death signaling pathways, which may render tumor cells resistant to apoptosis. OR A substance being studied in the treatment of cancer. AEG35156 may kill cancer cells by blocking the production of a protein called XIAP that helps cells live longer. It also makes cancer cells more sensitive to anticancer

drugs. It is a type of antisense oligonucleotide, and a type of chemosensitizing agent. Also called GEM640.

**Aeration:** The process of adding air to water. In wastewater treatment, air is added to freshen wastewater and to keep solids in suspension. OR Preparation of a saturated solution of air gases by either spraying the solution in air or by bubbling air through it.

**Aeration tank:** The tank where raw or settled wastewater is mixed with return sludge and aerated. This is the same as an aeration bay, aerator, or reactor.

**aerobic:** living or occurring only in the presence of oxygen. OR An organism that lives in air and uses oxygen as the terminal electron acceptor in respiration. OR An organism that utilizes oxygen for growth. OR An organism that requires free oxygen for growth.

**aerobic :** In biochemistry, reactions that need oxygen to happen or happen when oxygen is present.

**aerobic biological oxidation:** any waste treatment process or other process utilizing aerobic organisms, in the presence of air or oxygen, as the agent for reducing pollution load, oxygen demand, or the amount of organic substance in waste. The term is used in reference to secondary treatment of wastes.

**Aerobic Degradation:** Degradation in the presence of air. Composting is a way of aerobic degradation.

**aerobic exercise :** Physical activity that increases the heart rate and the body's use of oxygen. It helps improve a person's physical fitness.

**aerobic metabolism :** A chemical process in which oxygen is used to make energy from carbohydrates (sugars). Also called aerobic respiration, cell respiration, and oxidative metabolism.

**aerobic respiration :** A chemical process in which oxygen is used to make energy from carbohydrates (sugars). Also called aerobic metabolism, cell respiration, and oxidative metabolism.

**aerodigestive tract :** The combined organs and tissues of the respiratory tract and the upper part of the digestive tract (including the lips, mouth, tongue, nose, throat, vocal cords, and part of the esophagus and windpipe).

**aerodynamic diameter of a particle:** The diameter of a spherical particle of unit density that has the same settling velocity in air as the particle in

question (IAEA, 1978).

**aerogel:** A porous solid formed by replacing the liquid in a gel with a gas; what remains when the liquid part of an alcogel is removed without damaging the solid part.

**Aeroseb-HC:** (Other name for: therapeutic hydrocortisone)

**aerosol:** This is a very broad term applied to any suspension of solid or liquid particles in a gas. They are fine enough in the particle size (0.001 to 100 micrometers) to remain dispersed for a period of the time. OR A product feature that uses compressed gas to spray the product from its container. OR A colloid in which solid particles or liquid droplets are suspended in a gas. Smoke is an example of a solid aerosol; fog is an example of a liquid aerosol. OR Particulate material, other than water or ice, in the atmosphere ranging in size from approximately  $10 \times 10^{-3}$  to larger than  $10 \times 10^2$   $\mu$  m in radius. Aerosols are important in the atmosphere as nuclei for the condensation of water droplets and ice crystals, as participants in various chemical cycles, and as absorbers and scatterers of solar radiation, thereby influencing the radiation budget of the earth-atmosphere system, which in turn influences the climate on the surface of the Earth.

**aerosol sargramostim:** An aerosol inhalation formulation containing a yeast-derived glycosylated recombinant form of human granulocyte macrophage colony stimulating factor (GM-CSF) with potential immunostimulating activity. Sargramostim binds to specific cell surface receptors, modulating the proliferation and differentiation of a variety of hematopoietic progenitor cells with some specificity towards stimulation of leukocyte production. This agent also activates neutrophils, monocytes, macrophages, and dendritic cells and promotes antigen presentation, upregulates antibody-dependent cellular cytotoxicity (ADCC), and increases interleukin-2-mediated, lymphokine-activated killer cell function. Aerosol inhalation may help achieve high concentrations of sargramostim in the lung.

**aerosolize :** In medicine, to turn a liquid drug into a fine mist that can be inhaled.

**aerosolized aldesleukin:** An aerosol formulation of aldesleukin, a recombinant form of interleukin-2 (IL-2), with potential immunostimulating activity. Upon IL-2 inhalation, this cytokine activates lymphokine-activated

killer cells and natural killer cells, and induces expression of cytotoxic cytokines, such as interferon-gamma and transforming growth factor-beta. This may eventually halt tumor cell growth. Localized administration of IL-2 may decrease toxicity and increase efficacy.

**aerosolized liposomal rubitecan:** An aerosolized liposomal preparation of a water-insoluble derivative of camptothecin with potential antineoplastic activity. 9-nitro-20 (S)-camptothecin and its active metabolite 9-aminocamptothecin (9-AC) selectively stabilize topoisomerase I-DNA covalent complexes during S-phase, thereby inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when encountered by the DNA replication machinery. This agent is formulated with dilauroylphosphatidylcholine and nebulized in particle sizes of 1.2-1.6 micrometer mass median aerodynamic diameter.

**Aerrane:** (Other name for: isoflurane)

**Aesthetic Fill:** Filling to a specific level in a clear package where the fill level is visible.

**Aesthetics:** The sum total of the visual response to the beauty of an object. Elements of aesthetics may include: color, shape or particular features of the object.

**Aezea®:** (Other name for: cenersen)

**afamelanotide:** A synthetic peptide analogue of the naturally occurring alpha-melanocyte stimulating hormone (a-MSH) with potential photoprotective activity. Mimicking the action of a-MSH, afamelanotide stimulates melanocytes to increase the production and release of melanin. Increased melanocyte melanin may protect against ultraviolet radiation (UVR)-initiated cellular DNA damage, oxidation of membrane proteins, and alterations in intracellular signaling processes in epidermal cells. Endogenously, a-MSH is released by skin cells in response to UVR exposure, stimulating melanocytes to produce and release melanin.

**afatinib dimaleate:** The dimaleate salt form of afatinib, an orally bioavailable anilino-quinazoline derivative and inhibitor of the receptor tyrosine kinase (RTK) epidermal growth factor receptor (ErbB; EGFR) family, with antineoplastic activity. Upon administration, afatinib selectively and irreversibly binds to and inhibits the epidermal growth factor receptors 1 (ErbB1; EGFR), 2 (ErbB2; HER2), and 4 (ErbB4;

HER4), and certain EGFR mutants, including those caused by EGFR exon 19 deletion mutations or exon 21 (L858R) mutations. This may result in the inhibition of tumor growth and angiogenesis in tumor cells overexpressing these RTKs. Additionally, afatinib inhibits the EGFR T790M gatekeeper mutation which is resistant to treatment with first-generation EGFR inhibitors. EGFR, HER2 and HER4 are RTKs that belong to the EGFR superfamily; they play major roles in both tumor cell proliferation and tumor vascularization and are overexpressed in many cancer cell types. or A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients with certain mutations (changes) in a cell protein called epidermal growth factor receptor (EGFR). It is also being studied in the treatment of other types of cancer. Afatinib dimaleate blocks certain EGFRs, which may help keep cancer cells from growing. It may also prevent the growth of new blood vessels that tumors need to grow. Afatinib dimaleate is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called Gilotrif.

**affected :** Individuals in a pedigree who exhibit the specific phenotype under study.

**afferent neurons:** neurons that project into the cortex of the brain; sensory neurons are afferents

**Affinitac:** (Other name for: ISIS 3521)

**Affinitak:** (Other name for: ISIS 3521)

**Affinity:** Refers to a molecule's tendency associate with another. Drug affinity refers to a drug's ability to bind to a biological target.

**Affinity:** The attraction for another substance.

**affinity :** In chemistry and biology, the strength of the attraction between two substances, such as two chemicals, or an antigen and an antibody.

**Affinity chromatography:** A protein-purification technique based on the high affinity of many proteins for specific chemical groups. Such groups are attached to an inert matrix, and the protein sample is applied; only those proteins with an affinity for the groups will bind. Or A column chromatographic technique that employs attached functional groups that have a specific affinity for sites on particular proteins. or Affinity chromatography. A column chromatographic technique that employs

attached functional groups that have a specific affinity for sites on particular proteins.

**Affinity labeling:** A means of mapping the active site of an enzyme by using a substrate analog that binds to the active site and forms a covalent bond with a nearby amino acid.

**affinity reagent :** In chemistry and biology, a compound that binds specific substances, such as proteins or nucleic acids. Many affinity reagents are antibodies. They are used to analyze tissue samples to help diagnose diseases.

**afimoxifene:** A tamoxifen metabolite with both estrogenic and anti-estrogenic effects. Afimoxifene has a higher affinity for the estrogen receptor than tamoxifen, and functions as an antagonist in breast cancer cells.

**Afinitor :** (Other name for: everolimus) OR A drug used with exemestane to treat some postmenopausal women with advanced breast cancer that is hormone-receptor positive and HER2 negative. It is also used to treat certain types of pancreatic, lung, and gastrointestinal neuroendocrine tumors that cannot be removed by surgery, are advanced, or have spread to other parts of the body. It is also used to treat advanced renal cell carcinoma (a type of kidney cancer) and subependymal giant cell astrocytoma in some patients, including children. Afinitor is being studied in the treatment of other types of cancer. It stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It also lowers the body's immune response. Afinitor is a type of kinase inhibitor, a type of angiogenesis inhibitor, and a type of immunosuppressant. Also called Afinitor Disperz, everolimus, and RAD001.

**Afinitor Disperz :** (Other name for: everolimus tablets for oral suspension) OR A drug used with exemestane to treat some postmenopausal women with advanced breast cancer that is hormone-receptor positive and HER2 negative. It is also used to treat certain types of pancreatic, lung, and gastrointestinal neuroendocrine tumors that cannot be removed by surgery, are advanced, or have spread to other parts of the body. It is also used to treat advanced renal cell carcinoma (a type of kidney cancer) and subependymal giant cell astrocytoma in some patients, including children. Afinitor Disperz is being studied in the treatment of other types of cancer. It stops cancer cells from dividing and may prevent the growth of new blood

vessels that tumors need to grow. It also lowers the body's immune response. Afinitor Disperz is a type of kinase inhibitor, a type of angiogenesis inhibitor, and a type of immunosuppressant. Also called Afinitor, everolimus, and RAD001.

**aflatoxin :** A harmful substance made by certain types of mold (*Aspergillus flavus* and *Aspergillus parasiticus*) that is often found on poorly stored grains and nuts. Consumption of foods contaminated with aflatoxin is a risk factor for primary liver cancer.

**Aflodac:** (Other name for: sulindac)

**AFP:** A protein normally produced by a fetus. AFP levels are usually undetectable in the blood of healthy adult men or women (who are not pregnant). An elevated level of AFP suggests the presence of either a primary liver cancer or germ cell tumor. Also called alpha-fetoprotein.

**AFP gene hepatocellular carcinoma vaccine:** A cancer vaccine composed of naked plasmid DNA of the gene for the tumor-associated antigen alpha-fetoprotein (AFP), a macromolecule that acts as a specific immunologic target for hepatocellular carcinoma. This agent exerts an antitumor effect by inducing cytotoxic T-lymphocytes to attack AFP-expressing tumor cells. Check for active clinical trials using this agent.

**AFP464:** A synthetic lysyl prodrug of the amino-substituted flavone derivative aminoflavone with antiproliferative and antineoplastic activities. AFP464 is rapidly converted to aminoflavone in plasma. Aminoflavone activates the aryl hydrocarbon receptor (AhR) signaling pathway leading to an increase in cytochrome P450 1A1 (CYP1A1) and cytochrome P450 1A2 (CYP1A2) expression and, to a lesser extent, an increase in cytochrome P450 1B1 (CYP1B1) expression. Subsequently, aminoflavone is metabolized to toxic metabolites by the cytochrome P450 enzymes that it induces; these toxic metabolites covalently bind to DNA, resulting in the phosphorylation of p53, the induction of the p53 downstream target p21Waf1/Cip1, and apoptosis. Pulmonary toxicity may be dose-limiting. OR A substance being studied in the treatment of cancer. AFP464 kills cancer cells or stops them from dividing. It is a type of aminoflavone.

**After Cure:** Continuation of curing after heat source removed ie injection mold or compression mold.

**aftershock:** one of the small earthquakes that may follow the main earthquake.

**afuresertib:** An orally bioavailable inhibitor of the serine/threonine protein kinase Akt (protein kinase B) with potential antineoplastic activity.

Afuresertib binds to and inhibits the activity of Akt, which may result in inhibition of the PI3K/Akt signaling pathway and tumor cell proliferation and the induction of tumor cell apoptosis. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**AG-013736:** A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called angiogenesis inhibitors and protein tyrosine kinase inhibitors.

**AG-024322:** A cyclin-dependent kinase (CDK) inhibitor with antineoplastic activity. AG-024322 selectively inhibits cyclin-dependent kinases (particularly CDK1,2 and 4), enzymes that regulate cell cycle progression. Inhibition of CDK may result in cell cycle arrest, induction of apoptosis, and inhibition of DNA replication and tumor cell proliferation. Check for active clinical trials using this agent.

**AG014699:** A substance being studied in the treatment of breast cancers caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is also being studied in the treatment of other types of cancer. It blocks an enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. AG014699 may cause cancer cells to die. It is a type of poly(ADP-ribose) polymerase inhibitor. Also called PARP-1 inhibitor AG014699.

**AG2037:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called glycinamide ribonucleotide formyl transferase inhibitors.

**AG3340:** A substance that is being studied in the treatment of cancer. It is a matrix metalloproteinase inhibitor and belongs to the family of drugs called angiogenesis inhibitors. Also called prinomastat.

**AG337:** A substance that is being studied in the treatment of liver cancer. It belongs to the family of drugs called thymidylate synthase inhibitors. Also called nolatrexed and Thymitaq.

**aganglionic megacolon :** A condition in which certain nerve cells are missing from the muscle layers of part of the large intestine. This causes

severe constipation or blockage of the large intestine. Constipation is when stool becomes hard, dry, and difficult to pass and bowel movements occur less often than normal. Other symptoms include swollen abdomen, vomiting, bloody diarrhea, gas, lack of energy, and trouble gaining weight. Aganglionic megacolon is present from birth, but the symptoms may not appear until later in a child's life. This condition has been linked to an increased risk of thyroid cancer and neuroblastoma. Also called Hirschsprung disease.

**agar:** A gel made from seaweed used to make salt bridges.

**Agaricus blazei Murill extract:** A dietary supplement containing an extract of the Basidiomycete fungus *Agaricus blazei* Murill with potential chemopreventive, antineoplastic and immunopotentiating activities. *Agaricus blazei* Murill extract contains high levels of phytochemicals, especially beta-D-glucans. Beta-D-glucans may promote dendritic cell (DC) maturation; increase interferon gamma (IFN-gamma), tumor necrosis factor alpha (TNF-alpha) and immunoglobulin levels; and may enhance natural killer (NK) cell activity, potentially boosting anti-tumor host immune responses.

**agatolimod sodium:** The tricosasodium salt of a synthetic 24-mer oligonucleotide containing 3 CpG motifs with potential antineoplastic and immunostimulatory activity. Agatolimod selectively targets Toll-like receptor 9 (TLR9), thereby activating dendritic and B cells and stimulating cytotoxic T cell and antibody responses against tumor cells bearing tumor antigens.

**AGC:** A finding of abnormal cells in a Pap test. The glandular cells come from the inner part of the cervix or the lining of the uterus. This finding may be a sign of cancer or other serious condition, and more testing may be needed. Also called atypical glandular cells.

**age-related macular degeneration :** A condition in which there is a slow breakdown of cells in the center of the retina (the light-sensitive layers of nerve tissue at the back of the eye). This blocks vision in the center of the eye and can cause problems with activities such as reading and driving. Age-related macular degeneration is most often seen in people who are over the age of 50. Also called AMD, ARMD, and macular degeneration.

**agent study :** In cancer prevention, a clinical trial that studies whether taking certain medicines, vitamins, minerals, or food supplements can

prevent cancer. Also called chemoprevention study.

**agglomeration:** In meteorology, the process by which precipitation particles grow larger by collision or contact with cloud particles or other precipitation particles.

**agglutinin :** A substance that makes particles (such as bacteria or cells) stick together to form a clump or a mass.

**aggravating factor :** Something that makes a condition worse. For example, tobacco smoke is an aggravating factor for asthma.

**Aggregate:** A collection of minerals, i.e. fine particles of stone, grit, mica, etc. which provide the textured finish of materials, such as Weather-coat No.1.

**aggressive :** In medicine, describes a tumor or disease that forms, grows, or spreads quickly. It may also describe treatment that is more severe or intense than usual.

**aggressive lymphoma :** A type of lymphoma that grows and spreads quickly and has severe symptoms. Also called high-grade lymphoma and intermediate-grade lymphoma.

**Aging:** The change in physical and chemical properties of an elastomer that has been exposed to a particular environment over time The change of a material with time under defined environmental conditions, leading to improvement or deterioration of properties. OR The change of a material with time under defined environmental conditions, leading to improvement or deterioration of properties. OR The change of a material with time under defined environmental conditions, leading to improvement or deterioration of properties. OR The physical and/or chemical change of a material with respect to time, under defined environmental conditions, leading to improvement or deterioration of properties. The effect of exposing plastic to a specific environment for an extended period of time. OR The change of a material with time under defined environmental conditions, leading to improvement or deterioration of properties. OR The process of, or the results of, exposure of plastics to natural or artificial environmental conditions for a prolonged period of time.

**Aging, Accelerated:** Tests run on destructive influence of light, oxygen, heat and ozone in as short a period as possible

**agitation :** A condition in which a person is unable to relax and be still. The person may be very tense and irritable, and become easily annoyed by small things. He or she may be eager to have an argument, and be unwilling to work with caregivers to make the situation better.

**aglatimagene besadenovec:** An adenoviral vector engineered to express the herpes simplex virus thymidine kinase (HSV-tk) gene, which, when administered in conjunction with a synthetic acyclic guanosine analogue, possesses potential antineoplastic activity. Aglatimagene besadenovec is transduced into tumor cells, sensitizing tumor cells that overexpress HSV-tk to synthetic acyclic guanosine analogues. Subsequently, a low dose of a synthetic acyclic guanosine analogue such as valacyclovir (VCV) or ganciclovir (GCV) is given, which may preferentially kill tumor cells containing the adenoviral vector and overexpressing HSV-tk. Release of tumor-associated antigens (TAAs) by dying tumor cells may then stimulate an antitumor cytotoxic T lymphocyte (CTL) response.

**agnogenic myeloid metaplasia :** A progressive, chronic disease in which the bone marrow is replaced by fibrous tissue and blood is made in organs such as the liver and the spleen, instead of in the bone marrow. This disease is marked by an enlarged spleen and progressive anemia. Also called chronic idiopathic myelofibrosis, idiopathic myelofibrosis, myelosclerosis with myeloid metaplasia, and primary myelofibrosis.

**Agonist:** A drug or an endogenous ligand that can bind to a receptor and elicit a biological response characteristic of the receptor. Note the existence of partial agonists, inverse agonists, and superagonists. Or A drug or substance that binds to a receptor inside a cell or on its surface and causes the same action as the substance that normally binds to the receptor.

**agonistic anti-CD40 monoclonal antibody ADC-1013:** A human immunoglobulin (Ig) G1 monoclonal antibody directed against the cell surface receptor CD40 with potential immunostimulatory and antineoplastic activities. Upon intratumoral administration, agonistic anti-CD40 monoclonal antibody ADC-1013 binds to CD40 on antigen-presenting dendritic cells, which leads to the activation and proliferation of effector and memory T-cells, and enhances the immune response against tumor cells. In addition, this agent binds to the CD40 antigen present on the surfaces of tumor cells, which induces antibody-dependent cytotoxicity (ADCC). This eventually inhibits the proliferation of CD40-expressing

tumor cells. CD40, a stimulatory receptor and a member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on various immune cells, such as macrophages, dendritic cells and various tumor cell types; it plays a key role in the activation of the immune system.

**agonistic anti-OX40 monoclonal antibody MEDI6383:** An agonistic monoclonal antibody against receptor OX40 (CD134), with potential immunostimulatory activity. Upon administration, anti-OX40 monoclonal antibody MEDI6383 selectively binds to and activates the OX40 receptor, by mimicking the action of endogenous OX40 ligand (OX40L). OX40 receptor activation induces proliferation of memory and effector T lymphocytes. In the presence of tumor-associated antigens (TAAs), this may promote an immune response against the TAA-expressing tumor cells. OX40, a cell surface glycoprotein and member of the tumor necrosis factor (TNF) receptor family, is expressed on T-lymphocytes and provides a co-stimulatory signal for the proliferation and survival of activated T cells. Check for active clinical trials using this agent.

**agonistic anti-OX40 monoclonal antibody MEDI6469:** An agonistic monoclonal antibody against the co-stimulatory receptor OX40 (CD134), with potential immunostimulatory and antineoplastic activities. Upon intravenous administration, anti-OX40 monoclonal antibody MEDI6469 selectively binds to and activates OX40. OX40 activation induces proliferation of effector T-lymphocytes. In the presence of tumor-associated antigens (TAAs), this may promote an immune response against the TAA-expressing tumor cells. OX40, a cell surface glycoprotein and member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on T-lymphocytes and provides a co-stimulatory signal for the proliferation and survival of activated T-cells.

**agoraphobia :** An intense fear of being in open places or in situations where it may be hard to escape, or where help may not be available. People with agoraphobia are usually very anxious about having a panic attack in a public place. They may also have a fear of being alone or have trouble leaving their home. They usually avoid elevators, bridges, and public places. Agoraphobia is a type of phobia and a type of anxiety disorder.

**agranulocyte :** A type of white blood cell. Monocytes and lymphocytes are agranulocytes.

**Agreement State:** A State that has signed an agreement with the NRC authorizing the State to regulate certain uses of radioactive materials within the State. For additional detail, see Agreement State Program and Map and State Regulations.

**Agriflu:** (Other name for: trivalent influenza vaccine)

**Agrylin:** (Other name for: anagrelide hydrochloride)

**Agung:** Active volcano 10,380 ft (3,141 m) high in Bali, Indonesia. Last eruption was in 1964.

**AGUS:** A term that has been used to describe abnormal cells that come from glands in the walls of the cervix (the lower, narrow end of the uterus). These abnormal cells are found in a small number of Pap smears (a procedure used to detect cervical cancer) and may be a sign of more serious lesions or cancer. The term used now is atypical glandular cells. Also called atypical glandular cells of uncertain significance and atypical glandular cells of undetermined significance.

**AHA:** One of a group of substances that are found in several types of fruit and in milk. They are used in skin care products to reduce wrinkles and soften the skin. Examples of AHAs are glycolic acid, lactic acid, and citric acid. Also called alpha hydroxyl acid and fruit acid.

**Aicardi syndrome :** A rare, genetic disorder marked by a lack of tissue connecting the left and right halves of the brain, seizures, lesions on the back of the eye (retina), and other brain and eye abnormalities. Other problems may include unusual facial features, defects of the hands, spine, and ribs, and developmental and gastrointestinal problems. When Aicardi syndrome occurs, it is almost always in a newborn girl. People with Aicardi syndrome have an increased risk of certain tumors, such as hepatoblastoma (a type of liver cancer) and choroid plexus tumors (a rare tumor that forms in the brain).

**AIDS :** A disease caused by the human immunodeficiency virus (HIV). People with AIDS are at an increased risk for developing certain cancers and for infections that usually occur only in individuals with a weak immune system. Also called acquired immunodeficiency syndrome.

**AIDS-related cancer :** Types of cancer that are more likely to occur in people who are infected with the human immunodeficiency virus (HIV). The most common AIDS-related cancers are Kaposi sarcoma, non-Hodgkin

lymphoma, and cervical cancer. People infected with HIV who develop any one of these cancers are considered to have AIDS. Other less common types of AIDS-related cancers include cancers of the mouth, throat, liver, lung, colon, rectum, anus, testes, and skin.

**AIM:** Atoms-in-molecules. An analysis method based upon the shape of the total electron density; used to define bonds, atoms, etc. (5). Atomic charges computed using this theory are often quite different from those from other analyses (e.g., from Mulliken populations). Such charges are probably the most justifiable theoretically, but meet some resistance because the values obtained may be quite different from those from older theories (6).

**AIM2(-1)/HT001(-1)/TAF1B(-1) frameshift peptide vaccine:** A cancer vaccine containing the three frame shift peptides (FSP) AIM2(-1), HT001(-1) and TAF1B(-1), with potential immunomodulating activity. Upon administration, the AIM2(-1)/HT001(-1)/TAF1B(-1) FSP vaccine may induce an immune response against microsatellite instability (MSI) colorectal cancer-associated antigens. Frame shift mutations of AIM2 (absent in melanoma 2, an interferon-inducible protein), HT001 (asteroid homolog 1 or ASTE1, with an unknown function) and TAF1B (TATA box-binding protein-associated RNA polymerase I B, a transcription factor) are seen in MSI-positive colorectal cancers and may be associated with malignant transformation, tumor progression and the presence of tumor-infiltrating lymphocytes. These FSPs all have one-base deletions.

**Air:** The mixture of gases which we breathe! Most of the air (almost 4/5) is nitrogen with oxygen making up 1/5 and small amounts of argon (1%) and other gases in even smaller amounts. Carbon dioxide is only present in very small quantities. Water vapour is present in varying amounts depending on where you are in the world.

**Air Cure:** One method by which liquid coatings cure to a dry film. Oxygen from the air enters the film and cross-links the resin molecules. Also called "Air Dry" and "Oxidizing."

**AIR GAP:** In extrusion coating, the distance from the die opening to the tip formed by the pressure roll and chill roll. OR In extrusion coating, the distance from the die opening to the nip formed by the pressure roll and the chill roll.

**air mass:** large mass of air at the surface of the Earth with similar characteristics of temperature and humidity throughout the mass.

**Air pollutants:** Substances directly produced by a process, such as ash from a volcanic eruption or carbon monoxide gas from motor vehicle exhaust

**air pollution:** The presence of substances in the atmosphere resulting either from human activity or natural processes, present in sufficient concentration, for a sufficient time and under circumstances such as to interfere with the comfort, health, or welfare of persons or the environment (ISO, 1980). OR Substances that have been released into the air that are not natural. In the past, people have not been very concerned about waste being put into the atmosphere. Many thought that a tall chimney would remove the problem. Nowadays we are much more careful and take more care to dispose of problem gases, smoke and dusts in a more responsible way.

**Air Ring:** A circular manifold used to distribute an even flow of the cooling medium, air, onto a hollow tubular form passing through the center of the ring. In blown tubing, the air cools the tubing uniformly to provide uniform film thickness. OR In blown film extrusion, a circular manifold mounted above the extrusion die used to distribute an even flow of air against a blown film bubble.

**Air sampling:** The collection of samples of air to measure the radioactivity or to detect the presence of radioactive material, particulate matter, or chemical pollutants in the air. For related information, see Detecting Radiation and Regulatory Guide 8.25 , "Air Sampling in the Workplace."

**Air Trap:** Surface markings or depressions due to air caught between the material being cured and the mold surface

**Air-assist Forming:** A method of thermoforming in which a flow of air pressure is employed to partially pre-form the sheet immediately prior to the final pull down onto the mold using vacuum.

**Air-drying:** A description used for paints that dry solely or mainly during exposure to air at normal temperatures, as distinct from those that require heat-treatment (stoving and force-dried paints) or those that set independently of the surrounding atmosphere (catalysed or "accelerated" paints).

**airborne fraction:** The portion of CO<sub>2</sub> released from all energy consumption and land use activities that remains in the atmosphere as opposed to the amounts absorbed by plants and oceans. How the world's total carbon is partitioned among the oceanic, terrestrial, and atmospheric pools is determined by complex biogeochemical and climatological interactions.

**airborne particulates:** Total suspended matter found in the atmosphere as solid pieces or liquid droplets. Airborne particulates include windblown dust, emissions from industrial processes, smoke from the burning of wood and coal, and the exhaust of motor vehicles.

**Airborne radioactivity area:** As defined in Title 10, Section 20.1003, of the Code of Federal Regulations (10 CFR 20.1003), the airborne radioactivity area is a room, enclosure, or area in which airborne radioactive materials, composed wholly or partially of licensed material, exist in concentrations that (1) exceed the derived air concentration limits (DACs), or (2) would result in an individual present in the area without respiratory protection exceeding, during those hours, 0.6 percent of the annual limit on intake (ALI) or 12 DAC-hours. For additional detail, see Appendix B to 10 CFR Part 20, "Standards for Protection Against Radiation," and Information for Radiation Workers.

**AIRLESS SPRAY:** A spray that increases the fluid pressure of paint by means of a pump that causes atomization with air, resulting in higher film build and little or no over-spray.

**airmass:** A widespread body of air in the atmosphere that gains certain meteorological or polluted characteristics while set in one location. The characteristics can change as it moves away.

**AIS:** A condition in which abnormal cells are found in the glandular tissue that lines certain internal organs, such as the uterus, cervix, lung, pancreas, and colon. AIS, which occurs most often in the cervix, may become cancer and spread to nearby normal tissue. Also called adenocarcinoma in situ.

**Aisle:** The side portions of a church parallel to the nave. Any passage way divided off by pillars.

**AJCC staging system :** A system to describe the amount and spread of cancer in a patient's body, using TNM. T describes the size of the tumor and any spread of cancer into nearby tissue; N describes spread of cancer to nearby lymph nodes; and M describes metastasis (spread of cancer to other

parts of the body). This system was created and is updated by the American Joint Committee on Cancer (AJCC) and the International Union Against Cancer (UICC). The AJCC staging system is used to describe most types of cancer. Also called TNM staging system.

**AK 3012:** A proprietary topical formulation. Upon subcutaneous administration, the active ingredient in AK 3012 may inhibit actinic keratosis. Check for active clinical trials using this agent.

**Aknoten:** (Other name for: tretinoin)

**Akt:** A group of enzymes involved in several processes related to cell growth and survival. Akt enzymes help to transfer signals inside cells. An Akt enzyme is a type of serine/threonine protein kinase. Also called protein kinase B.

**AKT 1/2 inhibitor BAY1125976:** An orally bioavailable inhibitor of the serine/threonine protein kinase AKT (protein kinase B) isoforms 1 and 2 (AKT1/2) with potential antineoplastic activity. AKT1/2 inhibitor BAY1125976 selectively binds to and inhibits the phosphorylation and activity of AKT1/2 in a non-ATP competitive manner, which may result in the inhibition of the phosphatidylinositol 3 (PI3K)/AKT/mammalian target of rapamycin (mTOR) signaling pathway. This may lead to both the reduction of cell proliferation and the induction of cell apoptosis in AKT-overexpressing tumor cells. The AKT signaling pathway is often deregulated in cancer and is associated with tumor cell proliferation, survival and migration.

**Akt antisense oligonucleotide RX-0201:** A 20-mer antisense oligodeoxynucleotide (ODN) against the proto-oncogene Akt with potential antineoplastic activity. Akt-1 antisense oligonucleotide RX-0201 binds to Akt-1 mRNA, inhibiting translation of the transcript; suppression of Akt-1 expression may result in the inhibition of cellular proliferation and the induction of apoptosis in tumor cells that overexpress Akt-1. Akt-1 is a serine-threonine protein kinase that stimulates proliferation and inhibits apoptosis of tumor cells.

**AKT inhibitor ARQ 092:** An orally bioavailable inhibitor of the serine/threonine protein kinase AKT (protein kinase B) with potential antineoplastic activity. AKT inhibitor ARQ 092 binds to and inhibits the activity of AKT in a non-ATP competitive manner, which may result in the inhibition of the PI3K/AKT signaling pathway. This may lead to the

reduction in tumor cell proliferation and the induction of tumor cell apoptosis. The AKT signaling pathway is often deregulated in cancer and is associated with tumor cell proliferation, survival and migration. Check for active clinical trials using this agent.

**Akt inhibitor AZD5363:** A novel pyrrolopyrimidine derivative, and an orally available inhibitor of the serine/threonine protein kinase AKT (protein kinase B) with potential antineoplastic activity. AKT inhibitor AZD5363 binds to and inhibits all AKT isoforms. Inhibition of AKT prevents the phosphorylation of AKT substrates that mediate cellular processes, such as cell division, apoptosis, and glucose and fatty acid metabolism. A wide range of solid and hematological malignancies show dysregulated PI3K/AKT/mTOR signaling due to mutations in multiple signaling components. By targeting AKT, the key node in the PI3K/AKT signaling network, this agent may be used as monotherapy or combination therapy for a variety of human cancers.

**Akt inhibitor GSK2141795:** An orally bioavailable inhibitor of the serine/threonine protein kinase Akt (protein kinase B) with potential antineoplastic activity. Akt inhibitor GSK2141795 binds to and inhibits the activity of Akt, which may result in inhibition of the PI3K/Akt signaling pathway and tumor cell proliferation and the induction of tumor cell apoptosis. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**Akt inhibitor LY2780301:** An orally bioavailable inhibitor of the serine/threonine protein kinase Akt (protein kinase B) with potential antineoplastic activity. Akt inhibitor LY2780301 binds to and inhibits the activity of Akt, which may result in inhibition of the PI3K/Akt signaling pathway, thereby leading to inhibition of cell proliferation and the induction of apoptosis in tumor cells. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**Akt inhibitor MK2206:** An orally bioavailable allosteric inhibitor of the serine/threonine protein kinase Akt (protein kinase B) with potential antineoplastic activity. Akt inhibitor MK2206 binds to and inhibits the activity of Akt in a non-ATP competitive manner, which may result in the

inhibition of the PI3K/Akt signaling pathway and tumor cell proliferation and the induction of tumor cell apoptosis. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**Akt inhibitor SR13668:** An orally bioavailable indole-3-carbinol (I3C) analogue inhibitor of the serine/threonine protein kinase Akt (protein kinase B) with potential antineoplastic and antiangiogenic activities. Akt inhibitor SR13668 binds to and inhibits the activity of Akt, which may result in inhibition of the PI3K/Akt signaling pathway and tumor cell proliferation, and the induction of tumor cell apoptosis. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**Akt/ERK inhibitor ONC201:** A water soluble, orally bioavailable inhibitor of the serine/threonine protein kinase Akt (protein kinase B) and extracellular signal-regulated kinase (ERK), with potential antineoplastic activity. Upon administration, Akt/ERK inhibitor ONC201 binds to and inhibits the activity of Akt and ERK, which may result in inhibition of the phosphatidylinositol 3-kinase (PI3K)/Akt signal transduction pathway as well as the mitogen-activated protein kinase (MAPK)/ERK-mediated pathway. This may lead to the induction of tumor cell apoptosis mediated by tumor necrosis factor (TNF)-related apoptosis-inducing ligand (TRAIL)/TRAIL death receptor type 5 (DR5) signaling in AKT/ERK-overexpressing tumor cells. The PI3K/Akt signaling pathway and MAPK/ERK pathway are upregulated in a variety of tumor cell types and play a key role in tumor cell proliferation, differentiation and survival by inhibiting apoptosis. In addition, ONC201 is able to cross the blood-brain barrier.

**Akti-1/2 inhibitor treated tumor infiltrating lymphocytes:** Autologous tumor infiltrating lymphocytes (TILs) harvested directly from the infiltrate of a patient's tumor and treated with an inhibitor of the serine/threonine kinases Akt-1 and -2 (Akti-1/2) during ex vivo expansion, with potential antineoplastic activity. Upon reintroduction into the patient, the Akti-1/2-treated TILs recognize and kill cancer cells. Akt inhibition promotes the

immunologic memory of the TILs and enhances their expansion, in vivo long-term persistence and antitumor activity.

**Akubras:** We thought we would put this in because we have met people from New Zealand who didn't know what they were and understand that there are a few New Zealanders in New South Wales. Akubras are a kind of you beaut hat that all real Ostrayans (e.g., Greg Norman) wear.

**Akynzeo :** (Other name for: netupitant and palonosetron hydrochloride)  
OR A combination of two drugs used to prevent nausea and vomiting caused by chemotherapy. It is a combination of netupitant and palonosetron hydrochloride. Akynzeo blocks the action of chemicals in the brain that may trigger nausea and vomiting. Akynzeo is a type of antiemetic. Also called netupitant and palonosetron hydrochloride.

**Alagille syndrome :** A rare disorder in which there are defects in the small tubes that carry bile (fluid that helps digest fat) out of the liver. These small tubes may be narrow or have an abnormal shape, or there may be fewer of them than normal. This can cause bile to build up in the liver, which may lead to cirrhosis (scarring of the liver) and liver damage. Alagille syndrome can also affect other parts of the body, including the heart, kidneys, blood vessels, eyes, face, and spine. It usually occurs in infants and children and may be inherited.

**alanine:** A naturally occurring aliphatic amino acid which is required for protein synthesis but is not essential in the diet. Beta-alanine ( $\text{NH}_2\text{CH}_2\text{CH}_2\text{COOH}$ ) also occurs naturally.

**alanine aminopeptidase :** An enzyme that is normally found in healthy kidneys. It may be found at high levels in the urine when there are kidney problems. It is used as a biomarker to detect damage to the kidneys caused by drugs and other agents. It may also be used to diagnose certain kidney and liver disorders. Also called AAP.

**alanine transferase :** An enzyme found in the liver and other tissues. A high level of alanine transferase released into the blood may be a sign of liver damage, cancer, or other diseases. Also called serum glutamate pyruvate transaminase and SGPT.

**alanosine :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called antimetabolites. Also called SDX-102.

**ALARA:** As defined in Title 10, Section 20.1003, of the Code of Federal Regulations (10 CFR 20.1003), ALARA is an acronym for "as low as (is) reasonably achievable," which means making every reasonable effort to maintain exposures to ionizing radiation as far below the dose limits as practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest. For additional detail, see Dose Limits for Radiation Workers and Dose Limits for Radiation Workers.

**albedo:** The fraction of the total solar radiation incident on a body that is reflected by it.

**albinism :** A group of genetic conditions marked by little or none of the pigment melanin in the skin, hair, and/or eyes. People with albinism may have vision problems and white or yellow hair; reddish, violet, blue or brown eyes; and pale skin.

**albumin :** A type of protein found in blood, egg white, milk, and other substances.

**albuterol sulfate:** The sulfate salt of the short-acting sympathomimetic agent albuterol, a 1:1 racemic mixture of (R)-albuterol and (S)-albuterol with bronchodilator activity. Albuterol stimulates beta<sub>2</sub>-adrenergic receptors in the lungs, thereby activating the enzyme adenylate cyclase that catalyzes the conversion of ATP to cyclic-3',5'-adenosine monophosphate (cAMP). Increased cAMP concentrations relax bronchial smooth muscle, relieve bronchospasms, and reduce inflammatory cell mediator release, especially from mast cells. To a lesser extent albuterol stimulates beta<sub>1</sub>-adrenergic receptors, thereby increasing the force and rate of myocardial contraction.

**Alcaptonuria:** A relatively harmless hereditary disorder resulting from the aberrant breakdown of tyrosine and phenylalanine.

**ALCAR :** A form of the natural substance carnitine that is being studied as a way to prevent tissue damage caused by chemotherapy. Carnitine is made in muscle and liver tissue and is found in certain foods, such as meat, poultry, fish, and some dairy products. It is used by many cells in the body

to make energy from fat. Also called acetyl-L-carnitine and acetyl-L-carnitine hydrochloride.

**Alchemy:** Alchemy is an ancient, non-scientific form of chemistry. In the middle ages, alchemists were people who tried to turn one element into another (usually lead (Pb) into gold (Au)).

**ALCL:** An aggressive (fast-growing) type of non-Hodgkin lymphoma that is usually of the T-cell type. The cancer cells express a marker called CD30 or Ki-1 on the surface, and may appear in the lymph nodes, skin, bones, soft tissues, lungs, or liver. Also called anaplastic large cell lymphoma.

**alcogel:** A gel formed by the coagulation of a sol in which the liquid is alcohol; at the gel point, the mixture forms a rigid substance that can stand on its own. The liquid and solid parts of an alcogel occupy the same volume.

**Alcohol:** A molecule with a hydroxyl group attached to a carbon atom. OR an organic chemical that contains an —OH group. OR "Any chemical compound where the hydroxy functional group -O-H is bound to a carbon skeleton. You are probably most familiar with the diols (compounds with two hydroxy groups), which are used in the manufacture of polyesters, and the phenols, where an hydroxy group is bound to an arene. OR Any class of organic compounds containing the hydroxyl group, OH. Specifically, the term is applied to ethyl alcohol (C<sub>2</sub>H<sub>5</sub>OH). OR A class of organic compounds which has an OH group covalently bonded to a carbon atom.

**alcohol :** A chemical substance found in drinks such as beer, wine, and liquor. It is also found in some medicines, mouthwashes, household products, and essential oils (scented liquid taken from certain plants). It is made by a chemical process called fermentation that uses sugars and yeast. There are different types of alcohol. The type used to make alcoholic drinks is called ethyl alcohol (ethanol). Drinking regular or large amounts of alcohol may increase the risk of certain types of cancer, such as cancer of the mouth, throat, esophagus, breast, liver, colon, and rectum.

**alcohol ablation :** An injection of ethanol (alcohol) through the skin directly into a tumor to kill cancer cells. Ultrasound or a CT scan is used to guide the needle into the tumor. Also called ethanol ablation, PEI, and percutaneous ethanol injection.

**alcohol dependence :** A chronic disease in which a person craves drinks that contain alcohol and is unable to control his or her drinking. A person

with this disease also needs to drink greater amounts to get the same effect and has withdrawal symptoms after stopping alcohol use. Alcohol dependence affects physical and mental health, and can cause problems with family, friends, and work. Regular heavy alcohol intake increases the risk of several types of cancer. Also called alcoholism.

**Alcoholic fermentation:** The anaerobic conversion of glucose into ethanol with the concomitant production of ATP.

**alcoholism :** A chronic disease in which a person craves drinks that contain alcohol and is unable to control his or her drinking. A person with this disease also needs to drink greater amounts to get the same effect and has withdrawal symptoms after stopping alcohol use. Alcoholism affects physical and mental health, and can cause problems with family, friends, and work. Regular heavy alcohol intake increases the risk of several types of cancer. Also called alcohol dependence.

**alcohols:** The alcohols are a family of organic compounds containing the  $-OH$  (hydroxide) grouping.

**Alcove:** A recess or niche; sometimes flanked by columns.

**Aldactone:** (Other name for: spironolactone)

**Aldara :** (Other name for: imiquimod) OR A drug used to treat early basal cell skin cancer and certain other skin conditions. It is being studied in the treatment of other types of cancer. Aldara is a type of biological response modifier. Also called imiquimod.

**Aldehyde:** Any chemical compound containing the functional group  $-C(O)H$ . Acrolein, the simplest aldehyde that is also a monomer capable of undergoing addition polymerisation, is responsible for the distinctive smell of burning fat. Here is a picture: OR an organic chemical that contains a  $-CHO$  group. Water addition to terminal alkynes forms aldehydes. OR A molecule containing a doubly bonded oxygen and a hydrogen attached to the same carbon atom. OR An aldehyde is an organic compound with a carbon bound to a  $-(C=O)-H$  group. Examples are formaldehyde ( $HCHO$ ), acetaldehyde,  $CH_3CHO$ , and benzaldehyde,  $C_6H_5CHO$ .

**aldehyde :** A type of chemical substance made from alcohol. Aldehydes are found in essential oils (scented liquid taken from plants).

**aldesleukin:** A drug used to treat some types of cancer. It is a form of interleukin-2, a cytokine made by leukocytes (white blood cells), that is

made in the laboratory. Aldesleukin increases the activity and growth of white blood cells called T lymphocytes and B lymphocytes. It is a type of biological response modifier. Also called Proleukin and recombinant human interleukin-2. OR A recombinant analog of the endogenous cytokine interleukin-2 (IL-2) with immunoregulatory and antineoplastic activities. Aldesleukin binds to and activates the IL-2 receptor, followed by heterodimerization of the cytoplasmic domains of the IL-2R beta and gamma(c) chains; activation of the tyrosine kinase Jak3; and phosphorylation of tyrosine residues on the IL-2R beta chain, resulting in an activated receptor complex. Various cytoplasmic signaling molecules are recruited to the activated receptor complex and become substrates for regulatory enzymes that are associated with the receptor complex. This agent enhances lymphocyte mitogenesis; stimulates long-term growth of human IL-2 dependent cell lines; enhances lymphocyte cytotoxicity; induces lymphokine-activated killer (LAK) cell and natural killer (NK) cell activities; and induces expression of interferon-gamma. Aldesleukin may induce T cell-mediated tumor regression in some tumor types.

**Aldol condensation:** The combination of two carbonyl compounds (e.g., an aldehyde and a ketone) to form a  $\beta$ -hydroxycarbonyl compound, or aldol.

**Aldose:** A monosaccharide whose C-1 carbon atom contains an aldehyde group.

**aldose:** A simple sugar in which the carbonyl carbon atom is an aldehyde; that is, the carbonyl carbon is at one end of the carbon chain.

**aldosterone :** A steroid hormone made by the adrenal cortex (the outer layer of the adrenal gland). It helps control the balance of water and salts in the kidney by keeping sodium in and releasing potassium from the body. Too much aldosterone can cause high blood pressure and a build-up of fluid in body tissues. Aldosterone is a type of mineralocorticoid hormone.

**aldoxorubicin:** A 6-maleimidocaproyl hydrazone derivative prodrug of the anthracycline antibiotic doxorubicin (DOXO-EMCH) with antineoplastic activity. Following intravenous administration, aldoxorubicin binds selectively to the cysteine-34 position of albumin via its maleimide moiety. Doxorubicin is released from the albumin carrier after cleavage of the acid-sensitive hydrazone linker within the acidic environment of tumors and, once located intracellularly, intercalates DNA, inhibits DNA synthesis, and

induces apoptosis. Albumin tends to accumulate in solid tumors as a result of high metabolic turnover, rapid angiogenesis, hypervascularity, and impaired lymphatic drainage. Because of passive accumulation within tumors, this agent may improve the therapeutic effects of doxorubicin while minimizing systemic toxicity.

**Aldrich syndrome :** An inherited immune disorder that occurs in young boys. It causes eczema (a type of skin inflammation), a decrease in the number of platelets (blood cells that help prevent bleeding), and frequent bacterial infections. People with Aldrich syndrome are at increased risk of developing leukemia and lymphoma. Also called Wiskott-Aldrich syndrome.

**Alecensa :** (Other name for: alectinib) OR A drug used to treat non-small cell lung cancer that has spread to other parts of the body and has a mutated (changed) form of a gene called anaplastic lymphoma kinase (ALK). It is used in patients whose cancer has gotten worse after treatment with or who cannot receive crizotinib (a type of anticancer drug). Alecensa blocks the protein made by the mutated ALK gene. Blocking this protein may stop the growth and spread of cancer cells. Alecensa is a type of tyrosine kinase inhibitor. Also called alectinib.

**alectinib:** An orally available inhibitor of the receptor tyrosine kinase anaplastic lymphoma kinase (ALK) with antineoplastic activity. Upon administration, alectinib binds to and inhibits ALK kinase, ALK fusion proteins as well as the gatekeeper mutation ALK L1196M known as one of the mechanisms of acquired resistance to small-molecule kinase inhibitors. The inhibition leads to disruption of ALK-mediated signaling and eventually inhibits tumor cell growth in ALK-overexpressing tumor cells. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development. ALK dysregulation and gene rearrangements are associated with a series of tumors. OR A drug used to treat non-small cell lung cancer that has spread to other parts of the body and has a mutated (changed) form of a gene called anaplastic lymphoma kinase (ALK). It is used in patients whose cancer has gotten worse after treatment with or who cannot receive crizotinib (a type of anticancer drug). Alectinib blocks the protein made by the mutated ALK gene. Blocking this protein may stop the growth and spread of cancer cells. Alectinib is a type of tyrosine kinase inhibitor. Also called Alecensa.

**alefacept:** A drug that is used to treat certain skin conditions and is being studied in the treatment of cutaneous (skin-related) T-cell cancer and T-cell non-Hodgkin lymphoma. Alefacept is made by combining part of an antibody with a protein that blocks the growth some types of T cells. It is a type of fusion protein and a type of immunosuppressant. Also called Amevive. OR A recombinant dimeric fusion protein consisting of the extracellular CD2-binding domain of the human leukocyte function-associated antigen 3 (LFA-3; CD58) linked to the Fc portion of human immunoglobulin G1 (IgG1) with potential immunosuppressive activity. Alefacept binds to the CD2 receptor expressed on the majority of T lymphocytes, blocking the binding of endogenous LFA-3, located on antigen-presenting cells (APCs), to the CD2 receptor; the activation and proliferation of T lymphocytes in response to LFA-3 binding is thus inhibited. In addition, binding of the IgG1 moiety of this agent to the Fc gamma receptor on the surface of natural killer (NK) cells may bridge NK cells and target T lymphocytes, initiating NK cell-mediated apoptosis of T lymphocytes.

**alemtuzumab:** A recombinant DNA-derived humanized monoclonal antibody directed against the cell surface glycoprotein CD52. Alemtuzumab is an IgG1 kappa with human variable framework and constant regions, and complementarity-determining regions derived from a rat monoclonal antibody. This agent selectively binds to CD52, thereby triggering a host immune response that results in lysis of CD52 + cells. CD52 is a glycoprotein expressed on the surface of essentially all normal and malignant B and T cells, a majority of monocytes, macrophages and natural killer (NK) cells, a subpopulation of granulocytes, and tissues of the male reproductive system. or A drug used to treat B-cell chronic lymphocytic leukemia. It is also being studied in the treatment of other types of cancer. Alemtuzumab binds to a protein called CD52, which is found on some types of immune cells and cancer cells. This may help the immune system kill cancer cells. Alemtuzumab is a type of monoclonal antibody. Also called Campath.

**alendronate sodium:** The sodium salt of alendronate, a second generation bisphosphonate and synthetic analog of pyrophosphate with bone anti-resorption activity. Alendronate sodium binds to and inhibits the activity of geranyltranstransferase (farnesyl pyrophosphate synthetase), an enzyme involved in terpenoid biosynthesis. Inhibition of this enzyme prevents the

biosynthesis of isoprenoid lipids (FPP and GGPP) that are donor substrates of farnesylation and geranylgeranylation during the post-translational modification of small GTPase signalling proteins, which is important in the process of osteoclast turnover. As a result, osteoclast activity is inhibited and bone resorption and turnover are reduced. Check for active clinical trials using this agent. OR A drug used to treat certain bone conditions, such as osteoporosis and Paget disease of the bone. It is also being studied in the treatment of hypercalcemia (high levels of calcium in the blood) and bone pain caused by cancer. Alendronate sodium slows the breakdown of bone and prevents the loss of calcium. It is a type of bisphosphonate. Also called Fosamax.

**Alfenta:** (Other name for: alfentanil hydrochloride)

**alfentanil hydrochloride:** The hydrochloride salt of alfentanil, a synthetic short-acting opioid with analgesic and local anesthesia enhancing activity. Alfentanil hydrochloride primarily binds to mu-opioid receptor, a G-protein-coupled receptor, thereby mimicking the actions of morphine, the prototypical mu receptor agonist. This agent induces anti-nociception responses mediated through inhibiting the release of various neurotransmitters such as substance P, GABA, dopamine, acetylcholine and noradrenaline; in addition, the release of vasopressin, somatostatin, insulin and glucagon are also inhibited.

**Alferon:** (Other name for: recombinant interferon alpha-2a)

**Alferon N:** (Other name for: recombinant interferon alfa)

**Alfisols:** An order of soils with a medium-to-high base supply, horizons of clay accumulation, and gray-brown surface horizons.

**Alfred Nobel:** A Swedish inventor, businessman and famous posthumous philanthropist (1833-1896). He developed the mercury percussion detonator (1863) and numerous other advances in explosives technology to make blasting safer and easier. He made a lot of money, which he left in his will to provide prizes for people whose work had been of great benefit to humanity, and economists. See Nobel Prize.

**alfuzosin hydrochloride:** The hydrochloride salt of alfuzosin, a quinazoline compound with smooth muscle-relaxing activity. Alfuzosin selectively binds to and antagonizes post-synaptic alpha1-adrenoreceptors in smooth muscle of the prostate, bladder base, bladder neck, prostatic capsule, and prostatic urethra, initiating relaxation of smooth muscle and

resulting in improvement of urine flow and the symptoms of benign prostatic hyperplasia (BPH). This agent also blocks alpha1-adrenoreceptors in peripheral vascular smooth muscle, resulting in vasodilatation and a decrease in peripheral vascular resistance.

**algae:** a large number of photosynthetic organisms that are generally unicellular and not classified as plants. OR Simple rootless plants that grow in sunlit waters in relative proportion to the amounts of nutrients available. They are food for fish and small aquatic animals.

**algaecide:** chemical agent added to water to destroy algae.

**algal blooms:** Sudden spurts of algal growth that can indicate potentially hazardous changes in local water chemistry.

**algebraic equation:** A statement that two algebraic expressions are equal.

**algebraic expression:** A collection of numbers, variables, operations, and grouping symbols.

**algenpantucel-L:** A cancer vaccine comprised of irradiated allogeneic pancreatic cancer cells transfected to express murine alpha-1,3-galactosyltransferase with potential antitumor activity. Vaccination is associated with the expression of murine alpha-1,3-galactosyl (alpha-gal) carbohydrate residues on cell membrane glycoproteins and glycolipids of the vaccine pancreatic cancer cell allograft; murine alpha-gal epitopes, not present on human cells, then induce a hyperacute rejection of the vaccine pancreatic cancer cell allograft. The hyperacute rejection involves the binding of pre-existing human anti-alpha-gal antibodies (which naturally occur against gut flora) to murine alpha-gal epitopes, resulting in the rapid activation of antibody-dependent cell-mediated cytotoxicity (ADCC) towards allograft cells. The host immune system then attacks endogenous pancreatic cancer cells, resulting in ADCC towards endogenous pancreatic cancer cells.

**ALH:** A benign (not cancer) condition in which there are more cells than normal in the breast lobules and the cells look abnormal under a microscope. Having ALH increases the risk of breast cancer. Also called atypical lobular breast hyperplasia and atypical lobular hyperplasia.

**alicyclic compound:** an aliphatic cyclic hydrocarbon, which means that a compound contains a ring but not an aromatic ring.

**ALIMTA:** (Other name for: pemetrexed disodium)

**Alimta :** A drug used alone or with another drug to treat certain types of non-small cell lung cancer and malignant pleural mesothelioma. It is being studied in the treatment of other types of cancer. Alimta blocks DNA synthesis and may kill cancer cells. It is a type of folate antagonist. Also called LY231514 and pemetrexed disodium.

**Alinia:** (Other name for: nitazoxanide)

**Aliphatic:** derived from or related to fats and other derivatives of the paraffin hydrocarbons, including unsaturated compounds of the ethylene and acetylene series.

**aliphatic compound:** a straight- or branched-chain hydrocarbon; an alkane, alkene, or alkyne.

**aliquot:** A sample of precisely determined amount taken from a material.

**alisertib:** A second-generation, orally bioavailable, highly selective small molecule inhibitor of the serine/threonine protein kinase Aurora A kinase with potential antineoplastic activity. Alisertib binds to and inhibits Aurora A kinase, which may result in disruption of the assembly of the mitotic spindle apparatus, disruption of chromosome segregation, and inhibition of cell proliferation. Aurora A kinase localizes to the spindle poles and to spindle microtubules during mitosis, and is thought to regulate spindle assembly. Aberrant expression of Aurora kinases occurs in a wide variety of cancers, including colon and breast cancers.

**alitretinoin:** An orally- and topically-active naturally-occurring retinoic acid with antineoplastic, chemopreventive, teratogenic, and embryotoxic activities. Alitretinoin binds to and activates nuclear retinoic acid receptors (RAR) and retinoid X receptors (RXR); these activated receptors act as transcription factors, regulating gene expression that results in the inhibition of cell proliferation, induction of cell differentiation, and apoptosis of both normal cells and tumor cells.

**ALK gene :** A gene that makes a protein called anaplastic lymphoma kinase (ALK), which may be involved in cell growth. Mutated (changed) forms of the ALK gene and protein have been found in some types of cancer, including neuroblastoma, non-small cell lung cancer, and anaplastic large cell lymphoma. These changes may increase the growth of cancer cells. Checking for changes in the ALK gene in tumor tissue may help to plan cancer treatment. Also called anaplastic lymphoma kinase gene.

**ALK Inhibitor ASP3026:** An orally available, small molecule inhibitor of the receptor tyrosine kinase anaplastic lymphoma kinase (ALK), with potential antineoplastic activity. Upon oral administration, ASP3026 binds to and inhibits ALK tyrosine kinase, ALK fusion proteins and ALK point mutation variants. Inhibition of ALK leads to the disruption of ALK-mediated signaling and the inhibition of cell growth in ALK-expressing tumor cells. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development. ALK is not expressed in healthy adult human tissue but ALK dysregulation and gene rearrangements are associated with a series of tumors. Additionally, ALK mutations are associated with acquired resistance to small molecule tyrosine kinase inhibitors. Check for active clinical trials using this agent.

**ALK inhibitor RO5424802:** An orally available inhibitor of the receptor tyrosine kinase anaplastic lymphoma kinase (ALK) with antineoplastic activity. Upon administration, ALK inhibitor RO5424802 binds to and inhibits ALK kinase, which leads to a disruption of ALK-mediated signaling and eventually inhibits tumor cell growth in ALK-overexpressing tumor cells. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development. ALK dysregulation and gene rearrangements are associated with a series of tumors. Additionally, ALK mutations are associated with acquired resistance to small molecule tyrosine kinase inhibitors.

**ALK inhibitor X-396:** An orally available small molecule inhibitor of the receptor tyrosine kinase anaplastic lymphoma kinase (ALK) with potential antineoplastic activity. Upon oral administration, X-396 binds to and inhibits ALK kinase, ALK fusion proteins and ALK point mutation variants. Inhibition of ALK leads to the disruption of ALK-mediated signaling and eventually inhibits tumor cell growth in ALK-expressing tumor cells. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development. ALK is not expressed in healthy adult human tissue but ALK dysregulation and gene rearrangements are associated with a series of tumors; ALK mutations are associated with acquired resistance to small molecule tyrosine kinase inhibitors.

**ALK-FAK inhibitor CEP-37440:** An orally available dual kinase inhibitor of the receptor tyrosine kinase anaplastic lymphoma kinase (ALK) and focal adhesion kinase (FAK), with potential antineoplastic activity.

Upon administration, ALK-FAK inhibitor CEP-37440 selectively binds to and inhibits ALK kinase and FAK kinase. The inhibition leads to disruption of ALK- and FAK-mediated signal transduction pathways and eventually inhibits tumor cell growth in ALK- and FAK-overexpressing tumor cells. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development; its dysregulation and gene rearrangements are associated with a variety of tumors. The cytoplasmic tyrosine kinase FAK, a signal transducer for integrins, is upregulated and constitutively activated in various tumor types; it plays a key role in tumor cell migration, proliferation, survival, and tumor angiogenesis.

**ALK/FAK/Pyk2 inhibitor CT-707:** An orally available inhibitor of the receptor tyrosine kinase anaplastic lymphoma kinase (ALK), focal adhesion kinase (FAK) and proline-rich tyrosine kinase 2 (Pyk2), with potential antineoplastic activity. Upon administration, ALK/FAK/Pyk2 inhibitor CT-707 selectively binds to and inhibits ALK, FAK and Pyk2. The inhibition leads to disruption of ALK-, FAK- and Pyk2-mediated signal transduction pathways and eventually inhibits tumor cell growth in ALK-, FAK- and Pyk2-overexpressing tumor cells. Expression of these tyrosine kinases is dysregulated in various tumor types; they play a key role in tumor cell migration, proliferation, survival, and tumor angiogenesis.

**ALK/ROS1 inhibitor PF-06463922:** An orally available, ATP-competitive inhibitor of the receptor tyrosine kinases, anaplastic lymphoma kinase (ALK) and C-ros oncogene 1 (Ros1), with potential antineoplastic activity. Upon administration, ALK/ROS1 inhibitor PF-06463922 binds to and inhibits both ALK and ROS1 kinases. The kinase inhibition leads to disruption of ALK- and ROS1-mediated signaling and eventually inhibits tumor cell growth in ALK- and ROS1-overexpressing tumor cells. In addition, PF-06463922 is able to cross the blood brain barrier. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development; ALK dysregulation and gene rearrangements are associated with a series of tumors. ROS1, overexpressed in certain cancer cells, plays a key role in cell growth and survival of cancer cells.

**ALK/TRK inhibitor TSR-011:** An orally available inhibitor of both the receptor tyrosine kinase anaplastic lymphoma kinase (ALK) and the tropomyosin-related kinases (TRK) TRKA, TRKB, and TRKC, with potential antineoplastic activity. Upon administration, ALK/TRK inhibitor

TSR-011 binds to and inhibits both ALK and TRK kinases. The inhibition leads to disruption of ALK- and TRK-mediated signaling and impedes tumor cell growth in ALK/TRK-overexpressing tumor cells. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development; ALK dysregulation and gene rearrangements are associated with a series of tumors. TRK, a family of receptor tyrosine kinases activated by neurotrophins, is mutated in a variety of cancer cell types and plays an important role in tumor cell growth and survival.

**ALK5 inhibitor TEW-7197:** An orally bioavailable inhibitor of the serine/threonine kinase, transforming growth factor (TGF)-beta receptor type 1 (TGFBR1), also known as activin receptor-like kinase 5 (ALK5), with potential antineoplastic activity. Upon oral administration, ALK5 inhibitor TEW-7197 inhibits the activity of TGFBR1 and prevents TGF-beta/TGFBR1-mediated signaling. This suppresses tumor growth in TGFBR1-overexpressing tumor cells. TGFBR1, which is overexpressed in a variety of tumor cell types, plays a key role in tumor cell proliferation. Expression of TGF-beta promotes tumor cell proliferation, enhances the migration of tumor cells and suppresses the response of the host immune system to tumor cells.

**Alka Seltzer Gold:** (Other name for: sodium bicarbonate/potassium bicarbonate/anhydrous citric acid)

**Alkagin:** (Other name for: zinc oxide/aluminum starch octenylsuccinate/glycyrrheticin phytosome/vitamin E/botanical extracts-based skin protectant paste)

**alkali:** An alkali is a substance that dissolves in water to form a solution with a pH value greater than 7. Alkaline solutions contain an excess of hydroxide ions, OH<sup>-</sup>(aq).

**alkali :** A chemical that can dissolve in water, combine with acids to form salts, and make acids less acidic. Alkalis have a bitter taste and turn certain dyes blue. Some alkalis can help the body work the way it should. An example of an alkali is sodium hydroxide.

**alkali metal:** The Group 1 elements, lithium (Li), sodium (Na), potassium (K), rubidium (Rb), cesium (Cs), and francium (Fr) react with cold water to form strongly alkaline hydroxide solutions, and are referred to as "alkali metals". Hydrogen is not considered an alkali metal, despite its position on some periodic tables.

**alkali metals:** the column of elements from lithium to francium.

**alkali metals:** The alkali metals are the elements in Group 1 of the Periodic Table lithium, sodium, potassium, rubidium, caesium, and francium.

**Alkali resisting primer:** A paint used as a barrier to alkaline substances in the surface which would otherwise attack the paint film. Alkaline surfaces which are continually damp are not effectively sealed for long periods by this method.

**Alkali silica reaction (ASR):** ASR is a chemical combining of reactive silica from the concrete aggregate with the alkali from the cement paste in the presence of moisture. The result of the reaction is a gel, which can expand and may cause micro-cracks in the concrete.

**alkali soil:** a pedocal type of soil toxic to plant growth because of its high salt content.

**Alkalies:** compounds capable of neutralizing acids and usually characterized by an acrid taste. Can be mild like baking soda or highly caustic like lye.

**alkaline:** Describes an alkali (basic) or a solution that has excess of hydroxide ions. OR Forming or containing an alkali, and by extension, any base. Strictly speaking, an alkali is the hydroxide or carbonate salt of an element in the first two columns of the periodic table (those unstable alkali and alkaline earth metals things). OR Having a pH greater than 7.

**alkaline earth:** An oxide of an alkaline earth metal, which produces an alkaline solution in reaction with water. OR The Group 2 elements, beryllium (Be), magnesium (Mg), calcium (Ca), strontium (Sr), barium (Ba), and radium (Ra) form alkaline oxides and hydroxides and are called "alkaline earth metals". OR The alkaline earth metals are the elements in Group 2 of the Periodic Table beryllium, magnesium, calcium, strontium, barium, and radium. OR the column of elements from beryllium to radium.

**alkaline error:** A systematic error that occurs when glass electrodes are used to read the pH of an extremely alkaline solution; the electrode responds to sodium ions as though they were hydrogen ions, giving a pH reading that is consistently too low.

**Alkaline substance:** Chemical compounds in which the basic hydroxide (OH<sup>-</sup>) ion is united with a metallic ion, such as sodium hydroxide (NaOH)

or potassium hydroxide (KOH). These substances impart alkalinity to water and are employed for neutralization of acids. Lime is the most commonly used alkaline material in wastewater treatment.

**alkalinity:** A pressure- and temperature-independent property of seawater that determines in part the carbon content of seawater. Carbonate alkalinity is the sum of the concentration of bicarbonate plus two times the concentration of the carbonate ions. Total alkalinity is the amount of acid required to bring seawater to a pH at which all dissolved inorganic carbon becomes freely exchangeable. The alkalinity of the oceans is determined with potentiometric or normal titration techniques that detect and measure the presence of bicarbonate, carbonate, and borate ions. OR the capacity of water to neutralize acids, a property imparted by the water's content of carbonate, bicarbonate, hydroxide, and on occasion borate, silicate, and phosphate. It is expressed in milligrams per liter of equivalent calcium carbonate (mg/l CaCO<sub>3</sub>). OR A measure of a material's ability to neutralize acids. Alkalinity is usually determined using titration. or Refers to the amount of alkali. An alkali is a chemical that can dissolve in water, combine with acids to form salts, and make acids less acidic.

**alkalinization :** A process that lowers the amount of acid in a solution. In medicine, an alkali, such as sodium bicarbonate, may be given to patients to lower high levels of acid in the blood or urine that can be caused by certain medicines or conditions.

**alkaloid:** A class of bitter-tasting, basic organic compounds with nitrogen-containing rings. Alkaloids often have powerful effects on living things. Examples are cocaine, nicotine, strychnine, caffeine, and morphine. Or A member of a large group of substances found in plants and in some fungi. Alkaloids contain nitrogen and can be made in the laboratory. Nicotine, caffeine, codeine, and vincristine are alkaloids. Some alkaloids, such as vincristine, are used to treat cancer.

**Alkaloids:** A class of over 3,000 nitrogen-containing chemicals (such as caffeine and cocaine) that are produced by plants but have effects in humans and animals or Nitrogen-containing organic compounds of plant origin; often basic, and having intense biological activity.

**alkalosis:** A metabolic condition in which the capacity of the body to buffer OH<sup>-</sup> is diminished; usually accompanied by an increase in blood pH.

**alkane:** A saturated hydrocarbon with the general formula  $C_nH_{2n+2}$ . OR An alkane is a saturated hydrocarbon; that is, it contains only single covalent bonds. Their general formula is  $C_nH_{2n+2}$ . For example, ethane is  $C_2H_6$  and pentane is  $C_5H_{12}$ . OR Carbon compound containing only carbon and hydrogen, and single bonds only. OR a hydrocarbon without a double bond, triple bond, or ring structure. OR a hydrocarbon that contains only single covalent bonds. The alkane general formula is  $C_nH_{2n+2}$ . OR A series of organic compounds with general formula  $C_nH_{2n+2}$ . Alkane names end with -ane. Examples are propane (with  $n=3$ ) and octane (with  $n=8$ ). OR A hydrocarbon that has only single bonds. It is a saturated hydrocarbon.

**Alkanoic acid:** The proper IUPAC term for what we typically call carboxylic acids.

**ALKANOLAMINE:** An amine where some or all of the alkyl groups attached to the nitrogen contain hydroxyl functionality. For example; triethanolamine (TEA), monisopropanolamine (MIPA).

**alkene:** An alkene is an unsaturated hydrocarbon, that is a hydrocarbon whose molecules contain one or more double covalent bonds between its carbon atoms. OR Carbon compound containing carbon and hydrogen incorporating one or more double bonds. OR a hydrocarbon with one or more double bonds and no triple bond. OR a hydrocarbon that contains a carbon-carbon double bond. The alkene general formula is  $C_nH_{2n}$ . OR A compound that consists of only carbon and hydrogen, that contains at least one carbon-carbon double bond. Alkene names end with -ene. Examples are ethylene ( $CH_2=CH_2$ ); 1-propene ( $CH_2=CH_2CH_3$ ), and 2-octene ( $CH_3CH_2=CH(CH_2)_4CH_3$ ).

**Alkeran:** (Other name for: melphalan hydrochloride) or (Other name for: melphalan)

**Alkeran for Injection :** A drug used to treat multiple myeloma in patients who cannot take melphalan by mouth. It is also being studied in the treatment of other types of cancer. Alkeran for Injection may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called Evomela and melphalan hydrochloride.

**Alkeran Tablets :** A drug used to treat multiple myeloma. It is also used to treat ovarian epithelial cancer that cannot be removed by surgery. It is also being studied in the treatment of other types of cancer. Alkeran Tablets may

kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called melphalan.

**alkoxide:** An ionic compound formed by removal of hydrogen ions from the hydroxyl group in an alcohol using reactive metals, e. g. sodium. For example, potassium metal reacts with methanol (CH<sub>3</sub>OH) to produce potassium methoxide (KOCH<sub>3</sub>).

**alkoxide ion:** an anion formed by removing a proton from an alcohol; the RO<sup>-</sup> ion.

**alkoxy free radical:** a free radical formed by the homolytic cleavage of an alcohol —OH bond; the RO· free radical.

**Alkyd:** Synthetic resin modified with oil. Coating that contains alkyd resins in the binder. OR A type of "synthetic" resin that is built up from relatively simple non-resinous components. In practice an alkyd varnish is made by adding such components to a drying oil and treating to produce an "oil-modified alkyd varnish". This process is distinct from the traditional method in which a separate gum or resin is "cooked" with a drying oil to produce a varnish.

**Alkyd Resin:** Polyester resins made with some fatty acid as a modifier. OR a class of resins produced by condensation of a polybasic acid or anhydride and a polyhydric alcohol. OR Alkyd resins are polyesters modified by the addition of fatty acids. Alkyd (oil-based) paints are durable, provide gloss, have gloss retention, and are fast-drying, but they also contain and emit high levels of chemical vapors, including Volatile Organic Compounds (VOCs).

**Alkyl:** A general term for monovalent aliphatic hydrocarbon radicals. OR Composite material made up by blending polymers or copolymers with other polymers or elastomers under selected conditions, e.g., styrene-acrylonitrile copolymer resins blended with butadiene-acrylonitrile rubbers.

**alkyl:** A molecular fragment derived from an alkane by dropping a hydrogen atom from the formula. Examples are methyl (CH<sub>3</sub>) and ethyl (CH<sub>2</sub>CH<sub>3</sub>).

**alkyl group:** an alkane molecule from which a hydrogen atom has been removed. Alkyl groups are abbreviated as "R" in structural formulas.

**Alkyl Halide:** A carbon compound containing a covalent bond between a halogen (fluorine, chlorine, bromine, iodine) and an alkane.

**alkyl-substituted cycloalkane:** a cyclic hydrocarbon to which one or more alkyl groups are bonded. (Compare with "cycloalkyl alkane.")

**ALKYLATE:** The product of a reaction between an olefin, such as 1-dodecene or Tetramer-M, and an aromatic hydrocarbon, such as benzene, toluene or diphenyl oxide.

**alkylated:** A molecule that has attached to it an alkyl group (derived from an alkane —  $C_nH_{2n+2}$ ), which is a saturated hydrocarbon with a single bond available.

**alkylating agent :** A type of drug that is used in the treatment of cancer. It interferes with the cell's DNA and inhibits cancer cell growth.

**alkylation:** a reaction in which an alkyl group is added to a molecule.

**alkyne:** A compound that consists of only carbon and hydrogen, that contains at least one carbon-carbon triple bond. Alkyne names end with -yne. Examples are acetylene ( $CHCH$ ); 1-propyne ( $CH_2CH_2CH_3$ ), and 2-octyne ( $CH_3CH_2CH_2(CH_2)_4CH_3$ ). OR a hydrocarbon that contains a triple bond. The alkyne general formula is  $C_nH_{2n-2}$ . OR a hydrocarbon with one or more triple bonds. OR Carbon compound containing carbon and hydrogen incorporating one or more triple bonds

**ALL:** A type of leukemia (blood cancer) that comes on quickly and is fast growing. In ALL, there are too many lymphoblasts (immature white blood cells) in the blood and bone marrow. Also called acute lymphoblastic leukemia and acute lymphocytic leukemia.

**all-trans retinoic acid :** A nutrient that the body needs in small amounts to function and stay healthy. All-trans retinoic acid is made in the body from vitamin A and helps cells to grow and develop, especially in the embryo. A form of all-trans retinoic acid made in the laboratory is put on the skin to treat conditions such as acne and is taken by mouth to treat acute promyelocytic leukemia (a fast-growing cancer in which there are too many immature blood-forming cells in the blood and bone marrow). All-trans retinoic acid is being studied in the prevention and treatment of other types of cancer. Also called ATRA, retinoic acid, tretinoin, and vitamin A acid.

**Allegation:** A declaration, statement, or assertion of impropriety or inadequacy associated with NRC-regulated activities, the validity of which has not been established. For additional detail, see What is an Allegation.

**Allegra :** (Other name for: fexofenadine hydrochloride) OR A drug used to treat certain allergy symptoms. It blocks a chemical released during an allergic response that causes itching, sneezing, runny nose, wheezing, and watery eyes. It is a type of antihistamine. Also called fexofenadine.

**allele :** One of two or more DNA sequences occurring at a particular gene locus. Typically one allele (“normal” DNA sequence) is common, and other alleles (mutations) are rare.

**Alleles:** Alternative forms of a gene at a particular site on a chromosome.

**alleles:** different forms of the same gene.

**allelic heterogeneity :** Different mutations in the same gene that cause different phenotypic manifestations or severity of disease.

**allergen:** This descriptor may be used to any substance which produces an allergic reaction. Or A substance that causes an allergic response. Examples include pollen, molds, and certain foods.

**allergic response :** A hypersensitive immune reaction to a substance that normally is harmless or would not cause an immune response in most people. An allergic response may cause harmful symptoms such as itching or inflammation or tissue injury.

**allergy:** A broad term applied to disease symptoms following exposure to a previously encountered substance (allergen), often one which would otherwise be classified as harmless. Essentially it is a malfunction of the immune system. See sensitization.

**AllerNaze:** (Other name for: triamcinolone acetonide)

**allo:** A prefix that designates the more stable of a pair of geometric isomers. allo- is sometimes used less precisely to designate isomers or close relatives of a compound.

**allobar:** A form of an element that has isotopic abundances that are different from the naturally occurring form. For example, "depleted" uranium has had most of the uranium-235 removed, and is an allobar of natural uranium.

**allodepleted haploidentical T cells expressing inducible Caspase 9:**

Allodepleted haploidentical T-lymphocytes transduced with the Gal-V pseudotyped retrovirus vector encoding SFG.iCasp9-2A-deltaCD19, with potential immune reconstitution property. SFG.iCasp9-2A-deltaCD19 contains the suicide gene inducible caspase 9 (iCasp9) linked with a 2A-like

cleavable peptide to the selectable marker, truncated human CD19 (deltaCD19). iCasp9 consists of a human FK506 drug-binding domain with an F36V mutation (FKBP12-F36V) linked to human caspase 9 using a short linker (SGGGS). Donor T cell therapy may help control transplant-related viral infections following allogeneic hematopoietic stem cell transplantation. However, even the addition of allodepleted donor T cells can lead to graft-versus-host disease (GVHD). In the event that GVHD begins to develop, the chemical homodimerizer AP1903 can be administered, which binds to the FKBP12-F36V domain activating caspase 9. This results in the death of T cells causing GVHD while sparing the virus reactive T-cells.

**allodepleted T cell immunotherapeutic ATIR101:** A cell-based immunotherapeutic product containing T-lymphocyte-enriched leukocytes that are devoid of alloreactive T-lymphocytes, that can potentially be used to restore lymphocyte levels after stem cell transplantations and are derived from partially matched (haploidentical) family donors for blood cancer patients who do not have a matching stem cell donor available. Host alloreactive T-cells, which can cause graft-versus-host disease (GVHD), are eliminated from the donor lymphocytes ex vivo using photodynamic therapy. After allogeneic hematopoietic stem cell transplantation (HSCT), allodepleted T cell immunotherapeutic ATIR101 is administered. This maintains a T-cell-mediated immune response against tumor cells and the donor T-cells can prevent opportunistic infections. ATIR101 does not cause severe, acute GVHD. In addition, administration of ATIR101 eliminates the need for immunosuppressants.

**Allodepleted T-cell Immunotherapeutics:** (Other name for: allodepleted T cell immunotherapeutic ATIR101)

**AlloDerm:** (Other name for: acellular cadaveric dermal matrix)

**allogeneic :** Taken from different individuals of the same species. Also called allogenic.

**allogeneic acute myeloid leukemia antigen-expressing dendritic cell vaccine:** A cancer vaccine consisting of allogeneic, immortalized dendritic precursor cells derived from a patient with acute myelogenous leukemia (AML), with potential immunostimulatory and antineoplastic activities. Upon ex vivo stimulation and expansion of the precursor cells into mature, fully functional dendritic cells (DCs) and subsequent administration, the

allogeneic AML antigen-expressing DC vaccine may elicit a potent cytotoxic T-cell (CTL) and antibody response against AML antigen-expressing cells, resulting in tumor cell death.

**allogeneic adenovirus-specific cytotoxic T lymphocytes:** A population of allogeneic cytotoxic T-lymphocytes (CTLs) specifically reactive to human adenovirus (Ad) with potential immunomodulating and anti-adenoviral activities. Upon immunoprophylactic adoptive cell therapy, infusion of allogeneic Ad-specific CTLs may help reconstitute Ad-specific CTL responses in patients at risk of developing Ad infections after allogeneic stem cell transplant or in Ad-infected immunocompromised hosts. These allogeneic Ad-specific CTLs are prepared by multiple rounds of stimulation with donor peripheral blood mononuclear cells and lymphoblastoid cell lines that have been transduced with Ad5f35, a recombinant adenoviral vector carrying no transgene. Check for active clinical trials using this agent.

**allogeneic B7.1/HLA-A1 transfected tumor cell vaccine:** An allogeneic whole cell vaccine, derived from irradiated allogeneic tumor cells manipulated to express human B7.1 (CD80 antigen) and human leukocyte antigen (HLA) A1, with potential antitumor activity. Vaccination with allogeneic B7.1/HLA-A1 transfected tumor cell vaccine may elicit a cytotoxic T lymphocyte (CTL) response against similar host tumor cells, resulting in decreased tumor cell proliferation.

**allogeneic bone marrow transplantation :** A procedure in which a person receives stem cells (cells from which all blood cells develop) from a genetically similar, but not identical, donor.

**allogeneic CD19-specific CAR-modified CD8 positive central memory-derived virus-specific T cells:** A preparation of allogeneic Epstein-Barr virus (EBV)- and human cytomegalovirus (CMV)-specific CD8<sup>+</sup> central memory-derived T effector-lymphocytes that have been genetically modified to express a chimeric antigen receptor (CAR) anti-CD19/CD3 zeta chain fusion protein coupled to the intracellular signal domain of CD28 antigen, with potential immunostimulating, anti-viral and antineoplastic activities. Upon infusion, allogeneic CD19-specific CAR-modified CD8<sup>+</sup> central memory-derived virus-specific T cells directs the T-lymphocytes to CD19-expressing tumor cells, stimulating a selective toxicity to tumor cells which may eventually result in tumor cell lysis. CD19 antigen is a B-cell

specific cell surface antigen expressed in all B-cell lineage malignancies. The viral specific T-cells exert antiviral immunity.

**allogeneic CD4+ memory Th1-like T cells/microparticle-bound anti-CD3/anti-CD28:** A preparation consisting of allogeneic, differentiated Th1-like T cells bound to T cell-stimulating monoclonal antibodies with potential antitumor activity. More specifically, allogeneic CD4+ memory Th1-like T cells/microparticle-bound anti-CD3/anti-CD28 are composed of a proprietary preparation of mismatched, allogeneic differentiated CD4+ memory Th1-like T cells bound to paramagnetic, epoxy-covered 4.5 micron microparticles with covalently bound anti-CD3/anti-CD28 monoclonal antibodies at a 2:1 bead:cell ratio. The CD4+ memory Th1-like T cells are derived from precursors found in the circulation of a normal donor. Stimulated by the microparticle-bound monoclonal antibodies, the infused T cells produce pro-inflammatory, anti-tumor cytokines such as like IFN-gamma, TNF-beta, and IL-2, disabling tumor immune avoidance mechanisms and stimulating the host immune system to both reject the infused T cells and kill tumor cells.

**allogeneic CMV/AdV-specific cytotoxic T lymphocytes:** A population of allogeneic cytotoxic T lymphocytes (CTLs) specifically reactive to cytomegalovirus (CMV) and adenovirus (AdV) with potential antiviral activity. Allogeneic CMV/AdV-specific cytotoxic T lymphocytes are prepared by exposing donor-derived CTLs to a lethally irradiated Epstein-Barr virus-positive lymphoblastoid B cell line (EBV-LCL) that has been transduced with a clinical-grade adenoviral vector (Ad5f35CMVpp65) as a source of CMV and AdV antigens. Infusion of these CTLs into stem cell transplant recipients may prevent CMV and AdV viral disease.

**allogeneic cytomegalovirus-specific cytotoxic T lymphocytes:** A population of allogeneic cytotoxic T lymphocytes (CTLs) specifically reactive to the herpes virus cytomegalovirus (CMV) with potential immunomodulating and antiviral activities. Upon immunoprophylactic adoptive cell therapy infusion with allogeneic cytomegalovirus-specific cytotoxic T lymphocytes, these CTLs may help reconstitute CMV-specific CTL responses in CMV-infected immunocompromised hosts after allogeneic hematopoietic stem cell transplant, thereby potentially preventing the occurrence of CMV viral disease or reducing the amount of antiviral drug therapy.

**allogeneic dendritic cell vaccine COMBIG-DC:** A cancer vaccine consisting of allogeneic, immortalized dendritic cells (DCs) loaded with tumor specific antigens and activated, with potential immunostimulatory and antineoplastic activities. Upon intratumoral administration of the allogeneic dendritic cell vaccine COMBIG-DC, these activated DCs attract natural killer (NK) cells, induce an anti-inflammatory response leading to the induction of NK-cell-mediated tumor cell death. Upon release of tumor associated antigens (TAAs) from the lysed tumor cells, these antigens are taken up by antigen presenting cells which activate the immune system to elicit a potent cytotoxic T-cell (CTL) response against the TAAs, resulting in the death of TAAs-expressing tumor cells. Check for active clinical trials using this agent.

**allogeneic dendritic cell-myeloma idiotype vaccine:** A cell-based vaccine composed of allogeneic dendritic cells pulsed ex-vivo with an autologous myeloma idiotype with potential antineoplastic activity. Upon administration, allogeneic dendritic cell-myeloma idiotype vaccine may stimulate the host immune system to mount a specific cytotoxic T-lymphocyte (CTL) response against myeloma cells, resulting in cell lysis.

**allogeneic Epstein-Barr virus-specific cytotoxic T lymphocytes:** A preparation of lymphocytes harvested from a patient with an Epstein-Barr virus (EBV)-positive tumor. Ex vivo, the lymphocytes are activated against EBV-specific antigens and then returned to the patient, where they mount a specific immune response against EBV-positive tumor cells.

**allogeneic glioblastoma stem-like cell line lysate-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with lysates from an allogeneic glioblastoma (GBM) stem-like cell line, with potential immunostimulatory and antineoplastic activities. Upon administration allogeneic glioblastoma stem-like cell line lysate-pulsed autologous dendritic cell vaccine exposes the immune system to GBM stem cell antigens, which may result in cytotoxic T lymphocyte (CTL) and antibody responses against GBM cells. This leads to GBM cell lysis. GBM stem-like cells contain a specific range of antigens that are essential for the neoplastic growth and survival of GBM cells.

**allogeneic GM-CSF-secreting breast cancer vaccine:** An allogenic vaccine consisting of irradiated breast cancer cells transfected with the

granulocyte macrophage-colony-stimulating factor (GM-CSF) gene. Upon vaccination, the genetically modified cells secrete GM-CSF, thereby potentiating a tumor-specific T cell response against breast cancer cell-associated antigens.

**allogeneic GM-CSF-secreting lethally irradiated whole melanoma cell vaccine:** An allogeneic cancer vaccine composed of lethally irradiated whole melanoma cancer cells that are genetically modified to secrete the immunostimulatory cytokine granulocyte-macrophage colony-stimulating factor (GM-CSF), with potential immunostimulating and antineoplastic activities. Upon intradermal injections, allogeneic GM-CSF-secreting lethally irradiated whole melanoma cell vaccine secretes GM-CSF. In turn, GM-CSF may stimulate the body's immune system against tumor cells by enhancing the activation of dendritic cells (DCs) and promoting antigen presentation to both B- and T-lymphocytes. In addition, GM-CSF promotes antibody-dependent cellular cytotoxicity (ADCC), and increases interleukin-2-mediated lymphokine-activated killer cell function. Check for active clinical trials using this agent.

**allogeneic GM-CSF-secreting tumor vaccine PANC 10.05 pcDNA-1/GM-Neo:** An allogeneic cancer vaccine composed of lethally irradiated, whole pancreatic cancer cells transfected with a plasmid carrying the gene for cytokine granulocyte-macrophage colony-stimulating factor (GM-CSF), with potential immunostimulating and antineoplastic activities. Allogeneic GM-CSF-secreting tumor vaccine PANC 10.05 pcDNA-1/GM-Neo secretes GM-CSF thereby activating dendritic cells, promoting antigen presentation to B- and T-cells, and promoting a cytotoxic T-lymphocyte (CTL) response. This may eventually kill tumor cells. The pancreatic tumor cells are derived from the PANC 10.05 tumor cell line.

**allogeneic GM-CSF-secreting tumor vaccine PANC 6.03 pcDNA-1/GM-Neo:** An allogeneic cancer vaccine composed of lethally irradiated, whole pancreatic cancer cells transfected with a plasmid carrying the gene for cytokine granulocyte-macrophage colony-stimulating factor (GM-CSF), with potential immunostimulating and antineoplastic activities. Allogeneic GM-CSF-secreting tumor vaccine PANC 6.03 pcDNA-1/GM-Neo secretes GM-CSF thereby activating dendritic cells, promoting antigen presentation to B- and T-cells, and promoting a cytotoxic T-lymphocyte (CTL) response.

This may eventually kill tumor cells. The pancreatic tumor cells are derived from the PANC 6.03 tumor cell line.

**allogeneic GM-CSF-transfected myeloma cell vaccine:** An allogeneic tumor cell vaccine containing myeloma cancer cells transfected with the granulocyte macrophage-colony-stimulating factor (GM-CSF) gene with potential antineoplastic activity. Upon vaccination, allogeneic GM-CSF-based myeloma cellular vaccine secretes GM-CSF, which may potentiate a tumor-specific cytotoxic T-lymphocyte (CTL) response against myeloma cancer cell-associated antigens.

**allogeneic HLA A2/4-1BB ligand-expressing melanoma vaccine:** An allogeneic melanoma cell vaccine derived from a cell line with high expression of melanoma associated antigens and genetically modified to express both HLA-A2 and 4-1BB ligand, with potential immunostimulating and antineoplastic activities. Upon administration, the 4-1BB ligand of the allogeneic HLA-A2/4-1BB ligand-expressing melanoma vaccine binds to 4-1BB on activated T-lymphocytes, which induces a strong immune response against HLA-A2 positive melanoma cells. Check for active clinical trials using this agent.

**allogeneic IL13-zetakine/HyTK-expressing-glucocorticoid resistant cytotoxic T lymphocytes GRm13Z40-2:** A preparation of glucocorticoid receptor (GR) negative, allogeneic cytotoxic T-lymphocytes (CTLs) expressing a membrane-tethered interleukin 13 (IL13) cytokine chimeric T-cell antigen receptor (zetakine), with potential antineoplastic activity. Upon transfection of donor T-lymphocytes with a plasmid encoding a fusion protein of the IL13-zetakine and the selection-suicide expression enzyme HyTK, these modified CTLs are expanded and introduced into a patient with glioblastoma multiforme (GBM). This agent specifically targets IL13 receptor alpha2, a glioma-restricted cell-surface epitope; the CTLs exert their cytolytic effect thereby killing IL13Ra2-expressing glioma cells. In addition, IL13-zetakine redirected CTLs induce production of certain cytokines. Furthermore, due to the fact that these CTLs are GR negative, they can be used concomitantly with glucocorticoid therapy. The IL13-zetakine consists of an extracellular IL-13 E13Y mutein-human IgG4 hinge-Fc chimera fused to human cytoplasmic CD3-zeta via the transmembrane domain of human CD4.

**allogeneic irradiated melanoma cell vaccine CSF470:** An allogeneic cancer vaccine composed of a mixture of lethally irradiated whole melanoma cancer cells obtained from four different melanoma cell lines, with potential immunostimulating and antineoplastic activities. Upon intradermal injections, allogeneic irradiated melanoma cell vaccine may stimulate the body's immune system to exert a cytotoxic T-lymphocyte response and antibody-dependent cellular cytotoxicity (ADCC) against the melanoma cancer cells.

**allogeneic large multivalent immunogen breast cancer vaccine:** A cancer vaccine, containing human-specific large multivalent immunogens (LMIs) isolated from the membrane fraction of cells from a breast cancer cell line, with potential immunostimulatory and antineoplastic activities. Upon administration, allogeneic large multivalent immunogen breast cancer vaccine may stimulate a cytotoxic T lymphocyte (CTL) immune response against tumor cells that express the breast cancer cell-specific LMIs.

**allogeneic large multivalent immunogen melanoma vaccine LP2307:** A cancer vaccine, containing human-specific large multivalent immunogen (LMI) isolated from plasma membrane fractions of the melanoma cell lines MSM-M1 and MSM-M2, with potential immunostimulating and antineoplastic activities. Upon administration, allogeneic large multivalent immunogen melanoma vaccine LP2307 may stimulate a CD8<sup>+</sup> cytotoxic T lymphocyte (CTL) response against melanoma tumor cells that express melanoma-specific LMI.

**allogeneic LMP1-/LMP2- specific cytotoxic T-lymphocytes:** A preparation of cytotoxic T-lymphocytes (CTL), specifically reactive to the Epstein-Barr virus (EBV) latent membrane proteins (LMP) 1 and 2, with potential antineoplastic activity. Peripheral blood mononuclear cells (PBMC) are collected from a donor and are exposed *ex vivo* to dendritic cells (DCs) transfected with a replication-deficient adenovirus encoding EBV LMP1/2 to generate LMP1/2-specific CTL which are subsequently expanded. Administration of allogeneic LMP1-/LMP2- specific CTL to patients with LMP1/2-positive tumors may result in a specific CTL response against tumor cells expressing LMP1 and LMP2, resulting in cell lysis and inhibition of tumor cell proliferation. As tumor associated antigens (TAAs), LMP1 and LMP2 are expressed in various malignancies including

nasopharyngeal cancer and EBV-positive Hodgkin lymphoma. Check for active clinical trials using this agent.

**allogeneic melanoma vaccine AGI-101H:** A cancer vaccine derived from two genetically modified human melanoma cell lines with potential antineoplastic activity. Allogeneic melanoma vaccine AGI-101H consists of a 1:1 mixture of cells from two genetically modified human melanoma cell lines, designated as Mich1H6 and Mich2H6, that have been gamma-irradiated to render the cells non-proliferative. Upon administration, this vaccine may stimulate a cytotoxic immune response against melanoma tumor cells.

**allogeneic mesothelioma tumor lysate-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with a mixture of lysates from five allogeneic mesothelioma tumor cell lines, with potential immunostimulatory and antineoplastic activities. Upon leukapheresis, DCs are loaded with allogeneic mesothelioma tumor cell lysates. Upon re-administration of the allogeneic mesothelioma tumor lysate-pulsed autologous DC vaccine, the immune system is exposed to an undefined amount of mesothelioma-associated antigens, which stimulates the induction of a specific cytotoxic T-lymphocyte (CTL) response against mesothelioma tumor cells and leads to tumor cell lysis.

**allogeneic multipotent adult progenitor cells:** A biologic product that consists of undifferentiated stem cells, obtained from adult bone marrow or other non-embryonic tissue sources, that are expanded in vitro and deposited in master cell banks for "off-the-shelf" use, with potential hematopoiesis-inducing and immunomodulating activities. Allogeneic multipotent adult progenitor cells (MAPCs) are non-immunogenic due to the lack of major histocompatibility (MHC) molecule expression, and so elicit no immune response upon administration. In vivo, bone marrow-derived adult stem cells are capable of maturing into a broad range of cell types and may help restore the immune system by producing multiple therapeutic molecules in response to inflammation and tissue damage.

**allogeneic multivirus-specific cytotoxic T lymphocytes:** A population of closely human leukocyte antigen (HLA)-matched, donor-derived cytotoxic T lymphocytes (CTLs) that are specifically reactive towards five viruses, Epstein-Barr virus (EBV), cytomegalovirus (CMV), adenovirus (AdV),

human herpesvirus 6 (HHV6), and human polyomavirus type I (BKV), with potential antiviral activity. Infusion of the multivirus-specific CTLs into allogeneic hematopoietic stem cell transplant (HSCT) recipients provides virus-specific cellular immunity and causes specific anti-viral effects against active viral infections. The administered CTLs also prevent EBV, CMV, AdV, HHV6, and BKV reactivation and infection as well as inhibiting viral-associated diseases in immunocompromised patients. The allogeneic multivirus-specific CTLs may also provide cellular immunity towards the human polyomavirus type II (JC virus; JCV), which is highly homologous to BKV.

**allogeneic natural killer cell line MG4101:** A population of allogeneic, cytotoxic natural killer (NK) cells with potential antitumor activity.

Allogeneic natural killer cell line MG4101 is derived from cells of a normal, healthy donor upon leukapheresis and activation.

**allogeneic natural killer cell line NK-92:** A proprietary, human cytotoxic cell line composed of allogeneic, activated, interleukin-2 (IL-2) dependent-natural killer cells derived from a 50-year old male patient with rapidly progressive non-Hodgkin's lymphoma, with potential antineoplastic activity. As NK-92 cells are devoid of killer inhibitory receptors (KIRs; also called killer cell immunoglobulin-like receptors), which are negative regulators of NK cell activity, cancer cells are unable to suppress the cancer cell killing ability of the NK-92 cells. Upon infusion of the allogeneic NK cell line NK-92, the NKs recognize and bind to tumor cells. This leads to the secretion and release of perforins, granzymes, cytokines and chemokines, which results in cancer cell lysis and apoptosis. In addition, NK-92 cells express high affinity Fc receptors, which bind to therapeutic antibodies; therefore, this agent can enhance antibody dependent cellular cytotoxicity (ADCC) of co-administered therapeutic antibodies.

**allogeneic renal cell carcinoma vaccine MGN1601:** A whole cell vaccine comprised of irradiated allogeneic renal cell carcinoma (RCC) with potential immunostimulating and antineoplastic activities. Allogeneic renal cell carcinoma vaccine MGN1601 contains two active ingredients: 1) genetically modified allogeneic RCC cells that are transiently transfected with four different MIDGE (Minimalistic Immunogenically Defined Gene Expression) vectors encoding IL-7, GM-CSF, CD80 and CD154 and 2) the synthetic DNA-based immunomodulator dSLIM-30L1, a TLR9 agonist.

Vaccination results in expression of IL-7, GM-CSF, CD80 and CD154, which all contribute to the activation or enhancement of immune responses. Furthermore, administration of this RCC vaccine may elicit a cytotoxic T lymphocyte (CTL) response against similar host tumor cells, resulting in decreased tumor growth. TLR9 is a member of the TLR family, which plays a fundamental role in pathogen recognition and activation of innate immunity. Check for active clinical trials using this agent.

**allogeneic stem cell transplantation :** A procedure in which a person receives blood-forming stem cells (cells from which all blood cells develop) from a genetically similar, but not identical, donor. This is often a sister or brother, but could be an unrelated donor.

**allogeneic T lymphocytes BPX-501:** Allogeneic T lymphocytes with potential immune reconstitution activity. Donor T lymphocytes are transduced with a retroviral vector (BPZ-1001) encoding the inducible suicide gene caspase 9 (iCasp9) and linked to a drug binding domain. Donor T-cell therapy may help control transplant-related infections following allogeneic hematopoietic stem cell transplantation. However, the addition of donor T cells can lead to graft-versus-host disease (GVHD). In the event that GVHD begins to develop, the chemical homodimerizer AP1903 can be administered, which binds to the drug binding domain and induces caspase 9 expression. This activates apoptosis in the T cells causing GVHD.

**allogeneic tumor cell vaccine:** A vaccine composed of tumor cells isolated from the tumor of one patient, killed and processed, and administered to another patient in order to stimulate cytotoxic immune responses to a similar tumor cell type. The cells found in this type of whole-cell vaccine express many cell-surface tumor-associated antigens. This vaccine is frequently administered with an adjuvant immunostimulant.

**allogenic :** Taken from different individuals of the same species. Also called allogeneic.

**allograft :** The transplant of an organ, tissue, or cells from one individual to another individual of the same species who is not an identical twin.

**allomer:** Substances with different chemical composition but the same crystalline form.

**allopathic medicine :** A system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat

symptoms and diseases using drugs, radiation, or surgery. Also called biomedicine, conventional medicine, mainstream medicine, orthodox medicine, and Western medicine.

**allopurinol:** A structural isomer of hypoxanthine. Allopurinol inhibits xanthine oxidase, an enzyme that converts oxypurines to uric acid. By blocking the production of uric acid, this agent decreases serum and urine concentrations of uric acid, thereby providing protection against uric acid-mediated end organ damage in conditions associated with excessive production of uric acid, i.e. the massive cell lysis associated with the treatment of some malignancies. OR A drug that lowers high levels of uric acid (a byproduct of metabolism) in the blood caused by some cancer treatments.

**Allosteric:** A binding site is said to be allosteric if it's a binding site other than the one used by the endogenous ligand.

**allosteric Bcr-Abl tyrosine kinase inhibitor ABL001:** An orally bioavailable, allosteric Bcr-Abl tyrosine kinase inhibitor with potential antineoplastic activity. Designed to overcome resistance, ABL001 binds to the Abl portion of the Bcr-Abl fusion protein at a location that is distinct from the ATP-binding domain. This binding results in the inhibition of Bcr-Abl-mediated proliferation and enhanced apoptosis of Philadelphia chromosome-positive (Ph<sup>+</sup>) hematological malignancies. The Bcr-Abl fusion protein tyrosine kinase is an abnormal enzyme produced by leukemia cells that contain the Philadelphia chromosome.

**allosteric effect:** A change in the behavior of one part of a molecule caused by a change in another part of the molecule.

**Allosteric enzyme:** An enzyme whose active site can be altered by the binding of a small molecule at a nonoverlapping site. OR A regulatory enzyme, with catalytic activity modulated by the noncovalent binding of a specific metabolite at a site other than the active site.

**Allosteric interaction:** An interaction between a small molecule (a ligand) and a site on a protein that may be some distance away from the active site; the interaction causes a conformational change and consequent alteration in the catalytic activity of the protein.

**allosteric site:** The specific site on the surface of an allosteric enzyme molecule to which the modulator or effector molecule is bound.

**allotrope:** Allotropes are different forms of the same element. The difference is that the atoms of each allotrope are bonded together in different arrangements. OR Some elements occur in several distinct forms called allotropes. Allotropes have different chemical and physical properties. For example, graphite and diamond are allotropes of carbon.

**allotrope (allotropic form):** Different bonding arrangements allowing for different forms of matter to be made from a single type of atom. Different forms of matter made in this way are called allotropes. For example, ozone (O<sub>3</sub>) and dioxygen (O<sub>2</sub>) are allotropes of the element oxygen. Also, diamond, buckyball, and graphite are allotropes of carbon.

**Allovectin-7 :** A substance that is being studied as a gene therapy agent in the treatment of cancer. It increases the ability of the immune system to recognize cancer cells and kill them.

**alloy:** Alloys are mixtures of metals. OR A mixture containing mostly metals. For example, brass is an alloy of copper and zinc. Steel contains iron and other metals, but also carbon. OR A mixture of different metals. Bronze, brass, duralumin are some typical examples of alloys. OR Composite material made up by blending polymers or copolymers with other polymers or elastomers under selected conditions. e.g., styrene-acrylonitrile copolymer resins blended with butadiene-acrylonitrile rubbers. OR A term used in the plastics industry to denote blends of polymers or copolymers with other polymers or elastomers. – e.g. Polycarbonate. OR A combination of two or more plastics that form a new plastic. OR A polymer blend having a modified interface and/or morphology. OR A plastic alloy is a physical modification of an existing plastic to achieve higher performance and or functionality. These alloys are often used in the automobile industry and to replace metal parts. OR Composites of polymers or copolymers with other polymers or elastomers, e.g. ABS/Polycarbonate. ABS/PC alloys are used to make structurally strong parts for use in such market areas as appliances, automotive, for building and construction, chemical processing, consumer goods, electronics, health care, and packaging. OR Composite material made up by blending polymers or copolymers with other polymers or elastomers under selected conditions. e.g., styrene-acrylonitrile copolymer resins blended with butadiene-acrylonitrile rubbers. OR A term used in the plastics industry to

denote blends of polymers or copolymers with other polymers or elastomers. - i.e. ABS/Polycarbonate.

**alluvial fan:** a feature similar to a delta; a large, fanlike accumulation of sediment dropped where a stream emerges from rugged terrain, such as the edge between a mountain canyon and a flat plain.

**allyl:** A molecular fragment derived by removing a methyl hydrogen from propene ( $-\text{CH}_2-\text{CH}=\text{CH}_2$ ). For example, "allyl chloride" is 3-chloropropene,  $\text{Cl}-\text{CH}_2-\text{CH}=\text{CH}_2$ .

**allyl group:** the  $\text{H}_2\text{C}=\text{CHCH}_2-$  group.

**Allyl Resin:** A synthetic resin formed by the polymerization of chemical compounds containing the group  $\text{CH}_2=\text{CH}-\text{CH}_2-$ . The principal commercial allyl resin is a casting material that yields allyl carbonate polymer. OR a class of resins produced from an ester or other derivative of allyl alcohol by polymerization.

**allylic carbocation:** the  $\text{H}_2\text{C}=\text{CHCH}_2^+$  ion.

**almurtide:** A synthetic muramyl dipeptide (MDP) H8analogue with potential immunostimulating and antineoplastic activity. As a derivative of the mycobacterial cell wall component MDP, almuride activates both monocytes and macrophages. This results in the secretion of cytokines and induces the recruitment and activation of other immune cells, which may result in indirect tumoricidal or cytostatic effects.

**Alocrest:** (Other name for: injectable liposomal vinorelbine)

**aloe vera gel:** A preparation of leaf pulp from the parenchymal tissue of the plant Aloe vera (Liliaceae). Aloe vera gel contains carbohydrate polymers, such as glucomannans or pectic acid, and various vitamins and essential amino acids, as well as other organic and inorganic compounds. This agent has been used internally or externally for sunburn, skin problems, insect bites, ulcers, arthritis, constipation, and as an immune system enhancer. Check for active clinical trials using this agent.

**aloe-emodin :** A substance found in certain plants, including aloe vera. It belongs to a family of compounds called anthraquinones, which have shown anti-inflammatory and anticancer effects.

**aloe/anise/ascorbic acid/clove/glycerin/peppermint/spearmint/thyme-based herbal mouthwash:** A herbal-based mouthrinse containing aloe, anise, ascorbic acid, clove, peppermint, spearmint and thyme, with potential

anti-mucositis activity. When aloe/anise/ascorbic acid/clove/peppermint/spearmint/thyme-based mouthwash is used as a rinse, the ingredients in this agent may prevent or decrease inflammation and bacterial infections. This may prevent or inhibit radiotherapy- or chemotherapy-induced mucositis and decreases the pain associated with mucositis. Check for active clinical trials using this agent.

**alogliptin:** A selective, orally bioavailable, pyrimidinedione-based inhibitor of dipeptidyl peptidase 4 (DPP-4), with hypoglycemic activity. In addition to its effect on glucose levels, alogliptin may inhibit inflammatory responses by preventing the toll-like receptor 4 (TLR-4)-mediated formation of proinflammatory cytokines.

**alopecia :** The lack or loss of hair from areas of the body where hair is usually found. Alopecia can be a side effect of some cancer treatments.

**Aloxi :** (Other name for: palonosetron hydrochloride) OR A drug used to prevent nausea and vomiting caused by chemotherapy. It is also used to prevent nausea and vomiting after surgery. Aloxi blocks the action of the chemical serotonin in the brain, which may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called palonosetron hydrochloride.

**alpelisib:** An orally bioavailable phosphatidylinositol 3-kinase (PI3K) inhibitor with potential antineoplastic activity. Alpelisib specifically inhibits PIK3 in the PI3K/AKT kinase (or protein kinase B) signaling pathway, thereby inhibiting the activation of the PI3K signaling pathway. This may result in inhibition of tumor cell growth and survival in susceptible tumor cell populations. Activation of the PI3K signaling pathway is frequently associated with tumorigenesis. Dysregulated PI3K signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**alpha electron:** An electron with spin up.

**alpha emitter radiation therapy :** Therapy that uses a radioactive substance that gives off a type of high-energy radiation called an alpha-particle to kill cancer cells. The radioactive substance is injected into a vein, travels through the blood, and collects in certain tissues in the body, such as areas of bone with cancer. This type of radiation may cause less damage to nearby healthy tissue. Alpha emitter radiation therapy is used to treat prostate cancer that has spread to the bone, and it is being studied in the treatment of other types of cancer.

**alpha fetoprotein adenoviral vector vaccine:** A vaccine consisting of a recombinant adenoviral vector encoding alpha fetoprotein. After vaccination, expressed alpha fetoprotein may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells that express alpha fetoprotein, resulting in tumor cell lysis.

**alpha fetoprotein plasmid DNA vaccine:** A vaccine consisting of plasmid DNA encoding alpha fetoprotein. After vaccination, expressed alpha fetoprotein may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells that express alpha fetoprotein, resulting in tumor cell lysis. Check for active clinical trials using this agent.

**alpha hydroxyl acid :** One of a group of substances that are found in several types of fruit and in milk. They are used in skin care products to reduce wrinkles and soften the skin. Examples of alpha hydroxyl acids are glycolic acid, lactic acid, and citric acid. Also called AHA and fruit acid.

**Alpha Olefins:** Alpha olefins are straight chained olefins with a double bond between the end two carbons in a chain (the "alpha" position). These olefins are very reactive and as such have a number of uses. Light alpha olefins (butene-1, hexene-1 and octene-1) are consumed mainly in the production of polyethylene, including LLDPE. Decene-1 is principally used to manufacture polyalpha olefins for the production of high performance lubricants. High alpha olefins are consumed in the manufacture of detergent alcohols. There are two main ways to produce linear alpha olefins - via ethylene oligomerization and via Fischer-Tropsch process via syngas (applicable only to SASOL). In regions of low cost ethylene (eg Middle East) ethylene dimerisation is also used to produce butene-1 and recently ethylene trimerisation has been used to produce hexene-1 Producers either manufacture a specific linear alpha olefin (on-purpose) or a range.

**alpha particle:** a cluster of 2 protons and 2 neutrons emitted from a nucleus in one type of radioactivity. OR A particle that is commonly ejected from radioactive nuclei, consisting of two protons and two neutrons. Alpha particles are helium nuclei. Alpha particles have a mass of  $6.644\ 655\ 98 \times 10^{-27}$ kg or 4.001 506 1747 atomic mass units. [1998 CODATA values] OR A positively charged particle ejected spontaneously from the nuclei of some radioactive elements. It is identical to a helium nucleus that has a mass number of 4 and an electrostatic charge of +2. It has low penetrating power and a short range (a few centimeters in air). The most energetic alpha

particle will generally fail to penetrate the dead layers of cells covering the skin, and can be easily stopped by a sheet of paper. Alpha particles are hazardous when an alpha-emitting isotope is inside the body. For additional detail, see Radiation Basics. OR are helium nuclei (no electrons) produced in nuclear reactions. They are helium ions,  $\text{He}^{+2}$ .

**alpha ray:** A stream of alpha particles. Alpha rays rapidly dissipate their energy as they pass through materials, and are far less penetrating than beta particles and gamma rays.

**alpha-1-proteinase inhibitor human:** Human serum-derived alpha-1 proteinase inhibitor (alpha-1-antitrypsin or AAT) with immunomodulating and anti-inflammatory activity. Upon administration, AAT reduces the production of proinflammatory cytokines, such as tumor necrosis factor-alpha, interleukin (IL)-1 beta, IL-32, IL-6, and proteinase 3, and induces the production of anti-inflammatory cytokines, such as IL-10 and the IL-1 receptor antagonist IL-1RN. This agent also downregulates heparan sulfate and reduces the expansion of cytotoxic effector T cells, interferes with the maturation of dendritic cells and increases T regulatory cells. Altogether, AAT may attenuate acute graft-versus-host disease (GvHD) and may facilitate graft acceptance and survival. In addition, AAT enhances levels of cAMP and activation of cAMP-dependent protein kinase A. AAT, a 52kD protein and serine protease inhibitor, belongs to the serpin superfamily.

**alpha-1,3-galactosyltransferase-expressing allogeneic lung tumor cell vaccine:** An allogeneic lung cancer vaccine with potential immunostimulating and antineoplastic activities. Derived from allogeneic lung tumor cells, alpha-1,3-galactosyltransferase-expressing allogeneic lung tumor cell vaccine is engineered to express the murine alpha-1,3-galactosyltransferase (GalT), an enzyme humans lack. GalT catalyzes the expression of foreign alpha-1,3-galactosyl (alpha-gal) carbohydrate epitopes in glycoproteins and in glycolipids on the cell membranes of the allogeneic lung tumor cells present in the vaccine, essentially producing a "xenograft". The hyperacute rejection involves pre-existing human anti-alpha-gal antibodies that bind the foreign alpha-gal epitopes expressed by the vaccine tumor cell "xenograft", resulting in complement-mediated cytotoxicity (CMC) and antibody-dependent cell-mediated cytotoxicity (ADCC) towards endogenous lung tumor cells with unmodified carbohydrate epitopes.

**alpha-1,3-galactosyltransferase-expressing allogeneic renal cell carcinoma vaccine:** An allogeneic renal cell cancer (RCC) vaccine composed of cell line-derived RCCs that are genetically engineered to express the murine alpha-1,3-galactosyltransferase (GalT), with potential immunostimulatory and antineoplastic activities. Not naturally occurring in humans, GalT catalyzes the expression of foreign alpha-1,3-galactosyl (alpha-gal) carbohydrate epitopes on the cell membranes of the allogeneic RCCs present in the vaccine. This induces a hyperacute rejection reaction involving pre-existing human anti-alpha-gal antibodies, which bind to the foreign alpha-gal epitopes expressed by the allogeneic RCCs. This results in complement-mediated cytotoxicity (CMC) and antibody-dependent cell-mediated cytotoxicity (ADCC) towards endogenous RCCs with unmodified carbohydrate epitopes.

**alpha-adrenergic antagonist :** A substance that relaxes muscle tissue in blood vessels and in the prostate gland, which improves the flow of urine and blood. Alpha-adrenergic antagonists are used to treat the symptoms of many conditions, such as benign prostatic hyperplasia (BPH), high blood pressure, and some blood circulation problems. Also called alpha-blocker.

**alpha-blocker :** A substance that relaxes muscle tissue in blood vessels and in the prostate gland, which improves the flow of urine and blood. Alpha-blockers are used to treat the symptoms of many conditions, such as benign prostatic hyperplasia (BPH), high blood pressure, and some blood circulation problems. Also called alpha-adrenergic antagonist.

**Alpha-cellulose:** Very pure cellulose prepared by special chemical treatment.

**alpha-fetoprotein :** A protein normally produced by a fetus. Alpha-fetoprotein levels are usually undetectable in the blood of healthy adult men or women (who are not pregnant). An elevated level of alpha-fetoprotein suggests the presence of either a primary liver cancer or germ cell tumor. Also called AFP.

**alpha-fetoprotein peptide-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine comprising autologous dendritic cells pulsed with four alpha-fetoprotein (AFP) peptides, with potential immunostimulatory and antineoplastic activities. Upon administration, AFP peptide-pulsed autologous dendritic cell vaccine may stimulate anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against AFP-expressing cancer

cells, resulting in tumor cell lysis. AFP is overexpressed in a variety of cancer cells.

**alpha-folate receptor-targeting thymidylate synthase inhibitor ONX-0801:** An alpha-folate receptor (aFR)-mediated inhibitor of thymidylate synthase (TS), with potential antineoplastic activity. Upon intravenous infusion, ONX-0801 selectively targets and binds to aFR-expressing tumor cells. Upon uptake by aFR, this agent binds to and inhibits TS. This reduces thymine nucleotide synthesis, inhibits both DNA synthesis and cell division, and leads to tumor cell apoptosis. TS catalyzes the conversion of deoxyuridine monophosphate (dUMP) to deoxythymidine monophosphate (dTMP), an essential precursor for DNA synthesis, and plays a key role in cell growth and division. aFR, a cell-surface receptor glycoprotein, is overexpressed on various tumor cell types, but is minimally expressed by normal, healthy tissue.

**alpha-Gal glycosphingolipids:** A preparation of glycosphingolipids (GSL), containing the disaccharide epitope galactose-alpha-1,3-galactose (alpha-Gal), with potential antineoplastic activity. Upon intratumoral injection, alpha-Gal glycosphingolipids may stimulate the immune system to mount complement-mediated cytotoxicity (CMC) and antibody-dependent cell-mediated cytotoxicity (ADCC) responses against alpha-Gal GSL, which may result in tumor cell death; these responses involve natural anti-alpha-Gal immunoglobulins (Igs). As antibodies that occur naturally due to sensitization to alpha-Gal present on symbiotic bacterial flora, anti-alpha-Gal Igs are present in unusually high amounts in human sera. GSL represent a glycolipid subtype containing the amino alcohol sphingosine; tumor-associated GSL antigens contain various oligosaccharide residues.

**alpha-galactosylceramide-pulsed autologous dendritic cells:** A cancer vaccine comprised of autologous dendritic cells (DCs) pulsed with the marine sponge glycolipid alpha-galactosylceramide (alpha-GalCer) with potential immunostimulatory and antimetastatic activities. Upon administration, alpha-galactosylceramide-pulsed autologous dendritic cells may result in the activation and proliferation of a subset of endogenous natural killer T (NKT) cells, B cells, and CD4+ and CD8+ T cells, and the production of interferon-gamma and interleukin-12; these cascade events may result in a T helper-1 cell-biased proinflammatory antitumor immune

response. The NKT cell ligand alpha-GalCer was originally isolated from the marine sponge *Agelas mauritanus*.

**alpha-lipoic acid:** A naturally occurring micronutrient, synthesized in small amounts by plants and animals (including humans), with antioxidant and potential chemopreventive activities. Alpha-lipoic acid acts as a free radical scavenger and assists in repairing oxidative damage and regenerates endogenous antioxidants, including vitamins C and E and glutathione. This agent also promotes glutathione synthesis. In addition, alpha-lipoic acid exerts metal chelating capacities and functions as a cofactor in various mitochondrial enzyme complexes involved in the decarboxylation of alpha-keto acids. OR A substance that is being studied for its ability to protect normal cells from the side effects of chemotherapy and prevent peripheral neuropathy (numbness, tingling, burning, and weakness in the hands or feet). Alpha-lipoic acid is made by the body and can be found in foods such as organ meats, spinach, broccoli, peas, brussel sprouts, and rice bran. It can also be made in the laboratory. Alpha-lipoic acid is a type of antioxidant and chemoprotective agent.

**alpha-lipoic acid/vitamin/mineral supplement PolyMVA:** A proprietary water- and lipid-soluble polymer-based nutritional supplement composed of a complex mixture of alpha-lipoic acid bound to palladium (palladium lipoic acid complex (PdLA)) and other minerals, vitamins and amino acids, including vitamins B1, B2 and B12, formylmethionine, acetyl cysteine, and trace amounts of molybdenum, rhodium, and ruthenium, with potential antioxidant and cytoprotective activities. Upon oral administration, the alpha-lipoic acid-palladium/vitamin/mineral supplement acts as a free radical scavenger, crosses the cell membrane and is able to transfer electrons from fatty acids to DNA via the electron transport chain in mitochondria, which protects against DNA damage. This could protect non-cancerous cells from the oxidative damage caused by radiation and chemotherapy. In addition, in the hypoxic conditions found within tumors, the excess electrons can generate free radicals within mitochondria and could induce both cytochrome c release and apoptosis.

**alpha-tocopherol:** A naturally-occurring form of vitamin E, a fat-soluble vitamin with potent antioxidant properties. Considered essential for the stabilization of biological membranes (especially those with high amounts of polyunsaturated fatty acids), d-alpha-Tocopherol is a potent peroxy

radical scavenger and inhibits noncompetitively cyclooxygenase activity in many tissues, resulting in a decrease in prostaglandin production. Vitamin E also inhibits angiogenesis and tumor dormancy through suppressing vascular endothelial growth factor (VEGF) gene transcription. OR A nutrient that the body needs in small amounts to stay healthy and work the way it should. It is fat-soluble (can dissolve in fats and oils) and is found in seeds, nuts, leafy green vegetables, and vegetable oils. Alpha-tocopherol boosts the immune system and helps keep blood clots from forming. It also helps prevent cell damage caused by free radicals (highly reactive chemicals). Alpha-tocopherol is being studied in the prevention and treatment of some types of cancer. It is a type of antioxidant. Also called vitamin E.

**alpha-tocopheryloxyacetic acid:** An orally bioavailable vitamin E derivative with potential antineoplastic and immunostimulating activities. Upon administration, alpha-tocopheryloxyacetic acid (alpha-TEA) induces tumor autophagy; the autophagosomes formed, which carry tumor associated antigens (TAAs), allow for increased cross-presentation of TAAs by professional antigen-presenting cells (APCs). This activates a T-cell-mediated T-helper type 1 (TH1) response, generates a cytotoxic T-lymphocyte (CTL) response against cancer cells, and reduces the frequency of regulatory T-cell (Treg) differentiation. In addition, alpha-TEA modulates the release of various cytokines and chemokines and induces tumor cell apoptosis. Altogether, this results in decreased tumor cell proliferation.

**alpha-type-1 polarized dendritic cells:** A population of mature polarized dendritic cells with potent immunostimulating activity. Treating bone marrow-derived dendritic cells (DCs) with interferon-alpha (IFN- $\alpha$ ), polyinosinic:polycytidylic acid (poly I:C) and bacterial CpG-DNA produces mature but not exhausted alpha type-1 polarized DCs (alphaDC1) that are capable of: 1) high responsiveness to other lymphoid chemokines, and 2) producing high levels of interleukin-12p70 (IL-12p70), characteristics found in human type-1 polarized dendritic cells. When pulsed with specific tumor associated antigens (TAAs), alphaDC1 may induce a potent cytotoxic T lymphocyte (CTL) response against TAA-expressing tumor cells.

**alpine:** referring to high mountain regions.

**alpine glaciation:** glaciation usually restricted to deep valleys in high mountainous terrain.

**alprazolam:** A triazolobenzodiazepine agent with anxiolytic, sedative-hypnotic and anticonvulsant activities. Alprazolam binds to a specific site distinct from the inhibitory neurotransmitter gamma-aminobutyric acid (GABA) binding site on the benzodiazepine-GABA-A-chloride ionophore receptor complex located in the limbic, thalamic and hypothalamic regions of the central nervous system (CNS). This binding causes an allosteric modification of the receptor and enhances the affinity of GABA to the receptor leading to an increase in the frequency of chloride-channel opening events. This leads to an increase in chloride ion conductance, neuronal hyperpolarization, inhibition of the action potential and leads to a decrease in neuronal excitability. OR A drug used to treat anxiety disorders and panic attacks. It is being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of benzodiazepine. Also called Xanax.

**alprostadil:** The naturally occurring prostaglandin E1 (PGE1) which displays a variety of pharmacologic actions. Alprostadil is a potent vasodilator agent that increases peripheral blood flow, inhibits platelet aggregation, and induces bronchodilation. Used in the treatment of erectile dysfunction, this agent produces corporal smooth muscle relaxation by binding to PGE receptors, resulting in the activation of adenylate cyclase and the subsequent accumulation of 3'5'-cAMP. OR A drug that is used to treat impotence (inability to have an erection) and is being studied in the treatment of sexual problems in men who have had surgery for prostate cancer. It is a type of vasodilator. Also called PGE1 and prostaglandin E1.

**Altace:** (Other name for: ramipril)

**ALTENS :** A procedure in which mild electric currents are applied to certain acupuncture points (spots on the body where an acupuncture needle may be inserted to control pain and other symptoms) on the skin. It is being studied in the treatment of dry mouth caused by radiation therapy for cancer. Also called acupuncture-like transcutaneous electrical nerve stimulation.

**alteplase:** A recombinant therapeutic agent which is chemically identical to or similar to endogenous tissue plasminogen activator (tPA). tPA is a serine protease which converts plasminogen to plasmin, a fibrinolytic

enzyme. Upon administration, alteplase increases plasmin enzymatic activity, resulting in hyperfibrinolysis and potential dissolution of a thrombus or embolism.

**Alteplase :** A form of tissue plasminogen activator that is made in the laboratory. It helps dissolve blood clots and is used to treat heart attacks, strokes, and clots in the lungs. It is also being studied in the treatment of cancer. It is a type of systemic thrombolytic agent. Also called Activase, r-tPA, and recombinant tissue plasminogen activator.

**alteration :** A change resulting in something that is different from the original.

**alternating current (ac):** current that reverses its direction at regular intervals, such as a common 115 volt circuit.

**alternative medicine :** Treatments that are used instead of standard treatments. Standard treatments are based on the results of scientific research and are currently accepted and widely used. Less research has been done for most types of alternative medicine. Alternative medicine may include special diets, megadose vitamins, herbal preparations, special teas, and magnet therapy. For example, a special diet may be used instead of anticancer drugs as a treatment for cancer.

**Alternative splicing:** The generation of unique but related mrna molecules by the differential splicing of the pre-mrna transcript. By allowing the synthesis of more than one mrna molecule from a premrna transcript, alternative splicing increases the encoding potential of the genome.

**Althose:** (Other name for: methadone hydrochloride)

**altiratinib:** An orally bioavailable inhibitor of c-Met/hepatocyte growth factor receptor (HGFR), vascular endothelial growth factor receptor type 2 (VEGFR2), Tie2 receptor tyrosine kinase (TIE2), and tropomyosin receptor kinase (Trk), with potential antiangiogenic and antineoplastic activities. Upon administration, altiratinib selectively binds to c-Met, VEGFR2, Tie2 and Trk tyrosine kinases, which may lead to the inhibition of endothelial cell migration, proliferation and survival. This also results in both an inhibition of tumor cell proliferation and increased tumor cell death in c-Met/VEGFR2/Tie2/Trk-expressing cells. These receptor tyrosine kinases (RTKs), frequently overexpressed or mutated by a variety of tumor cell

types, play crucial roles in the regulation of angiogenesis, tumor cell growth and survival.

**altithermal period:** A period of high temperature, particularly the one from 8000 to 4000 B.P. (before the present era), which was apparently warmer in summers, as compared with the present, and with the precipitation zones shifted poleward. Also called the hypsithermal period.

**altitude:** angle of a celestial object above the horizon.

**altretamine:** A synthetic cytotoxic s-triazine derivative similar in structure to alkylating agent triethylenemelamin with antineoplastic activity.

Although the precise mechanism by which altretamine exerts its cytotoxic effect is unknown, N-demethylation of altretamine may produce reactive intermediates which covalently bind to DNA, resulting in DNA damage.

OR An anticancer drug that belongs to the family of drugs called alkylating agents.

**Alum:** Astringent crystalline double sulfate of an alkali.  $K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$ . Used in the processing of pickles and as a flocking agent. Excess aluminum in the environment can be hazardous. OR technically, a double sulfate of ammonium or a univalent or trivalent metal but commonly used to denote aluminum sulfate ( $Al_2(SO_4)_3$ ).

**alum :** A chemical substance that contains aluminum sulfate and a second chemical, usually potassium sulfate. It is used to shrink tissues, to stop bleeding, and to boost the immune response to a vaccine.

**alum adjuvant:** An aluminum compound with immune adjuvant activity. This agent adsorbs and precipitates protein antigens in solution; the resulting precipitate improves vaccine immunogenicity by facilitating the slow release of antigen from the vaccine depot formed at the site of inoculation.

**Aluminum:** Symbol:"Al" Atomic Number:"13" Atomic Mass: 26.98amu. Aluminum is a light element and classified as a basic metal. There is more aluminum than any other metal in the Earth's crust. You will also find aluminum in utensils, foil wrap, power lines, soda cans, and airplane structures. or A metallic element that is found combined with other elements in the earth's crust. It is also found in small amounts in soil, water, and many foods. It is used in medicine and dentistry and in many products such as foil, cans, pots and pans, airplanes, siding, and roofs. High levels of aluminum in the body can be harmful.

**Aluminum hydrate (Al(OH)<sub>3</sub>) :** The main raw material for aluminum-based coagulants. The hydrate is produced of alumina, Al<sub>2</sub>O<sub>3</sub>, which originates from bauxite ore.

**ALVAC-CEA vaccine:** A cancer vaccine consisting of ALVAC, a highly attenuated poxvirus strain derived from the canarypox virus, encoding for the tumor associated antigen (TAA) carcinoembryonic antigen (CEA), with potential antineoplastic activity. Upon administration, ALVAC-CEA vaccine expresses CEA and may stimulate a host immune response against tumor cells expressing CEA. This may result in the inhibition of tumor growth and/or metastasis. CEA is overexpressed in a variety of tumor cell types. Check for active clinical trials using this agent. OR A cancer vaccine made with a form of the canarypox virus that does not cause disease in people. It is being studied in the treatment of some kinds of cancer. The virus is changed in the laboratory to make a protein called carcinoembryonic antigen (CEA), which is a tumor marker. ALVAC-CEA vaccine may help the immune system find and kill cancer cells that make CEA.

**ALVAC-ESO-1 vaccine:** A cancer vaccine consisting of a replication-defective recombinant canarypox virus (ALVAC) encoding the cancer-testis antigen NY-ESO-1, with potential immunostimulatory and antineoplastic activities. Upon administration, ALVAC-ESO-1 vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against NY-ESO-1-expressing cancer cells, which may result in the inhibition of tumor cell proliferation. NY-ESO-1, a tumor associated antigen (TAA), is found in normal testis and on the surface of various tumor cells.

**ALVAC-hB7.1:** A vaccine comprise of a canarypox viral vector that carries the gene for human B7.1 (CD80 antigen) with potential use as an autologous therapeutic cancer vaccine. Tumor cells harvested from a patient are infected with ALVAC-hB7.1, thereby producing an autologous cell line that exhibits increased expression of HLA class I and class II, CD54 (ICAM), and CD80. Increased expression of these proteins by this autologous cell line may activate an antitumor T-cell response when the modified cells are administered to the patient.

**ALVAC-MART-1 vaccine:** A cancer vaccine containing a replication-defective recombinant canarypox virus (ALVAC), encoding an epitope of

MART-1 (melanoma antigen recognized by T-cells), with potential immunostimulatory and antineoplastic activities. Upon administration, the MART-1 epitope is expressed by the ALVAC vector in ALVAC-MART-1 vaccine; a host cytotoxic T lymphocyte (CTL) response against MART-1-expressing tumor cells may follow, resulting in tumor cell lysis and decreased tumor cell proliferation.

**ALVAC(2) melanoma multi-antigen therapeutic vaccine:** A therapeutic cancer vaccine, based on a replication-defective recombinant canarypox virus (ALVAC) encoding multiple melanoma antigens, with potential immunostimulatory and antineoplastic activities. Vaccination with ALVAC(2) melanoma multi-antigen therapeutic vaccine may stimulate the host immune system to mount an immune response against antigen-expressing melanoma cells, resulting in inhibition of tumor growth and/or metastasis.

**ALVAC(2)-NY-ESO-1 (M)/TRICOM vaccine:** A cancer vaccine consisting of a replication-defective recombinant canarypox virus [ALVAC(2)] encoding the cancer-testis antigen NY-ESO and the TRIad of COstimulatory Molecules (B7-1, ICAM-1 and LFA-3; also called TRICOM), with potential immunostimulatory and antineoplastic activities. Upon administration, ALVAC(2)/NY-ESO (M)/TRICOM vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against NY-ESO-expressing cancer cells, which may result in the inhibition of tumor cell proliferation. NY-ESO-1, a tumor associated antigen (TAA), is found in normal testis and on the surface of various tumor cells, including bladder, breast, hepatocellular, melanoma, and prostate tumor cells. TRICOM may enhance antigen presentation and activate cytotoxic T-cells. In addition, ALVAC(2) encodes the vaccinia virus (vv) E3L and K3L genes, which may potentiate the translation of the NY-ESO and TRICOM genes.

**alvelestat:** An orally bioavailable, selective and reversible inhibitor of human neutrophil elastase (NE), with potential anti-inflammatory activity. Upon administration, alvelestat binds to and inhibits the activity of human NE. This inhibits NE-mediated inflammatory responses, which may prevent lung inflammation and injury, and may improve lung function associated with NE-induced respiratory diseases. NE, a serine protease released by

neutrophils during inflammation, is upregulated in a number of respiratory diseases.

**alveolar rhabdomyosarcoma :** A soft tissue tumor that is most common in older children and teenagers. It begins in embryonic muscle cells (cells that develop into muscles in the body). It can occur at many places in the body, but usually occurs in the trunk, arms, or legs. Also called ARMS.

**alveolar soft part sarcoma :** A soft tissue tumor that is most common in older children and teenagers. It begins in the soft supporting tissue that connects and surrounds the organs and other tissues. Alveolar soft part sarcoma usually occurs in the legs, but can also occur in the arms, hands, head, or neck. It can cause the growth of new blood vessels that help the tumor grow and spread. Also called ASPS.

**alveoli:** microscopic air sacs that are surrounded by a rich network of blood vessels in mammalian lungs that function in gas exchange; the air sacs are at the end of the bronchioles. Or Tiny air sacs at the end of the bronchioles (tiny branches of air tubes) in the lungs. The alveoli are where the lungs and the bloodstream exchange carbon dioxide and oxygen. Carbon dioxide in the blood passes into the lungs through the alveoli. Oxygen in the lungs passes through the alveoli into the blood.

**alvespimycin hydrochloride:** The hydrochloride salt of alvespimycin, an analogue of the antineoplastic benzoquinone antibiotic geldanamycin. Alvespimycin binds to HSP90, a chaperone protein that aids in the assembly, maturation and folding of proteins. Subsequently, the function of Hsp90 is inhibited, leading to the degradation and depletion of its client proteins such as kinases and transcription factors involved with cell cycle regulation and signal transduction.

**alvimopan:** A synthetic trans-3,4-dimethyl-4-(3-hydroxyphenyl) piperidine with peripherally selective opioid mu receptor antagonist activity. Alvimopan is a selective and competitive antagonist at mu-opioid receptors, found in myenteric and submucosal neurons and the immune cells of the lamina propria in the human gut. Upon administration, this agent binds to mu-opioid receptors in the gut, thereby reversing opioid-related disturbances in gut motility. Alvimopan is approximately three to nine times more potent than naloxone. Check for active clinical trials using this agent.

**alvocidib:** A synthetic N-methylpiperidinyl chlorophenyl flavone compound. As an inhibitor of cyclin-dependent kinase, alvocidib induces cell cycle arrest by preventing phosphorylation of cyclin-dependent kinases (CDKs) and by down-regulating cyclin D1 and D3 expression, resulting in G1 cell cycle arrest and apoptosis. This agent is also a competitive inhibitor of adenosine triphosphate activity. OR A substance being studied in the treatment of several types of cancer. It stops cells from dividing and may kill cancer cells. It is a type of cyclin-dependent kinase (CDK) inhibitor. Also called flavopiridol and HMR 1275.

**Alzheimer dementia :** A brain disorder that usually starts in late middle age or old age and gets worse over time. Symptoms include loss of memory, confusion, difficulty thinking, and changes in language, behavior, and personality. Also called Alzheimer disease.

**Alzheimer disease :** A brain disorder that usually starts in late middle age or old age and gets worse over time. Symptoms include loss of memory, confusion, difficulty thinking, and changes in language, behavior, and personality. Also called Alzheimer dementia.

**AM1:** Austin model 1. One of the most popular semi-empirical MO theories.

**amalgam:** An alloy of mercury with another metal, often used as a dental filling.

**Amanita phalloides :** A type of poisonous mushroom that has harmful effects on the kidneys and liver. It is responsible for most fatal cases of mushroom poisoning. Also called death cap.

**Amanitin:** A cyclic octapeptide from the mushroom *Amanita phalloides* (the destroying angel) that is a potent inhibitor of the elongation phase of RNA synthesis catalyzed by RNA polymerase II.

**amantadine hydrochloride:** The hydrochloride salt of amantadine, a synthetic tricyclic amine with antiviral, antiparkinsonian, and antihyperalgesic activities. Amantadine appears to exert its antiviral effect against the influenza A virus by interfering with the function of the transmembrane domain of the viral M2 protein, thereby preventing the release of infectious viral nucleic acids into host cells; furthermore, this agent prevents virus assembly during virus replication. Amantadine exerts its antiparkinsonian effects by stimulating the release of dopamine from striatal dopaminergic nerve terminals and inhibiting its pre-synaptic

reuptake. This agent may also exert some anticholinergic effect through inhibition of N-methyl-D-aspartic acid (NMDA) receptor-mediated stimulation of acetylcholine, resulting in antihyperalgesia. or A drug used to treat infections caused by the influenza A virus. It blocks the ability of the virus to infect cells and to make more virus particles. It is also used to treat the symptoms of Parkinson disease. Amantidine hydrochloride is a type of antiviral agent.

**Amaryl:** (Other name for: glimepiride)

**amatuximab:** A humanized IgG1 monoclonal antibody directed against human mesothelin with potential antineoplastic activity. Amatuximab binds to mesothelin, triggering an antibody dependent cellular cytotoxicity (ADCC)-mediated host immune response against mesothelin-expressing tumor cells, which may result in tumor cell lysis. Mesothelin, a 40kDa cell surface glycoprotein, is overexpressed in several human tumors, including mesothelioma and ovarian and pancreatic adenocarcinomas. or A substance being studied in the treatment of mesothelioma. Amatuximab binds to a protein called mesothelin, which is found on some cancer cells.

Amatuximab may help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called anti-mesothelin monoclonal antibody MORAb-009 and MORAb-009.

**Amber:** A chromatic (brown) color of glass or plastic containers. It is used principally to protect the contents of the container from exposure to light. OR A yellowish-brown color of glass or plastic containers used primarily to protect light-sensitive contents.

**Ambien :** (Other name for: zolpidem tartrate) OR A drug used to treat insomnia (inability to sleep), and anxiety. It is a type of imidazopyridine (sedative hypnotic). Also called zolpidem.

**Ambient Temperature:** The temperature of the environment surrounding a particular object OR The temperature of a medium surrounding an object. The term is often used to denote prevailing room temperature.

**AmBisome:** (Other name for: liposomal amphotericin B)

**Ambochlorin:** (Other name for: chlorambucil)

**Amboclorin:** (Other name for: chlorambucil)

**AMD:** A condition in which there is a slow breakdown of cells in the center of the retina (the light-sensitive layers of nerve tissue at the back of

the eye). This blocks vision in the center of the eye and can cause problems with activities such as reading and driving. AMD is most often seen in people who are over the age of 50. Also called age-related macular degeneration, ARMD, and macular degeneration.

**AMD 3100:** A drug used before autologous stem cell transplantation in patients with non-Hodgkin lymphoma or multiple myeloma. AMD 3100 is given together with granulocyte-colony stimulating factor (G-CSF) to help move stem cells from the bone marrow to the blood. The stem cells can then be collected, stored, and given back to the patient. AMD 3100 is a type of chemokine receptor antagonist. Also called Mozobil and plerixafor.

**Amdray:** (Other name for: valspodar)

**amelanotic melanoma :** A type of skin cancer in which the cells do not make the pigment melanin. Skin lesions are often irregular and may be pink, red, or have light brown, tan, or gray at the edges.

**amenorrhea:** lack of menses

**American Chemical Society:** A large and influential professional society for professionals and students in chemistry and related fields.

**American ginseng:** The aromatic root of the perennial herb *Panax quinquefolius*, native to eastern North America. American ginseng, used in Chinese traditional medicine and available as a nutritional supplement, is classified as an adaptogenic herb with multiple effects, many of which are regulatory in nature. It contains a complex mixture of saponin glycosides, also known as ginsenosides or panaxosides. Although the mechanism of action is unclear, this agent is reported to enhance the immune system and reduce fatigue.

**American Society of Testing and Materials (ASTM):** The main standardization body for materials standards in the United States. Including materials standards and testing protocols for plastic sheeting.

**Americium:** Symbol:"Am" Atomic Number:"95" Atomic Mass: (243)amu. Americium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. This element is radioactive and can be safely used in small amounts. You might find it in nuclear reactors and some smoke detectors.

**Ames test:** A simple, rapid means of detecting carcinogens by measuring a chemical's ability to induce mutations in *Salmonella* bacteria. OR A

simple bacterial test for carcinogens, based on the assumption that carcinogens are mutagens.

**amethopterin** : A drug used to treat some types of cancer, rheumatoid arthritis, and severe skin conditions, such as psoriasis. Amethopterin stops cells from making DNA and may kill cancer cells. It is a type of antimetabolite. Also called methotrexate, MTX, and Rheumatrex.

**Amevive:** (Other name for: alefacept) or A drug that is used to treat certain skin conditions and is being studied in the treatment of cutaneous (skin-related) T-cell cancer and T-cell non-Hodgkin lymphoma. Amevive is made by combining part of an antibody with a protein that blocks the growth some types of T cells. It is a type of fusion protein and a type of immunosuppressant. Also called alefacept.

**Amfebutamone:** (Other name for: bupropion hydrochloride)

**AMG 102:** A substance being studied in the treatment of cancer. It binds to a protein called hepatocyte growth factor (HGF), which may cause cancer cells to grow. Blocking this may cause cancer cells to die. AMG 102 is a type of monoclonal antibody. Also called anti-HGF monoclonal antibody AMG 102.

**AMG 162:** A drug used to prevent or treat certain bone problems. Under the brand name Xgeva, it is used to prevent broken bones and other bone problems caused by solid tumors that have spread to bone. It is also used in certain patients to treat giant cell tumor of the bone that cannot be removed by surgery. Under the brand name Prolia, it is used to treat osteoporosis (a decrease in bone mass and density) in postmenopausal women who have a high risk of breaking bones. AMG 162 is also being studied in the treatment of other conditions and types of cancer. It binds to a protein called RANKL, which keeps RANKL from binding to another protein called RANK on the surface of certain bone cells, including bone cancer cells. This may help keep bone from breaking down and cancer cells from growing. AMG 162 is a type of monoclonal antibody. Also called denosumab, Prolia, and Xgeva.

**AMG 531:** A drug used to treat patients with immune thrombocytopenic purpura (ITP) who do not get better with other forms of treatment. In ITP, platelets (cells that cause blood clots to form) are destroyed by the immune system. AMG 531 is being studied as a way to treat low platelet counts caused by chemotherapy. It binds to the thrombopoietin receptor and causes the bone marrow to make more platelets. AMG 531 is also being studied in

the treatment of myelodysplastic syndromes (a group of diseases in which the bone marrow does not make enough healthy blood cells). It is a type of thrombopoietin agonist. Also called Nplate and romiplostim.

**AMG 706:** A substance that is being studied in the treatment of some types of cancer. It belongs to the families of drugs called angiogenesis inhibitors and protein kinase inhibitors.

**Amicar:** (Other name for: aminocaproic acid)

**amide:** an organic functional group that has the following structure: OR A functional group which can act as an epoxy resin curing agent. OR Any carbon compound containing the functional group  $-C(O)NH$ . Acrylamide,  $CH_2=CH-C(O)NH$ , is one of the nastiest pieces of work you could hope to come across, but poly(acrylamide) is an innocuous compound found in disposable nappies. Get a disposable nappy and tear it open; you will find cottony padding stuff, and a gritty substance - this grit is small particles of cross-linked poly(acrylamide). OR An amide is an organic compound that contains a carbonyl group bound to nitrogen: . The simplest amides are formamide ( $HCONH_2$ ) and acetamide ( $CH_3CONH_2$ ).

**amifampridine:** An organic compound derived from pyridine with potassium channel inhibition activity. Amifampridine inhibits potassium channel efflux, increasing the duration of the action potential, which results in an increase in the duration of calcium channel opening and enhanced acetylcholine (ACh) release. Increased ACh availability at the motor end plate allows muscles to contract.

**amifostine :** A drug used as a chemoprotective drug to control some of the side effects of chemotherapy and radiation therapy.

**amifostine trihydrate:** The trihydrate form of a phosphorylated aminosulphydryl compound. After dephosphorylation of amifostine by alkaline phosphatase to an active free sulphydryl (thiol) metabolite, the thiol metabolite binds to and detoxifies cytotoxic platinum-containing metabolites of cisplatin and scavenges free radicals induced by cisplatin and ionizing radiation. The elevated activity of this agent in normal tissues results from both the relative abundance of alkaline phosphatase in normal tissues and the greater vascularity of normal tissues compared to tumor tissues.

**amikacin :** An antibiotic drug used to treat infection. It belongs to the family of drugs called aminoglycoside antibiotics.

**Amiloride-sensitive sodium channel:** A sodium channel important in the detection of the taste of salt. Such channels are inhibited by amiloride, which also mutes the taste of salt.

**Amines:** Any carbon compound containing the nitrogen bound only to carbon or hydrogen. The functional group for a primary amine is  $\text{-NH}_2$ , for a secondary amine  $\text{-NH-}$ , and for a tertiary amine a nitrogen bound to three carbon chains. Amino acids are carbon compounds containing both amine and carboxylic acid groups - e.g., glycine,  $\text{NH}_2\text{-CH}_2\text{-COOH}$ . (Biochemists give this compound the symbol (G)) OR An amine is an organic compound that contains a nitrogen atom bound only to carbon and possibly hydrogen atoms. Examples are methylamine,  $\text{CH}_3\text{NH}_2$ ; dimethylamine,  $\text{CH}_3\text{NHCH}_3$ ; and trimethylamine,  $(\text{CH}_3)_3\text{N}$ . OR a class of organic compounds of nitrogen that may be considered as derived from ammonia ( $\text{NH}_3$ ) by replacing one or more of the hydrogen atoms by organic radicals, such as  $\text{CH}_3$  or  $\text{C}_6\text{H}_5$ , as in methylamine and aniline. The former is a gas at ordinary temperature and pressure, but other amines are liquids or solids. All amines are basic in nature and usually combine readily with hydrochloric or other strong acids to form salts. OR Used as accelerators for polyester resins. OR any of a class of organic compounds derived from ammonia by replacement of hydrogen with one or more alkyl groups. OR any of a class of organic compounds derived from ammonia by replacement of hydrogen with one or more alkyl groups. OR Any of a class of organic compounds derived from ammonia by replacement of hydrogen with one or more alkyl groups.

**Amino acid:** A carbon compound containing both an amine ( $\text{NH}_2$ ) and an carboxylic acid ( $\text{-C(O)-OH}$ ) functional group. Amino acids are the building blocks of proteins, which can be considered a special case of condensation polymers. Twenty main amino acids are responsible for most of the incredible variation in proteins, and these have been given one letter symbols (G, Q, V, etc.) by biochemists. An example is glycine,  $\text{NH}_2\text{-CH}_2\text{-COOH}$ . (Biochemists give this compound the symbol (G))" OR An organic acid with an  $\alpha$ -carbon atom linked to a carboxylic acid, an amino group, a hydrogen atom, and a side chain (the R group). Twenty different amino acids are the building blocks of proteins.

**amino acid :** One of several molecules that join together to form proteins. There are 20 common amino acids found in proteins. Or the building

blocks of proteins. OR A class of 20 chemical units that are the building blocks of peptides and proteins OR  $\alpha$ -Amino-substituted carboxylic acids, the building blocks of proteins.

**amino acid activation:** ATP-dependent enzymatic esterification of the carboxyl group of an amino acid to the 3'-hydroxyl group of its corresponding tRNA.

**amino acid injection:** A concentrated dietary supplement for injection containing the essential amino acids leucine, isoleucine, lysine, valine, phenylalanine, histidine, threonine, methionine and tryptophan as well as the non-essential amino acids alanine, arginine, glycine, proline, serine and tyrosine, with potential anabolic and anti-catabolic activities. Upon dilution and intravenous infusion of the amino acid nutritional supplement, the amino acids serve as protein building blocks, promote protein synthesis in muscle cells and prevent protein breakdown.

**amino acid sequence :** The arrangement of amino acids in a protein. Proteins can be made from 20 different kinds of amino acids, and the structure and function of each protein are determined by the kinds of amino acids used to make it and how they are arranged.

**Amino Group:** The amino group is a functional group with one nitrogen and two hydrogen atoms. You will find them on all of the amino acids. It can be synthesized from ammonia.

**Amino sugar:** A sugar that contains an amino group rather than a hydroxyl group at the C-2 position; the most common amino sugars are glucosamine and galactosamine.

**amino-terminal residue:** The only amino acid residue in a polypeptide chain with a free  $\alpha$ -amino group; defines the amino terminus of the polypeptide.

**Aminoacyl-trna:** An amino acid ester of transfer RNA.

**aminoacyl-tRNA:** An aminoacyl ester of a tRNA.

**Aminoacyl-trna synthetase:** An enzyme that activates an amino acid and then links it to transfer RNA. Also known as an activating enzyme, each aminoacyl-trna synthetase is specific for a particular amino acid.

**aminoacyl-tRNA synthetases:** Enzymes that catalyze synthesis of an aminoacyltRNA at the expense of ATP energy.

**aminobenzoate potassium:** The potassium salt form of aminobenzoate, with anti-inflammatory and antifibrotic activities. Aminobenzoate potassium increases oxygen uptake at the tissue level and may enhance monoamine oxidase (MAO) activity, which requires oxygen as a substrate. Enhanced MAO activity maybe accountable for the prevention or regression of fibrosis, which may occur due to too much serotonin or too little MAO activity.

**aminobenzoic acid :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Bacteria that live in the intestines need aminobenzoic acid to survive. Aminobenzoic acid is found in grains and foods from animals. It is being studied as a radiosensitizer (a substance that makes tumor cells more sensitive to radiation therapy) and in the treatment of certain skin disorders. Also called PABA and para-aminobenzoic acid.

**aminocamptothecin:** A water-insoluble camptothecin derivative. Aminocamptothecin binds to the nuclear enzyme topoisomerase I, thereby inhibiting repair of single-strand DNA breakages. Because the terminal lactone ring of aminocamptothecin required for the agent's antitumor activity spontaneously opens under physiological conditions to an inactive carboxy form, the drug must be administered over an extended period of time to achieve effective cytotoxicity. or An anticancer drug that belongs to the family of drugs called topoisomerase inhibitors.

**aminocaproic acid:** A synthetic lysine derivative with antifibrinolytic activity. Aminocaproic acid competitively inhibits activation of plasminogen, thereby reducing conversion of plasminogen to plasmin (fibrinolysin), an enzyme that degrades fibrin clots as well as fibrinogen and other plasma proteins including the procoagulant factors V and VIII. Aminocaproic acid competitively reduces the conversion of plasminogen to plasmin by plasminogen activators. It directly inhibits proteolytic activity of plasmin, but higher doses are required than are needed to reduce plasmin formation. Aminocaproic acid is used in the treatment of hemorrhage and prophylactically against hemorrhage, including hyperfibrinolysis-induced hemorrhage and postsurgical hemorrhage.

**aminoglutethimide :** An anticancer drug that belongs to the family of drugs called nonsteroidal aromatase inhibitors. Aminoglutethimide is used to decrease the production of sex hormones (estrogen in women or

testosterone in men) and suppress the growth of tumors that need sex hormones to grow.

**aminoglycoside antibiotic :** A substance that works against many types of bacteria and includes streptomycin, gentamicin, and neomycin. An aminoglycoside antibiotic is used to treat bacterial infections.

**aminolevulinic acid :** The active ingredient in a drug used to treat actinic keratosis (a skin condition that may become cancer). The drug is also being studied in the treatment of squamous cell and basal cell skin cancers and other types of cancer. When aminolevulinic acid is taken up by cells, including cancer cells, and then exposed to certain types of light, it becomes active and kills the cells. It is a type of photosensitizing agent.

**aminolevulinic acid hydrochloride :** A drug used to treat actinic keratosis (a skin condition that may become cancer). The drug is also being studied in the treatment of squamous cell and basal cell skin cancers and other types of cancer. When aminolevulinic acid hydrochloride is taken up by cells, including cancer cells, and then exposed to certain types of light, it becomes active and kills the cells. It is a type of photosensitizing agent. Also called Levulan and Levulan Kerastick. OR A topically administered metabolic precursor of protoporphyrin IX. After topical administration, aminolevulinic acid hydrochloride (ALA HCl) is converted to protoporphyrin IX (PpIX) which is a photosensitizer. When the proper wavelength of light activates protoporphyrin IX, singlet oxygen is produced, resulting in a local cytotoxic effect.

**aminophylline:** A methylxanthine and derivative of theophylline. Aminophylline relaxes smooth muscles, particularly bronchial muscles. This xanthine most likely exerts its effect by inhibiting cAMP or cGMP phosphodiesterases, thereby increasing levels of the second messenger cAMP or cGMP intracellularly. Other mode of actions include an adenosine antagonistic effect on the activity of CD4 lymphocytes and mediator release from mast cells thereby decreasing lung sensitivity to allergens and other substances that cause inflammation. Aminophylline also acts as a CNS stimulant and exerts a positive chronotropic and inotropic effect on the heart.

**aminopterin:** A synthetic derivative of pterins with antineoplastic and immunosuppressive properties. As a folate analogue, aminopterin competes for the folate binding site of the enzyme dihydrofolate reductase, thereby

blocking tetrahydrofolate synthesis, and resulting in depletion of nucleotide precursors and inhibition of DNA, RNA and protein synthesis. or An anticancer drug that belongs to the family of drugs called antimetabolites.

**aminothiadiazole:** A synthetic derivative of nicotinamide adenine dinucleotide (NAD). Aminothiadiazole competitively inhibits inosine 5-monophosphate dehydrogenase, thereby disrupting the regulation of cell proliferation and differentiation in a number of cells. This agent is also a selective human adenosine A<sub>3</sub> receptor antagonist.

**Aminotransferase:** A class of enzymes that transfer an  $\alpha$ -amino group from an  $\alpha$ -amino acid to an  $\alpha$ -keto acid. Also called transaminases.

**aminotransferases:** Enzymes that catalyze the transfer of amino groups from  $\alpha$ -amino to  $\alpha$ -keto acids; also called transaminases.

**amiodarone hydrochloride:** The hydrochloride salt of an iodine-rich benzofuran derivative with antiarrhythmic and vasodilatory activities. As a class III antiarrhythmic agent, amiodarone blocks the myocardial calcium, potassium and sodium channels in cardiac tissue, resulting in prolongation of the cardiac action potential and refractory period. In addition, this agent inhibits alpha- and beta-adrenergic receptors, resulting in a reduction in sympathetic stimulation of the heart, a negative chronotropic effect, and a decrease in myocardial oxygen demands. Amiodarone may cause vasodilation by stimulation of the release of nitric oxide and cyclooxygenase-dependent relaxing endothelial factors. or A drug used to treat certain types of abnormal heart rhythms that have not gotten better with other drugs. Amiodarone hydrochloride affects the electrical activity of the heart. It is a type of antiarrhythmic agent. Also called Corderone.

**Amitiza:** (Other name for: lubiprostone)

**amitriptyline :** A drug that is used to treat depression and may be given to treat anxiety, sleep disorders, and pain. It is also being studied in an oral or gel form in the treatment of nerve pain caused by chemotherapy.

Amitriptyline is a type of tricyclic antidepressant. Also called amitriptyline hydrochloride.

**amitriptyline hydrochloride:** The hydrochloride salt of the tricyclic dibenzocycloheptadiene amitriptyline with antidepressant and antinociceptive activities. Amitriptyline inhibits the re-uptake of norepinephrine and serotonin by the presynaptic neuronal membrane in the central nervous system (CNS), thereby increasing the synaptic

concentration of norepinephrine and serotonin. Due to constant stimulation to these receptors, amitriptyline may produce a downregulation of adrenergic and serotonin receptors, which may contribute to the antidepressant activity. In the CNS the antinociceptive activity of this agent may involve high affinity binding to and inhibition of N-methyl-D-aspartate (NMDA) receptors and/or the enhancement of the action of serotonin at the spinal terminals of an opioid-mediated intrinsic analgesia system. OR A drug that is used to treat depression and may be given to treat anxiety, sleep disorders, and pain. It is also being studied in an oral or gel form in the treatment of nerve pain caused by chemotherapy. Amitriptyline hydrochloride is a type of tricyclic antidepressant. Also called amitriptyline.

**AML:** An aggressive (fast-growing) disease in which too many myeloblasts (immature white blood cells that are not lymphoblasts) are found in the bone marrow and blood. Also called acute myeloblastic leukemia, acute myelogenous leukemia, acute myeloid leukemia, acute nonlymphocytic leukemia, and ANLL.

**AML mRNA plus lysate loaded autologous dendritic cell vaccine:** A cancer vaccine consisting of autologous dendritic cells loaded with separate preparations of acute myelogenous leukemia (AML) cell lysate and AML-specific messenger RNA (mRNA) with potential immunostimulatory and antineoplastic activities. Upon administration, AML mRNA plus lysate loaded autologous dendritic cell vaccine may elicit a potent cytotoxic T-cell (CTL) response against AML cells, resulting in tumor cell death. Autologous dendritic cells doubly-loaded with AML cell lysate and AML-specific mRNA may elicit superior primary, recall, and effector lytic immune responses compared to autologous dendritic cells loaded with tumor lysate or tumor mRNA alone.

**ammine:** A metal ion complex containing ammonia as a ligand. The ammonia nitrogen is bound directly to a metal ion in amines; amines differ in that the ammonia nitrogen is directly bound to a carbon atom.

**Ammoidin:** (Other name for: methoxsalen)

**Ammonia:** Ammonia is an inorganic compound comprising nitrogen and hydrogen in the ratio 1:3. Ammonia is produced from hydrocarbons, mainly natural gas, and nitrogen extracted from air. Ammonia occurs both in solution and as anhydrous ammonia, the latter finding its main application in fertilizers. Ammonia is also consumed in various other chemical and

industrial applications such as the production of nitrate-based explosives, and in aqueous solution as a solvent.

**ammonia** : A gas made of nitrogen and hydrogen. It has a strong odor and can irritate the skin, eyes, nose, throat, and lungs. Ammonia is made by bacteria and decaying plants and animals and is found in water, soil, and air. Ammonia is also made by the body when proteins break down. In the laboratory, ammonia can be changed to a liquid and used in medicines, fertilizers, household cleaning liquids, and other products. It is also added to cigarettes to increase the effect of nicotine on the body.

**ammonia N-13**: A radiopharmaceutical composed of ammonia labeled with the radioisotope nitrogen N 13 that can be used, during positron emission tomography (PET), as a blood flow imaging agent and potentially as a tumor imaging agent. Upon intravenous administration, ammonia N 13 distributes to various organs in the body, such as the myocardium, liver, kidneys and brain. This agent is taken up by cells and is retained following conversion to glutamine N 13 by glutamine synthetase (GS). Upon PET, organ perfusion and the presence of cancer cells can be assessed. GS, an enzyme that catalyzes the synthesis of glutamine from glutamate and ammonia, is overexpressed in a variety of cancers and plays a key role in cancer cell proliferation.

**Ammonia oxidation**: Test drawn during manufacturing process to evaluate the ammonia oxidation rate for the nitrifiers.

**ammonia<sub>3</sub>**: Pure NH<sub>3</sub> is a colorless gas with a sharp, characteristic odor. It is easily liquified by pressure, and is very soluble in water. Ammonia acts as a weak base. Aqueous solutions of ammonia are (incorrectly) referred to as "ammonium hydroxide".

**Ammoniotelic**: Characteristic of organisms in which excess ammonia is directly secreted; many aquatic animals are ammoniotelic.

**ammonium ion<sub>4+</sub>**: NH<sub>4</sub><sup>+</sup> is a cation formed by neutralization of ammonia, which acts as a weak base.

**ammonium tetrathiomolybdate** : A substance being studied in the treatment of many types of cancer. Ammonium tetrathiomolybdate removes extra copper from the body. Removing the copper may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. Ammonium tetrathiomolybdate is a type of chelating agent and a type of antiangiogenesis agent.

**ammonium trichlorotellurate:** A synthetic non-toxic tellurium derivative, structurally similar to cisplatin, with immuno-modulating, antiviral, and hair growth-promoting activities. Ammonium trichlorotellurate may inhibit the inflammatory cytokine interleukin-10 (IL-10) and may induce hematopoietic cells to express interleukin-2 (IL-2), IL-2 receptors, granulocyte-macrophage colony-stimulating factor (GM-CSF), IL-3, tumor necrosis factor (TNF) and interferons (INFs). This agent is also a potent inducer of IL-1 and IL-6. Accordingly, ammonium trichlorotellurate may protect against chemotherapy-induced myelosuppression. In addition, this agent exhibits hair growth-promoting activity by inducing anagen production and inhibiting catagen production, resulting in the promotion of follicular keratinocyte proliferation and interference with follicular keratinocyte terminal differentiation, respectively. Accordingly, ammonium trichlorotellurate may protect against chemotherapy-induced alopecia.

**ammonotelic:** Excreting excess nitrogen in the form of ammonia.

**Amnesteem:** (Other name for: isotretinoin)

**AmnioFix:** (Other name for: dehydrated human amnion/chorion membrane)

**amnion-derived cellular cytokine solution:** A topical cellular cytokine solution containing a distinct combination of growth factors and cytokines secreted by and released from amnion-derived multipotent progenitor (AMP) cells, with potential immunomodulating and skin healing activities. The amnion-derived cellular cytokine solution (ACCS) contains near physiological levels of transforming growth factor beta, tissue inhibitor of metalloproteinase-1 (TIMP-1) and TIMP-2, as well as the angiogenesis factors platelet-derived growth factor (PDGF), vascular endothelial growth factor (VEGF) and angiogenin that are normally found in healing wounds. Upon spraying the solution onto affected areas, the cytokines and growth factors in ACCS appear to increase the migration, proliferation and differentiation of both keratinocytes and fibroblasts; enhance the migration and phagocytosis of macrophages in wounds; and increase epithelialization. Together these processes may accelerate skin healing and tissue repair. Also, ACCS may be beneficial in the treatment of radiation burns of the skin.

**amoeba:** single-celled organisms with no distinct shape; members of the phylum Sarcodina.

**amonafile :** A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called topoisomerase inhibitors and intercalating agents.

**amonafile dihydrochloride:** The dihydrochloride salt of amonafile, an imide derivative of naphthalic acid. Amonafile intercalates into DNA and inhibits topoisomerase II, resulting in protein-associated strand breaks and impaired DNA and RNA synthesis.

**amonafile L-malate:** The malate salt of amonafile, an imide derivative of naphthalic acid, with potential antineoplastic activity. Amonafile intercalates into DNA and inhibits topoisomerase II, resulting in DNA double-strand breaks (DSB) and inhibition of DNA replication and RNA synthesis.

**amorphous:** A solid that does not have a repeating, regular three-dimensional arrangement of atoms, molecules, or ions.

**AMORPHOUS:** Having no crystallinity. At processing temperatures most plastics are amorphous. OR Latin meaning without form. Non-crystalline structure. OR Devoid of crystallinity or stratification. Most plastics are amorphous at processing temperatures. Material assumes more random molecular structure when cooling. OR A plastic material in which the molecular structure is random and becomes mobile over a wide temperature range. See crystalline. OR Latin meaning without form. Non-crystalline structure. OR Latin meaning without form. Non-crystalline structure. OR Non-crystalline. Most plastics are amorphous at extrusion processing temperatures. The material assumes a more random molecular structure when cooling. OR Devoid of crystallinity or stratification. Most plastics are amorphous at processing temperatures. Material assumes more random molecular structure when cooling.

**Amorphous form:** A solid that does not give a distinctive powder X-ray diffraction pattern. Amorphous solids are usually considered noncrystalline materials (i.e., glasses).

**Amorphous Phase:** Devoid of crystallinity – no definite order. At processing temperatures, the plastic is normally in the amorphous state.

**Amorphous Polymer:** Amorphous means irregular, having no discernible order or shape. In the context of solids, the molecules are randomly arranged, as in glass, rather than periodically arranged as in a crystalline material. Amorphous polymer has a glass like structure with tangled chain

and no long range order. OR A polymer having no crystallinity. Polystyrene is an amorphous polymer while HDPE is semi-crystalline.

**Amorphous Solid:** An amorphous solid has no specific organization of molecules. The other end of the spectrum would be a crystal with a highly organized set of molecules. Plastic is an example of a vitreous solid. Because of their combination of atoms, amorphous solids do not have a specific melting point. They become a liquid over a wide temperature range.

**amount:** The number that is a percentage of the base. It is the number in the numerator in a percent ratio:

**amoxicillin:** A broad-spectrum, semisynthetic aminopenicillin antibiotic with bactericidal activity. Amoxicillin binds to and inactivates penicillin-binding protein (PBP) 1A located on the inner membrane of the bacterial cell wall. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity. This interrupts bacterial cell wall synthesis and results in the weakening of the bacterial cell wall and causes cell lysis. OR A drug used to treat some bacterial infections. Amoxicillin is a form of penicillin that is made in the laboratory. It kills certain types of bacteria. It is a type of antibiotic.

**amoxicillin-clavulanate potassium:** A combination of the semisynthetic broad-spectrum antibiotic amoxicillin and the beta-lactamase enzyme inhibitor clavulanate potassium. Clavulanate potassium increases the serum half-life of amoxicillin by inhibiting beta-lactamase-mediated metabolism of amoxicillin. Amoxicillin inhibits bacterial cell wall synthesis by binding to penicillin binding proteins and inhibiting peptidoglycan synthesis, a critical component of bacterial cell walls.

**amoxicillin-clavulanate potassium :** A drug used to treat bacterial infections. Adding the chemical clavulanate potassium to the antibiotic amoxicillin increases the amount of time the antibiotic stays active in the body. Amoxicillin-clavulanate potassium is a type of combination antibiotic. Also called Augmentin.

**Amoxil:** (Other name for: amoxicillin)

**AMP-dependent protein kinase:** A protein kinase, conserved among eukaryotes, that is activated on binding of AMP and inhibited by ATP; consequently, it functions as a cellular fuel gauge, inhibiting certain process by phosphorylating key enzymes when the energy supply is low.

**amperage:** The amount of charge moved per second by an electric current, measured in amperes.

**Ampere:** A measure of electrical current: the flow of  $6.24 \times 10^{18}$  charges per second.

**ampere:** The SI unit of electric current, equal to flow of 1 coulomb of charge per second. An ampere is the amount of current necessary to produce a force of 0.2 micronewtons per meter between two arbitrarily long, arbitrarily thin wires, placed parallel in a vacuum and exactly 1 m apart. Named for 19th century physicist André Marie Ampère.

**amperometry:** Determining the concentration of a material in a sample by measuring electric current.

**amphetamines:** Any of the compounds which are substituted or slightly modified amphetamine molecules.

**amphi-:** A prefix used to name certain members of a series of geometric isomers or stereoisomers.

**amphibolic pathway:** A metabolic pathway used in both catabolism and anabolism.

**Amphibolic reactions:** Metabolic reactions that can be anabolic or catabolic, depending on the energy conditions in the cell.

**Amphipathic:** Amphipathic molecules have one hydrophobic end and one hydrophilic end. You can find these molecules in the cell membrane.

**amphipathic:** Containing both polar and nonpolar domains.

**Amphipathic molecule:** A molecule, such as a membrane lipid, that contains both a hydrophobic and a hydrophilic moiety.

**Amphiphilic:** From the greek meaning 'both' (something like amphi) and 'lover' (something like philos). An amphiphile is a molecule that has a strong attraction towards both polar solvents (like a hydrophile) and non-polar solvents (like a hydrophobe) and will end up concentrated at the interface between the two.

**amphiprotic solvent:** Solvents that exhibit both acidic and basic properties; amphiprotic solvents undergo autoprotolysis. Examples are water, ammonia, and ethanol.

**amphoteric:** A compound that can act as a base and an acid. OR A substance that can act as either an acid or a base in a reaction. For example,

aluminum hydroxide can neutralize mineral acids (  $\text{Al(OH)}_3 + 3 \text{HCl} = \text{AlCl}_3 + 3 \text{H}_2\text{O}$  ) or strong bases (  $\text{Al(OH)}_3 + 3 \text{NaOH} = \text{Na}_3\text{AlO}_3 + 3 \text{H}_2\text{O}$  ). OR Capable of donating and accepting protons, thus able to serve as an acid or a base.

**amphoteric oxide:** Amphoteric oxides react with both acidic and alkaline solutions.

**AMPHOTERIC SURFACTANT:** A surfactant in which the hydrophile has both positive and negative charges. Examples; betaines and amine oxides. (see RFF 750.10.01 - SURFACTANTS)

**amphotericin B :** A drug used in the treatment of infections caused by fungi. It is a type of antifungal.

**amphotericin B deoxycholate:** The deoxycholate salt of amphotericin B, a polyene antifungal antibiotic produced by *Streptomyces nodosus*, with antifungal activity. Amphotericin B binds to ergosterol, an essential component of the fungal cell membrane, resulting in depolarization of the membrane; alterations in cell membrane permeability and leakage of important intracellular components; and cell rupture. This agent may also induce oxidative damage in fungal cells and has been reported to stimulate host immune cells.

**ampicillin sodium/sulbactam sodium:** A combination formulation of the sodium salts of the antibiotic ampicillin and the beta-lactamase inhibitor sulbactam with antibacterial activity. Ampicillin, a broad-spectrum, semisynthetic penicillin, binds to and inactivates penicillin-binding proteins (PBP) located on the inner membrane of the bacterial cell wall, thereby interfering with the cross-linking of peptidoglycan chains necessary for bacterial cell wall strength and rigidity. As a result, the cell wall is weakened and the cell lyses. The sulbactam component irreversibly binds to bacterial beta-lactamase at or near its active site, thereby interfering with substrate binding and inhibiting bacterial metabolism of penicillin and cephalosporin beta-lactam antibiotics, effectively extending their antibiotic spectrum to include many beta-lactam-resistant bacteria.

**Ampligen:** (Other name for: rintatolimod)

**Amplimexon :** A substance that is being studied in the treatment of some types of cancer, including pancreatic, lung, breast, prostate, melanoma, and multiple myeloma. It belongs to the family of drugs called cyanoaziridine derivatives. Also called imexon.

**amplitude:** The displacement of a wave from zero. The maximum amplitude for a wave is the height of a peak or the depth of a trough, relative to the zero displacement line.

**ampulla :** A sac-like enlargement of a canal or duct.

**ampulla of Vater :** An enlargement of the ducts from the liver and pancreas at the point where they enter the small intestine.

**ampulla of Vater cancer :** Cancer that forms in the ampulla of Vater (an enlargement of the ducts from the liver and pancreas where they join and enter the small intestine). Symptoms include jaundice, abdominal pain, nausea, vomiting, and weight loss. Also called ampullary cancer.

**ampullary cancer :** Cancer that forms in the ampulla of Vater (an enlargement of the ducts from the liver and pancreas where they join and enter the small intestine). Symptoms include jaundice, abdominal pain, nausea, vomiting, and weight loss. Also called ampulla of Vater cancer.

**amputation :** The removal by surgery of a limb (arm or leg) or other body part because of injury or disease, such as diabetes or cancer.

**amrubicin :** A substance being studied in the treatment of lung cancer. It is a type of anthracycline analog.

**amrubicin hydrochloride:** The hydrochloride salt of a third-generation synthetic 9-amino-anthracycline with antineoplastic activity. Amrubicin intercalates into DNA and inhibits the activity of topoisomerase II, resulting in inhibition of DNA replication, and RNA and protein synthesis, followed by cell growth inhibition and cell death. This agent has demonstrated a higher level of anti-tumor activity than conventional anthracycline drugs without exhibiting any indication of the cumulative cardiac toxicity common to this class of compounds. Check for active clinical trials using this agent.

**Amsa P-D:** (Other name for: amsacrine)

**amsacrine:** An aminoacridine derivative with potential antineoplastic activity. Although its mechanism of action is incompletely defined, amsacrine may intercalate into DNA and inhibit topoisomerase II, resulting in DNA double-strand breaks, arrest of the S/G2 phase of the cell cycle, and cell death. This agent's cytotoxicity is maximal during the S phase of the cell cycle when topoisomerase levels are greatest. In addition, amsacrine may induce transcription of tumor promoter p53 protein and block p53

ubiquitination and proteasomal degradation, resulting in p53-dependent tumor cell apoptosis. or An anticancer drug that belongs to the family of drugs called topoisomerase inhibitors.

**amsilarotene:** A retinobenzoic acid with potential antineoplastic activity. Amsilarotene inhibits retinoblastoma-gene product (RB) phosphorylation and increases the presence of 2 cyclin-dependent kinase (CDK) inhibitors, resulting in cell cycle arrest. This agent also causes a cytotoxic decline in cyclin A and thymidylate synthase expression.

**amuvatinib:** An orally bioavailable synthetic carbothioamide with potential antineoplastic activity. Amuvatinib binds to mutant forms of the stem cell factor receptor (c-Kit; SCFR), inhibiting clinically relevant mutants of this receptor tyrosine kinase that may be associated with resistance to therapy. In addition, amuvatinib inhibits activities of other receptor tyrosine kinases, such as c-Met, Ret oncoprotein, and mutant forms of Flt3 and PDGFR alpha, which are frequently dysregulated in variety of tumors. This agent also suppresses the induction of DNA repair protein Rad51, thereby potentiating the activities of DNA damage-inducing agents. Mutant forms of c-Kit are often associated with tumor chemoresistance. Check for active clinical trials using this agent. OR A substance being studied in the treatment of some types of cancer. It may block certain proteins involved in cancer cell growth and DNA repair. Blocking these proteins may make cancer cells more sensitive to anticancer drugs and radiation therapy. Amuvatinib is a type of tyrosine kinase inhibitor. Also called MP470.

**amygdalin :** A substance found in the pits of many fruits such as apricots and papayas, and in other foods. It has been tried in some countries as a treatment for cancer, but it has not been shown to work in clinical studies. Amygdalin is not approved for use in the United States. Also called laetrile.

**amylase :** An enzyme that helps the body digest starches.

**amyloidosis :** A group of diseases in which protein builds up in certain organs (localized amyloidosis) or throughout the body (systemic amyloidosis). Amyloidosis may be either primary (with no known cause), secondary (caused by another disease, including some types of cancer, such as multiple myeloma), or hereditary (passed down from parents to children). Many organs are affected by amyloidosis. The organs affected

may depend on whether the amyloidosis is the primary, secondary, or hereditary form.

**Amylopectin:** The branched form of starch, containing glucose residues in about one  $\alpha$ -1,6 linkage per thirty  $\alpha$ -1,4 linkages. Or A form of starch made of glucose molecules linked in a branching pattern.

**Amylose:** The unbranched form of starch, containing glucose residues in  $\alpha$ -1,4 linkage. Or A form of starch made of long, unbranched chains of -D-glucose molecules.

**Amytal:** A barbiturate that blocks the respiratory chain by inhibiting electron transfer in the NADH-Q reductase complex.

**Anabolic A:** type of reaction or series of reactions in which complex molecules are synthesized from simpler ones; the opposite of catabolic

**Anabolic steroid:** A steroid, such as testosterone, that acts through the androgen receptor to stimulate genes that enhance the development of lean muscle mass. Or A type of steroid that is used in medicine to repair body tissues and to increase appetite and the growth of muscles. Anabolic steroids are made in the laboratory from testosterone (a male hormone).

**anabolism:** the process of synthesizing large molecules by joining smaller molecules together. OR The set of metabolic reactions that require energy to synthesize molecules from simpler precursors. OR The phase of intermediary metabolism concerned with the energyrequiring biosynthesis of cell components from smaller precursors. or Metabolic synthesis of proteins, fats and other constituents of living organisms from molecules or simple precursors, which usually requires an input of energy.

**anadromous:** Fish that spend their adult lives in the sea but swim upriver to freshwater spawning grounds to reproduce.

**Anaerobe:** An organism that lives and reproduces in the absence of dissolved oxygen, instead deriving oxygen from the breakdown of complex substances. OR An organism that lives without oxygen. Obligate anaerobes die when exposed to oxygen. OR living or occurring only in the absence of free oxygen. OR organisms that thrive in an oxygen-free environment. OR In the absence of oxygen. OR Occurring in the absence of air or oxygen.

**anaerobic biological treatment:** any waste treatment process utilizing anaerobic or facultative organisms in the absence of air to reduce the organic matter in water.

**Anaerobic Degradation:** Degradation in the absence of air, as occurs in dry landfills. Anaerobic degradation is also called biometanization.

**anaerobic waste treatment:** (sludge processing) waste stabilization brought about through the action of microorganisms in the absence of air or elemental oxygen.

**anagrelide :** A drug that is used to decrease the number of platelets in the blood in order to prevent blood clotting.

**anagrelide hydrochloride:** The hydrochloride salt of a synthetic quinazoline derivative, anagrelide hydrochloride reduces platelet production through a decrease in megakaryocyte maturation. Anagrelide inhibits cyclic AMP phosphodiesterase, as well as ADP- and collagen-induced platelet aggregation. At therapeutic doses, it does not influence white cell counts or coagulation parameters. Anagrelide is used for treatment of essential thrombocythemia to reduce elevated platelet counts and the risk of thrombosis.

**anagrelide prolonged-release formulation:** A prolonged-release tablet formulation containing the quinazoline anagrelide, with antiplatelet activity. Although the exact mechanism of action through which anagrelide exerts its effect has yet to be fully elucidated, this agent inhibits the maturation of megakaryocytes into platelets, which reduces platelet production. Anagrelide also inhibits cyclic AMP phosphodiesterase III (PDEIII), which prevents PDEIII-mediated platelet aggregation. This may prevent essential thrombocythemia and thrombosis. Check for active clinical trials using this agent.

**anakinra :** A substance that is used to treat rheumatoid arthritis, and is being studied in the treatment of cancer. Anakinra blocks the action of interleukin 1 (IL-1). It is a type of interleukin receptor antagonist. Also called Kinaret. OR A recombinant human nonglycosylated interleukin-1 (IL-1) receptor antagonist with potential antineoplastic activity. Anakinra binds to the IL-1 receptor, thereby blocking the binding of the IL-1 to and activation of its receptor. Blockade of IL-1 activity may inhibit the cascade of downstream pro-angiogenic factors such as vascular endothelial cell growth factor, tumor necrosis factor-alpha, and IL-6, resulting in inhibition of tumor angiogenesis.

**anal :** Having to do with the anus. The anus is the opening of the rectum (last part of the large intestine) to the outside of the body.

**anal cancer :** Cancer that forms in tissues of the anus. The anus is the opening of the rectum (last part of the large intestine) to the outside of the body.

**anal Pap smear :** A procedure in which cells are scraped from the lining of the anus (the opening of the rectum to the outside of the body) and looked at under a microscope. It is used to find cancer and changes in cells that may lead to cancer. An anal Pap smear can also show conditions that are not cancer, such as infection or inflammation. Also called anal Pap test.

**anal Pap test :** A procedure in which cells are scraped from the lining of the anus (the opening of the rectum to the outside of the body) and looked at under a microscope. It is used to find cancer and changes in cells that may lead to cancer. An anal Pap test can also show conditions that are not cancer, such as infection or inflammation. Also called anal Pap smear.

**analgesia :** Pain relief.

**analgesic:** An analgesic is a substance that acts as a painkiller, e.g. aspirin.

**analog :** In chemistry, a substance that is similar, but not identical, to another.

**analog (climate):** A large-scale weather pattern of the past that is similar to a current situation in its essential characteristics.

**Analog multiplexer :** a device that increase the number of measurements channels while still using a single instrumentation amplifier.

**analogies:** Similarities in relationships between two items. Or in organic chemistry, chemicals that are similar to each other, but not identical. For example, the hydrocarbons are all similar to each other, but an alkane is different from the alkenes and alkynes because of the types of bonds they contain. Therefore, an alkane and an alkene are analogues.

**analysis:** Determination of the composition of a sample. Or A process in which anything complex is separated into simple or less complex parts.

**analyte:** An analyte is the sample constituent whose concentration is sought in a chemical analysis.

**analytic study:** A hypothesis-testing method of investigating the association between a given disease or health state or other dependent variable and possible causative factors. In an analytic study, individuals in the study population may be classified according to absence or presence (or future development) of specific disease and according to "attributes" that

may influence disease occurrence. Attributes may include age, race, sex, other disease(s), genetic, biochemical, and physiological characteristics, economic status, occupation, residence, and various aspects of the environment or personal behaviour. Three types of analytic study are cross-sectional (prevalence), cohort (prospective), and case control (retrospective) (Last, 1983).

**anamorelin hydrochloride:** The orally bioavailable hydrochloride salt of a synthetic, small-molecule ghrelin mimetic with appetite-stimulating and anabolic activities. Anamorelin binds to and stimulates the growth hormone secretagogue receptor (GHSR) centrally, thereby mimicking the appetite-stimulating and growth hormone-releasing effects of ghrelin. Stimulation of GHSR may also reduce the production of the pro-inflammatory cytokines TNF-alpha and interleukin-6, which may play a direct role in cancer-related loss of appetite. Check for active clinical trials using this agent.

**anaphase:** a phase during mitosis in which chromatids separate to become visible chromosomes and migrate to opposite poles.

**anaphase I:** a phase during meiosis in which homologous chromosomes separate.

**anaphase II:** a phase during meiosis II in which the centromeres divide and the chromosomes separate from one another.

**anaphylactic shock :** A severe and sometimes life-threatening immune system reaction to an antigen that a person has been previously exposed to. The reaction may include itchy skin, edema, collapsed blood vessels, fainting, difficulty in breathing, and death.

**anaplastic :** A term used to describe cancer cells that divide rapidly and have little or no resemblance to normal cells.

**anaplastic large cell lymphoma :** An aggressive (fast-growing) type of non-Hodgkin lymphoma that is usually of the T-cell type. The cancer cells express a marker called CD30 or Ki-1 on the surface, and may appear in the lymph nodes, skin, bones, soft tissues, lungs, or liver. Also called ALCL.

**anaplastic lymphoma kinase gene :** A gene that makes a protein called anaplastic lymphoma kinase (ALK), which may be involved in cell growth. Mutated (changed) forms of the ALK gene and protein have been found in some types of cancer, including neuroblastoma, non-small cell lung cancer, and anaplastic large cell lymphoma. These changes may increase the

growth of cancer cells. Checking for changes in the anaplastic lymphoma kinase gene in tumor tissue may help to plan cancer treatment. Also called ALK gene.

**anaplastic lymphoma receptor tyrosine kinase :** A protein that is found on the outside of cells that sends signals into the cells. These signals help control cell growth and division. It is made by the anaplastic lymphoma kinase (ALK) gene, which may be changed in some types of cancer, such as anaplastic large cell lymphoma, neuroblastoma, and non-small cell lung cancer. These changes in the ALK gene can cause the cancer cells to grow and spread.

**anaplastic thyroid cancer :** A rare, aggressive type of thyroid cancer in which the malignant (cancer) cells look very different from normal thyroid cells.

**anaplerotic reaction:** An enzyme-catalyzed reaction that can replenish the supply of intermediates in the citric acid cycle. OR From the Greek for “fill up,” referring to a reaction that replenishes intermediates removed from a metabolic pathway. The most common example is the reaction catalyzed by pyruvate carboxylase, in which the carboxylation of pyruvate produces oxaloacetate, a key component of the citric acid cycle.

**anastomosis :** A procedure to connect healthy sections of tubular structures in the body after the diseased portion has been surgically removed.

**anastrozole:** A nonsteroidal inhibitor of estrogen synthesis that resembles paclitaxel in chemical structure. As a third-generation aromatase inhibitor, anastrozole selectively binds to and reversibly inhibits aromatase, a cytochrome P-450 enzyme complex found in many tissues including those of the premenopausal ovary, liver, and breast; aromatase catalyzes the aromatization of androstenedione and testosterone into estrone and estradiol, the final step in estrogen biosynthesis. In estrogen-dependent breast cancers, anastrozole may inhibit tumor growth. OR A drug used to treat certain types of breast cancer in postmenopausal women. It is also being studied in the treatment of other types of cancer. Anastrozole lowers the amount of estrogen made by the body. This may stop the growth of cancer cells that need estrogen to grow. Anastrozole is a type of nonsteroidal aromatase inhibitor. Also called Arimidex.

**anatomic :** Having to do with anatomy (the study of the structure of a plant or animal).

**anatomist** : A person who has special training in anatomy (the study of the structures of animals or plants).

**anatomy** : The study of the structure of a plant or animal.

**anaxirone**: A synthetic triepoxide alkylating agent with potential antineoplastic activity. Anaxirone alkylates DNA via actual or derived epoxide groups, resulting in inhibition of DNA synthesis. This agent has been shown to exhibit a broad spectrum of antineoplastic activity against experimental tumors, including those resistant to other alkylating agents.

**ANC**: A measure of the number of neutrophils in the blood. Neutrophils are a type of white blood cell. They help the body fight infection. An ANC may be used to check for infection, inflammation, leukemia, and other conditions. The lower a person's ANC is, the higher the risk is of getting an infection. Having an ANC of less than 500 means there is a high risk of getting an infection. Cancer treatment, such as chemotherapy, may reduce the ANC. Also called absolute neutrophil count.

**Ancef**: (Other name for: cefazolin sodium)

**Ancestim**: (Other name for: recombinant human stem cell factor)

**ancestim** : A substance that causes blood stem cells (cells from which other types of cells develop) to change into different types of blood cells and increases the number and actions of these cells in the blood. It is being studied in the treatment of myelodysplasia. Ancestim is a type of recombinant stem cell growth factor. Also called r-metHuSCF, recombinant human methionyl stem cell factor, and Stemgen.

**ANCHORING**: Mechanical bonding of a coating to a rough surface as contrasted with adhesion, which is chemical bonding.

**ancillary test** : In a clinical trial, a medical test on a patient that is not a part of the original study design.

**ancitabine hydrochloride**: The hydrochloride salt of a cytarabine congener prodrug with antineoplastic activity. Upon administration, ancitabine is slowly hydrolyzed into cytarabine. Subsequently, cytarabine is converted to the triphosphate form within the cell and then competes with cytidine for incorporation into DNA. Because the arabinose sugar sterically hinders the rotation of the molecule within DNA, DNA replication ceases, specifically during the S phase of the cell cycle. Cytarabine agent also inhibits DNA polymerase, resulting in a decrease in DNA replication and

repair. Compared to cytarabine, a more prolonged, consistent cytarabine-mediated therapeutic effect may be achieved with ancitabine because of the slow hydrolytic conversion of ancitabine to cytarabine.

**Ancobon:** (Other name for: flucytosine)

**Andersen's disease:** A disease due to an inability to introduce  $\alpha$ -1,6-glycosidic bonds during the synthesis of glycogen. Glycogen is present in normal amounts but with long outer branches; clinically, the disease is characterized by progressive cirrhosis of the liver.

**androblastoma :** A rare type of ovarian tumor in which the tumor cells secrete a male sex hormone. This may cause virilization (the appearance of male physical characteristics in females). Also called arrhenoblastoma and Sertoli-Leydig cell tumor of the ovary.

**AndroGel:** (Other name for: testosterone gel)

**androgen :** A type of hormone that promotes the development and maintenance of male sex characteristics.

**androgen ablation :** Treatment to suppress or block the production or action of male hormones. This is done by having the testicles removed, by taking female sex hormones, or by taking drugs called antiandrogens. Also called androgen deprivation and androgen suppression.

**androgen antagonist APC-100:** An orally available, vitamin E derivative and androgen receptor (AR) antagonist with potential anti-oxidant, chemopreventative and antineoplastic activity. APC-100 binds to ARs in target tissues thereby inhibiting androgen-induced receptor activation and facilitating the formation of inactive complexes that cannot be translocated to the nucleus. By inhibiting the formation of the complex between androgen activated AR- and the AP1 transcription factor JunD, the expression of androgen-responsive genes is blocked. One such gene is spermidine/spermine N1-acetyl transferase gene (SSAT) which is responsible for the breakdown of polyamines, which are produced in high levels by prostatic epithelial cells, into reactive oxygen species (ROS) that cause cellular damage. APC-100 may ultimately lead to an inhibition of growth in both AR-dependent and AR-independent prostate tumor cells.

**androgen deprivation :** Treatment to suppress or block the production or action of male hormones. This is done by having the testicles removed, by

taking female sex hormones, or by taking drugs called antiandrogens. Also called androgen ablation and androgen suppression.

**androgen receptor** : A protein that binds male hormones called androgens. Androgen receptors are found inside the cells of male reproductive tissue, some other types of tissue, and some cancer cells. In prostate cancer, androgens bind to androgen receptors inside the cancer cells, which causes the cancer cells to grow. Also called AR.

**androgen receptor antagonist SHR3680**: An orally bioavailable androgen receptor (AR) antagonist with potential antineoplastic activity. Upon administration, SHR3680 competitively binds to AR in target tissues, which both prevents androgen-induced receptor activation and facilitates the formation of inactive complexes that cannot be translocated to the nucleus. This prevents binding to and transcription of AR-responsive genes, inhibits the expression of genes that regulate prostate cancer cell proliferation, and may lead to an inhibition of cell growth of AR-expressing tumor cells. ARs are overexpressed in prostate cancer and play a key role in prostate cancer cell proliferation.

**androgen receptor antisense oligonucleotide AZD5312**: An antisense oligonucleotide targeting the androgen receptor (AR) mRNA, with potential antineoplastic activity. Upon intravenous administration, AZD5312 hybridizes with AR mRNA, which blocks translation of the AR protein. This both inhibits AR-induced tumor cell growth and promotes apoptosis in AR-overexpressing tumor cells. AR is overexpressed in certain breast and prostate cancers and is involved in tumor cell proliferation and survival.

**androgen receptor antisense oligonucleotide EZN-4176**: A locked nucleic acid (LNA)-based antisense oligonucleotide targeting the androgen receptor (AR) mRNA, with potential antineoplastic activity. Upon administration, EZN-4176 is hybridized and releases the complementary sequences of AR mRNA, thereby blocking translation of the AR protein and inhibiting AR-induced tumor cell growth and promoting tumor cell apoptosis in AR-overexpressing tumor cells. AR is overexpressed in certain breast and prostate cancers and is involved in tumor cell proliferation and survival. LNAs contain a methylene bridge linking 2'-oxygen and 4'-carbon of ribose sugar rings, thereby increasing their thermal stability and decreasing degradation. Check for active clinical trials using this agent.

**androgen receptor inhibitor EPI-506:** An orally bioavailable, small molecule inhibitor of the N-terminal domain (NTD) of the androgen receptor (AR), with potential antineoplastic activity. Upon oral administration, AR inhibitor EPI-506 specifically binds to the NTD of AR, thereby inhibiting both AR activation and the AR-mediated signaling pathway. This inhibits cell growth in AR-overexpressing tumor cells. AR is overexpressed in prostate cancers and is involved in proliferation, survival and chemoresistance of tumor cells.

**androgen receptor ligand-binding domain-encoding plasmid DNA vaccine MVI-118:** A cancer vaccine containing pTVG4 plasmid DNA encoding the human androgen receptor (AR) ligand-binding domain (LBD) (pTVG-AR), with potential immunostimulating and antineoplastic activities. Upon intradermal administration of AR LBD-encoding plasmid DNA vaccine MVI-118, the plasmid DNA vaccine expresses AR LBD and may stimulate the host immune system to generate a cytotoxic T-lymphocyte (CTL) response against AR LBD-expressing prostate cancer cells. This reduces proliferation of AR-expressing tumor cells. AR, a tumor-associated antigen (TAA) overexpressed in prostate cancer cells, plays a key role in the development and progression of prostate cancer; its expression is correlated with poor prognosis.

**androgen receptor positive :** Describes cells that have a protein that binds to androgens (male hormones). Cancer cells that are androgen receptor positive may need androgens to grow. These cells may stop growing or die when they are treated with substances that block the binding and actions of androgen hormones. Also called AR+.

**androgen suppression :** Treatment to suppress or block the production or action of male hormones. This is done by having the testicles removed, by taking female sex hormones, or by taking drugs called antiandrogens. Also called androgen ablation and androgen deprivation.

**androgen-independent :** Describes the ability of tumor cells to grow in the absence of androgens (hormones that promote the development and maintenance of male sex characteristics). Many early prostate cancers require androgens for growth, but advanced prostate cancers are often androgen-independent.

**androgens:** hormones, such as testosterone, produced from the testes that promote secondary male characteristics. OR A class of steroid hormones,

exemplified by testosterone, that are responsible for the development of male secondary sexual characteristics; synthesized by the testes.

**Android-F:** (Other name for: fluoxymesterone)

**androstane steroid HE3235:** An orally bioavailable adrenal steroid analogue with potential antineoplastic activity. Androstane steroid HE3235 appears to bind the androgen receptor (AR), down-regulating anti-apoptotic genes, such as Bcl-2, while increasing the expression of pro-apoptotic genes, such as caspases. In vitro and in vivo studies indicate that this agent inhibits androstenediol-dependent LNCaP cell tumor growth. In addition, HE3235 may potentiate chemotherapeutic agents by down-regulating ABCG2, the gene encoding the multi-drug resistant (MDR) protein MDR2.

**androstanolone :** A hormone made from testosterone in the prostate, testes, and certain other tissues. It is needed to develop and maintain male sex characteristics, such as facial hair, deep voice, and muscle growth. High amounts of androstanolone may increase the growth of prostate cancer and make it harder to treat. Also called DHT and dihydrotestosterone.

**anecdotal report :** An incomplete description of the medical and treatment history of one or more patients. Anecdotal reports may be published in places other than peer-reviewed, scientific journals.

**anemia :** A condition in which the number of red blood cells is below normal.

**anemometer:** instrument used to determine wind speed.

**anesthesia :** A loss of feeling or awareness caused by drugs or other substances. Anesthesia keeps patients from feeling pain during surgery or other procedures. Local anesthesia is a loss of feeling in one small area of the body. Regional anesthesia is a loss of feeling in a part of the body, such as an arm or leg. General anesthesia is a loss of feeling and a complete loss of awareness that feels like a very deep sleep.

**anesthesiologist :** A doctor who has special training in giving drugs or other agents to prevent or relieve pain during surgery or other procedures.

**anesthetic:** A substance that produces loss of sensation, sometimes with loss of consciousness as well.

**anesthetic :** A drug or other substance that causes a loss of feeling or awareness. Local anesthetics cause a loss of feeling in one small area of the body. Regional anesthetics cause a loss of feeling in a part of the body, such

as an arm or leg. General anesthetics cause a loss of feeling and a complete loss of awareness that feels like a very deep sleep.

**anetholtrithione** : A substance that is being studied in the treatment of cancer.

**anetumab raptansine**: A fully human IgG1 monoclonal antibody directed against the cell surface glycoprotein mesothelin and conjugated to the maytansinoid DM4 with potential antineoplastic activity. The monoclonal antibody moiety of anetumab raptansine targets and binds to the tumor associated antigen mesothelin; upon internalization, the DM4 moiety binds to tubulin and disrupts microtubule assembly/disassembly dynamics, resulting in inhibition of cell division and cell growth of mesothelin-expressing tumor cells. Mesothelin is overexpressed on all mesotheliomas as well as many ovarian and pancreatic cancers while minimally expressed on normal tissue.

**aneuploidy** : The occurrence of one or more extra or missing chromosomes leading to an unbalanced chromosome complement, or any chromosome number that is not an exact multiple of the haploid number (which is 23).

**Aneustat**: (Other name for: multifunctional/multitargeted anticancer agent OMN54)

**ANF-Rho**: (Other name for: pegfilgrastim anti-neutropenic factor)

**Ang2/VEGF-binding peptides-antibody fusion protein CVX-241**: A fusion protein containing angiopoietin-2 (Ang2) and vascular endothelial growth factor (VEGF) derived peptides covalently attached, via a proprietary diketone linker, to a proprietary humanized catalytic aldolase monoclonal antibody, with potential antiangiogenic and antineoplastic activities. The Ang2/VEGF peptide moieties of Ang2/VEGF-binding peptides-antibody fusion protein CVX-241 bind to Ang2 and VEGF receptors, which may inhibit tumor angiogenesis and tumor cell proliferation. The proprietary humanized catalytic IgG1 monoclonal aldolase antibody contains reactive lysine residues in its binding sites, which react covalently with compounds having a diketone function; the Ang2 and VEGFR peptide moieties are then covalently attached to the diketone linkers via a proprietary spacer. Both VEGF and Ang2 are upregulated in a variety of cancer cell types and play a crucial role in

angiogenesis. This agent possesses an enhanced half-life compared to the naked peptides.

**angelica root :** The root of any of a group of herbs called Angelica. It has been used in some cultures to treat certain medical problems, including gastrointestinal problems such as loss of appetite, feelings of fullness, and gas.

**Angelica sinensis root extract:** An herbal extract derived from the root of the plant *Angelica sinensis* with possible antiinflammatory, antispasmodic, vasodilatory, estrogenic, and antitumor activities. *Angelica sinensis* contains volatile oils, including safrole, isosafrole, and n-butylphthalide; coumarin derivatives, including psoralens, bergapten, osthol, imperatorin, and oxypeucedanin; and ferulic acid. The coumarin derivatives in this agent may vasodilate and relax smooth muscle and may exhibit additive anticoagulant effects. Ferulic acid, a phenolic phytochemical present in plant cell walls, may neutralize free radicals such as reactive oxygen species. In addition, *Angelica sinensis* extract has been shown to inhibit the growth and induce apoptosis of glioblastoma multiforme brain tumor cells through p53-dependent and p53-independent pathways.

**Angiocal:** (Other name for: anti-VEGF anticlin PRS-050-PEG40)

**Angiocept :** (Other name for: pegdinetanib) OR A substance being studied in the treatment of cancer. Angiocept may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of vascular endothelial growth factor receptor-2 (VEGFR-2) inhibitor and a type of antiangiogenesis agent. Also called CT-322 and VEGFR-2 inhibitor CT-322.

**angiofibroma :** (AN-jee-oh-fy-BROH-muh)

**angiofollicular lymph node hyperplasia :** A benign (not cancer) tumor that is made up of blood vessels and fibrous (connective) tissue.

Angiofibromas usually appear as small, red bumps on the face, especially on the nose and cheeks. They are common in patients with tuberous sclerosis (a genetic disorder that causes skin lesions, seizures, and mental problems). Angiofibromas are a type of vascular tumor.

**angiogenesis :** A rare disorder in which benign (not cancer) growths form in lymph node tissue. There are two main ways that angiofollicular lymph node hyperplasia occurs: localized (unicentric) and multicentric. Unicentric angiofollicular lymph node hyperplasia affects only one group of lymph

nodes in one part of the body, usually in the chest or abdomen. It may not cause symptoms. Multicentric angiofollicular lymph node hyperplasia affects many groups of lymph nodes and lymphoid tissue all through the body. It can weaken the immune system and cause problems such as infection, fever, weight loss, fatigue, night sweats, nerve damage, and anemia. People with angiofollicular lymph node hyperplasia have an increased risk of lymphoma. Also called Castleman disease and giant lymph node hyperplasia.

**angiogenesis inhibitor :** Blood vessel formation. Tumor angiogenesis is the growth of new blood vessels that tumors need to grow. This process is caused by the release of chemicals by the tumor and by host cells near the tumor.

**angiogenesis inhibitor GT-111:** An adenovirus encoding an endothelial cell-specific, murine pre-proendothelin-1 (PPE-1) promoter and a Fas-based chimeric death receptor with potential anti-angiogenic activity. Endothelial cell-specific transcriptional control of the adenoviral vector is achieved by the use of a modified murine PPE-1 promoter that is specifically activated in PPE-1-expressing angiogenic endothelial cells residing in the tumor microvasculature. Subsequently, the Fas-c (Fas-chimeric) death receptor, containing Fas and tumor necrosis factor (TNF) receptor 1 (TNFR1) moieties, is expressed in angiogenic endothelial cells; endothelial cell-specific Fas-mediated apoptosis is initiated by the binding of TNF-alpha, abundant in the tumor microenvironment, to the TNFR1 moiety of the expressed Fas-c death receptor. Check for active clinical trials using this agent.

**angiogenesis inhibitor JI-101:** An orally active inhibitor of vascular endothelial growth factor receptor 2 (VEGFR2), platelet-derived growth factor receptor beta (PDGFRb), and the ephrin B4 receptor B4 (EphB4) with potential antiangiogenic and antineoplastic activities. Angiogenesis inhibitor JI-101 binds to and inhibits VEGFR2, PDGFRb and EphB4, which may inhibit tumor angiogenesis and, so, cellular proliferation in tumor cells overexpressing VEGFR2, PDGFRb and EphB4. The receptor tyrosine kinases VEGFR2, PDGFRb and EphB4 may be overexpressed in a number of different cancer cell types and may play crucial roles in tumor angiogenesis.

**angiogenesis/heparanase inhibitor PG545:** A synthetic heparan sulfate mimetic with potential anti-angiogenic and antineoplastic activity. PG545 inhibits the cleavage of heparan sulfate from cell surface proteoglycan by heparanase and thus inhibits the neovascularization induced by interaction between heparan sulfate and other extracellular matrix proteins. In this manner, this agent may have the potential to slow the progression of growth of solid tumors.

**angiogram :** A drug or substance that keeps new blood vessels from forming. In cancer treatment, angiogenesis inhibitors may prevent the growth of new blood vessels that tumors need to grow. Also called antiangiogenesis agent.

**angiography :** An x-ray or computer image (CT scan or MRI) of the blood vessels and blood flow in the body. A dye may be injected through a catheter (small tube) into an artery or vein to make the blood vessels easier to see. An angiogram may be used to check for an aneurysm (a bulge in a blood vessel wall), blockages in arteries, blood clots, or other problems, such as a tumor.

**angioblastic T-cell lymphoma :** A procedure to x-ray blood vessels. The blood vessels can be seen because of an injection of a dye that shows up in the x-ray.

**angiokeratoma:** benign cutaneous injury of capillaries resulting in small lesions on the skin; typically having a red to blue color

**angiokeratoma corporis diffusum:** hyperkeratinized deep-red to blue-black skin lesions

**angiolymphoid hyperplasia with eosinophilia :** An aggressive (fast-growing) type of T-cell non-Hodgkin lymphoma marked by enlarged lymph nodes and hypergammaglobulinemia (increased antibodies in the blood). Other symptoms may include a skin rash, fever, weight loss, or night sweats.

**angiomyolipoma :** (AN-jee-oh-LIM-foyd HY-per-PLAY-zhuh ... EE-oh-SIH-noh-FIH-lee-uh)

**angioplasty :** A rare benign (not cancer) tumor of small blood vessels surrounded by lymphocytes and eosinophils (types of white blood cells). Angiolymphoid hyperplasia with eosinophilia usually forms on or in the skin, especially the skin of the head, but can occur in other areas of the

body, such as in bone. On the skin, it may appear as firm pink to red bumps that may be itchy or painful. If the tumor is in bone, it may cause swelling and pain. Angiolymphoid hyperplasia with eosinophilia is sometimes caused by injury and often comes back after treatment. Angiolymphoid hyperplasia with eosinophilia is most common in young and middle-aged adults. It is a type of vascular tumor. Also called epithelioid hemangioma and histiocytoid hemangioma.

**angiosarcoma :** A benign (noncancer) tumor of fat and muscle tissue that usually is found in the kidney. Angiomyolipomas rarely cause symptoms, but may bleed or grow large enough to be painful or cause kidney failure. They are common in patients with tuberous sclerosis (a genetic disorder in which benign tumors grow in the kidneys, brain, eyes, heart, lungs, and skin, causing seizures, mental problems, and skin lesions).

**angiostatin:** Encoded by human PLG Gene (Plasminogen Family) and expressed in the kidney, angiostatin is an angiogenesis inhibitor present in plasma and other extracellular fluids that blocks neovascularization and mediates suppression of metastases. Containing at least three kringles, angiostatin is a 38-kD internal (serine protease) proteolytic fragment of plasminogen. OR A procedure to enlarge the opening in a blood vessel that has become narrowed or blocked by plaque (a buildup of fat and cholesterol on the inner wall of the blood vessel). Examples of angioplasty are balloon angioplasty and laser angioplasty.

**angiotensin-converting enzyme inhibitor :** A type of cancer that begins in the cells that line blood vessels or lymph vessels. Cancer that begins in blood vessels is called hemangiosarcoma. Cancer that begins in lymph vessels is called lymphangiosarcoma.

**Angiozyme:** (Other name for: anti-FLT-1 ribozyme) or A protein normally made by the body. It can also be made in the laboratory, and is being studied in the treatment of cancer. Angiostatin may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent.

**angle:** Two rays sharing the same endpoint. (A ray is a part of a line that looks like an arrow. It begins at one point and goes on forever in the opposite direction.)

**Angle iron:** Used to describe any cast or rolled steel strip of L section.

**Angle of incidence:** The angle at which X-rays strike a plane in the crystal.

**angle of repose:** the steepest angle at which loose material will remain in place.

**angle of rotation:** ( $\alpha$ ) in a polarimeter, the angle right or left in which plane-polarized light is turned after passing through an optically active compound in solution.

**Angle Press:** A hydraulic molding press equipped with horizontal and vertical rams, and specially designed for the production of complex moldings containing deep undercuts.

**angle strain:** the strain created by the deformation of bond angles from their normal values.

**angstrom:** a unit of length, used especially in expressing the length of light waves, equal to one ten-thousandth of a micron, or one hundredth-millionth of a centimeter ( $1 \times 10^{-8}$  cm). OR A unit of length equal to  $1 \times 10^{-8}$  cm or .1 nanometer. It was named after A. J. Angstrom (1814-1874), a Swedish spectroscopist. OR A non-SI unit of length used to express wavelengths of light, bond lengths, and molecular sizes.  $1 \text{ \AA} = 10^{-10} \text{ m} = 10^{-8} \text{ cm}$ .

**angstrom (Å):** A unit of length ( $10^{-8}$  cm) used to indicate molecular dimensions.

**anguidine:** A trichothecene mycotoxin and potent teratogen. Anguidine inhibits initiation of protein synthesis, resulting in the death of rapidly proliferating cells. Anguidine also has been shown to both potentiate and protect against the cytotoxic effects of other drugs.

**angular momentum quantum number:** A quantum number that labels the subshells of an atom. Sometimes called the orbital angular momentum quantum number, this quantum number dictates orbital shape. can take on values from 0 to  $n-1$  within a shell with principal quantum number  $n$ .

**angular unconformity:** the contact that separates a younger, gently dipping rock unit from older underlying rocks that are tilted or deformed layered rock.

**Anhydrate:** A crystal form that contains no solvent of crystallization.

**anhydride:** The product of the condensation of two carboxyl or phosphate groups in which the elements of water are eliminated to form a compound with the general structure  $\text{X}_2\text{O}$ , where X is either carbon or phosphorus.

**Anhydrous:** Very dry. No water or dampness is present.

**anhydrous:** A compound with all water removed, especially water of hydration. For example, strongly heating copper(II) sulfate pentahydrate ( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ ) produces anhydrous copper(II) sulfate ( $\text{CuSO}_4$ ).

**anhydrovinblastine :** A drug that is used to lower blood pressure. An angiotensin-converting enzyme inhibitor is a type of antihypertensive agent. Also called ACE inhibitor.

**anidulafungin :** A substance being studied in the treatment of cancer. Angiozyme is a special type of RNA made in the laboratory. It stops a protein called vascular endothelial growth factor receptor (VEGFR) from being made. This may prevent the growth of new blood vessels that tumors need to grow. It is a type of angiogenesis inhibitor and a type of ribozyme. Also called RPI.4610. OR A cyclic lipopeptide echinocandin derivative with antifungal activity. Anidulafungin inhibits 1,3 beta-D-glucan synthase, an enzyme involved in fungal cell wall synthesis, resulting in cell lysis and death. This agent is active against *Candida* species and *Aspergillus*. Check for active clinical trials using this agent.

**Aniline:** Aniline is an aromatic derivative produced by hydrogenation of nitrobenzene and is used primarily for the production of MDI (methylene diphenyl diisocyanate).

**aniline mustard:** An alkylating mustard with antineoplastic activity. Aniline mustard forms covalent linkages with nucleophilic centers, resulting in depurination, base miscoding and strand scission, and crosslinking of DNA strands, all of which contribute to its cytotoxicity.

**Aniline Point:** The lowest temperature at which equal volume of pure, fresh aniline and oil will completely dissolve in one another is the aniline point of the oil.

**animal model :** An anticancer drug that belongs to the family of drugs called mitotic inhibitors.

**animal study :** A drug that is used to treat infections caused by fungi. It belongs to the family of drugs called antifungals.

**animal-assisted therapy :** An animal with a disease either the same as or like a disease in humans. Animal models are used to study the development and progression of diseases and to test new treatments before they are given to humans. Animals with transplanted human cancers or other tissues are called xenograft models.

**Animalia:** the kingdom that includes the animals.

**Anion:** A negatively charged ion in an electrolyte solution, attracted to the anode under the influence of a difference in electrical potential. Chloride is an anion. OR ion having a negative charge; an atom with extra electrons. Atoms of non-metals, in solution, become anions. OR An anion is a negatively charged ion. Nonmetals typically form anions.

**anion gap:** defined as difference in concentration of cations other than  $\text{Na}^+$  and anions other than  $\text{Cl}^-$  and  $\text{HCO}_3^-$ : value determined by equation as follows  $[\text{Na}^+ - (\text{Cl}^- + \text{HCO}_3^-)]$

**anion-exchange resin:** A polymeric resin with fixed cationic groups; used in the chromatographic separation of anions.

**Anionic:** A negatively charged chemical species, like the hydroxide  $\text{OH}^-$ , carbonate  $\text{CO}_3^{2-}$ , or sulphate  $\text{SO}_4^{2-}$ , is called an anion. In an electrochemical cell, an anion will move towards the anode to lose its extra electron and generate a current.

**Anionic product :** A product carrying negative charge in its structure.

**ANIONIC SURFACTANT:** A surfactant in which the hydrophile is negatively charged. Examples; sulfonates and sulfates. (see RFF 750.10.01 - SURFACTANTS).

**anions:** Anions are negatively charged ions (so called because they are attracted to the anode – the positive electrode – during electrolysis).

**aniridia :** A laboratory experiment using animals to study the development and progression of diseases. Animal studies also test how safe and effective new treatments are before they are tested in people.

**Anisotropic behavior:** A term used to describe cases where a solid-state reaction proceeds through different directions of the crystal at different rates; also referring to any observed property that varies in different directions in or on a crystal.

**Anisotropic shrinkage:** Shrinkage that occurs more in one direction (usually the direction of flow; reinforced materials shrink more across the direction of flow) than another.

**ANISOTROPY:** The situation where properties vary according to the direction in which they are measured.

**Anisotropy:** The tendency of a material to react differently to stresses applied in different directions.

**ANLL:** A type of therapy that uses dogs or other pets to improve the physical and mental health of patients with certain acute or chronic diseases. It is being studied as a way to relieve distress in cancer patients undergoing treatment for pain. Also called pet-facilitated therapy.

**anlotinib hydrochloride:** The hydrochloride salt form of anlotinib, a receptor tyrosine kinase (RTK) inhibitor with potential antineoplastic and anti-angiogenic activities. Upon administration, anlotinib targets multiple RTKs, including vascular endothelial growth factor receptor type 2 (VEGFR2) and type 3 (VEGFR3). This agent may both inhibit angiogenesis and halt tumor cell growth.

**annamycin :** A disorder in which a person is born without part or all of the iris (colored tissue at the front of the eyeball). Aniridia usually affects both eyes and causes other eye problems, including being sensitive to light and loss of vision.

**Anneal:** To prevent the formation of or remove stresses in plastics by cooling from a suitable temperature. OR (1) To heat a molded plastic article to a predetermined temperature and slowly cool it. to relieve stresses. (2) To heat steel to a predetermined temperature above the critical range and slowly cool it, to relieve stresses and reduce harness. (Annealing of molded or machined parts may be done dry as in an oven or wet as in a heated tank of mineral oil.) OR To heat a molded part up to a temperature just below its melting point and slowly cool it back down to room temperature This relieves molded stresses See conditioning. OR a procedure for preventing or removing stresses within a material through the use of controlled heating and subsequent cooling of the material. OR to prevent the formation of or remove stresses in plastics by cooling from a suitable temperature. OR (1) To heat a molded plastic article to a predetermined temperature and slowly cool it to relieve stresses. (2) To heat steel to a predetermined temperature above the critical range and slowly cool it, to relieve stresses and reduce harness. (Annealing of molded or machined parts may be done dry as in an oven or wet as in a heated tank of mineral oil.)

**Annealing:** The process of relieving internal stresses of molded plastic articles by heating to a predetermined temperature, maintaining this temperature for a predetermined length of time, and slowly cooling. OR A process of holding a material at a temperature mean, but below its melting point, the objective being to permit stress relaxation without distortion of

shape. It is often used on molded articles to relieve stresses set up by flow into the molds. OR A metallurgic term used in plastics to describe the heating of a polymer to just below the melting point. The process reconfigures the plastic molecules, re-setting the plastic's "memory." OR The process of relieving internal stresses of molded plastic articles by heating to a predetermined temperature, maintaining this temperature for a predetermined length of time, and slowly cooling the articles.

**Annonaceous acetogenins:** A family of naturally occurring polyketides that consist of C32 or C34 long chain fatty acids and combined with a propan-2-ol unit at C-2 to form a gamma-lactone, which are isolated from various species of the plant family Annonaceae, with potential antineoplastic and antimicrobial activity. Annonaceous acetogenins bind to the ubiquinone catalytic site(s) within the mitochondrial NADH:ubiquinone oxidoreductase (complex I), and block the electron transport chain in mitochondria. In addition, the acetogenins bind to and block the activity of ubiquinone-linked NADH oxidase, an enzyme overexpressed in the plasma membranes of cancer cells. This inhibits adenosine triphosphate (ATP) production, decreases intracellular ATP levels, and induces tumor cell apoptosis. Compared to normal cells, cancer cells have higher ATP demands. The Annonaceous acetogenins also inhibit microbial glucose dehydrogenase 6.

**Annual limit on intake (ALI):** As defined in Title 10, Section 20.1003, of the Code of Federal Regulations (10 CFR 20.1003), ALI is the derived limit for the amount of radioactive material taken into the body of an adult worker by inhalation or ingestion in a year. ALI is the smaller value of intake of a given radionuclide in a year by the "reference man" that would result in a committed effective dose equivalent (CEDE) of 5 rems (0.05 sievert) or a committed dose equivalent (CDE) of 50 rems (0.5 sievert) to any individual organ or tissue. ALI values for intake by ingestion and inhalation of selected radionuclides are given in Table 1, Columns 1 and 2, of Appendix B to 10 CFR Part 20, "Standards for Protection Against Radiation." For additional detail, see Information for Radiation Workers.

**ANO:** Atomic natural orbital. Very large basis sets derived from correlated atomic calculations. More expensive to use than the corresponding

correlation consistent basis sets (e.g., cc-pVDZ) but not often significantly more accurate.

**anode:** The electrode where electrons are lost (oxidized) in redox reactions.

**Anodising:** A method of treating aluminium or light alloy to provide a non-corroding oxide film on the surface of the metal.

**anodize:** Anodizing is the process of coating an aluminium surface with a thicker than usual coating of aluminium oxide. This is done by making aluminium the anode (positive electrode) in an electrolytic cell.

**anomers:** Two stereoisomers of a given sugar that differ only in the configuration about the carbonyl (anomeric) carbon atom.

**anorexia :** An aggressive (fast-growing) disease in which too many myeloblasts (immature white blood cells that are not lymphoblasts) are found in the bone marrow and blood. Also called acute myeloblastic leukemia, acute myelogenous leukemia, acute myeloid leukemia, acute nonlymphocytic leukemia, and AML.

**anorexia nervosa :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called anthracycline antibiotics.

**ANS:** An abnormal loss of the appetite for food. Anorexia can be caused by cancer, AIDS, a mental disorder (i.e., anorexia nervosa), or other diseases.

**Ansaid:** (Other name for: flurbiprofen)

**ansamycin :** An eating disorder marked by an intense fear of gaining weight, a refusal to maintain a healthy weight, and a distorted body image. People with anorexia nervosa have an abnormal loss of appetite for food, try to avoid eating, and eat as little as possible.

**ANSI:** Abbreviation for American National Standards Institute.

**Antabuse:** (Other name for: disulfiram)

**antacids:** Antacids are basic substances (such as magnesium hydroxide) used to neutralize excess acid in the stomach.

**Antagonist:** A molecule that binds to a receptor protein but does not trigger the signaling pathway. Such molecules are like competitive inhibitors for enzymes. Or The part of the nervous system that controls muscles of internal organs (such as the heart, blood vessels, lungs, stomach,

and intestines) and glands (such as salivary glands and sweat glands). One part of the ANS helps the body rest, relax, and digest food and another part helps a person fight or take flight in an emergency. Also called autonomic nervous system and involuntary nervous system.

**antagonistic effect:** This is the consequence of one chemical (or a group of chemicals) interacting the situation in which the combined effect of two or more chemicals is less than the simple sum of their independent effects. In bioassay, the term may be used to refer to the situation when a specified response is produced by exposure to either of two factors but not by exposure to both together (Last, 1983).

**Antarctic Ice Sheet:** See ice sheet.

**antecedent:** the noun or group of words acting as a noun to which the pronoun refers.

**antenatal :** An anticancer drug that belongs to the family of drugs called antineoplastic antibiotics.

**anterior :** In medicine, a substance that stops the action or effect of another substance. For example, a drug that blocks the stimulating effect of estrogen on a tumor cell is called an estrogen receptor antagonist.

**anterior mediastinotomy :** Having to do with the time a female is pregnant, before birth occurs. Also called prenatal.

**anterior mediastinum :** In human anatomy, has to do with the front of a structure, or a structure found toward the front of the body.

**anterior pelvic exenteration :** A procedure in which a tube is inserted into the chest to view the tissues and organs in the area between the lungs and between the breastbone and heart. The tube is inserted through an incision next to the breastbone. This procedure is usually used to get a tissue sample from the lymph nodes on the left side of the chest. Also called Chamberlain procedure.

**anterior urethral cancer :** The area in the front part of the chest between the lungs. Also called prevascular space.

**anthocyanin:** A family of pigments that give flowers, fruits, and leaves of some plants their red or blue coloring. Anthocyanins consist of sugar molecules bound to a benzopyrylium salt (called anthocyanidin). See Water to Wine for more about anthocyanins.

**anthocyanin-rich corn extract:** A corn-based, water-soluble extract rich in the polyphenol anthocyanin, with potential antioxidant, anti-inflammatory and chemoprotective activities. Upon administration of the anthocyanin-rich corn extract, the anthocyanins scavenge reactive oxygen species (ROS), which protects healthy cells from radiation-induced oxidative stress and DNA damage. In addition, anthocyanins modulate the expression of various genes and proteins involved in inflammation, tumor cell proliferation, angiogenesis, tumor cell invasion and differentiation. This agent also chelates metals and induces the expression of enzymes involved in Phase II antioxidant and detoxification pathways, which may further protect cells against oxidative stress induced by toxins and carcinogens.

**anthracenedione :** Surgery to remove the urethra, lower part of the ureters, uterus, cervix, vagina, and bladder.

**anthracycline :** A disease in which malignant (cancer) cells are found in the part of the urethra (the tube through which urine leaves the body) that is closest to the outside of the body.

**anthracycline analogue GPX-150:** A synthetic non-cardiotoxic analogue of the anthracycline antibiotic doxorubicin with potential antineoplastic activity. Anthracycline analogue GPX-150 intercalates DNA and impedes the activity of topoisomerase II, inducing single and double-stranded breaks in DNA; inhibiting DNA replication and/or repair, transcription, and protein synthesis; and activating tumor cell apoptosis.

**anthraquinone :** An anticancer drug that belongs to the family of drugs called anticancer antibiotics.

**Anthropogenic:** A fancy way of saying "man-made" that hides its lack of political correctness in greek. Think of 'anthropoid' and 'genesis'.

**anti c-KIT antibody-drug conjugate LOP628:** An antibody-drug conjugate (ADC) consisting of a humanized monoclonal antibody against the stem cell factor receptor c-Kit (SCFR) and conjugated, via a non-cleavable linker, to the cytotoxic agent maytansine, with potential antineoplastic activity. The monoclonal antibody moiety of anti c-KIT ADC LOP628 targets and binds to the cell surface antigen c-Kit. After antibody-antigen interaction followed by internalization, the maytansine moiety binds to tubulin, inhibits microtubule assembly, and induces microtubule disassembly. This leads to a disruption of mitosis and the inhibition of cell proliferation in cancer cells expressing c-Kit. c-Kit, a transmembrane

protein and receptor tyrosine kinase, is overexpressed in solid tumors and hematological malignancies; it plays a key role in the regulation of cell differentiation and proliferation.

**anti-5T4 antibody-drug conjugate PF-06263507:** An antibody-drug conjugate composed of an antibody directed against 5T4 and conjugated, via the stable linker maleimidocaproyl (mc), to the microtubule inhibitor monomethyl auristatin phenylalanine (MMAF), with potential antineoplastic activity. Upon administration, the antibody moiety of PF-06263507 selectively binds to cells expressing the 5T4 oncofetal antigen. After internalization and enzymatic cleavage of the immunoconjugate within the tumor cell cytosol, free MMAF binds to tubulin and inhibits its polymerization, which may result in G2/M phase arrest and tumor cell apoptosis. 5T4, a transmembrane glycoprotein, is overexpressed by a variety of cancer cell types; its expression is correlated with increased invasiveness.

**anti-A33 monoclonal antibody KRN330:** A recombinant fully human monoclonal antibody directed against the human A33 antigen, with potential immunomodulatory and antineoplastic activity. Anti-A33 monoclonal antibody KRN330 recognizes and binds to the human A33 antigen, which may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against A33-positive colorectal cancers. A33 antigen, a 43 kDa transmembrane glycoprotein of the immunoglobulin superfamily, is highly and homogeneously expressed in 95% of colorectal cancer cancers with only restricted expression in normal colonic mucosa and small bowel epithelia.

**anti-A5B1 integrin monoclonal antibody PF-04605412:** A monoclonal antibody directed against the human alpha5beta1 integrin with potential antiangiogenic and antineoplastic activities. Anti-alpha5beta1 integrin monoclonal antibody PF-04605412 selectively binds to alpha5beta1 integrin, preventing the binding of integrin ligands. This may result in the inhibition of endothelial cell-cell interactions, endothelial cell-matrix interactions, and integrin-mediated tumor angiogenesis and metastasis in alpha5beta1-expressing tumor cells. Alpha5beta1 integrin, a cell adhesion and signaling receptor, is often overexpressed on the surface of tumor vessel endothelial cells and plays a crucial role in endothelial cell adhesion and migration.

**anti-AGS-16 monoclonal antibody AGS-16M18:** A humanized monoclonal antibody directed against the activator of g-proteins signaling (AGS) cell surface protein AGS-16 with potential antineoplastic activity. Anti-AGS-16 monoclonal antibody AGS-16M18 selectively binds to AGS-16, triggering complement-dependent cell lysis (CDCL) and antibody-dependent cell-mediated cytotoxicity (ADCC) in tumor cells expressing AGS-16. While normally expressed at low levels in the proximal tubules of the kidney, AGS-16 has been found to be overexpressed in more than 95% of kidney and 40% of liver neoplasms.

**anti-AGS-5 antibody-drug conjugate ASG-5ME:** An antibody drug conjugate (ADC) containing the fully human IgG2k monoclonal antibody targeting an epitope of SLC44A4 (AGS-5) linked, via a valine-citrulline (vc) maleimidocaproyl (mc) linker, to the antimicrotubulin drug monomethyl auristatin E (MMAE), with potential antineoplastic activity. The monoclonal antibody moiety of ASG-5ME selectively binds to AGS-5. After internalization and proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, which results in G2/M phase arrest and tumor cell apoptosis. SLC44A4, potentially a sodium-dependent transmembrane transport protein, is overexpressed on more than 80 percent of samples derived from patients with pancreatic, prostate and gastric cancers.

**anti-AGS-8 monoclonal antibody AGS-8M4:** A humanized monoclonal antibody directed against the activator of g-proteins signaling (AGS) cell surface protein AGS-8 with potential antineoplastic activity. Anti-AGS-8 monoclonal antibody AGS-8M4 selectively binds to AGS-8, triggering complement-dependent cell lysis and antibody-dependent cell-mediated cytotoxicity in tumor cells expressing AGS-8. While normally expressed at low levels in the heart in response to ischemia, AGS-8 has been found to be expressed in more than 70% of ovarian neoplasms.

**anti-ALK-1 monoclonal antibody PF-03446962:** A fully human, IgG2 monoclonal antibody directed against activin-like receptor kinase 1 (ALK-1) with potential antineoplastic activity. Anti-ALK-1 monoclonal antibody PF-03446962 binds to and neutralizes ALK-1. This may disrupt tumor endothelial cell function and inhibit tumor angiogenesis, eventually leading to an inhibition of tumor cell proliferation. ALK-1, a member of the transforming growth factor beta (TGF- $\beta$ ) type I receptor family, is

overexpressed on endothelial cells in a variety of tumor cell types and increases endothelial cell proliferation and migration.

**anti-amyloid monoclonal antibody NEOD001:** A monoclonal antibody against amyloid with potential use in the treatment of amyloid light chain (AL) and AA amyloidosis. Upon intravenous administration, anti-amyloid monoclonal antibody NEOD001 specifically binds to amyloid fibrils. This prevents the formation of amyloid deposits in certain organs and facilitates their clearance. It also reduces the level of amyloid deposits in organs and prevents organ dysfunction.

**anti-ANG2 monoclonal antibody MEDI-3617:** A fully human IgG1 monoclonal antibody against angiopoietin 2 (ANG2), with potential antiangiogenic activity. Anti-ANG2 monoclonal antibody MEDI-3617 binds to Ang2 and interferes with the interaction between Ang2 and its receptor TEK tyrosine kinase (Tie2), thereby resulting in the disruption of vascular remodeling. This may inhibit angiogenesis and may eventually lead to an inhibition of tumor cell proliferation.

**anti-B4 blocked ricin immunotoxin:** An immunotoxin comprised of an anti-B4 (anti-CD19) murine monoclonal antibody linked to the modified plant-derived toxin blocked ricin. The antibody moiety of anti-B4 blocked ricin immunotoxin binds to B lymphocytes that express B4; after internalization of the immunotoxin by the B4-expressing B cell, the ricin moiety cleaves the N-glycosidic bond between the ribose and adenine base at position 4324 in the B lymphocyte 28S ribosomal RNA, resulting in ribosome inactivation, inhibition of protein synthesis, and cell death. "Blocked" ricin is ricin which has been chemically modified such that the lectin binding sites of the B chain (galactose-binding sites) have been blocked by covalent attachment of affinity ligands, leaving the ribosome-inactivating activity of the ricin A chain intact.

**anti-B7-H3 antibody DS-5573a:** An antibody directed against the immunoregulatory protein B7-homologue 3 (B7-H3, CD276), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, anti-B7-H3 antibody DS-5573a binds to the cell surface antigen B7-H3, thereby blocking B7-H3-mediated signaling. This abrogates the inhibitory effect on T-cell activation and may activate the immune system to exert a cytotoxic T-lymphocyte (CTL) response against B7-H3-expressing tumor cells. B7-H3, a type I transmembrane protein and

a member of the B7 co-stimulatory protein superfamily, is overexpressed on certain tumor cell types and on various immune cells. It is a negative regulator of the T-cell activation and its overexpression plays a key role in tumor cell invasion and metastasis.

**anti-BCMA antibody-drug conjugate GSK2857916:** An antibody-drug conjugate (ADC) consisting of an afucosylated, humanized monoclonal antibody, directed against the B-cell maturation antigen (BCMA), conjugated to the auristatin analogue and microtubule inhibitor monomethyl auristatin phenylalanine (MMAF), with potential antineoplastic activity. The anti-BCMA antibody moiety of anti-BCMA ADC GSK2857916 selectively binds to the BCMA on tumor cell surfaces. Upon internalization, the MMAF moiety binds to tubulin and inhibits its polymerization, which results in G2/M phase arrest and induces tumor cell apoptosis. In addition, GSK2857916 induces antibody-dependent cellular cytotoxicity (ADCC). Altogether, this results in the inhibition of cellular proliferation in tumor cells that overexpress BCMA. BCMA, a receptor for a proliferation-inducing ligand and B-cell activating factor, is a member of the tumor necrosis factor (TNF) receptor superfamily and plays a key role in plasma survival; it is found on the surfaces of plasma cells and overexpressed on malignant plasma cells. Afucosylation of the antibody moiety increases ADCC.

**anti-c-fms monoclonal antibody AMG 820:** A fully human IgG2 monoclonal antibody against the colony-stimulating factor-1 (CSF-1 or M-CSF) receptor c-fms (or CSFR1), with potential antineoplastic activity. Upon administration, anti-c-fms monoclonal antibody AMG 820 binds to and blocks c-fms, thereby blocking CSF-1 binding to its receptor and suppressing CSF-1-induced c-fms signaling. This results in the suppression of recruitment and activation of tumor associated macrophages (TAM) within the tumor microenvironment. This eventually leads to a decrease in tumor growth. c-fms, a transmembrane protein belonging to the tyrosine kinase family, is overexpressed in certain tumor cell types and plays an essential role in macrophage differentiation and regulation of cell proliferation. The presence of TAM is correlated with tumor proliferation, invasion and a poor prognosis.

**anti-c-KIT monoclonal antibody KTN0158:** A humanized immunoglobulin (Ig) G1 monoclonal antibody against the stem cell factor

receptor c-Kit (SCFR; KIT; CD117), with potential antineoplastic and anti-allergic activities. Upon administration, the anti-c-KIT monoclonal antibody KTN0158 binds to and inhibits the activation of the cell surface antigen c-Kit. This leads to an inhibition of the activation of c-KIT-mediated signal transduction pathways and inhibits cell proliferation in cancer cells expressing c-Kit. In mast cells, inhibition of c-KIT and c-KIT-mediated signaling prevents mast cell activation, degranulation and subsequent cytokine release. c-Kit, a transmembrane protein and receptor tyrosine kinase, is overexpressed in various cell types, including certain cancer cells and mast cells; it plays a key role in the regulation of cell differentiation and proliferation.

**anti-c-Met monoclonal antibody ABT-700:** A monoclonal antibody directed against human hepatocyte growth factor receptor (HGFR or c-Met), with potential antineoplastic activity. Anti-c-Met monoclonal antibody ABT-700 binds to c-Met, thereby preventing c-Met binding to its ligand, HGF and the subsequent activation of the HGF/c-Met signaling pathway. This may cause cell death in c-Met-expressing tumor cells. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis.

**anti-c-Met monoclonal antibody ARGX-111:** A human monoclonal antibody targeting c-Met, with potential antineoplastic activity. Anti-c-Met monoclonal antibody ARGX-111 binds to c-Met, and blocks both ligand-dependent and -independent activation of c-Met-mediated signaling pathways. In addition, this agent enhances antibody-dependent cellular cytotoxicity (ADCC). This leads to a reduction in cell proliferation of c-Met-expressing cancer cells. c-Met, a receptor tyrosine kinase overexpressed in certain cancer cell types, is involved in cell proliferation, angiogenesis and metastasis in multiple solid tumors. Compared to other c-Met targeting monoclonal antibodies, ARGX-111 shows increased antibody circulation time, enhanced tissue distribution and increased efficacy. ARGX-111 is obtained through active immunization with C-met antigen in Camelids and utilizes the Camelid V-domains fused with human antibody backbones.

**anti-c-MET monoclonal antibody LY2875358:** A humanized IgG4 monoclonal antibody directed against human hepatocyte growth factor

receptor (HGFR or c-MET) with potential antineoplastic activity. Anti-c-MET monoclonal antibody LY2875358 binds to c-MET, thereby preventing the binding of HGF to its receptor c-Met and subsequent activation of the HGF/c-Met signaling pathway. This may result in cell death in c-Met-expressing tumor cells. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis.

**anti-C-met monoclonal antibody SAIT301:** A humanized monoclonal antibody targeting the alpha chain of the extracellular domain of human hepatocyte growth factor receptor (HGFR or c-Met), with potential antineoplastic activity. Anti-c-Met monoclonal antibody SAIT301 binds to c-Met, thereby preventing both binding of its ligand, HGF, and the subsequent activation of the HGF/c-Met signaling pathway. In addition, SAIT301 induces c-Met internalization and subsequent degradation, which further inhibits c-Met-mediated signaling. This leads to a reduction in the proliferation of c-Met-expressing cancer cells. c-Met, a proto-oncogene receptor tyrosine kinase overexpressed in certain cancer cell types, is involved in various tumors. Check for active clinical trials using this agent.

**anti-C4.4a antibody-drug conjugate BAY1129980:** An antibody-drug conjugate (ADC) composed of an antibody against a structural homolog of the urokinase-type plasminogen activator receptor (uPAR) and tumor-associated antigen, C4.4a, and conjugated with a cytotoxic agent, with potential antineoplastic activity. Upon intravenous administration, anti-C4.4a antibody-drug conjugate BAY1129980 targets and binds to C4.4a-expressing tumor cells. Upon binding and cell entry, the cytotoxic agent kills the tumor cell. C4.4a, a glycolipid-anchored membrane protein and a member of the Ly-6 family, is overexpressed by a variety of cancer cell types whereas it is minimally expressed on healthy cells.

**anti-CA19-9 monoclonal antibody 5B1:** A human monoclonal antibody against the carbohydrate antigen sialyl-Lewis A (carbohydrate antigen 19-9; CA19-9), with potential antineoplastic activity. Upon administration, monoclonal antibody 5B1 binds to CA19-9 and kills CA19-9-expressing tumor cells, possibly through the induction of both complement-dependent cytotoxicity (CDC) and antibody-dependent cell-mediated cytotoxicity (ADCC). CA19-9 is overexpressed on a number of different tumor cell types, and plays a key role in tumor cell survival and metastasis.

**anti-CA6-DM4 immunoconjugate SAR566658:** An immunoconjugate consisting of a humanized monoclonal antibody against the tumor-associated sialoglycotope CA6 (huDS6) conjugated to the cytotoxic maytansinoid DM4, with potential antineoplastic activity. The anti-CA6 monoclonal antibody moiety of SAR566658 targets and binds to the cell surface antigen CA6. Upon antibody/antigen binding and internalization, the immunoconjugate releases DM4, which binds to tubulin and disrupts microtubule assembly/disassembly dynamics, resulting in inhibition of cell division and cell growth of CA6-expressing tumor cells. The CA6 epitope is found on a variety of solid tumors, including breast, ovarian, cervical, lung and pancreatic tumors.

**anti-CCR2 monoclonal antibody MLN1202 :** Treatment to stop or prevent cancer.

**anti-CD123 monoclonal antibody KHK2823:** A fully humanized monoclonal antibody against CD123 (interleukin-3 receptor alpha chain) with potential antineoplastic activity. Anti-CD123 monoclonal antibody KHK2823 binds to and neutralizes CD123, which is upregulated on leukemic stem cells (LSC) found in myelodysplastic syndrome (MDS) or acute myeloid leukemia (AML). This agent may inhibit IL-3-dependent signaling and proliferation and may prevent the uncontrolled growth and differentiation of mutated LSC.

**anti-CD123 x anti-CD3 bispecific antibody XmAb14045:** An anti-CD123/anti-CD3 bispecific monoclonal antibody, in which most of the naturally-occurring Fc domain is maintained, with potential immunostimulatory and antineoplastic activities. Anti-CD123/CD3 monoclonal antibody XmAb14045 possesses two antigen-recognition and binding sites, one for the CD3 complex, a group of T-cell surface glycoproteins that complex with the T-cell receptor (TCR), and one for CD123, a tumor-associated antigen (TAA) overexpressed on the surface of certain tumor cells. Upon administration of XmAb14045, this bispecific antibody simultaneously binds to both CD3-expressing T cells and CD123-expressing cancer cells, thereby crosslinking CD123-expressing tumor cells and cytotoxic T lymphocytes (CTLs). This may result in potent CTL-mediated cell lysis of CD123-expressing tumor cells. CD123, the interleukin-3 receptor alpha chain, is overexpressed in a variety of hematological malignancies; its expression is low or absent in normal

hematopoietic progenitors and stem cells. The Fc domain on the antibody prolongs the half-life of the bispecific antibody and enhances T-cell-mediated tumor cell killing through its binding to the Fc receptors. Check for active clinical trials using this agent.

**anti-CD123/CD3 bispecific antibody JNJ-63709178:** A humanized anti-CD123/anti-CD3 bispecific monoclonal antibody, with potential immunostimulating and antineoplastic activities. Anti-CD123/CD3 bispecific antibody JNJ-63709178 possesses two antigen-recognition and binding sites, one for the CD3 complex, a group of T-cell surface glycoproteins that complex with the T-cell receptor (TCR), and one for CD123, a tumor-associated antigen (TAA) overexpressed on the surface of certain tumor cells. Upon administration of JNJ-63709178, this bispecific antibody simultaneously binds to both CD3-expressing T cells and CD123-expressing cancer cells, thereby crosslinking CD123-expressing tumor cells and cytotoxic T lymphocytes (CTLs). This may result in potent CTL-mediated cell lysis of CD123-expressing tumor cells. CD123, the interleukin-3 receptor alpha chain, is overexpressed in a variety of cancers; its expression is low or absent in normal, healthy cells. Check for active clinical trials using this agent.

**anti-CD123/CD3 monoclonal antibody MGD006:** An anti-CD123/anti-CD3 bispecific humanized monoclonal antibody with potential immunostimulatory and antineoplastic activities. Anti-CD123/CD3 monoclonal antibody MGD006 possesses two antigen-recognition and binding sites, one for the CD3 complex, a group of T-cell surface glycoproteins that complex with the T-cell receptor (TCR), and one for CD123, a tumor-associated antigen (TAA) overexpressed on the surface of certain tumor cells. Upon administration of MGD006, this bispecific antibody simultaneously binds to both CD3-expressing T-cells and CD123-expressing cancer cells, thereby crosslinking CD123-expressing tumor cells and cytotoxic T-lymphocytes (CTLs). This may result in potent CTL-mediated cell lysis of CD123-expressing tumor cells. CD123, the interleukin-3 receptor alpha chain, is overexpressed in a variety of hematological malignancies; its expression is low or absent in normal hematopoietic progenitors and stem cells. Check for active clinical trials using this agent.

**anti-CD133-CAR vector-transduced allogeneic T lymphocytes:** A preparation of allogeneic peripheral blood T lymphocytes (PBTL) that have been genetically modified to express a chimeric antigen receptor (CAR) specific for the chimeric CD (cluster of differentiation) 133 antigen receptor, with potential immunostimulating and antineoplastic activities. Upon administration, anti-CD133-CAR vector-transduced allogeneic T lymphocytes specifically recognize and kill CD133-expressing tumor cells. CD133, a tumor associated antigen (TAA), is overexpressed on a variety of tumor cell types.

**anti-CD157 monoclonal antibody MEN1112:** A humanized, Fc-engineered, de-fucosylated monoclonal immunoglobulin G1 (IgG1) antibody directed against the bone marrow stromal cell antigen 1 (BST1/CD157), with potential antineoplastic activity. Upon intravenous infusion, anti-CD157 monoclonal antibody MEN1112 specifically binds to and induces an antibody-dependent cell cytotoxic (ADCC) response against CD157-expressing tumor cells. CD157, also known as ADP-ribosyl cyclase 2, is a glycosyl-phosphatidylinositol (GPI)-anchored transmembrane protein belonging to the ADP-ribosyl-cyclase family and is overexpressed on certain cancer cell types. Fc-optimization of MEN1112, which involves the removal of fucose residues from its Fc domain, allows for enhanced Fc-gamma receptor binding on effector cells, such as natural killer (NK) cells, and further enhances tumor cell lysis. Check for active clinical trials using this agent.

**anti-CD19 fully human monoclonal antibody MDX-1342:** A fully human anti-CD19 monoclonal antibody directed against the B-cell-specific membrane protein CD-19 with potential antineoplastic activity. Anti-CD19 monoclonal antibody MDX-1342 binds to CD19, depleting and eliminating CD19-expressing B-cells. CD19 is widely expressed during B-cell development, from pro-B-cell to early plasma cell stages.

**anti-CD19 immunotoxin :** Having to do with preventing or delaying the development of cancer.

**anti-CD19 monoclonal antibody DI-B4:** A low-fucosylated, humanized, IgG1 isotype, monoclonal antibody directed against the B-cell-specific membrane protein CD19 with potential immunostimulating and antineoplastic activities. Anti-CD19 monoclonal antibody DI-B4 binds to CD19, which may result in a strong antibody-dependent cellular

cytotoxicity (ADCC) directed at CD19-expressing B-cells but with minimal complement dependent cytotoxicity. DI-B4 contains low levels of fucose, which contributes to its enhanced ADCC activity. CD19 is a B-cell specific membrane antigen that is widely expressed during B-cell development and in all B-cell lineage malignancies.

**anti-CD19 monoclonal antibody MEDI-551:** A humanized immunoglobulin IgG1 kappa monoclonal antibody directed against the B-cell-specific membrane protein CD-19 with potential immunostimulating and antineoplastic activities. Anti-CD19 monoclonal antibody MEDI-551 binds to CD19, which may result in a cytotoxic T-lymphocyte (CTL) response and antibody-dependent cellular cytotoxicity (ADCC) to CD19-expressing B-cells. The Fc portion of MEDI-551 does not contain a fucose sugar moiety, which may contribute to its enhanced ADCC activity. CD19 is a membrane antigen that is widely expressed during B-cell development, from pro-B-cell to early plasma cell stages.

**anti-CD19 monoclonal antibody XmAb5574:** An Fc engineered, humanized anti-CD19 monoclonal antibody directed against the B-cell-specific membrane protein CD19 with potential immunostimulating and antineoplastic activities. Anti-CD19 monoclonal antibody XmAb5574 targets and binds to CD19, thereby depleting and eliminating CD19-expressing B-cells. The modified Fc region of XmAb5574 increases binding affinity to Fc-gamma receptors of effector cells and thereby enhances antibody-dependent cellular cytotoxicity (ADCC) and antibody-dependent cell-mediated phagocytosis (ADCP). CD19 is widely expressed during B-cell development, from pro-B-cell to early plasma cell stages.

**anti-CD19-CAR FMC63-28Z retroviral vector-transduced allogeneic T lymphocytes:** Allogeneic T-lymphocytes derived from peripheral blood mononuclear cells (PBMC) transduced with a retroviral vector expressing a chimeric antigen receptor (CAR) consisting of both the light and heavy chain variable regions of anti-CD19 monoclonal antibody FMC63, coupled to the molecule CD28 and the signaling domain of the zeta chain of the T-cell receptor (TCR) (FMC63-28Z), with potential immunomodulating and antineoplastic activities. Upon transfusion, the anti-CD19-CAR FMC63-28Z retroviral vector-transduced allogeneic T lymphocytes specifically recognize and kill CD19-expressing tumor cells. CD19 antigen is a B-cell

specific cell surface antigen, which is expressed in all B-cell lineage malignancies and normal B-cells.

**anti-CD19-CAR retroviral vector-transduced autologous T cells:** A preparation of autologous peripheral blood T-lymphocytes (PBTL) that have been genetically modified to express a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment); an extracellular portion of human CD28 and the entire transmembrane and cytoplasmic portion of human CD28; and the cytoplasmic portion of the human TCR-[zeta] molecule with potential immunostimulating and antineoplastic activities. Upon administration, anti-CD19-CAR retroviral vector-transduced autologous T cells may stimulate host cytotoxic T lymphocyte (CTL) and antibody responses against CD19-expressing tumor cells, resulting in tumor cell lysis. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. CD3 zeta is one of several membrane-bound polypeptides found in the T-cell receptor (TCR)/CD3 complex and regulates the assembly of complete TCR complexes and their expression on the cell surface. CD28 is essential for CD4+ T-cell proliferation, interleukin-2 production, and T-helper type-2 (Th2) development.

**anti-CD19-CAR-CD3zeta-4-1BB-expressing natural killer cells:** Allogeneic natural killer (NK) cells transduced with an mRNA expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) and the zeta chain of the TCR/CD3 complex (CD3-zeta), coupled to the signaling domain of 4-1BB (CD137), with potential immunomodulating and antineoplastic activities. NK cells from haploidentical donors are expanded in culture and electroporated with the CAR mRNA. Upon transfusion of the transduced cultured cells, CD19CAR-CD3zeta-4-1BB-expressing allogeneic NK cells bind to and induce selective cytotoxicity in CD19-expressing tumor cells. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19. Its inclusion may also increase antitumor activity, when compared to the inclusion of the CD3-zeta chain alone. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. Check for active clinical trials using this agent.

**anti-CD19-DM4 immunoconjugate SAR3419:** An immunoconjugate consisting of an anti-CD19 monoclonal antibody conjugated to the

maytansinoid DM4, a derivative of the cytotoxic agent maytansine (DM1), with potential antineoplastic activity. Anti-CD19-DM4 conjugate SAR3419 targets the cell surface antigen CD19, found on a number of B-cell-derived cancers. Upon antibody/antigen binding and internalization, the immunoconjugate releases DM4, which binds to tubulin and disrupts microtubule assembly/disassembly dynamics, resulting in inhibition of cell division and cell growth of CD19-expressing tumor cells.

**anti-CD19/CD22 bispecific ligand-directed toxin DT2219ARL:** An immunotoxin consisting of two scFv ligands recognizing human CD19 and CD22 linked to the first 389 amino acids of diphtheria toxin (DT), DT 390, with potential antineoplastic activity. The VH and VL regions of anti-CD22 (sFv) and anti-CD19 are reversed and linked by an aggregation stabilizing linker (ARL) consisting of a 20 amino acid segment of human muscle aldolase (hma) and an XhoI -compatible restriction site; the CDR3 region of the VH of anti-CD22 sFv is mutated to enhance its affinity. The anti-CD19 and anti CD-22 portions of the immunotoxin specifically bind to CD19 and CD22 receptors on tumor B cells. Upon internalization, DT catalyzes ADP ribosylation of elongation factor 2 (EF-2) which may result in the irreversible inhibition of protein synthesis and cell death in CD19- and CD22-expressing tumor cells. CD19 and CD22 transmembrane proteins upregulated on malignant B cells.

**anti-CD19/CD28/CD3zeta CAR gammaretroviral vector-transduced autologous T lymphocytes KTE-C19:** A preparation of autologous peripheral blood T-lymphocytes (PBTL) that have been transduced with a gammaretroviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 single chain variable fragment (scFv) coupled to the costimulatory signaling domain CD28 and the zeta chain of the T-cell receptor (TCR)/CD3 complex (CD3 zeta), with potential immunostimulating and antineoplastic activities. Upon intravenous infusion and re-introduction of the anti-CD19/CD28/CD3zeta CAR gammaretroviral vector-transduced autologous T lymphocytes KTE-C19 into the patient, these cells bind to and induce selective toxicity in CD19-expressing tumor cells. CD19 antigen is a B-cell specific cell surface antigen that is expressed in all B-cell lineage malignancies. CD3 zeta is one of several membrane-bound polypeptides found in the TCR/CD3 complex; it regulates both the assembly and cell surface expression of TCR complexes. CD28 is essential

for CD4+ T-cell proliferation, interleukin-2 production, and T-helper type-2 (Th2) development.

**anti-CD19/CD3 tetravalent antibody AFM11:** An anti-CD19/anti-CD3 bispecific tetravalent antibody with potential immunostimulatory and antineoplastic activities. Anti-CD19/CD3 tetravalent antibody AFM11 possesses two antigen-recognition and binding sites, one for the CD3 complex, a group of T-cell surface glycoproteins that complex with the T-cell receptor (TCR), and one for CD19, a tumor-associated antigen (TAA) overexpressed on the surface of B-cells. Upon bolus infusion of AFM11, this bispecific antibody binds to CD3-expressing T-cells and CD19-expressing cancer cells, thereby crosslinking CD19-expressing tumor B-cells and cytotoxic T-lymphocytes (CTLs). This may result in a potent CTL-mediated cell lysis of CD19-expressing B-lymphocytes. CD19, a B-cell specific membrane antigen, is expressed during both B-cell development and B-cell malignant growth.

**anti-CD20 B9E9 scFv-streptavidin fusion protein:** An Escherichia coli periplasm-expressed tetrameric fusion protein composed of four single-chain variable regions (scFv) of the murine immunoglobulin (Ig) G2a anti-CD20 monoclonal antibody B9E9 fused to the streptavidin (SA) gene of Streptomyces avidinii (scFv-SA), with potential use in pretargeted radioimmunotherapy (PRIT). Upon intravenous administration of the anti-CD20 B9E9 scFv-SA fusion protein, this agent targets and binds to CD20-expressing tumor cells. Subsequently, a biotinylated N-acetylgalactosamine-containing clearing agent is administered, which binds to the streptavidin moiety of the unbound fusion protein and promotes its hepatic excretion. In turn, radiolabeled DOTA (1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid)-biotin is administered and, due to its small size, quickly distributes. The biotin moiety efficiently binds to the SA moiety of the bound fusion protein, which localizes the biotin-conjugated radionuclide to the tumor site. CD20, a tumor-associated antigen (TAA), is overexpressed on B-cell malignancies. PRIT increases both tumor uptake and renal elimination of the radionuclide conjugate as compared to conventional radioimmunotherapy (RIT), where the radioisotope is bound to the antibody before administration; this increases the dose of radionuclide delivered to the tumor while limiting radiation exposure for normal, healthy tissues.

**anti-CD20 monoclonal antibody SCT400:** A chimeric monoclonal antibody directed against human CD20, with potential antineoplastic activity. Anti-CD20 monoclonal antibody SCT400 binds to the B cell-specific cell surface antigen CD20, which triggers an immune response against CD20-positive B-cells, leading to apoptosis. CD20, a non-glycosylated cell surface phosphoprotein, is exclusively expressed on B-cells during most stages of B-cell development and is often overexpressed in B-cell malignancies.

**anti-CD20 monoclonal antibody TL011:** A monoclonal antibody directed against human CD20 with potential antineoplastic activity. Anti-CD20 monoclonal antibody TL011 specifically binds to the B cell-specific cell surface antigen CD20 antigen (MS4A1; membrane-spanning 4-domains, subfamily A, member 1), thereby potentially triggering an immune response against CD20-positive B cells, leading to B cell apoptosis. CD20 is a non-glycosylated cell surface phosphoprotein that is exclusively expressed on B cells during most stages of B cell development and is often overexpressed in B-cell malignancies.

**anti-CD20 monoclonal antibody-interferon alpha fusion protein IGN002:** A humanized monoclonal antibody directed against the human B-cell-specific cell surface antigen CD20 and fused to the recombinant cytokine, interferon-alpha (IFN-a), with potential antineoplastic and immunomodulating activities. Upon administration of anti-CD20 monoclonal antibody-interferon alpha fusion protein IGN002, the antibody moiety specifically targets and binds to CD20. In turn, the IFN-a moiety binds to the IFN receptor, and activates IFN-mediated signal transduction, which induces the transcription and translation of genes whose protein products mediate anticancer effects. This results in the induction of both G2 cell cycle arrest and apoptosis in CD20-expressing tumor cells. In addition, IGN002 causes the induction of complement-dependent cytotoxicity (CDC) and antibody-dependent cell-mediated cytotoxicity (ADCC) against CD20-expressing B-cells, which leads to B-cell apoptosis and the inhibition of tumor cell proliferation. CD20, a non-glycosylated cell surface phosphoprotein that is exclusively expressed on B-cells during most stages of B-cell development, is often overexpressed in B-cell malignancies. Check for active clinical trials using this agent.

**anti-CD20-CAR-CD3zeta-4-1BB-expressing autologous T**

**lymphocytes:** A preparation of autologous blood T-lymphocytes that have been genetically modified to express a chimeric antigen receptor (CAR) consisting of an anti-CD20 scFv (single chain variable fragment); the cytoplasmic portion of the human TCR-[zeta] molecule; and the co-stimulatory molecule 4-1BB (CD137), with potential immunostimulating and antineoplastic activities. Upon transfusion, anti-CD20-CAR-CD3zeta-4-1BB-expressing autologous T-lymphocyte cells direct T-cells to CD20-expressing tumor cells. This results in cytotoxic T lymphocyte (CTL) and antibody responses against CD20-expressing tumor cells, causing tumor cell lysis. The CD20 antigen, a non-glycosylated cell surface phosphoprotein, is a B-cell specific cell surface antigen expressed in B-cell lineage malignancies. CD3 zeta is one of several membrane-bound polypeptides found in the T-cell receptor (TCR)/CD3 complex and regulates the assembly of complete TCR complexes and their expression on the cell surface. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD20; the inclusion of this signaling domain may increase the antitumor activity compared to the inclusion of the CD3-zeta chain alone. Check for active clinical trials using this agent.

**anti-CD20-engineered toxin body MT-3724:** An engineered toxin body (ETB) composed of the single-chain variable fragment (ScFv) from an antibody targeting CD20 that is linked to a modified form of the ribosome-inactivating alpha subunit of Shiga-like toxin 1 (Shiga-like Toxin-1 A or SLT-1A), with antineoplastic activity. Upon administration, the ScFv moiety of anti-CD20-engineered toxin body MT-3724 targets and binds to the CD20 antigen expressed on tumor cells. Upon internalization, the SLT-1A moiety is released and acts as an N-glycosidase, which binds to and cleaves an adenine nucleobase in the 28S RNA component of the 60S subunit of ribosomes and prevents ribosome activity. This inhibits protein synthesis and eventually leads to apoptosis of CD20-expressing tumor cells. CD20, a B-cell specific transmembrane protein and tumor-associated antigen (TAA), is expressed during most stages of B-cell development and is often overexpressed in B-cell malignancies.

**anti-CD20/CD3 monoclonal antibody REGN1979:** A bispecific, human monoclonal antibody with potential antineoplastic activity. Anti-CD20/CD3 monoclonal antibody REGN1979 contains two antigen-recognition sites:

one for human CD3, a T cell surface antigen, and one for human CD20, a tumor-associated antigen that is exclusively expressed on B-cells during most stages of B-cell development and is often overexpressed in B-cell malignancies. Upon administration, REGN1979 binds to both T-cells and CD20-expressing tumor B-cells, which cross-links the T-cells to tumor cells, and may result in a potent cytotoxic T-lymphocyte (CTL) response against CD20-expressing tumor B-cells.

**anti-CD20 monoclonal antibody ALXN6000:** A humanized monoclonal antibody directed against the human immunosuppressive molecule CD20 (OX-2) with potential immunomodulating and antineoplastic activities. Anti-CD20 monoclonal antibody ALXN6000 binds to CD20, blocking the binding of CD20 to its receptor, CD200R, present on cells of the macrophage lineage; inhibition of CD20 may augment the cytotoxic T-lymphocyte (CTL) mediated immune response against CD20-expressing tumor cells. CD200 is a type 1a transmembrane protein, related to the B7 family of co-stimulatory receptors, and is upregulated on the surface of multiple hematologic malignant cells; this transmembrane protein appears to be involved in the downregulation of a Th1 (helper T cell) immune response. Check for active clinical trials using this agent.

**anti-CD22 CAR-expressing T lymphocytes:** A preparation of human T lymphocytes transduced with a recombinant viral vector encoding a chimeric T-cell receptor (chimeric antigen receptor or CAR) consisting of one or more binding domains targeting the tumor-associated antigen (TAA) CD22 and fused to one or more co-stimulatory, TCR-signaling domains, with potential immunostimulating and antineoplastic activities. Upon administration, the anti-CD22 CAR-expressing T lymphocytes, express anti-CD22-CAR on their cell surfaces and bind to the CD22 antigen on tumor cell surfaces. Subsequently, CD22-expressing B cells are lysed. CD22, a B-lineage-restricted, transmembrane phosphoglycoprotein, is expressed on malignant B cells. Check for active clinical trials using this agent.

**anti-CD22 immunotoxin :** A substance being studied as a treatment for atherosclerosis (a build-up of fat in the arteries). It is also being studied in the treatment of cancers that spread to the bone. Anti-CCR2 monoclonal antibody MLN1202 binds to a protein called CCR2, which is found on the surface of certain bone cells, white blood cells, and cancer cells. Anti-

CCR2 monoclonal antibody MLN1202 blocks the action of a substance that is involved in keeping healthy bone mass. It may help keep the cancer cells from spreading to and growing in the bone. It is a type of monoclonal antibody. Also called MLN1202.

**anti-CD22 immunotoxin CAT-8015 :** A monoclonal antibody linked to a toxic substance. It is being studied in the treatment of some types of B-cell cancer. Anti-CD19 immunotoxin is made in the laboratory. It binds to CD19, a protein on the surface of normal B cells and B-cell tumors, and kills the cells.

**anti-CD22 monoclonal antibody-MMAE conjugate DCDT2980S:** An antibody-drug conjugate (ADC) composed of MCDT2219A , a humanized IgG1 anti-CD22 monoclonal antibody covalently linked, via a protease-cleavable peptide linker, to monomethyl auristatin E (MMAE), an auristatin derivative and a potent microtubule disrupting agent, with potential antineoplastic activity. Upon administration, the monoclonal antibody moiety of DCDT2980S binds to B-cell-specific CD22 receptors and is rapidly internalized, thereby delivering MMAE intracellularly. Upon proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, resulting in G2/M phase arrest and tumor cell apoptosis. CD22, a cell surface glycoprotein, is expressed on mature B-cells and on most malignant B-cells.

**anti-CD22 scFv TCRz:41BB-CAR lentiviral vector-transduced autologous T lymphocytes:** Autologous human T lymphocytes transduced with a recombinant lentiviral vector encoding a chimeric T cell receptor consisting of an anti-CD22 single chain variable fragment (scFv) and the co-stimulatory domain 4-1BB (CD137) coupled to the zeta chain of the TCR/CD3 complex (CD3-zeta), with potential immunostimulating and antineoplastic activities. Autologous peripheral blood lymphocytes (PBLs) from a patient with CD22-positive cancer are transduced with this lentiviral vector that encodes the CAR gene specific for CD22. After isolation, transduction, expansion in culture and reintroduction into the patient, the anti-CD22 scFv TCRz:41BB-CAR lentiviral vector-transduced autologous T lymphocytes express anti-CD22-CAR on their cell surfaces and bind to the CD22 antigen on tumor cell surfaces. Subsequently, CD22-expressing tumor cells are lysed. CD22, a B-lineage-restricted, transmembrane phosphoglycoprotein, is expressed on malignant B cells.

**anti-CD22-CAR m971-BBz lentiviral vector-transduced autologous T lymphocytes:** Autologous human T-lymphocytes transduced with a recombinant lentiviral vector encoding a chimeric T-cell receptor (chimeric antigen receptor or CAR) consisting of an anti-CD22 single chain variable fragment (scFv) derived from the monoclonal antibody (moAb) 971 (m971), and the co-stimulatory domain 4-1BB (CD137) coupled to the zeta chain of the TCR/CD3 complex (CD3-zeta), with potential immunostimulating and antineoplastic activities. Autologous peripheral blood lymphocytes (PBLs) from a patient with CD22-positive cancer are transduced with this lentiviral vector that encodes the CAR gene specific for CD22. After expansion in culture and reintroduction into the patient, the anti-CD22-CAR m971-BBz lentiviral vector-transduced autologous T-lymphocytes express anti-CD22-CAR on their cell surfaces and bind to the CD22 antigen on tumor cell surfaces. Subsequently, CD22-expressing tumor cells are lysed. CD22, a B-lineage-restricted, transmembrane phosphoglycoprotein, is expressed on malignant B-cells. m971 binds to a membrane proximal epitope on CD22 and has a higher binding affinity compared to any other anti-CD22 moAb.

**anti-CD25-PBD antibody-drug conjugate ADCT-301:** An immunoconjugate consisting of a human immunoglobulin (Ig) G1 monoclonal antibody directed against the alpha subunit of the interleukin-2 receptor (IL-2R alpha or CD25) and conjugated, via a cleavable linker, to a synthetic, cross-linking agent pyrrolobenzodiazepine (PBD) dimer that targets DNA minor grooves, with potential antineoplastic activity. The monoclonal antibody portion of the anti-CD25 antibody-drug conjugate (ADC) ADCT-301 specifically binds to the cell surface antigen CD25. This causes the internalization of ADCT-301 and the subsequent release of the cytotoxic PBD moiety. The imine groups of the PBD moiety bind to the N2 positions of guanines on opposite strands of DNA. This induces interstrand cross-links in the minor groove of DNA and inhibits DNA replication, which inhibits the proliferation of CD25-overexpressing tumor cells. CD25, a transmembrane receptor and tumor-associated antigen (TAA), is expressed on certain cancer cells.

**anti-CD27L antibody-drug conjugate AMG 172:** An immunoconjugate consisting of a human IgG1 monoclonal antibody directed against CD27L conjugated, via a non-cleavable linker, to the cytotoxic agent maytansinoid DM1, with potential antineoplastic activity. The monoclonal antibody

moiety of this immunoconjugate binds to CD27L on tumor cell surfaces. After internalization, the DM1 moiety binds to tubulin, thereby disrupting microtubule assembly/disassembly dynamics and inhibiting both cell division and proliferation of cancer cells that express CD27L. CD27L, a type II transmembrane protein and member of the tumor necrosis factor family, is a co-stimulatory molecule constitutively expressed on a subset of activated T-cells, B-cells, and dendritic cells, which is overexpressed in certain tumor cell types.

**anti-CD3 immunotoxin A-dmDT390-bisFv(UCHT1):** A bivalent recombinant fusion protein immunotoxin derived from the anti-CD3 monoclonal antibody UCHT1 with potential antineoplastic activity. Anti-CD3 immunotoxin A-dmDT390-bisFv(UCHT1) consists of 1-390 amino acid residues of chain A diphtheria toxin (DT) joined via a spacer to the Fv fragment of UCHT1, which is connected to a second UCHT1 Fv fragment via a disulfide bond (hence the "bisFv" designation); the addition of the second Fv fragment overcomes the steric hindrance of immunotoxin binding due to the large N-terminal DT domain. Once inside target T cells, the DT moiety catalyzes the transfer of the ADP-ribose moiety of NAD to diphthamide, a posttranslationally modified histidine residue found in elongation factor 2 (EF-2); inactivation of EF-2, disruption of polypeptide chain elongation, and cell death ensue. CD3 is a complex of five cell-surface polypeptides associated with the T cell receptor (TCR) complex.

**anti-CD3 x anti-CD20 bispecific antibody-armed activated T cells:** Autologous activated T cells that have been coated with bispecific antibodies (BiAb), with potential antineoplastic and immunomodulating activities. In vitro, T cells are activated through exposure to the anti-CD3 murine monoclonal antibody OKT3 and low-dose interleukin 2 (Il-2) for 6-14 days and then armed with anti-CD3 x anti-CD20 bispecific antibody (CD20Bi). Upon administration, anti-CD3 x anti-CD20 bispecific antibody-armed activated T cells (AATC) attach to CD3-expressing T cells and CD20-expressing tumor cells, selectively cross-linking T cells and tumor cells. This may result in the recruitment and activation of cytotoxic T lymphocyte (CTLs), CTL-mediated specific tumor cell lysis, and the secretion of antitumor cytokines and chemokines. CD20, a cell surface phosphoprotein, is found on normal B cells and most B-cell tumors.

**anti-CD3/anti-CD20 trifunctional bispecific monoclonal antibody**

**FBTA05:** A trifunctional bispecific monoclonal antibody with potential antineoplastic activity. FBTA05 contains two antigen-recognition sites: one for human CD3, a T cell surface antigen; and one for human CD20, a tumor-associated antigen that is exclusively expressed on B cells during most stages of B-cell development and often overexpressed in B-cell malignancies. In addition, the modified Fc portion of this antibody binds Fc receptors on antigen presenting cells (APCs) such as macrophages and dendritic cells (DCs). FBTA05 brings T cells, CD20-expressing tumor B-cells and APCs together into tricellular complexes, which may result in a potent cytotoxic T-lymphocyte (CTL) response against CD20-expressing tumor B-cells. Fc-mediated binding of APCs in the tricellular complex potentiates CD20 antigen presentation to T cells and the activation of anti-tumor cytotoxic T cells. Check for active clinical trials using this agent.

**anti-CD3/humanized 3F8 bispecific antibody-activated T lymphocytes:**

Autologous activated T cells that have been coated with bispecific antibodies (BiAb) comprised of anti-CD3 murine monoclonal antibody OKT3 heteroconjugated to anti-GD2 humanized monoclonal antibody 3F8 (hu3F8), with potential antineoplastic and immunomodulating activities. In vitro, T cells are exposed to OKT3, which binds to the T cell receptor-CD3 complex on the T cell surface, crosslinks the CD3 receptors and leads to T cell activation. In turn, the hu3F8 monoclonal antibody is heteroconjugated to OKT3. Upon administration, anti-CD3 x anti-GD2 bispecific antibody-armed activated T cells attach to GD2-expressing tumor cells, thereby selectively cross-linking T cells and tumor cells. This results in selective cytotoxicity towards the GD2-expressing tumor cells. In addition, cytokine and chemokine secretion by the T cells further activates the immune system, which leads to the recruitment and activation of cytotoxic T lymphocytes (CTLs), and additional CTL-mediated tumor-specific cell lysis. GD2, a disialoganglioside and tumor-associated antigen, is overexpressed in a variety of tumor cell types. CD3 is part of the functional T cell receptor (TCR) complex, which is necessary for antigen recognition by T cells, and is required for signal transduction.

**anti-CD30 monoclonal antibody MDX-1401:** A fully human, second-generation, nonfucosylated monoclonal antibody directed against the cell surface receptor CD30 with potential immunomodulating and antineoplastic activities. Anti-CD30 monoclonal antibody MDX-1401 specifically binds

to the CD30 antigen, which may result in a cytotoxic T lymphocyte (CTL) response against CD30-expressing tumor cells. CD30, a member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on activated lymphocytes transiently and is constitutively expressed in hematologic malignancies including Hodgkin's disease and some T-cell non-Hodgkin's lymphomas. Compared to conventional antibodies, deletion of fucose molecules on the antibody backbone, as is done in MDX-1401, may result in an increased affinity for Fc receptors and an enhanced antibody-dependent cellular cytotoxicity (ADCC). Check for active clinical trials using this agent.

**anti-CD30 monoclonal antibody XmAb2513:** A humanized monoclonal antibody directed against the cell surface receptor CD30 with potential immunotherapeutic activity. Anti-CD30 monoclonal antibody XmAb2513 specifically binds to the CD30 antigen, which may result in a cytotoxic T lymphocyte (CTL) response against CD30-expressing tumor cells. CD30, a member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on activated lymphocytes transiently and is constitutively expressed in hematologic malignancies including Hodgkin's disease and some T-cell non-Hodgkin's lymphomas.

**anti-CD30/CD16A monoclonal antibody AFM13:** A tetravalent bispecific antibody directed against human CD30 and the human low affinity IgG Fc region receptor (FCGR3A; CD16A), with potential immunomodulating and antineoplastic activities. Anti-CD30/CD16A monoclonal antibody AFM13 binds to the CD16A expressed on natural killer (NK) cells with two of its binding sites and to CD30 on CD30-expressing tumor cells with the other two binding sites, thereby selectively cross-linking tumor and NK cells. This may result in NK cell activation, antibody-dependent cellular cytotoxicity (ADCC) and eventually tumor cell lysis. CD30, a cell surface receptor and a member of the tumor necrosis factor (TNF) receptor superfamily, is overexpressed in hematologic malignancies; CD16A is specifically expressed on the surface of NK cells.

**anti-CD33 monoclonal antibody BI 836858:** An engineered, fully human, immunoglobulin (Ig) G1 anti-CD33 monoclonal antibody, with potential antineoplastic activity. Upon administration, anti-CD33 monoclonal antibody BI 836858 induces an antibody-dependent cellular cytotoxicity (ADCC) against CD33-expressing tumor cells, leading to cell death. CD33,

a cell surface antigen expressed on normal non-pluripotent hematopoietic stem cells, is overexpressed on myeloid leukemia cells.

**anti-CD33 monoclonal antibody-DM4 conjugate AVE9633:** An immunoconjugate consisting of the humanized monoclonal antibody huMy9-6 conjugated to the cytotoxic maytansinoid DM4 with potential antineoplastic activity. The monoclonal antibody portion of anti-CD33 monoclonal antibody-DM4 conjugate AVE9633 specifically binds to the cell surface antigen CD33 expressed on myeloid leukemia cells; upon internalization, the DM4 moiety is released, binds tubulin, and disrupts microtubule assembly/disassembly dynamics, resulting in the inhibition of cell division and cell growth in myeloid leukemia cells that express CD33. CD33 is expressed on normal non-pluripotent hematopoietic stem cells as well as on myeloid leukemia cells. Check for active clinical trials using this agent.

**anti-CD33/CD3 BiTE antibody AMG 330:** A proprietary recombinant bispecific T-cell engager (BiTE) antibody composed of two single-chain variable fragments (scFv), one directed against the tumor-associated antigen (TAA) CD33 fused to one that is directed against the CD3 antigen found on T-lymphocytes, with potential immunostimulating and antineoplastic activities. Upon administration of anti-CD33/CD3 BiTE antibody AMG 330, this bispecific antibody binds to both the CD3 antigen on cytotoxic T-lymphocytes (CTLs) and the CD33 antigen found on CD33-expressing tumor cells. This activates and redirects CTLs to CD33-expressing tumor cells, which results in the CTL-mediated cell death of CD33-expressing tumor cells. CD33, a myeloid differentiation antigen, is expressed on normal non-pluripotent hematopoietic stem cells and overexpressed on neoplastic cells in patients with acute myeloid leukemia.

**anti-CD37 antibody-drug conjugate IMG529:** An immunoconjugate that consists of a humanized IgG1 antibody K7153A against the cell-surface antigen CD37 that is covalently linked via the uncleavable, maleimide-derived thioether-based linker SMCC to the maytansinoid DM1, with potential pro-apoptotic and cytotoxic activities. The antibody moiety of IMG529 binds to CD37 on tumor B cells and induces an antibody-dependent cell-mediated cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC), thereby showing pro-apoptotic activity. In addition, after the internalization of this agent and lysosomal degradation, the DM1

moiety binds to tubulin and inhibits tubulin polymerization and microtubule assembly, resulting in a disruption of microtubule activity and cell division, and eventually causing cell death in CD37-positive B cells. CD37, a transmembrane glycoprotein, is overexpressed in B-cell malignancies. Compared to reducible, cleavable linkers, the non-reducible SMCC linker shows increased stability in plasma. Check for active clinical trials using this agent.

**anti-CD37 monoclonal antibody BI 836826:** An Fc-engineered, chimeric immunoglobulin (Ig) G1 monoclonal antibody against the tumor-associated antigen (TAA) CD37, with potential antineoplastic activity. Upon administration, the anti-CD37 monoclonal antibody BI 836826 both activates the immune system to induce an antibody-dependent cell-mediated cytotoxicity (ADCC) against CD37-overexpressing tumor cells and induces apoptosis in these tumor cells. BI 836826 is Fc-engineered to improve ADCC activity and enhance affinity for the receptor Fc-gamma-R1IIa, which is expressed on human natural killer (NK) cells. CD37, a member of the tetraspanin superfamily of cell surface antigens, is overexpressed on a variety of cancer cell types and plays a key role in tumor cell proliferation.

**anti-CD38 monoclonal antibody MOR03087:** A fully human monoclonal antibody directed against the cell surface glycoprotein CD-38 with potential antineoplastic activity. Anti-CD38 monoclonal antibody MOR03087 specifically binds to CD38 on CD38-positive tumor cells. This may trigger antitumoral antibody-dependent cellular cytotoxicity (ADCC) and may eventually lead to cell lysis in CD38-expressing tumor cells. CD38, a type II transmembrane glycoprotein, is present on various immune cells and hematologic malignancies, and its expression has been correlated with poor prognosis.

**anti-CD38 monoclonal antibody SAR650984:** A humanized IgG1 monoclonal antibody directed against the cell surface glycoprotein CD-38 with potential antineoplastic activity. Anti-CD38 monoclonal antibody SAR650984 specifically binds to CD38 on CD38-positive tumor cells. This may trigger antitumoral antibody-dependent cellular cytotoxicity (ADCC), complement-dependent cytotoxicity (CDC) and apoptosis eventually leading to cell lysis in CD38-expressing tumor cells. CD38, a type II transmembrane glycoprotein, is present on various immune cells and

hematologic malignancies, and its expression has been correlated with poor prognosis.

**anti-CD40 monoclonal antibody Chi Lob 7/4:** An IgG1 chimeric monoclonal antibody agonist of the cell surface receptor CD40 with potential immunostimulatory and antineoplastic activities. Upon intravenous administration, anti-CD40 monoclonal antibody Chi Lob 7/4 binds to CD40 on a variety of immune cell types, triggering the cellular proliferation and activation of antigen-presenting cells (APCs), activating B cells and T cells, and enhancing the immune response; in addition, this agent binds to the CD40 antigen present on the surfaces of some solid tumor cells, resulting in complement-dependent cytotoxicity (CDC) and antibody-dependent cytotoxicity (ADCC) eventually resulting in decreased tumor growth. CD40, a member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on various immune cells, many B-cell malignancies, and many solid tumors, mediating both indirect tumor cell death through the activation of the immune system and direct tumor cell apoptosis. Check for active clinical trials using this agent.

**anti-CD40 monoclonal antibody SEA-CD40:** A proprietary, non-fucosylated monoclonal antibody directed against the cell surface receptor CD40 with potential immunostimulatory and antineoplastic activities. Upon intravenous administration, anti-CD40 monoclonal antibody SEA-CD40 binds to CD40 on a variety of immune cell types, triggering both cellular proliferation and activation of antigen-presenting cells (APCs), which activates B-cells and T-cells, and enhances the immune response against tumor cells. In addition, this agent binds to the CD40 antigen present on the surfaces of tumor cells, which induces antibody-dependent cytotoxicity (ADCC), and eventually inhibits the proliferation of CD40-expressing tumor cells. CD40, a stimulatory receptor and a member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on various immune cells, such as macrophages, dendritic cells and various tumor cell types; it plays a key role in the activation of the immune system. The non-fucosylated antibody shows increased efficacy as compared to its fucosylated counterpart.

**anti-CD40L Fc-fusion protein BMS-986004:** A dimeric fusion protein composed of the C-terminus of the domain antibody (dAb) BMS2h-572-633 targeting the CD40 ligand (CD40L or CD154) linked to a modified Fc

fragment of immunoglobulin G1 (IgG1), with potential immunomodulatory activity. Upon intravenous administration, the peptide moiety of anti-CD40L antibody BMS-986004 specifically targets and binds to CD40L expressed on T lymphocytes. This prevents the binding of CD40L to its cognate receptor CD40 expressed on B lymphocytes, macrophages, and dendritic cells (DCs). This prevents T-cell mediated proliferation and differentiation of B cells, and prevents the production of antibodies. By inhibiting both the production of anti-glycoprotein (GP) IIb/IIIa antibodies by B cells and GPIIb/IIIa-dependent T-cell proliferation, BMS-986004 may prevent platelet destruction and may increase platelet counts in idiopathic thrombocytopenic purpura (ITP). The direct binding of BMS-986004 to CD40L on platelets further prevents CD40L/CD40-mediated destruction by macrophages and DCs in ITP. The modified Fc domain prevents the binding of BMS-986004 to the Fc receptor FcγRIIA on platelets, thereby preventing FcγRIIA-dependent platelet activation and anti-CD40L-induced thromboembolism. CD40L, a transmembrane protein of the tumor necrosis factor (TNF) superfamily, is primarily expressed on activated T cells, but is also expressed on eosinophils, basophils, natural killer (NK) cells, mast cells, platelets and activated endothelial cells.

**anti-CD44 monoclonal antibody RO5429083:** A recombinant, humanized monoclonal antibody targeting the cancer stem cell (CSC) antigen CD44, with potential immunomodulating and antineoplastic activities. Upon administration, RO5429083 binds to the constant region of the extracellular domain of CD44, thereby preventing the activation of various CD44-mediated signal transduction pathways. This may lead to a reduction in the proliferation of CD44-expressing tumor stem cells. CD44, a transmembrane glycoprotein and hyaluronic acid receptor, is expressed in healthy tissue and overexpressed in numerous cancer cell types; it plays a key role in tumor cell proliferation, migration and survival. Check for active clinical trials using this agent.

**anti-CD45 monoclonal antibody:** A monoclonal antibody linked to a toxic substance. It is being studied in the treatment of some types of B-cell cancer. Anti-CD22 immunotoxin is made in the laboratory. It binds to CD22, a protein on the surface of normal B cells and B-cell tumors, and kills the cells. OR A monoclonal antibody directed against the receptor-like leukocyte cell surface glycoprotein CD45 with leukocyte-depleting activity. Upon administration, anti-CD45 monoclonal antibody binds to leukocyte

surface-expressed CD45, which may result in the transient depletion of circulating leukocytes including circulating T cell depletion (TCD). CD45, a receptor-like protein-tyrosine phosphatase that consists of several isoforms, is present on all differentiated hematopoietic cells except erythrocytes and plasma cells and is essential for T cell development and lymphocyte activation. Check for active clinical trials using this agent.

**anti-CD45 monoclonal antibody AHN-12:** A high affinity IgG1 monoclonal antibody with potential immunotherapeutic activity. Anti-CD45 monoclonal antibody AHN-12 recognizes CD45, a transmembrane protein tyrosine phosphatase that is expressed on the surface of normal and malignant hematopoietic cells.

**anti-CD45 monoclonal antibody BC8:** A murine IgG1 anti-CD45 monoclonal antibody (MoAb) with immunotherapeutic activity. CD45 antigen, a receptor protein-tyrosine phosphatase essential for T cell development and lymphocyte activation, is expressed on virtually all leukocytes. MoAb BC8 has specificity for hematopoietic tissues and may be used in targeted immunotherapy.

**anti-CD45 monoclonal antibody BC8-streptavidin conjugate:** An immunoconjugate containing a monoclonal antibody directed against the CD45 antigen BC8, conjugated to streptavidin, a nonglycosylated homotetrameric protein that has four high affinity binding sites for biotin. Anti-CD45 BC8 antibody-streptavidin conjugate binds to CD45, a transmembrane protein tyrosine phosphatase that is expressed on the surface of normal and malignant hematopoietic cells. Upon administration of a biotin-based radioconjugate, the biotin moiety of the radioconjugate binds to the streptavidin moiety of anti-CD45 BC8 antibody-streptavidin conjugate and, upon cellular internalization, specifically delivers cytotoxic radiation to CD45-expressing tumor cells.

**anti-CD47 monoclonal antibody CC-90002:** A monoclonal antibody targeting the human cell surface antigen CD47, with potential phagocytosis-inducing and antineoplastic activities. Upon administration, anti-CD47 monoclonal antibody CC-90002 selectively binds to CD47 expressed on tumor cells and blocks the interaction of CD47 with signal regulatory protein alpha (SIRPa), a protein expressed on phagocytic cells. This prevents CD47/SIRPa-mediated signaling and abrogates the CD47/SIRPa-mediated inhibition of phagocytosis. This induces pro-phagocytic signaling

mediated by the binding of calreticulin (CRT), which is specifically expressed on the surface of tumor cells, to low-density lipoprotein (LDL) receptor-related protein (LRP), expressed on macrophages. This results in macrophage activation and the specific phagocytosis of tumor cells. In addition, blocking CD47 signaling activates both an anti-tumor T-lymphocyte immune response and T cell-mediated killing of CD47-expressing tumor cells. CD47, also called integrin-associated protein (IAP), is a tumor-associated antigen (TAA) expressed on normal, healthy hematopoietic stem cells (HSC) and overexpressed on the surface of a variety of cancer cells. Expression of CD47, and its interaction with SIRPa, leads to the inhibition of macrophage activation and protects cancer cells from phagocytosis, which allows cancer cells to proliferate.

**anti-CD47 monoclonal antibody Hu5F9-G4:** A humanized monoclonal antibody targeting the human cell surface antigen CD47, with potential immunostimulating and antineoplastic activities. Upon administration, anti-CD47 monoclonal antibody Hu5F9-G4 selectively binds to CD47 expressed on tumor cells and blocks the interaction of CD47 with its ligand signal regulatory protein alpha (SIRPa), a protein expressed on phagocytic cells. This prevents CD47/SIRPa-mediated signaling, allows the activation of macrophages, through the induction of pro-phagocytic signaling mediated by calreticulin, which is specifically expressed on the surface of tumor cells, and results in specific tumor cell phagocytosis. In addition, blocking CD47 signaling activates an anti-tumor T-lymphocyte immune response and T-cell mediated cell killing. CD47, a tumor associated antigen expressed on normal, healthy hematopoietic stem cells (HSC), is overexpressed on the surface of a variety of cancer cells. Expression of CD47, and its interaction with SIRP-alpha, leads to inhibition of macrophages and protects cancer cells from phagocytosis thereby allowing cancer cells to proliferate.

**anti-CD70 antibody-drug conjugate MDX-1203:** An antibody-drug conjugate (ADC) containing a fully human monoclonal antibody, directed against the extracellular domain of the human CD70 molecule, conjugated to a prodrug of a CC-1065 (rachelmycin) analogue via a stable peptide-based linker, with potential antineoplastic activity. The anti-CD70 antibody moiety of the anti-CD70 antibody-drug conjugate MDX-1203 selectively binds to the extracellular domain of CD70 on tumor cell surfaces. Upon internalization, the prodrug moiety is released and activated and binds to double-stranded B-DNA within the minor groove, thereby alkylating the –3

position of adenine, which may result in the inhibition of cellular proliferation of tumor cells that overexpress CD70. CD70, the ligand for the costimulatory receptor CD27 and a member of the tumor necrosis factor (TNF) family, is found on the surfaces of various types of cancer cells. The antitumor antibiotic CC-1065, a DNA minor-groove-binding alkylating agent, was originally isolated from the bacterium *Streptomyces zelensis*. Check for active clinical trials using this agent.

**anti-CD70 antibody-drug conjugate SGN-CD70A:** An antibody-drug conjugate (ADC) containing an engineered cysteine monoclonal antibody (EC-mAb), directed against the extracellular domain of the human CD70 molecule, conjugated to the synthetic, cytotoxic, DNA minor-groove crosslinking agent, pyrrolobenzodiazepine (PBD) dimer, via a stable, protease-cleavable, peptide-based linker, with potential antineoplastic activity. The anti-CD70 antibody moiety of the anti-CD70 antibody-drug conjugate SGN-CD70A selectively binds to the extracellular domain of CD70 on tumor cell surfaces. Upon internalization, the PBD dimer moiety is released and covalently binds, through its imine moieties, to the N2 positions of guanines on opposite strands of DNA. This induces DNA double strand breaks and inhibits DNA replication, which lead to the inhibition of cell growth of tumor cells that overexpress CD70. CD70, the ligand for the costimulatory receptor CD27 and a member of the tumor necrosis factor (TNF) family, is found on the surfaces of various types of cancer cells. The cysteine moiety of the EC-mAb allows for the stable conjugation of the PBD to the antibody.

**anti-CD70 monoclonal antibody ARGX-110:** A defucosylated, humanized IgG1 monoclonal antibody directed against the extracellular domain of the human CD70 molecule with potential antineoplastic activity. Upon administration, anti-CD70 monoclonal antibody ARGX-110 selectively binds to, and neutralizes the activity of CD70, which may also induce an antibody-dependent cellular cytotoxicity (ADCC) response against CD70-expressing tumor cells. CD70, the ligand for the costimulatory receptor CD27 and a member of the tumor necrosis factor (TNF) family, is found on a number of solid and hematological tumors. Its overexpression may play an important role in evasion of immune surveillance. Check for active clinical trials using this agent.

**anti-CD70 monoclonal antibody MDX-1411:** A glycoengineered, fully humanized IgG1 monoclonal antibody directed against the extracellular domain of the human CD70 molecule with potential antineoplastic activity. Anti-CD70 fully human monoclonal antibody MDX-1411 selectively binds to the extracellular domain of CD70, which may induce an antibody-dependent cellular cytotoxicity (ADCC) response against CD70-expressing tumor cells. CD70, the ligand for the costimulatory receptor CD27 and a member of the tumor necrosis factor (TNF) family, is found on renal cell carcinoma (RCC) cells among other cancer cell types. Check for active clinical trials using this agent.

**anti-CD73 monoclonal antibody MEDI9447:** A monoclonal antibody against the ectoenzyme CD73 (cluster of differentiation 73), also known as 5'-nucleotidase (5'-NT; ecto-5'-nucleotidase) with potential antineoplastic activity. Upon administration, anti-CD73 monoclonal antibody MEDI9447 targets and binds to CD73, leading to clustering of and internalization of CD73. This prevents CD73-mediated conversion of adenosine monophosphate (AMP) to adenosine and decreases the amount of free adenosine. This prevents adenosine-mediated lymphocyte suppression and increases the activity of CD8-positive effector cells. This also activates macrophages, and reduces both myeloid-derived suppressor cells (MDSCs) and regulatory T-lymphocytes. By abrogating the inhibitory effect on the immune system and enhancing the cytotoxic T-cell-mediated immune response against cancer cells, tumor cell growth decreases. In addition, clustering and internalization of CD73 decreases the migration of cancer cells and prevents metastasis. CD73, a plasma membrane protein upregulated on a number of cancer cell types, catalyzes the conversion of extracellular nucleotides, such as AMP, to membrane-permeable nucleosides, such as adenosine; it plays a key role in adenosine-mediated immunosuppression within the tumor microenvironment. Check for active clinical trials using this agent.

**anti-CD98 monoclonal antibody IGN523:** A humanized, monoclonal antibody targeting the CD98 (gp125) antigen, with potential immunomodulatory and antineoplastic activities. Upon intravenous administration, IGN523 binds to CD98 expressed on the tumor cell surface and elicits both natural killer (NK)-cell mediated antibody-dependent cellular cytotoxicity (ADCC) and complement-dependent cytotoxicity towards CD98-expressing tumor cells. In addition, IGN523 inhibits

essential amino acid uptake by rapidly proliferating tumor cells. CD98, a type II transmembrane glycoprotein, is involved in both integrin signaling and amino acid transport processes; it is overexpressed in certain cancer cells and plays a key role in the proliferation, survival, and metastasis of tumor cells.

**anti-CEA antibody :** A monoclonal antibody linked to a toxic substance. It is being studied in the treatment of some types of B-cell cancer. Anti-CD22 immunotoxin CAT-8015 is made in the laboratory. It binds to CD22, a protein on the surface of normal B cells and B-cell tumors, and kills the cells. Also called CAT-8015.

**anti-CEA BiTE monoclonal antibody AMG211:** A recombinant, proprietary bispecific T-cell engagers (BiTE) antibody directed against human carcinoembryonic antigen (CEA), with potential immunostimulating and antineoplastic activities. Anti-CEA BiTE monoclonal antibody MEDI-565 possesses two antigen-recognition sites, one for CEA and one for the CD3 complex, a group of T cell surface glycoproteins that complex with the T cell receptor (TCR). This bispecific monoclonal antibody brings CEA-expressing tumor cells and cytotoxic T lymphocytes (CTLs) and helper T lymphocytes (HTLs) together, which may result in the CTL- and HTL-mediated cell death of CEA-expressing cells. CEA, a tumor associated antigen, is overexpressed in many cancer types, including gastrointestinal, breast, non-small cell lung, and thyroid cancers.

**anti-CEA IgCD28TCR-transduced autologous T cells:** A population of autologous tumor infiltrating lymphocytes (TIL) transduced with a retroviral vector encoding the chimeric gene IgCD28TCR with potential immunostimulating and antineoplastic activities. The chimeric IgCD28TCR gene consists of portions of CD28, the zeta chain of the T-cell receptor (TCRzeta), and a single chain antibody domain (sFv) specific for the tumor-associated antigen CEA. Upon administration, these gene-modified TIL bind to tumor cells expressing CEA, which may result in activation and proliferation of TIL and an enhanced cytotoxic T-lymphocyte (CTL) response against CEA-expressing tumor cells. CEA may be overexpressed in various gastrointestinal and breast cancers. CD28, a T-cell surface-associated co-stimulatory molecule, is required for full T-cell activation, proliferation, and survival; expression of the CD28 fragment in this

chimeric gene construct may impede activation-induced cell death (AICD) of TIL.

**anti-CEA TCR retroviral vector-transduced autologous lymphocytes:**

Autologous human peripheral blood lymphocytes (PBLs), transduced with a retroviral vector encoding both the alpha and beta chains of a T cell receptor (TCR) specific for the carcinoembryonic antigen (CEA), with potential immunostimulating and antineoplastic activities. After transduction, expansion in culture, and reintroduction into the patient, anti-CEA TCR retroviral vector-transduced autologous lymphocytes bind to tumor cells expressing CEA, which may result in cytokine expression, activation and proliferation of T-cells, and a specific cytotoxic T-lymphocyte (CTL) response against CEA-expressing tumor cells. The tumor-associated antigen (TAA) CEA is overexpressed by a variety of cancer cell types, including those of the gastrointestinal tract, lung, and breast.

**anti-CEA-CAR autologous T lymphocytes:** Autologous lymphocytes transduced with a retroviral vector encoding a chimeric antigen receptor (CAR) specific for the tumor-associated antigen human carcinoembryonic antigen (CEA), with potential immunostimulating and antineoplastic activities. Upon administration, the anti-CEA-CAR autologous T-lymphocytes target and bind to tumor cells expressing CEA, which results in the cytotoxic T-lymphocyte (CTL)-mediated cell killing of CEA-expressing tumor cells. CEA is overexpressed in various tumor cell types. Check for active clinical trials using this agent.

**anti-CEA/anti-DTPA-In (F6-734) bispecific antibody:** A bispecific monoclonal antibody (BsMAb) consisting of the Fab fragment of an anti-CEA monoclonal antibody (F6) coupled to the Fab fragment of an anti-DTPA-In monoclonal antibody (734) with potential radioimmunotherapeutic activity. In a two-step "pretargeted" radioimmunotherapeutic approach, this BsMAb, localizing to CEA-expressing tumor cells via the F6 Fab fragment, is introduced into patient first, followed by injection of indium 131-radiolabeled DTPA, which is recognized by the 734 Fab fragment of the BsMAb. Accordingly, a potentially lethal dose of indium 131 is delivered specifically to CEA-expressing tumor cells while minimizing radiotoxicity to normal tissues. CEA (carcinoembryonic antigen) is a tumor antigen overexpressed in many

cancer types, including gastrointestinal, breast, non-small cell lung, and thyroid cancers. DTPA (diethylenetriaminepentaacetic acid) is a bivalent hapten. Check for active clinical trials using this agent.

**anti-CEA/anti-HSG bispecific monoclonal antibody TF2:** A tri-Fab bispecific monoclonal antibody (BiMoAb) divalent for the carcinoembryonic antigen (CEA) and monovalent for histamine-succinyl-glycine (HSG) peptide-hapten. Anti-CEA/anti-HSG bispecific monoclonal antibody TF2 binds to the tumor associated antigen (TAA) CEA on CEA-expressing tumor cells. Subsequently, an HSG peptide-hapten carrying a radionuclide is administered, binding to the anti-HSG binding fragment on the BiMoAb. Depending on the characteristics of the radionuclide used, CEA-expressing tumor cells may then be radioimaged and/or treated radioimmunotherapeutically.

**anti-CEA/CD3 bispecific antibody RO6958688:** An anti-carcinoembryonic antigen (CEA)/anti-CD3 bispecific monoclonal antibody with potential antineoplastic activity. Anti-CEA/CD3 monoclonal antibody RO6958688 contains two antigen-recognition sites: one for human CD3, a T-cell surface antigen, and one for human CEA, a tumor-associated antigen that is specifically expressed on certain tumor cells. Upon intravenous administration, RO6958688 binds to both T-cells and CEA-expressing tumor cells, which cross-links the T-cells with the tumor cells. This may result in a potent cytotoxic T-lymphocyte (CTL) response against CEA-expressing tumor cells. CEA is overexpressed in many cancer cell types.

**anti-CEACAM1 monoclonal antibody CM-24:** A humanized monoclonal immunoglobulin G4 (IgG4) antibody targeting the anti-carcinoembryonic antigen (CEA)-related cell adhesion molecule 1 (CEACAM1; CD66a), with potential immunomodulating and antineoplastic activities. Upon administration of anti-CEACAM1 monoclonal antibody CM-24, this agent binds to CEACAM1 on cancer cells and certain immune cells. This blocks the binding of CEACAM1-expressing cancer cells to CEACAM1-expressing immune cells and abrogates CEACAM1-mediated immunosuppression. This enhances the activation of cytotoxic T-lymphocytes (CTLs) and natural killer (NK) cells and increases CTL- and NK-mediated killing of CEACAM1-overexpressing cancer cells. CEACAM1, a member of the CEA family of proteins that plays a key role in cell migration, cell invasion, and cell adhesion, is overexpressed by a

variety of cancer cell types. Its overexpression is correlated with both immunosuppression and poor prognosis.

**anti-CEACAM5 antibody-drug conjugate SAR408701:** An immunoconjugate consisting of anti-carcinoembryonic antigen-related cell adhesion molecule 5 (CEACAM5) conjugated to a cytotoxic agent, with potential antineoplastic activity. Upon administration of anti-CEACAM5 antibody-drug conjugate SAR408701, the antibody moiety targets CEACAM5 on tumor cells. Upon antibody/antigen binding and internalization, the immunoconjugate releases the cytotoxic agent, which results in tumor cell death. CEACAM5, a member of the CEA family of proteins that plays a key role in cell migration, cell invasion, and cell adhesion, is overexpressed by a variety of cancer cell types.

**anti-CEACAM6 AFAIKL2 antibody fragment/Jack Bean urease immunoconjugate L-DOS47:** A lyophilized formulation of DOS47, an immunoconjugate composed of AFAIKL2, a recombinant camelid single-domain antibody which recognizes carcinoembryonic antigen-related cell adhesion molecule 6 (CEACAM6), and the enzyme urease derived from the plant *Canavalia ensiformis* (Jack bean), with potential antineoplastic activity. Upon intravenous administration, the AFAIKL2 antibody fragment moiety of L-DOS47 specifically targets and binds to CEACAM6 expressed on certain tumor cells. In turn, the urease moiety of L-DOS47 catalyzes the hydrolysis of urea into ammonia, which is further hydrolyzed to produce hydroxyl ions, and causes a locally increased concentration of the toxic waste product ammonia, which under normal conditions is converted into the nontoxic substance urea via the urea cycle. This increases the pH of the tumor microenvironment and alkalinizes the highly acidic environment that is needed for cancer cell survival and proliferation. In addition, the ammonia diffuses into cancer cells and exerts a cytotoxic effect. Altogether, this leads to cell death of CEACAM6-expressing cancer cells. The naturally-occurring enzyme urease catalyzes the hydrolysis of urea into ammonia and carbon dioxide. CEACAM6, a tumor-associated antigen and CEA family member, is overexpressed in a variety of tumor cells and plays a key role in tumor initiation, progression, metastasis and survival.

**anti-CLDN6 monoclonal antibody IMAB027:** A monoclonal antibody directed against the cell surface protein claudin 6 (CLDN6), with potential immunostimulating and antineoplastic activities. Upon administration, the

anti-CLDN6 monoclonal antibody IMAB027 binds to CLDN-6 and may stimulate the immune system to exert both an antibody-dependent cellular cytotoxicity (ADCC) and a complement-dependent cytotoxicity (CDC)-mediated immune response against CLDN-6-expressing tumor cells. This may inhibit tumor cell growth. CLDN-6, a tight-junction protein and embryonic antigen, is expressed on a variety of tumor cells but is not expressed on normal, healthy adult cells.

**Anti-corrosive:** A general term for paints used to prevent the corrosion of metal, especially of iron and steel.

**ANTI-CORROSIVE PAINT:** Metal paint designed to inhibit corrosion. Applied directly to metal.

**anti-CSF-1R monoclonal antibody IMC-CS4:** A monoclonal antibody directed against colony stimulating factor 1 receptor (CSF1R) with potential antineoplastic activity. CSF1R monoclonal antibody IMC-CS4 binds to CSF1R which may trigger antitumoral antibody-dependent cell-mediated cytotoxicity (ADCC) in tumor cells overexpressing CSF1R. CSF1R, also known as macrophage colony-stimulating factor receptor (M-CSFR) and CD115 (cluster of differentiation 115), is a cell-surface receptor for its ligand colony stimulating factor 1 (CSF1); this receptor is overexpressed or mutated in certain tumor cell types and plays major roles in tumor cell proliferation and metastasis. Check for active clinical trials using this agent.

**anti-CSF1R monoclonal antibody FPA008:** A humanized monoclonal antibody directed against the tyrosine kinase receptor colony stimulating factor 1 receptor (CSF1R; CSF-1R), also known as macrophage colony-stimulating factor receptor (M-CSFR) and CD115 (cluster of differentiation 115), with potential antineoplastic activity. Upon administration, anti-CSF1R monoclonal antibody FPA008 binds to CSF1R expressed on monocytes, macrophages, and osteoclasts and inhibits the binding of the CSF1R ligands colony-stimulating factor-1 (CSF-1) and interleukin-34 (IL-34), to CSF1R. This prevents CSF1R activation and CSF1R-mediated signaling in these cells. This blocks the production of inflammatory mediators by macrophages and monocytes and reduces inflammation. By blocking the recruitment to the tumor microenvironment and activity of CSF1R-dependent tumor-associated macrophages (TAMs), FPA008 enhances T-cell infiltration and antitumor T-cell immune responses, which inhibits the proliferation of tumor cells. Additionally, FPA008 prevents the

activation of osteoclasts and blocks bone destruction. TAMs play key roles in immune suppression and promoting inflammation, tumor cell proliferation and survival. Check for active clinical trials using this agent.

**anti-CTGF monoclonal antibody FG-3019:** A human monoclonal antibody targeting connective tissue growth factor (CTGF) with potential anti-fibrotic and antineoplastic activities. FG-3019 binds to CTGF thereby preventing the binding of the ligand to the receptor and subsequent receptor activation. As CTGF enhances the production of collagen and fibronectin, FG-319 may prevent and reverse fibrosis. In addition, FG-3019 may prevent tumor cell proliferation in CTGF-expressing tumor cells. CTGF, a member of the CCN family (CTGF, CYR61/CEF and NOV), is expressed in a variety of tumor cell types and is involved in processes such as cell proliferation, cell migration, cell adhesion, differentiation and angiogenesis. Check for active clinical trials using this agent.

**anti-CTLA-4 mAb RNA-transfected autologous dendritic cell vaccine:** An autologous dendritic cell (DC) cancer vaccine with potential immunostimulatory activity. Anti-CTLA4 MoAb RNA-transfected autologous DC vaccine is prepared by transfecting DCs with RNAs encoding humanized heavy and light chains of the anti-CTLA4 (cytotoxic T-Lymphocyte-Associated Antigen 4); expression of anti-CTLA4 blocks the inhibitory effect of CTLA4 on the activation of T-lymphocytes. Co-vaccination of this vaccine with melanoma antigen specific vaccine may eliminate the adverse effects associated with systemic administration of immune modulators, while also enhancing vaccine-induced immune responses.

**anti-CTLA-4 monoclonal antibody AGEN1884:** A recombinant human monoclonal antibody directed against the human T-cell receptor cytotoxic T-lymphocyte-associated antigen 4 (CTLA4), with immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-CTLA4 monoclonal antibody AGEN1884 binds to CTLA4 expressed on T cells and inhibits the CTLA4-mediated downregulation of T-cell activation. This leads to a cytotoxic T-lymphocyte (CTL)-mediated immune response against cancer cells. CTLA4, an inhibitory receptor and member of the immunoglobulin superfamily, plays a key role in the downregulation of the immune system.

**anti-CTLA4 mAb RNA/GITRL RNA-transfected autologous dendritic cell vaccine:** An autologous dendritic cell (DC) cancer vaccine with potential immunostimulatory activity. Anti-CTLA4 MoAb RNA/GITRL RNA-transfected DC vaccine is prepared by transfecting DCs with RNAs encoding humanized heavy and light chains of the anti-CTLA4 (cytotoxic T-Lymphocyte-Associated Antigen 4) monoclonal antibody and tumor necrosis factor (ligand) superfamily, member 18 (TNFSF18 or GITRL); expression of anti-CTLA4 blocks the inhibitory effect of CTLA4 on the activation of T-lymphocytes, while expression of GITRL modulates T lymphocyte survival in peripheral tissues. Co-vaccination of this vaccine with melanoma antigen specific vaccine may eliminate the adverse effects associated with systemic administration of immune modulators, while also enhancing vaccine-induced immune responses.

**anti-denatured collagen recombinant monoclonal antibody TRC093:** A humanized, affinity-matured IgG1k antibody directed against denatured collagens (I-IV) with potential antiangiogenic and antineoplastic activities. Anti-denatured collagen recombinant monoclonal antibody TRC093 binds to multiple epitopes on denatured collagens, inhibiting proteolytic collagen-mediated signaling in the extracellular matrix (ECM) that is important to tumor angiogenesis, tumor growth, and metastasis. The epitopes on denatured collagen bound by this antibody are considered "cryptic" because, in vivo, they are accessible only on the subendothelial basement membrane of tumors or in normal tissues undergoing neovascularization.

**anti-DKK-1 monoclonal antibody LY2812176:** A human monoclonal antibody directed against the WNT antagonist dickkopf homolog 1 (DKK1), with potential anti-osteolytic activity. Anti-DKK1 monoclonal antibody LY2812176 binds to and inhibits DKK1, thereby restoring signaling through the WNT pathway, which may result in osteoblast differentiation and activation within the bone matrix and the reversal of tumor-induced osteolytic disease. DKK1, overexpressed by myeloma cells, is an inhibitor of the WNT signaling pathway and prevents the mediated formation of bone.

**anti-DKK1 monoclonal antibody BHQ880:** A humanized monoclonal antibody directed against Wnt antagonist Dickkopf-1 (DKK1) with potential anti-osteolytic activity. Anti-DKK1 monoclonal antibody BHQ880 binds to and inhibits DKK1, enhancing signaling through the Wnt pathway,

which may result in osteoblast differentiation and activation within the bone matrix and the reversal of tumor-induced osteolytic disease. DKK1 is a potent Wnt signaling pathway antagonist. Check for active clinical trials using this agent.

**anti-DLL4 monoclonal antibody MEDI0639:** An immunoglobulin G1 lambda monoclonal antibody directed against the Notch ligand delta-like 4 (DLL4) with potential antineoplastic activity. Anti-DLL4 monoclonal antibody MEDI0639 specifically binds to DLL4 and prevents its interaction with Notch receptors, thereby inhibiting Notch-mediated signaling and gene transcription, which may block tumor angiogenesis and eventually the inhibition of tumor cell growth. Activation of Notch receptors by DLL4 stimulates proteolytic cleavage of the Notch intracellular domain (NICD); after cleavage, NICD is translocated to the nucleus and mediates the transcriptional regulation of a variety of genes involved in vascular development. The expression of DLL4 is highly restricted to the vascular endothelium; DLL4/Notch signaling is required for the development of functional tumor blood vessels.

**anti-DLL4 monoclonal antibody REGN421:** A human monoclonal antibody directed against Delta-like ligand-4 (DLL4) with potential antineoplastic activity. Anti-DLL4 monoclonal antibody REGN421 specifically binds to human DLL4, preventing its binding to Notch receptors and inhibiting Notch signaling, which may result in defective tumor vascularization and, so, the inhibition of tumor cell growth. DLL4 is the only Notch ligand selectively expressed on endothelial cells; DLL4/Notch signaling is required for the development of functional tumor blood vessels.

**anti-DLL4/VEGF bispecific monoclonal antibody OMP-305B83:** A bispecific monoclonal antibody directed against both the Notch ligand delta-like 4 (DLL4) and the human tyrosine kinase vascular endothelial growth factor (VEGF), with potential anti-angiogenic and antineoplastic activities. The anti-DLL4 moiety of anti-DLL4/VEGF monoclonal antibody OMP-305B83 specifically binds to DLL4, prevents its interaction with Notch receptors, and inhibits Notch-mediated signaling and gene transcription, which may both block tumor angiogenesis and inhibit tumor cell growth. The anti-VEGF moiety binds to VEGF and prevents the binding of VEGF to its receptor, which blocks VEGF-mediated signaling

and further inhibits the growth and maintenance of tumor blood vessels. The expression of DLL4 is highly restricted to the vascular endothelium; DLL4/Notch signaling is required for the development of functional tumor blood vessels. The expression of the pro-angiogenic growth factor VEGF is associated with tumor angiogenesis and tumor cell proliferation and invasion.

**anti-DR5 agonist monoclonal antibody TRA-8:** An agonist mouse monoclonal antibody directed against TRAIL death receptor type 5 (DR5) with potential antineoplastic activity. Anti-DR5 agonist monoclonal antibody TRA-8 binds DR5, which may induce apoptosis in DR5-expressing tumor cells. DR5 is a tumor cell surface ligand that crosslinks with death receptor type 4 (DR4) when bound by TRAIL [Tumor necrosis (TNF)-related apoptosis-inducing ligand], triggering apoptosis via a death receptor signaling pathway. The apoptotic activity of this antibody may not require DR4/DR5 crosslinking.

**anti-EGFL7 monoclonal antibody MEGF0444A:** A humanized IgG1 monoclonal antibody directed against the epidermal growth factor-like domain multiple 7 (EGFL7) with potential antineoplastic activity. Anti-EGFL7 monoclonal antibody MEGF0444A binds to EGFL7, thereby preventing the activities of EGFL7 on endothelial cells and inhibiting the survival and migration of endothelial cells during angiogenesis. EGFL7, a vascular-restricted extracellular matrix protein which is upregulated during angiogenesis and which regulates vascular development, may be overexpressed on the cell surfaces of various solid tumor cell types.

**anti-EGFR monoclonal antibody ABT-806:** A humanized monoclonal antibody (MoAb) against human epidermal growth factor receptor (EGFR) with antineoplastic activity. MoAb ABT-806 targets the EGFR deletion variant, de2-7 EGFR as well as wild-type EGFR expressed in cells overexpressing the receptor, thereby preventing the activation and subsequent dimerization of the receptor; the decrease in receptor activation and dimerization result in an inhibition in signal transduction and anti-proliferative effects. This MoAb targets cells expressing aberrant EGFR, hence making it an ideal candidate for generation of radioisotope or toxin conjugates.

**anti-EGFR monoclonal antibody GC1118:** A recombinant, human monoclonal antibody directed against the epidermal growth factor receptor

(EGFR) with potential antineoplastic activity. Upon intravenous administration, GC1118 binds to and blocks the ligand binding site of EGFR, which prevents receptor dimerization and activation. This may lead to an inhibition of both EGFR-dependent downstream pathways and EGFR-dependent tumor cell proliferation and metastasis. EGFR, a receptor tyrosine kinase, may be overexpressed on the surfaces of various tumor cell types.

**anti-EGFR monoclonal antibody mixture MM-151:** An oligoclonal therapeutic composed of three fully human monoclonal antibodies targeting epidermal growth factor receptor (EGFR or ErbB1), with potential antineoplastic activity. Upon administration of MM-151, the three antibodies bind to distinct, non-overlapping epitopes of EGFR, thereby preventing the binding of a full range of both high and low affinity EGFR ligands and inhibiting EGFR-ERK-mediated signaling. This eventually inhibits tumor cell proliferation in EGFR-overexpressing tumor cells. Furthermore, multi antibody-antigen bindings cause crosslinking of EGFR and downregulate receptor signalings that are mediated via heterodimerization of EGFR with other members of the EGFR family. EGFR, a receptor tyrosine kinase overexpressed in a variety of cancer cell types, is a key regulator of cancer cell proliferation, apoptosis, invasion, and metastasis. Check for active clinical trials using this agent.

**anti-EGFR monoclonal antibody mixture sym004:** A mixture of two recombinant IgG1 antibodies directed against different epitopes in the epidermal growth factor receptor (EGFR) extracellular domain III, with potential antineoplastic activity. Anti-EGFR monoclonal antibody mixture Sym004 binds to the extracellular domain of EGFR, thereby preventing ligand binding. This may prevent activation and subsequent dimerization of the receptor; the decrease in receptor activation may result in an inhibition of downstream ERK and JNK signaling pathways and thus inhibition of EGFR-dependent tumor cell proliferation and metastasis. In addition, binding of Sym004 to EGFRs causes EGFR internalization and degradation. EGFR, a receptor tyrosine kinase, often is overexpressed on the cell surfaces of various solid tumor cell types.

**anti-EGFR monoclonal antibody RO5083945:** A glycoengineered monoclonal antibody directed against the epidermal growth factor receptor (EGFR) with potential antineoplastic activity. anti-EGFR monoclonal

antibody RO5083945 binds to the extracellular domain of EGFR, preventing the activation and subsequent dimerization of the receptor; the decrease in receptor activation and dimerization may result in an inhibition of downstream ERK and JNK signaling pathways and so inhibition of EGFR-dependent tumor cell proliferation and metastasis. EGFR, a member of the epidermal growth factor family of extracellular protein ligands, may be overexpressed on the cell surfaces of various solid tumor cell types.

**anti-EGFR monoclonal antibody SYN004:** A glyco-engineered monoclonal antibody directed against the receptor tyrosine kinase epidermal growth factor receptor (EGFR), with potential antineoplastic activity. Upon administration, anti-EGFR monoclonal antibody SYN004 binds to the extracellular domain of EGFR, which prevents ligand binding and the subsequent activation and dimerization of the receptor. This inhibits the activation of EGFR-mediated signaling pathways and inhibits EGFR-dependent tumor cell proliferation. EGFR, a member of the EGFR receptor tyrosine kinase family, may be overexpressed on the cell surfaces of various tumor cell types.

**anti-EGFR TAP antibody-drug conjugate IMGN289:** A targeted antibody payload (TAP)-based immunoconjugate consisting of a human monoclonal antibody directed against the epidermal growth factor receptor (EGFR) conjugated, via a nonreducible thioether linker (succinimidyl trans-4-(maleimidylmethyl)cyclohexane-1-carboxylate or SMCC), to the cytotoxic agent maytansinoid mertansine (DM1), with potential antineoplastic activity. Upon intravenous administration, the monoclonal antibody moiety of immunoconjugate IMGN289 binds to and inhibits EGFR on tumor cell surfaces. Inhibition of EGFR prevents EGFR-mediated signaling and may inhibit tumor cell proliferation. After internalization, the mertansine moiety binds to tubulin and interferes with microtubule assembly/disassembly dynamics. This inhibits both cell division and the proliferation of cancer cells that express EGFR. EGFR, overexpressed by a variety of cancers, plays a key role in tumor cell proliferation and survival. Linkage of the antibody and drug, through a nonreducible linker, appears to contribute to the improved efficacy and reduced toxicity of this antibody-drug conjugate (ADC) compared to similar ADCs constructed with reducible linkers.

**anti-EGFR/c-Met bispecific antibody JNJ-61186372:** A human bispecific antibody targeting both epidermal growth factor receptor EGFR and hepatocyte growth factor receptor (HGFR; cMet), with potential antineoplastic activity. Upon administration, anti-EGFR/c-Met bispecific antibody JNJ-61186372 simultaneously targets and binds to wild-type or certain mutant forms of both EGFR and cMet expressed on cancer cells, thereby preventing receptor phosphorylation. This prevents the activation of both EGFR- and cMet-mediated signaling pathways. In addition, binding results in receptor degradation, which further inhibits EGFR- and cMet-mediated signaling. JNJ-61186372 also causes antibody-dependent cellular cytotoxicity (ADCC). Altogether, this results in the inhibition of tumor cell proliferation. EGFR and cMet, both upregulated or mutated in a variety of tumor cell types, play key roles in tumor cell proliferation. Check for active clinical trials using this agent.

**anti-EGFR/HER3 monoclonal antibody MEHD7945A:** An immunoglobulin (Ig) G1 monoclonal antibody directed against both human epidermal growth factor receptor 3 (HER3 or ERBB3) and human epidermal growth factor receptor (EGFR), with potential antineoplastic activity. Anti-EGFR/HER3 Monoclonal Antibody MEHD7945A binds to both EGFR and HER3 and inhibits their activation. This may prevent EGFR/HER3-mediated signaling and inhibit EGFR/HER3-dependent tumor cell proliferation. In addition, MEHD7945A induces antibody-dependent cell-mediated cytotoxicity (ADCC) against EGR/HER3-expressing tumor cells. EGFR and HER3, members of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, are frequently overexpressed in tumors; their expression is associated with both poor prognosis and drug resistance.

**anti-EGFRvIII antibody drug conjugate AMG 595:** An immunoconjugate consisting of a human monoclonal antibody directed against the deletion-mutant of epidermal growth factor receptor, EGFRvIII, conjugated via a non-cleavable linker to the cytotoxic agent maytansinoid DM1, with potential antineoplastic activity. The monoclonal antibody moiety of this immunoconjugate binds to EGFRvIII on tumor cell surfaces. After internalization, the DM1 moiety binds to tubulin, thereby disrupting microtubule assembly/disassembly dynamics and inhibiting cell division and the proliferation of cancer cells that express the EGFRvIII mutant. EGFRvIII, a deletion mutation of exons 2-7 in the epidermal growth factor

receptor gene, is overexpressed by a variety of cancers, including glioblastoma multiforme, non-small cell lung carcinoma, and breast carcinoma.

**anti-EGFRvIII CAR-transduced allogeneic T lymphocytes:** Allogeneic human T lymphocytes transduced with a retroviral vector encoding an anti-epidermal growth factor receptor (EGFR) variant III (EGFRvIII) mutant chimeric T-cell receptor (chimeric antigen receptor or CAR) gene coupled to the signaling domains from CD8, CD28, 4-1BB (CD137) and CD3 zeta, with potential immunostimulatory and antineoplastic activities. Upon administration, the anti-EGFRvIII CAR-transduced allogeneic T lymphocytes bind to the EGFRvIII antigen on tumor cell surfaces; subsequently, EGFRvIII-expressing tumor cells may be lysed. EGFRvIII, an in-frame deletion of exons 2-7 in the EGFR gene, is overexpressed by a variety of cancer cell types and absent in normal, healthy cells; it plays a key role in tumor cell proliferation, tumor angiogenesis and radio- and chemoresistance.

**anti-EGFRvIII immunotoxin MR1-1:** A recombinant immunotoxin consisting of single-chain variable domain fragment antibody directed against the tumor-specific antigen EGFRvIII (MR1scFv) fused to domains II and III of the Pseudomonas exotoxin (PE38KDEL), with potential antineoplastic activity. Upon administration, the antibody moiety of anti-EGFRvIII immunotoxin MR1-1 binds to EGFRvIII; upon internalization, the exotoxin portion inhibits protein synthesis, resulting in a reduction in tumor cell proliferation of EGFRvIII-expressing tumor cells. EGFRvIII, a type III in-frame deletion mutation of the epidermal growth factor receptor (EGFR) gene, is expressed by a variety of cancers, including glioblastoma multiforme, non-small lung carcinoma, and breast carcinoma. Compared to intact IgG antibodies, single-chain antibodies such as MR1scFv are smaller and may penetrate tumors better. Pseudomonas exotoxin PE38KDEL was modified to remove the natural cell binding domain. Check for active clinical trials using this agent.

**anti-EGP-2 immunotoxin MOC31-PE:** An immunotoxin consisting of a monoclonal antibody directed against epithelial glycoprotein-2 (EP-2, or epithelial cell adhesion molecule (EpCAM)) conjugated to the bacterial toxin Pseudomonas exotoxin A (PE) with potential antineoplastic activity. Upon administration of anti-EGP-2 immunotoxin MOC31-PE, the

monoclonal antibody moiety targets and binds to EP-2. Upon internalization, the Pseudomonas exotoxin A moiety then inactivates elongation factor 2 (EF-2) through ADP ribosylation, resulting in inhibition of protein synthesis in EP-2-expressing cells. EP-2, a tumor-associated antigen, is overexpressed in a variety of cancer cell types.

**anti-endoglin monoclonal antibody TRC105:** A human/murine chimeric monoclonal antibody directed against endoglin (CD105) with potential antiangiogenic and antineoplastic activities. Anti-endoglin monoclonal antibody TRC105 binds to endoglin, which may result in inhibition of tumor angiogenesis and decreased tumor cell proliferation. The glycoprotein endoglin is a transforming growth factor beta-1 (TGF beta-1) accessory receptor that is highly expressed on tumor vessel endothelial cells and appears to be essential for angiogenesis.

**anti-endosialin/TEM1 monoclonal antibody MORAb-004:** A humanized IgG1 monoclonal antibody directed against human endosialin/TEM1 (tumor endothelial marker;CD248) with potential antiangiogenic and antineoplastic activities. Anti-endosialin/TEM1 monoclonal antibody MORAb-004 binds to and inhibits the activity of cell surface protein endosialin/TEM1, which may result in the inhibition of angiogenesis, tumor cell proliferation and metastasis. Endosialin/TEM1 plays a key role in angiogenesis and may be overexpressed on tumor stromal cells and endothelial cells.

**anti-ENPP3 antibody-drug conjugate AGS-16C3F:** An antibody-drug conjugate (ADC) containing a fully human monoclonal antibody (AGS-16C) directed to the ectonucleotide pyrophosphatase/phosphodiesterase family member 3 (ENPP3), conjugated via a non-cleavable linker to monomethyl auristatin F (MMAF), an auristatin derivative and a potent microtubule inhibitor, that has potential antineoplastic activity. Upon intravenous administration of ADC AGS-16C3F, the monoclonal antibody moiety of this conjugate selectively binds to ENPP3 then is internalized and undergoes proteolytic cleavage to release MMAF. MMAF binds to and inhibits tubulin polymerization, resulting in G2/M phase arrest and tumor cell apoptosis. While normally expressed at low levels in the proximal tubules of the kidney, the type II transmembrane glycoprotein ENPP3 has been found to be overexpressed in renal neoplasms. Check for active clinical trials using this agent.

**anti-EpCAM antibody fragment -Pseudomonas exotoxin fusion**

**protein:** A substance used to treat diarrhea (frequent and watery bowel movements). OR A fusion protein immunotoxin consisting of a humanized, single-chain monoclonal antibody fragment specific for the epithelial cell adhesion molecule (EpCAM) conjugated with a truncated form of Pseudomonas exotoxin A with potential antineoplastic activity. Anti-EpCAM-Pseudomonas-exotoxin fusion protein binds to Ep-CAM-positive tumor cells, thereby delivering the Pseudomonas exotoxin A moiety specifically; the Pseudomonas exotoxin A moiety then inactivates elongation factor 2 (EF-2) through ADP ribosylation, resulting in inhibition of protein synthesis in target cells. EpCAM, a cell surface protein, is expressed by a variety of tumor cells and is frequently found in head and neck cancers.

**anti-EphA2 monoclonal antibody DS-8895a:** A monoclonal antibody directed against the ephrin receptor A2 (EphA2), with potential antineoplastic activity. Upon administration, anti-EphA2 monoclonal antibody DS-8895a selectively binds to cells expressing the EphA2 receptor. This blocks EphA2 activation and EphA2-mediated signaling. In addition, DS-8895a may activate an immune response against EphA2-expressing tumor cells. The cell-surface receptor EphA2, a member of the ephrin family of receptor tyrosine kinases (RTKs) that are involved in mammalian development, is overexpressed by a variety of cancer cell types and plays an important role in tumor growth.

**anti-EphA2 monoclonal antibody-MMAF immunoconjugate MEDI-547:** An auristatin analogue immunoconjugate directed against Eph receptor A2 (EphA2)-positive cancer cells with potential antineoplastic activity. Anti-EphA2 monoclonal antibody-MMAF immunoconjugate MEDI-547 is generated by conjugating the fully human IgG1 anti-EphA2 monoclonal antibody (1C1) to the small-molecule microtubule inhibitor monomethyl auristatin phenylalanine (MMAF) via the stable linker maleimidocaproyl (mc) (1C1-mcMMAF). The monoclonal antibody moiety of this agent selectively binds to cells expressing the EphA2 receptor. After internalization and enzymatic cleavage of the immunoconjugate within the tumor cell cytosol, free MMAF binds to tubulin and inhibits its polymerization, which may result in G2/M phase arrest and tumor cell apoptosis. The cell-surface receptor EphA2, a member of the ephrin family

of receptor tyrosine kinases (RTKs) involved in mammalian development, is overexpressed by a variety of different cancer cell types.

**anti-EphA3 monoclonal antibody KB004:** A non-fucosylated monoclonal antibody directed against the ephrin receptor A3 (EphA3), with potential antineoplastic activity. Upon administration, anti-EphA3 monoclonal antibody KB004 selectively binds to tumor cells expressing EphA3. This blocks both EphA3 activation and EphA3-mediated signaling, and induces apoptosis in EphA3-expressing tumor cells. In addition, KB004 can stimulate antibody dependent cell-mediated cytotoxicity (ADCC) against EphA3-expressing tumor cells. This agent also prevents tumor cell proliferation by inhibiting both EphA3 signaling and proliferation of endothelial cells in the tumor vasculature. The cell-surface receptor EphA3, a member of the ephrin family of receptor tyrosine kinases (RTKs) that are involved in mammalian development, is overexpressed by a variety of tumor types but is not expressed in normal healthy adult tissues. It plays an important role in tumor cell proliferation. Non-fucosylation of the antibody enhances its ADCC activity.

**anti-epidermal growth factor receptor 2 antibody expressing pluripotent killer T lymphocytes:** A specific population of pluripotent killer (PIK) T cells that have been induced to express high levels of antibodies against human epidermal growth factor receptor 2 (ERBB2; HER2), with potential antitumor activity. Although the exact mechanism(s) of action through which PIK-HER2 cells exert their effects has yet to be elucidated, upon infusion, these cells secrete antibodies targeting HER2 expressed on the surface of tumor cells. This may inhibit HER2-dependent signaling, which may lead to inhibition of cellular proliferation and differentiation. Additionally, these cells may stimulate the host immune system to mount both a highly-specific cytotoxic T-lymphocyte (CTL) response and antibody-dependent cell cytotoxicity (ADCC) directed against HER2-overexpressing tumors, which leads to tumor cell lysis. HER2 is a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases and is frequently overexpressed in solid tumors.

**anti-ErbB2/anti-ErbB3 bispecific monoclonal antibody MM-111:** A bispecific monoclonal antibody directed against the human epidermal growth factor receptors ErbB2 (Her2) and ErbB3 (Her3) with potential antineoplastic activity. The anti-ErbB2 targeting arm of anti-ErbB2/anti-

ErbB3 bispecific monoclonal antibody MM-111 binds to ErbB2 on tumor cells with high affinity while the anti-Erb3 therapeutic arm binds to ErbB3, which may result in the inhibition of cellular proliferation and differentiation in ErbB2-overexpressing tumor cells via inhibition of ErbB3-dependent signal transduction pathways. ErbB2 and ErbB3 are members of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases and are frequently overexpressed in solid tumors.

**anti-ErbB3 monoclonal antibody AV-203:** A humanized monoclonal antibody (MoAb) directed against the human receptor tyrosine-protein kinase ErbB-3 (HER3) with potential antineoplastic activity. Anti-ErbB3 MoAb AV-203 binds to and inhibits both ligand neuregulin-1 (NRG-1)-dependent and ligand-independent ErbB3 activation, which may result in inhibition of ErbB3-dependent PI3K/Akt signaling and may lead to inhibition of cellular proliferation and differentiation. ErbB3, a member of the epidermal growth factor receptor (EGFR) family, is frequently overexpressed in solid tumors and its overexpression generally correlates with poor prognosis and tumor resistance; it has no active kinase domain itself but is activated through heterodimerization with other members of the EGFR receptor family that do. Check for active clinical trials using this agent.

**anti-ErbB3 monoclonal antibody KTN3379:** A monoclonal antibody directed against the human epidermal growth factor receptor ErbB3 (Her3) with potential antineoplastic activity. Anti-ErbB3 monoclonal antibody KTN3379 binds to and prevents ligand binding to ErbB3, which may inhibit ErbB3-dependent phosphatidylinositol-3 kinase (PI3K)/Akt signaling and may lead to the inhibition of cellular proliferation and differentiation. ErbB3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in a variety of solid tumors and its overexpression generally correlates with poor prognosis and tumor resistance.

**anti-ErbB3 monoclonal antibody REGN1400:** A human monoclonal antibody directed against the human epidermal growth factor receptor ErbB3 (Her3) with potential antineoplastic activity. Anti-ErbB3 receptor monoclonal antibody REGN1400 binds to ErbB3 and prevents neuregulin 1 ligand binding to ErbB3, which may result in an inhibition of ErbB3-dependent phosphatidylinositol-3 kinase (PI3K)/Akt signaling. This

eventually leads to the inhibition of cellular proliferation and differentiation. ErbB3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in a variety of solid tumors and its overexpression generally correlates with poor prognosis and tumor resistance.

**anti-ErbB3/anti-IGF-1R bispecific monoclonal antibody MM-141:** A bispecific monoclonal antibody directed against the human epidermal growth factor receptor ErbB3 (Her3) and the human insulin-like growth factor-1 receptor (IGF-1R), with potential antineoplastic activity. The anti-IGF-1R targeting arm of anti-IGF-1R/anti-ErbB3 bispecific monoclonal antibody MM-141 binds to IGF-1R on tumor cells thereby preventing the binding of the natural ligands IGF-1, 2 and heregulin (HRG) to IGF-1R; the anti-ErbB3 therapeutic arm prevents the binding of neuregulin (NRG) to ErbB3. This prevents the activation of the PI3K/AKT signal transduction pathway and may result in both the induction of apoptosis and a decrease in cellular proliferation in IGF-1R and ErbB3-overexpressing tumor cells. IGF-1R, a receptor tyrosine kinase of the insulin receptor superfamily, and ErbB3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, are frequently overexpressed in solid tumors.

**anti-FGF23 IgG1 monoclonal antibody KRN23:** An orally bioavailable recombinant human immunoglobulin G1 monoclonal antibody directed against human fibroblast growth factor 23 (FGF23), that can be used to increase serum phosphate levels. Upon subcutaneous administration, anti-FGF23 IgG1 monoclonal antibody KRN23 binds to and inhibits FGF23, thereby interfering with FGF23 signaling. This increases tubular phosphate reabsorption, decreases excretion of phosphate, and increases serum phosphate levels, resulting in enhanced bone mineralization. FGF23, a member of the fibroblast growth factor (FGF) family produced by osteocytes, plays a key role in hypophosphatemic rickets/osteomalacia, such as X-linked hypophosphatemia (XLH) and tumor-induced rickets/osteomalacia. Increased FGF23 levels lead to decreased expression of the sodium-phosphate co-transporters in the proximal tubules, reduced renal phosphate reabsorption, increased excretion by the kidneys, and low serum phosphate concentration.

**anti-FGFR2 antibody BAY1179470:** An antibody against the fibroblast growth factor receptor type 2 (FGFR2), with potential antineoplastic

activity. Upon administration, the anti-FGFR2 antibody BAY1179470 binds to and inhibits FGFR2, which may result in the inhibition of both FGFR2 phosphorylation and FGFR2-mediated signal transduction pathways. This results in the inhibition of cell proliferation and the induction of cell death of FGFR2-expressing tumor cells. FGFR2, upregulated in many tumor cell types, is a receptor tyrosine kinase, which is essential to tumor cellular proliferation, differentiation and survival.

**anti-FGFR2 antibody-drug conjugate BAY1187982:** An antibody-drug conjugate (ADC) directed against the fibroblast growth factor receptor type 2 (FGFR2) and conjugated to an as of yet unidentified toxin, with potential antineoplastic activity. Upon intravenous administration, the anti-FGFR2 ADC BAY1187982 binds to FGFR2. Upon binding, the toxin selectively induces cell death, through an as of yet undisclosed mechanism of action, in FGFR2-expressing tumor cells. FGFR2, a receptor tyrosine kinase upregulated in many tumor cell types, plays an essential role in tumor cell proliferation, differentiation and survival.

**anti-FGFR2 monoclonal antibody FPA144:** A glycoengineered, humanized monoclonal antibody directed against the fibroblast growth factor receptor type 2b (FGFR2b), with potential antineoplastic activity. Upon administration, the anti-FGFR2 antibody FPA144 specifically binds to and inhibits FGFR2b on tumor cell surfaces, which prevents FGFR2 from binding to its ligands, FGFR2b activation and the activation of FGFR2b-mediated signal transduction pathways. The binding of FPA144 to FGFR2b protein also induces antibody-dependent cell-mediated cytotoxicity (ADCC) against FGFR2b-expressing tumor cells. This results in the inhibition of cell proliferation and the induction of cell death of FGFR2-expressing tumor cells. FGFR2b, a specific isoform of the receptor tyrosine kinase FGFR2 upregulated in many tumor cell types, is essential to tumor proliferation, differentiation and survival. Glycoengineering enhances the FPA144-mediated ADCC.

**anti-FGFR3 antibody-drug conjugate LY3076226:** An antibody-drug conjugate (ADC) composed of a human monoclonal antibody against the fibroblast growth factor receptor type 3 (FGFR3) and conjugated to an as of yet not publicly known cytotoxic agent, with potential antineoplastic activity. Upon administration, the antibody moiety of anti-FGFR3 ADC LY3076226 binds to FGFR3. Upon internalization, the cytotoxic moiety

causes cell death in FGFR3-expressing tumor cells. FGFR3, a receptor tyrosine kinase upregulated or mutated in many tumor cell types, plays a key role in tumor cell proliferation.

**anti-FGFR3 monoclonal antibody B-701:** A human immunoglobulin G1 (IgG1) monoclonal antibody directed against the fibroblast growth factor receptor type 3 (FGFR3), with potential antineoplastic activity. Upon intravenous administration, the anti-FGFR3 monoclonal antibody B-701 specifically binds to and inhibits both wild-type and mutated forms of FGFR3. This may result in the inhibition of FGFR3 phosphorylation, thereby preventing its activation and FGFR3-mediated signal transduction pathways. This results in the inhibition of cell proliferation and the induction of cell death in FGFR3-expressing tumor cells. FGFR3, a receptor tyrosine kinase upregulated or mutated in many tumor cell types, plays a key role in tumor cell proliferation.

**anti-FGFR3 monoclonal antibody MFGR1877S:** A human monoclonal antibody against the fibroblast growth factor receptor type 3 (FGFR3), with potential antineoplastic activity. Upon administration, the anti-FGFR3 antibody MFGR1877S binds to and inhibits FGFR3, which may result in the inhibition of both FGFR3 phosphorylation and FGFR3-mediated signal transduction pathways. This results in the inhibition of cell proliferation and the induction of cell death in FGFR3-expressing tumor cells. FGFR3, upregulated or mutated in many tumor cell types, is a receptor tyrosine kinase, and plays a key role in tumor cell proliferation. Check for active clinical trials using this agent.

**anti-FGFR4 monoclonal antibody U3-1784:** A human monoclonal antibody against human fibroblast growth factor receptor 4 (FGFR4), with potential antineoplastic activity. Upon administration, U3-1784 specifically binds to and blocks FGFR4. This prevents the activation of FGFR4, inhibits FGFR4-mediated signaling and leads to an inhibition of cell proliferation in FGFR4-overexpressing tumor cells. FGFR4, a receptor tyrosine kinase overexpressed by certain tumor cell types, is involved in tumor cell proliferation, differentiation, angiogenesis, and survival. Check for active clinical trials using this agent.

**anti-FLT-1 ribozyme:** A nuclease-stabilized synthetic ribozyme (ribonucleic acid enzyme) with potential anti-angiogenesis activity. Ribozyme RPI.4610 specifically recognizes the mRNA for FLT1 (vascular

endothelial growth factor receptor 1; VEGFR1), and hydrolyzes the mRNA, thereby preventing VEGFR1 proteins from being made. This may prevent VEGF-stimulated angiogenesis in cancerous tissue and metastasis.

**anti-FLT3 monoclonal antibody IMC-EB10:** A fully human, IgG1 monoclonal antibody directed against the FLT3 tyrosine kinase receptor (CD135) with potential antineoplastic activity. Upon binding to FLT3, anti-FLT3 monoclonal antibody IMC-EB10 blocks FLT3 ligand binding to FLT3 and subsequent FLT3 phosphorylation, which may result in the inhibition of FLT3-mediated signal transduction pathways. In addition, this agent may stimulate an anti-FLT3 antibody-dependent cell-mediated cytotoxicity (ADCC) against FLT3-expressing tumor cells, which may result in the inhibition of cellular proliferation and survival in FLT3-expressing cells. FLT3 (FLK2), a class III tyrosine kinase receptor, is overexpressed or mutated in most B lineage and acute myeloid leukemias.

**Anti-fouling:** Compositions used to prevent the growth of barnacles, arine weed and other organisms on ships' bottoms.

**Anti-fouling Paint:** Paints formulated especially for boat decks and hulls, docks and other below-water-line surfaces and structures to prevent the growth of barnacles and other organisms on the bottom of ships.

**Anti-friction Compounds:** Materials specifically formulated to reduce or eliminate friction.

**anti-fucosyl-GM1 monoclonal antibody BMS-986012:** A monoclonal antibody directed against the ganglioside fucosyl-GM1, with potential antineoplastic and immunomodulating activities. Upon administration, anti-fucosyl-GM1 monoclonal antibody BMS-986012 binds to fucosyl-GM1 on cancer cells and may activate both antibody-dependent cellular cytotoxicity (ADCC) and complement-dependent cytotoxicity against the bound tumor cells. This may inhibit the proliferation of GM1-expressing tumor cells. Fucosyl-GM1, a sphingolipid monosialoganglioside and tumor-associated antigen (TAA), is overexpressed on the surface of many cancer cells while its expression is minimal or non-existent in normal tissues.

**anti-ganglioside GM2 monoclonal antibody BIW-8962:** A humanized anti-ganglioside GM2 (GM2) monoclonal antibody with potential antineoplastic and immunomodulating activities. Upon administration, anti-ganglioside GM2 monoclonal antibody BIW-8962 may activate an antibody dependent cellular cytotoxicity (ADCC) against GM2-expressing tumor

cells. GM2 is a tumor associated antigen (TAA) overexpressed on the surface of many cancer cells, such as multiple myeloma (MM) cells and neuroblastoma cells.

**anti-GCC antibody-drug conjugate MLN0264:** An antibody-drug conjugate (ADC) containing a monoclonal antibody directed against guanylyl cyclase C (GCC or GUCY2C) conjugated to monomethylauristatin E (MMAE), an auristatin derivative and a potent microtubule inhibitor, with potential antineoplastic activity. The monoclonal antibody moiety of MLN0264 selectively binds to GCC, a transmembrane receptor normally found on intestinal cells and dopamine neurons in the brain, but is also overexpressed on the surface of gastrointestinal cancers. Upon internalization and proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, resulting in G2/M phase arrest and tumor cell apoptosis in GCC-expressing tumor cells.

**anti-GD2 monoclonal antibody hu14.18K322A:** A monoclonal antibody directed against human glycosphingolipid GD2 with potential antineoplastic activity. Upon binding to the GD2 antigen, anti-GD2 monoclonal antibody hu14.18K322A triggers a host immune response against GD2-expressing tumor cells, which may result in tumor cell death. GD2, an O-acetylated disialoganglioside with expression in normal tissues restricted primarily to the cerebellum and peripheral nerves, is commonly expressed at high levels on tumors of neuroectodermal origins such as melanomas and neuroblastomas.

**anti-GD2 monoclonal antibody MORAb-028:** A human IgM monoclonal antibody directed against disialoganglioside GD2 with potential immunomodulating activity. Upon administration, anti-GD2 monoclonal antibody MORAb-028 may stimulate the immune system to exert a complement-mediated cytotoxic response against GD2-expressing tumor cells. The glycosphingolipid GD2 is a tumor associated antigen (TAA) overexpressed on the surface of many cancer cells. Check for active clinical trials using this agent.

**anti-GITR agonistic monoclonal antibody INCAGN01876:** An anti-human glucocorticoid-induced tumor necrosis factor receptor (tumor necrosis factor superfamily, member 18; TNFRSF18; GITR; CD357) agonistic humanized monoclonal antibody, with potential immune checkpoint modulating activity. Anti-GITR antibody INCAGN01876 binds

to and activates GITRs found on multiple types of T cells. This stimulates the immune system, induces both the activation and proliferation of tumor-antigen-specific T-effector cells (Teffs), and suppresses the function of activated T-regulatory cells (Tregs). This leads to tumor cell eradication. GITR, a member of the TNF receptor superfamily and T-cell receptor co-stimulator, is expressed on the surface of multiple immune cell types, including Tregs, Teffs, B-cells, and natural killer (NK) cells. Inappropriately activated Tregs suppress Teffs and suppress T-cell receptor (TCR) signaling.

**anti-GITR monoclonal antibody GWN 323:** An anti-human glucocorticoid-induced tumor necrosis factor receptor (tumor necrosis factor superfamily, member 18; TNFRSF18; GITR; CD357) agonistic monoclonal antibody, with potential immune checkpoint modulating activity. Anti-GITR antibody GWN 323 binds to and activates GITRs found on multiple types of T-cells. This stimulates the immune system, induces both the activation and proliferation of tumor-antigen-specific T effector cells (Teff), and suppresses the function of activated T regulatory cells (Tregs). This leads to tumor cell eradication. GITR, a member of the TNF receptor superfamily and T-cell receptor-co-stimulator, is expressed on the surface of multiple immune cell types, including Tregs, Teffs, B-cells, and natural killer (NK) cells. Inappropriately activated Tregs suppress both Teffs and T-cell receptor (TCR) signaling.

**anti-GITR monoclonal antibody MK-4166:** An anti-human glucocorticoid-induced tumor necrosis factor receptor (GITR) agonistic monoclonal antibody (MoAb) with potential immunomodulating activity. Anti-GITR monoclonal antibody MK-4166 binds to and activates GITRs found on multiple types of T-cells. This stimulates the immune system and induces both the activation and proliferation of tumor-antigen-specific T effector cells, and suppresses the function of activated T regulatory cells. This leads to tumor cell eradication. Also, this agent is shown to act synergistically with chemotherapeutic drugs in multiple cancer models. GITR, a member of the TNF receptor superfamily, is expressed on the surface of multiple types of immune cells, including regulatory T-cells, effector T-cells, B-cells, and natural killer (NK) cells. Check for active clinical trials using this agent.

**anti-GnRH vaccine PEP223:** A peptide vaccine derived from the synthetic peptide pyroEHWSYGLRPG, corresponding to amino acids 22-31 of mouse gonadotropin releasing hormone (GnRH), with potential immunocastration activity. PEP223 is dimerized and contains a D-lysine (k) substitution at position 6 (pyroEHWSYkLRPG) to increase its immunogenicity. Anti-GnRH vaccine PEP223 may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against GnRH, neutralizing its activity. In turn, testosterone production and tumor cell growth may be inhibited in testosterone-sensitive tumors. Check for active clinical trials using this agent.

**anti-gpA33/CD3 monoclonal antibody MGD007:** An anti-glycoprotein A33 (gpA33)/anti-CD3 bispecific humanized monoclonal antibody with potential immunostimulatory and antineoplastic activities. Anti-gpA33/CD3 monoclonal antibody MGD007 possesses two antigen-recognition sites, one for the CD3 complex, a group of T-cell surface glycoproteins that complex with the T-cell receptor (TCR), and one for gpA33, a tumor-associated antigen (TAA) overexpressed on the surface of certain tumor cells. Upon administration of MGD007, this bispecific antibody simultaneously binds to both CD3-expressing T-cells and gpA33-expressing cancer cells, thereby crosslinking cytotoxic T-lymphocytes (CTLs) to gpA33-expressing tumor cells. This may result in CTL-mediated cell lysis of the crosslinked tumor cells. The gpA33 antigen, a member of the immunoglobulin superfamily, is expressed in certain malignancies, including colon and gastrointestinal cancers.

**anti-GPC3 monoclonal antibody GC33:** A humanized monoclonal antibody directed against the cell surface oncofetal protein glypican-3 (GPC3) with potential antineoplastic activity. Anti-GPC3 monoclonal antibody GC33 binds to GPC3 and triggers a host immune response against GPC3-expressing tumor cells, which may result in tumor cell death. GPC3, a heparin sulfate proteoglycan, is frequently upregulated in hepatocellular carcinoma and mesoderm-derived organs such as the liver, lungs, and kidney.

**anti-GPC3-CAR autologous T lymphocytes:** A preparation of autologous T-lymphocytes that have been genetically modified to express a chimeric antigen receptor (CAR) specific for glypican-3 (GPC3), with potential immunostimulating and antineoplastic activities. Upon administration, anti-

GPC3-CAR autologous T-lymphocytes specifically target and bind to GPC3-expressing tumor cells, resulting in tumor cell lysis. GPC3, a heparan sulfate proteoglycan and a member of the glypican family, is overexpressed on certain tumor cell types while minimally expressed in normal, healthy cells; GPC3 plays an important role in cellular proliferation and differentiation.

**anti-GRP78 monoclonal antibody PAT-SM6:** A IgM monoclonal antibody (MoAb) against 78-kDa glucose-regulated protein (GRP78; also called BiP or HSPA5), with potential proapoptotic and antineoplastic activities. Upon intravenous administration of the anti-GRP78 monoclonal antibody PAT-SM6, the MoAb strongly binds to GRP78, thereby preventing the activation of multiple GRP78-mediated pathways and blocking the GRP78-induced suppression of apoptotic pathways. This eventually leads to the induction of tumor cell apoptosis and a reduction in tumor cell proliferation. GRP78, the endoplasmic reticulum (ER) chaperone and unfolded protein response (UPR) regulator, is overexpressed on the surface of a variety of cancer cell types; its expression is associated with increased tumor cell survival and proliferation, as well as angiogenesis and resistance to chemotherapy.

**anti-HB-EGF monoclonal antibody KHK2866:** A proprietary fucose-free monoclonal antibody directed against human heparin-binding EGF-like growth factor (HBEGF) with potential antineoplastic activity. Anti-HB-EGF monoclonal antibody KHK2866 binds to HBEGF, thereby blocking its binding to the EGF receptors. This prevents EGF receptor activation and the subsequent induction of cell growth signaling. HBEGF is mitogenic for fibroblasts and smooth muscle and may be involved in macrophage-mediated cellular proliferation. The fucose-free monoclonal antibodies enhance antigen dependent cellular cytotoxicity (ADCC), and increase binding affinity to the Fc receptor to overcome genetic polymorphism. Check for active clinical trials using this agent.

**anti-HBEGF monoclonal antibody U3-1565:** A humanized monoclonal antibody directed against human heparin-binding EGF-like growth factor (HBEGF) with potential antineoplastic activity. Anti-HBEGF monoclonal antibody U3-1565 binds to HBEGF and blocks the binding of HBEGF to the EGF receptors. This prevents EGF receptor activation and the subsequent induction of cell growth signaling. HBEGF is mitogenic for

fibroblasts and smooth muscle and may be involved in macrophage-mediated cellular proliferation.

**anti-HCV E2 monoclonal antibody MBL-HCV1:** A neutralizing, human monoclonal antibody against the hepatitis C virus (HCV) E2 envelope glycoprotein, with potential immunomodulatory and antiviral activities against HCV. Upon administration, anti-HCV E2 monoclonal antibody MBL-HCV1 recognizes and binds to the E2 glycoprotein of HCV. This suppresses HCV load and provides passive immunization against HCV. This may prevent both infection by HCV in immunocompromised patients and hepatitis C-related liver disease. HCV is a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family.

**anti-Her-2-CAR retroviral vector-transduced autologous peripheral blood lymphocytes:** Autologous human peripheral blood lymphocytes (PBLs) transduced with a retroviral vector encoding an anti-Her-2 (epidermal growth factor receptor 2) chimeric T cell receptor (chimeric antigen receptor or CAR) gene with potential immunostimulatory and antineoplastic activities. Autologous PBLs from a patient with Her-2-positive cancer are pulsed with a retroviral vector that encodes the CAR gene specific for Her-2. After expansion in culture and reintroduction into the patient, anti-Her-2-CAR retroviral vector-transduced autologous peripheral blood lymphocytes, expressing anti-Her-2-CAR on their cell surfaces, bind to Her-2 antigen on tumor cell surfaces; subsequently, Her-2-expressing tumor cells may be lysed. Her-2 (ErbB-2), a receptor tyrosine kinase (RTK) overexpressed by a variety of cancer cell types, belongs to the EGFR superfamily and plays key roles in tumor cell proliferation and tumor angiogenesis.

**anti-HER2 ADC DS-8201a:** An antibody-drug conjugate (ADC) composed of a monoclonal antibody targeting human epidermal growth factor receptor 2 (ERBB2; EGFR2; HER2) conjugated to a derivative of the camptothecin analog exatecan (DXd; DX-8951 derivative), a DNA topoisomerase 1 (topoisomerase I; Top1) inhibitor, with potential antineoplastic activity. Upon administration of anti-HER2 ADC conjugate DS-8201a, the antibody moiety targets and binds to HER2 on tumor cells. Upon antibody/antigen binding and internalization, the DX-8951 derivative moiety binds to and inhibits Top1-DNA complexes, which results in an inhibition of DNA replication, cell cycle arrest and tumor cell apoptosis.

HER2, a tyrosine kinase receptor, is overexpressed by many cancer cell types. In addition, DS-8201a induces antibody-dependent cell-mediated cytotoxicity (ADCC) and causes a bystander killing effect, thereby killing neighboring HER2-expressing tumor cells.

**anti-HER2 antibody-drug conjugate ARX788:** An antibody-drug conjugate (ADC) composed of a monoclonal antibody targeting human epidermal growth factor receptor 2 (EGFR2; HER2) site-specifically conjugated, via the non-natural amino acid linker para-acetyl-phenylalanine (pAcF), to the auristatin analog and potent microtubule inhibitor monomethyl auristatin F (MMAF), with potential antineoplastic activity. Upon administration of anti-HER2 ADC ARX788, the antibody moiety targets and binds to HER2 on tumor cells. Upon antibody/antigen binding and internalization, MMAF binds to and inhibits tubulin polymerization, which results in G2/M phase arrest and tumor cell apoptosis. HER2, a tyrosine kinase receptor, is overexpressed by many cancer cell types. The site-specific conjugation of the cytotoxic agent to the antibody improves the biophysical properties of ARX788, increases payload stability and optimizes its efficacy.

**anti-HER2 antibody-drug conjugate MEDI4276:** An antibody-drug conjugate (ADC) composed of a bispecific antibody against the extracellular domain of human epidermal growth factor receptor 2 (HER2; ERBB2) comprised of the single-chain variable fragment (scFv) of the anti-HER2 monoclonal antibody trastuzumab, which binds to domain IV of HER2, fused to the heavy chains of the anti-HER2 monoclonal antibody 39S, which binds to domain II of HER2, and conjugated, via a cleavable linker, to the cytotoxic anti-microtubule agent tubulysin, with potential antineoplastic activity. Upon administration of MEDI4276, the anti-HER2 bispecific antibody specifically targets and binds to HER2 on the surface of certain cancer cells. Upon binding, crosslinking and internalization of antibody-HER2 complexes occurs and MEDI4276 is transported to the lysosome where the linker is cleaved, thereby delivering tubulysin inside HER2-expressing cancer cells. Tubulysin binds to tubulin and inhibits microtubule polymerization, which blocks cell division. This results in G2/M phase arrest, tumor cell apoptosis, and decreased proliferation of HER2-expressing tumor cells. HER2, a tyrosine kinase receptor, is overexpressed by many cancer cell types. Check for active clinical trials using this agent.

**anti-HER2 monoclonal antibody CT-P6:** A monoclonal antibody directed against the human epidermal growth factor receptor 2 (HER2) with potential immunomodulating and antineoplastic activity. After binding to HER2 on the tumor cell surface, anti-HER2 monoclonal antibody CT-P6 may induce a cytotoxic T-lymphocyte (CTL) as well as an antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells that overexpress HER2. HER2, a tyrosine kinase receptor, is overexpressed by many cancer cell types.

**anti-HER2-CAR autologous CMV-specific cytotoxic T lymphocytes:** Autologous human cytomegalovirus (CMV)-specific human cytotoxic T lymphocytes (CTLs) transduced with a retroviral vector encoding a human anti-HER2 (epidermal growth factor receptor 2) chimeric T cell receptor (CAR) gene with potential immunostimulatory and antineoplastic activities. Autologous CTLs from a patient with HER2- and CMV-positive glioblastoma multiforme (GBM) are genetically modified to express CAR gene specific for HER2 on their cell surfaces. After expansion in culture and reintroduction into the patient, the anti-HER2-CAR autologous CMV-specific CTLs bind to HER2 antigen on tumor cell surfaces; subsequently, HER2-positive tumor cells and stem cells may be lysed. HER2 (ErbB2), a receptor tyrosine kinase (RTK) overexpressed by a variety of cancer cell types, plays key roles in tumor cell proliferation and tumor angiogenesis. CMV is present in the majority of GBM tumors.

**anti-HER3 monoclonal antibody GSK2849330:** A monoclonal antibody directed against the human epidermal growth factor receptor 3 (HER3; ERBB3) with potential antineoplastic activity. Anti-HER3 monoclonal antibody GSK2849330 binds to HER3 and inhibits its activation. This may prevent HER3-mediated signaling and inhibit HER3-dependent tumor cell proliferation and differentiation. HER3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in tumors and is associated with poor prognosis and drug resistance; it has no active kinase domain but is activated through heterodimerization with other members of the EGFR receptor family, such as HER2.

**anti-HER3 monoclonal antibody LJM716:** A human monoclonal antibody directed against the human epidermal growth factor receptor HER3 (ErbB3) with potential antineoplastic activity. Anti-HER3

monoclonal antibody LJM716 possesses a novel mechanism of action; LJM716 binds to and locks HER3 in the inactive conformation and does not interfere with its interaction with neuregulin (NRG). The inactivated form of HER3 blocks the PI3K/Akt signaling pathway, thereby inhibiting cellular proliferation in HER2 or NRG expressing tumor cells. HER3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in tumors; it has no active kinase domain but is activated through heterodimerization with other members of the EGFR receptor family, such as HER2.

**anti-HGF monoclonal antibody AMG 102 :** A vaccine made of antigens and antigen-presenting cells (APCs). APCs boost an immune response by presenting antigens on their surfaces to other cells of the immune system. Also called APC vaccine.

**anti-HGF monoclonal antibody TAK-701:** A humanized monoclonal antibody directed against human hepatocyte growth factor (HGF) with potential antineoplastic activity. Anti-HGF monoclonal antibody TAK-701 binds to the soluble ligand HGF, preventing HGF binding to and activation of the HGF receptor c-Met and so the activation of the c-Met signaling pathway; this may result in the induction of cell death in c-Met-expressing tumor cells. c-Met, a receptor tyrosine kinase overexpressed or mutated in a variety of tumor cell types, plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis. Check for active clinical trials using this agent.

**anti-HIF-1alpha LNA antisense oligonucleotide EZN-2968:** A synthetic antisense oligodeoxynucleotide (AS ODN) targeting hypoxia-inducible factor-1alpha (HIF-1alpha) with potential antineoplastic activity. Anti-HIF-1alpha LNA antisense oligonucleotide EZN-2968 hybridizes with HIF-1alpha mRNA and blocks HIF-1 alpha protein expression, which may result in the inhibition of angiogenesis, the inhibition of tumor cell proliferation, and apoptosis. HIF-1alpha, normally activated in response to hypoxia-induced stress, is a key transcription regulator of a large number of genes important in cellular adaptation to low-oxygen conditions, including angiogenesis, cell proliferation, apoptosis, and cell invasion.

**anti-HLA-A2/NY-ESO-1 TCR-transduced autologous T lymphocytes:** Autologous human peripheral blood T lymphocytes transduced with a lentiviral or retroviral vector encoding a human leukocyte antigen A2

(HLA-A2)-restricted anti-cancer-testis antigen 1 (NY-ESO-1) T-cell receptor (TCR) gene, with potential antineoplastic activity. Following leukapheresis, isolation of lymphocytes, expansion ex vivo, transduction, and re-introduction into the patient, the anti-HLA-A2/NY-ESO-1 TCR-transduced autologous T lymphocytes recognize and bind to NY-ESO-1/HLA-A2-positive tumor cells. This results in cytotoxic T-lymphocyte (CTL)-mediated elimination of NY-ESO-1-positive cancer cells. NY-ESO-1, a tumor-associated antigen (TAA), is found in normal testis and on the surface of various tumor cell types.

**anti-HLA-DR monoclonal antibody IMMU-114:** A humanized IgG4 monoclonal antibody that targets the human leukocyte antigen HLA-DR, with potential antineoplastic activity. Upon administration, anti-HLA-DR monoclonal antibody IMMU-114 binds to HLA-DR on HLA-DR-expressing tumor cells and, although the exact mechanism has yet to be fully elucidated, appears to induce hyperactivation of ERK- and JNK-dependent mitogen activated protein kinase signaling pathways. This may lead to mitochondrial membrane depolarization and reactive oxygen species (ROS) generation. This eventually leads to an induction of tumor cell apoptosis and a reduction in tumor cell proliferation. IMMU-14 may be beneficial in the treatment of graft versus host disease (GVHD) as it appears to suppress T-lymphocyte proliferation and natural killer (NK) cell activation. As the Fc region of the original IgG1 MoAb was replaced with the IgG4 isotype, IMMU-114 does not induce a complement cytotoxicity (CDC) or an antibody-dependent cell-mediated cytotoxicity (ADCC). HLA-DR, a MHC class II molecule, is found on various B-cell hematologic malignancies and in autoimmune diseases as well as on normal cells.

**anti-human chorionic gonadotropin vaccine:** A peptide vaccine consisting of the whole or partial beta subunit of human chorionic gonadotrophin hormone (hCG), linked to an adjuvant carrier of bacterial or viral origin, with anti-fertility activity. Anti-human chorionic gonadotropin vaccine blocks the activity of hCG which is naturally produced by the trophoblast of the pre-implantation embryo within a few days of fertilization. hCG is required for the maintenance of the corpus luteum in the ovary thus ensuring its continued production of progesterone, which is required for the successful completion of implantation of the blastocyst. Without progesterone, the corpus luteum regresses, and menstruation is initiated.

**anti-human GITR monoclonal antibody TRX518:** A humanized, Fc disabled anti-human glucocorticoid-induced tumor necrosis factor receptor (GITR) monoclonal antibody (MoAb) with immunomodulating activity. Anti-human GITR MoAb TRX518 blocks the interaction of GITR, found on multiple types of T cells, with its ligand, thereby inducing both the activation of tumor-antigen-specific T effector cells, as well as abrogating the suppression induced by inappropriately activated T regulatory cells. This agent is shown to act synergistically with chemotherapeutic drugs in multiple cancer models.

**anti-human integrin alpha v subunit monoclonal antibody EMD 525797:** A humanized monoclonal antibody directed against the human alpha v integrin subunit with potential antiangiogenic and antineoplastic activities. Anti-human integrin alpha v subunit monoclonal antibody EMD 525797, a chimeric antibody which includes the antigen binding sites of the anti-integrin mouse antibody 17E6, binds to and inhibits the activity of alphavbeta3 integrin (vitronectin receptor); this may result in the inhibition of endothelial cell-cell interactions, endothelial cell-matrix interactions, and integrin-mediated tumor angiogenesis and metastasis in alphavbeta3-expressing tumor cells. Alphavbeta3 integrin, a cell adhesion and signaling receptor, is expressed on the surface of tumor vessel endothelial cells and plays a crucial role in endothelial cell adhesion and migration.

**anti-ICAM-1 monoclonal antibody BI-505:** A fully human IgG1 monoclonal antibody directed against intercellular adhesion molecule-1 (ICAM-1 or CD54), with potential antineoplastic activity. Anti-ICAM-1 monoclonal antibody BI-505 selectively binds to the adhesion protein ICAM-1, which may result in antibody-dependent cellular cytotoxicity (ADCC), hyper-cross-linking-induced apoptosis, and a decrease in cellular proliferation of ICAM-1-expressing tumor cells. ICAM-1, normally expressed on leukocytes and endothelial cells, may be overexpressed in a variety of cancers.

**anti-ICOS agonist antibody GSK3359609:** An agonistic antibody for the inducible T-cell co-stimulator (ICOS; CD278), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-ICOS agonist antibody GSK3359609 targets and binds to ICOS expressed on tumor infiltrating CD4-positive T cells. This stimulates ICOS-positive T-cell proliferation, enhances cytotoxic T-lymphocyte (CTL)

survival and increases CTL-mediated immune responses against tumor cells. ICOS, a T-cell specific, CD28-superfamily costimulatory molecule and immune checkpoint protein, is normally expressed on certain activated T cells and plays a key role in the proliferation and activation of T cells.

**anti-ICOS monoclonal antibody MEDI-570:** An Fc-optimized humanized immunoglobulin (Ig) G1 monoclonal antibody (MoAb) directed against the inducible T-cell co-stimulator (ICOS, CD278), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-ICOS MoAb MEDI-570 targets and binds to ICOS expressed on tumor infiltrating CD4-positive T-cells. This prevents the interaction between ICOS-positive T-cells and plasmacytoid dendritic cells (pDCs), which express the ICOS ligand (ICOSL). Blocking ICOS activation prevents the pDC-induced proliferation and accumulation of regulatory ICOS-positive T-cells (ICOS<sup>+</sup> Tregs) and inhibits interleukin-10 (IL-10) secretion by CD4<sup>+</sup> infiltrating T-cells. This may abrogate Treg-mediated immune suppression and may enhance cytotoxic T-lymphocyte (CTL)-mediated immune responses against tumor cells. Fc optimization enhances antibody-dependent cellular cytotoxicity (ADCC). ICOS, a T-cell specific, CD28-superfamily costimulatory molecule and immune checkpoint protein, plays a key role in the proliferation and activation of T-cells. It is normally expressed on both activated CD4<sup>+</sup> T-cells, which is a subset of memory T-cells (T<sub>m</sub>), and follicular helper T-cells (T<sub>fh</sub>). ICOS is highly expressed on Tregs infiltrating various tumors and its expression is associated with a poor prognosis; ICOS-positive Tregs play a key role in immune suppression and tumor immune evasion.

**anti-idiotypic vaccine :** Treatment with drugs, surgery, or radiation in order to block the production or action of a hormone. Antihormone therapy may be used in cancer treatment because certain hormones are able to stimulate the growth of some types of tumors.

**anti-IGF-1R monoclonal antibody AVE1642:** A humanized monoclonal antibody directed against the human insulin-like growth factor-1 receptor (IGF-1R/CD221) with potential antineoplastic activity. Anti-IGF-1R monoclonal antibody AVE1642 specifically binds to and blocks membrane-bound IGF-1R, preventing the binding of the natural ligand IGF-1 and the subsequent activation of PI3K/AKT signal transduction, which may result in the induction of apoptosis and a decrease in cellular proliferation.

Activation of IGF-1R , a receptor tyrosine kinase of the insulin receptor superfamily overexpressed by various cancer cell types, stimulates cell proliferation, promotes angiogenesis, enables oncogenic transformation, and suppresses apoptosis.

**anti-IGF-1R recombinant monoclonal antibody BIIB022:** A recombinant, human monoclonal antibody directed against the insulin-like growth factor 1 receptor (IGF-1R) with potential antineoplastic activity. Anti-IGF-1R recombinant monoclonal antibody BIIB022 binds to membrane-bound IGF-1R, preventing binding of the ligand IGF-1 and the subsequent triggering of the PI3K/Akt signaling pathway; inhibition of this survival signaling pathway may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. The activation of IGF-1R, a tyrosine kinase and a member of the insulin receptor family, stimulates cell proliferation, enables oncogenic transformation, and suppresses apoptosis; IGF-1R signaling has been highly implicated in tumorigenesis and metastasis.

**anti-IGF1/2 monoclonal antibody MEDI-573:** A humanized monoclonal antibody directed against insulin-like growth factors 1 and 2 (IGF-1/2) with potential antineoplastic activity. Anti-IGF1/2 monoclonal antibody MEDI-573 inhibits IGF1- and IGF2-stimulated activation of membrane-bound IGF receptors and the subsequent triggering of proliferation and survival signaling pathways. This may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. IGF1/2 ligands stimulate cell proliferation, enable oncogenic transformation, and suppress apoptosis; IGF1/2 signaling has been highly implicated in tumorigenesis and metastasis.

**anti-IGF1R recombinant monoclonal antibody MK-0646 :** A type of drug used to treat high blood pressure. There are many different types of antihypertensive agents, and they work in different ways to lower blood pressure. Some remove extra fluid and salt from the body. Others relax and widen the blood vessels or slow the heartbeat. A person may respond better and have fewer side effects with one drug than with another. Some patients need more than one antihypertensive agent to lower their blood pressure.

**anti-IL-1 alpha monoclonal antibody CA-18C3:** A "true human" (cloned from human B lymphocytes) monoclonal antibody directed against interleukin-1 alpha (IL1a) with potential antineoplastic activity. Anti-IL-1

alpha monoclonal antibody CA-18C3 binds to IL1a and may block the activity of IL1a. IL1a, an inflammatory mediator, plays a key role in interleukin-mediated tumor cell activity such as angiogenesis, tissue matrix remodeling, metastasis and tumor cell invasion. Check for active clinical trials using this agent.

**anti-IL-13 humanized monoclonal antibody TNX-650:** A humanized monoclonal antibody directed against interleukin-13 (IL-13) with potential antineoplastic activity. Anti-IL-13 humanized monoclonal antibody TNX-650 binds to and blocks the activity of IL-13, which may result in the inhibition of Hodgkin lymphoma cell proliferation. IL-13 cytokine, an important mediator in allergic inflammation, may be an autocrine growth factor for Hodgkin lymphoma cells.

**anti-IL-15 monoclonal antibody AMG 714:** A human immunoglobulin G1 (IgG1) monoclonal antibody directed against the human pro-inflammatory cytokine interleukin-15 (IL-15), with potential anti-inflammatory, immunomodulating and antineoplastic activities. Upon administration, anti-IL-15 monoclonal antibody AMG 714 binds to and neutralizes IL-15, thereby preventing IL-15-mediated pro-inflammatory signaling. By inhibiting IL-15-mediated immune responses, AMG 714 decreases natural killer (NK) cell activation and proliferation, reduces T-cell infiltration, increases T-cell apoptosis, and may prevent the growth of IL-15-driven cancer cells. IL-15 plays a key role in inflammation and is associated with a variety of autoimmune and inflammatory disorders as well as with cell proliferation in certain cancer types, such as T-cell lymphomas. IL-15 is required for the proliferation of certain T-cells and NK cells.

**anti-IL-4/IL-13 combination agent QBX258:** A combination agent composed of the two human monoclonal antibodies VAK694 (VAK296), targeting interleukin-4 (IL-4), and dectrekumab, targeting IL-13, that can potentially be used to block signaling mediated by IL-4 and IL-13. Upon intravenous administration of the anti-IL-4/IL-13 combination agent QBX258, the two antibodies VAK694 and dectrekumab target and block the activity of the two cytokines IL-4 and IL-13, respectively, which prevents IL-4/IL-13-mediated signaling. In patients with breast cancer related lymphedema (BCRL), this agent may prevent lymphedema-associated effects, such as fibrosis, hyperkeratosis, the deposition of fibroadipose

tissue, fluid accumulation, limb swelling, reduction of skin elasticity, and pain. By reducing the excess volume, QBX258 may improve lymphatic and arm functions. The development of lymphedema after lymphatic injury is associated with tissue inflammation, the infiltration of CD4-positive cells and their differentiation to the type 2 helper T-cell (Th2) phenotype. Th2 cells produce IL-4 and IL-13 that play a key role in the development of lymphedema-associated symptoms as well as other Th2-mediated diseases.

**anti-IL-6 chimeric monoclonal antibody :** A vaccine made of antibodies that see other antibodies as the antigen and bind to it. Anti-idiotypic vaccines can stimulate the body to produce antibodies against tumor cells.

**anti-IL-8 monoclonal antibody HuMax-IL8:** A human monoclonal antibody against the pro-inflammatory mediator interleukin-8 (IL-8; CXCL8), with potential antineoplastic activities. Upon administration, HuMax-IL8 directly binds to IL-8, thereby inhibiting the binding of IL-8 to its receptors CXCR1 and CXCR2. This inhibits activation of IL-8-mediated signaling transduction pathways, which decreases proliferation of susceptible tumor cells. Also, HuMax-IL8 effectively blocks binding of IL-8 to neutrophils and inhibits neutrophil activation and recruitment towards sites of inflammation, which reduces inflammation. IL-8, a member of the CXC chemokine family, is upregulated in a variety of cancer cell types and inflammatory diseases; it plays a key role in tumor cell proliferation, endothelial cell proliferation, and cancer stem cell (CSC) renewal.

**anti-inflammatory :** A substance being studied in the treatment of many types of cancer. Anti-IGF1R recombinant monoclonal antibody MK-0646 binds to a protein called insulin-like growth factor receptor (IGFR) on the surface of cells. This may prevent the cells from growing when IGF is present. It may also kill cancer cells. Anti-IGF1R recombinant monoclonal antibody MK-0646 is a type of monoclonal antibody. Also called MK-0646.

**anti-inflammatory agent :** A drug used to treat a rare condition called Castleman disease in patients who do not have HIV or human herpesvirus 8. It is also being studied in the treatment of multiple myeloma. Anti-IL-6 chimeric monoclonal antibody binds to a protein called interleukin-6 (IL-6), which is made by some white blood cells and other cells in the body. Anti-IL-6 chimeric monoclonal antibody may help reduce inflammation and stop the growth of cancer cells or abnormal blood cells. It is a type of

monoclonal antibody. Also called cCLB8, CNTO 328, siltuximab, and Sylvant.

**anti-inflammatory antibody ALXN1007:** A proprietary antibody that targets the complement inflammatory pathway with potential immunomodulating and anti-inflammatory activities. Upon intravenous administration, anti-inflammatory antibody ALXN1007 modulates the complement inflammatory pathway through binding to an as of yet undisclosed target. This may help in the treatment of certain inflammatory-mediated disorders, such as antiphospholipid syndrome (APS). This agent may also influence the progression of graft-versus-host disease (GvHD). Check for active clinical trials using this agent.

**anti-integrin monoclonal antibody-DM4 immunoconjugate IMGN388:** An immunoconjugate consisting of an anti-integrin monoclonal antibody covalently attached to the maytansinoid DM4, a derivative of the cytotoxic agent maytansine (DM1), with potential antineoplastic activity. Anti-integrin monoclonal antibody-DM4 immunoconjugate IMGN388 binds to tumor cell surface integrins; upon internalization, the DM4 moiety is released from the immunoconjugate, binding to tubulin and disrupting microtubule assembly/disassembly dynamics, which may result in inhibition of cell division and cell growth of integrin-expressing tumor cells. Integrins, a class of transmembrane cell surface receptors, link the extracellular matrix (ECM) to intracellular signaling pathways that control cell proliferation and differentiation.

**anti-interferon gamma monoclonal antibody NI-0501:** A human monoclonal antibody against the cytokine interferon-gamma (IFN-gamma; IFN $\gamma$ ), with potential immunomodulating activity. Upon administration, the anti-IFN $\gamma$  monoclonal antibody NI-0501 binds to and neutralizes IFN $\gamma$ . This inhibits IFN $\gamma$ -mediated signaling pathways and suppresses the activation of the immune system. IFN $\gamma$ , a cell-signaling protein, plays a key role in the regulation and activation of the immune system; its upregulation is associated with certain auto-immune and auto-inflammatory diseases in which the immune system is abnormally activated.

**anti-interleukin 6 monoclonal antibody ALD518:** A humanized monoclonal antibody directed against the pro-inflammatory cytokine interleukin-6 (Il-6) with potential immunomodulating activity. Upon administration, anti-interleukin 6 monoclonal antibody ALD518 binds to

and blocks the activity of IL-6, which may mitigate the catabolic effects of IL-6.

**anti-interleukin-1 alpha monoclonal antibody MABp1:** A human IgG1 monoclonal antibody targeting the inflammatory cytokine interleukin-1 alpha (IL1a) with potential antineoplastic, anti-cachectic and anti-angiogenic activities. Anti-IL1a monoclonal antibody MABp1 targets and binds to IL1a and prevents IL1a activity. This prevents IL1a-mediated tumorigenesis and angiogenesis. In addition, MABp1 abrogates IL1a-mediated cachexia. IL1a, an inflammatory mediator expressed on monocytes, platelets and overexpressed by certain tumors, plays a key role in the promotion of tumor cell growth, metastasis and invasion. In addition, IL1a stimulates metabolic activity in the central nervous system.

**anti-KIR monoclonal antibody IHP 2101:** A human monoclonal antibody directed against the human inhibitory killer IgG-like receptor (KIR) with potential immunostimulating and antineoplastic activities. Anti-KIR monoclonal antibody IPH 2101 binds to the KIR receptor expressed on human natural killer (NK) cells, which may prevent KIR-mediated inhibition of NK cells and permit NK cell-mediated anti-tumor cytotoxicity. KIRs are surface glycoproteins that bind to major histocompatibility complex (MHC)/human leukocyte antigen (HLA) class I subtypes on target cells; binding of KIRs inhibits NK cell-mediated cytotoxicity.

**anti-KIR3DL2 monoclonal antibody IPH4102:** A humanized monoclonal antibody against the immune receptor human killer cell immunoglobulin-like receptor, three domains, long cytoplasmic tail, 2 (KIR3DL2), with potential immunomodulating and antineoplastic activities. Upon administration, the anti-KIR3DL2 monoclonal antibody IPH4102 binds to KIR3DL2 expressed on certain tumor cells. This recruits natural killer (NK) cells and leads to lysis of KIR3DL2-expressing tumor cells. In addition, IPH4102 induces antibody-dependent cellular cytotoxicity (ADCC), thereby further eliminating tumor cells. KIR3DL2, a tumor-associated antigen (TAA) and inhibitory receptor of the KIR family, is specifically expressed in most subtypes of cutaneous T-cell lymphomas (CTCL) and expressed only on a fraction of normal NK cells. Check for active clinical trials using this agent.

**anti-LAG-3 monoclonal antibody BMS-986016:** A monoclonal antibody directed against the inhibitor receptor lymphocyte activation gene-3 (LAG-

3), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, the anti-LAG-3 monoclonal antibody BMS-986016 binds to LAG-3 on tumor infiltrating lymphocytes (TILs). This may activate antigen-specific T-lymphocytes and enhance cytotoxic T cell-mediated tumor cell lysis, which leads to a reduction in tumor growth. LAG-3 is a member of the immunoglobulin superfamily (IgSF) and binds to major histocompatibility complex (MHC) class II. LAG-3 expression on TILs is associated with tumor-mediated immune suppression.

**anti-LAG-3 monoclonal antibody LAG525:** A humanized monoclonal antibody directed against the inhibitory receptor lymphocyte activation gene-3 (LAG-3), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, the anti-LAG-3 monoclonal antibody LAG525 binds to LAG-3 expressed on tumor-infiltrating lymphocytes (TILs) and blocks its binding with major histocompatibility complex (MHC) class II molecules expressed on tumor cells. This activates antigen-specific T-lymphocytes and enhances cytotoxic T-cell-mediated tumor cell lysis, which leads to a reduction in tumor growth. LAG-3, a member of the immunoglobulin superfamily (IgSF) and expressed on various immune cells, negatively regulates cellular proliferation and activation of T-cells. Its expression on TILs is associated with tumor-mediated immune suppression.

**anti-LAMP1 antibody-drug conjugate SAR428926:** An antibody-drug conjugate (ADC) consisting of a monoclonal antibody against lysosome-associated membrane protein 1 (LAMP1) conjugated, via the disulfide-containing cleavable linker N-succinimidyl-4-(2-pyridyldithio)butyrate (SPDB), to the cytotoxic maytansinoid DM4, with potential antineoplastic activity. Upon administration of anti-LAMP1 ADC SAR428926, the anti-LAMP1 monoclonal antibody moiety targets and binds to the cell surface antigen LAMP1. After antibody-antigen interaction and internalization, the SPDB linker is selectively cleaved by proteases in the cytosol and the DM4 moiety is released. DM4 binds to tubulin and disrupts microtubule assembly/disassembly dynamics, thereby inhibiting both cell division and cell growth of LAMP1-expressing tumor cells. LAMP1, overexpressed on a variety of cancer cells, plays a key role in cell-cell adhesion and migration. The SPDB linker is resistant to cleavage in the bloodstream, which may increase stability and reduce toxicity.

**anti-LGR5 monoclonal antibody BNC101:** A humanized monoclonal antibody targeting leucine-rich repeat-containing G-protein coupled receptor 5 (LGR5), with potential antineoplastic activity. Upon administration, the anti-LGR5 humanized monoclonal antibody BNC101 targets and binds to LGR5, thereby inhibiting LGR5-mediated signal transduction pathways. This prevents proliferation of LGR5-expressing tumor cells. LGR5, a member of the Wnt signaling pathway, is a cancer stem cell (CSC) receptor overexpressed on certain cancer cells; it plays a key role in CSC proliferation and survival.

**anti-LIV-1 monoclonal antibody-MMAE conjugate SGN-LIV1A:** An antibody-drug conjugate (ADC) composed of a humanized monoclonal antibody directed against the anti-solute carrier family 39 zinc transporter member 6 (SLC39A6; LIV-1; ZIP6) protein that is conjugated, via a protease-cleavable linker, to the cytotoxic agent monomethyl auristatin E (MMAE), with potential antineoplastic activity. Upon administration and internalization by LIV-1-positive tumor cells, anti-LIV-1 antibody-drug conjugate SGN-LIV1A undergoes enzymatic cleavage to release MMAE into the cytosol. In turn, MMAE binds to and inhibits tubulin polymerization, which may result in G2/M phase cell cycle arrest and apoptosis in LIV-1-expressing tumor cells. LIV-1, a member of the zinc transporter family, is expressed in several types of solid tumors and plays a key role in tumor cell progression and metastasis. The linkage system in SGN-LIV1A is highly stable in plasma, resulting in cytotoxic specificity against LIV-1-positive cells.

**anti-LOXL2 monoclonal antibody GS-6634:** A humanized monoclonal antibody against lysyl oxidase-like 2 (LOXL2), with potential antineoplastic activity. Anti-LOXL2 monoclonal antibody AB0024 targets and specifically binds to the scavenger receptor cysteine rich domain 4 (SRCR-4) on LOXL2, thereby preventing the crosslinking of collagen and inhibiting the recruitment and activation of fibroblasts. Inhibiting fibroblast activation and the subsequent production of growth factors and chemokines may lead to an inhibition of tumor cell proliferation. LOXL2, a member of the lysyl oxidase (LO) gene family, is an extracellular, copper-dependent enzyme overexpressed in a variety of tumor cell types, and contributes to tumor cell invasion and metastasis.

**anti-Ly6E antibody-drug conjugate DLYE5953A:** An antibody-drug conjugate (ADC) composed of an antibody against the tumor-associated antigen (TAA) lymphocyte antigen 6 complex locus E (Ly6E) and linked to an as of yet undisclosed cytotoxic agent, with potential antineoplastic activity. Upon intravenous administration, the antibody moiety of DLYE5953A targets and binds to Ly6E expressed on tumor cells. Upon binding and internalization, the cytotoxic agent is released and kills, through an as of yet unknown mechanism of action, the Ly6E-expressing cancer cells. Ly6E, an interferon (IFN)-inducible glycosylphosphatidylinositol (GPI)-linked cell membrane protein, is expressed on a variety of tumor cell types.

**Anti-M-CSF monoclonal antibody MCS110:** A humanized monoclonal antibody directed against macrophage colony-stimulating factor (M-CSF) with potential anti-osteolytic activity. Anti-M-CSF monoclonal antibody MCS110 binds to M-CSF and blocks M-CSF-mediated signaling through the M-CSF receptor CD116 expressed on osteoclasts, which may result in inhibition of M-CSF-induced osteoclast differentiation and so osteoclastic bone resorption. Osteoclasts are derived through the fusion of cells of the monocyte/macrophage lineage. Osteoblasts and stromal cells may react to bone metastases by producing M-CSF and its osteoclastogenic cofactor RANKL (receptor activator of NF-kappaB ligand).

**anti-Markovnikov addition:** a reaction in which the hydrogen atom of a hydrogen bromide bonds to the carbon of a double bond that is bonded to fewer hydrogen atoms. The addition takes place via a free-radical intermediate rather than a carbocation. (Compare with "Markovnikov rule.")

**anti-MASP-2 monoclonal antibody OMS721:** A monoclonal antibody against mannan-binding lectin (MBL)-associated serine protease-2 (MASP-2), with potential anti-thrombotic and immunomodulating activities. Upon subcutaneous administration, OMS721 binds to and inhibits MASP-2. This prevents the activation of MASP-2, the cleavage of certain complement components, and the activation of the complement lectin pathway. This inhibits complement deposition and complement-induced thrombus formation. MASP-2, a pro-inflammatory protein, plays a key role in the activation of the lectin complement pathway, which is a key component in the immune system, and is associated with complement-mediated diseases,

such as thrombotic microangiopathies (TMAs), which includes hematopoietic stem cell transplant (HSCT)-related TMA, atypical hemolytic uremic syndrome (aHUS), and thrombotic thrombocytopenic purpura (TTP).

**anti-mesothelin antibody-drug conjugate BMS-986148:** An antibody-drug conjugate (ADC) composed of a monoclonal antibody directed against the cell surface glycoprotein mesothelin and conjugated to an as of yet undisclosed cytotoxic drug, with potential antineoplastic activity. The monoclonal antibody moiety of anti-mesothelin ADC BMS-986148 targets and binds to the tumor-associated antigen mesothelin. Upon internalization, the cytotoxic agent kills or prevents cellular proliferation of mesothelin-expressing tumor cells through an as of yet undescribed mechanism of action. Mesothelin is overexpressed by all mesotheliomas and a variety of other cancers, while it is minimally expressed in normal tissue.

**anti-mesothelin CAR vector-transduced autologous T lymphocytes:** Genetically modified, autologous T lymphocytes transduced with a retroviral vector encoding a chimeric antigen receptor (CAR) consisting of an anti-human tumor-associated antigen (TAA) mesothelin single chain variable fragment (scFv), the intracellular CD3 zeta T-cell receptor domain and the 4-1BB (cd137) costimulatory domain, with potential immunomodulating and antineoplastic activities. After isolation, transduction, expansion in culture, and reintroduction into the patient, the anti-mesothelin CAR vector-transduced autologous T lymphocytes specifically target and kill mesothelin-expressing tumor cells. Mesothelin, a cell surface glycoprotein involved in cell adhesion, is overexpressed in a variety of cancer cell types.

**anti-mesothelin cytolytic fusion protein LMB-100:** An anti-mesothelin (MSLN) recombinant cytolytic fusion protein (cFP) composed of a humanized Fab fragment of anti-MSLN monoclonal antibody SS1 linked to a truncated and de-immunized 24 kDa fragment of the *Pseudomonas* exotoxin (PE) (PE24), with potential antineoplastic activity. Upon intravenous administration of anti-MSLN-PE24 cFP LMB-100, the anti-MSLN moiety targets and binds to MSLN-expressing tumor cells. Upon binding and internalization through endocytosis, the toxin moiety ADP-ribosylates and inactivates eukaryotic elongation factor 2 (eEF2), preventing the elongation step of protein synthesis and leading to both an

inhibition of protein synthesis and an induction of MSLN-expressing tumor cell apoptosis. MSLN, a tumor-associated antigen overexpressed in a variety of cancer cell types, plays a key role in tumor cell proliferation and migration. The engineered PE24 portion of LMB-100 does contain the targeting domain and furin cleavage site, which are needed for cytotoxicity, but most of the translocation domain II is deleted and the catalytic domain III contains point mutations, which result in the deletion and silencing of most T- and B-cell epitopes; therefore, the immunogenicity and toxicity is reduced compared to non-engineered PE toxin, which allows for the administration of larger doses of LMB-100.

#### **anti-mesothelin iCasp9M28z CAR-transduced autologous T**

**lymphocytes:** Genetically modified, autologous T lymphocytes transduced with a retroviral vector encoding a chimeric antigen receptor (CAR) specific for mesothelin linked to the signaling domains for the co-stimulatory molecules CD28 and CD3 zeta, as well as the suicide gene inducible caspase 9 (iCasp9 or iC9), with potential immunomodulating and antineoplastic activities. Upon intravenous administration, anti-mesothelin iCasp9M28z CAR-transduced autologous T lymphocytes specifically target and kill mesothelin-expressing tumor cells. iCasp9 consists of a human FK506 drug-binding domain with an F36V mutation (FKBP12-F36V) linked to human caspase 9. If administration of the T cells lead to unacceptable side effects, a dimerizing agent can be administered which binds to the FKBP12-F36V drug-binding domain and activates caspase 9, resulting in the apoptosis of the administered T-cells. Mesothelin, a tumor-associated antigen, is overexpressed in a variety of cancer cell types.

**anti-mesothelin monoclonal antibody MORAb-009 :** A drug or substance that reduces inflammation (redness, swelling, and pain) in the body. Anti-inflammatory agents block certain substances in the body that cause inflammation. They are used to treat many different conditions. Some anti-inflammatory agents are being studied in the prevention and treatment of cancer.

#### **anti-mesothelin-CAR mRNA-transduced autologous T lymphocytes:**

Autologous chimeric immune receptor (CIR) T cells transfected with anti-mesothelin chimeric T cell receptor mRNA, with potential antineoplastic activity. The anti-mesothelin mRNA encodes a single chain antibody variable fragment (ScFv), the intracellular CD 3 zeta T cell receptor domain

and the 4-1BB (cd137) costimulatory domain. Upon intravenous administration, the anti-mesothelin-CAR mRNA-transduced autologous T lymphocytes may attach to cancer cells expressing mesothelin. This may stimulate the secretion of multiple cytokines and may result in cell lysis of mesothelin-expressing cancer cells. Mesothelin is a cell surface glycoprotein involved in cell adhesion and is overexpressed in many epithelial-derived cancers.

**anti-Met monoclonal antibody mixture Sym015:** A mixture of two humanized immunoglobulin G1 (IgG1) monoclonal antibodies, Hu9006 and Hu9338, which recognize non-overlapping epitopes in the extracellular domain of the human hepatocyte growth factor receptor (MET; HGFR; c-Met), with potential antineoplastic activity. Upon administration, anti-MET monoclonal antibody mixture Sym015 targets and binds to the extracellular domain of MET, thereby preventing the binding of its ligand, hepatocyte growth factor (HGF). This may prevent activation of the receptor and MET-mediated signal transduction pathways. This inhibits MET-dependent tumor cell proliferation. MET, a receptor tyrosine kinase, is overexpressed on the cell surfaces of various solid tumor cell types; it plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis.

**anti-Met/EGFR monoclonal antibody LY3164530:** A monoclonal antibody (MoAb) against human epidermal growth factor receptor (EGFR) and human hepatocyte growth factor receptor (HGFR or c-Met), with potential antineoplastic activity. Upon administration, anti-Met/EGFR MoAb LY3164530 targets and prevents the activation of EGFR and c-Met. This leads to a downstream inhibition of EGFR/c-Met-mediated signal transduction pathways, and prevents cellular proliferation in tumor cells overexpressing EGFR and c-Met. EGFR, a member of the epidermal growth factor family of extracellular protein ligands, may be overexpressed on the cell surface of various solid tumor cell types. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis.

**anti-MMP-9 monoclonal antibody GS-5745:** A humanized monoclonal antibody against matrix metalloproteinase 9 (MMP-9), with potential antineoplastic activity. Upon administration, anti-MMP-9 monoclonal antibody GS-5745 binds to MMP-9 and inhibits its enzymatic activity. This

results in an inhibition of extracellular matrix protein degradation and, potentially, the inhibition of angiogenesis, tumor growth, invasion, and metastasis. MMP-9, a protein belonging to the MMP family, plays a key role in the degradation of collagens and proteoglycans; increased activity of MMP-9 has been associated with increased invasion and metastasis of cancer. Check for active clinical trials using this agent.

**anti-MUC1 CAR-transduced autologous T lymphocytes:** Autologous T lymphocytes transduced with a retroviral vector expressing a chimeric antigen receptor (CAR) consisting of a single chain variable fragment (scFv) against the human tumor-associated epithelial antigen mucin 1 (MUC1), with potential immunomodulating and antineoplastic activities. Autologous PBLs from a patient with MUC1-positive cancer are transduced with a retroviral vector that encodes the CAR gene specific for MUC1. After expansion in culture and reintroduction into the patient, anti-MUC1 CAR-transduced autologous T lymphocytes target and induce selective toxicity in MUC1-expressing tumor cells. MUC-1 is a human, hypoglycosylated tumor-associated antigen (TAA) overexpressed by epithelial cancer cells.

**anti-myeloma monoclonal antibody-DM4 immunoconjugate BT-062:** An immunoconjugate consisting of a monoclonal antibody directed against a highly-expressed myeloma cell surface antigen covalently attached to the maytansinoid DM4, a derivative of the cytotoxic agent maytansine (DM1), with potential antineoplastic activity. Anti-myeloma monoclonal antibody-DM4 immunoconjugate BT-062 binds to an unspecified cell surface antigen highly expressed on myeloma cells; upon internalization the DM4 moiety is released, binding to tubulin and disrupting microtubule assembly/disassembly dynamics, which may result in the inhibition of cell division and cell growth of myeloma tumor cells.

**anti-myostatin monoclonal antibody LY2495655:** A monoclonal antibody against myostatin (MSTN) with potential anti-cachexia activity. Upon administration, anti-myostatin monoclonal antibody LY2495655 binds to and neutralizes the MSTN protein, thereby blocking the MSTN signalling pathway. This may help decrease muscle protein breakdown and muscle weakness and may attenuate cancer cachexia. MSTN, a member of the transforming growth factor-beta (TGF-beta) superfamily, is a negative

regulator of muscle growth and development. Check for active clinical trials using this agent.

**anti-NaPi2b/MMAE antibody-drug conjugate DNIB0600A:** An antibody-drug conjugate (ADC) composed of a monoclonal antibody directed against the sodium-dependent phosphate transport protein 2B (NaPi2b), and covalently linked to monomethyl auristatin E (MMAE), an auristatin derivative and a potent microtubule disrupting agent, with potential antineoplastic activity. Upon administration, the monoclonal antibody moiety of DNIB0600A binds to NaPi2b-expressing tumor cells and is internalized, thereby delivering MMAE intracellularly. Proteolytic cleavage releases MMAE, which then binds to tubulin and inhibits its polymerization, resulting in G2/M phase arrest and tumor cell apoptosis. NaPi2b, a tumor-associated antigen (TAA), overexpressed in a variety of cancer cell types, plays a key role in transport of inorganic phosphate and the maintenance of phosphate homeostasis.

**anti-nectin 4 antibody-drug conjugate ASG-22CE:** An antibody drug conjugate (ADC) containing a human monoclonal antibody AGS-22 targeting the cell adhesion molecule nectin-4 and conjugated to the cytotoxic agent monomethyl auristatin E (MMAE), via a proprietary enzyme-cleavable linker (AGS-22CE), with potential antineoplastic activity. The monoclonal antibody moiety of AGS-22CE selectively binds to nectin-4. After internalization and proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, which results in G2/M phase arrest and induces apoptosis in nectin-4 overexpressing tumor cells. Nectin-4, a tumor associated antigen belonging to the nectin family, is overexpressed in a variety of cancers, including breast, bladder, lung and pancreatic cancer.

**anti-Nectin-4 monoclonal antibody-drug conjugate AGS-22M6E:** An antibody drug conjugate (ADC) containing a fully human monoclonal antibody AGS-22 targeting the cell adhesion molecule nectin-4 and conjugated, via a proprietary enzyme-cleavable linker, to the cytotoxic agent monomethyl auristatin E (MMAE) (AGS-22M6E), with potential antineoplastic activity. The monoclonal antibody moiety of AGS-22M6E selectively binds to nectin-4. After internalization and proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, which results in G2/M phase arrest and induces apoptosis in nectin-4 overexpressing tumor cells. Nectin-4, a tumor associated antigen belonging to the nectin family, is

overexpressed in a variety of cancers, including breast, bladder, lung and pancreatic cancer.

**anti-neuropilin-1 monoclonal antibody MNRP1685A:** A human IgG1 monoclonal antibody directed against neuropilin-1 (NRP1), with potential antiangiogenic and antineoplastic activities. Upon intravenous administration, MNRP1685A specifically targets and binds to NRP1; the antibody-NRP1 complex prevents the subsequent coupling of NRP1 to VEGFR2, thereby potentially inhibiting VEGF-mediated signaling and potentially preventing angiogenesis. In combination with other anti-VEGF therapies, MNRP1685A may enhance their anti-angiogenic effect. NRP1 is a membrane-bound co-receptor normally expressed by endothelial cells and overexpressed by certain tumor cells, and plays a role in angiogenesis, cell survival, migration, and invasion.

**anti-nf-P2X7 antibody ointment BIL-010t:** An ointment formulation composed of a purified sheep immunoglobulin G (IgG) antibody against the non-functional form of the purinergic P2X7 receptor (nf-P2X7), with potential antineoplastic activity. Upon topical application of the anti-nf-P2X7 antibody ointment BIL-010t, the antibody binds to nf-P2X7 and inhibits its antiapoptotic activity. This may induce apoptosis and inhibit the growth of nf-P2X7-overexpressing cancer cells. P2X7, an ATP-gated cation-selective channel, plays a role in the induction of apoptosis; nf-P2X7, is upregulated in a variety of cancer cell types while not expressed on normal, healthy cells and is unable to form a large transmembrane, apoptotic pore upon exposure to ATP and prevents apoptosis.

**anti-nucleolin aptamer AS1411:** A 26-base guanine-rich oligodeoxynucleotide aptamer with potential apoptotic induction activity. Upon administration, anti-nucleolin aptamer AS1411 targets and binds to nucleolin, a nucleolar phosphoprotein which is overexpressed on the surface of certain cancer cells. Via binding to cell surface nucleolin, AS1411 is internalized and may prevent nucleolin from binding to and stabilizing mRNA of the anti-apoptotic BCL2, thereby destabilizing BCL2 mRNA, leading to a reduction in BCL2 protein synthesis. This may lead to the induction of apoptosis.

**anti-NY-ESO1 TCR-transduced autologous CD62L+-derived T lymphocytes:** Human autologous CD62L-positive T lymphocytes transduced with a retroviral vector encoding a T cell receptor (TCR)

specific for the cancer-testis antigen NY-ESO-1, with potential antineoplastic activity. Following leukapheresis, isolation of lymphocytes, expansion ex vivo, transduction, and reintroduction into the patient, the anti-NY-ESO1 TCR-transduced autologous CD62L<sup>+</sup>-derived T lymphocytes bind to NY-ESO-1-overexpressing tumor cells. This may result in cytotoxic T-lymphocyte (CTL)-mediated elimination of NY-ESO-1-positive cancer cells. NY-ESO-1, a tumor associated antigen (TAA), is found in normal testis and on the surface of various tumor cell types. CD62L, also called L-selectin, is a lymphoid homing receptor and differentiation marker and is expressed on a subset of CD8-positive T-lymphocytes; it is involved in the migration of T-lymphocytes to lymph nodes and may improve the efficacy for ex vivo-expanded T-cells following adoptive cell therapy.

**anti-OX40 antibody BMS 986178:** An agonistic monoclonal antibody against the co-stimulatory receptor OX40 (CD134; TNFRSF4), with potential immunostimulatory activity. Upon administration, anti-OX40 monoclonal antibody BMS 986178 selectively binds to and activates the OX40 receptor, by mimicking the action of the endogenous OX40 ligand (OX40L). OX40 receptor activation induces proliferation of memory and effector T-lymphocytes. In the presence of tumor-associated antigens (TAAs), this may promote an immune response against the TAA-expressing tumor cells. OX40, a cell surface glycoprotein and member of the tumor necrosis factor receptor family (TNFRSF), is expressed on T-lymphocytes and provides a co-stimulatory signal for the proliferation and survival of activated T-cells.

**anti-OX40 antibody PF-04518600:** An agonistic antibody that recognizes the co-stimulatory receptor OX40 (CD134;TNFRSF4), with potential immunostimulatory activity. Upon administration, anti-OX40 antibody PF-04518600 selectively binds to and activates OX40; which induces proliferation of memory and effector T-lymphocytes. In the presence of tumor-associated antigens (TAAs), this may promote a T-cell-mediated immune response against TAA-expressing tumor cells. OX40, a cell surface glycoprotein and member of the tumor necrosis factor receptor superfamily (TNFRSF), is expressed on T-lymphocytes and plays an essential role in T-cell activation.

**anti-OX40 monoclonal antibody:** An agonistic monoclonal antibody against receptor OX40 (CD134), with potential immunostimulatory activity. Mimicking the natural OX4 ligand (OX40L), anti-OX40 monoclonal antibody selectively binds to and activates the OX40 receptor. Receptor activation induces proliferation of memory and effector T lymphocytes. In the presence of tumor associated antigens (TAAs), this may promote an immune response against the TAA-expressing tumor cells. OX40, a cell surface glycoprotein and member of the tumor necrosis factor (TNF) receptor family, is expressed by CD4 T cells and provides a costimulatory signal for T cell activation. Check for active clinical trials using this agent.

**anti-OX40 monoclonal antibody MEDI0562:** An agonistic, humanized monoclonal antibody against receptor OX40 (CD134), with potential immunostimulatory activity. Upon administration, anti-OX40 monoclonal antibody MEDI0562 selectively binds to and activates the OX40 receptor. OX40 receptor activation induces proliferation of memory and effector T-lymphocytes. In the presence of tumor-associated antigens (TAAs), this agent may promote an immune response against TAAs-expressing tumor cells. OX40, a cell surface glycoprotein and member of the tumor necrosis factor (TNF) receptor family, is expressed on T-lymphocytes and provides a co-stimulatory signal for the proliferation and survival of activated T-cells.

**anti-p53 T-cell receptor-transduced peripheral blood lymphocytes:** Human autologous peripheral blood lymphocytes (PBLs) transduced with an anti-p53 T cell receptor gene with potential antineoplastic activity. PBLs are harvested from a patient and pulsed with a retroviral vector that encodes the T-cell receptor gene specific for a mutated form of p53. The transduced PBLs are then expanded in culture. When reintroduced to the patient, these modified PBLs express the anti-p53 T cell receptor which binds to mutant p53-overexpressing tumor cells; PBL-mediated tumor growth inhibition may follow. Many tumor cell types overexpress mutant p53 proteins, which are associated with the loss of apoptosis regulation and abnormal cell proliferation.

**anti-PD-1 checkpoint inhibitor PF-06801591:** An inhibitor of the human inhibitory receptor programmed cell death 1 (PD-1; PDCD1), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-PD-1 checkpoint inhibitor PF-06801591 targets and binds to PD-1 and blocks the interaction between PD-1 and its ligands, PD-

1 ligand 1 (PD-L1) and PD-1 ligand 2 (PD-L2). This prevents the activation of PD-1 and its downstream signaling pathways. This may restore immune function through the activation of natural killer (NK) cells and cytotoxic T-lymphocytes (CTLs) against tumor cells. PD-1, an inhibitory receptor belonging to the B7-receptor family, is expressed on activated T-lymphocytes, B-cells and NK cells; it functions as an immune checkpoint that negatively regulates T-cell activation and effector function when activated by its ligands, and plays an important role in tumor evasion from host immunity.

**anti-PD-1 fusion protein AMP-224:** A recombinant B7-DC Fc-fusion protein composed of the extracellular domain of the PD-1 ligand programmed cell death ligand 2 (PD-L2, B7-DC) and the Fc region of human immunoglobulin (Ig) G1, with potential immune checkpoint inhibitory and antineoplastic activities. Anti-PD-1 fusion protein AMP-224 specifically binds to PD-1 on chronically stimulated T-cells and reduces their proliferation. This may restore immune function and may result in the activation of cytotoxic T-cells and cell-mediated immune responses against tumor cells. PD-1, a transmembrane protein of Ig superfamily and inhibitor receptor expressed on activated T-cells, negatively regulates T-cell activation and effector function when activated by its ligands, and plays an important role in tumor evasion from host immunity. AMP-224 does not bind normal activated T-cells.

**anti-PD-1 monoclonal antibody BGB-A317:** A monoclonal antibody directed against the negative immunoregulatory human cell surface receptor programmed cell death 1 (PD-1), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-PD-1 monoclonal antibody BGB-A317 binds to PD-1 and inhibits the binding of PD-1 to the PD-1 ligands programmed cell death-1 ligand 1 (PD-L1), and PD-1 ligand 2 (PD-L2). This prevents the activation of PD-1 and its downstream signaling pathways. This may restore immune function through the activation of both T-cells and T-cell-mediated immune responses against tumor cells. PD-1, a transmembrane protein in the immunoglobulin (Ig) superfamily expressed on activated T-cells, negatively regulates T-cell activation and effector function when activated by its ligands; it plays an important role in tumor evasion from host immunity.

**anti-PD-1 monoclonal antibody MEDI0680:** A humanized immunoglobulin (Ig) G4 monoclonal antibody directed against the negative immunoregulatory human cell surface receptor programmed cell death 1 (PD-1), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-PD-1 monoclonal antibody MEDI0680 binds to and inhibits PD-1 and its downstream signaling pathways. This may restore immune function through the activation of T-cells and cell-mediated immune responses against tumor cells. PD-1, a transmembrane protein in the Ig superfamily expressed on T cells, functions as an immune checkpoint that negatively regulates T-cell activation and effector function when activated by its ligands programmed cell death ligand 1 (PD-L1) or 2 (PD-L2); it plays an important role in tumor evasion from host immunity.

**anti-PD-1 monoclonal antibody PDR001:** A fully humanized monoclonal antibody directed against the negative immunoregulatory human cell surface receptor programmed death-1 (PD-1, PCD-1), with immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-PD1 monoclonal antibody PDR001 binds to PD-1 expressed on activated T-cells and blocks the interaction with its ligands, programmed cell death 1 ligand 1 (PD-L1, PD-1L1) and PD-1 ligand 2 (PD-L2, PD-1L2). The inhibition of ligand binding prevents PD-1-mediated signaling and results in both T-cell activation and the induction of T-cell-mediated immune responses against tumor cells. PD-1, an immunoglobulin (Ig) superfamily transmembrane protein and inhibitory receptor, negatively regulates T-cell activation.

**anti-PD-1 monoclonal antibody REGN2810:** A human monoclonal antibody directed against the negative immunoregulatory human cell surface receptor programmed cell death 1 (PD-1, PCD-1) protein, with potential immune checkpoint inhibitory and antineoplastic activity. Upon administration, anti-PD-1 monoclonal antibody REGN2810 binds to PD-1, inhibits its binding to the PD-1 ligand programmed cell death-1 ligand 1 (PD-L1), and prevents the activation of its downstream signaling pathways. This may restore immune function through the activation of cytotoxic T-cells. PD-1, a transmembrane protein in the immunoglobulin superfamily expressed on activated T-cells, negatively regulates T-cell activation and effector function when activated by its ligand; it plays an important role in tumor evasion from host immunity. Check for active clinical trials using this agent.

**anti-PD-1 monoclonal antibody SHR-1210:** A monoclonal antibody directed against the negative immunoregulatory human cell surface receptor programmed death-1 (PD-1, PCD-1,) with immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-PD-1 monoclonal antibody SHR-1210 binds to and blocks the binding of PD-1, expressed on activated T-lymphocytes, B-cells and natural killer (NK) cells, to its ligands programmed cell death ligand 1 (PD-L1), overexpressed on certain cancer cells, and programmed cell death ligand 2 (PD-L2), which is primarily expressed on antigen presenting cells (APCs). This prevents the activation of PD-1 and its downstream signaling pathways. This restores immune function through the activation of cytotoxic T-lymphocytes (CTLs) and cell-mediated immune responses against tumor cells or pathogens. Activated PD-1 negatively regulates T-cell activation and plays a key role in tumor evasion from host immunity.

**anti-PD-1 monoclonal antibody TSR-042:** A humanized monoclonal antibody directed against the negative immunoregulatory human cell surface receptor programmed cell death 1 (PD-1; programmed death-1), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, anti-PD-1 monoclonal antibody TSR-042 binds to and inhibits PD-1 and its downstream signaling pathways. This may restore immune function through the activation of T cells. PD-1, a transmembrane protein in the Ig superfamily expressed on T cells, functions as an immune checkpoint protein that negatively regulates T-cell activation and T-cell-mediated immune responses when activated by its ligands programmed cell death receptor ligand 1 (PD-L1) or 2 (PD-L2); it plays an important role in tumor evasion from host immunity.

**anti-PD-L1 monoclonal antibody MDX-1105:** A fully human monoclonal antibody directed against programmed cell death-1 ligand 1 (PD-L1) with immune checkpoint inhibitory and potential antineoplastic activities. Anti-PD-L1 monoclonal antibody MDX-1105 binds to PD-L1, blocking its binding to and activation of its receptor programmed death 1 (PD-1), which may enhance the T-cell-mediated immune response to neoplasms and reverse T-cell inactivation. PD-L1 is overexpressed by many human cancer cell types. PD-L1 binding to PD-1 on T-cells suppresses the immune system and results in immune evasion. PD-1, a transmembrane protein expressed on activated T-cells, is a negative regulator of the immune system that limits the expansion and survival of CD8<sup>+</sup> T cells.

**anti-PDGFR alpha monoclonal antibody IMC-3G3 :** A substance that protects cells from the damage caused by free radicals (unstable molecules made by the process of oxidation during normal metabolism). Free radicals may play a part in cancer, heart disease, stroke, and other diseases of aging. Antioxidants include beta-carotene, lycopene, vitamins A, C, and E, and other natural and manufactured substances.

**anti-PDGFR alpha monoclonal antibody MEDI-575:** A humanized monoclonal antibody directed against the platelet-derived growth factor receptor (PDGFR) alpha with potential antineoplastic activity. Anti-PDGFR alpha monoclonal antibody MEDI-575 inhibits activation of the cell-surface tyrosine kinase PDGFR alpha subunit and subsequent triggering of mitogenic signaling pathways, including the JAK/STAT, PI3K/Akt, and MAP kinase pathways. PDGFR alpha acts as a mitogenic signaling receptor for cells of mesenchymal origin and inhibition of receptor activity may inhibit tumor cell proliferation.

**anti-PGF monoclonal antibody RO5323441:** A humanized IgG1 monoclonal antibody directed against the placenta growth factor (PGF), with potential anti-angiogenic and antineoplastic activities. Anti-PGF monoclonal antibody RO5323441 binds to both PGF-1 and -2, thereby inhibiting the binding of PGF-1 and -2 to the vascular endothelial growth factor receptor-1 (VEGFR-1) and subsequent VEGFR-1 phosphorylation. This may result in the inhibition of tumor angiogenesis and tumor cell proliferation. PGF, a member of the VEGF sub-family and a key molecule in angiogenesis and vasculogenesis, is upregulated in many cancers.

**anti-PKN3 siRNA Atu027:** A lipoplexed formulation consisting of short-interfering RNAs (siRNAs) directed against protein kinase N3 (PKN3) encapsulated in cationic and fusogenic lipids with potential antineoplastic activity. Upon administration, cationic and fusogenic lipids promote anti-PKN3 siRNA Atu02 uptake by tumor cells; the siRNAs moieties are subsequently released once inside the cell. The siRNAs bind to PKN3 mRNAs, which may result in the inhibition of translation and expression of the PKN3 protein and, so, growth inhibition of tumor cells that overexpress PKN3. The protein kinase C-related molecule PKN3, downstream in the phosphoinositide-3-kinase (PI3K) signaling pathway, is upregulated in many tumor cells and plays an important role in invasive cell growth and metastasis.

**anti-platelet-derived growth factor receptor alpha monoclonal antibody IMC-3G3:** A drug used to treat infections caused by bacteria and parasites. It is also used in the treatment of some cancers.

**anti-PLGF monoclonal antibody TB-403:** A humanized monoclonal antibody directed against placental growth factor (PLGF) with potential anti-angiogenic and antineoplastic activities. Anti-PLGF monoclonal antibody TB-403 binds to PLGF, inhibiting the binding of PLGF to the vascular endothelial growth factor receptor, which may result in the inhibition of tumor angiogenesis and tumor cell proliferation. PLGF is a protein that belongs to the family of vascular endothelial growth factors (VEGFs).

**anti-PR1/HLA-A2 monoclonal antibody Hu8F4:** A T-cell receptor (TCR)-like monoclonal antibody against PR1, a 9 amino-acid (VLQELNVTV) human leukocyte antigen (HLA)-A2-restricted leukemia-associated antigen (LAA) derived from the myeloid leukemia-associated antigens proteinase 3 (P3) and neutrophil elastase (NE), with potential immunostimulating and antineoplastic activities. Upon administration, anti-PR1/HLA-A2 monoclonal antibody Hu8F4 selectively binds to a combined epitope of the PR1/HLA-A2 complex expressed on acute myeloid leukemia (AML) blasts and leukemic stem cells (LSC), and prevents PR1/HLA-A2-mediated signaling. This induces complement-dependent cytotoxicity (CDC), to a lesser extent, antibody-dependent cell-mediated cytotoxicity (ADCC), and CDC/ADCC-independent cytolysis of myeloid leukemia cells. This results in a reduction of cellular proliferation in PR1/HLA-A2-overexpressing leukemic cells. PR1 in combination with the HLA-A2 molecule is highly expressed on AML blasts and LSCs.

**anti-programmed cell death protein 1 antibody expressing pluripotent killer T lymphocytes:** A specific population of pluripotent killer (PIK) T cells that have been induced to express high levels of antibodies against the negative immunoregulatory human cell surface receptor programmed cell death protein 1 (PD-1; PDCD1; CD279), with potential antitumor activity. Although the exact mechanism(s) of action through which PIK-PD-1 cells exert their effects has yet to be elucidated, upon infusion, these cells secrete antibodies that target PD-1 expressed on the surface of activated T cells and tumor cells. This may block the interaction of PD-1 with its ligands, programmed cell death 1 ligand 1 (PD-L1, PD-1L1; CD274) and PD-1

ligand 2 (PD-L2, PD-1L2; CD273). The inhibition of ligand binding prevents PD-1-mediated signaling and results in both T-cell activation and the induction of T-cell-mediated immune responses against tumor cells. PD-1, an immunoglobulin (Ig) superfamily transmembrane protein and inhibitory receptor, negatively regulates T-cell activation; PD-L1 is overexpressed on certain cancer cells, and PD-L2 is primarily expressed on antigen presenting cells (APCs).

**anti-prolactin receptor antibody LFA102:** A neutralizing antibody against the prolactin receptor (PRLR) with potential antineoplastic activity. Upon administration, anti-prolactin receptor antibody LFA102 binds to PRLR and prevents the binding of the peptide hormone prolactin (PRL) to its receptor. This binding induces an antibody-dependent cellular cytotoxicity (ADCC) and may eventually prevent tumor cell proliferation in PRLR-positive cancer cells. PRLR/PRL signaling pathway is frequently overexpressed in breast and prostate cancer. Check for active clinical trials using this agent.

**anti-PSCA fully human monoclonal antibody AGS-1C4D4:** An IgG1k fully human monoclonal antibody directed against the human prostate stem cell antigen (PSCA) with potential antineoplastic activity. Anti-PSCA fully human monoclonal antibody AGS-1C4D4 selectively targets and binds to PSCA, triggering complement-dependent cell lysis and antibody-dependent cell-mediated cytotoxicity in tumor cells expressing PSCA. PSCA is a glycosyl-phosphatidylinositol (GPI)-linked cell surface antigen found in cancers of the bladder, pancreas, and prostate. Check for active clinical trials using this agent.

**anti-PSMA monoclonal antibody MDX1201-A488:** A recombinant, human monoclonal antibody targeting an extracellular epitope of human prostate specific membrane antigen (PSMA) that is conjugated with a fluorescent dye A488, with potential imaging activity. Upon intravenous administration, the MDX1201 moiety of anti-PSMA monoclonal antibody MDX1201-A488 targets PSMA expressed on cancer cells. Subsequently, the A488 moiety can then be visualized by fluorescence-based imaging and the amount of PSMA-expressing tumor cells can be assessed. A488 is a photostable fluorescent dye with a high quantum yield. PSMA, a tumor-associated antigen and type II transmembrane protein, is expressed on the

membrane of prostatic epithelial cells and overexpressed on prostate tumor cells.

**anti-PSMA monoclonal antibody-MMAE conjugate:** An antibody-drug conjugate (ADC) containing a fully human monoclonal antibody directed against prostate-specific membrane antigen (PSMA), conjugated via a stable, enzyme-cleavable linker to monomethylauristatin E (MMAE), an auristatin derivative and a potent microtubule inhibitor, with potential antineoplastic activity. The monoclonal antibody moiety of this conjugate selectively binds to PSMA, a protein which is abundantly expressed on the surface of metastatic and hormone-refractory prostate cancer cells. Upon internalization and proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, resulting in G2/M phase arrest and tumor cell apoptosis.

**anti-PSMA/CD3 BiTE monoclonal antibody MT112:** A recombinant T-cell engaging bispecific monoclonal antibody (BiTE) directed against human prostate specific membrane antigen (PSMA) and the CD3 epsilon subunit of the T cell receptor complex, with potential immunostimulating and antineoplastic activities. Anti-PSMA/CD3 BiTE monoclonal antibody MT112 possesses two antigen-recognition sites, one for PSMA, and one for the CD3 complex, a group of T cell surface glycoproteins that complex with the T cell receptor (TCR). This bispecific monoclonal antibody brings PSMA-expressing tumor cells and cytotoxic T lymphocytes (CTLs) together, which may result in the CTL-mediated cell death of PSMA-expressing cells. PSMA, a tumor associated antigen, is overexpressed on the surface of metastatic and hormone-refractory prostate cancer cells.

**anti-PSMA/CD3 monoclonal antibody MOR209/ES414:** An anti-prostate specific membrane antigen (PSMA)/anti-CD3 bispecific humanized monoclonal antibody, with potential immunostimulatory and antineoplastic activities. Anti-PSMA/CD3 monoclonal antibody MOR209/ES414 possesses two antigen-recognition sites, one for the CD3 complex, a group of T-cell surface glycoproteins that complex with the T-cell receptor (TCR), and one for PSMA, a tumor-associated antigen (TAA) overexpressed on the surface of prostate tumor cells. Upon intravenous administration of MOR209/ES414, this bispecific antibody simultaneously binds to both CD3-expressing T-cells and PSMA-expressing cancer cells, thereby crosslinking PSMA-expressing tumor cells and cytotoxic T-

lymphocytes (CTLs). This results in CTL-mediated cancer cell lysis of prostate cancer cells expressing PSMA.

**anti-RSPO3 monoclonal antibody OMP-131R10:** An immunoglobulin (Ig) G1 humanized monoclonal antibody targeting human R-spondin 3 (RSPO3), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, the anti-RSPO3 monoclonal antibody OMP-131R10 targets and binds to RSPO3 expressed on tumor cells. This prevents the activation of RSPO3, and inhibits both the binding of RSPO3 to leucine-rich repeat-containing G-coupled receptors (LGRs) and the activation of the RSPO-LGR pathway. This may result in an inhibition of both cancer stem cell (CSC) survival and the proliferation of cancer cells in which this pathway is overactivated. The RSPO-LGR pathway is a CSC pathway activated in a variety of cancer cell types.

**anti-sCLU monoclonal antibody AB-16B5:** A humanized, immunoglobulin (Ig) G2 monoclonal antibody against the secreted form of human clusterin (sCLU) expressed by tumor cells, with potential antineoplastic and anti-metastatic activities. Upon administration, anti-sCLU monoclonal antibody AB-16B5 specifically binds to tumor-associated sCLU and inhibits its activity. This inhibits both the sCLU-mediated signal transduction pathways and epithelial-to-mesenchymal transition (EMT), which leads to the inhibition of tumor cell migration and invasion. In addition, AB-16B5 enhances chemo-sensitivity. sCLU, a heterodimeric disulfide-linked glycoprotein overexpressed by various types of cancer cells, contributes to proliferation and survival of cancer cells, and stimulates tumor cell EMT.

**anti-SEMA4D monoclonal antibody VX15/2503:** A humanized IgG4 monoclonal antibody against the semaphorin 4D (SEMA4D; CD100) with potential immunomodulating and antineoplastic activities. Upon administration, anti-SEMA4D monoclonal antibody VX15/2503 binds to and neutralizes SEMA4D, thereby preventing binding of SEMA4D to its receptor plexin-B1 (PLXNB1). By blocking the interaction of SEMA4D and PLXNB1, VX15/2503 may cause an inhibition of endothelial cell activation and migration, eventually leading to an inhibition of angiogenesis and tumor cell proliferation. Semaphorin 4D, a large cell surface antigen found on the resting T-cell and overexpressed in a variety of tumor cell types, plays an important role in vascular growth, tumor progression,

invasion and immune cell regulation. Check for active clinical trials using this agent.

**anti-SLITRK6 monoclonal antibody-MMAE conjugate AGS15E:** An antibody-drug conjugate (ADC) composed of a monoclonal antibody directed against SLIT and NTRK-like protein 6 (SLITRK6), covalently linked to the cytotoxic agent monomethyl auristatin E (MMAE), an auristatin derivative and a potent inhibitor of microtubule polymerization, with potential antineoplastic activity. Upon intravenous administration, the monoclonal antibody moiety of AGS15E binds to SLITRK6 expressed on tumor cells, which facilitates both AGS15E internalization and the intracellular delivery of MMAE. Upon cleavage, MMAE binds to tubulin and inhibits its polymerization, which results in G2/M phase arrest and tumor cell apoptosis. SLITRK6, a member of the Slitrk family of leucine-rich repeat (LRR) neuronal transmembrane proteins, is minimally expressed in normal tissue but overexpressed in a variety of cancers, including bladder cancer, some forms of lung cancer, breast cancer and glioblastoma.

**anti-TA-MUC1 monoclonal antibody PankoMab:** A humanized monoclonal antibody recognizing the tumor-specific epitope of mucin-1 (TA-MUC1), with potential antineoplastic activity. Anti-TA-MUC1 monoclonal antibody PankoMab targets and binds to the TA-MUC1 epitopes expressed on the cell surface of tumor cells, thereby potentially activating the immune system to induce an antibody-dependent cellular cytotoxicity (ADCC) against the TA-MUC1-expressing tumor cells. TA-MUC1 is designated to MUC1 epitopes with O-glycosylated carbohydrate-induced conformational structures that are tumor-specific, thereby enabling PankoMab to differentiate between tumor MUC1 and non-tumor MUC1 epitopes.

**anti-TF monoclonal antibody ALT-836:** A recombinant human-mouse chimeric monoclonal antibody against human tissue factor (TF), with potential antiangiogenic, anticoagulant and anti-inflammatory activities. Upon administration, anti-TF monoclonal antibody ALT-836 binds to TF or the TF-Factor VIIa (FVIIa) complex preventing binding and activation of Factor X (FX) and Factor IX (FIX). This may prevent thrombin formation and cancer-associated venous thromboembolism, and may inhibit angiogenesis and tumor cell proliferation. TF, a transmembrane protein and procoagulant, is overexpressed in many tumor cell types, and is correlated

with metastasis, angiogenesis, tumor growth and tumor-associated thrombosis.

**anti-TF monoclonal antibody-MMAE conjugate:** An antibody-drug conjugate (ADC) comprised of a monoclonal antibody against human tissue factor (TF) covalently coupled, via a protease-cleavable peptide linker, to monomethyl auristatin E (MMAE), an auristatin derivative and potent microtubule disrupting agent, with potential antiangiogenic, anticoagulant and antineoplastic activities. Upon administration, anti-TF monoclonal antibody-MMAE conjugate binds to cell surface TF and is internalized. The antibody moiety prevents binding of TF to factor VIIa (FVIIa) and interferes with the activation of factor X (FX) into FXa. This may prevent thrombin formation and cancer-associated venous thromboembolism, and may inhibit angiogenesis and tumor cell proliferation. After internalization of the agent, the MMAE moiety is released by proteolytic cleavage. It then binds to tubulin and inhibits its polymerization, which results in G2/M phase arrest and apoptosis. TF, a transmembrane protein and initiator of the coagulation cascade, is overexpressed in many tumor cells and tumor-resident endothelial cells. Expression of TF is correlated with metastasis, angiogenesis, tumor cell growth and tumor-associated thrombosis.

**anti-TGF-beta monoclonal antibody GC1008 :** Treatment with antisense oligonucleotides. These are small pieces of DNA or RNA that can bind to specific molecules of RNA. This blocks the cell's ability to use the RNA to make a protein or work in other ways. Antisense oligonucleotides are being studied in the treatment of many types of cancer. Also called antisense oligonucleotide therapy.

**anti-TGF-beta RII monoclonal antibody IMC-TR1:** A monoclonal antibody directed against transforming growth factor-beta receptor type II (TGF-beta RII) with potential antineoplastic activity. Anti-TGF-beta RII monoclonal antibody IMC-TR1 specifically targets and binds to TGF-beta R11, thereby preventing the activation of TGF-beta RII-mediated signaling pathways. TGF-beta RII is mutated in a number of cancer cell types and is involved in cancer cell proliferation and tumor progression.

**anti-thymocyte globulin:** A purified gamma immunoglobulin (IgG) with immunosuppressive activity. Obtained from rabbits that have been immunized with human thymocytes, antithymocyte globulin specifically recognizes and destroys T lymphocytes. Although the exact mechanism of

action is not completely understood, it appears to involve T lymphocyte clearance from the circulation and modulation of T lymphocyte activity. Administering antithymocyte globulin with chemotherapy prior to stem cell transplantation may reduce the risk of graft-versus-host disease.

**anti-thyroglobulin mTCR-transduced autologous peripheral blood lymphocytes:** Peripheral blood lymphocytes (PBLs) transduced with a gene encoding for a thyroglobulin (TG)-specific murine T-cell receptor (mTCR), with potential antineoplastic activity. PBLs are harvested from a thyroid cancer patient, and transfected with a retroviral vector that encodes the mTCR gene specific for the human TG antigen. The transduced PBLs are then expanded in culture. When reintroduced to the patient, these anti-TG mTCR-expressing PBLs target and bind to TG-overexpressing tumor cells, which results in both cytokine secretion and tumor cell lysis. TG is a thyroid-specific protein. Check for active clinical trials using this agent.

**anti-TIM-3 monoclonal antibody TSR-022:** A monoclonal antibody against the inhibitory T-cell receptor, T-cell immunoglobulin and mucin domain-containing protein 3 (TIM-3; TIM3; hepatitis A virus cellular receptor 2; HAVCR2), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, the anti-TIM-3 monoclonal antibody TSR-022 binds to TIM-3 expressed on certain T cells, including tumor infiltrating lymphocytes (TILs). This abrogates T-cell inhibition, activates antigen-specific T lymphocytes and enhances cytotoxic T-cell-mediated tumor cell lysis, which results in a reduction in tumor growth. TIM-3, a transmembrane protein and immune checkpoint receptor, is associated with tumor-mediated immune suppression. Check for active clinical trials using this agent.

**anti-tissue factor monoclonal antibody MORAb-066:** A humanized monoclonal antibody against human tissue factor (TF), with potential antiangiogenic, anticoagulant and anti-inflammatory activities. Upon administration, anti-TF monoclonal antibody MORAb-066 binds to TF and prevents Factor VIIa (FVIIa) from binding, thereby interfering with the activation of Factor X (FX) into FXa. This may prevent thrombin formation and cancer-associated venous thromboembolism, and may inhibit angiogenesis and tumor cell proliferation. TF, a transmembrane protein and initiator of the coagulation cascade, is overexpressed in many tumor cells

and tumor endothelial cells; its expression is correlated with metastasis, angiogenesis, tumor cell growth and tumor-associated thrombosis.

**anti-TLR2 monoclonal antibody OPN-305:** A humanized immunoglobulin (Ig) G4 monoclonal antibody directed against toll-like receptor type 2 (TLR2), with potential anti-inflammatory and antineoplastic activities. Upon intravenous administration, OPN-305 binds to the ligand-binding site on the TLR2 receptor and blocks the activation of TLR2-mediated innate immunity signaling. This prevents the TLR2-mediated production of pro-inflammatory mediators and prevents inflammation. TLR2, a member of the TLR family primarily found on leukocytes, plays a key role in the activation of innate immunity; it is overexpressed in various inflammatory diseases and in certain types of cancer.

**anti-TRAIL R1-mAb :** A substance being studied in the treatment of breast cancer that has spread to other parts of the body. It is also being studied in the treatment of other cancers and conditions. Anti-TGF-beta monoclonal antibody GC1008 binds to a protein called transforming growth factor-beta (TGF-beta), which is found on some cancer cells. Anti-TGF-beta monoclonal antibody GC1008 may help keep cancer cells from growing and prevent the growth of new blood vessels that tumors need to grow. It is a type of monoclonal antibody and a type of antiangiogenesis agent. Also called fresolimumab and GC1008.

**anti-TRAIL R2 mAb HGS-ETR2 :** Serum from blood that contains antibodies that bind to human T cells. Antithymocyte globulin is given to a patient before a stem cell transplant to kill T cells and lower the risk of graft-versus-host disease (GVHD). It is also used to treat GVHD and after a kidney transplant to help keep the body from rejecting the kidney. Also called antilymphocyte globulin.

**anti-transthyretin siRNA ALN-TTR02:** A lipid nanoparticle (LNP)-based formulation consisting of small-interfering RNAs (siRNAs) directed against transthyretin (TTR)-encapsulated in lipids, which has potential use in the treatment of TTR-mediated amyloidosis (ATTR). Upon intravenous administration of ALN-TTR02, the lipid formulation promotes the uptake by cells. The siRNAs bind to TTR mRNAs, which may result in the inhibition of both the translation and expression of the TTR protein. ATTR is caused by mutations in the TTR gene and results in the formation of

abnormal amyloid proteins that accumulate in and cause damage to various body organs and tissues.

**anti-TWEAK monoclonal antibody RO5458640:** A humanized monoclonal antibody directed against the apoptotic ligand TNF-like weak inducer of apoptosis (TWEAK) with potential antineoplastic activity. Anti-TWEAK monoclonal antibody RO5458640 binds to TWEAK and prevents the binding of TWEAK to its receptor, FGF-inducible molecule 14 (Fn14), thereby blocking the TWEAK/Fn14 signaling. This may prevent tumor cell proliferation, invasion, migration and angiogenesis. TWEAK has pleiotropic effects, mediating proinflammatory and pro-angiogenic activity as well as stimulation of invasion, migration, and survival mediated via its receptor Fn14; Fn14 is expressed at relatively low levels in normal tissues, but is elevated in tumor cells and locally in injured and diseased tissues.

**anti-VEGF anticalin PRS-050-PEG40:** A pegylated, proprietary lipocalin that targets human vascular endothelial growth factor (VEGF), with potential antineoplastic activity. Pegylated anti-VEGF anticalin PRS-050 specifically targets and binds to VEGF receptor 2 (VEGFR2 or KDR), thereby preventing its activity. This may inhibit angiogenesis and eventually reduce tumor cell growth. Check for active clinical trials using this agent.

**anti-VEGF-C monoclonal antibody VGX-100:** A fully human monoclonal antibody directed against the human vascular endothelial growth factor C (VEGFC or Flt4 ligand) with potential antiangiogenic activity. Anti-VEGFC monoclonal antibody VGX-100 specifically binds to and inhibits VEGFC protein, thereby preventing its binding to VEGFR3 (FLT4) or VEGFR2 (KDR or FLK1). This may prevent VEGFC-mediated signaling and may lead to the inhibition of vascular and lymphatic endothelial cell proliferation. The inhibition of tumor angiogenesis and lymphangiogenesis may eventually decrease tumor cell proliferation and prevent metastasis. VEGFC is overexpressed in a variety of cancer cells, and is associated with increased invasiveness and decreased survival. Check for active clinical trials using this agent.

**anti-VEGF/ANG2 nanobody BI 836880:** A nanobody directed against angiopoietin-2 (Ang2; ANGPT2)- and vascular endothelial growth factor (VEGF)-derived peptides, with potential antiangiogenic and antineoplastic activities. Anti-VEGF/ANG2 nanobody BI 836880 binds to Ang2 and

VEGF and inhibits receptor binding; this prevents Ang2- and VEGF-mediated signaling and inhibits both tumor angiogenesis and tumor cell proliferation. Both VEGF and Ang2 are upregulated in a variety of cancer cell types and each plays a crucial role in angiogenesis. The nanobody is based on functional fragments of single-chain antibodies. Check for active clinical trials using this agent.

**anti-VEGFR monoclonal antibody :** Having to do with stopping abnormal cell growth.

**anti-VEGFR-2 fully human monoclonal antibody IMC-1121B :** A type of anticancer drug that blocks cell growth by interfering with DNA, the genetic material in cells. Also called anticancer antibiotic and antineoplastic antibiotic.

**anti-VEGFR2-CAR retroviral vector-transduced autologous T lymphocytes:** Autologous human CD8-positive T-lymphocytes transduced with a recombinant retroviral vector encoding a chimeric T cell receptor (chimeric antigen receptor or CAR) consisting of an anti-vascular endothelial growth factor receptor type 2 (VEGFR2) scFv (single chain variable fragment), linked to the transmembrane domain of human CD8alpha and coupled to the costimulatory signaling domains of both CD28 and 4-1BB (CD137), and the CD3 zeta chain of the T-cell receptor (TCR), with potential immunostimulating and antineoplastic activities. Autologous peripheral blood lymphocytes (PBLs) from a patient with VEGFR2-positive cancer are pulsed with a retroviral vector that encodes the CAR gene specific for VEGFR2. After expansion in culture and reintroduction into the patient, the anti-VEGFR2 CAR-gene engineered CD8+ lymphocytes express anti-VEGFR2-CAR on their cell surfaces and bind to the VEGFR2 antigen on tumor cell surfaces. Subsequently, VEGFR2-expressing tumor cells are lysed. VEGFR2, a receptor tyrosine kinase (RTK) overexpressed by a variety of cancer cell types, belongs to the VEGFR superfamily and plays key roles in tumor cell proliferation, survival, invasion and tumor angiogenesis. The co-stimulatory molecules are required for optimal T-cell activation.

**anti-VEGFR3 monoclonal antibody IMC-3C5:** A fully-human monoclonal antibody directed against human vascular endothelial growth factor receptor 3 (VEGFR-3; Flt-4) with antiangiogenic activity. Anti-VEGFR-3 monoclonal antibody IMC-3C5 specifically binds to and inhibits

VEGFR-3, which may result in inhibition of tumor angiogenesis and a decrease in tumor nutrient supply. VEGFR-3 plays a critical role in the embryonic vascular system development but is restricted postnatally to endothelial cells of lymphatic vessels and found to be expressed in many solid and hematologic malignancies.

**anti-VISTA monoclonal antibody JNJ 61610588:** A human monoclonal antibody against the protein V-domain immunoglobulin (Ig) suppressor of T-cell activation (VISTA; programmed death 1 homolog; PD1H; PD-1H), with potential negative checkpoint regulatory and antineoplastic activities. Upon administration, JNJ 61610588 targets and binds to VISTA. This inhibits VISTA signaling, abrogates the VISTA-induced suppression of T-lymphocyte-mediated immune responses, enhances cytotoxic T-cell responses against tumor cells and inhibits tumor cell growth. VISTA, mainly expressed on hematopoietic cells, plays a key role in immunosuppression.

**anti-von Willebrand factor nanobody:** A humanized, bivalent anti-von Willebrand factor (VWF) nanobody with potential anti-platelet activity. Anti-von Willebrand factor nanobody specifically binds to the A1 domain of the VWF molecule, thereby inhibiting and neutralizing VWF activity. This prevents the interaction of VWF with the platelet glycoprotein (Gp)Ib-IX-V receptor and prevents VWF-mediated platelet aggregation. VWF is a glycoprotein and plays a key role in blood coagulation. Increased VWF, which is seen in a number of diseases, is associated with an increased risk in thrombosis. The nanobody formulation allows for rapid distribution, onset of action and clearance. The nanobody is based on the smallest functional fragments of single-chain antibodies that naturally occur in the Camelidae family.

**antiandrogen :** A type of antibiotic that comes from certain types of Streptomyces bacteria. Anthracyclines are used to treat many types of cancer. Anthracyclines damage the DNA in cancer cells, causing them to die. Daunorubicin, doxorubicin, and epirubicin are anthracyclines.

**antiandrogen therapy :** A type of anticancer drug.

**antiangiogenesis :** A substance that keeps androgens (male hormones) from binding to proteins called androgen receptors, which can be found in prostate cells and cells of some other tissues. Treatment with antiandrogens may stop prostate cancer cells from growing. Examples of antiandrogens

used to treat prostate cancer are flutamide, bicalutamide, enzalutamide, and nilutamide.

**antiangiogenesis agent :** Treatment with drugs to block the action of androgens (male hormones) in the body. Androgens, such as testosterone, bind to proteins called androgen receptors, which are found in prostate cancer cells and in cells of some other tissues. Antiandrogen therapy keeps androgens from binding to these receptors and may keep cancer cells from growing. It is used to treat prostate cancer.

**antiangiogenic :** Prevention of the growth of new blood vessels.

**antiangiogenic drug combination TL-118:** A proprietary, oral suspension containing a combination of agents comprised of a nonsteroidal anti-inflammatory agent, an alkylating agent, a histamine H<sub>2</sub> antagonist and a sulfonamide with potential anti-angiogenic and antineoplastic activities. Antiangiogenic drug combination TL-118 is administered as a specific dosing regimen and may result in a synergistic effect and reduce angiogenesis and inhibit tumor cell proliferation. Check for active clinical trials using this agent.

**antianxiety agent :** A drug or substance that keeps new blood vessels from forming. In cancer treatment, antiangiogenesis agents may prevent the growth of new blood vessels that tumors need to grow. Also called angiogenesis inhibitor.

**antiapoptotic :** Having to do with reducing the growth of new blood vessels.

**antiaromaticity:** The unusual instability that results from a continuous cyclic system of  $4n$  pi electrons (where  $n$  is any integer).

**antibacterial :** A drug used to treat symptoms of anxiety, such as feelings of fear, dread, uneasiness, and muscle tightness, that may occur as a reaction to stress. Most antianxiety agents block the action of certain chemicals in the nervous system. Also called anxiolytic and anxiolytic agent.

**Antibiotic:** A natural product that inhibits bacterial growth (is bacteriostatic) and sometimes results in bacterial death (is bacteriocidal).  
OR One of many different organic compounds that are formed and secreted by various species of microorganisms and plants, are toxic to other species, and presumably have a defensive function.

**antibiotic :** Something that prevents apoptosis. Apoptosis is a type of cell death in which a series of molecular steps in a cell leads to its death.

**Antibiotic resistance:** The ability of a microorganism to withstand the effects of antibiotic medicines or When antibiotics are incorrectly used (to treat bacteria that are not sensitive to the specific antibiotic or to treat viruses, which NEVER respond to antibiotics) and are not taken for the full term prescribed (usually from 5 to 21 days, depending on the specific antibiotic and disease being treated), surviving pathogenic organisms develop immunity to the antibiotic and pass it along to descendants and might choose to pass the trait along to unrelated bacteria via a process known as horizontal gene transfer.

**antibiotic SQ109:** An orally available, acid-stable diamine antibiotic, with potential antimicrobial activity against a variety of bacteria including *Helicobacter pylori* (*H. pylori*) and *Mycobacterium tuberculosis* (*M. tuberculosis*). As an ethambutol analogue with asymmetric structure, SQ109 does not act on the same target as ethambutol. However, this agent interferes with cell wall synthesis, thereby causing weakening of the cell wall and ultimately cell lysis.

**Antiblock:** Additive used to give surface of film a rougher texture at a microscopic level. Without additives, film has tacky texture similar to cling wrap. Prevents film from sticking together, or “blocking”.

**ANTIBLOCK AGENT:** Additive incorporated in film to prevent the adhesion (sticking) between touching layers of film during fabrication, storage, or use. For example, these additives can be diatomaceous earth, silica, and talc. OR Additive used to improve the electrical conductivity of the plastic extrusions or other plastic profiles so that any charge can readily go to ground and not remain in the part.

**antibodies:** proteins synthesized by plasma cells that are released into the circulation to the antigen site and destroy the microorganisms by chemically reacting with them.

**Antibody:** A specific protein that interacts with a foreign substance (antigen) in a specific way. OR A defense protein synthesized by the immune system of vertebrates. See also immunoglobulin. OR A protein produced in body in response, and specific for, a foreign substance or antigen.

**antibody** : A substance that kills bacteria or stops them from growing and causing disease.

**antibody therapy** : A drug used to treat infections caused by bacteria and other microorganisms.

**antibody-dependent cell-mediated cytotoxicity** : A protein made by plasma cells (a type of white blood cell) in response to an antigen (a substance that causes the body to make a specific immune response). Each antibody can bind to only one specific antigen. The purpose of this binding is to help destroy the antigen. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy the antigen. An antibody is a type of immunoglobulin.

**antibody-dependent cellular cytotoxicity** : Treatment that uses antibodies to help the body fight cancer, infection, or other diseases. Antibodies are proteins made by the immune system that bind to specific markers on cells or tissues. Monoclonal antibodies are a type of antibody made in the laboratory that can be used in diagnosis or treatment. In cancer treatment, monoclonal antibodies may kill cancer cells directly, they may block development of tumor blood vessels, or they may help the immune system kill cancer cells.

**antibody-drug conjugate** : A type of immune reaction in which a target cell or microbe is coated with antibodies and killed by certain types of white blood cells. The white blood cells bind to the antibodies and release substances that kill the target cells or microbes. Also called ADCC and antibody-dependent cellular cytotoxicity.

**antibody-drug conjugate ABBV-085**: An antibody-drug conjugate (ADC) composed of a proprietary monoclonal antibody against a tumor-associated antigen (TAA) linked to an as of yet undisclosed cytotoxic agent, with potential antineoplastic activity. Upon intravenous administration, the monoclonal antibody moiety of ABBV-085 targets and binds to the TAA expressed on tumor cells. Upon binding and internalization, the cytotoxic agent is released and kills the TAA-expressing cancer cells, through an as of yet unknown mechanism of action. Check for active clinical trials using this agent.

**antibody-drug conjugate ADCT-402**: An antibody-drug conjugate (ADC) consisting of an anti-CD19 humanized monoclonal antibody conjugated, via a cleavable linker comprised of valine-alanine and maleimide, to a

cytotoxic, cross-linking agent pyrrolobenzodiazepine (PBD) dimer, which targets DNA minor grooves, with potential antineoplastic activity. Upon administration, the monoclonal antibody portion of anti-CD19-PBD conjugate ADCT-402 targets the cell surface antigen CD19 on various cancer cells. Upon antibody/antigen binding and internalization, the cytotoxic PBD moiety is released. The imine groups of the PBD moiety bind to the N2 positions of guanines on opposite strands of DNA. This induces interstrand cross-links in the minor groove of DNA and inhibits DNA replication, which inhibits the proliferation of CD19-overexpressing tumor cells. CD19, a transmembrane receptor and tumor-associated antigen (TAA), is expressed on a number of B-cell-derived cancers.

**antibody-drug conjugate BAY79-4620:** A monoclonal antibody (MoAb) directed against the MN protein with potential antineoplastic activity. Upon administration of BAY79-4620, this MoAb may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response and an antibody mediated cellular cytotoxicity (ADCC) against MN-expressing tumor cells. MN, a transmembrane glycoprotein, is expressed in some human carcinomas and appears to be involved in cancer cell proliferation and transformation.

**antibody-drug conjugate DFRF4539A:** An antibody-drug conjugate (ADC) composed of a monoclonal antibody directed against a specific myeloma antigen and conjugated to monomethyl auristatin E (MMAE), an auristatin derivative and a potent microtubule inhibitor, with potential antineoplastic activity. Upon administration, the monoclonal antibody moiety of DFRF4539A selectively binds to a specific protein expressed on the surface of myeloma cells. Upon internalization and proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, which results in G2/M phase arrest and tumor cell apoptosis.

**antibody-drug conjugate PF-06647020:** An antibody-drug conjugate (ADC) composed of a proprietary monoclonal antibody against an unnamed tumor-associated antigen (TAA) linked to an as of yet undisclosed cytotoxic agent, with potential antineoplastic activity. Upon intravenous administration, the monoclonal antibody moiety of PF-06647020 targets and binds to the TAA expressed on tumor cells. Upon binding and internalization, the cytotoxic agent is released and kills the TAA-expressing

cancer cells, through an as of yet unknown mechanism of action. Check for active clinical trials using this agent.

**antibody-drug conjugate SC-002:** An antibody-drug conjugate (ADC) composed of an as of yet publicly unknown monoclonal antibody against a tumor-associated antigen (TAA) linked to an as of yet undisclosed cytotoxic agent, with potential antineoplastic activity. Upon intravenous administration, the monoclonal antibody moiety of SC-002 targets and binds to the TAA expressed on tumor cells. Upon binding and internalization, the cytotoxic agent is released and kills the TAA-expressing cancer cells, through an as of yet unknown mechanism of action. Check for active clinical trials using this agent.

**antibody-drug conjugate SC-003:** An antibody-drug conjugate (ADC) composed of a proprietary monoclonal antibody against a tumor-associated antigen (TAA) linked to an as of yet undisclosed cytotoxic agent, with potential antineoplastic activity. Upon intravenous administration, the monoclonal antibody moiety of SC-003 targets and binds to the TAA expressed on tumor cells. Upon binding and internalization, the cytotoxic agent is released and kills the TAA-expressing cancer cells, through an as of yet unknown mechanism of action. Check for active clinical trials using this agent.

**Antibody-drug conjugates:** Drugs that are covalently linked to antibodies. One purpose is to enhance drug site-specificity.

**antibody-mediated immunity:** the process by which antibodies bind to antigens and destroy the microorganisms in a highly specific manner.

**antibonding molecular orbital:** a molecular orbital that contains more energy than the atomic orbitals from which it was formed; in other words, an electron is less stable in an antibonding orbital than it is in its original atomic orbital.

**antibonding orbital:** A molecular orbital that can be described as the result of destructive interference of atomic orbitals on bonded atoms. Antibonding orbitals have energies higher than the energies its constituent atomic orbitals would have if the atoms were separate.

**anticachexia :** A type of immune reaction in which a target cell or microbe is coated with antibodies and killed by certain types of white blood cells. The white blood cells bind to the antibodies and release substances that kill

the target cells or microbes. Also called ADCC and antibody-dependent cell-mediated cytotoxicity.

**anticachexia agent MT-102:** A small molecule with potential anticachexia activity. The anticachexia agent MT-102 may increase protein synthesis and decrease muscle protein breakdown. This may result in improved body weight, muscle mass and may improve weakness and fatigue associated with cancer-related cachexia.

**anticancer antibiotic :** A substance made up of a monoclonal antibody chemically linked to a drug. The monoclonal antibody binds to specific proteins or receptors found on certain types of cells, including cancer cells. The linked drug enters these cells and kills them without harming other cells. Some antibody-drug conjugates are used to treat cancer. Also called ADC.

**anticancer therapy :** Describes a drug or effect that works against cachexia (loss of body weight and muscle mass).

**anticarcinogenic :** A type of anticancer drug that blocks cell growth by interfering with DNA, the genetic material in cells. Also called antineoplastic antibiotic and antitumor antibiotic.

**antichlor:** A chemical compound that reacts with chlorine-based bleaches to stop the bleaching. Thiosulfate compounds are antichlors.

**Anticipated transient without scram (ATWS):** An ATWS is one of the "worst case" accidents, consideration of which frequently motivates the NRC to take regulatory action. Such an accident could happen if the scram system (which provides a highly reliable means of shutting down the reactor) fails to work during a reactor event (anticipated transient). The types of events considered are those used for designing the plant.

**anticline:** parallel rock layers folded upward, like an arch.

**anticoagulant :** A substance being studied in the treatment of some types of leukemia and lymphoma. Anti-CD45 monoclonal antibody binds to a protein called CD45, which is found on most types of blood cells and some types of leukemia and lymphoma cells. Anti-CD45 monoclonal antibody may help the immune system kill cancer cells. It is a type of monoclonal antibody.

**anticodon:** the complementary codon present on a tRNA molecule. OR A sequence of three bases on the transfer RNA that pair with the bases in the

corresponding codon on the messenger RNA. OR Three-nucleotide sequence of tRNA that base-pairs with a codon in mRNA.

**anticonvulsant** : An antibody against carcinoembryonic antigen (CEA), a protein present on certain types of cancer cells.

**anticyclone (high-pressure area)**: An atmospheric high-pressure closed circulation with clockwise rotation in the Northern Hemisphere, counterclockwise in the Southern Hemisphere, and undefined at the Equator.

**antidepressant** : A substance that is used to prevent and treat blood clots in blood vessels and the heart. Also called blood thinner.

**antidiarrheal** : A drug or other substance used to prevent or stop seizures or convulsions. Also called antiepileptic.

**antiemetic** : A drug used to treat depression.

**antiepileptic** : A drug that prevents or reduces nausea and vomiting.

**antiestrogen** : A substance being studied in the treatment of certain types of head and neck cancer. Anti-EpCAM-Pseudomonas-exotoxin fusion protein is made by linking a monoclonal antibody fragment to a toxic protein that may kill cancer cells. It binds to EpCAM (a protein on the surface of epithelial cells and some types of cancer cells). Also called Proxinium and VB4-845.

**ANTIFOAM**: An additive used to suppress the foaming characteristics of a formulation in service.

**Antifogger**: An additive that prevents condensation of moisture on glass and other transparent materials, such as windshields or lenses.

**antifolate** : A drug or other substance used to prevent or stop seizures or convulsions. Also called anticonvulsant.

**antifungal** : A substance that keeps cells from making or using estrogen (a hormone that plays a role in female sex characteristics, the menstrual cycle, and pregnancy). Antiestrogens may stop some cancer cells from growing and are used to prevent and treat breast cancer. They are also being studied in the treatment of other types of cancer. An antiestrogen is a type of hormone antagonist. Also called estrogen blocker.

**antifungal agent F901318**: A systemic antifungal agent that can potentially be used in the treatment of systemic fungal infections.

**Antigen:** A foreign substance that elicits the synthesis of an antibody. OR A molecule capable of eliciting the synthesis of a specific antibody in vertebrates. Or The descriptor applied to any substance that produces a specific immune response and is recognised as foreign by the immune system when it enters the tissue of an animal or human. OR A foreign substance that triggers antibody formation and is bound by the corresponding antibody. or A type of drug that stops cells from using folic acid to make DNA and may kill cancer cells. Certain antifolates are used to treat some types of cancer and inflammatory conditions, such as rheumatoid arthritis. Also called folate antagonist and folic acid antagonist.

**antigen-presenting cell :** A drug that treats infections caused by fungi.

**antigen-presenting cell vaccine :** Any substance that causes the body to make an immune response against that substance. Antigens include toxins, chemicals, bacteria, viruses, or other substances that come from outside the body. Body tissues and cells, including cancer cells, also have antigens on them that can cause an immune response. These antigens can also be used as markers in laboratory tests to identify those tissues or cells.

**antigen-targeted personalized breast cancer vaccine:** An individualized, therapeutic cancer vaccine (IVAC) composed of liposomes containing RNA encoding two or three tumor-associated antigens (TAAs) that are specifically expressed in the patient's individual cancer selected from a warehouse ("off the shelf") and p53 RNA, with potential immunostimulatory and antineoplastic activities. Upon administration, the antigen-targeted personalized breast cancer vaccines are translated by antigen presenting cells (APCs) and the expressed protein is presented via major histocompatibility complex (MHC) molecules on the surface of the APCs. This leads to an induction of both cytotoxic T-lymphocyte (CTL) and memory T-cell immune responses against the TAAs. The RNAs in the vaccine are specifically selected for an individual patient after RNA profiling of the patient's tumor.

**Antigenic determinant:** Site on an antigen to which an antibody binds. Also called an epitope.

**antigens:** the immune-stimulating polysaccharides on the surface of cells.

**antiglobulin test :** A type of immune cell that boosts immune responses by showing antigens on its surface to other cells of the immune system. An antigen-presenting cell is a type of phagocyte. Also called APC.

**antihemophilic factor, human recombinant:** The recombinant form of human antihemophilic factor (AH) (Factor VIII) with coagulation promoting activity. Antihemophilic factor binds to factor IXa in the coagulation cascade along with calcium and phospholipid. This complex converts factor X to the activated form, factor Xa. In turn, factor Xa/Va complex activates thrombin, which cleaves fibrinogen into fibrin, eventually resulting in blood clot formation.

**antihistamine :** A laboratory test to identify antibodies that can bind to the surface of red blood cells or platelets and destroy them. This test is used to diagnose certain blood disorders in which patients make antibodies to their own red blood cells or platelets. It is also used to determine blood type. Also called Coombs test.

**antihormone therapy :** A substance being studied in the treatment of cancer. It binds to a protein called hepatocyte growth factor (HGF), which may cause cancer cells to grow. Blocking this may cause cancer cells to die. Anti-HGF monoclonal antibody AMG 102 is a type of monoclonal antibody. Also called AMG 102.

**antihypertensive agent :** A type of drug that blocks the action of histamines, which can cause fever, itching, sneezing, a runny nose, and watery eyes. Antihistamines are used to prevent fevers in patients receiving blood transfusions and to treat allergies, coughs, and colds.

**antilymphocyte globulin :** Having to do with reducing inflammation.

**antimatter:** Any subatomic particle identical in mass to a proton, neutron, or electron, but with the opposite charge. For example, a positron is a positive electron. A collision between a particle and its respective antiparticle results in both being annihilated, with their masses converted to photons of equivalent energy.

**antimetabolite :** Serum from blood that contains antibodies that bind to human T cells. Antilymphocyte globulin is given to a patient before a stem cell transplant to kill T cells and lower the risk of graft-versus-host disease (GVHD). It is also used to treat GVHD and after a kidney transplant to help keep the body from rejecting the kidney. Also called antithymocyte globulin.

**antimetabolite FF-10502:** An antimetabolite with potential antineoplastic activity. Upon administration, FF-10502 is able to enter the nucleus where it

inhibits DNA polymerases, thereby preventing DNA synthesis and halting tumor cell proliferation.

**ANTIMICROBIAL:** A chemical which either destroys or inhibits the growth of microscopic and sub-microscopic organisms.

**antimicrobial :** A substance being studied in the treatment of mesothelioma. Anti-mesothelin monoclonal antibody MORAb-009 binds to a protein called mesothelin, which is found on some cancer cells. Anti-mesothelin monoclonal antibody MORAb-009 may help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called amatuximab and MORAb-009.

**antimicrotubule agent :** A drug that is very similar to natural chemicals in a normal biochemical reaction in cells but different enough to interfere with the normal division and functions of cells.

**antimitotic agent :** A substance that kills microorganisms such as bacteria or mold, or stops them from growing and causing disease.

**Antimony:** Symbol:"Sb" Atomic Number:"51" Atomic Mass: 121.75amu. Antimony has been used for thousands of years. The pure metal is quite brittle. You will find the element used in batteries, alloys, and in the creation of paints and enamels.

**ANTIMONY OXIDE:** A white, odorless, fine powder widely used as a flame retardant in plastics.

**Antimony trioxide (Sb<sub>2</sub>O<sub>3</sub>):** A commonly-used flame retardant additive for plastics, especially polyesters.

**Antimycin A:** An antibiotic from Streptomyces that inhibits the respiratory chain by blocking electron transfer in the cytochrome reductase complex.

**antineoplastic :** A type of drug that blocks cell growth by stopping mitosis (cell division). Antimicrotubule agents interfere with microtubules (cellular structures that help move chromosomes during mitosis). They are used to treat cancer.

**antineoplastic agent combination SM-88:** An orally bioavailable, proprietary combination of four agents with potential antineoplastic activity. Although the four agents and their exact mechanisms of action are not publicly known, the components of SM-88 appear, upon oral administration, to work synergistically to increase the amount of free

radicals in cancer cells, thereby inducing oxidative stress and selective killing of the cancer cells.

**antineoplastic agent TRX-818:** An orally bioavailable agent with potential antineoplastic and anti-vasculogenic mimicry (VM) activities. Although the exact multiple mechanisms of action through which this agent exerts its effects have yet to be fully elucidated, TRX-818, upon oral administration appears to induce cancer cell apoptosis and inhibits cancer cell proliferation. This agent also prevents tumor cell VM by blocking the formation of vasculogenic-like tubular structures through an as of yet undetermined mechanism of action. Check for active clinical trials using this agent.

**antineoplastic antibiotic :** A type of drug that blocks cell growth by stopping mitosis (cell division). They are used to treat cancer. Also called mitotic inhibitor.

**antineoplaston :** Blocking the formation of neoplasms (growths that may become cancer).

**antineoplaston A10:** A piperidinedione antineoplaston with potential antineoplastic activity. Antineoplaston A10 was originally isolated from human urine but is now synthetically derived. This agent intercalates into DNA, resulting in cell cycle arrest in G1 phase, reduction of mitosis, and decreased protein synthesis. Antineoplaston A10 may also inhibit ras-oncogene expression and activate tumor suppressor gene p53, leading to cell differentiation and apoptosis.

**antineoplaston AS2-1:** A 4:1 mixture of phenylacetate and phenylacetylglutamine, degradation products of the antineoplaston agent A10. Antineoplaston AS2-1 inhibits the incorporation of L-glutamine into tumor-cell proteins, leading to cell cycle arrest in the G1 phase and inhibition of mitosis. This agent may also inhibit RAS oncogene expression and activate tumor suppressor gene p53, resulting in cell differentiation and apoptosis.

**antioncogene :** A type of gene that regulates cell growth. When an antioncogene is mutated, uncontrolled cell growth may occur. This may contribute to the development of cancer. Also called tumor suppressor gene.  
OR A type of anticancer drug that blocks cell growth by interfering with DNA, the genetic material in cells. Also called anticancer antibiotic and antitumor antibiotic.

**antioxidant:** Antioxidants are compounds that slow oxidation processes that degrade foods, fuels, rubber, plastic, and other materials. Antioxidants like butylated hydroxyanisole (BHA) are added to food to prevent fats from becoming rancid and to minimize decomposition of vitamins and essential fatty acids; they work by scavenging destructive free radicals from the food. OR Substance which prevents or slows down oxidation of material exposed to air. OR Additive which prevents degradation and oxidation of material when exposed to ambient air during processing and storage of finished product. OR An additive which inhibits the degradation/oxidation of a material when exposed to ambient air, during processing and subsequently in the end-product form. OR Any organic compound that slows the process of oxidation OR Additive used to reduce degradation from oxygen attack at normal or elevated temperatures. Sources such as heat, age, chemicals, and/or stress may accelerate oxygen attack. OR An additive, that when exposed to ambient air, inhibits the degradation and oxidation of material. OR A chemical substance added to a plastic resin to minimize or prevent the effects of oxygen attack on the plastic, e.g., yellowing or degradation. Chemical attacks by oxygen can render a plastic brittle or cause it to lose desired mechanical properties.

**antioxidant :** A substance isolated from normal human blood and urine that is being tested as a type of treatment for some tumors and AIDS.

**Antioxidants & Antiozonants:** These additives are used to prevent the negative effects of oxygen and ozone on the resin materials.

**antiozonant:** Substances that reverse or prevent severe oxidation by ozone. Antiozonants are added to rubber to prevent them from becoming brittle as atmospheric ozone reacts with them over time. Aromatic amines are often used as antiozonants. OR Any substance that slows the severe oxidizing effect of ozone on elastomers. Exposure to ozone typically causes surface cracking in many rubbers

**Antiozonants:** These additives are used to prevent the negative effects of ozone on the resin materials.

**antiparallel:** Describing two linear polymers that are opposite in polarity or orientation.

**Antiparallel b-pleated sheet (b-sheet):** A hydrogen bonded secondary structure formed between two or more extended polypeptide chains.

**antiparasitic** : A type of gene that makes a protein called a tumor suppressor protein that helps control cell growth. Mutations (changes in DNA) in antioncogenes may lead to cancer. Also called tumor suppressor gene.

**antiperspirant cream F511**: A cream formulation containing aluminum chlorohydrate with astringent and antiperspirant activities. Upon topical application of F511 cream, aluminium chlorohydrate forms a gel matrix in the sweat gland which subsequently reduces, then stops the flow of water. In addition, this agent exerts an astringent effect, thereby further preventing sweat formation. Hyperhidrosis appears to play a role in the development of certain mucocutaneous reactions, such as palmar-plantar erythrodysesthesia (PPE), upon administration of chemotherapeutic agents such as doxorubicin, 5-fluorouracil, and capecitabine.

**antiport**: Cotransport of two solutes across a membrane in opposite directions.

**Antiporter**: A transport system in which a molecule is carried across a membrane in the direction opposite that of an ion, which in turn is pumped back across the membrane through active transport linked to ATP hydrolysis.

**antiprogesterin** : A substance being studied in the treatment of glioblastoma (a type of brain tumor) that has come back. It binds to receptors for a protein called platelet-derived growth factor (PDGF). This keeps PDGF from binding to the cells. This may stop the growth of cancer cells and blood vessels that have the receptors for PDGF. It is a type of monoclonal antibody. Also called anti-platelet-derived growth factor receptor alpha monoclonal antibody IMC-3G3 and IMC-3G3.

**antipsychotic** : A substance being studied in the treatment of glioblastoma (a type of brain tumor) that has come back. It binds to receptors for a protein called platelet-derived growth factor (PDGF). This keeps PDGF from binding to the cells. This may stop the growth of cancer cells and blood vessels that have the receptors for PDGF. It is a type of monoclonal antibody. Also called anti-PDGFR alpha monoclonal antibody IMC-3G3 and IMC-3G3.

**antipsychotic agent** : A substance that prevents cells from making or using progesterone (a hormone that plays a role in the menstrual cycle and pregnancy). Antiprogesterins may stop some cancer cells from growing and

they are being studied in the treatment of breast cancer. An antiprogestin is a type of hormone antagonist.

**antipyretic:** A substance that can lessen or prevent fever.

**antiretroviral therapy :** A type of drug used to treat symptoms of psychosis. These include hallucinations (sights, sounds, smells, tastes, or touches that a person believes to be real but are not real), delusions (false beliefs), and dementia (loss of the ability to think, remember, learn, make decisions, and solve problems). Most antipsychotics block the action of certain chemicals in the nervous system. Also called antipsychotic agent and neuroleptic agent.

**antisense:** Having a sequence complementary to a segment of genetic material and serving to inhibit gene function.

**antisense agent :** A type of drug used to treat symptoms of psychosis. These include hallucinations (sights, sounds, smells, tastes, or touches that a person believes to be real but are not real), delusions (false beliefs), and dementia (loss of the ability to think, remember, learn, make decisions, and solve problems). Most antipsychotic agents block the action of certain chemicals in the nervous system. Also called antipsychotic and neuroleptic agent.

**antisense c-fos :** Treatment with drugs that inhibit the ability of the human immunodeficiency virus (HIV) or other types of retroviruses to multiply in the body.

**antisense DNA :** Small pieces of DNA or RNA that can bind to specific molecules of RNA. This blocks the ability of the RNA to make a protein or work in other ways. Antisense agents may be used to block the production of proteins needed for cell growth. They are being studied in the treatment of several types of cancer. Also called antisense oligonucleotide.

**antisense oligonucleotide :** A substance that has been studied in the treatment of cancer and is being studied in the treatment of rheumatoid arthritis and certain skin conditions. It blocks the production of a protein called c-fos, which helps control cell growth. This may kill cancer cells that need c-fos to grow. It is a type of antisense oligonucleotide. Also called c-fos antisense oligonucleotide.

**antisense oligonucleotide therapy :** Small pieces of DNA that can bind to specific molecules of RNA and block the cell's ability to use the RNA to

make a protein or work in other ways. Antisense DNA may be used to block the production of proteins needed for cell growth. It is being studied in the treatment of many types of cancer.

**antisense RNA :** Small pieces of DNA or RNA that can bind to specific molecules of RNA. This blocks the ability of the RNA to make a protein or work in other ways. Antisense oligonucleotides may be used to block the production of proteins needed for cell growth. They are being studied in the treatment of several types of cancer. Also called antisense agent.

**antisense therapy :** Treatment with antisense oligonucleotides. These are small pieces of DNA or RNA that can bind to specific molecules of RNA. This blocks the cell's ability to use the RNA to make a protein or work in other ways. Antisense oligonucleotides are being studied in the treatment of many types of cancer. Also called antisense therapy.

**Antiserum:** Serum prepared from the blood of an immunized animal containing soluble antibodies specific for a particular antigen.

**antisocial :** Small pieces of RNA that can bind to specific molecules of RNA and block the cell's ability to use the RNA to make a protein or work in other ways. Antisense RNA may be used to block the production of proteins needed for cell growth. It is being studied in the treatment of many types of cancer.

**Antistat:** Plastic has a natural tendency to attract static electricity. Additives put in to dissipate static are referred to as antistats.

**Antistatic Agent:** Additive used to improve the electrical conductivity of the plastic part so that any charge can readily go to ground and not remain in the part. OR Agents which, when added to the molding material or applied on the surface of the molded object, make it less conducting (thus hindering the fixation of dust). OR Additive which reduces or eliminates the build-up of static electricity in the material. This can be used in all processes including plastic extrusion manufacturing. OR Additive which imparts a slight degree of electrical conductivity to plastics, permitting the dissipation of static electricity. OR a chemical substance applied to the surface of a plastic article or incorporated in the plastic from which the article is made. The antistatic agent renders the surface of the plastic article less susceptible to the accumulation of electrostatic charges which attract and hold fine dirt or dust on the surface of the plastic article. OR Additive used to improve the electrical conductivity of the plastic part so that

any charge can readily go to ground and not remain in the part. OR Agents which, when added to the molding material or applied on the surface of the molded object, make it less conducting (thus hindering the fixation of dust). OR A chemical substance applied to the surface of a plastic article or incorporated in the plastic from which the article is made. The anti-static agent renders the surface of the plastic article less susceptible to the accumulation of electrostatic charges which attract and hold fine dirt or dust on the surface of the plastic article. OR Additive used to improve the electrical conductivity of the plastic part so that any charge can readily go to ground and not remain in the part. OR Methods of minimizing static electricity in plastic materials. Such agents are of two basic types: (1) metallic devices which come into contact with the plastics and conduct the static to earth. Such devices give complete neutralization at the time, but because they do not modify the surface of the material it can become prone to further static during subsequent handling; (2) chemical additives which, mixed with the compound during processing, give a reasonable degree of protection to the finished products.

**Antistats:** The use of these additives will eliminate or lessen static electricity.

**antithymocyte globulin :** Describes behavior that ignores the rights of others and the practices and laws of society.

**antituberculosis :** A substance being studied in the treatment of some types of cancer. It binds to a protein called TRAIL R1 on the surface of some tumor cells. This may kill the tumor cells. Anti-TRAIL R1-mAb is a type of monoclonal antibody. Also called HGS-ETR1 and mapatumumab.

**antitumor :** A substance being studied in the treatment of some types of cancer. It binds to a protein called TRAIL-R2 on the surface of some tumor cells, which may kill the tumor cells. Anti-TRAIL R2 mAb HGS-ETR2 is a type of monoclonal antibody. Also called HGS-ETR2 and lexatumumab.

**antitumor antibiotic :** Describes a drug or effect that works against tuberculosis (a contagious bacterial infection that usually affects the lungs).

**antiviral :** A substance that binds to receptors for a protein called vascular endothelial growth factor (VEGF), which may be found on some types of cancer cells. This may prevent the growth of new blood vessels that tumors need to grow. There are different types of anti-VEGFR monoclonal

antibodies being studied in the treatment of cancer. These substances are a type of antiangiogenesis agent and a type of monoclonal antibody.

**antiviral agent CSJ148:** An antiviral agent that can potentially be used to prevent replication of human cytomegalovirus (HCMV).

**ANTIWEAR ADDITIVE:** Compounds which form, or react to form, thin films on highly loaded parts in operation to prevent metal to metal contact, thereby reducing friction at the point of contact.

**Antoine equation:** A simple 3-parameter fit to experimental vapor pressures measured over a restricted temperature range:  $\log P = A - \frac{B}{C + T}$  - where A, B, and C are "Antoine coefficients" that vary from substance to substance. Sublimations and vaporizations of the same substance have separate sets of Antoine coefficients, as do components in mixtures. The Antoine equation is accurate to a few percent for most volatile substances (with vapor pressures over 10 Torr).

**Antrin:** (Other name for: motexafin lutetium)

**Antrodia cinnamomea supplement:** A dietary supplement containing extract from the medicinal fungus *Antrodia cinnamomea* with potential antiangiogenic, hepatoprotective and antioxidant activities. The components in *Antrodia cinnamomea* supplement are rather complex, however, rich in triterpenoids, polysaccharides, nucleosides (adenosine) nucleic acids, superoxide dismutase, other small molecular weight proteins and steroid like compounds. Neutral sugars in this supplement show inhibitory activity on endothelial tube formation, while maleimide and maleic anhydride derivative components in the extract, such as antrodin B and antrodin C and their metabolites, exhibit significant cytotoxic effects on tumor cells and hepatitis C virus.

**anus :** A drug used with other drugs to treat colorectal cancer and non-small cell lung cancer that have spread to other parts of the body. It is used alone or with another drug to treat cancer of the stomach or gastroesophageal junction (area where the esophagus connects to the stomach) that is advanced or has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Anti-VEGFR-2 fully human monoclonal antibody IMC-1121B binds to receptors for a protein called vascular endothelial growth factor (VEGF), which may be found on some types of cancer cells. This may prevent the growth of new blood vessels that tumors need to grow. Anti-VEGFR-2 fully human monoclonal

antibody IMC-1121B is a type of antiangiogenesis agent and a type of monoclonal antibody. Also called Cyramza, IMC-1121B, and ramucirumab.

**anxiety** : A drug used to treat infections caused by viruses.

**anxiolysis** : The opening of the rectum to the outside of the body.

**anxiolytic** : Feelings of fear, dread, and uneasiness that may occur as a reaction to stress. A person with anxiety may sweat, feel restless and tense, and have a rapid heart beat. Extreme anxiety that happens often over time may be a sign of an anxiety disorder.

**anxiolytic agent** : A level of sedation in which a person is very relaxed and may be awake. The person is able to answer questions and follow instructions. Anxiolysis is caused by special drugs and is used to help relieve anxiety during certain medical or surgical procedures. Also called minimal sedation.

**Anzemet** : A drug used to treat symptoms of anxiety, such as feelings of fear, dread, uneasiness, and muscle tightness, that may occur as a reaction to stress. Most anxiolytics block the action of certain chemicals in the nervous system. Also called antianxiety agent and anxiolytic agent.

**aorta**: the major artery of the human circulatory system that receives blood from the left ventricle. Or A drug used to treat symptoms of anxiety, such as feelings of fear, dread, uneasiness, and muscle tightness, that may occur as a reaction to stress. Most anxiolytic agents block the action of certain chemicals in the nervous system. Also called antianxiety agent and anxiolytic.

**aortocoronary bypass** : A drug used to prevent nausea and vomiting caused by chemotherapy. It is also used to prevent nausea and vomiting after surgery. Anzemet blocks the action of the chemical serotonin, which binds to certain nerves and may trigger nausea and vomiting. Blocking serotonin may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called dolasetron mesylate.

**AP23573**: The largest artery in the body. It carries oxygen-rich blood away from the heart to vessels that reach the rest of the body.

**AP5346**: Surgery in which a healthy blood vessel taken from another part of the body is used to make a new path for blood around a blocked artery

leading to the heart. This restores the flow of oxygen and nutrients to the heart. Also called CAB and coronary artery bypass.

**apalutamide:** A small molecule and androgen receptor (AR) antagonist with potential antineoplastic activity. Apalutamide binds to AR in target tissues thereby preventing androgen-induced receptor activation and facilitating the formation of inactive complexes that cannot be translocated to the nucleus. This prevents binding to and transcription of AR-responsive genes. This ultimately inhibits the expression of genes that regulate prostate cancer cell proliferation and may lead to an inhibition of cell growth in AR-expressing tumor cells. Check for active clinical trials using this agent.

**apatinib:** An orally bioavailable, small-molecule receptor tyrosine kinase inhibitor with potential antiangiogenic and antineoplastic activities. Apatinib selectively binds to and inhibits vascular endothelial growth factor receptor 2, which may inhibit VEGF-stimulated endothelial cell migration and proliferation and decrease tumor microvessel density. In addition, this agent mildly inhibits c-Kit and c-SRC tyrosine kinases.

**apatorsen:** A second-generation antisense oligonucleotide targeting heat shock protein 27 (Hsp27) with potential antitumor and chemosensitizing activities. Apatorsen suppresses tumor cell expression of Hsp27, which may induce tumor cell apoptosis and enhance tumor cell sensitivity to cytotoxic agents. Hsp27, a chaperone belonging to the small heat shock protein (sHsp) group of proteins, is a cytoprotective protein that supports cell survival under conditions of stress; it has been found to be over-expressed in a variety of human cancers.

**apaziquone:** An indolequinone bioreductive prodrug and analog of mitomycin C with potential antineoplastic and radiosensitization activities. Apaziquone is converted to active metabolites in hypoxic cells by intracellular reductases, which are present in greater amounts in hypoxic tumor cells. The active metabolites alkylate DNA, resulting in apoptotic cell death. This agent displays activity towards both hypoxic solid tumors, which exhibits higher expression of cytochrome P450 reductase, and well-oxygenated malignant cells that overexpress the bioreductive enzyme NQO1 (NAD(P)H: quinone oxidoreductase). Apaziquone may selectively sensitize hypoxic tumor cells to radiocytotoxicity. Check for active clinical trials using this agent.

**APC:** A substance being studied in the treatment of soft tissue and bone cancers. It is also being studied in the treatment of other solid tumors and hematologic cancer. AP23573 stops cells from dividing and may cause cancer cells to die. It is a type of mTOR inhibitor. Also called ridaforolimus.

**APC vaccine :** A substance being studied in the treatment of head and neck cancer. It may kill cancer cells by carrying an anticancer drug into the tumor. It is a type of platinum compound.

**APC8015:** A type of immune cell that boosts immune responses by showing antigens on its surface to other cells of the immune system. An APC is a type of phagocyte. Also called antigen-presenting cell.

**APC8015F:** A vaccine made of antigens and antigen-presenting cells (APCs). APCs boost an immune response by presenting antigens on their surfaces to other cells of the immune system. Also called antigen-presenting cell vaccine. OR A cell-based vaccine composed of previously frozen autologous antigen-presenting peripheral blood mononuclear cells (enriched for a dendritic cell fraction) that have been exposed to a recombinant protein consisting of granulocyte-macrophage colony-stimulating factor (GM-CSF) fused to prostatic-acid phosphatase (PAP), a protein expressed by prostate cancer cells. Upon administration, the vaccine may stimulate an antitumor T-cell response against tumor cells expressing PAP.

**APF530:** A controlled-release formulation of the 5-hydroxytryptamine 3 (5-HT<sub>3</sub>) antagonist granisetron, in which granisetron is encapsulated in a biodegradable poly(ortho ester) polymer, with antiemetic activity. Upon subcutaneous administration, APF530 slowly erodes and releases the active ingredient granisetron over a period of approximately 5 days. As a selective serotonin receptor antagonist, granisetron competitively blocks the action of serotonin at 5-HT<sub>3</sub> receptors, resulting in the suppression of nausea and vomiting.

**aphanitic:** fine grained.

**aphelion:** point in an orbit farthest from the Sun.

**apheresis :** A drug used to treat prostate cancer that has spread. It is made from immune system cells collected from a patient with prostate cancer. The cells are treated with a protein that is made by combining a protein found on prostate cancer cells with a growth factor. When the cells are injected back into the patient, they may stimulate T cells to kill prostate

cancer cells. APC8015 is a type of vaccine and a type of cellular adoptive immunotherapy. Also called Provenge and sipuleucel-T.

**API separator:** A facility developed by the Committee on Disposal or Refinery Wastes of the American Petroleum Institute for separation of oil from wastewater in a gravity differential and equipped with means for recovering the separated oil and removing sludge

**Apidra :** A vaccine made from immune system cells taken from a patient with prostate cancer and frozen for future use. The cells are treated in the laboratory with a growth factor attached to a protein called prostatic-acid phosphatase (PAP), which is found on prostate cancer cells. When APC8015F is injected into the patient, it may cause T cells (a type of white blood cell) to kill tumor cells that have PAP on them.

**apilimod dimesylate capsule:** A capsule containing the dimesylate salt form of apilimod, an inhibitor of the class III PI kinase phosphatidylinositol-3-phosphate 5-kinase (PIKfyve), with potential antineoplastic and immunomodulatory activities. Upon oral administration of apilimod dimesylate capsule, apilimod selectively binds to and inhibits PIKfyve. The inhibition leads to disruption of PIKfyve-mediated signal transduction pathways and eventually inhibits tumor cell growth in PIKfyve-overexpressing tumor cells. Also, PIKfyve inhibition by apilimod inhibits the toll-like receptor (TLR)-induced production of various cytokines, including interleukin-12 (IL-12) and IL-23, thereby preventing IL-12/IL-23-mediated immune responses. PIKfyve, a lipid kinase dysregulated in various tumor types, plays a key role in TLR signaling and tumor cell migration, proliferation and survival.

**apixaban:** An orally active inhibitor of coagulation factor Xa with anticoagulant activity. Apixaban directly inhibits factor Xa, thereby interfering with the conversion of prothrombin to thrombin and preventing formation of cross-linked fibrin clots.

**APL:** A procedure in which blood is collected, part of the blood such as platelets or white blood cells is taken out, and the rest of the blood is returned to the donor. Also called pheresis.

**aplastic anemia :** A drug used to control the amount of sugar in the blood of patients with diabetes mellitus. It is a form of the hormone insulin that is made in the laboratory. Apidra gets into the blood faster than insulin when

it is injected under the skin before or shortly after a meal. It is a type of therapeutic insulin. Also called insulin glulisine.

**Aplidin:** (Other name for: plitidepsin)

**aplidine :** An aggressive (fast-growing) type of acute myeloid leukemia in which there are too many immature blood-forming cells in the blood and bone marrow. It is usually marked by an exchange of parts of chromosomes 15 and 17. Also called acute promyelocytic leukemia and promyelocytic leukemia.

**APN:** A condition in which the bone marrow is unable to produce blood cells.

**Apo-2L :** A substance that is being studied in the treatment of cancer. It is obtained from a marine organism.

**Apoactivator:** A regulatory protein that stimulates transcription from one or more genes in the presence of a coactivator molecule.

**apocrine gland :** A registered nurse who has additional education and training in how to diagnose and treat disease. APNs are licensed at the state level and certified by national nursing organizations. In cancer care, an APN may manage the primary care of patients and their families, based on a practice agreement with a doctor. Also called advanced practice nurse, NP, and nurse practitioner.

**apoenzyme:** The protein portion of an enzyme, exclusive of any organic or inorganic cofactors or prosthetic groups that might be required for catalytic activity.

**apogee:** point in an orbit farthest from the Earth.

**apolipoprotein:** The protein component of a lipoprotein.

**apolizumab:** A cell protein that can attach to certain molecules in some cancer cells and may kill the cells. Apo-2L is being studied in the treatment of cancer. Also called TNF-related apoptosis-inducing ligand, TRAIL, and tumor necrosis factor-related apoptosis-inducing ligand. OR A humanized monoclonal antibody directed against 1D10, a polymorphic determinant on the HLA-DR beta chain that is expressed on normal and neoplastic B cells. Apolizumab induces complement-mediated cytotoxicity, antibody-dependent cell-mediated cytotoxicity, and apoptosis of 1D10 antigen-positive B cells in vitro.

**apomab:** A fully human monoclonal antibody directed against human death receptor 5 (DR5; TRAIL-R2; TNFRSF10B) with potential proapoptotic and antineoplastic activities. Mimicking the natural ligand TRAIL (tumor necrosis factor-related apoptosis inducing ligand), apomab binds to DR5, which may directly activate the extrinsic apoptosis pathway and indirectly induce the intrinsic apoptosis pathway in tumor cells. DR5 is a cell surface receptor of the TNF-receptor superfamily and is expressed in a broad range of cancers.

**Apoptosis:** A cascade of proteolytic enzymes that results in controlled cell death in response to significant cell damage or specific developmental programs. Also called programmed cell death. OR term defining the process of programmed cell death

**apoptosis :** A type of gland that is found in the skin, breast, eyelid, and ear. Apocrine glands in the breast secrete fat droplets into breast milk and those in the ear help form earwax. Apocrine glands in the skin and eyelid are sweat glands. Most apocrine glands in the skin are in the armpits, the groin, and the area around the nipples of the breast. Apocrine glands in the skin are scent glands, and their secretions usually have an odor. Another type of gland (eccrine gland or simple sweat gland) produces most sweat.

**apoptosis inducer BZL101:** An orally active aqueous extract derived from the plant *Scutellaria barbata* with potential antineoplastic activity. Sparing normal cells, apoptosis inducer BZL101 specifically facilitates translocation of the protein apoptosis-inducing factor (AIF) from the mitochondrial membrane into the nucleus in tumor cells, thereby causing tumor cell-specific chromatin condensation and DNA degradation followed by the induction of caspase-independent apoptosis. AIF is both a mitochondrial intermembrane flavoprotein with oxidoreductase activity and a caspase-independent death effector that, similar to cytochrome c, is released from mitochondria early in the apoptotic process. Check for active clinical trials using this agent.

**apoptosis inducer GCS-100:** A galectin-binding polysaccharide derived from citrus pectin with potential antineoplastic activity. Apoptosis inducer GCS-100 binds to the carbohydrate-binding domain of the lectin galectin-3, which may result in apoptosis mediated through mitochondria/caspase activation cascades; this agent may overcome tumor growth mediated through anti-apoptotic protein Bcl-2, heat shock protein-27 (Hsp-27), and

nuclear factor-kappa B (NF-kB). Galectin-3, a chimeric molecule consisting of both carbohydrate recognition and collagen-like domains, interacts with a variety of carbohydrate and protein ligands to form pentamers with unique crosslinking abilities; this lectin also exhibits anti-apoptotic properties, perhaps, in part, through the regulation of intracellular signaling pathways.

**apoptosis inducer MPC-2130:** A broad-acting, apoptosis-inducing, small molecule with potential antineoplastic activity. Although the exact mechanism of action has yet to be fully elucidated, apoptosis inducer MPC-2130 exhibits proapoptotic activities in tumor cells, including membrane phosphatidylserine externalization, release of cytochrome C from mitochondria, caspase activation, cell condensation, and DNA fragmentation. In addition, because this agent is not a substrate for several types of multidrug resistance (MDR) ABC superfamily transporters, such as P-glycoprotein 1 (MDR-1), multidrug resistance-associated protein 1 (MRP1), and breast cancer resistance protein 1 (BCRP1/ABCG2), it may be useful in treating MDR tumors that express these particular MDR efflux pumps. Check for active clinical trials using this agent.

**apoptotic autologous tumor cells-pulsed alpha-type-1 polarized dendritic cells:** A cell-based cancer vaccine composed of mature polarized dendritic cells (DCs) and pulsed with apoptotic autologous tumor cells that has potential immunostimulating and antineoplastic activities. Dendritic cells (DCs) were treated with interleukin-1 beta, tumor necrosis factor alpha, interferon-alpha (IFN-a), IFN-gamma and polyinosinic:polycytidylic acid (p-I:C) to produce mature alpha type-1 polarized DCs (alphaDC1) that are capable of producing high levels of interleukin-12p70 (IL-12p70). The alphaDC1 are subsequently pulsed with apoptotic autologous tumor cells. Upon administration, these DCs are able to induce a potent cytotoxic T lymphocyte (CTL) response against tumor associated antigens (TAAs), resulting in tumor cell lysis and inhibition of tumor cell growth. Apoptotic tumor cells contain an array of TAAs.

**APOTONE:** (Other name for: androstane steroid HE3235)

**apparent diameter:** the diameter of an object as it appears to an observer; changes with distance.

**apparent magnitude:** how bright a star appears to someone on Earth.

**APPARENT SHEAR RATE:** The shear rate determined in capillary viscometers without making a correction (Rabinowitsch) for shear thinning.

It turns out that the apparent shear rate is equal to  $4Q/p R^3$  where Q is the volumetric flow rate ( $m^3/s$ ) and R is the radius (m) of the capillary.

**APPARENT VISCOSITY:** The viscosity determined in capillary viscometry without making a correction (Rabinowitsch) for shear thinning. The apparent viscosity is equal to the shear stress divided by the apparent shear rate, which is where DP is the pressure drop (Pa), Q is the volumetric flow rate ( $m^3/s$ ), L is the length (m) and R is the radius (m) of the capillary die.

**appendage :** A substance being studied in the treatment of hematologic (blood) cancers. Apolizumab binds to a protein called ID10, which is found on the surface of some types of immune cells and cancer cells. It may help the immune system kill cancer cells. It is a type of monoclonal antibody.

**appendectomy :** A type of cell death in which a series of molecular steps in a cell lead to its death. This is one method the body uses to get rid of unneeded or abnormal cells. The process of apoptosis may be blocked in cancer cells. Also called programmed cell death.

**appendix :** a small fingerlike process that may be a vestige of larger organs functional in human ancestors. Or In medicine, a body part (such as an arm or leg) that is attached to the main part of the body.

**appetite :** Surgery to remove the appendix (small finger-shaped pouch at the end of the first part of the large intestine).

**Application:** The act of applying or putting to use. What the molded plastic article will be in its final form. OR The act of putting something to use—a material's final purpose is its application. OR The act of applying or putting to use, i.e. What the plastic extrusion profile will be used for in its final form.

**Application Torque:** The torque force, measured in inch-pounds, required to screw a closure onto a container.

**Applicator Cap:** A closure designed to apply the contents of the container.

**appositive:** a word or group of words that restates or identifies the noun or pronoun it is next to.

**aprepitant:** A small molecule, high-affinity substance P antagonist (SPA) with antiemetic activity. Crossing the blood brain barrier, aprepitant binds selectively to the human substance P/neurokinin 1 receptor in the central nervous system (CNS), thereby inhibiting receptor binding of endogenous

substance P and substance P-induced emesis. This agent has little or no affinity for serotonin type 3 (5-HT<sub>3</sub>), dopamine, and corticosteroid receptors. or A small, fingerlike pouch that sticks out from the cecum (the first part of the large intestine near the end of the small intestine).

**apricoxib:** An orally bioavailable nonsteroidal anti-inflammatory agent (NSAID) with potential antiangiogenic and antineoplastic activities. Apricoxib binds to and inhibits the enzyme cyclooxygenase-2 (COX-2), thereby inhibiting the conversion of arachidonic acid into prostaglandins. Apricoxib-mediated inhibition of COX-2 may induce tumor cell apoptosis and inhibit tumor cell proliferation and tumor angiogenesis. COX-related metabolic pathways may represent crucial regulators of cellular proliferation and angiogenesis.

**Apriso:** (Other name for: mesalamine)

**aprotic solvent:** A solvent that does not act as an acid or as a base; aprotic solvents don't undergo autoprotolysis. Examples are pentane, pet ether, and toluene.

**aprotinin bovine:** A single chain polypeptide isolated from bovine lung with antifibrinolytic and anti-inflammatory activities. As a broad-spectrum serine protease inhibitor, aprotinin bovine competitively and reversibly inhibits the activity of a number of different esterases and proteases, including trypsin, chymotrypsin, kallikrein, plasmin, tissue plasminogen activator, and tissue and leukocytic proteinases, resulting in attenuation of the systemic inflammatory response (SIR), fibrinolysis, and thrombin generation. This agent also inhibits pro-inflammatory cytokine release and maintains glycoprotein homeostasis. Check for active clinical trials using this agent.

**Aptivus :** A desire to satisfy a physical or mental need, such as for food, sex, or adventure.

**Aptosyn:** (Other name for: exisulind)

**AQL:** Accepted quality level

**aqua regia:** A mixture of nitric and hydrochloric acids, usually 1:3 or 1:4 parts HNO<sub>3</sub> to HCl, used to dissolve gold.

**Aquacel AG with Hydrofiber:** (Other name for: ionic silver-impregnated sodium carboxymethyl cellulose antimicrobial dressing)

**Aquacel Dressing:** (Other name for: sodium carboxymethylcellulose dressing)

**Aquadiol:** (Other name for: therapeutic estradiol)

**Aquaphor:** (Other name for: petrolatum-mineral oil-lanolin-ceresin ointment)

**Aquasol A:** (Other name for: retinol)

**aqueous:** refers to a solution with water as solvent. OR A substance dissolved in water. Or A drug used together with other drugs to prevent and control the nausea and vomiting caused by cancer treatment. It is also used to treat nausea and vomiting after surgery. It is a type of antiemetic and a type of substance P/neurokinin 1 receptor antagonist. Also called Emend.

**aquiclude:** an impermeable layer such as clay that retards the flow of groundwater.

**aquifer:** a porous, permeable, saturated formation of rock or soil through which groundwater flows easily. Or a subsurface geological structure that contains water. Or Water bearer. Earth materials that contain ground water and through which ground water may flow freely. Some examples of these include sand, porous sandstone, and gravel. Aquifers vary widely in their ability to hold water and the speed at which water flows through them.

**aquitard:** a formation such as shale, clay, or unfractured igneous rocks that retards water flow.

**AR:** A drug used with another drug, ritonavir, to treat patients who are infected with HIV (the virus that causes AIDS) and have been treated with other anti-HIV drugs. Aptivus blocks the HIV virus from making copies of itself. It is a type of anti-HIV agent and a type of protease inhibitor. Also called tipranavir sodium.

**AR antagonist BMS-641988:** A nonsteroidal androgen receptor (AR) antagonist with anti-androgenic and potential antineoplastic activities. AR antagonist BMS-641988 binds to ARs in target tissues and prevents AR activation, which may result in the inhibition of AR-mediated transcriptional activity and tumor cell death in susceptible tumor cell populations. Global gene expression analysis has shown that exposure to this agent may result in a phenotype that is closer to a castration phenotype than is achievable with other antiandrogens such as bicalutamide.

**AR antagonist ODM-201:** A formulation containing an androgen receptor (AR) antagonist with potential antineoplastic activity. AR antagonist ODM-201 binds to ARs in target tissues; subsequently, inhibiting androgen-induced receptor activation and facilitating the formation of inactive complexes that cannot translocate to the nucleus. This prevents binding to and transcription of AR-responsive genes that regulate prostate cancer cell proliferation. This ultimately leads to an inhibition of growth in AR-expressing prostate cancer cells.

**AR+ :** Having to do with water.

**Arachidonate:** Derived from linoleate, a 20:4 fatty acid that is a major precursor to several classes of signal molecules, including prostaglandins.

**arachnodactyly:** abnormally long and slender fingers and toes

**aragonite:** A mineral species of calcium carbonate ( $\text{CaCO}_3$ ) with a crystal structure different from that of vaterite and calcite, which are the other two forms of  $\text{CaCO}_3$ . It is precipitated from ocean surface waters mainly by organisms (e.g., coral) that use it to make their shells and skeletons.

**Aralast:** (Other name for: alpha-1-proteinase inhibitor human)

**Aramid:** any of a group of lightweight by very strong heat-resistant synthetic aromatic polyamide materials that are fashioned into fibers, filaments, or sheets.

**Aranelle:** (Other name for: ethinyl estradiol/norethindrone)

**Aranesp:** (Other name for: darbepoetin alfa)

**Arava:** (Other name for: leflunomide)

**Arc:** 1) A luminous glow formed by the flow of electric current through ionized air, gas or vapor between separated electrodes or contacts. 2) A portion of the circumference of a circle.

**Arc Resistance:** 1) The resistance to the flow of current offered by the voltaic arc (i.e., if the carbons of an arc lamp are  $1/32$ " apart, the arc resistance will be  $1-1/2$  ohms). 2) The resistance of a material to the effects of an arc passing across its surface stated as a measure of the total elapsed time taken to form a conducting path (of material carbonizing by the arc flame) across the surface under prescribed conditions of applications of a high voltage, low current arc (as across an insulator).

**arc-continent convergence:** the result when intervening ocean is destroyed by subduction, welding an island arc to the continental edge.

**archaebacteria:** ancient bacteria that have a different ribosomal structure, membrane composition, and cell wall composition than modern bacteria.

**Archexin:** (Other name for: Akt antisense oligonucleotide RX-0201)

**Architrave:** A carpentry term which describes the moulding surrounding a door or window opening.

**arcitumomab:** A murine IgG monoclonal Fab fragment antibody labeled with technetium-99m directed against carcinoembryonic antigen (CEA), a protein that is overexpressed by many tumor cell types. For tumors that overexpress CEA, arcitumomab may be used as an adjunct diagnostic imaging tool to obtain prognostic information following resection and to monitor for recurrent disease.

**Arcoxia:** (Other name for: etoricoxib)

**Arctic haze:** A persistent winter diffuse layer in the Arctic atmosphere whose origin may be related to long-range transport of midlatitude continental man-made pollutants.

**arctigenin :** A protein that binds male hormones called androgens. ARs are found inside the cells of male reproductive tissue, some other types of tissue, and some cancer cells. In prostate cancer, androgens bind to ARs inside the cancer cells, which causes the cancer cells to grow. Also called androgen receptor.

**arctiin :** Describes cells that have a protein that binds to androgens (male hormones). Cancer cells that are AR+ may need androgens to grow. These cells may stop growing or die when they are treated with substances that block the binding and actions of androgen hormones. Also called androgen receptor positive.

**arcus cornea:** whitish ring on the peripheral cornea

**area:** Measures the size of a surface using length measurements in two dimensions. OR The amount of surface enclosed by a closed figure.

**Aredia :** (Other name for: pamidronate disodium) OR A substance found in certain plants, including burdock. It has shown antiviral and anticancer effects. Arctigenin belongs to a group of substances called lignans.

**Arene:** Any carbon compound containing a six membered ring of carbons, each of which forms only one chemical bond outside of the ring. This is called a phenyl ring, and though it looks like it has alternating single and double bonds, all the bonds are actually the same. Benzene is the

simplest arene; other examples are toluene, fulvic acid, and trinitrotoluene OR an aromatic hydrocarbon. OR A hydrocarbon that contains at least one aromatic ring.

**areola :** A substance found in certain plants, including burdock. It has shown anticancer effects. Arctiin belongs to a group of substances called lignans.

**arete:** a sharp ridge that commonly extends downward from a horn to separate two adjacent glacial valleys.

**arginine :** A drug used to treat hypercalcemia (high blood levels of calcium) caused by certain types of cancer. It is also used with other anticancer drugs to treat multiple myeloma and breast cancer that has spread to bone. It is also used to treat Paget disease of the bone. Aredia may help keep bone from breaking down and prevent the loss of calcium from the bones. It is a type of bisphosphonate. Also called pamidronate disodium.

**arginine butyrate:** The area of dark-colored skin on the breast that surrounds the nipple. OR The butyric acid salt of the amino acid arginine. In EBV-related lymphomas, arginine butyrate induces EBV thymidine kinase transcription and may act synergistically with the antiviral agent ganciclovir to inhibit cell proliferation and decrease cell viability. In addition, the butyrate moiety inhibits histone deacetylase, which results in hyperacetylation of histones H3 and H4. Acetylated histones have a reduced affinity for chromatin; this reduced histone-chromatin affinity may allow chromosomal unfolding, potentially enhancing the expression of genes related to tumor cell growth arrest and apoptosis.

**arginine/omega-3 fatty acids/nucleotides oral supplement:** An oral nutritional supplement, containing substantial amounts of polyunsaturated fatty acids, arginine, and nucleotides, with potential immunostimulating activity. Omega-3 fatty acids/arginine/nucleotides oral supplement may enhance activities of key components of the immune system, including lymphocytes, antigen presenting cells (APCs), and various cytokines.

**arginine61442:** An essential amino acid and building block of proteins. Arginine acts as a base under physiological conditions; the double-bonded nitrogen on the end of the side chain readily captures a hydrogen ion, becoming positively charged. This charged side group makes arginine hydrophilic.

**ArginMax:** (Other name for: L-arginine/Korean ginseng/ Ginkgo biloba/damiana-based supplement)

**Argon:** Symbol:"Ar" Atomic Number:"18" Atomic Mass: 39.95amu. Argon has no color, no smell, and is one of the noble or inert gases. It can be found in welding, making silicon chips, light bulbs, and radio tubes.

**argon beam coagulator ablation :** One of the twenty common amino acids (building blocks of proteins). Arginine is being studied as a nutritional supplement in the treatment and prevention of cancer and other conditions. Also called L-arginine.

**argonaute:** proteins that are components of the RISC

**Aricept:** (Other name for: donepezil hydrochloride)

**arid:** climates that are extremely dry, with low precipitation and high evapotranspiration.

**Arimidex:** (Other name for: anastrozole) OR A substance that is being studied in the treatment of cancer.

**Aristocort:** (Other name for: triamcinolone)

**Aristocort A:** (Other name for: triamcinolone acetonide)

**Arixtra:** (Other name for: fondaparinux sodium) or A procedure that destroys tissue with an electrical current passed through a stream of argon gas to the tissue. It is used to treat endometriosis and other conditions, and to stop blood loss during surgery.

**ARMD:** A drug used to treat certain types of breast cancer in postmenopausal women. It is also being studied in the treatment of other types of cancer. Arimidex lowers the amount of estrogen made by the body. This may stop the growth of cancer cells that need estrogen to grow. Arimidex is a type of nonsteroidal aromatase inhibitor. Also called anastrozole.

**armodafinil:** The R-enantiomer of the racemic synthetic agent modafinil with central nervous system (CNS) stimulant and wakefulness-promoting activities. Although the exact mechanism of action has yet to be fully elucidated, armodafinil appears to inhibit the reuptake of dopamine by binding to the dopamine-reuptake pump, which leads to an increase in extracellular dopamine levels in some brain regions. This agent does not bind to or inhibit several receptors and enzymes that may be involved in sleep/wake regulation and is not a direct- or indirect-acting dopamine

receptor agonist. Armodafinil has a longer half-life than modafinil. OR A drug used to prevent blood clots from forming inside blood vessels in the leg. It is being studied in the prevention of blood clots in some cancer patients, including women having surgery for cancer of the reproductive tract. It is a type of anticoagulant. Also called fondaparinux and fondaparinux sodium.

**ARMS:** A condition in which there is a slow breakdown of cells in the center of the retina (the light-sensitive layers of nerve tissue at the back of the eye). This blocks vision in the center of the eye and can cause problems with activities such as reading and driving. ARMD is most often seen in people who are over the age of 50. Also called age-related macular degeneration, AMD, and macular degeneration.

**Arnebia Indigo Jade Pearl topical cream:** A proprietary multiherbal topical cream based on Chinese herbal medicine with potential antineoplastic, antiviral, antibacterial and immunostimulatory activities. Arnebia Indigo Jade Pearl topical cream contains 12 ingredients including 9 herbs infused in sesame oil, with an additional three powdered ingredients and beeswax added to the infused oil to create the salve. The purported mechanism(s) of action is unclear due to the complexity of the herbal mixture.

**Aromasin :** A drug that is used to treat certain sleep disorders, such as narcolepsy. It makes patients feel more alert and awake. It is also being studied in the treatment of insomnia and fatigue in patients treated for cancer. Armodafinil acts in a part of the brain that controls sleep and wakefulness. It is a type of wakefulness-promoting agent. Also called Nuvigil.

**aromatase inhibitor :** A soft tissue tumor that is most common in older children and teenagers. It begins in embryonic muscle cells (cells that develop into muscles in the body). It can occur at many places in the body, but usually occurs in the trunk, arms, or legs. Also called alveolar rhabdomyosarcoma.

**aromatherapist :** A drug used to treat advanced breast cancer and to prevent recurrent breast cancer in postmenopausal women who have already been treated with tamoxifen. It is also being studied in the treatment of other types of cancer. Aromasin causes a decrease in the amount of

estrogen made by the body. It is a type of aromatase inhibitor. Also called exemestane.

**aromatherapy** : A drug that prevents the formation of estradiol, a female hormone, by interfering with an aromatase enzyme. Aromatase inhibitors are used as a type of hormone therapy for postmenopausal women who have hormone-dependent breast cancer.

**aromatherapy infusion** : A person who practices a type of complementary medicine called aromatherapy. This therapy uses plant oils that give off strong, pleasant smells to promote relaxation and a sense of well-being. The plant oils are usually inhaled or put on the skin using wet cloths, baths, or massage.

**aromatherapy massage** : A type of complementary and alternative medicine that uses plant oils that give off strong pleasant aromas (smells) to promote relaxation, a sense of well-being, and healing.

**aromatic**: refers to an organic compound with a benzene-like ring. OR A large class of cyclic organic compounds derived from, or characterized by the presence of the benzene ring and its homologs.

**aromatic** : The process of heating (without boiling) a mixture of water and an essential oil (scented liquid taken from a plant) to release a pleasant aroma. Aromatherapy infusion may also refer to the process of heating an herb in liquid to release the essential oils. Inhaled oxygen scented by aromatherapy infusion is being studied as a complementary therapy (used in addition to standard treatments) to relieve pain and shorten recovery time in patients undergoing colonoscopy.

**aromatic compound**: a compound that possesses a closed-shell electron configuration as well as resonance. This type of compound obeys Hückel's rule. OR A compound containing an aromatic ring. Aromatic compounds have strong, characteristic odors.

**Aromatic Hydrocarbons**: Hydrocarbons derived from or characterized by presence of unsaturated resonant ring structures.

**aromatic ring**: An exceptionally stable planar ring of atoms with resonance structures that consist of alternating double and single bonds, e. g. benzene:

**aromaticity**: The unusual stability that results from a continuous cyclic system of  $4n + 2$  (where  $n$  is any integer) pi-electrons in a cyclic compound.

This stability results from complete filling of bonding pi molecular orbitals.

**Aromatics Family:** The Aromatics are a group of unsaturated hydrocarbons all sharing a common unsaturated six carbon ring. Benzene is the simplest aromatic compound and consists solely of this ring structure, with the other members having hydrocarbon side groups connected to the main ring. Aromatics are named Aromatic after the sharp smell associated with the family and are produced in processes involving the pyrolysis of hydrocarbon streams such as steam crackers and refinery reformer units.

**Aroplatin:** (Other name for: liposomal oxaliplatin) or (Other name for: liposomal NDDP)

**arousal :** A type of complementary and alternative medicine that uses rubbing and kneading of the skin with plant oils that give off strong, pleasant aromas (smells) to promote relaxation, a sense of well-being, and healing.

**Arranon:** (Other name for: nelarabine)

**Arranon :** Having an odor, which often is pleasant or spicy.

**Arrestin:** A protein that plays a role in the termination of the visual signal-transduction pathway by binding to phosphorylated rhodopsin and preventing further interaction with transducin. Arrestin may function similarly in other 7TM-dependent signal-transduction pathways.

**Arrhenius equation:** In 1889, Svante Arrhenius explained the variation of rate constants with temperature for several elementary reactions using the relationship  $k = A \exp(-E_a/RT)$  where the rate constant  $k$  is the total frequency of collisions between reaction molecules  $A$  times the fraction of collisions  $\exp(-E_a/RT)$  that have an energy that exceeds a threshold activation energy  $E_a$  at a temperature of  $T$  (in kelvins).  $R$  is the universal gas constant.

**Arrhenius theory:** a theory (limited to aqueous systems) that defines an acid as a compound that liberates hydrogen ions and a base as a compound that liberates hydroxide ions. A neutralization is the reaction of a hydrogen ion with a hydroxide ion to form water.

**arrhenoblastoma :** The state of being alert and ready to respond, or waking from sleep.

**Arris:** The sharp edge formed by the intersection of two surfaces. This term is commonly used to refer to the edges in a moulding.

**arroyo:** a narrow gorge with steep walls and a gravel bottom; produced over time by flash floods.

**Arsenate Mineral:** A mineral that is made up of compounds with an arsenic atom or arsenic oxide group bonded to a metal. Erythrite is a good example of a arsenate mineral.

**Arsenic:** Symbol:"As" Atomic Number:"33" Atomic Mass: 74.92amu. Classified as a semi-metallic element, Arsenic is probably best known as a poison. While highly toxic, this grey, semi-metallic element is used in lasers, insecticides, and in some fireworks.

**arsenic :** A drug used to treat certain types of T-cell acute lymphoblastic leukemia (T-ALL) and T-cell lymphoblastic lymphoma (T-LBL). It belongs to the family of drugs called antimetabolites. Also called 506U78 and nelarabine.

**arsenic trioxide:** A rare type of ovarian tumor in which the tumor cells secrete a male sex hormone. This may cause virilization (the appearance of male physical characteristics in females). Also called androblastoma and Sertoli-Leydig cell tumor of the ovary. OR A small-molecule arsenic compound with antineoplastic activity. The mechanism of action of arsenic trioxide is not completely understood. This agent causes damage to or degradation of the promyelocytic leukemia protein/retinoic acid receptor-alpha (PML/RARa) fusion protein; induces apoptosis in acute promyelocytic leukemia (APL) cells and in many other tumor cell types; promotes cell differentiation and suppresses cell proliferation in many different tumor cell types; and is pro-angiogenic.

**ART:** A term used to describe collectively a number of noncoital methods of conception that are used to treat infertility with donor or nondonor eggs and sperm including in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT), and zygote intrafallopian transfer (ZIFT). Also called assisted reproductive technology.

**art therapy :** A poisonous chemical used to kill weeds and pests. Also used in cancer therapy.

**artemether sublingual spray:** A sublingual spray containing artemether, a semisynthetic derivative of artemisinin, an endoperoxide extracted from the Chinese herb qinghaosu (*Artemisia annua* or annual wormwood), with antiparasitic and potential antineoplastic activity. Upon sublingual application of the spray, artemether exerts its antineoplastic activity through

as of yet not fully elucidated mechanism(s) of action. This agent binds to heme molecules inside cells, thereby inducing reactive oxygen species (ROS)-mediated damage which selectively kills cancer cells. In addition, artemether appears to target and modulate the expression of various proteins involved in cancer cell proliferation, angiogenesis, invasion and metastasis. Also, this agent depletes T regulatory cells, and modulates the production of inflammatory cytokines, such as interleukin-4 and interferon-gamma. Altogether, this inhibits tumor cell proliferation. The sublingual spray allows faster absorption of a higher percentage of the artemether dose, when compared to the oral form, as it avoids first pass metabolism; this results in an increased efficacy.

**Artemisia vulgaris:** An herbal remedy containing the leaves and/or flowering tops of a species of wormwood (*Artemisia absinthium*) with potential anticachexia activity. Upon oral consumption, *Artemisia absinthium* may decrease production of pro-inflammatory cytokines such as TNF-alpha. As increased levels of pro-inflammatory cytokines is correlated with decreased appetite and weight loss, *Artemisia absinthium* may increase appetite and improve weight gain.

**arterial embolization :** A drug used to treat acute promyelocytic leukemia (APL) that has not gotten better or that has come back after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Also called Trisenox.

**arteries:** the channels through which fluid flows away from the heart.

**arteriogram :** Treatment that uses the making of art and the response to art to improve one's physical, mental, and emotional well-being. Art therapy is sometimes used together with psychotherapy (talk therapy).

**arteriography :** A procedure in which the blood supply to a tumor or an abnormal area of tissue is blocked. During arterial embolization, a small incision (cut) is made in the inner thigh and a catheter (thin, flexible tube) is inserted and guided into an artery near the tumor or abnormal tissue. Once the catheter is in place, small particles made of tiny gelatin sponges or beads are injected. This blocks the artery and stops the flow of blood to the tumor or abnormal area of tissue. Arterial embolization is used to treat some types of liver cancer, kidney cancer, and neuroendocrine tumors. It may also be used to treat uterine fibroids, aneurysms, and other conditions. Also called TAE and transarterial embolization.

**artery :** An x-ray of arteries. The person receives an injection of a dye that outlines the vessels on the x-ray.

**artesian well:** a well that taps water from a confined aquifer.

**artesunate:** A water-soluble, semi-synthetic derivative of the sesquiterpene lactone artemisinin with anti-malarial, anti-shistosomiasis, antiviral, and potential anti-neoplastic activities. Upon hydrolysis of artesunate's active endoperoxide bridge moiety by liberated heme in parasite-infected red blood cells, reactive oxygen species and carbon-centered radicals form, which have been shown to damage and kill parasitic organisms.

Additionally, in vitro studies demonstrate that this agent induces DNA breakage in a dose-dependent manner. Artesunate has also been shown to stimulate cell differentiation, arrest the cell cycle in the G1 and G2/M phases, inhibit cell proliferation, and induce apoptosis through mitochondrial and caspase signaling pathways. Artemisinin is isolated from the plant *Artemisia annua*.

**arthralgia :** A procedure to x-ray arteries. The arteries can be seen because of an injection of a dye that outlines the vessels on the x-ray.

**arthritis :** A blood vessel that carries blood from the heart to tissues and organs in the body.

**artichoke whole phytocomplex concentrate:** A whole phytocomplex concentrate (W.P.C.) composed of a standardized extract of the *Cynara scolymus* (artichoke) leaf with potential antioxidant, protective and chemopreventive activities. Artichoke W.P.C. is high in flavonoids and polyphenols, such as caffeoylquinic acids, which are mainly responsible for the pharmacological effects of the extract. Artichoke W.P.C. also contains protein, fiber, vitamins, minerals, numerous enzymes, volatile oils, phytosterols and polyunsaturated fatty acids.

**articular cartilage:** cartilage covering the bony ends of the articulating joints

**artificial pacemaker :** Joint pain.

**Artificially balanced runner system :** balancing a runner system by adjusting the pressure drop of a long large diameter runner against a short small diameter runner. Since pressure drop over the small diameter runner will be much more affected by heat loss than the large diameter runner, an artificially balanced runner system will work with a set range of molding

conditions. The width of this range of molding conditions determines the stability of the molding.

**aryl:** A molecular fragment or group attached to a molecule by an atom that is on an aromatic ring.

**aryl group:** a group produced by the removal of a proton from an aromatic molecule.

**aryl halide:** a compound in which a halogen atom is attached to an aromatic ring.

**Arzerra :** A disease that causes inflammation and pain in the joints.

**arzoxifene hydrochloride:** (Other name for: ofatumumab) OR The hydrochloride salt of arzoxifene, a synthetic aromatic derivative with anti-estrogenic properties. Arzoxifene binds to estrogen receptors as a mixed estrogen agonist/antagonist. In comparison to other selective estrogen receptor modulators (SERMs), arzoxifene exhibits greater bioavailability and higher anti-estrogenic potency in the breast than raloxifene; it exhibits reduced estrogenicity in the uterus compared with either tamoxifen or raloxifene. This agent may have beneficial effects on bone and the cardiovascular system. or An electronic device that is implanted in the body to monitor heart rate and rhythm. It gives the heart electrical stimulation when it does not beat normally. It runs on batteries and has long, thin wires that connect it to the heart. Also called cardiac pacemaker and pacemaker.

**AS03-adjuvanted H1N1 pandemic influenza vaccine:** A split-virus, inactivated influenza A (H1N1) vaccine containing H1N1 immunizing antigen combined with the adjuvant AS03, with potential immunostimulating activity. Upon intramuscular vaccination, AS03-adjuvanted H1N1 influenza vaccine may elicit an immune response against the H1N1 virus and the production of anti-H1N1 antibodies. AS03 is a stabilized oil-in-water emulsion adjuvant containing DL-alpha-tocopherol, squalene and polysorbate 80 that non-specifically stimulates cell-mediated immune antigen responses.

**ASA:** Acrylic-styrene-acrylonitrile

**Asacol:** (Other name for: mesalamine)

**asaley:** An L-leucine derivative of melphalan with antineoplastic activity. Asaley alkylates and crosslinks DNA, resulting in disruption of DNA synthesis. Check for active clinical trials using this agent.

**Asbestos:** A gray, non-burning, non-conductive and chemical resistant material occurring in long fibers or fibrous masses, sometimes used as a filler for reinforcement.

**asbestos :** A drug used to treat chronic lymphocytic leukemia (CLL) that has not gotten better with other anticancer drugs. It is also used with chlorambucil in patients who have not already been treated and cannot receive certain anticancer drugs. It is also being studied in the treatment of other types of cancer. Arzerra binds to a protein called CD20, which is found on B cells (a type of white blood cell) and some types of leukemia and lymphoma cells. This may help the immune system kill cancer cells. Arzerra is a type of monoclonal antibody. Also called HuMax-CD20 and ofatumumab.

**Asbestos cement:** Usually refers to a type of asbestos sheet, or to casting where the asbestos is bonded together with Portland cement, e.g. asbestos, cement sheet, tiles, rain-water pipes, etc.

**asbestosis:** The damage to the the lungs caused specifically by exposure to, and inhalation of, asbestos fibres.

**asbestosis :** A substance being studied in the treatment of osteoporosis and breast cancer. Arzoxifene hydrochloride is made in the laboratory and binds to estrogen receptors in the body. It is a type of selective estrogen receptor modulator (SERM). Also called LY353381 hydrochloride.

**ASC-H:** A group of minerals that take the form of tiny fibers. Asbestos has been used as insulation against heat and fire in buildings. Loose asbestos fibers breathed into the lungs can cause several serious diseases, including lung cancer and malignant mesothelioma (cancer found in the lining of the lungs, chest, or abdomen). Asbestos that is swallowed may cause cancer of the gastrointestinal tract.

**ASC-US:** A nutrient that the body needs in small amounts to function and stay healthy. Ascorbic acid helps fight infections, heal wounds, and keep tissues healthy. It is an antioxidant that helps prevent cell damage caused by free radicals (highly reactive chemicals). Ascorbic acid is found in all fruits and vegetables, especially citrus fruits, strawberries, cantaloupe, green peppers, tomatoes, broccoli, leafy greens, and potatoes. It is water-soluble (can dissolve in water) and must be taken in every day. Ascorbic acid is being studied in the prevention and treatment of some types of cancer. Also called vitamin C.

**ascites** : A lung disease caused by breathing in particles of asbestos (a group of minerals that take the form of tiny fibers). Symptoms include coughing, trouble breathing, and chest pain caused by scarring and permanent damage to lung tissue. Asbestosis increases the risk of lung cancer and malignant mesothelioma (cancer found in the lining of the lungs, chest, or abdomen).

**Ascorbate (vitamin C):** A water-soluble vitamin that functions as an antioxidant and is required for the hydroxylation of collagen; scurvy results if ascorbate is deficient.

**ascorbic acid:** A natural water-soluble vitamin (Vitamin C). Ascorbic acid is a potent reducing and antioxidant agent that functions in fighting bacterial infections, in detoxifying reactions, and in the formation of collagen in fibrous tissue, teeth, bones, connective tissue, skin, and capillaries. Found in citrus and other fruits, and in vegetables, vitamin C cannot be produced or stored by humans and must be obtained in the diet. OR A finding of abnormal cells in a Pap test. It means there are abnormal squamous cells in the tissue that lines the outer part of the cervix. ASC-H may be a sign of a high-grade squamous intraepithelial lesion (HSIL), which may become cervical cancer if untreated. More testing may be needed. Also called atypical squamous cells, cannot exclude a high-grade lesion.

**ASCUS** : Abnormal buildup of fluid in the abdomen that may cause swelling. In late-stage cancer, tumor cells may be found in the fluid in the abdomen. Ascites also occurs in patients with liver disease.

**aseismic ridge:** a chain of seamounts and guyots; so called because it is not associated with earthquakes.

**Aseptic:** Free from living germs of disease, fermentation or putrefaction.

**aseptic necrosis** : A finding of abnormal cells in the tissue that lines the outer part of the cervix. ASCUS is the most common abnormal finding in a Pap test. It may be a sign of infection with certain types of human papillomavirus (HPV). It may also be a sign of a benign (not cancer) growth, such as a cyst or polyp or, in menopausal women, of low hormone levels. More testing, such as an HPV test, may be needed. Also called ASC-US and atypical squamous cells of undetermined significance.

**Asexual reproduction:** Growth and cell duplication that does not involve the union of nuclei from cells of opposite mating types.

**Ash Content :** The solid residue remaining after a substance has been incinerated or heated to a temperature sufficient to drive off all combustible or volatile substances.

**Ashkenazi Jews :** One of two major ancestral groups of Jewish individuals, comprised of those whose ancestors lived in Central and Eastern Europe (e.g., Germany, Poland, Russia). The other group is designated Sephardic Jews and includes those whose ancestors lived in North Africa, the Middle East, and Spain. Most Jews living in the United States are of Ashkenazi descent. OR A finding of abnormal cells in the tissue that lines the outer part of the cervix. ASC-US is the most common abnormal finding in a Pap test. It may be a sign of infection with certain types of human papillomavirus (HPV). It may also be a sign of a benign (not cancer) growth, such as a cyst or polyp or, in menopausal women, of low hormone levels. More testing, such as an HPV test, may be needed. Also called ASCUS and atypical squamous cells of undetermined significance.

**Ashlar:** Stones which have been cut square are called ashlar as opposed to rough stoned which have been quarried.

**ashwagandha root powder extract:** A dietary supplement containing an extract powder derived from the root of the ashwagandha shrub with potential antineoplastic, antioxidant, immunostimulating and anti-angiogenic activities. Ashwagandha root powder extract contains numerous alkaloids, including withanine as the primary alkaloid, and steroidal lactone withanolides. The withanolides in this agent may suppress nuclear factor-kappaB activation and nuclear factor-kappaB-regulated gene expression, potentiating apoptosis and inhibiting tumor cell invasion. Cultivated in India and North America, ashwagandha (*Withania somnifera* Dunal or Indian ginseng) belongs to the Solanaceae (nightshade) family.

**Asian ginseng:** The aromatic root of perennial herbs of *Panax ginseng*. Ginseng, used in traditional Chinese medicine and available as a nutritional supplement, is classified as an adaptogenic herb with multiple effects, many of them are regulatory in nature. It contains a complex mixture of saponins, ginsenosides and panaxosides. Although the mechanism of action is unclear, ginseng is reported to enhance the immune system and reduce fatigue. Check for active clinical trials using this agent.

**ASK1 inhibitor GS-4997:** An orally bioavailable inhibitor of apoptosis signal-regulating kinase 1 (ASK1), with potential anti-inflammatory, antineoplastic and anti-fibrotic activities. Upon oral administration, ASK1 inhibitor GS-4997 targets and binds to the catalytic kinase domain of ASK1 in an ATP-competitive manner, thereby preventing its phosphorylation and activation. This prevents the phosphorylation of downstream kinases, such as c-Jun N-terminal kinases (JNKs) and p38 mitogen-activated protein kinase (p38 MAPK). By preventing the activation of ASK1-dependent signal transduction pathways, GS-4997 prevents the production of inflammatory cytokines, down-regulates the expression of genes involved in fibrosis, suppresses excessive apoptosis and inhibits cellular proliferation. ASK1, also called mitogen-activated protein kinase kinase kinase 5 (MAP3K5), is activated in response to oxidative and endoplasmic reticulum (ER) stress, calcium influx and infection. It plays a key role in the development of certain cardiovascular and neurodegenerative diseases, diabetes, as well as certain types of cancer.

**ASONEP:** (Other name for: sonopcizumab)

**Asorbicap:** (Other name for: ascorbic acid)

**ASP4132:** A molecule with potential antineoplastic activity. Upon oral administration, ASP4132 affects oxidative phosphorylation in mitochondria of metabolically-active tumor cells, which reduces both energy production and tumor cell proliferation. Mitochondrial oxidative phosphorylation is hyperactivated in tumor cells and plays a key role in the promotion of tumor cell proliferation.

**ASP9853:** An orally bioavailable small molecule, with potential antineoplastic activity.

**asparaginase:** An enzyme isolated from the bacterium *Escherichia coli* or the bacterium *Erwinia carotovora* with antileukemic activity. Asparaginase hydrolyzes L-asparagine to L-aspartic acid and ammonia in leukemic cells, resulting in the depletion of asparagine, inhibition of protein synthesis, cell cycle arrest in the G1 phase, and apoptosis in susceptible leukemic cell populations. Asparagine is critical to protein synthesis in leukemic cells; some leukemic cells cannot synthesize this amino acid de novo due to the absent or deficient expression of the enzyme asparagine synthase. The *E. carotovora*-derived form of asparaginase is typically reserved for cases of asparaginase hypersensitivity. Check for active clinical trials using this

agent. or A condition in which there is a loss of blood flow to bone tissue, which causes the bone to die. It is most common in the hips, knees, shoulders, and ankles. It may be caused by long-term use of steroid medicines, alcohol abuse, joint injuries, and certain diseases, such as cancer and arthritis. It may also occur at some point in time after cancer treatment that included methotrexate, bisphosphonates, or corticosteroids. Also called avascular necrosis, ischemic necrosis, and osteonecrosis.

**asparaginase Erwinia chrysanthemi:** An enzyme isolated from the bacterium *Erwinia chrysanthemi* (*E. carotovora*). Asparagine is critical to protein synthesis in leukemic cells, which cannot synthesize this amino acid due to the absence of the enzyme asparagine synthase. Asparaginase hydrolyzes L-asparagine to L-aspartic acid and ammonia, thereby depleting leukemic cells of asparagine and blocking protein synthesis and tumor cell proliferation, especially in the G1 phase of the cell cycle. This agent also induces apoptosis in tumor cells. The *Erwinia*-derived product is often used for those patients who have experienced a hypersensitivity reaction to the *E. Coli* formulation. OR One of two major ancestral groups of Jewish individuals. The ancestors of Ashkenazi Jews lived in Central and Eastern Europe (e.g., Germany, Poland, Russia). The other group is called Sephardic Jews and includes those whose ancestors lived in North Africa, the Middle East, and Spain. Most Jews living in the United States are of Ashkenazi descent.

**asparagine:** A natural amino acid that is the amide of aspartic acid.

**aspartate transaminase :** A drug that is used to treat acute lymphoblastic leukemia (ALL) and is being studied in the treatment of some other types of cancer. It is an enzyme taken from the bacterium *Escherichia coli* (*E. coli*). It breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. Also called Elspar and L-asparaginase.

**aspartic acid<sup>22</sup>:** A nonessential amino acid that is abundant in molasses. The carboxylic acid group on the side chain is ionized under physiological conditions, making aspartic acid residues in proteins hydrophilic.

**Aspartyl proteases:** A class of protein-degrading enzymes whose activity is dependent on an aspartate residue at the active site. An aspartyl protease is required for HIV replication.

**Aspect Ratio:** Ratio of total flow length to average wall thickness. OR The length/diameter ratio of a fibre. OR

**aspergillois :** A drug used with other anticancer drugs to treat acute lymphoblastic leukemia (ALL). It is an enzyme that comes from the Erwinia chrysanthemi bacterium. It is used in patients who cannot take a similar drug that comes from the E. coli bacterium. It is also being studied in the treatment of other types of cancer. It breaks down the amino acid asparagine and may block the growth of cancer cells that need asparagine to grow. It may also kill cancer cells. Also called Erwinaze.

**Aspergillus :** An enzyme found in the liver, heart, and other tissues. A high level of aspartate transaminase released into the blood may be a sign of liver or heart damage, cancer, or other diseases. Also called serum glutamic-oxaloacetic transaminase and SGOT.

**Aspergum:** (Other name for: acetylsalicylic acid)

**aspirate:** An infectious fungal disease that occurs most often in the skin, ears, nasal sinuses, and lungs of people with suppressed immune systems.

**aspiration :** Fungi commonly found in soil. Certain types of Aspergillus may cause disease, especially in people who have suppressed immune systems.

**aspirin :** Aspirate (pronounced AS-pih-rit) refers to fluid, tissue, or other substance that is withdrawn from a body cavity, cyst, or tumor. Aspirate (pronounced AS-pih-rayt) refers to the act of withdrawing the fluid, tissue, or other substance through a needle. It also refers to the accidental breathing in of food or fluid into the lungs. This can cause serious problems, such as pneumonia and other lung problems.

**ASPS:** Removal of fluid or tissue through a needle. Also, the accidental breathing in of food or fluid into the lungs.

**assay:** The quantitative or quantitative evaluation of a hazardous substance; the results of such an evaluation (Last, 1988). Or A drug that reduces pain, fever, inflammation, and blood clotting. Aspirin belongs to the family of drugs called nonsteroidal anti-inflammatory agents. It is also being studied in cancer prevention.

**Assembly:** A secondary manufacturing function of joining finished parts together.

**assent process :** A soft tissue tumor that is most common in older children and teenagers. It begins in the soft supporting tissue that connects and surrounds the organs and other tissues. ASPS usually occurs in the legs, but can also occur in the arms, hands, head, or neck. It can cause the growth of new blood vessels that help the tumor grow and spread. Also called alveolar soft part sarcoma.

**assessment :** A laboratory test to find and measure the amount of a specific substance.

**Assimilate:** To take in, similar to eating food.

**assimilation:** the process by which pieces of the country rock melt and mix within a body of magma.

**assisted reproductive technology :** A term used to describe collectively a number of noncoital methods of conception that are used to treat infertility with donor or nondonor eggs and sperm including in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT), and zygote intrafallopian transfer (ZIFT). Also called ART.

**assistive device :** A process that is required by law in which children or adolescents are given easy-to-understand information about a clinical trial to help them decide if they want to take part in the trial. The patient is given a chance to ask questions about what will happen during the trial, why it's being done, and what they will be asked to do. Formal consent to enter the trial comes from the parent or guardian.

**assistive technology :** In healthcare, a process used to learn about a patient's condition. This may include a complete medical history, medical tests, a physical exam, a test of learning skills, tests to find out if the patient is able to carry out the tasks of daily living, a mental health evaluation, and a review of social support and community resources available to the patient.

**associativity:** A property in math which states that:  $(A+B)+C=A+(B+C)$  and  $(A*B)*C=A*(B*C)$ .

**Assumptions (for IPEs, IPEEs, and PRAs):** In the context of individual plant examinations (IPEs), individual plant examinations for external events (IPEEE), and probabilistic risk assessments (PRAs), assumptions are those parts of the mathematical models that the analyst expects will hold true for the range of solutions used for making decisions. Without assumptions,

even the most powerful computers may not be able to provide useful solutions for the models.

**Astatine:** Symbol:"At" Atomic Number:"85" Atomic Mass: (210)amu. Astatine is a member of the halogen group. This element is often found during reactions with uranium in nuclear reactors. It is not found in nature and has no uses.

**asteroid:** Any of the thousands of small bodies that revolve about the sun in orbits lying mostly between those of Mars and Jupiter. Also known as a minor planet.

**asteroid belt:** the orbiting band of rocks between Mars and Jupiter.

**asthenia :** A tool that helps a person with a disability to do a certain task. Examples are a cane, wheelchair, scooter, walker, hearing aid, or special bed.

**asthenosphere:** The asthenosphere is the region of the mantle that lies below the lithosphere and contains between 1 and 10 per cent molten material. OR an area composed of the flexible mantle beneath the lithosphere. OR the outer layer of the Earth's mantle, which has a plastic-like composition; site of convection currents that move the plates on the surface.

**asthma :** Any device or technology that helps a disabled person. Examples are special grips for holding utensils, computer screen monitors to help a person with low vision read more easily, computers controlled by talking, telephones that make the sound louder, and lifters to help a person rise out of a chair.

**ASTM:** Abbreviation for American Society for Testing and Materials. OR Abbreviation of American Society for Testing and Materials, an association for establishing standard testing and reporting procedures. OR American Society for Testing and Materials, An organization for issuing standard specifications on materials

**Astragalus-based formulation Qing Shu Yi Qi Tang:** An herbal remedy containing Astragalus membranaceus, Panax ginseng, Atractylodes chinensis Koidz, Cimicifuga foetida, A. macrocephala Koidz, Alisma orientale Juzep, and Citrus reticulata Blanco, with potential immunomodulating, anti-oxidant and anticachexia activities. Upon oral consumption, the ingredients in this herbal supplement may modulate the

activity of the immune system through a decrease in both the expression of nuclear factor-kappa B (NF- $\kappa$ B) and the production of pro-inflammatory cytokines such as interleukin-1beta (IL-1b), IL-6, and tumor necrosis factor-alpha (TNF-alpha). Increased levels of pro-inflammatory cytokines are correlated with decreased appetite and weight loss; thus, this herbal remedy may improve immune function, appetite and weight gain, which could prevent cachexia.

**astrocyte :** Weakness; lack of energy and strength.

**astrocytoma :** A chronic disease in which the bronchial airways in the lungs become narrowed and swollen, making it difficult to breathe. Symptoms include wheezing, coughing, tightness in the chest, shortness of breath, and rapid breathing. An asthma attack may be brought on by pet hair, dust, smoke, pollen, mold, exercise, cold air, or stress.

**astronomical unit:** measurement used in the solar system, the average distance from the Earth to the Sun (150,000,000 km or 93,000,000 mi).

**Astugenal:** (Other name for: antineoplaston AS2-1)

**astuprotimut-R:** A cancer vaccine consisting of a recombinant form of human melanoma antigen A3 (MAGE-A3) combined with a proprietary adjuvant with potential immunostimulatory and antineoplastic activities. Upon administration, astuprotimut-R may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing the MAGE-A3 antigen, resulting in tumor cell death. MAGE-A3, a tumor-associated antigen (TAA) originally discovered in melanoma cells, is expressed by various tumor types. The proprietary immunostimulating adjuvant in this agent is composed of a specific combination of immunostimulating compounds selected to increase the anti-tumor immune response to MAGE-A3. Check for active clinical trials using this agent.

**asulacrine isethionate:** The isethionate salt of an amsacrine analogue with antineoplastic properties. Asulacrine inhibits the enzyme topoisomerase II, thereby blocking DNA replication and RNA and protein synthesis.

**asunaprevir:** An orally bioavailable inhibitor of the nonstructural protein 3 (NS3), with potential activity against hepatitis C virus (HCV). Upon administration, asunaprevir binds to the active center of the HCV NS3 and prevents NS3 protease-mediated polyprotein maturation. This disrupts the processing of viral proteins required for HCV replication. NS3, a serine protease, is essential for the proteolytic cleavages within the HCV

polyprotein and plays a key role during HCV viral RNA replication. HCV is a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family.

**Asymmetric carbon:** A carbon that is covalently bonded to four different groups.

**asymmetric carbon atom:** A carbon atom that is covalently bonded to four different groups and thus may exist in two different tetrahedral configurations.

**asymmetry :** A large, star-shaped cell that holds nerve cells in place and helps them develop and work the way they should. An astrocyte is a type of glial cell.

**Asymmetry potential:** the potential across a glass pH electrode membrane when the inside and outside of the membrane are in contact with solutions of identical pH. This term has also been used to define the observed potential differences between identical electrode pairs placed in identical solutions. Differences can occur because of variability in the potentials of the internal reference elements of both the sensing and the reference electrodes, differences in liquid junction potentials, and differences in internal filling solutions. These variations in electrode potential are compensated for by the instrument calibration control (asymmetry potential control).

**asymptomatic :** A tumor that begins in the brain or spinal cord in small, star-shaped cells called astrocytes.

**asymptomatic inflammatory prostatitis :** Lack or absence of balanced proportions between parts of a thing.

**AT/RT:** Having no signs or symptoms of disease.

**AT7519M:** Inflammation of the prostate gland where the only symptom is the presence of white blood cells in the prostate fluid.

**AT9283:** An aggressive cancer of the central nervous system, kidney, or liver that occurs in very young children. Also called ATT/RHT and atypical teratoid/rhabdoid tumor.

**Atacand:** (Other name for: candesartan cilexetil)

**Atactic:** a polymer exhibiting no stereochemical regularity of structure.

**atamestane:** A synthetic steroidal substance with antineoplastic activity. Atamestane binds irreversibly to and inhibits the enzyme aromatase,

thereby blocking the conversion of cholesterol to pregnenolone and the peripheral aromatization of androgenic precursors into estrogens. or A substance being studied in the treatment of some types of cancer. AT7519M blocks enzymes needed for cells to divide. It is a type of cyclin-dependent kinase inhibitor. Also called CDK inhibitor AT7519M.

**ataxia:** inability to coordinate voluntary muscle movements; unsteady movements and staggering gait or A substance being studied in the treatment of some types of cancer. It blocks enzymes (Aurora kinases) involved in cell division and may kill cancer cells. AT9283 is a type of serine/threonine protein kinase inhibitor. Also called Aurora kinase inhibitor AT9283.

**ataxia-telangiectasia :** A substance that is being studied in the treatment of cancer. Atamestane blocks the production of the hormone estrogen in the body. It belongs to the family of drugs called antiestrogens.

**ataxic gait :** Loss of muscle coordination.

**atelectasis :** A rare, inherited, progressive, degenerative disease of childhood that causes loss of muscle control, a weakened immune system, and an increased risk of cancer.

**Atengenal:** (Other name for: antineoplaston A10)

**atenolol:** A synthetic isopropylamino-propanol derivative used as an antihypertensive, hypotensive and antiarrhythmic. Atenolol acts as a peripheral, cardioselective beta blocker specific for beta-1 adrenergic receptors, without intrinsic sympathomimetic effects. It reduces exercise heart rates and delays atrioventricular conduction, with overall decreasing oxygen requirements.

**atezolizumab:** A human, Fc optimized, monoclonal antibody directed against the protein ligand PD-L1 (programmed cell death-1 ligand 1), with potential immune checkpoint inhibitory and antineoplastic activities. Atezolizumab binds to PD-L1, blocking its binding to and activation of its receptor programmed death 1 (PD-1) expressed on activated T-cells, which may enhance the T-cell-mediated immune response to neoplasms and reverse T-cell inactivation. In addition, by binding to PD-L1, atezolizumab also prevents binding of this ligand to B7.1 expressed on activated T cells, which further enhances the T-cell-mediated immune response. PD-L1 is overexpressed on many human cancer cell types and on various tumor-infiltrating immune cells. PD-L1 binding to PD-1 on T-cells suppresses the

immune system and results in increased immune evasion. PD-1, a transmembrane protein, is a negative regulator of the immune system that limits the expansion and survival of CD8+ T cells. The Fc region of atezolizumab is modified in such a way that it does not induce either antibody-dependent cytotoxicity (ADCC) or complement-dependent cytotoxicity (CDC). or Awkward, uncoordinated walking.

**ATGAM:** (Other name for: anti-thymocyte globulin)

**atheromas:** fat deposits in the arteries

**atherosclerosis:** A disease of the arterial walls characterized by fatty deposits and abnormal tissue growth. Or condition in which an artery wall thickens as the result of a build up of fatty materials such as cholesterol

**Athrombin-K:** (Other name for: warfarin)

**athymic nude mouse :** Failure of the lung to expand (inflate) completely. This may be caused by a blocked airway, a tumor, general anesthesia, pneumonia or other lung infections, lung disease, or long-term bedrest with shallow breathing. Sometimes called a collapsed lung.

**atiprimod:** An orally bioavailable small molecule belonging to the azaspirane class of cationic amphiphilic agents with anti-inflammatory, antineoplastic, and antiangiogenic properties. Atiprimod inhibits the phosphorylation of signal transducer and activator of transcription 3 (STAT3), blocking the signalling pathways of interleukin-6 and vascular endothelial growth factor (VEGF) and downregulating the anti-apoptotic proteins Bcl-2, Bcl-XL, and Mcl-1, thereby inhibiting cell proliferation, inducing cell cycle arrest, and inducing apoptosis. or A drug used to treat urothelial cancer (a type of bladder cancer) that has advanced or spread to other parts of the body. It is used in patients whose disease got worse during or after treatment with anticancer drugs that included platinum. It is also being studied in the treatment of other types of cancer. Atezolizumab binds to a protein called PD-L1, which is found on some cancer cells.

Atezolizumab may block this protein and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called Tecentriq.

**Ativan:** (Other name for: lorazepam)

**atlantoaxial sublaxation:** a mis-alignment between the 1st and 2nd cervical vertebrae

**ATLL:** A type of laboratory mouse that is hairless, lacks a normal thymus gland, and has a defective immune system because of a genetic mutation. Athymic nude mice are often used in cancer research because they do not reject tumor cells, from mice or other species.

**ATM kinase inhibitor AZD0156:** An orally bioavailable ataxia telangiectasia mutated (ATM) kinase inhibitor, with potential chemo-/radio-sensitizing and antineoplastic activities. Upon oral administration, AZD0156 targets and binds to ATM, thereby inhibiting the kinase activity of ATM and ATM-mediated signaling. This prevents DNA damage checkpoint activation, disrupts DNA damage repair, induces tumor cell apoptosis, and leads to cell death of ATM-overexpressing tumor cells. In addition, AZD0156 sensitizes tumor cells to chemo- and radiotherapy. ATM, a serine/threonine protein kinase, is upregulated in a variety of cancer cell types; it is activated in response to DNA damage and plays a key role in DNA-strand repair. Check for active clinical trials using this agent.

**atmosphere:** Unit of pressure equal to 101325 pascals or 760mmHg. Its symbol is atm. OR the gas layer surrounding the Earth. OR A unit of pressure, equal to a barometer reading of 760 mm Hg. 1 atmosphere is 101325 pascals and 1.01325 bar.

**atmosphere (An):** A standard unit of pressure representing the pressure exerted by a 29.92-in. column of mercury at sea level at 45 degrees latitude and equal to 1000 g/cm<sup>2</sup>.

**atmosphere (The):** The envelope of air surrounding the Earth and bound to it by the Earth's gravitational attraction. Studies of the chemical properties, dynamic motions, and physical processes of this system constitute the field of meteorology.

**atmospheres:** Common units for measuring pressure.

**atmospheric turbulence:** A state of the flow of air in which apparently random irregularities occur in the air's instantaneous velocities, often producing major deformations of the flow.

**atmospheric window:** The spectral region between 8.5 and 11.0 microns where the atmosphere is essentially transparent to longwave radiation.

**ATN-161:** A small peptide antagonist of integrin alpha5beta1 with potential antineoplastic activity. ATN-161 selectively binds to and blocks the receptor for integrin alpha5beta1, thereby preventing integrin

alpha5beta1 binding. This receptor blockade may result in inhibition of endothelial cell-cell interactions, endothelial cell-matrix interactions, angiogenesis, and tumor progression. Integrin alpha5beta1 is expressed on endothelial cells and plays a crucial role in endothelial cell adhesion and migration. or A substance being studied in the treatment of certain multiple myelomas and other advanced cancers. Atiprimod may block the growth of tumors and may prevent the growth of new blood vessels that tumors need to grow. Atiprimod is a type of signal transduction inhibitor and a type of antiangiogenesis agent. Also called azaspirane and SK&F106615.

**ATN-224:** An aggressive (fast-growing) type of T-cell non-Hodgkin lymphoma caused by the human T-cell leukemia virus type 1 (HTLV-1). It is marked by bone and skin lesions, high calcium levels, and enlarged lymph nodes, spleen, and liver. Also called adult T-cell leukemia/lymphoma.

**atoll:** a circular reef in deep water that shelters a lagoon; the result of reef development around the flank of a volcano that has since subsided but to which the corals are still anchored. OR ring of coral reefs surrounding a sunken island.

**atom:** An atom is the smallest particle of an element that retains the chemical properties of the element. Atoms are electrically neutral, with a positively charged nucleus that binds one or more electrons in motion around it. OR The smallest particle of an element that cannot be divided or broken up by chemical means. It consists of a central core (or nucleus), containing protons and neutrons, with electrons revolving in orbits in the region surrounding the nucleus. OR An example would be dissolving salt in water. The change can be reversed simply by evaporating the water. OR The smallest particle of an element. OR The smallest particle of matter that maintains the property of an element in the periodic table; atoms are composed of subatomic particles called electrons, neutrons, and protons, which themselves are composed of even tinier subatomic particles such as quarks OR the smallest part of an element that can enter into various combinations with atoms of other elements. OR the smallest amount of an element; a nucleus surrounded by electrons. OR An atom is the smallest particle of an element that can still be defined as that element. OR is the smallest particle of a chemical element. OR The smallest unit of an element which has all the properties of the element. It is composed of protons,

neutrons and electrons. OR The smallest object that retains properties of an element. Composed of electrons and a nucleus (containing protons and neutrons). OR the smallest particle of an element which can exist alone or enter into a chemical combination.

**atom** : A substance being studied in the treatment of some types of cancer. ATN-161 may prevent the spread of tumor cells and may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent.

**atomic 1s orbital** : s the spherical orbital nearest the nucleus of an atom.

**atomic absorption**: quantitative chemical method used for the analysis of elemental constituents.

**Atomic displacement parameter**: A measure of the mobility or disorder of a given atom in a crystal structure, formerly called the temperature factor.

**Atomic energy**: The energy that is released through a nuclear reaction or radioactive decay process. Of particular interest is the process known as fission, which occurs in a nuclear reactor and produces energy usually in the form of heat. In a nuclear power plant, this heat is used to boil water in order to produce steam that can be used to drive large turbines. This, in turn, activates generators to produce electrical power. Atomic energy is more correctly called nuclear energy.

**Atomic Energy Commission**: The Federal agency (known as the AEC), which was created in 1946 to manage the development, use, and control of atomic (nuclear) energy for military and civilian applications. The AEC was subsequently abolished by the Energy Reorganization Act of 1974 and succeeded by the Energy Research and Development Administration (now part of the U.S. Department of Energy) and the U.S. Nuclear Regulatory Commission. For related information, see Our History.

**Atomic Heat**: This is a measure of the atomic weight of a substance multiplied by its specific heat.

**atomic mass**: (A) the sum of the weights of the protons and neutrons in an atom. (A proton and neutron each have a mass of 1 atomic mass unit.) OR is the average mass of the isotopes of an element. It is the decimal number on the periodic chart. It depends upon both the isotopes' masses and the amount of each isotope present. OR The atomic mass is the total mass of

one atom of an element. It is the mass of the protons, electrons, and neutrons combined. The mass of all atoms is based on the mass of carbon. Carbon's mass is twelve AMU. Atomic mass is not measured in pounds or grams, scientists used something called Daltons. One Dalton is equal to one-twelfth the mass of a carbon atom. Scientists also call a Dalton an Atomic Mass Unit (amu). OR the mass of an atom expressed in atomic mass units (amu); the total number of protons and neutrons in the nucleus.

**atomic mass unit:** A unit of mass equal to 1/12 the mass of a carbon-12 nucleus, which is  $1.660\,538\,73 \times 10^{-27} \text{ kg} \pm 0.000\,000\,13 \times 10^{-27} \text{ kg}$  [1998 CODATA values]. Abbreviated as amu or u. Sometimes called the dalton, after John Dalton, architect of the first modern atomic theory. OR a unit of mass equal to 1/12 the mass of the carbon isotope with mass number 12, approximately  $1.6604 \times 10^{-24} \text{ gram}$ .

**atomic mass/weight:** the total number of protons and neutrons in an atom.

**atomic nucleus:** A tiny, incredibly dense positively charged mass at the heart of the atom. The nucleus is composed of protons and neutrons (and other particles). It contains almost all of the mass of the atom but occupies only a tiny fraction of the atom's volume.

**atomic number:** the number of protons in the nucleus of an atom. OR Number of protons in an element. OR The atomic number is the number of an element on the periodic table. It is also equal to the number of protons inside of an atom. A neutral atom has equal numbers of electrons and protons. The atomic number for oxygen is 8. OR is the number of protons in the nucleus of an atom. It is the whole number on the periodic chart. It is also the number of electrons in a neutral atom (where protons = electrons). OR The atomic number is the number of protons in an atom (which equals the number of electrons). OR the number of protons in the nucleus of the chemical element. OR (Z) the number of protons or electrons in an atom. OR the number of protons in the nucleus of an atom as well as the number of electrons in a neutral atom. OR The number of positively charged protons in the nucleus of an atom. OR The number of protons in an atomic nucleus. The atomic number and the element symbol are two alternate ways to label an element. In nuclide symbols, the atomic number is a leading subscript; for example, in  ${}^{12}_6\text{C}$ , the "6" is the atomic number. OR Z the number of protons or electrons in an atom.

**atomic orbital:** a region in space around the nucleus of an atom where the probability of finding an electron is high. OR A wavefunction that describes the behavior of an electron in an atom.

**atomic p orbital:** p an hourglass-shaped orbital, oriented on x, y, and z axes in three-dimensional space.

**atomic radius:** One half the distance between nuclei of atoms of the same element, when the atoms are bound by a single covalent bond or are in a metallic crystal. The radius of atoms obtained from covalent bond lengths is called the covalent radius; the radius from interatomic distances in metallic crystals is called the metallic radius.

**atomic theory:** An explanation of chemical properties and processes that assumes that tiny particles called atoms are the ultimate building blocks of matter.

**atomic unit:** A system of non-SI units used in quantum chemistry to simplify calculations and mathematical expressions. The definitions of atomic units include physical constants (like the speed of light, the rest mass of the electron, and other quantities that never change), so that all constants drop out of expressions when atomic units are used.

**atomic weight:** the weight in grams of one mole of the chemical element; approximately the number of protons and neutrons in the nucleus. OR The average mass of an atom of an element, usually expressed in atomic mass units. The terms mass and weight are used interchangeably in this case. The atomic weight given on the periodic table is a weighted average of isotopic masses found in a typical terrestrial sample of the element. the average weight of an atom of an element, usually expressed relative to one atom of the carbon isotope taken to have a standard weight of 12.

**atomoxetine hydrochloride:** The hydrochloride salt of atomoxetine, a phenoxy-3-propylamine derivative and selective non-stimulant, norepinephrine reuptake inhibitor with cognitive-enhancing activity. Although its precise mechanism of action is unknown, atomoxetine appears to selectively inhibit the pre-synaptic norepinephrine transporter, resulting in inhibition of the presynaptic reabsorption of norepinephrine and prolongation of norepinephrine activity in the synaptic cleft; the effect on cognitive brain function may result in improved attention and decreased impulsivity and activity levels.

**atorvastatin :** A substance being studied in the treatment of cancer. It may prevent the growth of new blood vessels that tumors need to grow. ATN-224 also blocks enzymes that cells need to divide and grow, and it may kill cancer cells. It is a type of antiangiogenesis agent and a type of superoxide dismutase inhibitor. Also called SOD1 inhibitor ATN-224.

**atorvastatin calcium:** The calcium salt of atorvastatin, a synthetic lipid-lowering agent. Atorvastatin competitively inhibits hepatic hydroxymethylglutaryl coenzyme A (HMG-CoA) reductase, the enzyme which catalyzes the conversion of HMG-CoA to mevalonate, a key step in cholesterol synthesis. This agent increases the number of LDL receptors on hepatic cell surfaces, enhancing the uptake and catabolism of LDL and reducing LDL production and the number of LDL particles, and lowers plasma cholesterol and lipoprotein levels. Like other statins, atorvastatin may also display direct antineoplastic activity, possibly by inhibiting farnesylation and geranylgeranylation of proteins such as small GTP-binding proteins, which may result in the arrest of cells in the G1 phase of the cell cycle. This agent may also sensitize tumor cells to cytostatic drugs, possibly through the mTOR-dependent inhibition of Akt phosphorylation. OR The smallest part of a substance that cannot be broken down chemically. Each atom has a nucleus (center) made up of protons (positive particles) and neutrons (particles with no charge). Electrons (negative particles) move around the nucleus. Atoms of different elements contain different numbers of protons, neutrons, and electrons.

**ATP:** Adenosine triphosphate. Chemical energy generated by substrate oxidations is conserved by formation of high-energy compounds such as adenosine diphosphate (ADP) and adenosine triphosphate (ATP) or compounds containing the thioester bond or The active ingredient in a drug used to lower the amount of cholesterol in the blood and to prevent stroke, heart attack, and angina (chest pain). It is also being studied in the prevention and treatment of some types of cancer and other conditions. Atorvastatin blocks an enzyme that helps make cholesterol in the body. It also causes an increase in the breakdown of cholesterol. It is a type of HMG-CoA reductase inhibitor and a type of statin.

**ATP (adenosine 5'-triphosphate):** A nucleotide consisting of adenine, ribose, and triphosphate units that serves as the cellular energy currency.

**ATP (adenosine triphosphate):** A ribonucleoside 5'-triphosphate functioning as a phosphate group donor in the cell energy cycle; carries chemical energy between metabolic pathways by serving as a shared intermediate coupling endergonic and exergonic reactions.

**ATP Adenosine triphosphate:** The energy currency of metabolism in all organisms

**ATP synthase:** Molecular assembly of the inner mitochondrial membrane responsible for the respiratory-chain-driven synthesis of ATP. Also called Complex V, mitochondrial atpase, H<sup>+</sup>-atpase, or F<sub>0</sub>F<sub>1</sub>-atpase. OR An enzyme complex that forms ATP from ADP and phosphate during oxidative phosphorylation in the inner mitochondrial membrane or the bacterial plasma membrane, and during photophosphorylation in chloroplasts.

**ATP-ADP translocase:** An adenine nucleotide carrying a transport protein that carries ADP into the mitochondria and ATP out in a coupled fashion.

**ATP-binding cassette (ABC) domain:** The ATP-binding domain characteristic of specific membranetransport proteins, called ABC transporters; these transporters also contain a membrane-spanning region.

**ATP-grasp fold:** A protein domain that surrounds ATP and orients it for nucleophilic attack at the  $\gamma$  phosphate. Enzymes with these domains catalyze the formation of carbon-nitrogen bonds through acylphosphate intermediates.

**ATPase:** An enzyme that hydrolyzes ATP to yield ADP and phosphate; usually coupled to some process requiring energy.

**ATR kinase inhibitor AZD6738:** An orally available morpholino-pyrimidine-based inhibitor of ataxia telangiectasia and rad3 related (ATR) kinase, with potential antineoplastic activity. Upon oral administration, ATR kinase inhibitor AZD6738 selectively inhibits ATR activity by blocking the downstream phosphorylation of the serine/threonine protein kinase CHK1. This prevents ATR-mediated signaling, and results in the inhibition of DNA damage checkpoint activation, disruption of DNA damage repair, and the induction of tumor cell apoptosis. In addition, AZD6738 sensitizes tumor cells to chemo- and radiotherapy. ATR, a serine/threonine protein kinase upregulated in a variety of cancer cell types, plays a key role in DNA repair, cell cycle progression, and survival; it is activated by DNA damage caused during DNA replication-associated stress.

**ATR kinase inhibitor VX-970:** An inhibitor of ataxia telangiectasia and rad3-related (ATR) kinase, a DNA damage response kinase, with potential antineoplastic activity. ATR kinase inhibitor VX-970 selectively inhibits ATR kinase activity and prevents ATR-mediated signaling in the ATR-checkpoint kinase 1 (Chk1) signaling pathway. This prevents DNA damage checkpoint activation, disrupts DNA damage repair, and induces tumor cell apoptosis. In addition, VX-970 sensitizes tumor cells to chemo- and radiotherapy. ATR, a serine/threonine protein kinase upregulated in a variety of cancer cell types, plays a key role in DNA repair, cell cycle progression, and survival; it is activated by DNA damage caused during DNA replication-associated stress.

**ATR-101:** An orally bioavailable agent that is selective towards adrenal cortex cells with potential antitumor activity. Upon administration, ATR-101 selectively kills adrenal and adrenal cancer cells, through an unknown mechanism.

**ATRA :** A drug used to lower the amount of cholesterol in the blood and to prevent stroke, heart attack, and angina (chest pain). It is also being studied in the prevention and treatment of some types of cancer and other conditions. Atorvastatin calcium blocks an enzyme that helps make cholesterol in the body. It also causes an increase in the breakdown of cholesterol. It is a type of HMG-CoA reductase inhibitor and a type of statin. Also called Lipitor.

**Atractyloside:** A plant glycoside that inhibits ATP-ADP translocase.

**Atragen:** (Other name for: liposomal tretinoin)

**atrasentan :** A substance present in all living cells that provides energy for many metabolic processes and is involved in making RNA. ATP made in the laboratory is being studied in patients with advanced solid tumors to see if it can decrease weight loss and improve muscle strength. Also called adenosine triphosphate.

**atrasentan hydrochloride:** The orally available hydrochloride salt of pyrrolidine-3-carboxylic acid with potential antineoplastic activity. As a selective antagonist of the endothelin-A (ETA) receptor, atrasentan binds selectively to the ETA receptor, which may result in inhibition of endothelin-induced angiogenesis and tumor cell proliferation.

**atrium :** a thin-walled receiving chamber in which blood accumulates in fishes.

**Atromid-S:** (Other name for: clofibrate)

**atrophy:** The process which is observed during the wasting of a tissue or an organ.

**atropine sulfate :** A nutrient that the body needs in small amounts to function and stay healthy. ATRA is made in the body from vitamin A and helps cells to grow and develop, especially in the embryo. A form of ATRA made in the laboratory is put on the skin to treat conditions such as acne and is taken by mouth to treat acute promyelocytic leukemia (a fast-growing cancer in which there are too many immature blood-forming cells in the blood and bone marrow). ATRA is being studied in the prevention and treatment of other types of cancer. Also called all-trans retinoic acid, retinoic acid, tretinoin, and vitamin A acid. OR The sulfate salt of atropine, a naturally-occurring alkaloid isolated from the plant *Atropa belladonna*. Atropine functions as a sympathetic, competitive antagonist of muscarinic cholinergic receptors, thereby abolishing the effects of parasympathetic stimulation. This agent may induce tachycardia, inhibit secretions, and relax smooth muscles. Check for active clinical trials using this agent.

**atropine suppression test :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called endothelin-1 protein receptor antagonists.

**ATT/RHT:** A drug used to block nerve stimulation of muscles and glands and relax smooth muscles. It is also used to increase heart rate, reduce secretions, and treat the effects of certain poisons. It is a type of antimuscarinic agent and a type of tropane alkaloid.

**Attached growth:** Wastewater treatment processes in which the microorganisms and bacteria treating the wastes are attached to the media in the reactor. The wastes being treated flow over the media. Trickling filters, bio-towers, and RBCs are attached growth reactors. These reactors can be used for removal of BOD, nitrification, and denitrification.

**attending physician :** A test used to help find out if secretion of pancreatic polypeptide (a protein released by the pancreas) is normal or caused by a tumor. A drug called atropine sulfate is injected into the patient's vein and level of pancreatic polypeptide in the blood is measured. If there is a tumor, the injection will not change the level of pancreatic polypeptide. If there is no tumor, the level of pancreatic polypeptide will drop.

**attenuated** : An aggressive cancer of the central nervous system, kidney, or liver that occurs in very young children. Also called AT/RT and atypical teratoid/rhabdoid tumor.

**attenuated chimpanzee adenovirus 5T4 vaccine:** A cancer vaccine comprised of a recombinant, attenuated, replication-defective simian adenovirus vector (ChAdOx1) encoding the human 5T4 fetal oncoprotein (ChAdOx1.5T4), with potential immuno-activating and antineoplastic activities. Upon administration of the recombinant attenuated chimpanzee adenovirus 5T4 vaccine, the viral vector expresses 5T4 and stimulates the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing 5T4, which results in tumor cell lysis. 5T4, a transmembrane glycoprotein, is overexpressed by a variety of cancer cell types; its expression is correlated with increased invasiveness.

**attenuated Listeria monocytogenes CRS-100:** A live-attenuated strain of the Gram-positive bacterium Listeria monocytogenes (Lm) with potential immunostimulatory and antineoplastic activities. Upon intravenous administration, attenuated Listeria monocytogenes CRS-100 may accumulate in and infect liver cells where it may activate a potent innate immune response and an adaptive immune response involving the by recruitment and activation of T lymphocytes. This agent may potentiate the immune response to vaccines against various liver neoplasms. Check for active clinical trials using this agent.

**Attenuation:** In bacteria, a mechanism for transcriptional regulation in which a decrease in the rate of translation of an mRNA operon reduces the rate of transcription of that operon. or The process by which the number of particles or photons entering a body of matter is reduced by absorption and scattered radiation.

**attenuator:** An RNA sequence involved in regulating the expression of certain genes; functions as a transcription terminator. OR A provisional transcription stop signal. OR Attenuator. A provisional transcription signal.

**atto-:** Prefix used in the SI system meaning "multiply by  $10^{-18}$ ". For example, 3 am means  $3 \times 10^{-18}$  meters.

**Attraction Forces:** Attraction forces hold molecules next to each other. When something is in a liquid, the attraction forces hold the liquid together.

If you raise the temperature of the liquid, the molecules are given more energy and break free of the attraction forces to become a gas.

**attributable risk** : Proportion of a disease in exposed individuals that can be attributed to an exposure. In the context of genetic studies, the "exposure" is the frequency of a specific genetic variant.

**atypia** : A medical doctor who is responsible for the overall care of a patient in a hospital or clinic setting. An attending physician may also supervise and teach medical students, interns, and residents involved in the patient's care.

**atypical ductal breast hyperplasia** : Weakened or thinned. Attenuated strains of disease-causing bacteria and viruses are often used as vaccines. The weakened strains are used as vaccines because they stimulate a protective immune response while causing no disease or only mild disease in the person receiving the vaccine.

**atypical ductal hyperplasia** : State of being not typical or normal. In medicine, atypia is an abnormality in cells in tissue.

**atypical glandular cells** : A benign (not cancer) condition in which there are more cells than normal in the lining of breast ducts and the cells look abnormal under a microscope. Having atypical ductal breast hyperplasia increases the risk of breast cancer. Also called ADH and atypical ductal hyperplasia.

**atypical glandular cells of uncertain significance** : A benign (not cancer) condition in which there are more cells than normal in the lining of breast ducts and the cells look abnormal under a microscope. Having atypical ductal hyperplasia increases the risk of breast cancer. Also called ADH and atypical ductal breast hyperplasia.

**atypical glandular cells of undetermined significance** : A finding of abnormal cells in a Pap test. The glandular cells come from the inner part of the cervix or the lining of the uterus. This finding may be a sign of cancer or other serious condition, and more testing may be needed. Also called AGC.

**atypical hyperplasia** : A term that has been used to describe abnormal cells that come from glands in the walls of the cervix (the lower, narrow end of the uterus). These abnormal cells are found in a small number of Pap smears (a procedure used to detect cervical cancer) and may be a sign of

more serious lesions or cancer. The term used now is atypical glandular cells. Also called AGUS and atypical glandular cells of undetermined significance.

**atypical lobular breast hyperplasia :** A term that has been used to describe abnormal cells that come from glands in the walls of the cervix (the lower, narrow end of the uterus). These abnormal cells are found in a small number of Pap smears (a procedure used to detect cervical cancer) and may be a sign of more serious lesions or cancer. The term used now is atypical glandular cells. Also called AGUS and atypical glandular cells of uncertain significance.

**atypical lobular hyperplasia :** A benign (not cancer) condition in which cells look abnormal under a microscope and are increased in number.

**atypical mole :** A benign (not cancer) condition in which there are more cells than normal in the breast lobules and the cells look abnormal under a microscope. Having atypical lobular breast hyperplasia increases the risk of breast cancer. Also called ALH and atypical lobular hyperplasia.

**atypical squamous cells of undetermined significance :** A benign (not cancer) condition in which there are more cells than normal in the breast lobules and the cells look abnormal under a microscope. Having atypical lobular hyperplasia increases the risk of breast cancer. Also called ALH and atypical lobular breast hyperplasia.

**atypical squamous cells, cannot exclude a high-grade lesion :** A type of mole that looks different from a common mole. Several different types of moles are called atypical. Atypical moles are often larger than common moles and have regular or ragged or blurred borders that are not easy to see. Colors of atypical moles may be the same as the rest of the skin, or lighter, darker, or uneven. Parts or all of the mole may be raised above the skin surface. It is rare, but some atypical moles can develop into melanoma (a type of skin cancer). An atypical mole is sometimes called a Spitz nevus, a congenital nevus, a birthmark, or a dysplastic nevus.

**atypical teratoid/rhabdoid tumor :** A finding of abnormal cells in the tissue that lines the outer part of the cervix. Atypical squamous cells of undetermined significance is the most common abnormal finding in a Pap test. It may be a sign of infection with certain types of human papillomavirus (HPV). It may also be a sign of a benign (not cancer) growth, such as a cyst or polyp or, in menopausal women, of low hormone

levels. More testing, such as an HPV test, may be needed. Also called ASC-US and ASCUS.

**AU:** arbitrary unit.

**audience:** refers to the reader at the other end of your writing; you should consider your audience's position and experiences when deciding on the appropriate language, style, and tone for your essay.

**auditory :** A finding of abnormal cells in a Pap test. It means there are abnormal squamous cells in the tissue that lines the outer part of the cervix. Atypical squamous cells, cannot exclude a high-grade lesion may be a sign of a high-grade squamous intraepithelial lesion (HSIL), which may become cervical cancer if untreated. More testing may be needed. Also called ASC-H.

**auditory brain stem response test :** An aggressive cancer of the central nervous system, kidney, or liver that occurs in very young children. Also called AT/RT and ATT/RHT.

**auditory nerve:** the nerve within the ear that carries impulses to the brain for interpretation.

**aufbau buildup:** the order in which electrons fill atomic orbitals according to energy factors.

**aufbau principle:** An approximate procedure for writing the ground state electronic configuration of atoms. The configuration of an atom is obtained by inserting one electron into the configuration of the atom immediately to its left on the periodic table. The electron is inserted into the subshell indicated by the element's period and block.

**aug-cc-pVDZ:** Augmented cc-pVDZ basis (diffuse functions added).

**Augmentin :** Having to do with the ear and the sense of hearing. OR (Other name for: amoxicillin-clavulanate potassium)

**augmerosen :** A test used to detect some types of hearing loss, such as hearing loss caused by injury or tumors that affect nerves involved in hearing. Electrodes are placed on the head and certain tones or clicking sounds are made. The electrodes measure nerve signals in the brain when it reacts to the sounds. Also called ABR test, BAER test, and brain stem auditory evoked response test.

**auranofin:** An orally available, lipophilic, organogold compound, used to treat rheumatoid arthritis, with anti-inflammatory and potential

antineoplastic activities. Auranofin interacts with selenocysteine residue within the redox-active domain of mitochondrial thioredoxin reductase (TrxR), thereby blocking the activity of TrxR. As a result, this agent induces mitochondrial oxidative stress leading to the induction of apoptosis. Furthermore, this agent strongly inhibits the JAK1/STAT3 signal transduction pathway, thereby suppressing expression of immune factors involved in inflammation. TrxR, overexpressed in many cancer cell types, inhibits apoptosis, promotes cell growth and survival and plays a role in resistance to chemotherapy; TrxR catalyzes the reduction of oxidized thioredoxin (Trx) and plays a central role in regulating cellular redox homeostasis. Check for active clinical trials using this agent.

**auricular :** A drug used to treat bacterial infections. Adding the chemical clavulanate potassium to the antibiotic amoxicillin increases the amount of time the antibiotic stays active in the body. Augmentin is a type of combination antibiotic. Also called amoxicillin-clavulanate potassium.

**Aurimmune :** (Other name for: colloidal gold-bound tumor necrosis factor) OR A substance being studied in the treatment of cancer. It may kill cancer cells by blocking the production of a protein that makes cancer cells live longer and by making them more sensitive to anticancer drugs. It is a type of antisense oligodeoxyribonucleotide. Also called bcl-2 antisense oligodeoxynucleotide G3139, Genasense, and oblimersen sodium.

**Aurolate:** (Other name for: gold sodium thiomalate)

**aurora:** light created in the sky by the interference of charged solar particles with the magnetic field of the Earth.

**Aurora A kinase inhibitor TAS-119:** An orally bioavailable inhibitor of the serine/threonine protein kinase aurora A, with potential antimetabolic and antineoplastic activities. Upon intravenous administration, aurora A kinase inhibitor TAS-119 binds to and inhibits aurora A kinase, which may result in disruption of the assembly of the mitotic spindle apparatus, disruption of chromosome segregation, inhibition of cell division and the induction of apoptosis in cells overexpressing aurora A kinase. Aurora A kinase localizes to the spindle poles and to spindle microtubules during mitosis; it plays an essential role in the regulation of spindle assembly. Aurora kinase A is overexpressed in a wide variety of cancers.

**Aurora A kinase/tyrosine kinase inhibitor ENMD-2076:** An orally bioavailable synthetic small molecule with potential antiangiogenic and

antineoplastic activities. Aurora A kinase/tyrosine kinase inhibitor ENMD-2076 selectively binds to and inhibits non-specified tyrosine kinases and Aurora kinases (AKs). The inhibition of AKs may result in the inhibition of cell division and proliferation and may induce apoptosis in tumor cells that overexpress AKs; antiangiogenic activity is related to the inhibition of angiogenic tyrosine kinases. AKs are serine-threonine kinases that play an essential role in mitotic checkpoint control during mitosis and are important regulators of cell division and proliferation.

**Aurora B kinase inhibitor TAK-901:** A small-molecule inhibitor of the serine-threonine kinase Aurora B with potential antineoplastic activity. Aurora B kinase inhibitor TAK-901 binds to and inhibits the activity of Aurora B, which may result in a decrease in the proliferation of tumor cells that overexpress Aurora B. Aurora B is a positive regulator of mitosis that functions in the attachment of the mitotic spindle to the centromere; the segregation of sister chromatids to each daughter cell; and the separation of daughter cells during cytokinesis. This serine/threonine kinase may be amplified and overexpressed by a variety of cancer cell types.

**Aurora B/C kinase inhibitor GSK1070916A:** An ATP-competitive inhibitor of the serine/threonine kinases Aurora B and C with potential antineoplastic activity. Aurora B/C kinase inhibitor GSK1070916A binds to and inhibits the activity of Aurora kinases B and C, which may result in inhibition of cellular division and a decrease in the proliferation of tumor cells that overexpress the Aurora kinases B and C. Aurora kinases play essential roles in mitotic checkpoint control during mitosis, and are overexpressed by a wide variety of cancer cell types. or Having to do with the ear.

**Aurora kinase inhibitor AMG 900:** A small-molecule inhibitor of Aurora kinases A, B and C with potential antineoplastic activity. Aurora kinase inhibitor AMG 900 selectively binds to and inhibits the activities of Aurora kinases A, B and C, which may result in inhibition of cellular division and proliferation in tumor cells that overexpress these kinases. Aurora kinases are serine-threonine kinases that play essential roles in mitotic checkpoint control during mitosis and are overexpressed by a wide variety of cancer cell types.

**Aurora kinase inhibitor AT9283 :** A substance being studied in the treatment of some types of cancer. Aurimmune is made in the laboratory by

binding a cancer-killing protein called tumor necrosis factor (TNF) to the surface of very tiny particles of gold. These TNF-gold particles may kill cancer cells without harming healthy tissue. Also called colloidal gold-bound tumor necrosis factor and TNF-bound colloidal gold.

**Aurora kinase inhibitor BI 811283:** A small molecule inhibitor of the serine/threonine protein kinase Aurora kinase with potential antineoplastic activity. Aurora kinase inhibitor BI 811283 binds to and inhibits Aurora kinases, resulting in disruption of the assembly of the mitotic spindle apparatus, disruption of chromosome segregation, and inhibition of cell proliferation.

**Aurora kinase inhibitor MLN8054:** An orally bioavailable, highly selective small molecule inhibitor of the serine/threonine protein kinase Aurora A kinase with potential antineoplastic activity. Aurora kinase inhibitor MLN8054 binds to and inhibits Aurora kinase A, resulting in disruption of the assembly of the mitotic spindle apparatus, disruption of chromosome segregation, and inhibition of cell proliferation. Aurora A localizes in mitosis to the spindle poles and to spindle microtubules and is thought to regulate spindle assembly. Aberrant expression of Aurora kinases occurs in a wide variety of cancers, including colon and breast cancers. Check for active clinical trials using this agent.

**Aurora kinase inhibitor PF-03814735:** An orally bioavailable, ATP-competitive, reversible small-molecule Aurora kinase inhibitor with potential antineoplastic activity. Aurora kinase inhibitor PF-03814735 binds to and inhibits Aurora kinases A and B, which may result in the inhibition of cellular division and proliferation in tumor cells that overexpress these kinases. Aurora kinases are serine-threonine kinases that play essential roles in mitotic checkpoint control during mitosis.

**Aurora kinase inhibitor SNS-314:** A synthetic small molecule Aurora kinase (AK) inhibitor with potential antineoplastic activity. Aurora kinase inhibitor SNS-314 selectively binds to and inhibits AKs A and B, which may result in the inhibition of cellular division and proliferation in tumor cells that overexpress AKs. AKs are serine-threonine kinases that play essential roles in mitotic checkpoint control during mitosis.

**Aurora kinase inhibitor TTP607:** A small-molecule pan-Aurora kinase inhibitor with potential antineoplastic activity. Aurora kinase inhibitor TTP607 selectively binds to and inhibits Aurora kinases A, B and C, which

may result in the disruption of the assembly of the mitotic spindle apparatus, disruption of chromosome segregation, and inhibition of cellular division and proliferation in Aurora kinase-overexpressing tumor cells. Aurora kinases A, B and C, are serine/threonine kinases that play essential roles in mitotic checkpoint control and are overexpressed by a wide variety of tumor cell types.

**Aurora kinase/VEGFR2 inhibitor CYC116:** An orally bioavailable small molecule multi-kinase inhibitor with antineoplastic activity. Aurora kinase/VEGFR 2 inhibitor CYC116 inhibits Aurora kinases A and B and vascular endothelial growth factor receptor 2 (VEGFR2), resulting in disruption of the cell cycle, rapid cell death, and the inhibition of angiogenesis. Aurora kinases are serine/threonine protein kinases that are only expressed in actively dividing cells and are critical in division or mitosis. VEGFR2 is a receptor tyrosine kinase that appears to account for most of the mitogenic and chemotactic effects of vascular endothelial growth factor (VEGF) on adult endothelial cells.

**aurotherapy :** A substance being studied in the treatment of some types of cancer. It blocks certain enzymes (Aurora kinases) involved in cell division and may kill cancer cells. It is a type of serine/threonine protein kinase inhibitor. Also called GSK1070916A.

**Australian Research Council:** Australia's peak science funding body. The ARC is responsible for running the competitive grant process which is used to determine which proposed research is funded by the Commonwealth government. The ARC's Research Centres Programme established and continues to support the Key Centre for Polymer Colloids.

**auto-ignition temperature:** Minimum temperature at which the vapor/air mixture over a liquid spontaneously catches fire.

**autoantibody :** A substance being studied in the treatment of some types of cancer. It blocks enzymes (Aurora kinases) involved in cell division and may kill cancer cells. Aurora kinase inhibitor AT9283 is a type of serine/threonine protein kinase inhibitor. Also called AT9283.

**Autoclavable:** A method used to sterilize containers with superheated steam under pressure.

**autoclave:** An airtight chamber use for processes requiring dry temperatures above 212 degrees F.

**autoclave :** A procedure that uses gold salts (a salt form of the metal element gold) to treat diseases, such as rheumatoid arthritis. The gold salts stop cells from releasing chemicals that can harm tissues. Also called chrysotherapy and gold therapy.

**Autoclave Molding:** Modification of the pressure bag method for molding reinforced plastics. After lay-up, entire assembly is placed in steam autoclave at 50 to 100 psi. Additional pressure achieves higher reinforcement loadings and improved removal of air.

**autoclave-resistant factor :** An antibody made against substances formed by a person's own body. Autoantibodies can directly destroy cells that have the substances on them or can make it easier for other white blood cells to destroy them. Some autoimmune diseases are caused by autoantibodies.

**Autoimmune disease:** A disease, such as insulin-dependent diabetes and multiple sclerosis, that result from a failure to suppress the immune response to self-antigens.

**autoimmune disease :** A device that uses steam under high pressure to sterilize medical and laboratory supplies and equipment.

**autoimmune enteropathy :** A substance found in soybeans that may slow down or stop the spread of cancer. This substance does not break down in an autoclave (a device that uses steam under high pressure to sterilize medical and laboratory supplies and equipment).

**autoimmune hemolytic anemia :** A condition in which the body recognizes its own tissues as foreign and directs an immune response against them.

**autoimmune thyroiditis :** A rare disease in which certain cells in the intestine are destroyed by a patient's immune system. It causes severe, chronic, diarrhea and usually occurs in children.

**autologous :** A condition in which the body's immune system stops red blood cells from forming or causes them to clump together. Autoimmune hemolytic anemia can occur in patients who have chronic lymphocytic leukemia (CLL). Also called immune complex hemolytic anemia and immunohemolytic anemia.

**autologous Ad-CD154-transduced CLL B cells:** An autologous tumor cell vaccine containing chronic lymphocytic leukemia (CLL) B cells transduced with an adenoviral vector carrying chimeric CD154 (ad-CD154)

with potential antineoplastic activity. Administration of autologous ad-CD154 transduced CLL B cells may result in increases in the numbers of leukemia-specific CD4+ T cells and high serum-levels of IL-12 and IFN-gamma. Due to ligation of CD154 to CD40 on CLL cells, this agent may induce CLL cells to express the proapoptotic molecule Bid and death receptors CD95 (Fas) and DR5, rendering CLL B cells first resistant and then sensitive to Fas-mediated apoptosis. In addition, autologous ad-CD154 transduced CLL B cells may induce MHC class I-dependent cytotoxic T lymphocyte (CTL) responses against autologous leukemia cells. CD154 is a type II membrane glycoprotein and ligand for CD40; both molecules are important in cognate co-stimulatory cell-cell interactions. Check for active clinical trials using this agent.

**autologous anti-CD123 CAR TCR/4-1BB-expressing T lymphocytes:**

Autologous, genetically engineered T lymphocytes that have been electroporated with a messenger RNA (mRNA) encoding a chimeric antigen receptor (CAR) consisting of an anti-human interleukin-3 receptor alpha chain (IL3RA; CD123) single chain variable fragment (scFv) coupled to the co-stimulatory signaling domains of 4-1BB (CD137) and the zeta chain of the T-cell receptor (TCR) CD3 complex (CD3-zeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, the mRNA-electroporated autologous anti-CD123 CAR TCR/4-1BB expressing T lymphocytes attach to cancer cells expressing CD123. This induces selective toxicity in and causes lysis of CD123-expressing tumor cells. The 4-1BB co-stimulatory molecule signaling domain enhances T cell activation and signaling after recognition of CD123. CD123 is normally expressed on committed blood progenitor cells in the bone marrow; its overexpression is associated with both increased leukemic cell proliferation and aggressiveness.

**autologous anti-CD19 CAR-expressing T lymphocytes:** A preparation of autologous T lymphocytes that have been genetically modified to express a chimeric antigen receptor (CAR) that targets the human tumor associated antigen (TAA) CD19, with potential immunostimulating and antineoplastic activities. Upon administration, autologous anti-CD19 CAR-expressing T lymphocytes bind to and induce selective toxicity against CD19-expressing tumor cells. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies.

**autologous anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing CD4+/CD8+ central memory T lymphocytes JCAR014:** A defined preparation of CD4+ and CD8+ central memory (CM) autologous T lymphocytes transduced with a lentiviral vector expressing a chimeric antigen receptor (CAR) containing an anti-CD19 single chain variable fragment (scFv) fused to the signaling domains of CD28, 4-1BB (CD137), the zeta chain of the TCR/CD3 complex (CD3-zeta), and a truncated form of the human epidermal growth factor receptor (EGFRt), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, autologous anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing CD4+/CD8+CM T lymphocytes JCAR014 are directed to and induce selective toxicity in CD19-expressing tumor cells. CD19 antigen is a B-cell-specific cell surface antigen expressed in all B-cell lineage malignancies. Devoid of both ligand binding domains and tyrosine kinase activity, the expressed EGFRt both facilitates in vivo detection of the administered, transduced T cells and can promote elimination of those cells through a cetuximab-induced antibody-dependent cellular cytotoxicity (ADCC) response. The 4-1BB costimulatory signaling domain enhances both proliferation of T cells and antitumor activity.

**autologous anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing CD4+/CD8+ T lymphocytes JCAR017:** A preparation of a defined ratio of CD4+ and CD8+ autologous T lymphocytes transduced with a lentiviral vector expressing a chimeric antigen receptor (CAR) containing an anti-CD19 single chain variable fragment (scFv) fused to the signaling domain of 4-1BB (CD137), the zeta chain of the TCR/CD3 complex (CD3-zeta), and a truncated form of the human epidermal growth factor receptor (EGFRt), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, autologous anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing CD4+/CD8+ T lymphocytes JCAR017 are directed to and induce selective toxicity in CD19-expressing tumor cells. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. Devoid of both ligand binding domains and tyrosine kinase activity, the expressed EGFRt both facilitates in vivo detection of the administered, transduced T cells and can promote elimination of those cells through a cetuximab-induced antibody dependent cellular cytotoxicity (ADCC) response. The 4-1BB costimulatory signaling domain enhances both proliferation of T cells and antitumor activity.

**autologous anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing T lymphocytes:** A preparation of genetically modified CD8<sup>+</sup> central memory (T<sub>cm</sub>) and CD4<sup>+</sup> autologous T-lymphocytes (1:1) transduced with a replication incompetent, self-inactivating (SIN) lentiviral vector expressing a chimeric antigen receptor (CAR) containing an anti-CD19 single chain variable fragment (scFv) derived from the murine IgG1 monoclonal antibody (mAb) FMC63, fused to the signaling domain of 4-1BB (CD137), the zeta chain of the TCR/CD3 complex (CD3-zeta), and a truncated form of the human epidermal growth factor receptor (EGFRt), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, autologous anti-CD19CAR-4-1BB-CD3zeta-EGFRt-expressing T lymphocytes are directed to and induce selective toxicity in CD19-expressing tumor cells. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. Devoid of both ligand binding domains and tyrosine kinase activity, the expressed EGFRt both facilitates in vivo detection of the administered, transduced T-cells and can promote elimination of those cells through a cetuximab-induced antibody dependent cellular cytotoxicity response. The 4-1BB costimulatory signaling domain enhances both proliferation of T-cells and antitumor activity. Check for active clinical trials using this agent.

**autologous anti-gp100:154-162 T-cell receptor gene-engineered peripheral blood lymphocytes:** Human autologous peripheral blood lymphocytes (PBLs) transduced with a glycoprotein 100 (gp100) epitope-determined T cell receptor (TCR) gene, with potential antineoplastic activity. PBLs are isolated from a melanoma patient and pulsed with a viral vector encoding the TCR specific for amino acid residues 154-162 of gp100 (KTWGQYWQV). After expansion ex vivo, the transduced autologous PBLs, expressing this specific TCR, are reintroduced into the patient and bind to melanoma cells expressing the gp100 protein, which may result in specific cytotoxic T-lymphocyte (CTL) killing of gp100-expressing melanoma cells. gp100 is a melanocyte lineage-specific antigen overexpressed in melanomas. Check for active clinical trials using this agent.

**autologous anti-MART-1 F5 T-cell receptor gene-engineered peripheral blood lymphocytes:** Human autologous peripheral blood lymphocytes (PBLs) transduced with a melanoma antigen MART-1 epitope-determined T cell receptor (TCR) gene, with potential antineoplastic activity. PBLs are

isolated from a melanoma patient and pulsed with a viral vector that encodes the TCR specific for an epitope of MART-1 (F5 TCR). After expansion ex vivo, the transduced autologous PBLs, expressing this specific TCR, are reintroduced into the patient, and bind to melanoma cells expressing the MART-1 antigen, which may result in specific cytotoxic T-lymphocyte (CTL) killing of MART-1-expressing melanoma cells. MART-1 (melanoma antigen recognized by T cells 1), also known as Melan-A, is a melanocyte lineage-specific transmembrane protein.

**autologous anti-PSMA gene-modified T-cells:** Autologous prostate specific membrane antigen (PSMA) gene-modified T lymphocytes with potential antineoplastic activity. Human autologous T-lymphocytes are isolated and transduced ex vivo with a retrovirus encoding a chimeric immune receptor (CIR) consisting of an antibody fragment against PSMA fused with signaling domains of the T cell. Upon reintroduction into the patient, autologous anti-PSMA gene-modified T-cells bind to PSMA-expressing prostate cancer cells, which may result in specific cytotoxic T-lymphocyte (CTL) tumor cell killing.

**autologous beta-A(T87Q)-globin gene-transduced CD34-positive cells:** A preparation of autologous, CD34-positive hematopoietic stem cells (HSCs) transduced ex vivo with the BB305 recombinant replication-defective, self-inactivating lentiviral vector encoding for an engineered form of human beta-globin (hemoglobin-beta, HBB) gene, beta-A-T87Q (b-A-T87Q) where the threonine at position 87 has been substituted with glutamine, with potential to restore beta-globin expression and function. Autologous CD34-positive stem cells are isolated from the patient's own bone marrow and the cells are transduced with the lentiviral vector. Upon re-infusion of the b-A-T87Q-globin gene transduced CD34-positive cells back into the patient, these cells express b-A-T87Q-globin, thereby allowing the body to make normal hemoglobin and thus normal, healthy red blood cells. Beta-globin, the beta-chain of the most common form of hemoglobin, is encoded by the HBB gene; mutations in this gene prevent normal beta-globin production and are associated with beta-thalassemia and sickle cell anemia. The b-A-T87Q form of beta-globin has increased antisickling activity compared to the wild type protein.

**autologous bone marrow :** An autoimmune condition of the thyroid gland (a gland located beneath the larynx). It is caused by the formation of

antibodies that attack the thyroid gland and it usually causes hypothyroidism (too little thyroid hormone). Symptoms include fatigue, weight gain, constipation, dry skin, depression, and the inability to exercise. It is more common in females and can run in families. Also called Hashimoto disease and Hashimoto thyroiditis.

**autologous bone marrow transplantation :** Taken from an individual's own tissues, cells, or DNA.

**autologous bone marrow-derived CD34/CXCR4-positive stem cells**

**AMR-001:** A cell-based product containing autologous bone marrow derived CD34 positive and C-X-C chemokine receptor type 4 (CXCR4) positive stem cells with potential antiapoptotic and proangiogenic activities. Upon intracoronary infusion after a myocardial infarction (MI), autologous bone marrow-derived CD34/CXCR4-positive stem cells may preserve cardiac muscle cells and prevent apoptosis; thus improving myocardial perfusion. CD34/CXCR4-positive stem cells are naturally mobilized upon cell injury through signaling by hypoxia inducing factor (HIF), which is secreted in response to hypoxia. In turn, HIF induces the synthesis of stromal-derived factor 1 (SDF-1) and vascular endothelial growth factor (VEGF) which mobilize CD34/CXCR4 positive stem cells; CXCR4 is the receptor for stromal-derived factor 1 (SDF-1).

**autologous CD123CAR-CD28-CD3zeta-EGFRt-expressing T**

**lymphocytes:** A preparation of genetically modified autologous T-cells transduced with a replication-incompetent, self-inactivating lentiviral vector expressing a hinge-optimized, chimeric antigen receptor (CAR), containing a CD28 co-stimulatory signaling domain fused to CD3 zeta, the single-chain variable fragment of CD123 (interleukin-3 receptor alpha chain or IL3RA) antigen, and a truncated form of the human epidermal growth factor receptor (EGFRt), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, autologous CD123CAR-CD28-CD3zeta-EGFRt-expressing T lymphocytes are directed to and induce selective toxicity in CD123-expressing tumor cells. CD123 is normally expressed on committed blood progenitor cells in the bone marrow; its overexpression is associated with increased leukemic cell proliferation and aggressiveness. Devoid of both ligand binding domains and tyrosine kinase activity, EGFRt both facilitates detection of the administered T-cells in vivo and can promote elimination of those cells

following a cetuximab-induced antibody-dependent cellular cytotoxicity response. The costimulatory signaling domain enhances both proliferation of T-cells and antitumor activity. Hinge optimization prevents recognition of the CAR by Fc receptors (FcRs).

**autologous CD133-positive BTSC mRNA-pulsed autologous dendritic cell vaccine:** A cancer vaccine consisting of autologous dendritic cells (DCs) loaded with CD133-positive autologous brain tumor stem cells (BTSCs) –derived mRNA with potential immunostimulatory and antineoplastic activities. Upon intradermal administration, autologous CD133-positive BTSC mRNA-pulsed autologous dendritic cell vaccine may elicit a cytotoxic T-lymphocyte (CTL) response against the CD133-positive BTSCs from which the autologous tumor mRNA is derived. CD133, a tumor-associated antigen (TAA) and neural stem cell marker, has been found on a specific subset of glioblastoma multiforme (GBM) stem cells; its presence has been correlated with resistance to conventional chemotherapy and radiotherapy.

**autologous CD171-specific CAR-CD28 zeta-4-1-BB-EGFRt-expressing T lymphocytes:** A preparation of genetically modified autologous human T-lymphocytes transduced with a lentiviral vector expressing a chimeric antigen receptor (CAR) specific for the L1 cell adhesion molecule (L1-CAM/CD171) antigen, and the co-stimulatory signaling domains CD28, 4-1BB (CD137) and CD3 zeta, and a truncated form of the human epidermal growth factor receptor (EGFRt), with potential immunostimulating and antineoplastic activities. Upon re-infusion into the patient, the autologous L1-CAM-specific CAR-CD28 zeta-4-1-BB-EGFRt-expressing T-lymphocytes are directed to and induce selective toxicity in L1-CAM-expressing tumor cells. L1-CAM, a neuronal cell adhesion molecule and member of the L1 protein family, plays a key role in the development of the nervous system; it is overexpressed in various tumor cell types and is associated with increased chemoresistance, tumor progression, migration and metastasis. Devoid of both ligand-binding domains and tyrosine kinase activity, EGFRt facilitates both the detection of the administered T-cells in vivo and the elimination of the modified T-cells following a cetuximab-induced antibody-dependent cellular cytotoxicity (ADCC) response. The co-stimulatory signaling domains enhance both proliferation of T-cells and antitumor activity.

**autologous CD19-28z chimeric antigen receptor-expressing T**

**lymphocytes:** Genetically modified autologous T-lymphocytes transduced with a replication-incompetent retroviral vector expressing a chimeric T-cell antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment), fused to the extracellular, transmembrane and intracellular signaling domains of the T cell co-stimulatory receptor CD28 and the cytoplasmic signaling domain of the zeta chain of the TCR/CD3 complex (CD3-zeta) (CAR19-28z), with potential antineoplastic activities. Upon intravenous administration, autologous CD19-28z CAR-expressing T-lymphocytes are directed to CD19-expressing tumor cells, which induces selective toxicity in CD19-expressing tumor cells. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. The CD28 co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19. The inclusion of the CD28 signaling domain may increase proliferation of T-cells and antitumor activity compared to the inclusion of the CD3-zeta chain alone. Check for active clinical trials using this agent.

**autologous CD19CAR-CD28-CD3zeta-EGFRt-expressing Tcm-**

**enriched T cells:** A preparation of genetically modified autologous central memory (Tcm) enriched T-cells transduced with a replication incompetent lentiviral vector expressing a chimeric antigen receptor (CAR), containing a CD28 signaling domain fused to both CD3 zeta, which targets the CD19 antigen, and a truncated form of the human epidermal growth factor receptor (EGFRt), with potential immunostimulating and antineoplastic activities. Upon intravenous administration, autologous CD19CAR-CD28-CD3zeta-EGFRt-expressing Tcm-enriched T cells are directed to CD19-expressing tumor cells, thereby inducing a selective toxicity in CD19-expressing tumor cells. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. Devoid of both ligand binding domains and tyrosine kinase activity, EGFRt both facilitates in vivo detection of the administered T-cells and can promote elimination of those cells upon a cetuximab-induced antibody dependent cellular cytotoxicity response. The costimulatory signaling domain enhances proliferation of T cells and antitumor activity.

**autologous CD34-positive hematopoietic progenitor cells:** A population of autologous CD34-positive hematopoietic progenitor cells (HPCs) that can be used for autotransplantation. CD34+ HPCs are isolated from human

blood stem cells upon apheresis. Upon transplantation with the CD34+ HPCs, these cells can differentiate into a variety of cell types including fibroblasts, osteoblasts, chondrocytes, myocytes, adipocytes, and endothelial cells. Check for active clinical trials using this agent.

**autologous CD8-positive PBL sensitized to Drosophila cell-presented melanoma peptides:** A preparation of autologous CD8+ (cytotoxic) human peripheral blood lymphocytes (PBLs) sensitized to Drosophila cell-presented melanoma peptides, with potential immunostimulating and antineoplastic activities. Autologous CD8+ T-lymphocytes, isolated from a melanoma patient, are exposed in vitro to melanoma peptide-pulsed HLA-A2-expressing Drosophila cells, expanded, and reintroduced into the patient; these tumor-reactive T-cells may stimulate a host immune response against tumor cells expressing the melanoma antigens, resulting in tumor cell lysis. Drosophila cells, which do not express any native MHC molecules, have been shown to potently stimulate tumor-reactivity in vitro from human peripheral blood lymphocytes (PBL) when stably transfected with human MHC molecules and appropriate adhesion and costimulatory molecules.

**autologous CD8+ melanoma-specific T cells:** Autologous CD8 T lymphocytes against melanoma-associated antigens, with potential immunomodulating and antineoplastic activities. Following leukapheresis and the ex vivo expansion of cytotoxic T-lymphocytes, the autologous CD8+ melanoma-specific T cells are re-introduced into the melanoma patient. These cytotoxic T-cells recognize and kill the patient's own melanoma cells.

**autologous CEA-specific cytotoxic T-lymphocytes:** Autologous cytotoxic T-lymphocytes (CTLs) specifically reactive to the tumor-associated antigen (TAA) human carcinoembryonic antigen (CEA), with potential antineoplastic activity. Dendritic cells (DCs) isolated from the patient's blood are infected with recombinant adeno-associated virus (AAV) expressing the CEA gene. Exposure of T-lymphocytes to DCs creates CEA-specific CTLs which are expanded. Upon reintroduction of these CTLs into the patient, these cells recognize and kill CEA-expressing tumor cells. CEA, a tumor-associated antigen and a member of the CEA family of proteins, plays a key role in cell migration, cell invasion, and cell adhesion and is overexpressed by a variety of cancer types.

**autologous colon cancer cell vaccine:** A personalized, proprietary cancer vaccine composed of sterile, irradiated, non-dividing, live colon cancer cells obtained from an individual after tumor resection, with potential immunoactivating and antineoplastic activities. Upon intradermal administration, the autologous colon cancer cell vaccine activates the immune system and elicits a cytotoxic T-lymphocytic (CTL) response against the residual colon cancer cells, which results in tumor cell death. This may prevent cancer recurrence. According to the vaccination schedule, the first two out of the four doses are co-administered with the immunoadjuvant bacillus Calmette-Guerin (BCG), which is an attenuated strain of *Mycobacterium bovis* that non-specifically enhances the immune response.

**autologous colorectal tumor antigen-pulsed dendritic cell vaccine:** A dendritic cell (DC)-based cancer vaccine composed of autologous DCs pulsed with tumor cell lysates from a colorectal cancer patient containing tumor-associated antigens (TAAs), with potential immunostimulatory and antineoplastic activities. Upon administration, autologous colorectal tumor antigen-pulsed DC vaccine exposes the immune system to colorectal tumor cell antigens, which may result in cytotoxic T-lymphocyte (CTL)-mediated immune responses against the colorectal cancer cells. This leads to cancer cell lysis. The tumor cell lysate contains a range of antigens that are essential for the neoplastic growth and survival of the cancer cells.

**autologous CT7/MAGE-A3/WT1 mRNA-electroporated Langerhans-type dendritic cells:** An autologous tumor cell vaccine containing CD34+ hematopoietic progenitor cell (HPC)-derived Langerhans-type dendritic cells (LCs) electroporated with mRNA encoding the full-length cancer-testis antigens, CT7 and melanoma-associated antigen 3 (MAGE-A3), and the self-differentiation tumor antigen, Wilms tumor 1 (WT1) with potential immunomodulating and antineoplastic activity. The autologous CT7/MAGE-A3/WT1 mRNA-electroporated Langerhans-type dendritic cells are prepared by drawing a blood sample containing the CD34+ HPCs from a cancer patient. The CD34+ HPCs are treated with a combination of cytokines which specifically support LC development, and the LC population is enriched and expanded *ex vivo*. The cultured LCs are allowed to mature for one day and then electroporated separately with CT7, MAGE-A3 or WT1 mRNA before final maturation. Upon intradermal administration into the patient, the mature LCs may activate cell-mediated

immunity and induce both cytotoxic CD8+ T cells and CD4+ helper T cells against cancer cells expressing CT7, MAGE-A3 and WT1 tumor antigens. This may result in the immune-mediated inhibition of tumor cell proliferation, leading to tumor cell death. CT7 and MAGE-A3 are tumor-specific proteins overexpressed in a number of cancers but not in healthy tissues other than testis and placenta. WT1 is a transcription factor important in development and cancer pathogenesis, which is overexpressed in a variety of cancers, including multiple myeloma, leukemia, ovarian cancer, malignant mesothelioma, neural tumors and renal carcinoma.

**autologous cultured acute myeloid leukemia-specific cytotoxic T lymphocytes:** A preparation of cytotoxic, autologous acute myelogenous leukemia (AML)-reactive T lymphocytes (CTL), with potential immunomodulating and antineoplastic activities. The autologous cultured AML-specific CTLs are prepared using a specific AML-CTL culture method. Autologous peripheral blood lymphocytes are taken from an AML patient and the autologous AML blasts are treated with granulocyte macrophage colony-stimulating factor (GM-CSF) and interleukin 4 (IL-4), both of which promote ex vivo differentiation of AML blasts into dendritic cells (DCs). In the same culture, T cells are treated and activated by low-dose interleukin 2 (IL-2), and expanded using anti-CD3. This results in cultured AML-reactive CTLs which are administered back into the patient after autologous hematopoietic stem cell transplant (AHSCT). The autologous cultured AML-specific CTLs may eradicate residual AML cells.

**autologous cytotoxic T lymphocytes induced with MUC1 gene-transfected dendritic cells:** A preparation of autologous cytotoxic T-lymphocytes (CTL), specifically reactive to the tumor-associated antigen (TAA) mucin-1 (MUC1), with potential antineoplastic activity. Peripheral blood mononuclear cells (PBMCs) are collected from the patient with MUC1-positive tumors and are exposed ex vivo to dendritic cells (DCs) transfected with a replication-deficient adenovirus encoding MUC1 to generate MUC1-specific CTLs, which are subsequently expanded in vitro. Upon re-infusion of autologous CTLs induced with MUC1 gene-transfected DCs to the patient, the CTLs target and lyse the MUC1-expressing tumor cells. This inhibits tumor cell proliferation. MUC1 is expressed by a variety of tumor cell types.

**autologous cytotoxic T lymphocytes induced with MUC1 peptide-transfected dendritic cells:** A preparation of autologous cytotoxic T-lymphocytes (CTL), specifically reactive to the tumor-associated antigen (TAA) mucin-1 (MUC1), with potential antineoplastic activity. Peripheral blood mononuclear cells (PBMCs) are collected from the patient with MUC1-positive tumors and are exposed ex vivo to dendritic cells (DCs) that are pulsed with a MUC1 peptide to generate MUC1-specific CTLs, which are subsequently expanded in vitro. Upon re-infusion of autologous CTLs induced with MUC1 peptide-pulsed DCs to the patient, the CTLs target and lyse the MUC1-expressing tumor cells. This inhibits tumor cell proliferation. MUC1 is expressed by a variety of tumor cell types.

**autologous dendritic cell vaccine ACT2001:** A cell-based cancer vaccine composed of autologous, immature dendritic cells (DCs), with potential immunostimulating and antineoplastic activities. Upon leukapheresis, immature DCs are isolated and re-administered intra-tumorally. The immature DCs internalize and process the tumor-associated antigens (TAAs), migrate to the lymphatic system, and then expose the immune system to the TAAs. This induces a specific cytotoxic T-lymphocyte (CTL) response against the cancer cells leading to tumor cell lysis.

**autologous dendritic cell-adenovirus CCL21 vaccine:** A cancer vaccine comprised of autologous dendritic cells (DCs) that have been transduced ex vivo with an adenoviral vector containing the CCL21 gene with potential immunostimulatory and antineoplastic activities. Upon intratumoral administration, autologous dendritic cell-adenovirus CCL21 vaccine expresses the chemokine CCL21, which may induce an antitumoral cytotoxic immune response in the tumor microenvironment. CCL21 [chemokine (C-C motif) ligand 21] has been shown to attract antigen presenting cells (APCs), like leukocytes and DCs, and natural killer (NK) cells and their T-cell effectors to induce a cytotoxic immune response.

**autologous dendritic cell-adenovirus p53 vaccine:** An autologous vaccine composed of dendritic cells (DC) that have been transduced with a p53 tumor suppressor gene-modified virus. When the autologous dendritic cell-adenovirus p53 vaccine is administered, the host cytotoxic T lymphocytes (CTL) are directed against p53-positive tumor cells, which may result in tumor cell death and decreased tumor growth.

**autologous dendritic cell-allogeneic melanoma tumor cell lysate**

**vaccine:** A cell-based vaccine composed of autologous dendritic cells (DCs) pulsed with lysates from heat-treated allogeneic melanoma tumor cells. Upon administration, this vaccine may stimulate anti-tumoral cytotoxic T-cell and antibody responses to melanoma cells bearing shared melanoma antigens such as MelanA/MART-1, gp100, MAGE3, resulting in tumor cell lysis.

**autologous dendritic cell-autologous tumor mRNA-human CD40L**

**vaccine:** A cancer vaccine consisting of autologous dendritic cells transfected with autologous tumor mRNA and the human CD40 ligand (CD40L) gene with immunostimulatory and antitumor activities.

Vaccination with autologous dendritic cell-autologous tumor mRNA-human CD40L vaccine may elicit a cytotoxic T cell response against tumor cells from which the autologous tumor mRNA was derived. When expressed by dendritic cells, tumor antigens and the co-stimulatory molecule CD40L, which binds to CD40 receptors on antigen presenting cells (APC), facilitate both humoral and cellular immune responses against tumor cells.

**autologous dendritic cell-based immunotherapeutic AV0113:** A

therapeutic interleukin-12 (IL-12)-expressing dendritic cell (DC)-based vaccine composed of autologous monocyte-derived DCs loaded with autologous tumor cell lysate and exposed to the microbial cell wall component lipopolysaccharide (LPS), with potential immunomodulating and antineoplastic activities. The monocyte-derived immature DCs are loaded with autologous tumor cell lysates and are subsequently exposed to LPS and interferon-gamma (IFN-gamma). Upon administration of autologous DC-based immunotherapeutic AV0113, the mature DCs migrate into the lymph nodes, express the immune stimulatory cytokine interleukin-12 (IL-12) and activate the immune system by promoting the activation of natural killer (NK) cells and induce a cytotoxic T-lymphocyte (CTL)-mediated immune response against tumor cells, which may result in immune-mediated tumor cell death and inhibition of tumor cell proliferation. Exposure to LPS and IFN-gamma allows the maturation of DCs and optimizes the presentation of tumor-associated antigens (TAAs) by DCs to T-lymphocytes.

**autologous dendritic cell-tumor fusion vaccine:** A therapeutic cancer vaccine consisting of autologous dendritic cells (DCs) fused with

autologous tumor cells with potential immunostimulatory and antineoplastic activities. Autologous dendritic cell-tumor fusion vaccine is generated in vitro by mixing DCs and irradiated tumor cells harvested from individual patients and treating them with polyethylene glycol (PEG) to produce DC-tumor cell fusion hybrid cells. Upon administration, autologous dendritic cell-tumor fusion vaccine may elicit antitumor humoral and cellular immune responses.

**autologous dinitrophenyl-modified ovarian cancer vaccine:** A cancer vaccine consisting of autologous ovarian cancer cell peptide antigens conjugated to the hapten 2,4-dinitrophenol (DNP) with potential immunostimulating and antineoplastic activities. Administration of autologous dinitrophenyl-modified ovarian cancer vaccine may induce a cytotoxic T-lymphocyte (CTL) response against ovarian cancer cells. DNP conjugation may enhance the immunogenicity of weakly immunogenic antigens.

**autologous EBV-CTL CD19CAR zeta:** Autologous Epstein-Barr virus (EBV)-specific cytotoxic T-lymphocytes (CTL) that have been genetically modified to express a T-cell chimeric antigen receptor (CAR) targeting the CD19 antigen, with potential immunotherapeutic activity. The CAR consists of a single chain Fv of anti-CD19 IgG1 coupled with an intracellular signaling region of the zeta-chain of the TCR/CD3 complex (CD3 zeta). Autologous EBV-CTL CD19CAR zeta directs the T-lymphocytes to CD19-expressing tumor cells, stimulating a selective toxicity to tumor cells. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies.

**autologous EBV-transformed B lymphoblastoid-tumor fusion cell vaccine:** A cell-based vaccine composed of autologous tumor cells fused with Epstein-Barr virus-transformed B-lymphoblastoid cells. Upon administration, this vaccine may stimulate a cytotoxic T cell response against tumor cells, resulting in tumor cell lysis.

**autologous Epstein-Barr virus-specific cytotoxic T lymphocytes:** A preparation of lymphocytes harvested from a patient with an Epstein-Barr virus (EBV)-positive tumor. Ex vivo, the lymphocytes are activated against EBV-specific antigens and then returned to the patient, where they mount a specific immune response against EBV-positive tumor cells.

**autologous Epstein-Barr virus-transformed B-lymphoblastoid cell vaccine:** A cell-based vaccine composed of autologous lymphoblastoid B cells activated against Epstein-Barr virus (EBV) in vitro with potential immunoprotective activity. Upon prophylactic administration, this vaccine may stimulate specific cytotoxic T-lymphocyte (CTL) and antibody responses against EBV-transformed B cells, thereby preventing an EBV-induced post-transplantation lymphoproliferative disorder. Check for active clinical trials using this agent.

**autologous expanded mesenchymal stem cells OTI-010:** Multipotent self-renewing adherent non-hematopoietic stromal cells harvested from a patient's bone marrow and grown in vitro. When injected back into the patient, autologous expanded mesenchymal stem cells OTI-010 may differentiate into various mesenchyme-derived cell types and, in some instances, may augment bone marrow engraftment after whole-body irradiation. OR In transplantation, refers to a person's own bone marrow. Bone marrow is the soft, sponge-like tissue in the center of most large bones that produces white blood cells, red blood cells, and platelets.

**autologous glioma cell lysate:** A cell lysate derived from glioma cells with potential immunostimulatory and antineoplastic activities. Upon intradermal administration, the autologous glioma cell lysate exposes the immune system to an undefined amount of glioma-type tumor associated antigens (TAA), which may result in the induction of both specific anti-tumoral cytotoxic T lymphocytes (CTL) and antibody-dependent responses against the glioma TAA-expressing cells, resulting in glioma cell lysis. Check for active clinical trials using this agent.

**autologous GM-CSF-secreting breast cancer vaccine:** An autologous tumor cell vaccine containing irradiated breast cancer cells transfected with the granulocyte macrophage-colony-stimulating factor (GM-CSF) gene with potential antineoplastic activity. Autologous breast cancer cells are transduced ex vivo with an adenovirus vector encoding the GM-CSF gene and irradiated and then reintroduced into the patient. Upon repeated subcutaneous administration of the vaccine, autologous GM-CSF-secreting breast cancer cells secrete GM-CSF, which may stimulate a tumor-specific cytotoxic T-lymphocyte (CTL) response.

**autologous GM-CSF-secreting lethally irradiated colorectal cancer cell vaccine:** A lethally irradiated, autologous colorectal cancer vaccine

consisting of patient-specific colorectal cancer cells genetically modified to secrete the cytokine granulocyte-macrophage colony stimulating factor (GM-CSF), with potential immunostimulating and antineoplastic activities. Upon vaccination, the autologous GM-CSF-secreting lethally irradiated colorectal cancer cell vaccine releases GM-CSF. In turn, GM-CSF may increase the body's immune response against tumor cells by promoting the maturation and activation of dendritic cells (DCs), and enhancing tumor-specific antigen presentation to both B- and T-cells, which leads to better recognition of tumors by the immune system. In addition, GM-CSF promotes antibody-dependent cellular cytotoxicity (ADCC), and increases interleukin-2-mediated lymphokine-activated killer cell function.

**autologous HBV-specific TCR-redirection T lymphocytes:** A preparation of human autologous T-lymphocytes transduced with a viral vector encoding for a T cell receptor (TCR) specific for a human hepatitis B virus (HBV) surface antigen (HBsAg), with potential antineoplastic activity. Following administration, the autologous HBV antigen specific TCR-redirection autologous T lymphocytes recognize and bind to the HBV antigen-positive cells, which induces cytotoxic T-lymphocyte (CTL)-mediated elimination of HBV antigen-positive cancer cells. HBV antigens are found on HBV-positive cells and HPV-induced hepatocellular carcinoma (HCC).

**autologous heat-shock protein 70 peptide vaccine AG-858:** A recombinant cancer vaccine made with tumor-derived heat shock protein 70 (HSP70) peptide complexes. HSP70 associates with antigenic peptides, transporting them into antigen presenting cells (APC) for processing. Tumor-derived HSP70-peptide complexes used in vaccine preparations have been shown to prime tumor immunity and tumor-specific T cells in animal models.

**autologous HER2 chimeric receptor/TGFbeta dominant negative receptor-expressing EBV-specific cytotoxic T lymphocytes:** A preparation of transforming growth factor-beta (TGF-beta)-resistant Epstein-Barr virus (EBV)-specific cytotoxic T-lymphocytes (CTLs) directed to EBV through their native receptor and HER2 through a retrovirally transduced HER2 chimeric antigen receptor (CAR) with potential antineoplastic activity. Autologous EBV-specific CTLs are produced by exposing autologous CTLs to "stimulator" autologous EBV-

transformed lymphoblastoid cell lines (EBV-LCLs). Subsequently, autologous EBV-specific CTLs are transduced with retroviral vectors expressing the mutant type II TGF-beta dominant-negative receptor (DNR), which blocks signaling by all three TGF-beta isoforms, and the HER2 CAR. After transduction, transgenic EBV-CTLs are expanded on EBV-LCLs. Upon administration, autologous HER2 chimeric receptor/TGFbeta dominant negative receptor-expressing EBV-specific cytotoxic T lymphocytes may bind to HER2-expressing tumors cells, which may result in CTL-mediated cell lysis and inhibition of tumor cell proliferation. Tumor-expressed TGF-beta inhibits T lymphocyte activation and expansion.

**autologous HNSCC DNA-transfected semi-allogeneic fibroblasts MRC-5 vaccine:** A vaccine consisting of lethally irradiated human fetal lung fibroblasts (Medical Research Council 5 or MRC-5) transfected with autologous tumor DNA derived from a head and neck squamous cell carcinoma (HNSCC), with potential immunostimulatory and antineoplastic activities. Upon intradermal administration, the autologous HNSCC DNA-transfected semi-allogeneic fibroblasts MRC-5 vaccine expresses HNSCC tumor-associated antigens (TAAs), which may activate the immune system to induce a cytotoxic T-lymphocyte (CTL) response against HNSCC cells. The MRC-5 cell line, established in 1966, is a human diploid lung fibroblast cell line derived from the human lung tissue of a 14-week-old male fetus.

**autologous HPV-16/18 E6/E7-specific TGF-beta-resistant T lymphocytes:** A preparation of autologous transforming growth factor-beta (TGF-beta)-resistant cytotoxic T-lymphocytes (CTL) reactive to human papilloma virus (HPV) types 16 and 18 E6/E7 antigens, with potential antineoplastic activity. Autologous T-lymphocytes from a HPV-positive cancer patient are exposed to and stimulated with dendritic cells (DCs) loaded with the HPV-16/18 proteins E6 and E7. In turn, the HPV-16/18 E6/E7-specific T-lymphocytes are transduced with a retroviral vector expressing a dominant-negative mutant of type II transforming growth factor (TGF)-beta receptor, which blocks signaling mediated by all three TGF-beta isoforms. Following re-administration to patients with HPV-positive tumors, the HPV-16/18 E6/E7-specific TGF-beta-resistant T-lymphocytes target HPV16/18 E6/E7-positive cells, which may result in a specific cytotoxic T-lymphocyte (CTL) response, followed by cell lysis and

the inhibition of tumor cell proliferation. Tumors expressing TGF-beta inhibit T-lymphocyte activation and expansion.

**autologous iC9-GD2-CAR-expressing VZV-specific T lymphocytes:**

Genetically modified, autologous varicella zoster virus (VZV)-specific T-lymphocytes transduced with a retroviral vector encoding a chimeric antigen receptor (CAR) specific for the disialoganglioside GD2, which contains the signaling domains for the co-stimulatory molecules CD28 and CD134 (OX-40), and the suicide gene, inducible caspase 9 (iCasp9 or iC9), with potential immunomodulating and antineoplastic activities. Upon intravenous administration, iC9-GD2-CD28-OX40-expressing T lymphocytes target the GD2 antigen on tumor cells for selective toxicity against GD2-expressing tumor cells. iCasp9 consists of a full-length caspase 9, including its caspase recruitment domain, linked to a human FK506 drug-binding domain with an F36V mutation (FKBP12-F36V). If the administered T cells lead to unacceptable side effects, the chemical homodimerizer AP1903 can be administered, which binds to the FKBP12-F36V drug binding domain, activates caspase 9, and results in apoptosis of the administered T-cells. Expression of the iCasp9 gene in T cells for adoptive transfer increases safety and broadens the scope for their clinical applications. The tumor-associated antigen GD2 is overexpressed on the surface of almost all tumors of neuroectodermal origin. OX40 and CD28, both T-cell surface-associated co-stimulatory molecules, are required for full T-cell activation. An additional VZV vaccine can be administered to increase T-cell activity.

**autologous IL-21-modulated CD8+ MART1-specific T cells: A**

preparation of interleukin 21 (IL-21) stimulated, CD8+ T-lymphocytes sensitized to MART-1 (melanoma antigen recognized by T-cells) antigen with potential immunostimulating and antineoplastic activities. CD8+ T-lymphocytes are exposed ex vivo to autologous dendritic cells (DCs) pulsed with MART-1 antigen peptide and grown in the presence of IL-21. These tumor-reactive T-cells may stimulate a host immune response against tumor cells expressing the MART-1 antigen, resulting in tumor cell lysis. MART-1 is expressed by certain types of melanoma cells. IL-21, a cytokine involved in the regulation of cellular immune responses, may play a key role during priming of antigen-specific CD8+ T cells and may enhance proliferation of the CTLs.

**autologous immunoglobulin idiotype-KLH conjugate vaccine:** A cancer vaccine composed of tumor-specific idiotype determinants derived from an individual's tumor cells which are conjugated to keyhole limpet hemocyanin, an immunostimulant carrier protein. When injected into the individual from whom the tumor cells were isolated, this vaccine may stimulate an antitumoral cytotoxic T-lymphocytic immune response.

**autologous interferon-producing killer dendritic cells:** A preparation of autologous dendritic cells (DC) with a molecular expression profile similar to both natural killer (NK) cells and DCs, with potential antineoplastic activity. Autologous interferon-producing killer dendritic cells (IKDCs) are characterized by double-negative expression of CD3 and CD19; these cells also express low levels of CD11 and are positive for B220. They are distinguished from plasmacytoid DCs (pDCs) by the absence of lymphocyte antigen 6C (Ly6C, Gr-1) expression. IKDCs produce interferon gamma (IFN-gamma) and interleukin (IL) -12, and are able to kill typical NK target cells using NK receptors while retaining DC-like antigen-presenting activity. Upon administration of the autologous IKDCs, these cells secrete high levels of IFN-gamma and, when in contact with tumor cells, mediate TNF-related apoptosis-inducing ligand (TRAIL)-dependent direct lysis of tumor cells. The resulting apoptotic tumor antigens may be presented by the IKDCs, thus activating the immune system to exert a cytotoxic T-lymphocyte (CTL) response to further eliminate tumor cells.

**autologous LMP1-/LMP2- specific cytotoxic T-lymphocytes:** A preparation of cytotoxic T-lymphocytes (CTL), specifically reactive to the Epstein-Barr virus (EBV) latent membrane proteins (LMP) 1 and 2, with potential antineoplastic activity. Autologous dendritic cells and EBV-infected lymphoblastoid cell lines (LCL) from patients with EBV-positive nasopharyngeal carcinoma (NPC) are transduced with an LMP1/LMP2-expressing adenoviral vector, are irradiated, and then are used to stimulate and expand autologous CTL to produce autologous LMP1-/LMP2-specific CTL *ex vivo*. Administration of autologous LMP1-/LMP2- specific cytotoxic T-lymphocytes may result in a specific CTL response against tumor cells expressing LMP1 and LMP2, resulting in cell lysis and inhibition of tumor cell proliferation *in vivo*. Among a limited set of viral antigens expressed by NPC cells, LMP1 and LMP2 are weak immunogens which, nevertheless, are capable of inducing a T-lymphocyte response.

**autologous lymphocyte :** A procedure in which bone marrow is removed from a person, stored, and then given back to the person after intensive treatment.

**autologous lymphoid effector cells specific against tumor cells:** A preparation of cytotoxic, autologous lymphoid effector cells specifically targeted towards tumor cells, with potential immunomodulating and antineoplastic activities. The autologous lymphoid effector cells are prepared by drawing a blood sample containing the required precursors for CD4+ helper T-cells, CD8+ cytotoxic T-cells, and natural killer (NK) cells from a cancer patient. The precursor cells are activated, selected and expanded to generate mature autologous lymphoid effector cells with the potential for enhanced tumor recognition. Upon readministration into the patient, the autologous lymphoid effector cells may induce both humoral and cellular immune responses against tumor cells. This may result in the immune-mediated inhibition of tumor cell proliferation, leading to tumor cell death.

**autologous lymphoma cell lysate-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with lysate from autologous lymphoma cells with potential immunostimulatory and antineoplastic activities. Upon intranodal administration, autologous lymphoma cell lysate-pulsed autologous DC vaccine may stimulate the immune system to mount anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against lymphoma cells, which may result in lymphoma cell lysis.

**autologous lymphoma cell/allogeneic dendritic cell electrofusion hybrid vaccine:** A cell-based cancer vaccine consisting of hybrid cells created by electrofusing autologous dendritic cells (DCs) and allogeneic lymphoma cells with potential immunostimulating and antitumor activities. Upon administration, autologous lymphoma cell/allogeneic dendritic cell electrofusion hybrid vaccine may stimulate the immune system to mount a specific cytotoxic T-lymphocyte (CTL) response against specific autologous lymphoma-associated antigens, resulting in lymphoma cell apoptosis.

**autologous lymphoma cell/autologous dendritic cell electrofusion hybrid vaccine:** A cell-based cancer vaccine consisting of hybrid cells created by electrofusing autologous dendritic cells (DCs) and autologous

lymphoma cells with potential immunostimulating and antitumor activities. Upon administration, autologous lymphoma cell/autologous dendritic cell electrofusion hybrid vaccine may stimulate the immune system to mount a specific cytotoxic T-lymphocyte (CTL) response against specific autologous lymphoma-associated antigens, resulting in lymphoma cell apoptosis. Check for active clinical trials using this agent.

**autologous lymphoma immunoglobulin-derived scFv-chemokine DNA vaccine:** A plasmid DNA vaccine encoding an autologous lymphoma-derived idiotype-targeting immunoglobulin (Ig)-derived single chain variable fragment (scFv) fused to the chemokine macrophage inflammatory protein 3 alpha (MIP3a), with potential immunostimulating and antineoplastic activities. Upon intramuscular vaccination, the autologous lymphoma immunoglobulin-derived scFv-chemokine DNA vaccine is taken up by antigen-presenting cells (APCs) and stimulates the immune system to exert a cytotoxic T-lymphocyte (CTL) response against the idiotype expressed on the surface of B lymphoma cells. MIP3a, also called chemokine (C-C motif) ligand 20 (CCL20), is a chemotactic cytokine able to enhance the immune response through binding to chemokine receptors expressed on APCs.

**autologous MAGE-A3-specific, HLA-A\*01-restricted T cell receptor gene engineered lymphocytes:** Human autologous T-lymphocytes transduced with a retroviral vector encoding a T-cell receptor (TCR) specific for the human leukocyte antigen (HLA)-A\*01-restricted, human melanoma-associated antigen A3 (MAGE-A3), with potential antineoplastic activity. Peripheral blood mononuclear cells (PBMCs) are isolated from a patient, transduced with an anti-MAGE-A3-HLA-A\*01 restricted TCR, expanded ex vivo, and reintroduced into the HLA-A\*01-positive patient. Then, the autologous MAGE-A3-specific, HLA-A\*01-restricted TCR gene engineered lymphocytes bind to tumor cells expressing the MAGE-A3 antigen, which may increase cell death and halt the growth of MAGE-A3-expressing cancer cells. The tumor-associated antigen MAGE-A3 is overexpressed by a variety of cancer cell types. Check for active clinical trials using this agent.

**autologous melanoma lysate-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with lysate from autologous melanoma cells containing tumor

associated antigens (TAAs) with potential immunostimulatory and antineoplastic activities. Upon administration, autologous melanoma lysate-pulsed autologous DC vaccine may stimulate the immune system to mount anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against melanoma cells, which may result in melanoma cell lysis.

**autologous melanoma lysate/KLH-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with lysate from autologous melanoma cells containing tumor associated antigens (TAAs) and conjugated to the immunostimulant Keyhole limpet hemocyanin (KLH), with potential immunostimulatory and antineoplastic activities. Upon administration, autologous melanoma lysate/KLH-pulsed autologous dendritic cell vaccine may stimulate the immune system to mount anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against melanoma cells, which may result in melanoma cell lysis. KLH is an immunogenic carrier and serves as an immunostimulant to improve antigenic immune recognition and T-cell responses and can be used to evaluate vaccine efficacy. Check for active clinical trials using this agent.

**autologous melanoma lysate/NY-ESO-1-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with both a lysate from autologous melanoma cells containing tumor associated antigens (TAAs) and a synthetic peptide derived from the tumor associated antigen human cancer-testis antigen NY-ESO-1, with potential immunostimulatory and antineoplastic activities. Upon administration, autologous melanoma lysate/NY-ESO-1-pulsed autologous DC vaccine may stimulate the immune system to mount anti-tumoral cytotoxic T lymphocyte (CTL) and antibody-mediated immune responses against melanoma cells, which may result in melanoma cell lysis. NY-ESO-1 is expressed in normal testes and on the surfaces of various tumor cells, and plays a key role in tumor cell proliferation and survival.

**autologous mesenchymal stem cells apceth\_101:** Human autologous mesenchymal stem cells (MSCs) harvested from the bone marrow of a patient and genetically modified with a self-inactivating retroviral vector expressing the suicide gene herpes simplex virus thymidine kinase (HSV-TK), that can be used to activate synthetic acyclic guanosine analogues when co-administered. Upon intravenous administration of autologous

mesenchymal stem cells apceth\_101, the cells are actively recruited to the tumor stroma, differentiate into more mature mesenchymal cells, and become part of the tumor microenvironment. When a synthetic acyclic guanosine analogue, such as ganciclovir, is co-administered, the HSV-TK within the HSV-TK-transduced MSCs will monophosphorylate this prodrug. Subsequently the monophosphate form is further converted to the diphosphate form and then to its active triphosphate form by cellular kinases. The active form of ganciclovir kills the HSV-TK-transduced MSCs and leads to a bystander effect, which eliminates neighboring cancer cells. Therefore, synthetic acyclic guanosine analogues are activated only at the tumor site, which increases their local efficacy and reduces systemic toxicity.

**autologous MUC1-mannan fusion protein pulsed dendritic cell**

**vaccine:** A cancer vaccine containing autologous dendritic cells pulsed with a fusion product of an epitope of human tumor-associated epithelial mucin 1 (MUC1) antigen and the vaccine adjuvant mannan (oxidized mannose), with potential antineoplastic activity. When the modified dendritic cells are returned to the patient, they may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells positive for the MUC1 antigen, resulting in tumor cell lysis. Addition of manna in this vaccine, enhances immune recognition. MUC1 antigen, a high-molecular-weight transmembrane glycoprotein, is overexpressed on many tumor cells.

**autologous neuroblastoma lysate/KLH-pulsed dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with a cell lysate from an autologous neuroblastoma containing tumor-associated antigens (TAAs), which are conjugated to the immunostimulant keyhole limpet hemocyanin (KLH), with potential immunostimulatory and antineoplastic activities. Upon administration, autologous neuroblastoma lysate/KLH-pulsed DC vaccine may stimulate the immune system to mount an anti-tumoral cytotoxic T-lymphocyte (CTL) response against neuroblastoma cells, which may result in tumor cell lysis. KLH is an immunogenic carrier and serves as an immunostimulant to improve antigenic immune recognition and T-cell responses.

**autologous NSCLC DNA-transfected semi-allogeneic fibroblasts MRC-5 vaccine:** A vaccine consisting of irradiated human fetal lung fibroblasts

(Medical Research Council 5 or MRC-5) transfected with autologous non-small cell lung cancer (NSCLC)-derived DNA with potential immunostimulatory and antineoplastic activities. Upon administration, autologous NSCLC DNA-transfected semi-allogeneic fibroblasts MRC-5 vaccine expresses NSCLC tumor-associated antigens (TAAs) in addition to MHC class I-determinants and the co-stimulatory molecule B7.1, which may induce a cytotoxic T-lymphocyte (CTL) response against NSCLC cells. The MRC-5 cell line, established in 1966, is a human diploid lung fibroblast cell line that is permissive for infection by a wide range of human viruses including human cytomegalovirus (HCMV) and coxsackie B viruses.

**autologous NSCLC peptide-specific dendritic cell vaccine:** A personalized cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with immunogenic peptides derived from autologous non-small cell lung cancer (NSCLC) cells, with potential immunostimulating and antineoplastic activities. During leukapheresis, mature DCs are loaded with autologous NSCLC-derived peptides. Upon re-administration of the NSCLC peptide-specific DC vaccine, the immune system is exposed to NSCLC-associated antigens. This results in the induction of a specific cytotoxic T-lymphocyte (CTL) response against NSCLC cells and tumor cell lysis.

**autologous NY-ESO-1-melanoma-specific CD8+ T cells:** A preparation of autologous CD8+ (cytotoxic) T-lymphocytes sensitized to cancer-testis antigen NY-ESO-1 antigen with potential immunostimulating and antineoplastic activities. Autologous CD8+ T-lymphocytes, isolated from a melanoma patient, are exposed to an NY-ESO-1 peptide ex vivo, expanded, and reintroduced into the patient; these tumor-reactive T-cells may stimulate a host immune response against tumor cells expressing the NY-ESO-1 antigen, resulting in tumor cell lysis. NY-ESO-1, an antigen found in normal testis, may be upregulated in various cancers, including bladder, breast, hepatocellular, melanoma, and prostate cancers.

**autologous OFA-iLRP RNA-transfected dendritic cell vaccine:** A cancer vaccine consisting of autologous, mature monocyte-derived dendritic cells (DCs) transfected with oncofetal antigen immature laminin receptor protein (OFA-iLRP) RNA, with potential antineoplastic activity. Upon administration, DCs in the OFA-iLRP RNA-transfected autologous

dendritic cell vaccine express, process, and present OFA-iLRP to the host immune system, which may mount a potent cytotoxic T-cell (CTL) response against OFA-iLRP-expressing tumor cells. As a highly conserved protein, OFA-iLRP is preferentially expressed in fetal tissues and in many types of cancer, including hematopoietic malignancies, but is not detectable in normal differentiated adult cells.

**autologous ovarian tumor cell lysate-pulsed dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous, irradiated dendritic cells (DCs) pulsed with ovarian tumor cell lysate containing tumor-associated antigens (TAAs) with potential immunostimulatory and antineoplastic activities. Upon administration, autologous ovarian tumor cell lysate-pulsed dendritic cell vaccine may stimulate an anti-tumoral cytotoxic T-lymphocyte (CTL) response against ovarian tumor cells expressing the patients ovarian tumor cell-specific TAAs, which may result in ovarian tumor cell lysis.

**autologous oxidized ovarian tumor cell lysate vaccine:** An autologous cancer vaccine composed of oxidized ovarian tumor cell lysate, with potential immunostimulatory and antineoplastic activities. Upon administration, the autologous oxidized ovarian tumor cell lysate vaccine exposes the immune system to an undefined amount of tumor-associated antigens (TAAs), which may result in the induction of both anti-tumor cytotoxic T-lymphocytes (CTLs) and antibody-dependent responses against TAA-expressing cells, leading to tumor cell lysis. Compared to non-oxidized tumor cell lysate vaccines, oxidized tumor cell lysate vaccines induce necrotic cell death, increase the immunogenicity of the TAAs and may enhance the anti-tumor immune response.

**autologous peripheral blood lymphocytes cotransduced with retroviral vectors encoding inducible IL-12 and anti-NY-ESO-1 TCR:** Human autologous peripheral blood lymphocytes (PBLs) transduced with two retroviral vectors, one encoding a T-cell receptor (TCR) specific for the cancer-testis antigen NY-ESO-1 and a second that encodes an inducible single-chain form of interleukin-12 (IL-12) driven by a nuclear factor of activated T-cells (NFAT)-responsive promoter, with potential immunomodulating and antineoplastic activities. Following isolation of lymphocytes, retroviral vector transduction, and expansion of the cells ex vivo, the inducible IL-12/anti-NY-ESO-1 TCR-expressing autologous PBLs

are re-administered into the patient by intravenous injection. As the transduced PBLs traverse the patient's circulatory system, they can bind to NY-ESO-1-overexpressing tumor cells. This binding activates the TCR signaling pathway in the transduced PBLs, which promotes NFAT-dependent gene transcription and induces expression of the cotransduced IL-12. IL-12 expression activates the immune system by promoting the secretion of interferon-gamma, activating natural killer cells (NKs), and inducing cytotoxic T-cell responses, which may result in both decreased cell proliferation and increased cell death for the NY-ESO-1-overexpressing tumor cells. NY-ESO-1, a tumor-associated antigen (TAA), is found in normal testis and on the surface of various tumor cell types. NFAT, a family of transcription factors involved in immune responses, is activated by calcium signaling, which can occur downstream of TCR activation. Use of a retroviral vector to express an inducible IL-12 may remove the requirement for concomitant administration of interleukin-2 (IL-2) that is a component of conventional cell transfer immunotherapies.

**autologous pluripotent ALDH<sup>br</sup> stem cells ALD-451:** A specific population of autologous, pluripotent bone marrow derived cells that express high levels of the cytosolic enzyme aldehyde dehydrogenase (ALDH) with potential protective and neuro-cognition improving activity. Expression of high levels of ALDH is an indicator of the biological activity in heterogenous early stage stem cells. Upon intravenous administration, these ALDH bright cells may protect normal cells and may repair damaged cells. These cells may also protect brain cells from damage and may improve neurocognition.

**autologous prostate cancer antigen-expressing dendritic cell vaccine BPX-101:** A genetically-modified autologous dendritic cell-based vaccine expressing a drug-inducible costimulatory CD40 receptor (iCD40) with potential immunomodulating and antineoplastic activities. Autologous dendritic cells (DCs) are genetically modified to express the iCD40 receptor and are pulsed with tumor antigen. Upon intradermal administration, these DCs accumulate in local draining lymph nodes. Twenty-four hours after vaccination, the dimerizer agent AP1903 is administered; AP1903 binds to and activates iCD40 receptors presented on DC cell surfaces, thus activating the DCs and stimulating a cytotoxic T-lymphocyte (CTL) response against host tumor cells that express the tumor antigen. This delayed activation strategy optimizes DC accumulation in local draining

lymph nodes prior to DC activation. iCD40 contains a membrane-localized cytoplasmic CD40 domain fused to a drug-binding domain.

**autologous prostate stem cell antigen-specific CAR T cells BPX-601:** A preparation of autologous T lymphocytes expressing a chimeric antigen receptor (CAR) consisting of an anti-human prostate stem cell antigen (PSCA) scFv (single chain variable fragment) coupled to the zeta chain of the T-cell receptor (TCRzeta) and a drug-induced co-stimulatory molecule, composed of an inducible, chimeric MyD88/CD40 (inducible MC; iMC) co-stimulatory domain, in which both the MyD88 and CD40 lack their extracellular domains, with potential antineoplastic activity. Upon administration of BPX-601, the T cells target and bind to PSCA-expressing cancer cells. Upon subsequent administration of the chemical inducer of dimerization (CID) agent rimiducid, this agent targets and binds to the drug binding domain, which leads to iMC expression, activation of both CD40- and MyD88-mediated signal transduction pathways, and an induction of selective cytotoxicity in, and eradication of PSCA-expressing cancer cells. iMC activation by rimiducid increases T-cell survival and anti-tumor activity of the administered T cells, compared to T cells without the drug iMC activation-switch. As these T cells are engineered to only be fully activated by binding to both antigen and rimiducid, T-cell proliferation, activity and toxicity can be controlled by adjusting the dose of rimiducid, thereby preventing uncontrolled T-cell activation which increases the safety of the administered T cells. PSCA is a glycosylphosphatidylinositol (GPI)-anchored cell surface antigen overexpressed in many cancer cell types.

**autologous renal cell carcinoma tumor lysate-dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with renal cell carcinoma (RCC) tumor cell lysate containing tumor associated antigens (TAAs) with potential immunostimulatory and antineoplastic activities. Upon administration, autologous renal cell carcinoma tumor lysate-dendritic cell vaccine may stimulate anti-tumoral cytotoxic T-lymphocyte (CTL) and antibody responses against RCC tumor cells expressing RCC TAAs, resulting in RCC tumor cell lysis.

**autologous sarcoma cell lysate:** A cell lysate derived from sarcoma cells with potential immunostimulatory and antineoplastic activities. Upon intradermal administration, the autologous sarcoma cell lysate exposes the immune system to an undefined amount of sarcoma-type tumor associated

antigens (TAA), which may result in the induction of both specific anti-tumoral cytotoxic T lymphocytes (CTL) and antibody-dependent responses against the sarcoma TAA-expressing cells, resulting in sarcoma cell lysis.

**autologous sarcoma lysate-pulsed dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with lysates from sarcoma cells with potential immunostimulatory and antineoplastic activities. Upon administration, the autologous sarcoma lysate-pulsed dendritic cell vaccine exposes the immune system to an undefined amount of sarcoma-type tumor associated antigens (TAA), which may result in the induction of both specific anti-tumoral cytotoxic T lymphocytes (CTL) and antibody-dependent responses against the sarcoma TAA-expressing cells, resulting in sarcoma cell lysis.

**autologous stem cell transplantation :** A product that is made of special stem cells taken from a patient's bone marrow and grown in the laboratory. After a patient's bone marrow is destroyed by treatment with whole body irradiation or chemotherapy, these cells are injected back into the patient to help rebuild bone marrow. Autologous expanded mesenchymal stem cells OTI-010 has been studied in the prevention of graft-versus-host disease during stem cell transplant in patients receiving treatment for cancer. Autologous expanded mesenchymal stem cells OTI-010 is used in cellular therapy. Also called Stromagen.

**autologous T lymphocytes expressing NY-ESO-1-C259-specific enhanced T cell receptors:** Human autologous lymphocytes transduced with a retroviral vector encoding a T cell receptor (TCR) specific for the cancer/testis antigen NY-ESO-1, with potential antineoplastic activity. Upon isolation, transduction, expansion ex vivo, and reintroduction into the patient, the autologous T lymphocytes expressing NY-ESO-1-C259-specific enhanced T cell receptors bind to NY-ESO-1-overexpressing tumor cells. This may result in the specific cytotoxic T-lymphocyte (CTL) killing of NY-ESO-1-positive cancer cells. NY-ESO-1, a tumor-associated antigen (TAA), is found in normal testis and on the surface of various tumor cell types; the TCR is specific for SLLMWITQC, an NY-ESO-1-derived peptide, in a complex with human leukocyte antigen (HLA) A2 peptide.

**autologous TARP peptide-pulsed dendritic cell vaccine:** A cell-based cancer vaccine comprised of autologous dendritic cells pulsed with autologous T cell receptor gamma-chain alternate reading frame protein

(TARP) peptide with potential immunostimulatory and antineoplastic activities. Upon intradermal administration, autologous TARP peptide-pulsed dendritic cell vaccine may stimulate anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against TARP-expressing cancer cells, resulting in tumor cell lysis. The highly immunogenic nuclear protein TARP is commonly expressed in breast and prostate cancer cells.

**autologous tumor cell :** In transplantation, refers to a person's own white blood cells. Lymphocytes have a number of roles in the immune system, including the production of antibodies and other substances that fight infections and other diseases.

**autologous tumor cell proteoliposome chronic lymphocytic leukemia vaccine:** An autologous chronic lymphocytic leukemia cancer vaccine consisting of patient-specific membrane proteins directly extracted from autologous tumor cells and incorporated into liposomes along with Interleukin 2 (IL-2) to produce membrane-patched proteoliposomes, with potential immunostimulating and antineoplastic activities. After subcutaneous injection of the autologous tumor cell proteoliposomes chronic lymphocytic leukemia vaccine, liposomes deliver the encapsulated tumor antigens into the cytosol of antigen presenting cells (APCs). Subsequently, the APCs process the antigens and present antigen-derived peptides to the immune system. This may enhance recognition of tumors by the immune system, and activate both cytotoxic CD8<sup>+</sup> T cells and CD4<sup>+</sup> helper T cells against tumor cells. IL-2 is incorporated into the vaccine to leverage its ability to expand activated T cells.

**autologous tumor cell vaccine:** A therapeutic agent produced by isolating tumor cells from an individual and processing these tumor cells into a vaccine formulation in vitro; the vaccine is then administered to the individual from whom the tumor cells were isolated. Typically combined with an adjuvant immunostimulant, an autologous cell vaccine may elicit a cytotoxic T-lymphocytic immune response to cell surface-expressed tumor-associated antigens (TAAs), resulting in tumor cell death.

**autologous tumor infiltrating lymphocytes LN-144:** A preparation of autologous tumor infiltrating lymphocytes (TILs), with potential antineoplastic activity. TILs are isolated from a patient's tumor tissue, cultured in vitro with high-dose interleukin-2 (IL-2), further selected based on antigen specificity and tumor reactivity, and the selected TILs are

subsequently expanded. Upon re-introduction of LN-144 into the patient, the TILs re-infiltrate the tumor, specifically recognize the tumor-associated antigens (TAAs), and initiate tumor cell lysis. IL-2 induces the proliferation and expansion of TILs in vitro.

**autologous tumor-associated peptide antigen-pulsed dendritic cell vaccine:** A dendritic cell (DC)-based cancer vaccine composed of autologous DCs pulsed with specific tumor-associated peptide antigens (TAPA), with potential immunostimulatory and antineoplastic activities. Upon administration, autologous TAPA-pulsed DC vaccine exposes the immune system to the specific TAPAs, which may result in cytotoxic T-lymphocyte (CTL)-mediated immune responses against the TAPA-expressing cancer cells. This leads to cancer cell lysis. This vaccine is specific towards peptides derived from the following proteins: sperm autoantigenic protein 17 (SP17), ropporin, A-kinase anchor protein 4 (AKAP4), pituitary tumor-transforming 1 (PTTG1) and SPANX family member B (SPANX-B).

**autologous WT1-TCRc4 gene-transduced CD8-positive Tcm/Tn lymphocytes:** Autologous, human CD8 T-lymphocytes, comprised of both central memory T-cells (Tcm) and naïve T-cells (Tn), that are transduced, ex vivo, with a self-inactivating (SIN) lentiviral vector encoding a high-affinity T-cell receptor (TCRc4) specific for the human tumor antigen Wilms tumor 1 (WT1) epitope 126-134 (RMFPNAPYL), with potential antineoplastic activity. Upon isolation of peripheral blood lymphocytes (PBLs), transduction, expansion ex vivo, priming of the Tn subset, but not the Tcm subset, with interleukin-21 (IL-21), and reintroduction of equal amounts of Tcm and Tn cells into the patient, WT1-TCRc4 gene-transduced CD8-positive Tcm/Tn lymphocytes redirect T-lymphocytes to WT1-expressing tumor cells and specifically bind to and lyse those cells. This inhibits proliferation of WT1-expressing tumor cells. WT1 protein, a zinc finger DNA-binding transcriptional regulator, is overexpressed in most leukemias and various solid tumors, while expression in normal, healthy tissues is very limited; its expression is correlated with aggressiveness and poor prognosis.

**Automated diffractometer:** See Diffractometer.

**AUTOMATIC MOLD:** A mold for injection, compression or transfer molding that repeatedly goes through the entire molding cycle, including ejection, without human assistance. OR A mold for injection, compression

or transfer molding that repeatedly goes through the entire molding cycle, including ejection, without human assistance. OR A mold for injection, compression or transfer molding that repeatedly goes through the entire molding cycle, including ejection, without the assistance of an operator. A mold for injection or compression molding that repeatedly goes through the entire cycle, including ejection, without human assistance.

**Automatic operation:** The term used to define the mode in which a molding machine is operating when there is no need for an operator to start each cycle.

**Automatic temperature compensation (ATC):** automatic instrumental adjustment of the measured parameter to correct for variations in sensor (e.g. electrode) slope due to temperature changes. The output of a thermistor probe regulates the correction factor.

**autonomic nervous system:** a subdivision of the peripheral nervous system, which is divided into the sympathetic and parasympathetic nervous systems.

**autonomic nervous system :** A procedure in which blood-forming stem cells (cells from which all blood cells develop) are removed, stored, and later given back to the same person.

**autooxidation:** oxidation caused by the atmosphere; an oxidation reaction that is self-catalyzed and spontaneous; an oxidation reaction begun only by an inductor.

**autophagy :** A cancer cell from an individual's own tumor.

**autoprotolysis:** Transfer of a hydrogen ion between molecules of the same substance, e. g. the autoprotolysis of methanol ( $2 \text{CH}_3\text{OH} = \text{CH}_3\text{OH}_2^+ + \text{CH}_3\text{O}^-$ ). Autoprotolysis of water into hydronium ions and hydroxide ions results in equilibrium concentrations that satisfy  $K_w = [\text{H}_3\text{O}^+][\text{OH}^-]$ , where the autoprotolysis constant  $K_w$  is equal to  $1.01 \times 10^{-14}$  at  $25^\circ\text{C}$ .

**Autoradiography:** The technique of exposing film in the presence of disintegrating radioactive particles Used to obtain information on the distribution of radioactivity in a gel or a thin cell section. OR A means of detecting radioactive molecules immobilized in a separation medium such as polyacrylamide; the radioactivity of the molecules will blacken x-ray film.

**Autoregulation:** The process in which a gene regulates its own expression.

**autosomal :** Refers to any of the chromosomes numbered 1-22 or the genes on chromosomes 1-22. This term excludes the sex-determining chromosomes, X and Y.

**autosomal dominant :** Autosomal dominant inheritance refers to genetic conditions that occur when a mutation is present in one copy of a given gene (i.e., the person is heterozygous).

**autosomal recessive :** Autosomal recessive inheritance refers to genetic conditions that occur only when mutations are present in both copies of a given gene (i.e., the person is homozygous for a mutation, or carries two different mutations of the same gene, a state referred to as compound heterozygosity).

**autosomes:** the 22 pairs of human chromosomes that are not sex chromosomes.

**Autotroph:** An organism that can form its organic constituents from CO<sub>2</sub>. OR An organism that can synthesize its own complex molecules from very simple carbon and nitrogen sources, such as carbon dioxide and ammonia.

**autotrophic:** certain bacteria that synthesize their own foods. OR An organism that produces food from inorganic substances.

**Autotrophs:** Photosynthetic organisms that synthesize glucose from carbon dioxide and water, by using sunlight as an energy source; the glucose is then used as a fuel for cellular metabolism.

**Autotrophy:** A unique form of metabolism found only in bacteria. Inorganic compounds (e.g., NH<sub>3</sub>, NO<sub>2</sub><sup>-</sup>, S<sub>2</sub>, and Fe<sup>2+</sup>) are oxidized directly (without using sunlight) to yield energy. This metabolic mode also requires energy for CO<sub>2</sub> reduction, like photosynthesis, but no lipid-mediated processes are involved. This metabolic mode has also been called chemotrophy, chemoautotrophy, or chemolithotrophy.

**autoxidation:** Oxidation caused by exposure to air. Rust is an example of autoxidation. Autoxidation makes ether taken from half-filled bottles very dangerous, because air oxidizes ether to highly explosive organic peroxides.

**autumnal equinox:** September 23, when the vertical ray of the Sun is at the Equator; the entire Earth has 12 hours of day and 12 hours of night.

**Auxiliary building:** A building at a nuclear power plant, which is frequently located adjacent to the reactor containment structure, and houses most of the auxiliary and safety systems associated with the reactor, such as

radioactive waste systems, chemical and volume control systems, and emergency cooling water systems.

**Auxiliary Drive:** The sprocket drive that sets the belt speed. This normally is located at the discharge of a spiral conveyor just before the take-up. See also take-up and tension drive.

**Auxiliary feedwater:** Backup water supply used during nuclear plant startup and shutdown to supply water to the steam generators during accident conditions for removing decay heat from the reactor.

**Auxin:** A plant growth hormone usually concentrated in the apical bud. OR A plant growth hormone.

**auxochrome:** A group or substructure in a molecule that influences the intensity of absorption of the molecule.

**Auxotroph:** A mutant that cannot grow on the minimal medium on which a wild-type member of the same species can grow.

**auxotrophic mutant (auxotroph):** A mutant organism defective in the synthesis of a given biomolecule, which must therefore be supplied for the organism's growth.

**Avage :** (Other name for: tazarotene) OR The part of the nervous system that controls muscles of internal organs (such as the heart, blood vessels, lungs, stomach, and intestines) and glands (such as salivary glands and sweat glands). One part of the autonomic nervous system helps the body rest, relax, and digest food and another part helps a person fight or take flight in an emergency. Also called ANS and involuntary nervous system.

**avanafil:** An orally available phosphodiesterase type 5 (PDE5) inhibitor with vasodilatory activity. Avanafil selectively inhibits PDE5, thus inhibiting the degradation of cyclic guanosine monophosphate (cGMP) found in the smooth muscle of the corpus cavernosa of the penis. The inhibition of cGMP degradation results in prolonged muscle relaxation, vasodilation, and blood engorgement of the corpus cavernosa, thereby prolonging penile erection.

**Avandia:** (Other name for: rosiglitazone maleate) or A normal process in which a cell destroys proteins and other substances in its cytoplasm (the fluid inside the cell membrane but outside the nucleus), which may lead to cell death. Autophagy may prevent normal cells from developing into

cancer cells, but it may also protect cancer cells by destroying anticancer drugs or substances taken up by them.

**avascular necrosis :** A drug used on the skin to treat several skin conditions. It is also being studied in the treatment of basal cell skin cancer and basal cell nevus syndrome. Avage is related to vitamin A and is made in the laboratory. It turns on a gene that may help stop the growth of skin cancer cells. Avage is a type of synthetic retinoid. Also called tazarotene and Tazorac.

**Avastin :** (Other name for: bevacizumab) OR A drug that helps control the amount of glucose (sugar) in the blood and is being studied in the prevention and treatment of some types of cancer. Avandia stops cells from growing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of thiazolidinedione and a type of antiangiogenesis agent. Also called rosiglitazone maleate.

**Aveeno cream:** (Other name for: colloidal oatmeal cream)

**Avelox :** (Other name for: moxifloxacin hydrochloride) OR A condition in which there is a loss of blood flow to bone tissue, which causes the bone to die. It is most common in the hips, knees, shoulders, and ankles. It may be caused by long-term use of steroid medicines, alcohol abuse, joint injuries, and certain diseases, such as cancer and arthritis. It may also occur at some point in time after cancer treatment that included methotrexate, bisphosphonates, or corticosteroids. Also called aseptic necrosis, ischemic necrosis, and osteonecrosis.

**avelumab:** A human immunoglobulin G1 (IgG1) monoclonal antibody directed against the human immunosuppressive ligand programmed death-ligand 1 (PD-L1) protein, with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, avelumab binds to PD-L1 and prevents the interaction of PD-L1 with its receptor programmed cell death protein 1 (PD-1). This inhibits the activation of PD-1 and its downstream signaling pathways. This may restore immune function through the activation of cytotoxic T-lymphocytes (CTLs) targeted to PD-L1-overexpressing tumor cells. In addition, avelumab induces an antibody-dependent cellular cytotoxic (ADCC) response against PD-L1-expressing tumor cells. PD-1, a cell surface receptor belonging to the immunoglobulin superfamily expressed on T-cells, negatively regulates T-cell activation and effector function when activated by its ligand, and plays an important role

in tumor evasion from host immunity. PD-L1, a transmembrane protein, is overexpressed on a variety of tumor cell types and is associated with poor prognosis.

**Avemar:** (Other name for: fermented wheat germ extract)

**Aventyl :** A drug used alone or with other drugs to treat certain types of cervical, colorectal, lung, kidney, ovarian, fallopian tube, and primary peritoneal cancer, and glioblastoma (a type of brain cancer). It is also being studied in the treatment of other types of cancer. Avastin binds to a protein called vascular endothelial growth factor (VEGF). This may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of monoclonal antibody. Also called bevacizumab.

**average bond enthalpy:** Average enthalpy change per mole when the same type of bond is broken in the gas phase for many similar substances

**Average Energy:** This is a measure of the overall energy of a sample. Some areas might be hotter and some might be colder, but the average energy is how scientists measure the temperature of a system.

**Average Molecular Weight (viscosity method):** The molecular weight of polymeric materials determined by the viscosity of the polymer in solution at a specific temperature. This gives an average molecular weight of the molecular chains in the polymer independent of specific chain length. Falls between weight average and number average molecular weight.

**Average number:** the number of instantaneous readings of the sensor (e.g. electrode potential), taken for example at onesecond intervals, used to calculate the average value for the millivolts. An operatorselectable variable in computer interface software which helps to reduce noise and increase the precision of ISE measurements.

**Average planar linear heat generation rate (APLGHR):** The average value of the linear heat generation rate of all the fuel rods at any given horizontal plane along a fuel assembly (also known as a "fuel bundle" or "fuel element").

**Avidity:** The strength of an interaction comprising multiple independent binding interactions between partners, as would take place between an antigen and antibody.

**Avinza:** (Other name for: morphine sulfate)

**Avita :** (Other name for: tretinoin) OR A drug used to treat bacterial infections. It is a type of fluoroquinolone. Also called moxifloxacin and moxifloxacin hydrochloride.

**avitinib maleate:** The maleate salt form of avitinib, an orally available, irreversible, epidermal growth factor receptor (EGFR) mutant-selective inhibitor, with potential antineoplastic activity. Upon oral administration, avitinib covalently binds to and inhibits the activity of mutant forms of EGFR, including the drug-resistant T790M EGFR mutant, which prevents signaling mediated by mutant forms of EGFR. This may both induce cell death and inhibit tumor growth in EGFR-mutated tumor cells. EGFR, a receptor tyrosine kinase that is mutated in a variety of cancers, plays a key role in tumor cell proliferation and tumor vascularization. As this agent is selective towards mutant forms of EGFR, its toxicity profile may be reduced when compared to non-selective EGFR inhibitors, which also inhibit wild-type EGFR. Check for active clinical trials using this agent.

**Avmacol:** (Other name for: broccoli sprout/broccoli seed extract supplement)

**AVN944:** An orally available, synthetic small molecule with potential antineoplastic activity. AVN944 inhibits inosine monophosphate dehydrogenase (IMPDH), an enzyme involved in the de novo synthesis of guanosine triphosphate (GTP), a purine molecule required for DNA and RNA synthesis. Inhibition of IMPDH deprives cancer cells of GTP, resulting in disruption of DNA and RNA synthesis, inhibition of cell proliferation, and the induction of apoptosis. AVN944 appears to have a selective effect on cancer cells in that deprivation of GTP in normal cells results in a temporary slowing of cell growth only. IMPDH is overexpressed in some cancer cells, particularly in hematological malignancies. Check for active clinical trials using this agent. or A drug used to treat depression. It may also be used to treat panic or anxiety disorders and certain types of pain, and to help people quit smoking. Aventyl increases the levels of norepinephrine and other natural chemicals in the brain. This helps improve mood and may reduce a person's craving for nicotine. It is a type of tricyclic antidepressant. Also called nortriptyline and Pamelor.

**Avodart :** A topical preparation of tretinoin that is used to treat acne. Tretinoin is a form of vitamin A.

**Avogadro:** Italian chemist and physicist Amadeo Avogadro (1776-1856) proposed a correct molecular explanation for Gay-Lussac's law of combining volumes. His work provided a simple way to determine atomic weights and molecular weights of gases.

**Avogadro number:** The number of particles in one mole, equal to  $6.02214199 \times 10^{23} \text{ mol}^{-1}$  ( $\pm 0.00000047 \text{ mol}^{-1}$ ) [1998 CODATA values]

**Avogadro's Hypothesis:** Amadeo Avogadro came up with this idea. He said that if you have two volumes of gas, they would have the same number of molecules inside if the pressure and temperatures inside were equal. One liter of oxygen and one liter of carbon dioxide (at the same temperature and pressure) would have an equal number of molecules.

**Avogadro's law:** equal volumes of gases at the same temperature and pressure that contain the same number of molecules. OR Equal volumes of an ideal gas contain equal numbers of molecules, if both volumes are at the same temperature and pressure. For example, 1 L of ideal gas contains twice as many molecules as 0.5 L of ideal gas at the same temperature and pressure.

**Avogadro's number:** Number representing the number of molecules in one (1) mole:  $6.022 \times 10^{23}$ . OR The number of particles present in 1 mole of a substance, experimentally determined to be  $6.02 \times 10^{23}$ . OR This is one of the constants of Chemistry. Amadeo Avogadro determined that there were  $6.02 \times 10^{23}$  atoms in one mole of any substance. So if you have one gram of hydrogen, you have that many  $6.02 \times 10^{23}$  atoms.  $6.02 \times 10^{23}$  OR 60,220,000, 000,000 ,000,000,000. The value represents the number of atoms or molecules in one mole of a substance. OR  $6.02 \times 10^{23}$ , the number of molecules in 1 mole of a substance. OR The number of molecules in a gram molecular weight (a mole) of any compound ( $6.02 \times 10^{23}$ ). OR The number of molecules in a gram molecular weight of any compound ( $6.023 \times 10^{23}$ ).

**avoidance :** A substance being studied in the treatment of cancer. It blocks cells from making DNA and RNA and may kill cancer cells. It is a type of inosine monophosphate dehydrogenase (IMPDH) inhibitor.

**Avrami–Erofe'ev equation:** The equation that treats a solid-state reaction as a process controlled by random nuclei growing in three dimensions and ingesting other nuclei.

**Avycaz:** (Other name for: ceftazidime/avibactam sodium)

**AWG:** abbreviation for American Wire Gauge, a standard system for designating wire diameter.

**AWT:** Advanced Waste Treatment - any process of water renovation that upgrades treated wastewater to meet reuse requirements.

**axial:** 1. An atom, bond, or lone pair that is perpendicular to equatorial atoms, bonds, and lone pairs in a trigonal bipyramidal molecular geometry.

**axial bond:** a bond positioned perpendicularly to the general plane of a cyclohexane ring.

**Axial hole:** This is a hole that is parallel to the axis of revolution of a turned part, but does not need to be concentric to it.

**axial hypotonia:** a floppiness associated with the inability to sit

**axial plane:** of a fold, the plane that separates rocks on one side of a fold from those that dip in the opposite direction on the other side.

**Axial Seal:** A face seal squeezed on both the top and bottom surfaces of the seal's cross section

**axilla :** A drug used to treat symptoms of an enlarged prostate gland. It is being studied in the treatment of male hair loss and prostate cancer. Avodart blocks enzymes the body needs to make male sex hormones. It is a type of 5-alpha reductase inhibitor. Also called dutasteride and GG745.

**axillary :** The act of staying away from people, places, and thoughts that may cause anxiety, pain, or unpleasant feelings. Some types of cancer-related avoidance include refusing to accept a cancer diagnosis or get treatment, and using alcohol or other drugs to forget about having cancer.

**axillary dissection :** The underarm or armpit.

**axillary lymph node :** Pertaining to the armpit area, including the lymph nodes that are located there.

**axillary lymph node dissection :** Surgery to remove lymph nodes found in the armpit region. Also called axillary lymph node dissection.

**axitinib:** An orally bioavailable tyrosine kinase inhibitor. Axitinib inhibits the proangiogenic cytokines vascular endothelial growth factor (VEGF) and platelet-derived growth factor receptor (PDGF), thereby exerting an anti-angiogenic effect. Check for active clinical trials using this agent. or A lymph node in the armpit region that drains lymph from the breast and nearby areas.

**AXL inhibitor BGB324:** An orally available and selective inhibitor of the AXL receptor tyrosine kinase (UFO), with potential antineoplastic activity. Upon administration, BGB324 targets and binds to the intracellular catalytic kinase domain of AXL and prevents its activity. This blocks AXL-mediated signal transduction pathways and inhibits the epithelial-mesenchymal transition (EMT), which, in turn, inhibits tumor cell proliferation and migration. In addition, BGB324 enhances chemo-sensitivity. AXL, a member of the TAM (TYRO3, AXL and MER) family of receptor tyrosine kinases overexpressed by many tumor cell types, plays a key role in tumor cell proliferation, survival, invasion and metastasis; its expression is associated with drug resistance and poor prognosis.

**AXL kinase inhibitor TP-0903:** An orally available and selective inhibitor of the receptor tyrosine kinase AXL (UFO), with potential antineoplastic activity. Upon administration, TP-0903 targets and binds to AXL and prevents its activity. This blocks AXL-mediated signal transduction pathways and inhibits the epithelial-mesenchymal transition (EMT), which, in turn, inhibits tumor cell proliferation and migration. In addition, TP-0903 enhances chemo-sensitivity to certain other chemotherapeutic agents. AXL, a member of the Tyro3, AXL and Mer (TAM) family of receptor tyrosine kinases and overexpressed by many tumor cell types, plays a key role in tumor cell proliferation, survival, invasion and metastasis. Its expression is associated with drug resistance and poor prognosis.

**axon:** the long extension of a neuron.

**Axoneme:** The fundamental design structure of cilia and flagella; it consists of a bundle of microtubules, enclosed in a membrane, in which nine microtubule doublets surround two microtubule singlets.

**Aygestin:** (Other name for: norethindrone acetate)

**Ayurveda :** Surgery to remove lymph nodes found in the armpit region. Also called axillary dissection.

**Ayurvedic medicine :** A drug used to treat advanced renal cell carcinoma (the most common type of kidney cancer). It is used in patients who have not gotten better with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Axitinib blocks the action of proteins called growth factor receptors and may prevent the growth of new blood

vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called Inlyta.

**azacitidine:** A pyrimidine nucleoside analogue of cytidine with antineoplastic activity. Azacitidine is incorporated into DNA, where it reversibly inhibits DNA methyltransferase, thereby blocking DNA methylation. Hypomethylation of DNA by azacitidine may activate tumor suppressor genes silenced by hypermethylation, resulting in an antitumor effect. This agent is also incorporated into RNA, thereby disrupting normal RNA function and impairing tRNA cytosine-5-methyltransferase activity. or A medical system from India that has been used for thousands of years. The goal is to cleanse the body and to restore balance to the body, mind, and spirit. It uses diet, herbal medicines, exercise, meditation, breathing, physical therapy, and other methods. It is a type of Complementary and Alternative Medicine (CAM) therapy. Also called Ayurvedic medicine.

**azapicyl:** A hydrazine compound that has been investigated for antineoplastic activity. Check for active clinical trials using this agent.

**azaserine:** A naturally occurring serine derivative diazo compound with antineoplastic properties, Azaserine functions as a purine antagonist and glutamine analogue (glutamine amidotransferase inhibitor) that competitively inhibits pathways in which glutamine is metabolized. An antibiotic and antitumor agent, Azaserine is used in clinical studies as a potential antineoplastic agent.

**AzaSite:** (Other name for: azithromycin)

**azaspirane :** A medical system from India that has been used for thousands of years. The goal is to cleanse the body and to restore balance to the body, mind, and spirit. It uses diet, herbal medicines, exercise, meditation, breathing, physical therapy, and other methods. It is a type of Complementary and Alternative Medicine (CAM) therapy. Also called Ayurveda.

**azathioprine sodium:** The sodium salt form of azathioprine, a pro-drug of purine analogue with immunosuppressive activity. Azathioprine is converted in vivo to its active metabolite 6-mercaptopurine (6-MP), which substitutes for the normal nucleoside and mistakenly gets incorporated into DNA sequences. This leads to inhibition of DNA, RNA, and protein synthesis. As a result, cell proliferation may be inhibited, particularly in lymphocytes and leukocytes. or A drug that is used to treat myelodysplastic

syndromes and is being studied in the treatment of other types of cancer. It belongs to the family of drugs called antimetabolites. Also called Mylosar and Vidaza.

**AZD0530:** A substance being studied in the treatment of certain multiple myelomas and other advanced cancers. Azaspirane may block the growth of tumors and may prevent the growth of new blood vessels that tumors need to grow. Azaspirane is a type of signal transduction inhibitor and a type of antiangiogenesis agent. Also called atiprimod and SK&F106615.

**AZD2171:** A drug used to keep a patient from rejecting a transplanted kidney. It is also used in the treatment of rheumatoid arthritis that does not get better with other types of treatment. Azathioprine sodium blocks the growth of white blood cells and the synthesis of DNA, RNA, and protein. It is a type of immunosuppressant.

**AZD2281:** A substance being studied in the treatment of some types of cancer. AZD0530 blocks enzymes needed for cancer growth. It is a type of tyrosine kinase inhibitor.

**AZD6244:** A substance being studied in the treatment of some types of cancer. AZD2171 may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of antiangiogenesis agent and a type of vascular endothelial growth factor (VEGF) receptor tyrosine kinase inhibitor. Also called cediranib maleate and Recentin.

**Azedra:** (Other name for: cold contaminant-free iobenguane I 131)

**azeotrope:** A solution that does not change composition when distilled. For example, if a 95% (w/w) ethanol solution in water is boiled, the vapor produced also is 95% ethanol- and it is not possible to obtain higher percentages of ethanol by distillation.

**azimuth:** direction along the horizon when looking for an object in the sky.

**aziridinybenzoquinone RH1:** A water-soluble, synthetic aziridinybenzoquinone with potential antineoplastic activity. Bioactivation of aziridinybenzoquinone RH1 occurs through the two-electron reduction of the quinone to the hydroquinone by the two-electron quinone reductase DT-diaphorase (DTD). The resultant hydroquinone selectively alkylates and cross-links DNA at the 5'-GNC-3' sequence, inhibiting DNA replication, inducing apoptosis, and inhibiting tumor cell proliferation. DTD is over-

expressed in many tumors relative to normal tissue, including lung, colon, breast and liver tumors.

**azithromycin:** An azalide, derived from erythromycin, and a member of a subclass of macrolide antibiotics with bacteriocidal and bacteriostatic activities. Azithromycin reversibly binds to the 50S ribosomal subunit of the 70S ribosome of sensitive microorganisms, thereby inhibiting the translocation step of protein synthesis, wherein a newly synthesized peptidyl tRNA molecule moves from the acceptor site on the ribosome to the peptidyl (donor) site, and consequently inhibiting RNA-dependent protein synthesis leading to cell growth inhibition and cell death.

**Azixa:** (Other name for: verubulin hydrochloride)

**azo:** The azo group has the general structure  $\text{Ar-N=N-Ar}'$ , where Ar and Ar' indicate substituted aromatic rings. Compounds containing the azo compounds are often intensely colored and are economically important as dyes. Methyl orange is an example of an azo dye.

**azoospermia :** A drug used to treat advanced ovarian cancer caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is used in patients who have already received other anticancer drugs. It is also being studied in the treatment of other types of cancer. AZD2281 blocks an enzyme involved in many cell functions, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. AZD2281 may cause cancer cells to die. It is a type of targeted therapy agent and a type of poly (ADP-ribose) polymerase inhibitor. Also called Lynparza, olaparib, and PARP inhibitor AZD2281.

**azoxymethane :** A substance being studied in the treatment of several types of cancer. AZD6244 blocks proteins needed for cell growth and may kill cancer cells. It is a type of protein kinase inhibitor. Also called MEK inhibitor AZD6244 and selumetinib.

**AZP:** An aziridinyl-substituted cyclophosphazene and a putrescence derivative that may cause DNA cross-linkage.

**AZQ:** A condition in which there are no sperm in the semen when a man ejaculates. This may be because the man does not make sperm or because the sperm is blocked from entering the semen. Azoospermia may be caused by hormone problems, certain genetic conditions, previous vasectomy or other surgery, or other conditions. It may also be caused by certain cancer

treatments. Azoospermia can cause infertility (the inability to produce children).

**AZT:** A substance that is used in cancer research to cause colon tumors in laboratory animals. This is done to test new diets, drugs, and procedures for use in cancer prevention and treatment.

**Azulfidine:** (Other name for: sulfasalazine)

**azurin-derived cell-penetrating peptide p28:** A water-soluble, amphipathic, 28 amino acid (amino acids 50-77), 2.9 kD fragment peptide (p28) derived from the protein azurin with potential antineoplastic and antiangiogenic activities. Although the mechanism has yet to be fully elucidated, the preferential cellular uptake of azurin-derived cell-penetrating peptide p28 by tumor cells and endothelial cells is likely via caveolae-mediated endocytosis; the C-terminal 18 amino acid residues (50-67) appear to be responsible for this preferential uptake. After cell entry, the first 12 amino acid residues interact with tumor suppressor p53 and form a p28:p53 complex, which may result in a reduction of proteasomal degradation of p53, increased p53 levels, and p53-mediated cell cycle inhibition and apoptosis. Azurin is a cupredoxin secreted by the bacterium *Pseudomonas aeruginosa*. Cell penetrating peptides (CPPs) are cationic and/or amphipathic peptides, typically less than 30 amino acids in length, that can penetrate cell membranes easily and may transport molecular cargo.

**B cell:** One of the major types of cells in the immune system. B cells can differentiate to form memory cells or antibody-forming cells. Or An anticancer drug that is able to cross the blood-brain barrier and kill cancer cells in the central nervous system. Also called diaziquone.

**B form:** The most common form of duplex DNA, containing a right-handed helix and about 10 (10.5 exactly) base pairs per turn of the helix axis.

**B horizon:** the middle soil horizon into which the leached materials from the A horizon often precipitate.

**B lymphocyte :** A drug that inhibits the human immunodeficiency virus (HIV) that causes AIDS. Also called zidovudine.

**B lymphocytes:** white blood cells within the lymph nodes; stimulated by microorganisms or other foreign materials in the blood.

**B-cell acute lymphoblastic leukemia :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called antitumor antibiotics. Also called pixantrone. Or A substance that is being studied in the treatment of cancer. It belongs to the family of platinum-based drugs.

**B-cell leukemia/lymphoma 2 protein :** An aggressive (fast-growing) type of leukemia (blood cancer) in which too many B-cell lymphoblasts (immature white blood cells) are found in the bone marrow and blood. It is the most common type of acute lymphoblastic leukemia (ALL). Also called B-cell acute lymphocytic leukemia and precursor B-lymphoblastic leukemia.

**B-cell lymphoma :** An aggressive (fast-growing) type of leukemia (blood cancer) in which too many B-cell lymphoblasts (immature white blood cells) are found in the bone marrow and blood. It is the most common type of acute lymphoblastic leukemia (ALL). Also called B-cell acute lymphoblastic leukemia and precursor B-lymphoblastic leukemia.

**B-DNA helix:** A right-handed double helix with the following characteristics: the two strands are antiparallel; the bases are inside the helix and the phosphates and deoxyribose sugars are on the outside; adenine forms hydrogen bonds with thymine, and guanine forms them with cytosine; the bases in each pair are coplanar; there are 10.4 residues per turn, with a pitch of 35 Å.

**B-Raf/VEGFR-2 inhibitor RAF265:** An orally bioavailable small molecule with potential antineoplastic activity. B-Raf/VEGFR-2 inhibitor RAF265 binds and inhibits Raf kinases, which may result in a reduction of tumor cell growth and proliferation, and tumor cell death. In addition, this agent inhibits vascular endothelial growth factor receptor type 2 (VEGFR-2), thereby disrupting tumor angiogenesis. Raf kinases are critical enzymes in the Ras/Raf/MEK/ERK signaling pathway and are frequently upregulated in neoplasms.

**B-Side:** Sometimes called the “core,” it is the half of the mold where ejectors, side-action cams and other complex components are located. On a cosmetic part, the B-side usually creates the inside of the part.

**B-stage:** This describes an intermediate stage of reaction where the material will soften when heated and swells in the presence of certain liquids, but may not completely fuse or dissolve. The resin is usually supplied in this uncured state. OR An intermediate stage in the cure reaction

of certain thermosetting resins, in which the material is still to some extent soluble and fusible. OR This describes an intermediate stage of a thermoset resin reaction where the material will soften when heated and swells in the presence of certain liquids, but may not completely fuse or dissolve. The resin is usually supplied in this uncured state.

**B16alphaGal melanoma vaccine:** A whole cell melanoma cancer vaccine with potential immunostimulating and antineoplastic activities.

B16alphaGal melanoma vaccine contains three types of human melanoma cell lines that are genetically engineered to express the alpha(1,3)-galactosyl (alphaGal) epitope on cell surfaces. The agent stimulates a hyperacute rejection of whole melanoma cancer cells expressing alphaGal epitopes, initiated by opsonization by anti-alphaGal antibodies and followed by antibody-dependent cell-mediated cytotoxicity (ADCC) and cell lysis. This results in the stimulation of a broader cytotoxic T-lymphocyte response (CTL) directed against tumor antigens on melanoma cells that do not express alphaGal. AlphaGal is not normally expressed in humans because alpha(1,3)-galactosyltransferase (Alpha-GT), the enzyme that catalyzes the synthesis of alphaGal epitopes on glycoproteins and glycolipids, is not naturally present in humans and other primates.

**B3 monoclonal antibody :** A type of white blood cell that makes antibodies. B cells are part of the immune system and develop from stem cells in the bone marrow. Also called B lymphocyte.

**B3LYP:** DFT using Becke exchange functional and Lee-Yang-Parr correlation functional, as well as Hartree-Fock exchange. A hybrid method; the parameters were optimized for thermochemistry, but using a different functional and numerical (basis set-free) code (7,8). Very popular.

**B43-PAP immunotoxin:** A mouse-derived anti-human CD19 monoclonal antibody linked to pokeweed (*Phytolacca americana*) antiviral protein (PAP) with antileukemic activity. The monoclonal antibody portion specifically binds to the CD19 antigen, a cell surface molecule normally expressed only by B lymphocytes and follicular dendritic cells and over-expressed in B-lineage lymphocytic leukemia cells. Following internalization, PAP, a plant hemitoxin and a ribosome-inactivating protein, is cleaved from the immunoconjugate and released into the cytoplasm where it enzymatically removes a single adenine base from a conserved, surface exposed loop sequence of rRNA leading to inhibition of protein

synthesis and cell growth, but not necessarily cell death. or A type of white blood cell that makes antibodies. B lymphocytes are part of the immune system and develop from stem cells in the bone marrow. Also called B cell.

**B7-1:** A substance that binds to a molecule called Lewis Y antigen that is found on many types of tumor cells and some normal cells. It is being studied in the treatment of several types of cancer that express the Lewis Y antigen. It is a type of monoclonal antibody.

**B7-DC cross-linking antibody rHIgM12B7:** A recombinant form of the monoclonal IgM antibody M12 isolated from a Waldenstrom macroglobulinaemia patient (rHIgM12) with potential immunomodulating activity. B7-DC cross-linking antibody rHIgM12B7 binds and crosslinks the B7 co-stimulatory family member B7-DC (PD-L2) on dendritic cells (DCs), antigen presenting cells (APCs) that play a crucial role in the human immune response. This results in enhanced activation of DCs; enhanced antigen-presenting activity; and increased production of immunomodulatory cytokines (especially interleukin 12); and may potentiate a specific cytotoxic T lymphocyte (CTL) response against Waldenstrom macroglobulinaemia B cells.

**Babinski reflex:** the great toe flexes toward the of the foot and the other toes fan out after the sole of the foot has been firmly stroked; also known as the extensor plantar reflex

**BAC-MP4:** Bond-additivity-corrected MP4. A method in which an MP4 energy is corrected using empirical parameters that depend upon the atoms in the molecule, bond distances, and nearest neighbors. Method developed by Carl Melius (Sandia); not well-described in the open literature.

**bacilli:** the rod-shaped bacteria (singular, bacillus).

**bacillus Calmette-Guérin :** A toxic substance linked to an antibody that attaches to tumor cells and kills them.

**bacillus Calmette-Guérin solution :** A protein found on the surface of some immune system cells, including B cells and monocytes. Cells with B7-1 on their surface cause T cells to make substances that help control immune responses. Also called CD80.

**bacillus Calmette-Guérin vaccine :** A weakened form of the bacterium *Mycobacterium bovis* (bacillus Calmette-Guérin) that does not cause disease. Bacillus Calmette-Guérin is used in a solution to stimulate the

immune system in the treatment of bladder cancer and as a vaccine to prevent tuberculosis. Also called BCG.

**Bacitracin:** An antibiotic that blocks the transfer of oligosaccharides from dolichol phosphate to proteins.

**bacitracin:** A complex of cyclic polypeptide antibiotics, mainly bacitracin A, produced by spore-forming organisms belonging to the licheniformin group of the *Bacillus subtilis* with antibacterial activity. Bacitracin binds to C55-isoprenyl pyrophosphate, a biphosphate lipid transport molecule that carries the building blocks of the peptidoglycan bacterial cell wall. The binding interferes with the enzymatic dephosphorylation of the C55-isoprenyl pyrophosphate and prevents peptidoglycan synthesis, thereby inhibiting bacterial cell growth.

**Back Pressure:** The resistance of the molten plastic material to forward flow. In molding, back pressure increases the temperature of the melt, and contributes to better mixing of colors and homogeneity of the material. As back pressure increases, so does cycle time. OR The resistivity of molten plastic material to forward flow. OR In extrusion, the resistance of molten polymer to flow forward, caused by a pressure difference between two points along the path of flow. OR The viscosity resistance of a material to continued flow when a mold is closing. In extrusion, the resistance to the forward flow of molten material. OR The applied hydraulic pressure used to restrict the shot size formation. Applied to the back of a melt accumulator or reciprocating screw. Used to control screw drift, mixing, and shot size adjustments. In molding, back pressure increases the temperature of the melt, and contributes to better mixing of colors and homogeneity of the material. OR The resistance of the molten plastic material to forward flow. In molding, back pressure increases the temperature of the melt, and contributes to better mixing of colors and homogeneity of the material. However, as back pressure increases, so does cycle time. OR The applied hydraulic pressure used to restrict the shot size formation. Applied to the back of a melt accumulator or reciprocating screw. Used to control screw drift, mixing, and shot size adjustments. In molding, back pressure increases the temperature of the melt, and contributes to better mixing of colors and homogeneity of the material.

**Back Rind:** Distortion of the mold parting line, usually in the form of a ragged or torn indentation

**BACK TAPER:** Reverse draft used in mold to prevent molded articles from drawing freely. See UNDERCUT.

**back titration:** Determining the concentration of an analyte by reacting it with a known number of moles of excess reagent. The excess reagent is then titrated with a second reagent. The concentration of the analyte in the original solution is then related to the amount of reagent consumed.

**back-mutation:** A mutation that causes a mutant gene to regain its wild-type base sequence.

**BACK-PRESSURE:** The resistance that reduces forward flow in an extruder.

**backarc basin:** the area on the continental side of an island arc or magmatic arc.

**backarc thrust belt:** the belt of rocks that has been thrust toward the continental interior from the magmatic arc area along low-angle faults.

**backbone :** A type of biologic therapy used to treat early stage bladder cancer. The solution is made from a weakened form of a bacterium called *Mycobacterium bovis* (bacillus Calmette-Guérin) that does not cause disease. It is given through a catheter that is placed into the bladder where the solution is held for about two hours. Bacillus Calmette-Guérin solution may help the body's immune system kill cancer cells. Also called BCG solution.

**Backflow:** molten resin flows back out of the mold, returning to the runners.

**backflow prevention:** a system designed to protect potable water from wastewater contamination which could occur if wastewater pressure exceeds potable water pressure over a cross-connection where one or more check valves fail.

**Background radiation:** The natural radiation that is always present in the environment. It includes cosmic radiation which comes from the sun and stars, terrestrial radiation which comes from the Earth, and internal radiation which exists in all living things. The typical average individual exposure in the United States from natural background sources is about 300 millirems per year. For additional information, see *Natural Background Sources and Doses in Our Daily Lives*.

**Backing Plate:** A plate used as a support for the mold cavity block, guide pins, bushings, etc. OR In injection molding, a plate used as a support for the cavity blocks, guide pins, bushings, etc. OR A plate, which supports the mold, pins and bushings in the injection machine. OR In mold construction, a plate used as a support for the cavity blocks, guide pins, bushings, etc. OR A plate which supports the mold, pins and bushings in the injection machine.

**Backputty:** The layer of putty which is put first in the sash bar before inserting the glass.

**Backside Treat:** Film defect when areas of the untreated/lamination side of film test positive for corona treatment.

**backsiphonage:** the backflow of contaminated or polluted water, from a plumbing fixture or cross-connection into a water supply line, due to a lowering of the pressure in the line.

**backswamp:** a poorly drained and marshy area behind a natural levee.

**Backup ring:** A washer-like device of a relatively hard, tough material installed in the gland on the downstream side of the seal to prevent seal extrusion into the diametrical gap while under pressure

**Backup washer:** A washer made from certain material that will add strength or support when installed next to the seal. This prevents the seal from being pinched and evenly distributes the load

**backwash:** the water that flows back down the beach into the surf zone.

**backwashing:** the process of cleaning a rapid sand or mechanical filter by reversing the flow of water.

**baclofen:** A synthetic chlorophenyl-butanoic acid derivative with muscle relaxant activity. Baclofen acts as a gamma-aminobutyric acid (GABA) agonist specific for GABA-B receptors in the central nervous system (CNS). At spinal and supraspinal sites, this agent reduces excitatory transmission. or A vaccine used to prevent tuberculosis (TB) in people who are at a high risk of TB or where TB is common. It is rarely given in the U.S. It is made from a weakened form of a bacterium called *Mycobacterium bovis* (bacillus Calmette-Guérin), which is similar to the bacteria that cause TB. The vaccine may help the body's immune system make antibodies to destroy the TB bacteria. It also may help the immune

system kill cancer cells and is being studied in the treatment of melanoma. Also called BCG vaccine.

**baclofen/amitriptyline/ketamine gel:** A topical preparation of baclofen, amitriptyline, and ketamine compounded in a penetration-enhancing polaxamer-lecithin organogel (PLO) with potential antineuralgic activity. The gamma-aminobutyric acid (GABA) analogue baclofen appears to activate the inhibitory GABA(B) receptor, a G protein-coupled receptor, which may result in hyperpolarization of the neuronal cell membrane and inhibition of neurotransmitter release. Amitriptyline likely produces antineuralgic effects via modulation of multiple subtypes of glutamate (Glu) receptors, independent of its antidepressant actions. Ketamine displays complex pharmacologic actions including biogenic amine uptake inhibition, interaction with opioid receptors, and inhibition of N-methyl D-aspartate (NMDA) receptors. Stimulation of GABA(B) receptor activity, modulation of Glu receptor activity, and inhibition of NMDA receptor activity may be of benefit in managing neuropathic pain. or The bones, muscles, tendons, and other tissues that reach from the base of the skull to the tailbone. The backbone encloses the spinal cord and the fluid surrounding the spinal cord. Also called spinal column, spine, and vertebral column.

**Bacteria:** Living organisms, microscopic in size, which usually consist of a single cell. Most bacteria use organic matter for their food and produce waste products as a result of their life processes. OR any of numerous unicellular microorganisms of the class Schizomycetes, occurring in a wide variety of forms, existing either as free-living organisms or parasites, and having a wide range of biochemical, often pathogenic properties. Some bacteria are capable of causing human, animal or plant diseases; others are essential in pollution control because they break-down organic matter in air and water. OR Single-celled organisms that probably provide the bulk of the biomass on our planet. There are more bacterial cells within your body than human cells. One of the most interesting things about bacteria is that our macroscopic concepts of 'species' are rather inappropriate - genetic material can be swapped from one 'species' to another with disturbing ease, leading some scientists to call all bacteria a single 'superorganism'. The fantastic durability and longevity of bacteria (some concentrate plutonium inside themselves and happily live inside high level nuclear waste facilities, while others are believed to have survived for tens of millions of years in rock formations) have led some other scientists to speculate they are

adapted to life in deep space and are continually raining down on us from above. or A drug that is used to treat certain types of muscle spasms and is being studied in the treatment of liver cancer. Baclofen relaxes muscles by blocking certain nerve receptors in the spinal cord. It is a type of antispasmodic. Also called Kemstro and Lioresal.

**Bacterial:** A light-dependent, anaerobic mode of metabolism. Carbon dioxide is reduced to glucose, which is used for both biosynthesis and energy production. Depending on the hydrogen source used to reduce CO<sub>2</sub>, both photolithotrophic and photoorganotrophic reactions exist in bacteria.

**bacterial examination:** the examination of water and wastewater to determine the presence, number, and identification of bacteria. Also called bacterial analysis.

**bacterial toxin :** A substance being studied in the treatment of peripheral neuropathy (pain, numbness, tingling, burning, or weakness in the hands or feet) caused by chemotherapy. It contains three drugs, baclofen, amitriptyline, and ketamine, that relax muscles by blocking nerve receptors. The gel is applied to the skin of affected areas. It is a type of analgesic. Also called BAK gel.

**bacteriophage (phage):** A virus capable of replicating in a bacterial cell.

**bacteriophage phi X 174:** A bacteriophage that infects E. coli. Its genome is a circular DNA of 5386 bases. Check for active clinical trials using this agent.

**Bacteriorhodopsin:** A 26-kd integral membrane protein that absorbs light and converts its energy into proton-motive force, which is then used to synthesize ATP.

**Bactrim:** (Other name for: trimethoprim-sulfamethoxazole)

**BAER test :** A large group of single-cell microorganisms. Some cause infections and disease in animals and humans. The singular of bacteria is bacterium.

**Baeyer reagent:** Cold, dilute potassium permanganate, which is used to oxidize alkenes and alkynes.

**bafetinib:** An orally bioavailable 2-phenylaminopyrimidine derivative with potential antineoplastic activity. Bafetinib specifically binds to and inhibits the Bcr/Abl fusion protein tyrosine kinase, an abnormal enzyme produced by Philadelphia chromosomal translocation associated with chronic myeloid

leukemia (CML). This agent also inhibits the Src-family member Lyn tyrosine kinase, upregulated in imatinib-resistant CML cells and in a variety of solid cancer cell types. The inhibitory effect of bafetinib on these specific tyrosine kinases may decrease cellular proliferation and induce apoptosis in tumor cells that overexpress these kinases. CML patients may be refractory to imatinib, which sometimes results from point mutations occurring in the kinase domain of the Bcr/Abl fusion product. Due to its dual inhibitory activity, the use of bafetinib has been shown to overcome this particular drug resistance.

**Baffle:** A device used to restrict or divert the passage of fluid through a pipe line or in a tank. OR A device used to restrict or divert the passage of fluid through a pipe line or channel. In hydraulic systems the device, which often consists of a disc with a small central perforation, restricts the flow of hydraulic fluid in a high pressure line. A common location for the disc is in a joint in the line. When applied to molds, the term is indicative of a plug or similar device located in a steam or water channel in the mold and designed to divert and restrict the flow to a desired path.

**Bag Balm:** (Other name for: 8-hydroxyquinoline sulfate ointment)

**Bag molding:** A method of applying pressure during bonding or molding, in which a flexible cover, usually in connection with a rigid die or mold, exerts pressure on the material being molded, through the application of air pressure or drawing of a vacuum.

**BAGLEY CORRECTION:** A term used in capillary viscometry to describe the excess pressure drop in the entrance to the capillary due to extensional (elongational) viscosity. It might be negligible when very long capillaries are used (i.e.  $L/D > 35$ ). If shorter capillaries are used the errors in viscosity measurement might be 10-30% or even higher.

**Bail:** The curved handle of a pail.

**bajada:** the joining of alluvial fans at the front of a mountain range in a rolling surface of sediment and gravel.

**BAK gel :** A harmful substance made by bacteria that can cause illness. Bacterial toxins can also be made in the laboratory and attached to monoclonal antibodies that bind to cancer cells. These toxins may help kill cancer cells without harming normal cells.

**Bake Out:** A process whereby a vacuum system is heated for a given time at some predetermined temperature to de-gas all the components, such as gauges, fittings, valves, seals

**Bakelite:** The proprietary name for phenolic and other plastics materials produced by Bakelite Limited, but often used indiscriminately to describe any phenolic molding material or molding. The name is derived from that of Dr. Leo Hendrik Baekeland (1863-1944), a Belgian who, through his work on synthesis of phenolic resins and their commercial development in the early 1900's, is generally considered to be the "father" of the plastic industry.

**balance:** n. Any piece of apparatus used to determine the mass of a sample of matter.v. as in balance an equation: to have equal numbers of atoms of each element on the opposite sides of an equation.

**balanced budget:** of a glacier, a situation in which there is neither advancement nor recession.

**Balanced chemical equation** : The smallest particle that can be recognised as being an element. If you break an atom into its smaller pieces (protons, neutrons and electrons) you can no longer identify a particular element. OR A balanced chemical equation has equal numbers of atoms on each side of the equation. If one side of the equation has five oxygen atoms, the other side must also have five (to be balanced). OR A balanced equation is a chemical reaction represented by the formulae of reactants and products, showing the same number of each type of atom before and after the reaction. e.g.  $2\text{Mg(s)} + \text{O}_2\text{(g)} \rightarrow 2\text{MgO(s)}$  OR A description of a chemical reaction that gives the chemical formulas of the reactants and the products of the reaction, with coefficients introduced so that the number of each type of atom and the total charge is unchanged by the reaction. For example, a balanced equation for the reaction of sodium metal (Na(s)) with chlorine gas (Cl<sub>2</sub>(g)) to form table salt (NaCl(s)) would be  $2\text{Na(s)} + \text{Cl}_2\text{(g)} = 2\text{NaCl(s)}$ , NOT  $\text{Na(s)} + \text{Cl}_2\text{(g)} = \text{NaCl(s)}$ .

**balanced crystalloid solution:** A multiple electrolyte, isotonic, crystalloid solution for intravenous infusion containing sodium chloride, sodium gluconate, sodium acetate, potassium chloride and magnesium chloride, which can restore electrolyte balance, normalize pH, and provide hydration. Upon intravenous administration, the balanced crystalloid solution will

replace lost body fluids and electrolytes thereby providing hydration, normalizing electrolyte concentrations and regulating acid-base balance.

**Balanced Runner:** A runner system designed to place all cavities at the same distance from the sprue.

**Balanced Weave:** A woven fabric consisting of alternating right and left hand spirals joined by crimped connecting rods to form a continuous belt. In some fabrics straight connecting rods are used.

**Ball mill:** A relatively high-energy mill consisting of one or more balls in a chamber and used to reduce the particle size of solids. In the process, the ball mill may induce undesired solid-solid reactions or create amorphous material.

**balloon angioplasty :** A test used to detect some types of hearing loss, such as hearing loss caused by injury or tumors that affect nerves involved in hearing. Electrodes are placed on the head and certain tones or clicking sounds are made. The electrodes measure nerve signals in the brain when it reacts to the sounds. Also called ABR test, auditory brain stem response test, and brain stem auditory evoked response test.

**balloon catheter radiation :** A substance being studied in the treatment of peripheral neuropathy (pain, numbness, tingling, burning, or weakness in the hands or feet) caused by chemotherapy. It contains three drugs, baclofen, amitriptyline, and ketamine, that relax muscles by blocking nerve receptors. The gel is applied to the skin of affected areas. It is a type of analgesic. Also called baclofen/amitriptyline/ketamine gel.

**Balmer series:** A series of lines in the emission spectrum of hydrogen that involve transitions to the  $n=2$  state from states with  $n>2$ .

**Baluster:** A column in a balustrade used to describe the posts supporting a handrail. See also 'banister'.

**Balziva:** (Other name for: ethinyl estradiol/norethindrone)

**BANBURY MIXER:** A high-intensity batch mixer composed of a "figure-eight" shaped chamber and a pair of counter-rotating rotors that masticate the materials.

**band:** 1. A set of closely spaced energy levels in an atom, molecule, or metal. 2. A set of closely spaced lines in an absorption spectrum or emission spectrum. 3. A range of frequencies or wavelengths.

**band :** When chromosomes at a particular stage in cell division are stained using one of several laboratory techniques, a specific pattern of light and dark stripes (bands) appears when the chromosomes are viewed through a microscope; the banding pattern assists in assigning each chromosome its particular number and evaluating its structure.

**BAND HEATER:** Electrical heating units fitted to extruder barrels, adaptors, dies, nozzles, etc. Utilized for heating the polymer to a desired temperature.

**band spectrum:** An emission spectrum that contains groups of sharp peaks that are so close together that they are not distinguishable separately, but only as a "band".

**Banister:** The posts supporting a handrail on a staircase. If turned in the form of ornamental columns they are more correctly termed 'balusters'.

**banks, sludge:** accumulations of solid, sewage, or industrial waste deposits on the bed of a waterway.

**banoxantrone:** A bioreductive, alkylaminoanthraquinone prodrug with antineoplastic activity. Under hypoxic conditions, often seen in solid tumors, banoxantrone (AQ4N) is converted and activated by cytochrome P450 enzymes, which are upregulated in certain tumors, to the cytotoxic DNA-binding agent AQ4. Banoxantrone intercalates into and crosslinks DNA, and inhibits topoisomerase II. This results in an inhibition of DNA replication and repair in tumor cells. Combined with conventional therapeutic agents, both oxygenic and hypoxic regions of tumors can be targeted.

**bar:** an elongate sedimentary accumulation of sand or gravel deposited by current action in a stream or other body of water. OR Unit of pressure. 1 bar = 10<sup>5</sup> pascals = 1.01325 atmospheres.

**Bar Capping:** Wear strips, typically UHMW, installed on the cage bars.

**Bar Links:** Links typically used on Omniflex, Mega-Flex and Hybriflex belts that determine the strength of the belt. The bar links are assembled in a "shingled" configuration to allow the links to nest as the inside belt edge collapses in a turn.

**Baraclude:** (Other name for: entecavir)

**barasertib:** An orally bioavailable, small-molecule, dihydrogen phosphate prodrug of the pyrazoloquinazoline Aurora kinase inhibitor AZD1152–

hydroxyquinazoline pyrazol anilide (AZD1152-HQPA) with potential antineoplastic activity. Upon administration and rapid conversion from the prodrug form in plasma, barasertib specifically binds to and inhibits Aurora kinase B, which results in the disruption of spindle checkpoint functions and chromosome alignment and, so, the disruption of chromosome segregation and cytokinesis. Consequently, cell division and cell proliferation are inhibited and apoptosis is induced in Aurora kinase B-overexpressing tumor cells. Aurora kinase B, a serine/threonine protein kinase that functions in the attachment of the mitotic spindle to the centromere, is overexpressed in a wide variety of cancer cell types.

**barbiturate :** A procedure to enlarge the opening in a blood vessel that has become narrowed or blocked by plaque (a buildup of fat and cholesterol on the inner wall of the blood vessel). A small balloon is filled with air inside the blood vessel to push the plaque against the blood vessel wall and increase the opening.

**barchan dune:** a solitary, crescent-shaped dune that forms in areas of sparse sand.

**barchanoid dune:** a variety of dune intermediate between barchan and transverse dunes; barchanoid dunes form scalloped rows of sand perpendicular to the wind.

**bardoxolone:** A synthetic triterpenoid compound with potential antineoplastic and anti-inflammatory activities. Bardoxolone blocks the synthesis of inducible nitric oxide synthase (iNOS) and inducible cyclooxygenase (COX-2), two enzymes involved in inflammation and carcinogenesis. This agent also inhibits the interleukin-1 (IL-1)-induced expression of the pro-inflammatory proteins matrix metalloproteinase-1 (MMP-1) and matrix metalloproteinase-13 (MMP-13) and the expression of Bcl-3; Bcl-3 is an IL-1-responsive gene that preferentially contributes to MMP-1 gene expression.

**BAREFOOT:** A resin or film containing no additives. OR Polyethylene resins which have no additives, slip, or antiblock.

**Barge board:** The board at the top of a gable where the wall meets the rough edge. Also called a parge board.

**baricitinib:** An orally bioavailable inhibitor of Janus kinases 1 and 2 (JAK1/2), with potential anti-inflammatory, immunomodulating and antineoplastic activities. Upon administration, baricitinib binds to JAK1/2,

which inhibits JAK1/2 activation and leads to the inhibition of the JAK-signal transducers and activators of transcription (STAT) signaling pathway. This decreases the production of inflammatory cytokines and may prevent an inflammatory response. In addition, baricitinib may induce apoptosis and reduce proliferation of JAK1/2-expressing tumor cells. JAK kinases are intracellular enzymes involved in cytokine signaling, inflammation, immune function and hematopoiesis; they are also upregulated and/or mutated in various tumor cell types.

**Barium:** Symbol:"Ba" Atomic Number:"56" Atomic Mass: 137.33amu. Barium is a member of the alkaline metals group. Barium is only found as a part of compounds when found in nature. The element is used in paints, fireworks, medicine, and the process of making glass.

**barium enema :** A system used to deliver internal radiation therapy to breast cancer patients after surgery to remove their cancer. Balloon catheter radiation targets only the part of the breast where the cancer was found. After a patient has had a lumpectomy to remove the cancer, a small balloon on the end of a catheter (thin tube) is inserted into the empty space left by the surgery. The balloon is then filled with liquid and left in place. Using the catheter, radioactive seeds are put into the balloon twice a day for five days and removed each time. Once treatment has ended, the catheter and balloon are removed. Balloon catheter radiation is a type of intracavitary brachytherapy and partial breast irradiation therapy (PBRT). Also called MammoSite.

**barium solution :** A type of drug that causes a decrease in brain activity. Barbiturates may be used to treat insomnia, seizures, and convulsions, and to relieve anxiety and tension before surgery. A barbiturate is a type of central nervous system (CNS) depressant.

**barium sulfate:** The sulfate salt of barium, an alkaline, divalent metal. Barium sulfate is quite insoluble in water, and is used as a radiopaque agent to diagnose gastrointestinal medical conditions. Barium sulfate is taken by mouth or given rectally. OR A procedure in which a liquid that contains barium sulfate is put through the anus into the rectum and colon. Barium sulfate is a silver-white metallic compound that helps show pictures of the colon, rectum, and anus on an x-ray.

**barium swallow :** A liquid that contains barium sulfate (a form of the silver-white metallic element barium). It is used to show pictures of parts of

the digestive system in x-rays.

**bark:** the structure of vascular plants formed between the phloem and the cork.

**baroclinic model:** A model of atmospheric circulation that, in contrast with barotropic models, does not constrain constant-pressure surfaces to coincide with constant-density surfaces.

**Barometer:** A device that measures atmospheric pressure. OR An instrument that measures atmospheric pressure. A mercury barometer is a closed tube filled with mercury inverted in a mercury reservoir. The height of the mercury column indicates atmospheric pressure (with 1 atm = 760 mm of mercury). An aneroid barometer consists of an evacuated container with a flexible wall. When atmospheric pressure changes, the wall flexes and moves a pointer which indicates the changing pressure on a scale.

**Barrel:** The section of a molding machine that contains the feed screw, also the section where resin heating and mixing occurs. OR Cylinder that contains the screw and the heaters. Built to withstand pressure of 7,500-20,000 psi. OR Section of the extrusion machine that contains the plastic extrusion feed screw, which can be single or twin screw. This is also the section where resin heating and mixing occurs. OR The tubular portion of the extruder in which the extruder screw is placed and rotates. OR The part of the extruder encasing the screw or plunger. OR A metallic cylinder containing the injection screw (or plunger) Also called cylinder. OR The part of the molding press where resin is melted. OR A component of the injection-molding machine wherein the resin pellets are melted, compressed and injected into the mold's runner system. OR The portion of the molding press where resin is melted. OR Cylinder that contains the screw and the heaters. Built to withstand pressure of 7,500-20,000 psi.

**Barrel Heaters :** Heaters that raise the barrel temperature in order to transform the thermoplastic material into a melt.

**Barrel Liner:** The sleeve forming the inner surface of the barrel.

**Barrett esophagus :** A silver-white metallic compound made from the mineral barite. It is mixed with water and used in barium swallows and barium enemas to help show parts of the digestive system on an x-ray.

**Barrier:** Protection from deterioration or admittance of moisture or other elements (such as oxygen and other gases) through package material.

**barrier :** The process of getting x-ray pictures of the esophagus or the upper gastrointestinal (GI) tract (esophagus, stomach, and duodenum). The x-ray pictures are taken after the patient drinks a liquid that contains barium sulfate (a form of the silver-white metallic element barium). The barium sulfate coats and outlines the inner walls of the esophagus and the upper GI tract so that they can be seen on the x-ray pictures.

**Barrier Coat:** A surface coating to improve permeation resistance and/or protect the container from scuffing.

**barrier island:** a large, elongate mass of sand that parallels a coast and forms an island.

**barrier reef:** an elongate reef that develops offshore parallel to a coastline and is separated from the coastline by a deep lagoon.

**Barrier Resins:** A group of resins specially formulated to resist the transmission of oxygen, water, solvents, essential oils, etc. OR Polymers which have very low permeability to gases.

**BARRIER SCREWS:** Screws where a second flight (barrier), with a larger radial clearance than a normal flight, separates the solid bed from melt in the compression section. Barrier screws have significantly higher melting capacity than conventional screws.

**Barseb HC:** (Other name for: therapeutic hydrocortisone)

**basal cell :** A condition in which the cells lining the lower part of the esophagus have changed or been replaced with abnormal cells that could lead to cancer of the esophagus. The backing up of stomach contents (reflux) may irritate the esophagus and, over time, cause Barrett esophagus.

**basal cell cancer :** Something that blocks, prevents, separates, or limits.

**basal cell carcinoma :** A small, round cell found in the lower part (or base) of the epidermis, the outer layer of the skin.

**basal cell nevus syndrome :** Cancer that begins in the lower part of the epidermis (the outer layer of the skin). It may appear as a small white or flesh-colored bump that grows slowly and may bleed. Basal cell cancers are usually found on areas of the body exposed to the sun. Basal cell cancers rarely metastasize (spread) to other parts of the body. They are the most common form of skin cancer. Also called basal cell carcinoma.

**basal metabolic rate:** The rate of oxygen consumption by an animal's body at complete rest, long after a meal.

**basal sliding:** the movement of a glacier generated by its sliding on a thin film of water resulting from the pressure of the glacier's weight.

**basal sliding (basal slip):** The movement or speed of movement of a glacier on its bed.

**Basalt** : If ever you write a chemical equation using symbols it MUST be balanced. That means that there must be the same number of each kind of atom on either side of the equation.

**Base:** A substance which dissociates (separates) in aqueous solution to yield hydroxyl ions, or one containing hydroxyl ions (OH<sup>-</sup>) which reacts with an acid to form a salt or which may react with metal to form a precipitate. OR any substance which contains hydroxyl (OH) groups and furnishes hydroxide ions in solution; a molecular or ionic substance capable of combining with a proton to form a new substance; a substance that provides a pair of electrons for a covalent bond with an acid; a solution with a pH of greater than 7. OR The adenine, guanine, cytosine or thymine group attached to a nucleotide or nucleoside Also may be used to refer to a nucleic acid unit within a polynucleotide chain, as when a gene is said to be 2000 bases long. OR A substance that will neutralise an acid is called a base. When an acid reacts with a base, a salt and water is formed. If a base is soluble in water, it is called an alkali. OR The number that is in the denominator in a percent ratio: OR a compound that yields OH<sup>-</sup> ions in solution or a solution in which the concentration of OH<sup>-</sup> exceeds H<sup>+</sup>. OR Substance which gives off hydroxide ions (OH<sup>-</sup>) in solution. OR A compound that produces hydroxide ions in water solution. OR A base is a compound that reacts with an acid to neutralize it, producing a salt and water. Ammonia and compounds containing a hydroxide group are examples of bases. OR The bottom of a wall or column. OR 1. a compound that reacts with an acid to form a salt. 2. a compound that produces hydroxide ions in aqueous solution (Arrhenius). 3. a molecule or ion that captures hydrogen ions.(Bronsted-Lowry). 4. a molecule or ion that donates an electron pair to form a chemical bond.(Lewis). OR The material woven (such as paper, woven cotton, glass fabric, or glass fiber mat, felted asbestos, aramid fibers, graphite and nylon fabrics) in the form of sheets or rolls which can be impregnated with resin to form laminated plastics. OR The bottom of the bottle or jar, often marked with a recycle code and indentations used during filling and labeling. OR the material woven (such

as paper, woven cotton, fabric, or glass fiber mat, felted asbestos, aramid fibers, graphite, and nylon fabrics) in the form of sheets or rolls which can be impregnated with resin to form laminated plastics.

**base :** Cancer that begins in the lower part of the epidermis (the outer layer of the skin). It may appear as a small white or flesh-colored bump that grows slowly and may bleed. Basal cell carcinomas are usually found on areas of the body exposed to the sun. Basal cell carcinomas rarely metastasize (spread) to other parts of the body. They are the most common form of skin cancer. Also called basal cell cancer.

**base (of a triangle):** One of the three sides of a triangle that is perpendicular to the height.

**Base analog:** A compound, usually a purine or a pyrimidine, that differs somewhat from a normal nucleic acid base.

**base hydrolysis constant:** ( $K_b$ ) base ionization constant; basic hydrolysis constant. Compare with acid dissociation constant. The equilibrium constant for the hydrolysis reaction associated with a base. For example,  $K_b$  for ammonia is the equilibrium constant for  $\text{NH}_3(\text{aq}) + \text{H}_2\text{O}(\text{l}) \rightleftharpoons \text{NH}_4^+(\text{aq}) + \text{OH}^-(\text{aq})$ , or  $K_b = \frac{[\text{NH}_4^+][\text{OH}^-]}{[\text{NH}_3]}$ .

**Base Line:** The mark from which all features are dimensioned or measured from

**BASE OIL (NAPHTHENIC):** A type of petroleum oil fluid derived from naphthenic crude oil. Contains a high degree of closed ring methylene groups.

**BASE OIL (PARAFFINIC):** A type of petroleum oil fluid derived from paraffinic crude oil, containing a high proportion of straight chain saturated hydrocarbons.

**base pair:** Two nucleotides in nucleic acid chains that are paired by hydrogen bonding of their bases; for example, A with T or U, and G with C.

**base pair :** Two nitrogen-containing bases pair together between double-stranded DNA; only specific combinations of these bases (e.g., adenine with thymine; guanine with cytosine) are possible, a fact which facilitates accurate DNA replication; when quantified (e.g., 8 base pairs, or bp), this term refers to the actual number of base pairs in a sequence of nucleotides.  
OR A genetic condition that causes unusual facial features and disorders of

the skin, bones, nervous system, eyes, and endocrine glands. People with this syndrome have a higher risk of basal cell carcinoma. Also called Gorlin syndrome and nevoid basal cell carcinoma syndrome.

**Base stacking:** The close packing of the planes of base pairs, commonly found in DNA and RNA structures.

**BASE STOCK:** The base carrier fluid, usually a refined petroleum fraction or synthetic fluid, into which additives are blended to produce finished lubricants.

**base unit:** Base units are units that are fundamental building blocks in a system of measurement. There are seven base units in the SI system.

**Base-excision repair:** A means of repairing DNA in which the damaged base is removed and replaced by a base complementary to the undamaged DNA strand.

**baseline :** In chemistry, a substance that can accept hydrogen ions in water and can neutralize an acid. Bases feel soapy or slippery on the skin and they can turn certain dyes blue. An example of a base is sodium hydroxide. Basicity is measured on a scale called the pH scale. On this scale, a pH value of 7 is neutral, and a pH value of more than 7 to 14 shows increasing basicity.

**Baseline Inspection Program:** The normal inspection program performed at all nuclear power plants. The program focuses on plant activities that are not adequately measured by performance indicators, on the corrective action program, and on verifying the accuracy of the performance indicators.

**Basen:** (Other name for: voglibose)

**bases:** compounds that attract hydrogen atoms when placed in water.

**basic:** Having the characteristics of a base.

**basicity :** Molecules called nucleotides, on opposite strands of the DNA double helix, that form chemical bonds with one another. These chemical bonds act like rungs in a ladder and help hold the two strands of DNA together. There are four nucleotides, or bases, in DNA: adenine (A), cytosine (C), guanine (G), and thymine (T). These bases form specific pairs (A with T, and G with C).

**basiliximab:** A recombinant, chimeric, human-murine monoclonal antibody directed against the alpha subunit of the interleukin-2 receptor (IL-

2R alpha) with immunosuppressant activity. Basiliximab selectively binds to and blocks IL-2R alpha, expressed on the surface of activated T-lymphocytes, thereby preventing interleukin-2 binding and inhibiting the interleukin-2-mediated activation of lymphocytes.

**Basin and Range topography:** a series of steep mountain ranges separated by broad valley floors.

**basis function:** A mathematical function that can be used to build a description of wavefunctions for electrons in atoms or molecules.

**basis set:** The set of mathematical functions (basis functions) used to describe the molecular orbitals. Gaussian functions predominate heavily, but occasional papers use the old "Slater" orbitals or functions, which are exponentials. OR A set of mathematical functions that are combined to approximate the wavefunctions for electrons in atoms and molecules.

**basophil :** An initial measurement that is taken at an early time point to represent a beginning condition, and is used for comparison over time to look for changes. For example, the size of a tumor will be measured before treatment (baseline) and then afterwards to see if the treatment had an effect.

**basophils:** the white blood cells that function in allergic responses.

**batabulin sodium:** A synthetic pentafluorophenylsulfonamide with potential antineoplastic activity. Batabulin sodium covalently binds to and selectively modifies the beta 1, beta 2, beta 3, and beta 4 isotypes of beta tubulin at a conserved cysteine residue, resulting in disruption of microtubule polymerization, collapse of the cytoskeleton, an increase in chromosomal ploidy, cell cycle arrest, and tumor cell apoptosis.

**Batch:** The product of one mixing operation or shipment of Liquid Silicone Rubber

**Batch Number:** The assigned number that identifies a batch of Silicone Rubber

**Batch process:** A treatment process in which a tank or reactor is filled, the wastewater (or solution) is treated or a chemical solution is prepared and the tank is emptied. The tank may then be filled and the process repeated. Batch processes are also used to cleanse, stabilize or condition chemical solutions for use in industrial manufacturing and treatment processes.

**batholith:** a pluton larger than 100 kilometers at the earth's surface; usually granitic and made up of diapirs.

**bathymetry:** The science of measuring ocean depths to determine the topography of the sea floor.

**batimastat :** In chemistry, the quality of being a base (not an acid). A base is a substance that can accept hydrogen ions in water and can neutralize an acid. Basicity is measured on a scale called the pH scale. On this scale, a pH value of 7 is neutral, and a pH value of more than 7 to 14 shows increasing basicity.

**batracylin :** A type of immune cell that has granules (small particles) with enzymes that are released during allergic reactions and asthma. A basophil is a type of white blood cell and a type of granulocyte.

**Batten:** A strip of wood, usually pine or fir, and between two and nine inches wide but less than nine inches.

**battery:** An electrochemical cell that can be used as a source of direct current at a constant voltage.

**battery acid:** A solution of approximately 6M sulfuric acid used in the lead storage battery.

**Baumé:** A, Be scale related to specific gravities, devised by the French chemist Antoine Baumé for marking hydrometers. At 60°F, specific gravity can be calculated from degrees Baumé by the following formulas:

**bauxite:** Bauxite is an ore of aluminium containing aluminium oxide.

**bavituximab:** An IgG3 monoclonal antibody directed against anionic phospholipids with potential antineoplastic activity. Chimeric anti-phosphatidylserine monoclonal antibody binds to anionic phospholipids in a beta 2-glycoprotein I-dependent manner, inhibiting tumor growth by stimulating antibody-dependent cellular cytotoxicity (ADCC) to tumor vessels. or An anticancer drug that belongs to the family of drugs called angiogenesis inhibitors. Batimastat is a matrix metalloproteinase inhibitor.

**Bay:** Any part of a building cut off by timbers, buttresses, beams, etc. Especially used for sections of roof or floor between beams or arches.

**BAY 12-9566:** A substance being studied in the treatment of cancer. It may kill cancer cells by causing damage to the DNA. Batracylin is a type of heterocyclic aryl amine.

**BAY 43-9006:** A substance being studied in the treatment of several types of cancer and infections caused by certain viruses. It binds to substances on the surface of tumor cells, certain viruses, and cells infected with a virus. The immune system detects bavituximab on the cells and the viruses and may destroy them. It is a type of monoclonal antibody and a type of targeted therapy agent. Also called Tarvacin.

**BAY 56-3722:** An anticancer drug that belongs to the family of drugs called angiogenesis inhibitors. OR A water-soluble camptothecin derivative conjugated to a carbohydrate moiety exhibiting antineoplastic activity. BAY 56-3722 stabilizes the topoisomerase I-DNA covalent complex and forms an enzyme-drug-DNA ternary complex. As a consequence of the formation of this complex, both the initial cleavage reaction and religation steps are inhibited and subsequent collision of the replication fork with the cleaved strand of DNA results in inhibition of DNA replication, double strand DNA breakage and triggering of apoptosis. The peptide carbohydrate moiety of this agent stabilizes the lactone form of camptothecin in blood.

**BAY 59-8862:** A drug used to treat advanced kidney cancer and a type of liver cancer that cannot be removed by surgery. It is also used to treat a type of advanced thyroid cancer that did not get better with radioactive iodine treatment. It is being studied in the treatment of other types of cancer. BAY 43-9006 stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of kinase inhibitor and a type of antiangiogenesis agent. Also called Nexavar and sorafenib tosylate.

**Bayesian estimation:** A mathematical formulation, using Bayes' theorem, by which the likelihood of an event can be estimated taking explicit consideration of certain contextual features (such as amount of data, nature of decision, etc.).

**Bayesian prior:** A way to express the context of a Bayesian estimation in which initial data are updated as new data become available.

**BayGam:** (Other name for: therapeutic immune globulin)

**bazedoxifene:** An indole derivative and third-generation selective estrogen receptor modulator (SERM) with potential antineoplastic activity. Upon administration, bazedoxifene specifically binds to estrogen receptors in responsive tissues, including liver, bone, breast, and endometrium. The resulting ligand-receptor complex is translocated to the nucleus where,

depending on the tissue type, it either promotes or suppresses the transcription of estrogen-regulated genes. Bazedoxifene acts as an estrogen antagonist in uterine and breast tissue, thereby blocking the proliferative effects of estrogen-binding to ER-positive cells in these tissues.

Bazedoxifene functions as an estrogen agonist in lipid metabolism, thereby decreasing total and LDL cholesterol levels. In bone, it decreases bone resorption and bone turnover and increases bone mineral density.

**BB-10901:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called camptothecins.

**BBB:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called taxanes.

**BBBD:** A substance that combines a monoclonal antibody (huN901) with an anticancer drug (DM1), and is being studied in the treatment of certain cancers, including non-small cell lung cancer. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells.

**BBIC:** A network of blood vessels and tissue that is made up of closely spaced cells and helps keep harmful substances from reaching the brain. The BBB lets some substances, such as water, oxygen, carbon dioxide, and general anesthetics, pass into the brain. It also keeps out bacteria and other substances, such as many anticancer drugs. Also called blood-brain barrier.

**BBR 2778:** The use of drugs to create openings between cells in the blood-brain barrier. The blood-brain barrier is a protective network of blood vessels and tissue that protects the brain from harmful substances, but can also prevent anticancer drugs from reaching the brain. Once the barrier is opened, anticancer drugs may be infused into an artery that goes to the brain, in order to treat brain tumors. Also called blood-brain barrier disruption.

**BBR 3464:** A substance that is made from soybeans and is being studied in the prevention of cancer. It blocks the action of enzymes that are needed for cancer cells to form. It is a type of protease inhibitor. Also called Bowman-Birk inhibitor concentrate.

**BC-819 plasmid/polyethylenimine complex:** A plasmid DNA encoding for the A fragment of Diphtheria Toxin (DTA) under the control of the H19 gene promoter (BC-819 or DTA-H19) and mixed with the transfectant polyethylenimine (PEI), with potential antineoplastic activity. Upon administration, the PEI moiety enhances the entry of the agent into rapidly

dividing cells. Upon cell entry, activation of the H19 gene promoter-containing plasmids and DTA expression are limited to tumor cells, as high levels of H19 expression are only found in tumor cells. DTA disrupts protein synthesis. Tumor-cell selective expression of this toxin leads to the selective destruction of the tumor while sparing healthy, normal cells. H19, an oncofetal, regulatory RNA, is overexpressed in certain cancer cells while its expression in normal cells is minimal or absent; it plays a key role in cancer progression, angiogenesis and metastasis. Check for active clinical trials using this agent.

**BCG:** A protein that helps control whether a cell lives or dies by blocking a type of cell death called apoptosis. The gene for the B-cell leukemia/lymphoma 2 protein is found on chromosome 18, and transfer of the B-cell leukemia/lymphoma 2 gene to a different chromosome is seen in many B-cell leukemias and lymphomas. This causes the B-cell leukemia/lymphoma 2 protein to be made in larger amounts, which may keep cancer cells from dying. Also called BCL2.

**BCG solution:** A solution containing an attenuated, live culture preparation of the Bacillus Calmette Guerin (BCG) strain of Mycobacterium bovis with potential immunostimulating activity. Although the precise mechanism of action is unknown, upon intravesical administration, attenuated, live BCG bacteria in the solution come into direct contact with the bladder wall, inciting an antitumor granulomatous inflammatory reaction. Check for active clinical trials using this agent. or A type of cancer that forms in B cells (a type of immune system cell). B-cell lymphomas may be either indolent (slow-growing) or aggressive (fast-growing). Most B-cell lymphomas are non-Hodgkin lymphomas. There are many different types of B-cell non-Hodgkin lymphomas. These include Burkitt lymphoma, chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL), diffuse large B-cell lymphoma, follicular lymphoma, and mantle cell lymphoma. Prognosis and treatment depend on type and stage of the cancer.

**BCG vaccine:** A vaccine containing bacillus Calmette-Guerin (BCG), an attenuated strain of Mycobacterium bovis, with non-specific immunoadjuvant and immunotherapeutic activities. Although the mechanism of its anti-tumor activity is unclear, immunization with BCG vaccine likely activates a Th1 cytokine response that includes the induction

of interferon. Vaccination with BCG vaccine may be immunoprotective against infection with Mycobacterium tuberculosis. or A weakened form of the bacterium Mycobacterium bovis (bacillus Calmette-Guérin) that does not cause disease. BCG is used in a solution to stimulate the immune system in the treatment of bladder cancer and as a vaccine to prevent tuberculosis. Also called bacillus Calmette-Guérin.

**bcl-2 antisense oligodeoxynucleotide G3139 :** A vaccine used to prevent tuberculosis (TB) in people who are at a high risk of TB or where TB is common. It is rarely given in the U.S. It is made from a weakened form of a bacterium called Mycobacterium bovis (bacillus Calmette-Guérin), which is similar to the bacteria that cause TB. The vaccine may help the body's immune system make antibodies to destroy the TB bacteria. It also may help the immune system kill cancer cells and is being studied in the treatment of melanoma. Also called bacillus Calmette-Guérin vaccine.

**Bcl-2 inhibitor BCL201:** A selective inhibitor of the anti-apoptotic protein B-cell lymphoma 2 (Bcl-2), with potential pro-apoptotic and antineoplastic activities. Upon administration, Bcl-2 inhibitor BCL201 binds to and inhibits the activity of Bcl-2. This restores apoptotic processes in tumor cells. Bcl-2 protein is overexpressed in many cancers and plays an important role in the negative regulation of apoptosis; its expression is associated with increased drug resistance and tumor cell survival.

**BCL2:** A type of biologic therapy used to treat early stage bladder cancer. The solution is made from a weakened form of a bacterium called Mycobacterium bovis (bacillus Calmette-Guérin) that does not cause disease. It is given through a catheter that is placed into the bladder where the solution is held for about two hours. BCG solution may help the body's immune system kill cancer cells. Also called bacillus Calmette-Guérin solution.

**BCMA-specific CAR-expressing T lymphocytes:** A preparation of autologous peripheral blood T-lymphocytes (PBTL) that have been genetically modified to express a chimeric antigen receptor (CAR) specific for the B cell maturation antigen (BCMA), with potential immunostimulating and antineoplastic activities. Upon administration, BCMA-specific CAR-expressing T-lymphocytes specifically recognize and kill BCMA-expressing tumor cells. BCMA, a tumor specific antigen and a receptor for both a proliferation-inducing ligand and B-cell activating

factor, is a member of the tumor necrosis factor (TNF) receptor superfamily and plays a key role in plasma survival; it is found on the surfaces of plasma cells and overexpressed on malignant plasma cells.

**BCNU:** A protein that helps control whether a cell lives or dies by blocking a type of cell death called apoptosis. The gene for BCL2 is found on chromosome 18, and transfer of the BCL2 gene to a different chromosome is seen in many B-cell leukemias and lymphomas. This causes the BCL2 protein to be made in larger amounts, which may keep cancer cells from dying. Also called B-cell leukemia/lymphoma 2 protein.

**BCOP:** A substance being studied in the treatment of cancer. It may kill cancer cells by blocking the production of a protein that makes cancer cells live longer and by making them more sensitive to anticancer drugs. It is a type of antisense oligodeoxyribonucleotide. Also called augmerosen, Genasense, and oblimersen sodium.

**bcr-abl (b2a2)-derived peptide vaccine:** A peptide vaccine consisting of the bcr-abl b2a2 fusion oncoprotein, frequently expressed in chronic myelogenous leukemia (CML), with potential antineoplastic activity. Vaccination with the bcr-abl (b2a2)-derived peptide vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells that express the bcr-abl b2a2 fusion protein. Fusion genes in CML typically result from the fusion of either BCR exon b2 or BCR exon b3 to ABL exon a2, a 'b3a2' or a 'b2a2' fusion.

**bcr-abl (b3a2)-derived peptide vaccine:** A peptide vaccine consisting of the bcr-abl b3a2 fusion oncoprotein, frequently expressed in chronic myelogenous leukemia (CML), with potential antineoplastic activity. Vaccination with the bcr-abl (b3a2)-derived peptide vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells that express the bcr-abl b3a2 fusion protein. Fusion genes in CML typically result from the fusion of either BCR exon b2 or BCR exon b3 to ABL exon a2, a 'b3a2' or a 'b2a2' fusion.

**BCR-ABL fusion gene :** A drug used to treat certain types of brain tumors. It is also used with prednisone to treat multiple myeloma and with other drugs to treat Hodgkin lymphoma and non-Hodgkin lymphoma that have not gotten better with other treatment or have come back. It is also being studied in the treatment of other types of cancer. BCNU damages the cell's

DNA and may kill cancer cells. It is a type of alkylating agent and a type of nitrosourea. Also called BiCNU and carmustine.

**BCR-ABL fusion protein :** A licensed pharmacist with special training in how to design, give, monitor, and change chemotherapy for cancer patients. Also called board certified oncology pharmacy specialist and oncology pharmacy specialist.

**bcr-abl p210-b3a2 breakpoint-derived multipeptide vaccine:** A multipeptide vaccine consisting of five peptides derived from the bcr-abl p210-b3a2 breakpoint fusion protein with potential antineoplastic activity. Vaccination with bcr-abl p210-b3a2 breakpoint-derived multipeptide vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells that express the bcr-abl p210-b3a2 breakpoint fusion protein. In chronic myelogenous leukemia (CML), fusion genes typically result from the fusion of either bcr exon b2 or exon b3 to abl exon a2, resulting in either a b3a2 or a b2a2 gene fusion product. Check for active clinical trials using this agent.

**bcr-abl peptide vaccine:** A multivalent antineoplastic vaccine comprised of the bcr-abl oncogene breakpoint fusion peptide that elicits a bcr-abl specific T-cell immune response. Check for active clinical trials using this agent.

**BCX-1777:** A gene formed when pieces of chromosomes 9 and 22 break off and trade places. The ABL gene from chromosome 9 joins to the BCR gene on chromosome 22, to form the BCR-ABL fusion gene. The changed chromosome 22 with the fusion gene on it is called the Philadelphia chromosome. The BCR-ABL fusion gene is found in most patients with chronic myelogenous leukemia (CML), and in some patients with acute lymphoblastic leukemia (ALL) or acute myelogenous leukemia (AML).

**BD:** Brueckner doubles. Very similar to CCSD and QCISD. Although BD only involves doubles, the Brueckner orbitals are those for which the singles contribution is zero. So BSD would be the same thing.

**BDC:** A protein made from pieces of two genes that get joined together. It is found in most patients with chronic myelogenous leukemia (CML), and in some patients with acute lymphoblastic leukemia (ALL) or acute myelogenous leukemia (AML). Inside the leukemia cells, the ABL gene from chromosome 9 joins to the BCR gene on chromosome 22 to form the BCR-ABL fusion gene, which makes the BCR-ABL fusion protein.

**beach:** the strip of sand or gravel (more rarely silt) that covers a shoreline from the low-water edge to a well-defined point of higher elevation.

**beach drift:** the zig-zag pattern by which sediment is moved across a beach face by breaking waves.

**beach face:** the side of a beach facing the ocean.

**BEACOPP :** A substance being studied in the treatment of some types of leukemia and lymphoma. It is a type of purine nucleoside phosphorylase (PNP) inhibitor. Also called forodesine and forodesine hydrochloride.

**BEACOPP regimen:** A rare type of kidney cancer that grows and spreads quickly. It begins in the duct of Bellini in the kidney. Also called Bellini duct carcinoma. OR A chemotherapy regimen consisting of bleomycin, etoposide, doxorubicin hydrochloride (Adriamycin), cyclophosphamide, vincristine (Oncovin), procarbazine and prednisone, used for the treatment of advanced-stage Hodgkin lymphoma.

**Bead:** Correctly refers to any small moulding in the form of beads on a string but is commonly used to describe small mouldings of other designs. OR On Hinge-Guard/J-Cap style neck finishes, the collar of plastic beneath the neck area that snap-on caps rest against.

**Bead blasting:** Using abrasives in a pressurized air blast to create a surface texture on the part.

**Bead Block Compressible Microspheres:** (Other name for: PVA microporous hydrospheres)

**Beam:** Any horizontal structure usually supported at each end. The term is therefore used to describe horizontal projection, whether load-bearing or not.

**becatecarin:** A synthetic diethylaminoethyl analogue of the indolocarbazole glycoside antineoplastic antibiotic rebeccamycin. Becatecarin intercalates into DNA and stabilizes the DNA-topoisomerase I complex, thereby interfering with the topoisomerase I-catalyzed DNA breakage-reunion reaction and initiating DNA cleavage and apoptosis.

**Becenum:** (Other name for: carmustine)

**Beckwith-Wiedemann syndrome :** An abbreviation for a chemotherapy combination used to treat advanced Hodgkin lymphoma. It includes the drugs bleomycin sulfate, etoposide phosphate, doxorubicin hydrochloride (Adriamycin), cyclophosphamide, vincristine sulfate (Oncovin),

procarbazine hydrochloride, and prednisone. Also called BEACOPP regimen.

**beclin 1** : An abbreviation for a chemotherapy combination used to treat advanced Hodgkin lymphoma. It includes the drugs bleomycin sulfate, etoposide phosphate, doxorubicin hydrochloride (Adriamycin), cyclophosphamide, vincristine sulfate (Oncovin), procarbazine hydrochloride, and prednisone. Also called BEACOPP.

**beclomethasone** : A rare, overgrowth disorder in which babies are large at birth and may develop low blood sugar. Other common symptoms are a large tongue, large internal organs, and defects of the abdominal wall near the navel. Beckwith-Wiedemann syndrome increases the risk of developing certain cancers, especially Wilms tumor.

**beclomethasone dipropionate**: The dipropionate salt of a synthetic glucocorticoid with anti-inflammatory and immunomodulating properties. After cell surface receptor attachment and cell entry, beclomethasone enters the nucleus where it binds to and activates specific nuclear receptors, resulting in an altered gene expression and inhibition of proinflammatory cytokine production.

**Beclovent**: (Other name for: beclomethasone dipropionate)

**Beconase**: (Other name for: beclomethasone dipropionate)

**Becquerel (Bq)**: One of three units used to measure radioactivity, which refers to the amount of ionizing radiation released when an element (such as uranium) spontaneously emits energy as a result of the radioactive decay (or disintegration) of an unstable atom. Radioactivity is also the term used to describe the rate at which radioactive material emits radiation, or how many atoms in the material decay (or disintegrate) in a given time period. As such, 1 Bq represents a rate of radioactive decay equal to 1 disintegration per second, and 37 billion ( $3.7 \times 10^{10}$ ) Bq equals 1 curie (Ci).

**Bed**: The horizontal surface of a stone. Also used to describe the large flat areas of a ceiling between beams.

**bed load**: of a stream, the heavier, coarser-grained earth material that travels on or near the bed of a stream. OR of wind, the heavier grains (usually sand) that hop and skip along the ground by saltation.

**bedding:** the pattern (usually horizontal) of layering in which sediments are deposited.

**bedding planes:** demarcations of different layers of sediments.

**Beer's law:** In absorption spectroscopy, the absorbance of a dilute solution is equal to its absorptivity times the path length times the concentration of the absorbing solute. OR The relations between the absorbance of light (A) by a compound, its extinction coefficient ( $\epsilon$ ), concentration (c) and the length (l) of the light path:  $A = \epsilon cl$

**Beesix:** (Other name for: pyridoxine hydrochloride)

**BeetElite NeoShot:** (Other name for: concentrated beet crystals)

**beetroot juice:** The juice of the beetroot, with potential antioxidant and protective activities. Beetroot juice contains antioxidants, including betacyanin, which scavenge free radicals. In addition, beetroot contains high levels of nitrates and folic acid. Consumption of beetroot juice leads to the conversion of nitrate to nitric oxide (NO) in the body. This juice may have a beneficial effect on blood flow and blood pressure through the induction of NO-mediated vasodilation. Additionally, this agent may decrease fatigue and increase physical performance.

**Begedina:** (Other name for: begelomab)

**begelomab:** A monoclonal antibody against the human dipeptidyl peptidase 4 (dipeptidylpeptidase IV, DPP4, DPP4; CD26), with potential activity against graft-versus-host disease (GvHD). Upon administration, begelomab binds to CD26 expressed on T-cells. This inhibits the stimulation of T-cells and may prevent GvHD. CD26, a membrane-bound glycoprotein with dipeptidyl peptidase activity, plays a key role in T-cell activation and immune regulation. Check for active clinical trials using this agent.

**behavior modification :** A protein involved in autophagy (the process by which a cell destroys proteins and other substances in its cytoplasm). Beclin 1 is found at lower levels in several types of cancer cells than in normal cells. It is a type of tumor suppressor.

**Behcet disease :** A drug being studied in the treatment of graft-versus-host disease. It belongs to a family of drugs called corticosteroids.

**Behcet syndrome :** A technique used to help people change the way they react to certain triggers in the environment that cause a negative reaction. In

cancer treatment, behavior modification may be used to help patients who have become nauseous during previous cancer treatments cope with nausea they feel when they enter the therapy room to begin a new round of treatment.

**belagenpumatucel-L:** A transforming growth factor beta2 (TGF-beta2) antisense gene-modified allogeneic tumor cell vaccine with potential immunostimulatory and antineoplastic activities. Belagenpumatucel-L is prepared by transfecting allogeneic non-small cell lung cancer (NSCLC) cells with a plasmid containing a TGF-beta2 antisense transgene, expanding the cells, and then irradiating and freezing them. Upon administration, this agent may elicit a cytotoxic T lymphocyte (CTL) response against host NSCLC cells, resulting in decreased tumor cell proliferation; vaccine immunogenicity may be potentiated by suppression of tumor TGF-beta2 production by antisense RNA expressed by the vaccine plasmid TGF-beta2 antisense transgene. Elevated levels of TGF-beta2 are frequently linked to immunosuppression in cancer patients and may be inversely correlated with prognosis in patients with NSCLC.

**Beleodaq :** (Other name for: belinostat) OR A rare disorder that causes the blood vessels to become inflamed. Symptoms include sores in the mouth and on the sex organs and other skin problems, inflammation in parts of the eye, and pain, swelling, and stiffness of the joints. Other serious symptoms include blood clots, blindness, and inflammation of the brain, spinal cord, and digestive system. The symptoms may come and go on their own. Behcet disease is most common in young adults and its cause is unknown. Also called Behcet syndrome.

**belimumab:** A fully human IgG1 monoclonal antibody directed against B-Lymphocyte stimulator protein (BlyS or TNFSF13B) with potential immunomodulating activity. Belimumab specifically recognizes and inhibits the biological activity of BlyS, thereby preventing the binding of BlyS to B-lymphocytes. This inhibits the maturation of B-lymphocytes and may induce apoptosis in B-lymphocytes. In addition, it may decrease B-lymphocyte proliferation and/or survival. BlyS, a member of TNF family supporting B-lymphocyte maturation and survival, has been implicated in the pathogenesis of autoimmune diseases and B-lymphocyte malignancies.

**belinostat:** A novel hydroxamic acid-type histone deacetylase (HDAC) inhibitor with antineoplastic activity. Belinostat targets HDAC enzymes,

thereby inhibiting tumor cell proliferation, inducing apoptosis, promoting cellular differentiation, and inhibiting angiogenesis. This agent may sensitize drug-resistant tumor cells to other antineoplastic agents, possibly through a mechanism involving the down-regulation of thymidylate synthase. Check for active clinical trials using this agent. OR A rare disorder that causes the blood vessels to become inflamed. Symptoms include sores in the mouth and on the sex organs and other skin problems, inflammation in parts of the eye, and pain, swelling, and stiffness of the joints. Other serious symptoms include blood clots, blindness, and inflammation of the brain, spinal cord, and digestive system. The symptoms may come and go on their own. Behcet syndrome is most common in young adults and its cause is unknown. Also called Behcet disease.

**Bellini duct carcinoma :** A drug used to treat peripheral T-cell lymphoma that has come back or has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Beleodaq blocks certain enzymes needed for cell division and may kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow and may help make cancer cells easier to kill with other anticancer drugs. It is a type of histone deacetylase (HDAC) inhibitor, a type of angiogenesis inhibitor, and a type of chemosensitizer. Also called belinostat and PXD101.

**belotecan :** A drug used to treat peripheral T-cell lymphoma that has come back or has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Belinostat blocks certain enzymes needed for cell division and may kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow and may help make cancer cells easier to kill with other anticancer drugs. It is a type of histone deacetylase (HDAC) inhibitor, a type of angiogenesis inhibitor, and a type of chemosensitizer. Also called Beleodaq and PXD101.

**belotecan hydrochloride:** The hydrochloride salt of the semi-synthetic camptothecin analogue belotecan with potential antitumor activity. Belotecan binds to and inhibits the activity of topoisomerase I, stabilizing the cleavable complex of topoisomerase I-DNA, which inhibits the religation of single-stranded DNA breaks generated by topoisomerase I; lethal double-stranded DNA breaks occur when the topoisomerase I-DNA complex is encountered by the DNA replication machinery, DNA

replication is disrupted, and the tumor cell undergoes apoptosis.

Topoisomerase I is an enzyme that mediates reversible single-strand breaks in DNA during DNA replication. or A rare type of kidney cancer that grows and spreads quickly. It begins in the duct of Bellini in the kidney. Also called BDC.

**Belt:** The completed product consisting of a skeleton with or without mesh and attachments suitable for flexing around pulleys or sprockets and used primarily as a means of conveyance.

**Belt Supports:** Structure that the belt rides on (also called supports).

Typical belt supports are UHMW and metal rails which can be arranged in a herring bone pattern or arranged horizontally in the direction of belt travel.

**Belt Trackers (Control Rolls):** Devices called control rolls are used to guide the belt's path. Control rolls are placed 1.5 x BW from terminals.

**bemiparin sodium:** The sodium salt of bemiparin, a second generation, synthetic, low-molecular-weight heparin (LMWH) with anticoagulant activity. Derived, after depolymerisation and fractionation, from medical-grade porcine unfractionated heparin (UFH), bemiparin has an average molecular weight of 3,600 daltons and has a higher anti-factor Xa/anti-factor IIa ratio (8:1) than first-generation LMWHs. This anticoagulant binds to antithrombin III, thereby enhancing the inactivation of activated Factor X (Factor Xa) and, to a lesser extent, activated factor II (Factor IIa).

Compared to unfractionated heparins, the use of bemiparin is associated with lower incidences of major bleeding, osteoporosis, and heparin-induced thrombocytopenia. Bemiparin also promotes a greater release of tissue factor pathway inhibitor than UFH or dalteparin.

**Benadryl:** (Other name for: diphenhydramine hydrochloride)

**benazepril hydrochloride:** The hydrochloride salt of benazepril, a carboxyl-containing angiotensin-converting enzyme (ACE) inhibitor with antihypertensive activity. As a prodrug, benazepril is metabolized to its active form benazeprilat. Benazeprilat competitively binds to and inhibits ACE, thereby blocking the conversion of angiotensin I to angiotensin II. This prevents the potent vasoconstrictive actions of angiotensin II, resulting in vasodilation. Benazeprilat also decreases angiotensin II-induced aldosterone secretion by the adrenal cortex, which leads to an increase in sodium excretion and subsequently increases water outflow. Check for active clinical trials using this agent.

**Bence Jones protein :** The active ingredient in a substance being studied in the treatment of small cell lung cancer and other types of cancer. It blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of camptothecin analog and a type of topoisomerase inhibitor.

**Bench scale analysis:** Also known as: "bench test". A method of studying different ways of treating wastewater and solids on a small scale in a laboratory. While some competitors of Alken-Murray Corporation will experiment with treatments by selling a product that they "hope" will work and then advising the client to change products every month as one treatment after another fails to deliver the desired results, Alken-Murray will examine information provided on the appropriate diagnostic survey form, by either the client or authorized distributor, to select standard products, blends of standard products or totally customized blends for the authorized distributor to test against freshly collected samples of pollution from the client's project, with tests performed locally in the distributor's laboratory. Sometimes a distributor will test up to 25 different treatment options to finally achieve a sufficiently high quality result to deliver a confidence level sufficient to ensure that the positive bench test results will scale up to deliver similar results when scaled up to pilot or full-scale application. If Alken-Murray and its authorized distributor cannot achieve this result from bench scale testing as many potential treatments as Valerie could devise from initially submitted information, the distributor will usually enlist the aid of an accredited, independent drinking water or environment pollution testing laboratory, paid for by the client, to see if some undisclosed or previously unencountered compounds are inhibiting bacterial performance. If nothing new is disclosed from these new chemical analysis, the client is advised to consider alternative treatments (incineration, chemical reaction, filtering, etc.) from other vendors, but if one or more new pollutants ARE discovered, Alken-Murray research staff examine the chemistry of the new pollutants to study its shape for possible attach by enzymes that have been discovered in previous screenings. If Sigma-Aldrich or another laboratory chemical supply company carries the chemical(s) in pure form, Alken-Murray will purchase enough to prepare a broth media, featuring the new pollutant(s) as sole source of organic carbon, so that any growth or reproduction will indicate potential talent for digesting the new pollutant(s). Following filter-sterilizing or autoclaving,

ten mL of the broth is dispensed into sterile, fifteen mL, screw-cap test tubes. Each tube is then inoculated with a single colony picked from a 24-hour-old TSA plate growth of a stock Alken-Murray collection strain, selected for demonstrating the ability to digest related or similarly shaped chemical compounds, in the past. Inoculated test tubes are incubated at their optimal temperature for up to 7 days, with a well-mixed sample tested spectrophotometrically for signs of growth and reproduction daily. Five mL from the original 10 mL broth media in a test tube showing strong growth is inoculated into 100 ml of fresh broth media, using the same recipe with the pollutant(s) as sole organic carbon source, contained in a 250 mL Erlenmeyer flask, incubated at the selected strain's optimum temperature, with shaking at 200 rpm. A chemical analysis protocol is selected to enable measurement of the pollutant(s) in the broth media. Appropriate samples are withdrawn to perform chemical analyses on the pollutant(s) in the media and the growth rate of the inoculated strain in each flask. If pollutant(s) disappear at a similar rate as the growth rate of the culture, the strain is then tested for synergy with other strains known to be required to digest known pollutants in client's polluted site, with these results guiding actual new custom formulas sent to distributor to test with fresh samples of client's pollution project. If final results of one of the new formulas delivers a confidence level sufficient to ensure that positive bench test results will scale up properly to a full-scale application, a new Alken-Murray product is officially named and the sale is made. This close cooperation between Alken-Murray Corporation and its authorized distributors is responsible for our strong reputation for a high success rate worldwide.

**bench-to-bedside :** A substance being studied in the treatment of small cell lung cancer and other types of cancer. It blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of camptothecin analog and a type of topoisomerase inhibitor.

**Bend Radius:** The measurement of how far a tube can be bent before it kinks.

**bendamustine :** A small protein made by plasma cells (white blood cells that produce antibodies). It is found in the urine of most people with multiple myeloma (cancer that begins in plasma cells).

**bendamustine hydrochloride:** TA term used to describe the process by which the results of research done in the laboratory are directly used to

develop new ways to treat patients. OR he hydrochloride salt of bendamustine, a bifunctional mechlorethamine derivative with alkylator and antimetabolite activities. Bendamustine possesses three active moieties: an alkylating group; a benzimidazole ring, which may act as a purine analogue; and a butyric acid side chain. Although its exact mechanism of action is unknown, this agent appears to act primarily as an alkylator. Bendamustine metabolites alkylate and crosslink macromolecules, resulting in DNA, RNA and protein synthesis inhibition, and, subsequently, apoptosis. Bendamustine may differ from other alkylators in that it may be more potent in activating p53-dependent stress pathways and inducing apoptosis; it may induce mitotic catastrophe; and it may activate a base excision DNA repair pathway rather than an alkyltransferase DNA repair mechanism. Accordingly, this agent may be more efficacious and less susceptible to drug resistance than other alkylators.

**bendamustine-containing nanoparticle-based formulation RXDX-107:**

A nanoparticle-based formulation containing the alkyl ester of bendamustine, a bifunctional mechlorethamine derivative, encapsulated in human serum albumin (HSA), with potential alkylating and antineoplastic activities. Upon administration of the alkyl ester bendamustine-containing nanoparticle formulation RXDX-107, the nanoparticle formulation permits high concentrations of the alkyl ester of bendamustine be localized at the tumor site. The modified bendamustine alkylates and crosslinks macromolecules, resulting in DNA, RNA and protein synthesis inhibition, and, subsequently, apoptosis.

**bendamustine-vorinostat fusion molecule EDO-S101:** An alkylating histone-deacetylase inhibitor (HDACi) fusion molecule composed of the alkylating agent bendamustine fused to the pan-HDACi vorinostat, with potential bi-functional antineoplastic activity. Upon administration of the bendamustine-vorinostat fusion molecule EDO-S101, the vorinostat moiety targets and binds to HDACs. This leads to an accumulation of highly acetylated histones, which results in an induction of chromatin remodeling, a modulation of gene expression, an inhibition of tumor cell division and the induction of tumor cell apoptosis. The bendamustine moiety binds to, alkylates and crosslinks macromolecules, inhibiting DNA, RNA and protein synthesis, which also results in tumor cell apoptosis. Thus, EDO-S101 shows superior efficacy compared to the activity of either agent alone. In addition, the inhibition of HDAC6 activity by EDO-S101 induces the

activation of inositol-requiring enzyme 1 (IRE-1), the key regulatory protein for the unfolded protein response (UPR). Induction of the UPR increases the sensitivity of certain cancer cell types to certain chemotherapeutic agents, such as proteasome inhibitors. Therefore, EDO-S101 may work synergistically with proteasome inhibitors. HDACs, enzymes that deacetylate chromatin histone proteins, are overexpressed in various cancers and play a key role in proliferation and resistance of tumor cells.

**Bendopa:** (Other name for: levodopa)

**Benefin:** (Other name for: shark cartilage)

**benegrastim:** A recombinant dimeric fusion peptide of the human granulocyte colony-stimulating factor (G-CSF; filgrastim), with immunomodulating and hematopoietic activities. Benegrastim binds to the cell surface G-CSF receptors (G-CSFRs) inducing receptor dimerization and activation of signaling cascades such as the Jak-STAT and mitogen-activated protein kinase pathways. This stimulates neutrophil progenitor proliferation and differentiation. Compared to other preparations of monomer recombinant G-CSF, dimeric filgrastim may allow for stronger activation of G-CSFRs and a faster myeloid precursor response thus enhancing neutrophil recovery upon myelosuppressive therapy.

**Benemid:** (Other name for: probenecid)

**Beneo Synergy 1:** (Other name for: oligofructose-enriched inulin)

**benign:** This adjective is applied to any growth which does not invade surrounding tissue. See malignant, tumour.

**benign :** The active ingredient in a drug that is used to treat chronic lymphocytic leukemia (CLL), to treat slow-growing B-cell non-Hodgkin lymphoma (NHL) that has gotten worse within 6 months of treatment with other anticancer drugs, and is being studied in the treatment of other types of cancer. Bendamustine may damage the DNA in cancer cells and cause them to die. It is a type of alkylating agent and a type of antimetabolite.

**benign breast disease :** A drug used to treat chronic lymphocytic leukemia (CLL). It is also used to treat slow-growing B-cell non-Hodgkin lymphoma (NHL) that has gotten worse within 6 months of treatment with other anticancer drugs. It is being studied in the treatment of other types of cancer. Bendamustine hydrochloride may damage the DNA in cancer cells

and cause them to die. It is a type of alkylating agent and a type of antimetabolite. Also called Treanda.

**benign proliferative breast disease :** Not cancerous. Benign tumors may grow larger but do not spread to other parts of the body. Also called nonmalignant.

**benign prostatic hyperplasia :** A group of conditions marked by changes in breast tissue that are benign (not cancer). There are different types of benign breast disease, including some types caused by an increase in the number of cells or by the growth of abnormal cells in the breast ducts or lobes. Signs and symptoms of benign breast disease include irregular lumps or cysts, breast swelling or discomfort, skin redness or thickening, and nipple discharge. Most benign breast conditions do not increase the risk of breast cancer. Also called mammary dysplasia. or A group of noncancerous conditions marked by an increase in the growth of certain cells in the breast. Having one of these conditions may increase the risk of breast cancer. Examples include ductal hyperplasia, lobular hyperplasia, and papillomas.

**benign tumor :** A benign (not cancer) condition in which an overgrowth of prostate tissue pushes against the urethra and the bladder, blocking the flow of urine. Also called benign prostatic hypertrophy and BPH.

**benign vascular tumor :** A benign (not cancer) condition in which an overgrowth of prostate tissue pushes against the urethra and the bladder, blocking the flow of urine. Also called benign prostatic hyperplasia and BPH.

**Benioff zone:** a zone that slopes downward from an oceanic trench and underneath the overlying crustal plate at 30 to 60 degrees; an area of earthquake origination.

**Benlysta:** (Other name for: belimumab)

**Benoquin:** (Other name for: monobenzone)

**benthic organism (benthos):** A form of aquatic plant or animal life that is found on or near the bottom of a stream, lake, or ocean.

**benthic region:** The bottom layer of a body of water.

**benzaldehyde :** A growth that is not cancer. It does not invade nearby tissue or spread to other parts of the body.

**benzaldehyde dimethane sulfonate:** A dimethane sulfonate derivative and alkylating agent with a structure similar to other alkylating agents such as

chlorambucil, busulfan and melphalan, with potential antineoplastic activity. Although the exact mechanism of action has yet to be fully elucidated, benzaldehyde dimethane sulfonate alkylates DNA, which results in DNA double strand breaks, inhibition of DNA replication, cell cycle arrest and cell death. In addition, this agent is metabolized by the enzyme aldehyde dehydrogenase (ALDH) into the active carboxylic acid metabolite benzoic acid dimethane sulfonate (BA), which further contributes to its alkylating activity. Unlike other alkylating agents, benzaldehyde dimethane sulfonate has demonstrated antitumor activity in renal cell carcinoma.

**Benzene:** An aromatic hydrocarbon which is a colorless, volatile, flammable liquid. Benzene is obtained chiefly from coal tar and is used as a solvent for resins and fats in dye manufacture. OR A primary petrochemical building block used in the production of styrene, phenol and caprolactam. Benzene is an aromatic compound consisting of six carbon unsaturated ring structure. Benzene is produced predominantly as a by-product from naphtha or heavy liquid cracking.

**benzene :** A type of benign (not cancer) tumor that forms from cells that make blood vessels or lymph vessels. Benign vascular tumors may occur anywhere in the body, and a patient may have several tumors in different parts of the body. They may grow large and sometimes spread to nearby tissue. The most common type of benign vascular tumor is hemangioma, which usually occurs in infants and goes away on its own.

**Benzene Ring:** The basic structure of benzene, the most important aromatic chemical. It is an unsaturated, resonant 6-carbon ring having three double bonds. One or more of the 6 hydrogen atoms of benzene may be replaced by other atoms or groups.

**benzenoid ring:** an aromatic ring with a benzene-like structure.

**benzo(a)pyrene :** A chemical used in flavorings and in some dyes, perfumes, and medicines. It is found in essential oils made from almonds and peach pits and in other foods. It can also be made in the laboratory.

**benzodiazepine :** A chemical that is used widely by the chemical industry, and is also found in tobacco smoke, vehicle emissions, and gasoline fumes. Exposure to benzene may increase the risk of developing leukemia.

**Benzoyl Peroxide:** Aromatic peroxide. OR A common initiator used to start chain growth polymerisation. It undergoes a decomposition reaction at the peroxide (O-O) bond. Here is a picture:

**benzoylphenylurea:** A low molecular weight agent with antineoplastic activity. Benzoylphenylurea binds to the colchicine binding site on tubulin, thereby blocking tubulin polymerization and disrupting mitotic function. This agent also inhibits DNA polymerase, and has been shown to arrest leukemia cells in the G1-S transition phase of the cell cycle. Check for active clinical trials using this agent. or A chemical that comes from certain substances when they are not burned completely. It is found in car exhaust, smoke from wood fires, tobacco, oil and gas products, charred or grilled foods, and other sources. It may also be found in water and soil. Benzo(a)pyrene can cause a skin rash, a burning feeling, skin color changes, warts, and bronchitis. It may also cause cancer. It is a type of polycyclic aromatic hydrocarbon. Also called 3,4-benzopyrene.

**benzodiazepine :** A type of drug used to relieve anxiety and insomnia (trouble sleeping). Benzodiazepines are also used to relax muscles and prevent seizures. They increase the effect of a chemical in the brain called GABA, which is a neurotransmitter (a substance that nerves use to send messages to one another). This causes brain activity to slow down. Benzodiazepines are a type of CNS depressant.

**benzidamine hydrochloride:** An indazole non-steroidal anti-inflammatory drug (NSAID) with analgesic, antipyretic, and anti-edema properties. Unlike other NSAIDs, benzidamine hydrochloride does not inhibit cyclooxygenases (COX) but stabilizes membranes, resulting in local anesthesia; inhibits the production of pro-inflammatory cytokines; inhibits the generation of reactive oxygen species by neutrophils; inhibits leukocyte aggregation and adhesion; and exhibits antimicrobial properties.

**benzyl group:** the  $C_6H_5CH_2$  group.

**benzyne:** an unstable intermediate that consists of a benzene ring with an additional bond that is created by the side-to-side overlap of  $sp^2$  orbitals on adjacent carbons of the ring.

**BEP:** A substance being studied in the treatment of cancer. It is a type of antitubulin agent. Also called BPU.

**BEP regimen:** A chemotherapy regimen consisting of bleomycin, etoposide and cisplatin used for the treatment of ovarian and testicular germ cell tumors (GCTs). Or A substance being studied as a mouth rinse treatment for oral mucositis (painful mouth sores) caused by cancer therapy. It is a type of nonsteroidal anti-inflammatory drug (NSAID).

**berberine chloride:** The orally bioavailable, hydrochloride salt form of berberine, a quaternary ammonium salt of an isoquinoline alkaloid and active component of various Chinese herbs, with potential antineoplastic, radiosensitizing, anti-inflammatory, anti-lipidemic and antidiabetic activities. Although the mechanisms of action through which berberine exerts its effects are not yet fully elucidated, upon administration this agent appears to suppress the activation of various proteins and/or modulate the expression of a variety of genes involved in tumorigenesis and inflammation, including, but not limited to transcription factor nuclear factor-kappa B (NF-kB), myeloid cell leukemia 1 (Mcl-1), B-cell lymphoma 2 (Bcl-2), B-cell lymphoma-extra large (Bcl-xl), cyclooxygenase (COX)-2, tumor necrosis factor (TNF), interleukin (IL)-6, IL-12, inducible nitric oxide synthase (iNOS), intercellular adhesion molecule-1 (ICAM-1), E-selectin, monocyte chemoattractant protein-1 (MCP-1), C-X-C motif chemokine 2 (CXCL2), cyclin D1, activator protein (AP-1), hypoxia-inducible factor 1 (HIF-1), signal transducer and activator of transcription 3 (STAT3), peroxisome proliferator-activated receptor (PPAR), arylamine N-acetyltransferase (NAT), and DNA topoisomerase I and II. The modulation of gene expression may induce cell cycle arrest and apoptosis, and inhibit cancer cell proliferation. In addition, berberine modulates lipid and glucose metabolism.

**bereavement :** An abbreviation for a chemotherapy combination used to treat ovarian and testicular germ cell tumors. It includes the drugs bleomycin sulfate, etoposide phosphate, and cisplatin (Platinol). Also called BEP regimen.

**bergamot :** An abbreviation for a chemotherapy combination used to treat ovarian and testicular germ cell tumors. It includes the drugs bleomycin sulfate, etoposide phosphate, and cisplatin (Platinol). Also called BEP.

**bergschrund:** a crevasse, commonly filled with rock fall debris, that forms where a glacier separates from a cirque wall.

**Beriberi:** A neurologic and cardiovascular disorder caused by a dietary deficiency of thiamine (vitamin B1).

**Berkelium:** Symbol:"Bk" Atomic Number:"97" Atomic Mass: (247)amu. Berkelium is only one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. It is a radioactive metal with no known applications.

**berm:** the landward edge of a beach.

**berubicin hydrochloride:** The hydrochloride salt of the anthracycline derivative berubicin with potential antineoplastic activity. Berubicin intercalates into DNA and interrupts topoisomerase II activity, resulting in the inhibition of DNA replication and repair, and RNA and protein synthesis. Unlike other anthracycline derivatives, this agent crosses the blood-brain barrier (BBB).

**Beryllium:** Symbol:"Be" Atomic Number:"4" Atomic Mass: 9.01amu. Beryllium is member of the alkaline metals family. Beryllium is a silvery, very light metallic element. You might find the element in nuclear reactors, springs, satellites, and the space shuttle. OR Element 4, atomic weight 9.0122, an extremely toxic metal used as a neutron source and in phosphors.

**best practice :** A state of sadness, grief, and mourning after the loss of a loved one.

**BET (Brunauer–Emmet–Teller) adsorption isotherm:** A curve (usually sigmoidal) that describes the manner in which a substance absorbs a monolayer of an inert gas (usually nitrogen or krypton) at reduced temperatures.

**BET bromodomain inhibitor ZEN-3694:** An orally bioavailable inhibitor of the bromodomain and extra-terminal (BET) family of proteins, with potential antineoplastic activity. Upon oral administration, the BET inhibitor ZEN-3694 binds to the acetylated lysine recognition motifs in the bromodomains of BET proteins, thereby preventing the interaction between the BET proteins and acetylated histones. This disrupts chromatin remodeling and gene expression. Prevention of the expression of certain growth-promoting genes may lead to an inhibition of proliferation in BET-overexpressing tumor cells. BET proteins, comprised of BRD2, BRD3, BRD4 and BRDT, are transcriptional regulators that play an important role during development and cellular growth.

**BET bromodomains 2/3/4 inhibitor MK-8628:** A synthetic, small molecule inhibitor of the BET (Bromodomain and Extra-Terminal) family of bromodomain-containing proteins 2, 3 and 4 with potential antineoplastic activity. Upon administration, the BET bromodomains 2, 3 and 4 inhibitor MK-8628 binds to the acetylated lysine recognition motifs on the bromodomain of BET proteins, thereby preventing the interaction between the BET proteins and acetylated histone peptides. This disrupts chromatin

remodeling and gene expression. Prevention of the expression of certain growth-promoting genes, including c-Myc-dependent target genes, may lead to an inhibition of tumor cell growth. Characterized by a tandem repeat of bromodomain at the N-terminus, the BET proteins BRD2, BRD3, BRD4 are transcriptional regulators that play an important role in cellular growth.

**BET inhibitor BAY1238097:** An inhibitor of the Bromodomain (BRD) and Extra-Terminal domain (BET) family of proteins, with potential antineoplastic activity. Upon administration, the BET inhibitor BAY1238097 binds to the acetylated lysine recognition motifs on the BRD of BET proteins, thereby preventing the interaction between BET proteins and histones. This disrupts chromatin remodeling and prevents the expression of certain growth-promoting genes. This leads to an inhibition of tumor cell growth. BET proteins (BRD2, BRD3, BRD4 and BRDT) are transcriptional regulators that bind to acetylated lysines on the tails of histones H3 and H4, and regulate chromatin structure and function; they play an important role in the modulation of gene expression during development and cellular growth. Check for active clinical trials using this agent.

**BET inhibitor BMS-986158:** An inhibitor of the bromodomain (BRD) and extra-terminal domain (BET) family of proteins, with potential antineoplastic activity. Upon administration, the BET inhibitor BMS-986158 binds to the acetyl-lysine binding site in the BRD of BET proteins, thereby preventing the interaction between BET proteins and acetylated histones. This disrupts chromatin remodeling and prevents the expression of certain growth-promoting genes, resulting in an inhibition of tumor cell growth. BET proteins (BRD2, BRD3, BRD4 and BRDT) are transcriptional regulators that bind to acetylated lysines on the tails of histones H3 and H4, and regulate chromatin structure and function; they play an important role in the modulation of gene expression during development and cellular growth.

**BET inhibitor CPI-0610:** A small molecule inhibitor of the Bromodomain and Extra-Terminal (BET) family of proteins, with potential antineoplastic activity. Upon administration, the BET inhibitor CPI-0610 binds to the acetylated lysine recognition motifs on the bromodomain of BET proteins, thereby preventing the interaction between the BET proteins and acetylated histone peptides. This disrupts chromatin remodeling and gene expression.

Prevention of the expression of certain growth-promoting genes may lead to an inhibition of tumor cell growth. Characterized by a tandem repeat of two bromodomains at the N-terminus, the BET proteins (BRD2, BRD3, BRD4 and BRDT) are transcriptional regulators that play an important role during development and cellular growth. Check for active clinical trials using this agent.

**BET inhibitor FT-1101:** An orally bioavailable inhibitor of the Bromodomain and Extra-Terminal (BET) family of proteins, with potential antineoplastic activity. Upon administration, the BET inhibitor FT-1101 binds to the acetylated lysine recognition motifs in the bromodomain sites of BET proteins, thereby preventing the interaction between the BET proteins and acetylated histones. This disrupts chromatin remodeling and gene expression. Prevention of the expression of certain growth-promoting genes may lead to the inhibition of tumor cell growth. BET proteins, comprised of BRD2, BRD3, BRD4 and BRDT, are transcriptional regulators that play an important role during development and cellular growth. Check for active clinical trials using this agent.

**BET inhibitor GSK2820151:** An orally bioavailable inhibitor of the bromodomain and extra-terminal (BET) family of proteins, with potential antineoplastic activity. Upon oral administration, the BET inhibitor GSK2820151 binds to the acetylated lysine recognition motifs in the bromodomains of BET proteins, thereby preventing the interaction between the BET proteins and acetylated histones. This disrupts chromatin remodeling and gene expression. Prevention of the expression of certain growth-promoting genes may lead to an inhibition of tumor cell growth. BET proteins, comprised of BRD2, BRD3, BRD4 and BRDT, are transcriptional regulators that play an important role during development and cellular growth. Check for active clinical trials using this agent.

**BET inhibitor GSK525762:** A small molecule inhibitor of the BET (Bromodomain and Extra-Terminal) family of bromodomain-containing proteins with potential antineoplastic activity. Upon administration, the BET inhibitor GSK525762 binds to the acetylated lysine recognition motifs on the bromodomain of BET proteins, thereby preventing the interaction between the BET proteins and acetylated histone peptides. This disrupts chromatin remodeling and gene expression. Prevention of the expression of certain growth-promoting genes may lead to an inhibition of tumor cell

growth. Characterized by a tandem repeat of bromodomain at the N-terminus, BET proteins, comprising of BRD2, BRD3, BRD4 and BRDT, are transcriptional regulators that play an important role during development and cellular growth. Check for active clinical trials using this agent.

**BET inhibitor INCB054329:** An inhibitor of the bromodomain and extra-terminal (BET) family of bromodomain-containing proteins with potential antineoplastic activity. Upon administration, the BET inhibitor INCB054329 binds to the acetylated lysine recognition motifs on the bromodomain of BET proteins, thereby preventing the interaction between the BET proteins and acetylated histones. This disrupts chromatin remodeling and gene expression. Prevention of the expression of certain growth-promoting genes may lead to an inhibition of tumor cell growth. Characterized by a tandem repeat of bromodomain at the N-terminus, BET proteins, BRD2, BRD3, BRD4 and BRDT, are transcriptional regulators that play an important role during cellular growth.

**BET inhibitor TEN-010:** A small molecule inhibitor of the BET (Bromodomain and Extra-Terminal) family of bromodomain-containing proteins with potential antineoplastic activity. Upon administration, the BET inhibitor TEN-010 binds to the acetylated lysine recognition motifs found in the bromodomain of BET proteins, which prevents the interaction between BET proteins and acetylated histones. This interaction disrupts chromatin remodeling and gene expression. Prevention of the expression of certain growth-promoting genes may lead to an inhibition of tumor cell growth. Characterized by a tandem repeat of bromodomains at the N-terminus, BET proteins, comprised of BRD2, BRD3, BRD4 and BRDT, are transcriptional regulators that play an important role during cellular development and growth.

**beta alethine :** A type of orange tree grown in Italy. The essential oil from the peel of this orange is used in perfume, to get rid of insects, and to flavor tea. Bergamot oil is also used in aromatherapy for depression, anxiety, and poor digestion. The scientific name for the bergamot orange tree is *Citrus bergamia*.

**beta carotene:** A naturally-occurring retinol (vitamin A) precursor obtained from certain fruits and vegetables with potential antineoplastic and chemopreventive activities. As an anti-oxidant, beta carotene inhibits free-

radical damage to DNA. This agent also induces cell differentiation and apoptosis of some tumor cell types, particularly in early stages of tumorigenesis, and enhances immune system activity by stimulating the release of natural killer cells, lymphocytes, and monocytes. or Treatment that is accepted by medical experts as a proper treatment for a certain type of disease and that is widely used by healthcare professionals. Also called standard medical care, standard of care, and standard therapy.

**beta cell neoplasm :** A substance that is being studied in the treatment of cancer. It belongs to a family of chemicals called disulfides.

**beta cell tumor of the pancreas :** A substance found in yellow and orange fruits and vegetables and in dark green, leafy vegetables. The body can make vitamin A from beta carotene. Beta carotene is being studied in the prevention of some types of cancer. It is a type of antioxidant.

**beta electron:** An electron with spin down.

**BETA GAUGE:** A device for measuring the thickness of plastic films, sheets or extruded shapes. It consists of a Beta-ray emitting source and a detecting element.

**beta hemolytic streptococcus group B :** An abnormal mass that grows in the beta cells of the pancreas that make insulin. Beta cell neoplasms are usually benign (not cancer). They secrete insulin and are the most common cause of low blood sugar caused by having too much insulin in the body. Also called beta cell tumor of the pancreas, insulinoma, and pancreatic insulin-producing tumor.

**Beta particle:** are electrons produced in nuclear reactions. They are Electrons. OR A charged particle (with a mass equal to  $1/1837$  that of a proton) that is emitted from the nucleus of a radioactive element during radioactive decay (or disintegration) of an unstable atom. A negatively charged beta particle is identical to an electron, while a positively charged beta particle is called a positron. Large amounts of beta radiation may cause skin burns, and beta emitters are harmful if they enter the body. Beta particles may be stopped by thin sheets of metal or plastic. For additional detail, see Radiation Basics. OR An electron emitted by an unstable nucleus, when a neutron decays into a proton and an electron. In some cases, beta radiation consists of positrons ("antielectrons" which are identical to electrons but carry a +1 charge.") Note that beta

particles are created in nuclear decay; they do not exist as independent particles within the nucleus.

**beta-2-microglobulin :** An abnormal mass that grows in the beta cells of the pancreas that make insulin. Beta cell tumors of the pancreas are usually benign (not cancer). They secrete insulin and are the most common cause of low blood sugar caused by having too much insulin in the body. Also called beta cell neoplasm, insulinoma, and pancreatic insulin-producing tumor.

**Beta-bend:** Beta-bend (b-bend) or turn. A characteristic way of turning an extended polypeptide chain in a different direction, involving the minimum number of residues, and held together by hydrogen bonding.

**Beta-bend (b-bend) or turn:** A characteristic way of turning an extended polypeptide chain in a different direction, involving the minimum number of residues, and held together by hydrogen bonding.

**beta-elemene:** One of the isomers of elemene, a lipid soluble sesquiterpene and the active component isolated from the Chinese medicinal herb *Rhizoma zedoariae* with potential antineoplastic and chemopreventive activities. Although the exact mechanism of action through which beta-elemene exerts its effect has yet to be fully elucidated, this agent appears to induce apoptosis through different mechanisms of action and induces cell cycle arrest at different stages based on the tumor cell type involved. Beta-elemene may sensitize cancer cells to other chemotherapeutic agents. or A type of bacterium often found in the vagina. It can cause systemic infections in people with suppressed immune systems.

**beta-glucan:** A polysaccharide isolated from the cell walls of bacteria, plants, and fungi with immunostimulant and antineoplastic activities. In a solubilized form, beta-glucan binds to a lectin site within complement receptor 3 (CR3) on leukocytes, priming the receptor to trigger cytotoxic degranulation of leukocytes when leukocyte CR3 binds to complement 3 (iC3b)-coated tumors. Thus, the attachment of beta-glucan to CR3 of circulating leukocytes simulates leukocytes to kill iC3b-coated tumor cells in the same way as they kill iC3b-coated yeast. or A small protein normally found on the surface of many cells, including lymphocytes, and in small amounts in the blood and urine. An increased amount in the blood or urine may be a sign of certain diseases, including some types of cancer, such as multiple myeloma or lymphoma.

**beta-glucan MM-10-001:** A powder formulation containing a triple helix beta-glucan, isolated from the cell walls of the shiitake mushroom (*Lentinula edodes*), with potential immunostimulating activity. The beta-glucan in beta-glucan MM-10-001 binds to a lectin site within the complement receptor 3 (CR3 or iC3b receptor) on leukocytes, priming the receptor to trigger cytotoxic degranulation of leukocytes when leukocyte CR3 binds to iC3b-opsonized tumor cells. iC3b is the proteolytically inactive product of the complement cleavage fragment C3b. Check for active clinical trials using this agent.

**beta-glucan/alginate/hyaluronic acid/squalene/avocado oil-containing emulsion:** A topical emulsion containing beta-glucan (5%), alginate, hyaluronic acid, squalene and avocado oil, with cutaneous protective activity. Upon topical application of beta-glucan/alginate/hyaluronic acid/squalene/avocado oil-containing emulsion, the naturally-occurring polysaccharide beta-glucan acts as an immunomodulator by activating the innate immune response, in particular through the activation of macrophages and migration of neutrophils. Alginate acts as a moisturizer and supports skin healing. Hyaluronic acid, squalene and avocado oil provide barrier protection, help maintain skin integrity and are natural emollients and moisturizers. This emulsion may accelerate wound healing and may prevent radiation-induced dermatitis.

**beta-glucan/Lactobacillus casei/Bifidobacterium lactis-based supplement:** A synbiotic supplement containing beta-1,3-glucan, bacteria *Lactobacillus casei* (*L. casei*) and *Bifidobacterium lactis* (*B. lactis*), with potential immunomodulating activity. The naturally-occurring bacterial components in this dietary supplement may improve digestion and help maintain adequate colonization of the gastrointestinal (GI) tract by modulating the composition of the normal microflora. During colonization of the GI tract, the bacteria may form a protective intestinal barrier, thereby preventing attachment of potential pathogens. Both the probiotics and beta-glucan have been shown to stimulate the immune system. This supplement also contains several vitamins and other insoluble polysaccharides.

**beta-hCG :** A substance produced in the brain, especially in the pituitary gland, that blocks the sensation of pain. It is produced in response to pain, exercise, and other forms of stress. It is a type of polypeptide hormone.

**beta-human chorionic gonadotropin :** A substance found in bacteria, plants, and certain foods, such as baker's yeast, cereal grains, and mushrooms. It is a type of polysaccharide that is made of a string of glucose (sugar) molecules joined together. Beta-glucan may stimulate the immune system and help kill cancer cells. It is being studied in the treatment of cancer. It is a type of biological response modifier.

**beta-hydroxy-beta-methylbutyrate supplement:** A nutritional supplement containing the active metabolite of the essential amino acid leucine, with potential anti-catabolic and anabolic activities. Upon oral administration of beta-hydroxy-beta-methylbutyrate (HMB), this leucine metabolite may decrease protein breakdown and increase protein synthesis thereby increasing muscle strength and mass. Although the exact mechanisms remain to be fully elucidated, multiple mechanisms have been proposed: 1) HMB is a precursor of cholesterol synthesis in skeletal muscle cells thereby increasing sarcolemmal integrity; 2) HMB may inhibit the ubiquitin-proteasome proteolytic pathway responsible for the specific degradation of intracellular proteins, thereby preventing muscular proteolysis; and/or 3) HMB may stimulate protein synthesis through a mammalian target of rapamycin (mTOR)-mediated mechanism.

**beta-lapachone:** A poorly soluble, ortho-naphthoquinone with potential antineoplastic and radiosensitizing activity. Beta-lapachone (b-lap) is bioactivated by NAD(P)H:quinone oxidoreductase-1 (NQO1), creating a futile oxidoreduction that generates high levels of superoxide. In turn, the highly reactive oxygen species (ROS) interact with DNA, thereby causing single-strand DNA breaks and calcium release from endoplasmic reticulum (ER) stores. Eventually, the extensive DNA damage causes hyperactivation of poly(ADP-ribose) polymerase-1 (PARP-1), an enzyme facilitating DNA repair, accompanied by rapid depletion of NAD<sup>+</sup>/ATP nucleotide levels. As a result, a caspase-independent and ER-stress induced mu-calpain-mediated cell death occurs in NQO1-overexpressing tumor cells. NQO1, a flavoprotein and two-electron oxidoreductase, is overexpressed in a variety of tumors.

**beta-lapachone prodrug ARQ 761:** A synthetic, soluble prodrug of beta-lapachone, a poorly soluble, ortho-naphthoquinone with potential antineoplastic and radiosensitizing activity. ARQ 761 is converted to beta-lapachone (b-lap) in vivo. When b-lap is activated by NAD(P)H:quinone

oxidoreductase-1 (NQO1) this agent creates a futile oxidoreduction, generating highly reactive oxygen species (ROS) that results in DNA damage. The activation of b-lap also causes hyperactivation of poly (ADP-ribose) polymerase-1 (PARP-1), an enzyme that facilitates DNA repair, accompanied by rapid depletion of NAD<sup>+</sup>/ATP nucleotide levels. As a result, a caspase-independent and endoplasmic reticulum (ER) stress-induced mu-calpain-mediated cell death occurs in NQO1-overexpressing tumor cells. In addition, b-lap induces expression of the checkpoints activator E2F transcription factor 1 (E2F1) and thereby activates the E2F1-mediated checkpoint pathway that directly triggers apoptosis. As ARQ 761 is soluble and requires less solvent, this formulation may cause less hemolytic anemia associated with administration of the synthetic b-lap ARQ 501. Check for active clinical trials using this agent.

**Beta-oxidation :** Beta-oxidation (b-oxidation). Oxidative degradation of fatty acids that occurs by the successive oxidation of the b-carbon atom.

**Beta-oxidation (b-oxidation):** bOxidative degradation of fatty acids that occurs by the successive oxidation of the b-carbon atom.

**Beta-sheet (b-sheet):** bA sheetlike structure formed by the interaction between two or more extended polypeptide chains.

**beta-sitosterol :** A hormone found in the blood and urine during pregnancy. It may also be found in higher than normal amounts in patients with some types of cancer, including testicular, ovarian, liver, stomach, and lung cancers, and in other disorders. Measuring the amount of beta-hCG in the blood or urine of cancer patients may help to diagnose cancer and find out how well cancer treatment is working. Beta-hCG is a type of tumor marker. Also called beta-human chorionic gonadotropin.

**beta-thioguanine deoxyriboside:** A thiopurine nucleoside derivative with antineoplastic activity. After conversion to the triphosphate, beta-thioguanine deoxyriboside is incorporated into DNA, resulting in inhibition of DNA replication. This agent is cytotoxic against leukemia cell lines and has demonstrated some activity against leukemia cells in vivo. Beta-thioguanine deoxyriboside demonstrates antineoplastic activity against 6-thioguanine-resistant tumor cells. Check for active clinical trials using this agent.

**Betadine:** (Other name for: povidone-iodine solution)

**Betadine Solution:** (Other name for: povidone-iodine solution)

**BetaMarc:** (Other name for: formoterol fumarate/roxithromycin)

**betamethasone:** A synthetic glucocorticoid with metabolic, immunosuppressive and anti-inflammatory activities. Betamethasone binds to specific intracellular glucocorticoid receptors and subsequently binds to DNA to modify gene expression. The synthesis of certain anti-inflammatory proteins is induced while the synthesis of certain inflammatory mediators is inhibited. As a result, there is an overall reduction in chronic inflammation and autoimmune reactions.

**Betaseron:** (Other name for: recombinant interferon beta)

**betel quid with tobacco :** A hormone found in the blood and urine during pregnancy. It may also be found in higher than normal amounts in patients with some types of cancer, including testicular, ovarian, liver, stomach, and lung cancers, and in other disorders. Measuring the amount of beta-human chorionic gonadotropin in the blood or urine of cancer patients may help to diagnose cancer and find out how well cancer treatment is working. Beta-human chorionic gonadotropin is a type of tumor marker. Also called beta-hCG.

**betulinic acid:** A pentacyclic lupane-type triterpene derivative of betulin (isolated from the bark of *Betula alba*, the common white birch) with antiinflammatory, anti-HIV and antineoplastic activities. Betulinic acid induces apoptosis through induction of changes in mitochondrial membrane potential, production of reactive oxygen species, and opening of mitochondrial permeability transition pores, resulting in the release of mitochondrial apoptotic factors, activation of caspases, and DNA fragmentation. Although originally thought to exhibit specific cytotoxicity against melanoma cells, this agent has been found to be cytotoxic against non-melanoma tumor cell types including neuroectodermal and brain tumor cells.

**bevacizumab:** A recombinant humanized monoclonal antibody directed against the vascular endothelial growth factor (VEGF), a pro-angiogenic cytokine. Bevacizumab binds to VEGF and inhibits VEGF receptor binding, thereby preventing the growth and maintenance of tumor blood vessels. OR A substance found in various nuts, beans, seeds, fruits, and vegetables. It may also be used in dietary supplements. Beta-sitosterol may help lower cholesterol levels in the blood by decreasing the amount of

cholesterol absorbed from the diet. It may also slow the growth of some types of cancer cells and kill them. It is a type of phytosterol.

**bevacizumab-IRDye 800CW:** An immunoconjugate and a fluorescent tracer consisting of the recombinant humanized anti-vascular endothelial growth factor (VEGF) monoclonal antibody bevacizumab conjugated to the N-hydroxysuccinamide (NHS) ester form of the near-infrared (NIR) fluorescent dye IRDye 800CW, that may be used for VEGF-specific tumor imaging. Upon administration, the bevacizumab moiety of bevacizumab-IRDye 800CW binds to VEGF and the fluorescent signal can be visualized using NIR fluorescence imaging (700–1,000 nm).

**Bevel:** Also known as a “chamfer,” it is a flat truncated corner.

**bexarotene:** A synthetic retinoic acid agent with potential antineoplastic, chemopreventive, teratogenic and embryotoxic properties. Bexarotene selectively binds to and activates retinoid X receptors (RXRs), thereby inducing changes in gene expression that lead to cell differentiation, decreased cell proliferation, apoptosis of some cancer cell types, and tumor regression. OR A type of smokeless tobacco that is made in India and is widely used throughout Asia. It is a mixture of tobacco, crushed areca nut (also called betel nut), spices, and other ingredients. It is used like chewing tobacco and is placed in the mouth, usually between the gum and cheek. Betel quid with tobacco contains nicotine and many harmful, cancer-causing chemicals. Using it can lead to nicotine addiction and can cause cancers of the lip, mouth, tongue, throat, and esophagus. Also called gutka.

**Bextra:** (Other name for: valdecoxib)

**Bexxar:** (Other name for: tositumomab and iodine I 131 tositumomab) or A drug used alone or with other drugs to treat certain types of cervical, colorectal, lung, kidney, ovarian, fallopian tube, and primary peritoneal cancer, and glioblastoma (a type of brain cancer). It is also being studied in the treatment of other types of cancer. Bevacizumab binds to a protein called vascular endothelial growth factor (VEGF). This may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of monoclonal antibody. Also called Avastin.

**Bexxar regimen :** A drug used to treat skin problems caused by cutaneous T-cell lymphoma that have not gotten better after other treatment. It is also

being studied in the treatment of other types of cancer. Bexarotene is a type of retinoid. Also called LGD1069 and Targretin.

**Beyond design-basis accidents:** This term is used as a technical way to discuss accident sequences that are possible but were not fully considered in the design process because they were judged to be too unlikely. (In that sense, they are considered beyond the scope of design-basis accidents that a nuclear facility must be designed and built to withstand.) As the regulatory process strives to be as thorough as possible, "beyond design-basis" accident sequences are analyzed to fully understand the capability of a design.

**BFGS:** An optimization method often used in geometry optimization (four people with initials B, F, G, S).

**BG00001:** A combination of drugs used to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of cancer. Bexxar is made up of a monoclonal antibody called tositumomab and a form of tositumomab that is linked to a radioactive substance called iodine I 131. It is a type of radioimmunoconjugate. Also called Bexxar regimen and tositumomab and iodine I 131 tositumomab.

**BH3 mimetic ABT-737:** An orally bioavailable, selective small molecule B-cell lymphoma 2 (Bcl-2) Homology 3 (BH3) mimetic, with potential pro-apoptotic and antineoplastic activities. ABT-737 binds to the hydrophobic groove of multiple members of the anti-apoptotic Bcl-2 protein family, including Bcl-2, Bcl-xl and Bcl-w. This inhibits the activity of these pro-survival proteins and restores apoptotic processes in tumor cells, via activation of Bak/Bax-mediated apoptosis. The pro-survival Bcl-2 proteins are overexpressed in many cancers and play important roles in the regulation of apoptosis. Their expression is associated with increased drug resistance and tumor cell survival. ABT-737 does not inhibit the pro-survival proteins Mcl-1, Bcl-B, Bfl-1 (A1); therefore, tumors that overexpress these Bcl-2 family proteins are resistant to ABT-737.

**Bi:** A prefix meaning two

**BI 2536:** A combination of drugs used to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of cancer. Bexxar regimen is made up of a monoclonal antibody called tositumomab and a form of tositumomab that is linked to a radioactive

substance called iodine I 131. It is a type of radioimmunoconjugate. Also called Bexxar and tositumomab and iodine I 131 tositumomab.

**BI 2536:** A small molecule compound with potential antineoplastic activities. BI 2536 binds to and inhibits Polo-like kinase 1 (Plk1), resulting in mitotic arrest, disruption of cytokinesis, and apoptosis in susceptible tumor cell populations. Plk1, a serine/threonine-protein kinase, is a key regulator of multiple processes fundamental to mitosis and cell division. Check for active clinical trials using this agent.

**bi-functional alkylating agent VAL-083:** A bi-functional alkylating agent, with potential antineoplastic activity. Upon administration, VAL-083 crosses the blood brain barrier (BBB) and appears to be selective for tumor cells. This agent alkylates and crosslinks DNA which ultimately leads to a reduction in cancer cell proliferation. In addition, VAL-083 does not show cross-resistance to other conventional chemotherapeutic agents and has a long half-life in the brain. Check for active clinical trials using this agent.

**BI-RADS :** A type of treatment that uses substances made from living organisms to treat disease. These substances may occur naturally in the body or may be made in the laboratory. Some biotherapies stimulate or suppress the immune system to help the body fight cancer, infection, and other diseases. Other biotherapies attack specific cancer cells, which may help keep them from growing or kill them. They may also lessen certain side effects caused by some cancer treatments. Types of biotherapy include immunotherapy (such as vaccines, cytokines, and some antibodies), gene therapy, and some targeted therapies. Also called biological response modifier therapy, biological therapy, and BRM therapy.

**bi-shRNA-furin/GM-CSF-expressing autologous tumor cell vaccine:** Autologous tumor cells transfected with a plasmid expressing recombinant human granulocyte macrophage-colony stimulating factor (rhGM-CSF) and bifunctional short hairpin RNA (bi-shRNA) against furin, with potential immunostimulatory and antineoplastic activities. Upon intradermal vaccination of bi-shRNA-furin/GM-CSF-expressing autologous tumor cell vaccine, expressed GM-CSF protein, a potent stimulator of the immune system, recruits immune effectors to the site of injection and promotes antigen presentation. The furin bifunctional shRNA blocks furin protein production. Decreased levels of furin lead to a reduction in the conversion of transforming growth factor (TGF) beta into TGF beta1 and beta2 protein

isoforms. In turn, as part of the negative feedback mechanism, reduced furin protein levels inhibit TGFbeta1 and TGFbeta2 gene expression, thereby further decreasing TGF levels. As TGFs are potent immunosuppressive cytokines, reducing their levels may activate the immune system locally and this may eventually cause a cytotoxic T-lymphocyte (CTL) response against the tumor cells.

**Biafine cream :** A gene therapy agent that is being studied in the treatment of cancer. It belongs to the family of drugs called biological response modifiers.

**biallelic :** Of or pertaining to both alleles of a single gene (paternal and maternal). For example, biallelic mutation carriers have a mutation (not necessarily the same mutation) in both copies of a particular gene (a paternal and a maternal mutation).

**bias:** Deviation of results or inferences from the truth, or processes leading to such deviation. Any trend in the collection, analysis, interpretation, publication, or review of data that can lead to conclusions that are systematically different from the truth. or A substance being studied in the treatment of cancer. It prevents cells from dividing and may block the growth of some tumors. It is a type of mitotic inhibitor.

**Biaxial crystal:** Crystals in which the propagation of light differs in two directions. These crystals are of the triclinic, monoclinic, and orthorhombic systems.

**Biaxial Orientation:** This term indicates orientation of plastic films in both machine and cross-machine directions by stretching. Biaxially stretched films are generally well balanced in both directions and much stronger in terms of tear strength.

**Biaxin:** (Other name for: clarithromycin)

**BIBF 1120:** A substance that is put on the skin to help repair damaged skin. It may be used on certain wounds and burns, and to treat the redness, burning, and peeling caused by radiation therapy.

**BIBX 1382:** A pyrimido-pyrimidine with antitumor activity. BIBX 1382 inhibits the intracellular tyrosine kinase domain of the Epidermal Growth Factor Receptor (EGFR) thus specifically reversing the aberrant enzymatic activity from overexpressed and constitutively activated EGFR, and subsequently inhibiting cell proliferation and inducing cell differentiation.

**BIBX 1382:** In a scientific research study or clinical trial, a flaw in the study design or the method of collecting or interpreting information. Biases can lead to incorrect conclusions about what the study or clinical trial showed.

**bicalutamide:** A synthetic, nonsteroidal antiandrogen. Bicalutamide competitively binds to cytosolic androgen receptors in target tissues, thereby inhibiting the receptor binding of androgens. This agent does not bind to most mutated forms of androgen receptors. Or A substance being studied in the treatment of some types of cancer. BIBF 1120 blocks enzymes needed for cells to grow, and may prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called tyrosine kinase inhibitor BIBF 1120.

**Bicitra:** (Other name for: sodium citrate)

**BiCNU:** (Other name for: carmustine) or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called epidermal growth factor receptor (EGFR) inhibitors.

**bicuspid (mitral) valve:** the valve that leads into the left ventricle of the human heart.

**bicyclic ring system:** a molecule made up of two carbon rings that share common sides.

**bidentate:** A ligand that has two "teeth" or atoms that coordinate directly to the central atom in a complex. For example, 1,10-phenanthroline is a bidentate ligand of iron.

**bidri :** A drug used with another drug to treat prostate cancer that has spread to other parts of the body. Bicalutamide binds to proteins called androgen receptors, which are found in some prostate cancer cells. These proteins bind to androgens (male hormones) and may cause cancer cells to grow. Bicalutamide blocks these proteins and may keep cancer cells from growing. It is a type of antiandrogen. Also called Casodex.

**Bidirectional replication:** Replication in both directions away from the origin, as opposed to replication in one direction only (unidirectional replication).

**Bifidobacterium lactis/Lactobacillus acidophilus/L. plantarum/L. salivarius probiotic supplement:** An orally available, probiotic

supplement containing the non-pathogenic microorganisms *Lactobacillus acidophilus*, *L. plantarum*, *L. salivarius* and *Bifidobacterium lactis*, with potential anti-inflammatory, immunomodulating and protective activities. Upon oral ingestion, the naturally-occurring bacterial components in this dietary supplement may improve digestion and help maintain adequate colonization of the gastrointestinal (GI) tract by modulating the composition of the normal microflora. During colonization in the GI tract, the bacteria may form a protective intestinal barrier that may prevent both damage to the mucosal epithelia caused by toxins and attachment of potential pathogens, which protects against bacterial translocation and infections. In addition, this agent may both reduce the secretion of pro-inflammatory cytokines, including interleukin-10, and potentiate natural and acquired immunity.

**Bifunctional enzyme:** An enzyme with two different, often opposing, catalytic activities on one polypeptide chain. For instance, phosphofructokinase 2 synthesizes fructose 2,6-bisphosphate and fructose 2,6-bisphosphatase hydrolyzes it, yet both active sites are on the same polypeptide chain.

**bifunctional expression vector plasmid DNA-bi-shRNA EWS/FLI1 type 1 lipoplex:** A proprietary plasmid DNA expression vector encoding bifunctional short hairpin RNAs (bi-shRNAs) targeting the identical type 1 translocation junction region of the human fusion oncogene Ewing sarcoma (EWS)/Ets family transcription factor Friend leukemia virus integration 1 (FLI1) and are encapsulated in liposomal delivery vehicle (lipoplex; LPX), with potential antineoplastic activity. pbi-shRNA EWS/FLI1 type 1 contains 2 stem-loop structures encoded by a plasmid vector: one cleavage-dependent unit with perfectly matched passenger- and guide-strand, which is the small interfering RNA (siRNA)-like component, and one cleavage-independent unit composed of a strategically mismatched double strand, which is the microRNA (miRNA)-like component. Upon intratumoral administration and transcription into tumor cells, one shRNA unit with an imperfectly matched sequence causes inhibition of EWS/FLI1 messenger RNA (mRNA) translation (through mRNA sequestration and cleavage-independent degradation) while the other unit with a perfectly matched sequence promotes EWS/FLI1 mRNA degradation (through cleavage-dependent mRNA silencing). This prevents EWS/FLI1 expression in tumor cells, which results in a reduction of tumor cell proliferation. The

EWS/FLI1 type 1 fusion gene product is overexpressed in type 1 Ewing's sarcoma and correlates with increased tumor proliferation and poor prognosis.

**big-bang hypothesis:** says that origin of the universe was when all matter was collected together and exploded, about 15 billion years ago.

**bilateral :** A drug used to treat certain types of brain tumors. It is also used with prednisone to treat multiple myeloma and with other drugs to treat Hodgkin lymphoma and non-Hodgkin lymphoma that have not gotten better with other treatment or have come back. It is also being studied in the treatment of other types of cancer. BiCNU damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent and a type of nitrosourea. Also called BCNU and carmustine.

**bilateral cancer :** A cigarette made by rolling tobacco by hand in a dried leaf from the tendu tree (a member of the ebony family). Most bidis are made in India, and they come in different flavors.

**bilateral nephrectomy :** Affecting both the right and left sides of the body.

**bilateral prophylactic mastectomy :** Cancer that occurs in both of a pair of organs, such as both breasts, ovaries, eyes, lungs, kidneys, or adrenal glands, at the same time.

**bilateral salpingo-oophorectomy :** Surgery to remove both kidneys.

**Bilayer:** A double layer of lipid molecules with the hydrophilic ends oriented outward, in contact with water, and the hydrophobic parts oriented inward. OR A double layer of oriented amphipathic lipid molecules, forming the basic structure of biological membranes. The hydrocarbon tails face inward to form a continuous nonpolar phase.

**bile :** Surgery to remove both breasts in order to reduce the risk of developing breast cancer.

**bile duct :** Surgery to remove both ovaries and both fallopian tubes.

**bile duct cancer :** A fluid made by the liver and stored in the gallbladder. Bile is excreted into the small intestine, where it helps digest fat.

**Bile salts:** Bile salts. Derivatives of cholesterol with detergent properties that aid in the solubilization of lipid molecules in the digestive tract. OR Polar derivatives of cholesterol that are made in the liver, stored in the gall bladder, and released into the small intestine, where they act as detergents to solubilize dietary lipids, facilitating their digestion and absorption. OR

Amphipathic steroid derivatives with detergent properties, participating in digestion and absorption of lipids.

**biliary** : A tube through which bile passes in and out of the liver.

**biliary bypass** : A rare cancer that forms in the bile ducts. A bile duct is a tube that carries bile (fluid made by the liver) between the liver and gallbladder and the small intestine. Intrahepatic bile duct cancer is found inside the liver. Extrahepatic bile duct cancer is found outside the liver. Also called cholangiocarcinoma.

**biliary cirrhosis** : Having to do with the liver, bile ducts, and/or gallbladder.

**biliary system** : Surgery done to help relieve symptoms caused by a blocked bile duct. In biliary bypass, a part of the bile duct before the blockage is connected to either a part of the bile duct that is past the blockage, or to the small intestine. This allows bile (fluid made by the liver) to flow around the blockage to the gallbladder or small intestine. A blocked bile duct may be caused by cancer or other conditions, such as gallstones, infection, or scar tissue. A biliary bypass is usually done in patients who have bile duct tumors that cannot be completely removed by surgery.

**biliary tract** : A type of chronic liver disease in which the tubes that carry bile (fluid that helps digest fat) out of the liver become damaged or blocked over time. This can cause bile and toxic substances to build up in the liver, which may lead to cirrhosis (scarring of the liver) and liver failure. It may also increase the risk of liver cancer. Biliary cirrhosis may be caused by gallstones, injury to the bile ducts, autoimmune disorders, and certain other conditions.

**bilirubin** : The organs and ducts that make and store bile (a fluid made by the liver that helps digest fat), and release it into the small intestine. The biliary system includes the gallbladder and bile ducts inside and outside the liver. Also called biliary tract.

**bilirubin encephalopathy**: characterized by yellow discoloration of the basal ganglia in babies with intense jaundice; commonly referred to as kernicterus

**BIM**: Building Information Modelling (BIM) is used in building design and integrates 3D models with rich information. BIM objects combine

performance, scheduling, fire rating, and many other parameters, with physical geometric attributes, in digital form.

**bimagrumab:** A human monoclonal antibody directed against type II activin receptors (ActRII; ActR2), with potential muscle-sparing and anti-cachectic activities. Upon administration, bimagrumab binds to ActRII, which prevents the binding of the natural ligands, myostatin and activin, to activin receptors and blocks ActRII-mediated signaling. This increases protein synthesis, decreases protein degradation, stimulates skeletal muscle cell growth, and increases muscle function and strength. Overstimulation of the ActRII-mediated signaling pathway is associated with muscle loss and weakness.

**bimatoprost :** The organs and ducts that make and store bile (a fluid made by the liver that helps digest fat), and release it into the small intestine. The biliary tract includes the gallbladder and bile ducts inside and outside the liver. Also called biliary system.

**bimatoprost ophthalmic solution:** A sterile ophthalmic solution containing 0.03% of a synthetic prostaglandin analog bimatoprost with hair-growing and anti-glaucoma activities. Applied once daily to the upper eyelid margin at the base of the eyelashes and, optionally, to the eyebrows, bimatoprost penetrates into the hair follicle and may, through a mechanism that has yet to be fully understood, stimulate the transition of hair follicles from the telogen phase into the anagen phase and may increase the duration of the time follicles spend in anagen. By increasing the numbers of hair follicles in and duration of anagen phase, bimatoprost may help increase eyebrow and eyelash growth and appearance, including their length, thickness and darkness.

**Binary Compound:** A binary compound is a compound that only has two atoms. Think about sodium chloride for binary compounds (NaCl). OR A compound that contains two different elements. NaCl is a binary compound; NaClO is not.

**Binary fission:** During binary fission, a single cell divides transversely to form two new cells called daughter cells. Both daughter cells contain an exact copy of the genetic information contained in the parent cell.

**Binder:** Solid ingredients in a coating that hold the pigment particles in suspension and attach them to the substrate. Consists of resins (e.g., oils, alkyd, latex). The nature and amount of binder determine many of the

paint's performance properties--washability, toughness, adhesion, color retention, etc. OR The binder cements the pigment particles into a uniform paint film and makes the paint adhere to the surface. The nature and amount of binder determine most of the paint's performance properties such as washability, toughness, adhesion and colour retention. OR The organic or inorganic material which encapsulates and holds together the base in reinforced or otherwise heterogeneous composites. OR A resin or other substance that binds two or more items or pieces together. OR A resin or other material used to hold particles together. The binder is the continuous phase in a reinforced plastic which provides mechanical strength or ensures uniform consistency, solidification, or adhesion to a surface coating. Typical binder materials include resin, glue, gum and casein. OR the organic or inorganic material which encapsulates and holds together the base in reinforced or otherwise heterogeneous composites. OR A resin or other material used to hold particles together. The binder is the continuous phase in are inforced plastic, which provides mechanical strength or ensures uniform consistency, solidification, or adhesion to a surface coating. Typical binder materials include resin, glue, gum and casein.

**binding agent :** Substance formed when red blood cells are broken down. Bilirubin is part of the bile, which is made in the liver and is stored in the gallbladder. The abnormal buildup of bilirubin causes jaundice.

**Binding energy:** The minimum energy required to separate the nucleus of an atom into its component neutrons and protons. OR The free energy released in the formation of the weak interactions between enzyme and substrate. OR The energy derived from noncovalent interactions between enzyme and substrate or receptor and ligand.

**Binding Region:** A region within the binding site that can interact with drugs through intramolecular interactions.

**Binding Site:** Regions in a drug target where an endogenous ligand or drug can bind.

**binge drinking:** The consumption of five or more drinks in a row on at least one occasion.

**binimetinib:** An orally available inhibitor of mitogen-activated protein kinase kinase 1 and 2 (MEK1/2) with potential antineoplastic activity. Binimetinib, noncompetitive with ATP, binds to and inhibits the activity of MEK1/2. Inhibition of MEK1/2 prevents the activation of MEK1/2-

dependent effector proteins and transcription factors, which may result in the inhibition of growth factor-mediated cell signaling. This may eventually lead to an inhibition of tumor cell proliferation and an inhibition in production of various inflammatory cytokines including interleukin-1, -6 and tumor necrosis factor. MEK1/2 are dual-specificity threonine/tyrosine kinases that play key roles in the activation of the RAS/RAF/MEK/ERK pathway and are often upregulated in a variety of tumor cell types.

**binomial name:** the scientific name of an organism, which contains two elements.

**Binosto:** (Other name for: alendronate sodium)

**Bio-Tower:** An attached culture system. A tower filled with a media similar to ratchet or plastic rings in which air and water are forced up a counterflow movement in the tower.

**bioaccumulation:** The process by which the amount of a substance in a living organism (or its parts) increases with time (WHO, 1979).

**bioactive compound :** A drug used under the name Latisse to increase the length, thickness, and darkness of eyelashes. It is being studied as a way to increase the growth of eyelashes and eyebrows in patients given chemotherapy for cancer. Bimatoprost is also used under the name Lumigan to treat glaucoma (a build-up of fluid in the eye). It lowers pressure in the eye by increasing the flow of natural eye fluids out of the eye. It is a type of prostaglandin analog.

**bioassay:** an assay method using a change in biological activity as a qualitative or quantitative means of analyzing a material response to industrial waste and other wastewater by using viable organisms or live fish as test organisms.

**Bioassay:** The determination of kinds, quantities, or concentrations and, in some cases, locations of radioactive material in the human body, whether by direct measurement (in vivo counting) or by analysis and evaluation of materials excreted or removed (in vitro) from the human body.

**Bioavailability:** The fraction of an administered unchanged drug that reaches the blood supply. OR A term used to describe the biological availability of a drug. The bioavailability depends on the absorption, distribution, metabolism, and excretion of the drug. For example, the absorption of the drug depends on the dissolution profile of the dosage

form, hence, the importance of dissolution testing in assuring consistent bioavailability. OR The extent to which a chemical substance to which the body is exposed (by ingestion, inhalation, injection, or skin contact) reaches the systemic circulation, and the rate at which this occurs. It is recognized that the bioavailability (for gastrointestinal absorption) of, for example, both essential and non-essential metals, depends on various factors including the composition of the diet and the type of the chemical compound and its state of dispersion. For instance, the absorption of lead and cadmium is increased if the food is deficient in calcium or iron (WHO, 1979).

**bioavailable :** A substance that makes a loose mixture stick together. For example, binding agents can be used to make solid pills from loose powders.

**Biobatch:** Manufactured batch of a drug preparation that is used to test for biological response.

**Biocatalysis:** Chemical reactions mediated by biological systems (microbial communities, whole organisms or cells, cell-free extracts, or purified enzymes aka catalytic proteins).

**biochanin A :** A type of chemical found in small amounts in plants and certain foods (such as fruits, vegetables, nuts, oils, and whole grains). Bioactive compounds have actions in the body that may promote good health. They are being studied in the prevention of cancer, heart disease, and other diseases. Examples of bioactive compounds include lycopene, resveratrol, lignan, tannins, and indoles.

**biochemical mechanism:** This is the general term for any chemical reaction or series of reactions, usually enzyme catalysed, which produces a given physiological effect in a living organism.

**biochemical oxygen demand (BOD):** the quantity of oxygen used in the biochemical oxidation of organic matter in a specified time, at a specified temperature, and under specified conditions; standard test used in assessing wastewater biological oxygen demand.

**Biochemical pathway:** A series of enzyme-catalyzed reactions that results in the conversion of a precursor molecule into a product molecule.

**biochemical reactions :** The ability of a drug or other substance to be absorbed and used by the body. Orally bioavailable means that a drug or

other substance that is taken by mouth can be absorbed and used by the body.

**biochemical recurrence :** An isoflavone found in soy products. Soy isoflavones (estrogen-like substances made by some plants) are being studied to see if they help prevent cancer.

**biochemical relapse :** In living cells, chemical reactions that help sustain life and allow cells to grow.

**biochemist :** A rise in the blood level of PSA (prostate-specific antigen) in prostate cancer patients after treatment with surgery or radiation. Biochemical recurrence may occur in patients who do not have symptoms. It may mean that the cancer has come back. Also called biochemical relapse and PSA failure.

**biochemistry:** The science that makes use of chemistry to learn about and explain biologically important systems. OR The scientific study of the chemistry of living cells, tissues, organs, and organisms OR The chemistry of living things, including the structure and function of biological molecules and the mechanism and products of their reactions.

**biocides:** chemical agents with the capacity to kill biological life forms. Bactericides, insecticides, pesticides, etc. are examples. OR A chemical agent which destroys microscopic and sub-microscopic organisms. OR Biocides are formulations of one or more active substances which can kill or control viruses, bacteria, algae, moulds or yeasts

**Biocides & Fungicides:** These additives act as pesticides and are used to inhibit the growth of fungus and other pests.

**Biocompatible:** A material may be regarded as biocompatible if it may be put into living organisms without rejection or detrimental effects. Materials may also be considered to be bioinert if they do not interact with the body at all (like titanium knee implants).

**bioconcentration:** A process leading to a higher concentration of a chemical in the organism relative to its environment (WHO, 1979).

**biocytin:** The conjugate amino acid residue arising from covalent attachment of biotin, through an amide linkage, to a Lys residue.

**biodegradability:** the susceptibility of a substance to decomposition by microorganisms; specifically, the rate at which compounds may be chemically broken down by bacteria and/or natural environmental factors.

**Biodegradable:** Organic matter that can be broken down by bacteria to more stable forms which will not create a nuisance or give off foul odors. OR The term 'biodegradable' is used to refer to plastics and other materials that can be decomposed naturally by bacteria, once they are thrown away. OR Capable of being eaten or otherwise decomposed by some kind of living creature. Bacteria and fungi are the main culprits; we usually use the word edible for things that can be eaten by animals. It is important to consider the timescale involved - paper is biodegradable, but can kick around for a very long time before succumbing. Most synthetic polymers are not particularly biodegradable (poly(acrylamide) is a rare example of one that is readily degraded), but many are susceptible to breakdown by ultraviolet radiation from the sun and will crumble away in about the same time as an equivalent sheet of paper. OR Capable of being broken down by the action of living things, such as microorganisms OR The American Society of Testing and Materials defines biodegradable as "Capable of undergoing decomposition into carbon dioxide, methane, water, inorganic compounds, or biomass in which the predominant mechanism is the enzymatic action of microorganisms, that can be measured by standardized tests, in a specified period of time, reflecting available disposal condition." For practical purposes claims about biodegradability of plastic should specify a timeframe.

**Biodegradable Plastic:** A degradable plastic in which the degradation results from the action of naturally occurring micro-organisms such as bacteria.

**BIODEGRADATION:** The degradation of plastics by micro-organisms when buried in the soil. Some plastics can be modified to become biodegradable by the incorporation of a biodegradable additive such as corn starch. OR The process of reducing plastics by microorganisms while buried in the soil.

**Bioerodable:** Polymers that exhibit controlled degradation through the incorporation of prodegradant additive master batches or concentrates. Such polymers oxidize and are embrittled in the environment and erode under the influence of weathering.

**biofeedback :** A rise in the blood level of PSA (prostate-specific antigen) in prostate cancer patients after treatment with surgery or radiation. Biochemical relapse may occur in patients who do not have symptoms. It

may mean that the cancer has come back. Also called biochemical recurrence and PSA failure.

**Biofilm:** A slime layer which naturally develops when bacteria attach to an inert support that is made of a material such as stone, metal, or wood. There are also non-filamentous bacteria that will produce an extracellular polysaccharide that acts as a natural glue to immobilize the cells. In nature, nonfilament-forming microorganisms will stick to the biofilm surface, locating within an area of the biofilm that provides an optimal growth environment (i.e., pH, dissolved oxygen, nutrients). Since nutrients tend to concentrate on solid surfaces, a microorganism saves energy through cell adhesion to a solid surface rather than by growing unattached and obtaining nutrients randomly from the medium. Pseudomonas and Nitrosomonas strains are especially well known for their ability to form a strong biofilm.

**biofilm :** A scientist who has special training in the study of the chemicals and processes that occur in all living things.

**Bioflocculation:** The clumping together of fine, dispersed organic particles by the action of certain bacteria and algae.

**Biogas boosting :** Sludge stabilization by anaerobic biological method, i.e., digestion produces biogas. Biogas contains methane, which allows the biogas utilization as biofuel. Biogas boosting refers to digestion process enhancement with addition of suitable chemicals, which increase the biogas generation.

**biogeochemical cycle:** The chemical interactions among the atmosphere, biosphere, hydrosphere, and lithosphere.

**bioinformatics :** A method of learning to voluntarily control certain body functions such as heartbeat, blood pressure, and muscle tension with the help of a special machine. This method can help control pain.

**Bioisostere:** Bioisosteres are chemical groups with similar physicochemical properties which give broadly similar biological properties to a compound.

**biologic agent :** A layer of bacteria or other microbes that grows on and sticks to the surface of a structure. A biofilm may cover natural surfaces, such as teeth. They may also grow in or on medical devices, such as

catheters or artificial joints. Bacteria growing as a biofilm are hard to treat with antibiotics.

**biological :** The science of using computers, databases, and math to organize and analyze large amounts of biological, medical, and health information. Information may come from many sources, including patient statistics, tissue specimens, genetics research, and clinical trials.

**biological agent :** A substance that is made from a living organism or its products and is used in the prevention, diagnosis, or treatment of cancer and other diseases. Biologic agents include antibodies, interleukins, and vaccines. Also called biological agent and biological drug.

**biological assessment of exposure:** Exposure to chemicals may be assessed by the analysis of specimens taken in the environment (air, water, food, etc.) or of specimens of biological material. Most often, urine and blood are analyzed, but other materials such as expired air, faeces, saliva, bile, hair, and biopsy or autopsy material are sometimes analyzed. In these samples, the content of the xenobiotic(s) or its metabolite(s) is determined and, on this basis, the exposure level (concentration in the air, absorbed amount of the substance) or the probability of health impairment due to exposure is derived. Biochemical changes in the components of an organism can also be used for this purpose (e.g., changes in enzyme activity or in the excretion of metabolic intermediates) if they show a relationship to the exposure (WHO, 1979).

**biological assessment of exposure:** Mainly used for hygienic evaluation of workplaces (deducing from the analytical results the level of exposure, sometimes even correlations with the concentration in the air, the possible absorption by other routes than inhalation, etc.) and for medical prevention or diagnostics (probability of health impairment at certain values of the exposure test). The definition of biological assessment of exposure should include only the chemical and haematological analyses already mentioned and should not be extended to include indicators of general health or sickness, or functional tests (WHO, 1979).

**biological cycle:** The process through which a chemical substance passes in the biosphere. It may involve transport through the various media (air, water, soil), followed by environmental transformation, and carriage through various ecosystems. Chemical compounds that occur naturally have a natural biological cycle (WHO, 1979).

**biological drug :** Pertaining to biology or to life and living things. In medicine, refers to a substance made from a living organism or its products. Biologicals may be used to prevent, diagnose, treat or relieve of symptoms of a disease. For example, antibodies, interleukins, and vaccines are biologicals. Biological also refers to parents and children who are related by blood.

**Biological half-life:** The time required for a biological system, such as that of a human, to eliminate, by natural processes, half of the amount of a substance (such as a radioactive material) that has entered it.

**biological half-life :** The time required for the amount of a particular substance in a biological system to be reduced to one-half of its value by biological processes when the rate of removal is approximately exponential (ISO, 1972). For a one-compartment system describing an exponential biological process, biological half-life =  $\log 2/f$  where  $f$  = elimination or decay constant. OR The periodic examination of biological specimens (in accordance with the definition of monitoring). It is usually applied to exposure monitoring but can also apply to effect monitoring (WHO, 1979).

**biological productivity:** The amount of organic matter, carbon, or energy content that is accumulated during a given time period.

**biological profile :** A substance that is made from a living organism or its products and is used in the prevention, diagnosis, or treatment of cancer and other diseases. Biological agents include antibodies, interleukins, and vaccines. Also called biologic agent and biological drug.

**biological response modifier therapy :** A substance that is made from a living organism or its products and is used in the prevention, diagnosis, or treatment of cancer and other diseases. Biological drugs include antibodies, interleukins, and vaccines. Also called biologic agent and biological agent.

**Biological shield:** A mass of absorbing material placed around a reactor or radioactive source to reduce the radiation to a level safe for humans.

**biological therapy :** A summary of the biological actions of a substance. A biological profile may come from patient data or from tests done in the laboratory or in animals.

**biological wastewater treatment:** forms of wastewater treatment in which bacterial or biochemical action is intensified to stabilize, oxidize, and nitrify

the unstable organic matter present. Intermittent sand filters, contact beds, trickling filters, and activated sludge processes are examples.

**Biological weathering:** Rocks can be broken down in many ways. Biological weathering is the breakdown of rocks by biological action. A good example is where the roots of plants growing in cracks in rocks causes them to split..

**Bioluminescence:** The production of light by a biochemical system.

**biomagnification :** A sequence of processes in an ecosystem by which higher concentrations are attained in organisms of higher trophic level, i.e., of higher levels in the food chain (Dustman & Stickel, 1969).

**biomarker :** A type of treatment that uses substances made from living organisms to treat disease. These substances may occur naturally in the body or may be made in the laboratory. Some biological response modifier therapies stimulate or suppress the immune system to help the body fight cancer, infection, and other diseases. Other biological response modifier therapies attack specific cancer cells, which may help keep them from growing or kill them. They may also lessen certain side effects caused by some cancer treatments. Types of biological response modifier therapy include immunotherapy (such as vaccines, cytokines, and some antibodies), gene therapy, and some targeted therapies. Also called biological therapy, biotherapy, and BRM therapy.

**Biomass:** A mass or clump of living organisms feeding on the wastes in wastewater, dead organisms and other debris. OR The total amount of biotic material, usually expressed per unit surface area or volume of a medium such as water (WHO, 1979). OR the total dry weight of food at each level of the food pyramid. OR The total dry organic matter or stored energy content of living organisms that is present at a specific time in a defined unit (community, ecosystem, crop, etc.) of the Earth's surface.

**Biomaterial:** Any material, natural or synthetic, used and adapted for a medical application

**biome:** a group of communities dominated by a particular climax community, such as deserts, forests, and prairies.

**Biomed 101 :** An agent binding to the leukotriene B4 receptor, leading to reduced interleukin-2 mediated hypoxia. Biomed 101 does not affect interleukin-2 antitumor activity. OR A type of treatment that uses

substances made from living organisms to treat disease. These substances may occur naturally in the body or may be made in the laboratory. Some biological therapies stimulate or suppress the immune system to help the body fight cancer, infection, and other diseases. Other biological therapies attack specific cancer cells, which may help keep them from growing or kill them. They may also lessen certain side effects caused by some cancer treatments. Types of biological therapy include immunotherapy (such as vaccines, cytokines, and some antibodies), gene therapy, and some targeted therapies. Also called biological response modifier therapy, biotherapy, and BRM therapy.

**biomedicine** : A biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease. A biomarker may be used to see how well the body responds to a treatment for a disease or condition. Also called molecular marker and signature molecule.

**biomethylation**: Becoming methylated through biological action; for example, bacteria can generate methylated mercury in aquatic sediments.

**biometrics** : A substance that is being studied for its ability to decrease the side effects of interleukin-2 (IL-2).

**biometry** : A system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. Also called allopathic medicine, conventional medicine, mainstream medicine, orthodox medicine, and Western medicine.

**biomolecule**: An organic compound normally present as an essential component of living organisms.

**biomonitoring**: the use of living organisms to test the suitability of effluent for discharge into receiving waters and to test the quality of such waters downstream from a discharge.

**Bioperine**: (Other name for: piperine extract (standardized))

**Bioplastics**: Bioplastics, such as thermoplastic starch, cellulose-based plastics, are a form of plastics derived from renewable biological material sources. Biodegradable bioplastics are used for disposable items, such as packaging and catering items (crockery, cutlery, pots, bowls, straws).

Bioplastics are more sustainable because they can break down in the environment faster than fossil-fuel plastics.

**Biopolymer:** A polymer produced by a living plant, animal fungus, bacterium, or other biological entity.

**Bioprecursor prodrug:** Prodrugs that are activated by oxidation or reduction processes rather than simple hydrolysis.

**biopsy :** The science of collecting and analyzing biologic or health data using statistical methods. Biometrics may be used to help learn the possible causes of a cancer or how often a cancer occurs in a certain group of people. Also called biometry and biostatistics.

**biopsy specimen :** The science of collecting and analyzing biologic or health data using statistical methods. Biometry may be used to help learn the possible causes of a cancer or how often a cancer occurs in a certain group of people. Also called biometrics and biostatistics.

**Biopterin:** A cofactor from which the electron carrier tetrahydrobiopterin is derived. OR An enzymatic cofactor derived from pterin and involved in certain oxidation-reduction reactions.

**Biorenewable Materials:** Raw materials, or ingredients, that are derived from plants or other natural sources.

**biorepository :** The removal of cells or tissues for examination by a pathologist. The pathologist may study the tissue under a microscope or perform other tests on the cells or tissue. There are many different types of biopsy procedures. The most common types include: (1) incisional biopsy, in which only a sample of tissue is removed; (2) excisional biopsy, in which an entire lump or suspicious area is removed; and (3) needle biopsy, in which a sample of tissue or fluid is removed with a needle. When a wide needle is used, the procedure is called a core biopsy. When a thin needle is used, the procedure is called a fine-needle aspiration biopsy.

**BioResponse DIM:** (Other name for: oral microencapsulated diindolylmethane)

**Biosensor:** A system or device that detects a chemical or chemicals in a biological material OR an analytical device, containing biologically active material (i.e. enzyme, antibody receptor etc.) introduced into a receptor part (membrane), contacting with an appropriate transducer element to detect

(selectively and reversibly) the concentration of chemical compound in the sample.

**biospecimen :** Tissue removed from the body and examined under a microscope to determine whether disease is present.

**biosphere:** the blanket of living things that surrounds the substratum of the earth. OR The portion of Earth and its atmosphere that can support life. The part (reservoir) of the global carbon cycle that includes living organisms (plants and animals) and life-derived organic matter (litter, detritus). The terrestrial biosphere includes the living biota (plants and animals) and the litter and soil organic matter on land, and the marine biosphere includes the biota and detritus in the oceans. OR All the living matter on or in the earth, the seas, and the atmosphere.

**biostatistics :** A facility that collects, catalogs, and stores samples of biological material, such as urine, blood, tissue, cells, DNA, RNA, and protein, from humans, animals, or plants for laboratory research. If the samples are from people, medical information may also be stored along with a written consent to use the samples in laboratory studies.

**Biostimulation:** Any process that increases the rates of biological degradation, usually by the addition of nutrients, oxygen, or other electron donors and acceptors so as to increase the number of indigenous microorganisms available for degradation of contaminants.

**Biosynthesis:** The production of a chemical by bacteria or other living organisms.

**biota:** Living organisms (WHO, 1979). OR The animal and plant (fauna and flora) life of a given area.

**Biotechnology:** The industrial use of living organisms or biological methods derived through basic research; examples range from genetic engineering to making cheese or bread

**Biotest-HCIG:** (Other name for: hepatitis C immune globulin intravenous)

**biotherapy :** Samples of material, such as urine, blood, tissue, cells, DNA, RNA, and protein from humans, animals, or plants. Biospecimens are stored in a biorepository and are used for laboratory research. If the samples are from people, medical information may also be stored along with a written consent to use the samples in laboratory studies.

**Biotic potential:** All the factors that contribute to a species

**Biotin:** A vitamin that plays a role in carboxylation and decarboxylation reactions. OR A vitamin; an enzymatic cofactor involved in carboxylation reactions.

**biotin :** The science of collecting and analyzing biologic or health data using statistical methods. Biostatistics may be used to help learn the possible causes of a cancer or how often a cancer occurs in a certain group of people. Also called biometrics and biometry.

**biotransformation:** A process in which a chemical is modified by a living organism (WHO, 1979). OR Chemical modifications done by an organism on chemical compounds.

**Birefringence:** An optical property of all anisotropic crystals (i.e., virtually all drugs) observed as light and dark areas while the sample is rotated on the microscope stage of a polarizing microscope. OR The refraction of light in an anisotropic material (as calcite) in two slightly different directions to form two rays. In optical coatings, birefringence creates a distortion of images seen through the optical piece, as well as a reflection or noticeable purple sheen on the surface of the optical piece. It is usually caused by poor refractive index matching between the coatings and the substrate.

**biricodar dicitrate:** The dicitrate salt of a synthetic pipercolinate derivative with potential chemosensitizing activity. Biricodar binds directly to the plasma membrane drug-efflux pumps P-glycoprotein (Pgp) and multidrug resistance protein 1 (MRP-1) and inhibits their activities, which may result in increased intracellular accumulation and retention of cytotoxic agents.

**birinapant:** A synthetic small molecule and peptidomimetic of second mitochondrial-derived activator of caspases (SMAC) and inhibitor of IAP (Inhibitor of Apoptosis Protein) family proteins, with potential antineoplastic activity. As a SMAC mimetic and IAP antagonist, birinapant binds to and inhibits the activity of IAPs, such as X chromosome-linked IAP (XIAP) and cellular IAPs 1 and 2. Since IAPs shield cancer cells from the apoptosis process, this agent may restore and promote the induction of apoptosis through apoptotic signaling pathways in cancer cells. IAPs are overexpressed by many cancer cell types and suppress apoptosis by binding and inhibiting active caspases-3, -7 and -9 via their baculoviral IAP repeat (BIR) domains.

**Birt-Hogg-Dube syndrome :** The use of drugs, devices, or surgery to prevent pregnancy. There are many different types of birth control. These

include barrier methods to keep sperm from fertilizing the egg, hormone methods, intrauterine devices (IUDs), and surgery to close the fallopian tubes in women or close off the two tubes that carry sperm out of the testicles in men. Also called contraception.

**birth canal :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Biotin helps some enzymes break down substances in the body for energy and helps tissues develop. It is found in yeast, whole milk, egg yolks, and organ meats. Biotin is water-soluble (can dissolve in water) and must be taken in every day. Not enough biotin can cause skin, nerve, and eye disorders. Biotin is present in larger amounts in some cancer tissue than in normal tissue. Attaching biotin to substances used to treat some types of cancer helps them find cancer cells. Also called vitamin H.

**birth control :** A method used by radiologists to interpret and report in a standardized manner the results of mammography, ultrasound, and MRI used in breast cancer screening and diagnosis. Also called Breast Imaging Reporting and Data System.

**birth control pill :** The muscular canal that goes from the uterus to the outside of the body. During birth, the baby passes through the birth canal. Also called vagina.

**bisacodyl:** A synthetic pyridinylmethylene-diacetate ester derivative stimulant laxative, Bisacodyl acts with a parasymphathetic effect directly on mucosal sensory nerves, increasing peristaltic contractions. It is used for occasional constipation, in pre- and postoperative treatment, and in conditions that require facilitation of defecation.

**bisantrene hydrochloride:** The hydrochloride salt of an anthracenyl bishydrazone with antineoplastic activity. Bisantrene intercalates with and disrupts the configuration of DNA, resulting in DNA single-strand breaks, DNA-protein crosslinking, and inhibition of DNA replication. This agent is similar to doxorubicin in activity, but unlike doxorubicin, does not exhibit cardiotoxicity.

**bisects:** divides into two equal parts.

**Bismuth:** Symbol:"Bi" Atomic Number:"83" Atomic Mass: 208.98amu. It is classified as a basic metal and is the most diamagnetic metal in the periodic table. Bismuth is a brittle metal often found with tin and lead. You will find it used in magnets, nuclear reactors, alloys, and even cosmetics.

**bismuth** : A pill used to prevent pregnancy. It contains hormones that block the release of eggs from the ovaries. Most birth control pills include estrogen and progestin. Also called oral contraceptive pill.

**bismuth Bi213 monoclonal antibody M195**: A radioimmunoconjugate consisting of murine monoclonal antibody (M195) and bismuth 213 (Bi213). Monoclonal antibody M195 binds to CD33, a surface antigen expressed by myelogenous leukemia cells. Bi213 is an isotope that emits short-ranged high-energy alpha particles. This radioimmunoconjugate selectively delivers alpha particle-mediated cytotoxicity to leukemic cells, thereby limiting the exposure of normal tissues to ionizing radiation.

**bismuth subsalicylate**: A bismuth salt of salicylic acid. Little absorbed from the gastrointestinal tract, bismuth subsalicylate exerts a local effect on the gastric mucosa, coating it and protecting it from the corrosive effects of acid and pepsin. This agent also has local antimicrobial properties.

**bisoprolol fumarate**: The fumarate salt of a synthetic phenoxy-2-propanol-derived cardioselective beta-1 adrenergic receptor antagonist with antihypertensive and potential cardioprotective activities. Devoid of intrinsic sympathomimetic activity, bisoprolol selectively and competitively binds to and blocks beta-1 adrenergic receptors in the heart, decreasing cardiac contractility and rate, reducing cardiac output, and lowering blood pressure. In addition, this agent may exhibit antihypertensive activity through the inhibition of renin secretion by juxtaglomerular epithelioid (JGE) cells in the kidney, thus inhibiting activation of the renin-angiotensin system (RAS). Bisoprolol has been shown to be cardioprotective in animal models.

**bispecific antibody** : An inherited condition in which benign tumors develop in hair follicles on the head, chest, back, and arms. People who have this disorder may be at increased risk of developing colon or kidney cancer.

**bispecific antibody 2B1**: A monoclonal antibody with potential antineoplastic activity. Specific for both the immunoglobulin G (IgG) receptor CD16 and c-erbB-2, bispecific antibody 2B1 may enhance cellular immune responses against c-erbB-2-positive cells, resulting in increased tumor cell lysis.

**bispecific antibody 4G7xH22**: A bispecific antibody containing a 4G7 hybridoma secreting IgG1 antibody specific for B-lymphocytes and a

monoclonal antibody targeting Fc gamma RI-expressing cells. Check for active clinical trials using this agent.

**bispecific antibody MDX-H210:** A humanized bivalent antibody directed against both cytotoxic effector cells expressing Fc gamma receptor type I (Fc gammaRI, or CD64) and HER2/neu-overexpressing tumor cells with potential antineoplastic activity. Bispecific antibody MDX-H210 was constructed by chemically linking Fab' fragments of the anti-HER2/neu-specific monoclonal antibody 520C9 and the Fab' fragments of the anti-Fc gammaRI-specific monoclonal antibody H22. This agent selectively binds to both HER2/neu-expressing tumor cells and Fc gammaRI-expressing cytotoxic effector cells, which may trigger antibody-dependent cell-mediated cytotoxicity (ADCC) and cell lysis of HER2/neu-expressing tumor cells. While HER2/neu is overexpressed in a variety of epithelial malignancies, expression of Fc gammaRI is primarily found in cytotoxic immune cells, including monocytes, macrophages, and cytokine-activated polymorphonuclear (PMN) cells.

**bispecific antibody MDX447:** An antibody with potential antineoplastic activity. Specific for both the high-affinity immunoglobulin G (IgG) receptor CD64 and epidermal growth factor receptor (EGFR), bispecific antibody MDX447 may enhance cellular immune responses against EGFR positive cells, resulting in increased tumor cell lysis.

**bispecific monoclonal antibody :** A silver-white metal used in medicines and other products. Certain forms of bismuth are used to treat diarrhea, heartburn, and upset stomach. Bismuth is also used with certain other drugs to treat stomach ulcers.

**Bisphenol A (BPA):** Bisphenol A (BPA) is an intermediate for polycarbonate resins and epoxy resins, and is used in various minor applications of coatings. It is manufactured by from phenol and acetone in the presence of an acid catalyst, and typically in solid form. BPA is produced in all regions. Alternative names for BPA include: 4,4'-(1-methylethylidene)bis-phenol, 4,4'-isopropylidenedi-phenol OR A carbon-based synthetic compound used to make certain plastics and epoxy resins.

**Bisphenol-A (4,4'-isopropylidenediphenol):** An intermediate used in the production of epoxy, polycarbonate and phenolic resins. The name was coined after the condensation reaction by which it may be formed two(bis) molecules of phenol with one of acetone (A).

**bisphosphonate** : A type of antibody that can bind to two different antigens at the same time. Bispecific antibodies are being studied in the imaging and treatment of cancer. They are made in the laboratory.

**bisphosphonate-associated osteonecrosis** : An antibody that can bind to two different antigens at the same time. Bispecific monoclonal antibodies are being studied in the imaging and treatment of cancer. They are made in the laboratory.

**Bittiness**: A description applied to paint coatings that exhibit bits of skin or other extraneous matter.

**bitumen**: Dark, naturally occurring solid or semisolid substances composed mainly of a mixture of hydrocarbons with little oxygen, nitrogen, or sulfur.

**bituminous coal**: a common form of coal that is soft and black.

**Bituminous paint**: Dark-coloured paints or coatings based on natural bitumens dissolved in organic solvents. They can include paints containing petroleum asphalt but are not generally used to those based completely upon coal-tar.

**bivalent HPV16/18 therapeutic cervical cancer vaccine**: A bivalent human papillomavirus (HPV) therapeutic vaccine containing recombinant inactivated adenylate cyclase (CyaA) from *Bordetella pertussis* carrying a sequence encoding the E7 antigen of both HPV16 and 18, with potential immunostimulatory and antiviral properties. Upon administration of bivalent HPV16/18 therapeutic cervical cancer vaccine, the expressed proteins may activate cell-mediated immunity and induce both cytotoxic CD8<sup>+</sup> T cells and CD4<sup>+</sup> helper T cells against the target antigens HPV16-E7 and HPV18-E7, which leads to HPV viral clearance. Adenylate cyclase is a virulence factor of *Bordetella pertussis*. Its ability to bind to CD11b-expressing dendritic cells and deliver antigens directly to the cytosol allows the activation and induction of T-cell immunity. CyaA may also induce a B cell response.

**bivalent vaccine** : A drug or substance used to treat hypercalcemia (abnormally high blood calcium) and bone pain caused by some types of cancer. Forms of bisphosphonates are also used to treat osteoporosis and for bone imaging. Bisphosphonates inhibit a type of bone cell that breaks down bone. Also called diphosphonate.

**bizelesin:** A synthetic cyclopropylpyrroloindole antineoplastic antibiotic. Bizelesin binds to the minor groove of DNA and induces interstrand cross-linking of DNA, thereby inhibiting DNA replication and RNA synthesis. Bizelesin also enhances p53 and p21 induction and triggers G2/M cell-cycle arrest, resulting in cell senescence without apoptosis. OR The necrosis (death) of bone tissue caused by treatment with a bisphosphonate (a drug or substance used to treat osteoporosis, bone pain caused by some types of cancer, and high blood calcium). It commonly occurs in the jaw bones. There may be pain, swelling and infection in the areas of necrosis. Also called BON.

**BL22 immunotoxin:** A recombinant immunotoxin consisting of the Fv portion of the anti-CD22 antibody RFB4 fused to a fragment of Pseudomonas exotoxin-A with potential antineoplastic activity. BL22 immunotoxin binds to CD22, an antigen expressed in B-cell malignancies, thereby delivering its toxin directly to tumor cells. The toxin moiety induces caspase-mediated apoptosis of tumor cells via a mechanism involving mitochondrial damage; it also blocks translational elongation via binding to elongation factor-2 in eukaryotic cells. Check for active clinical trials using this agent. or A vaccine that works by stimulating an immune response against two different antigens, such as two different viruses or other microorganisms. For example, Cervarix is a bivalent vaccine that helps protect the body against infection with two different types of human papillomaviruses (HPV).

**black cohosh:** A triterpene-containing herb isolated from the roots and rhizomes of the plant Cimicifuga racemosa (also known as Actaea racemosa). While the mechanism of action of black cohosh is not completely understood, it appears to act as a selective estrogen receptor modulator. In vitro, this preparation has been shown to induce cell cycle arrest and caspase-dependent apoptosis of estrogen-sensitive breast cancer cells. OR An anticancer drug that belongs to the family of drugs called alkylating agents. It is also an antitumor antibiotic.

**black raspberry nectar:** A concentrated fruit juice containing black raspberries, with potential antioxidant, pro-apoptotic, anti-angiogenic and chemopreventive activities. In addition to vitamins, minerals and phytosterols, black raspberries are rich in phenolic acids, such as gallic acid, ellagic acid, anthocyanidins, and flavonoids. Upon oral administration,

the phytochemicals in the black raspberry nectar inhibit the activation of several signal transduction pathways involved in carcinogenesis and the expression of downstream target genes that are upregulated in a variety of cancer cell types. In addition, the phytochemicals in black raspberry may protect the oral microbiome and may enhance the bacterial defense against pathogens.

**black smoker:** a submarine hot spring that results from high heat flows and convection currents at divergent plate boundaries and that deposits solid masses of metallic minerals.

**black snakeroot :** A bacterial toxic substance linked to an antibody that attaches to cancer cells and kills them. It belongs to the family of drugs called bacterial immunotoxins.

**Black Specks:** A specific kind of inclusion/contamination often associated with heat-degraded materials.

**Black Specs :** Dark colored wear debris from the system, product or belt that contaminates the product or product appearance.

**black tea:** Black tea is an infusion of dried leaves from plants of the Theaceae family. Due to the alkaloid caffeine, its main effect is stimulation. Black teas also contain other phytochemicals such as flavonoid and flavonoid-related compounds with strong antioxidant effects. They also attenuate atherosclerotic inflammation, reduce thrombosis, promote normal endothelial function, and block expression of cellular adhesion molecules. Black tea may reduce the risk of cancer, heart diseases, infectious diseases, and degenerative diseases.

**Blackfan–Diamond anemia :** An eastern North American perennial herb. A substance obtained from the root of the plant has been used in some cultures to treat a number of medical problems. It is being studied in the treatment of hot flashes and other symptoms of menopause. The scientific name is *Cimicifuga racemosa*. Also called black snakeroot, bugbane, bugwort, and rattlesnake root.

**bladder :** An eastern North American perennial herb. A substance obtained from the root of the plant has been used in some cultures to treat a number of medical problems. It is being studied in the treatment of hot flashes and other symptoms of menopause. The scientific name is *Cimicifuga racemosa*. Also called black cohosh, bugbane, bugwort, and rattlesnake root.

**bladder cancer :** A very rare disorder in which the bone marrow doesn't make enough red blood cells. It is usually seen in the first year of life. Patients may have deformed thumbs and other physical problems. They also have an increased risk of leukemia and sarcoma, especially osteosarcoma (bone cancer). Patients with Blackfan–Diamond anemia may have a mutation (change) in one of the genes that make proteins found in the cell's ribosomes. Also called congenital hypoplastic anemia, congenital pure red cell aplasia, DBA, Diamond-Blackfan anemia, erythrocytopenia, and inherited erythroblastopenia.

**Bladed Habit:** This is a crystal shape that resembles a knife blade because it has very thin layers. You may also think of a messy deck of cards for this example.

**blast :** The organ that stores urine.

**blast crisis :** Cancer that forms in tissues of the bladder (the organ that stores urine). Most bladder cancers are transitional cell carcinomas (cancer that begins in cells that normally make up the inner lining of the bladder). Other types include squamous cell carcinoma (cancer that begins in thin, flat cells) and adenocarcinoma (cancer that begins in cells that make and release mucus and other fluids). The cells that form squamous cell carcinoma and adenocarcinoma develop in the inner lining of the bladder as a result of chronic irritation and inflammation.

**Blast Finishing :** The process of removing flash from molded objects and/or dulling their surfaces, by impinging upon them with sufficient force to remove the flash.

**blastic phase chronic myelogenous leukemia :** An immature blood cell.

**Blasting:** A method of pressure cleaning used to remove rust, millscale or paint coatings in poor condition using grit or water under pressure.

**blastocyst:** a hollow ball of cells resulting after the morula has passed through the Fallopian tubes and enters the female uterus.

**Blastoderm:** The stage in embryogenesis when a unicellular layer at the surface surrounds the yolk mass.

**bleach:** A dilute solution of sodium hypochlorite or calcium hypochlorite which kills bacteria and destroys colored organic materials by oxidizing them.

**Bleaching:** Loss of colour usually caused by exposure to sunlight.

**Bleaching chemical :** A chemical that removes colors and whitens, e.g., fiber, often via oxidation or reduction. Common oxidizing bleaching chemicals are hydrogen peroxide, ozone, peracetic acid, chlorine dioxide and sodium chlorate. Common reducing bleaching chemicals are sodium dithionite and sodium borohydride.

**Bleed:** To give up color when in contact with water or a solvent; undesired movement of certain materials in a plastic (e.g. plasticizers in vinyl) to the surface of the finished article or into an adjacent material. Also called Migration. OR (1) To give up color when in contact with water or a solvent. (2) Undesired movement of certain materials in a plastic (e.g. plasticizers in vinyl) to the surface of the finished article or into an adjacent material. Also called "Migration." (3) An escape passage at the parting line of a mold, like a vent but deeper, which allows material to escape or bleed out. OR (1) To give up color when in contact with water or a solvent. (2) Undesired movement of certain materials in a plastic (e.g. plasticizers in vinyl) to the surface of the finished article or into an adjacent material. Also called "Migration". (3) An escape passage at the parting line of a mold, like a vent but deeper, which allows material to escape or bleed out.

**Bleeding:** Soluble matter leeching out from a substrate or previous coating, causing discolouration of fresh paint, e.g. bitumen bleed or nicotine staining. OR Common causes of bleeding from the surface below include old wallcoverings, bituminous paint and creosoted surfaces, so these should be completely removed before painting. If this is not possible apply one or, in severe cases, two coats of Dulux Aluminium Wood Primer. New creosote or bituminous materials must be aged for at least 12 months before painting. For staining by metallic inks in wallcoverings or felt tip pens, the surface should be touched in locally with Dulux Alkali Resisting Primer.

**BLEEDING:** Undercoat staining through the topcoat.

**Blemish:** A mark, deformity or injury which impairs appearance

**Blend:** A mixture of two or more plastics. OR The mixing of polymers with other polymers, copolymers, or additives to achieve desired physical properties. OR The mixing of polymers with other polymers or copolymers, usually where the mixture results in the desired physical properties. OR An intimate combination of two or more polymer chains having different features, that are not bonded to each other. OR The mixing of polymer plastics with other polymer or copolymers.

**Blenoxane :** (Other name for: bleomycin sulfate) OR A phase of chronic myelogenous leukemia in which tiredness, fever, and an enlarged spleen occur during the blastic phase, when more than 30% of the cells in the blood or bone marrow are blast cells (immature blood cells).

**bleomycin :** A phase of chronic myelogenous leukemia in which 20% or more of the cells in the blood or bone marrow are blast cells (immature blood cells). When tiredness, fever, and an enlarged spleen occur during the blastic phase, it is called blast crisis.

**bleomycin sulfate:** A mixture of the sulfate salts of basic glycopeptide antineoplastic antibiotics isolated from *Streptomyces verticillus*. Bleomycin sulfate forms complexes with iron that reduce molecular oxygen to superoxide and hydroxyl radicals which cause single- and double-stranded breaks in DNA; these reactive oxygen species also induce lipid peroxidation, carbohydrate oxidation, and alterations in prostaglandin synthesis and degradation. OR A drug that is used to treat many types of cancer and is being studied in the treatment of other types of cancer. It comes from the bacterium *Streptomyces verticillus*. Bleomycin damages DNA and may kill cancer cells. It is a type of antineoplastic antibiotic. Also called bleomycin sulfate.

**blessed thistle :** The active ingredient in a drug that is used to treat many types of cancer and is being studied in the treatment of other types of cancer. It comes from the bacterium *Streptomyces verticillus*. Bleomycin damages DNA and may kill rapidly growing cancer cells. It is a type of antineoplastic antibiotic.

**BLI850:** An oral laxative containing sodium sulfate, potassium sulfate, magnesium sulfate and sucralose. Oral sulfate-based laxative BLI850 exhibits osmotic activity, attracting water into the intestinal tract from tissues and increasing the volume and the water content of the stool; gastrointestinal motility is stimulated, resulting in defecation. Sucralose, an artificial sweetener, may contribute to the laxative effect.

**blinatumomab:** A recombinant, single-chain, anti-CD19/anti-CD3 bispecific monoclonal antibody with potential immunostimulating and antineoplastic activities. Blinatumomab possesses two antigen-recognition sites, one for the CD3 complex, a group of T cell surface glycoproteins that complex with the T cell receptor (TCR), and one for CD19, a tumor-associated antigen (TAA) overexpressed on the surface of B cells. This

bispecific monoclonal antibody brings CD19-expressing tumor B-cells and cytotoxic T lymphocytes (CTLs) and helper T lymphocytes (HTLs) together, which may result in the CTL- and HTL-mediated cell death of CD19-expressing B-lymphocytes. or A drug that is used to treat many types of cancer and is being studied in the treatment of other types of cancer. It comes from the bacterium *Streptomyces verticillus*. Bleomycin sulfate damages DNA and may kill cancer cells. It is a type of antineoplastic antibiotic. Also called Blenoxane.

**Blincyto** : (Other name for: blinatumomab) OR A plant whose leaves, stems, and flowers have been used in some cultures to treat certain medical problems. Blessed thistle may have anti-inflammatory and anticancer effects. The scientific name is *Cnicus benedictus*. Also called cardin, holy thistle, spotted thistle, and St. Benedict's thistle.

**blinded study** : A drug used to treat B-cell acute lymphoblastic leukemia that is Philadelphia chromosome negative and has come back or has not gotten better with other anticancer treatment. It is also being studied in the treatment of other types of cancer. Blinatumomab binds to a protein called CD19, which is found on most B cells (a type of white blood cell) and some types of leukemia cells. It also binds to a protein called CD3, which is found on T cells (a type of white blood cell). This may help the immune system kill cancer cells. Blinatumomab is a type of monoclonal antibody. Also called Blincyto.

**Blister**: Pre-formed custom plastic packaging used for consumer goods. The “formed” cavity or pocket contains the product and the “lidding” seals the product in the package. OR An imperfection on a plastic material—normally a bubble or pocket of air. OR An imperfection on the surface of a plastic article caused by a pocket of air or gas beneath the surface. OR An imperfection on the surface of a plastic article caused by a pocket of air or gas beneath the surface. OR A raised area on the surface of a molding caused by the pressure of gases inside it on its incompletely hardened surface. OR A raised area on the surface of a molding caused by the pressure of gases inside it on its incompletely hardened surface. OR As the name says, this is a part defect which appears as a small bubble or blister on the surface of a part and it generally created by gas or air bubbles. OR An imperfection on the surface of plastic extrusions or other plastic profiles caused by a pocket of air or gas beneath the surface. OR A raised area on

the surface of a molding caused by the pressure of gases inside it on its incompletely hardened surface. OR An imperfection on the surface of a plastic article caused by a pocket of air or gas beneath the surface. OR Undesirable raised areas in a moulded part caused by local internal pressure, usually due to trapped air, volatile reaction by-products or water entering by osmosis. OR This is a part defect which appears as a small bubble or blister on the surface of a part and it is generally created by gas or air bubbles. OR undesirable rounded elevation of the surface of a plastic, whose boundaries may be either more or less sharply defined, somewhat resembling in shape a blister on the human skin. A blister may burst and become flat. OR A raised spot on the seal's surface created by an internal void, or air-filled pocket

**blister :** A drug used to treat B-cell acute lymphoblastic leukemia that is Philadelphia chromosome negative and has come back or has not gotten better with other anticancer treatment. It is also being studied in the treatment of other types of cancer. Blincyto binds to a protein called CD19, which is found on most B cells (a type of white blood cell) and some types of leukemia cells. It also binds to a protein called CD3, which is found on T cells (a type of white blood cell). This may help the immune system kill cancer cells. Blincyto is a type of monoclonal antibody. Also called blinatumomab.

**Blistering:** Formation of dome-shaped projections in paints or varnish films resulting from local loss of adhesion and lifting of the film from the underlying surface. OR A 'swelling' of the paint film into the form of blisters often caused by resinous exudation from timber or moisture in the substrate. OR The formation of bubbles or pimples on the painted surface caused by moisture in the wood by painting before the previous coat has dried thoroughly or by excessive heat or grease under the paint.

**Blistering of paint on plaster:** Blistering can occur on plaster if you overcoat solvent-based paints such as gloss or eggshell with a conventional emulsion in an area that suffers from high levels of condensation. To resolve the problem, scrape back the blistered paint until you have a firm edge, feather lightly with abrasive paper and dust off. Now spot, prime and bring forward any bare areas with Dulux Primer Sealer, using Dulux Alkali Resisting Primer on friable surfaces. Finally, repaint the surface using a

thinned first coat of water-based Dulux Trade Quick Drying Eggshell followed by one or two full coats.

**bloating** : A type of study in which the patients (single-blinded) or the patients and their doctors (double-blinded) do not know which drug or treatment is being given. The opposite of a blinded study is an open label study.

**Bloch-decay experiment:** A solid-state NMR experiment where a single pulse on the observed nucleus is followed immediately by acquisition with high-power proton decoupling and usually magic-angle spinning. This technique accentuates highly mobile carbon nuclei.

**block:** A region of the periodic table that corresponds to the type of subshell (s, p, d, or f) being filled during the Aufbau construction of electron configurations.

**Block Copolymer:** An essentially linear copolymer in which there are repeated sequences of polymeric segments of different chemical structure. OR A block copolymer is made when one of the two monomers polymerized together to form a polymer exists as a long section or block in the polymer chain.

**Blocking:** An undesirable adhesion between layers of film or sheeting which may develop during processing or storage. OR An undesirable adhesion between layers of film or sheeting which may have developed during processing, or storage. Blocking can be prevented by adding antiblock agents to the resin.

**Blocking & Anticaking Agents:** These additives are used to prevent the adhesion of two touching layers of film during fabrication and storage. OR These additives are used to prevent the adhesion and agglomeration of ingredients within a resin compound

**blood** : A fluid-filled sac in the outer layer of skin. It can be caused by rubbing, heat, or diseases of the skin. Also called skin vesicle.

**blood alcohol content:** The amount of alcohol in a person's bloodstream measured in percentages. Abbreviated BAL or BAC.

**blood cancer** : A swelling or feeling of fullness in the abdomen. Bloating is usually the result of gas in the intestines and can be caused by many things, including overeating, lactose intolerance, and constipation. Bloating can also be a side effect of cancer or cancer treatment.

**blood cell count :** A tissue with red blood cells, white blood cells, platelets, and other substances suspended in fluid called plasma. Blood takes oxygen and nutrients to the tissues, and carries away wastes.

**blood cell count with differential :** Cancer that begins in blood-forming tissue, such as the bone marrow, or in the cells of the immune system. Examples of blood cancer are leukemia, lymphoma, and multiple myeloma. Also called hematologic cancer.

**blood chemistry study :** A measure of the number of red blood cells, white blood cells, and platelets in the blood. The amount of hemoglobin (substance in the blood that carries oxygen) and the hematocrit (the amount of whole blood that is made up of red blood cells) are also measured. A blood cell count is used to help diagnose and monitor many conditions. Also called CBC, complete blood count, and full blood count.

**blood chemistry test :** A measure of the number of red blood cells, white blood cells, and platelets in the blood, including the different types of white blood cells (neutrophils, lymphocytes, monocytes, basophils, and eosinophils). The amount of hemoglobin (substance in the blood that carries oxygen) and the hematocrit (the amount of whole blood that is made up of red blood cells) are also measured. A blood cell count with differential is used to help diagnose and monitor many different conditions, including anemia and infection. Also called CBC with differential.

**blood clot :** A test done on a sample of blood to measure the amount of certain substances in the body. These substances include electrolytes (such as sodium, potassium, and chloride), fats, proteins, glucose (sugar), and enzymes. Blood chemistry studies give important information about how well a person's kidneys, liver, and other organs are working. An abnormal amount of a substance in the blood can be a sign of disease or side effect of treatment. Blood chemistry studies are used to help diagnose and monitor many conditions before, during, and after treatment. Also called blood chemistry test.

**blood clotting:** the process in which platelets adhere to the walls of damaged blood vessels, setting off a series of processes leading to the formation of a patchy mesh at the injury site.

**blood culture :** A test done on a sample of blood to measure the amount of certain substances in the body. These substances include electrolytes (such as sodium, potassium, and chloride), fats, proteins, glucose (sugar), and

enzymes. Blood chemistry tests give important information about how well a person's kidneys, liver, and other organs are working. An abnormal amount of a substance in the blood can be a sign of disease or side effect of treatment. Blood chemistry tests are used to help diagnose and monitor many conditions before, during, and after treatment. Also called blood chemistry study.

**blood draw :** A mass of blood that forms when blood platelets, proteins, and cells stick together. When a blood clot is attached to the wall of a blood vessel, it is called a thrombus. When it moves through the bloodstream and blocks the flow of blood in another part of the body, it is called an embolus.

**blood poisoning :** A laboratory test to check for bacteria, yeast, fungi, or other microorganisms in the blood. Blood cultures can help identify the type of microorganism that is causing an infection. This helps determine the best treatment. They may be used to help diagnose septicemia (a serious blood infection) and other conditions.

**blood pressure :** A procedure in which a needle is used to take blood from a vein, usually for laboratory testing. A blood draw may also be done to remove extra red blood cells from the blood, to treat certain blood disorders. Also called phlebotomy and venipuncture.

**blood stasis :** Disease caused by the spread of bacteria and their toxins in the bloodstream. Also called septicemia and toxemia.

**blood stem cell :** The force of circulating blood on the walls of the arteries. Blood pressure is taken using two measurements: systolic (measured when the heart beats, when blood pressure is at its highest) and diastolic (measured between heart beats, when blood pressure is at its lowest). Blood pressure is written with the systolic blood pressure first, followed by the diastolic blood pressure (for example 120/80).

**blood sugar :** In traditional Chinese medicine, a condition described as slowing or pooling of blood, which may cause pain or other symptoms.

**blood test :** An immature cell that can develop into all types of blood cells, including white blood cells, red blood cells, and platelets. Blood stem cells are found in the peripheral blood and the bone marrow. Also called hematopoietic stem cell.

**blood thinner :** Glucose (a type of sugar) found in the blood. Also called glycemia.

**blood transfusion :** A test done on a sample of blood to measure the amount of certain substances in the blood or to count different types of blood cells. Blood tests may be done to look for signs of disease or agents that cause disease, to check for antibodies or tumor markers, or to see how well treatments are working.

**blood urea nitrogen :** A substance that is used to prevent and treat blood clots in blood vessels and the heart. Also called anticoagulant.

**blood vessel :** A procedure in which whole blood or parts of blood are put into a patient's bloodstream through a vein. The blood may be donated by another person or it may have been taken from the patient and stored until needed. Also called transfusion.

**Blood-Brain Barrier:** A highly selective permeability barrier that prevents many compounds from reaching the brain.

**blood-brain barrier :** Nitrogen in the blood that comes from urea (a substance formed by the breakdown of protein in the liver). The kidneys filter urea out of the blood and into the urine. A high level of urea nitrogen in the blood may be a sign of a kidney problem. Also called BUN and urea nitrogen.

**blood-brain barrier disruption :** A tube through which the blood circulates in the body. Blood vessels include a network of arteries, arterioles, capillaries, venules, and veins.

**Bloom:** A visible exudation or efflorescence on the surface of a material.  
OR Migration of additives such as slip to the surface of the film over time. A thin, greasy film on the surface of a plastic film or part usually caused by the exudation of an additive. Slip additives are designed to migrate or bloom to the surface of films. OR A visible exudation or efflorescence on the surface of a plastic. Bloom can be caused by lubricant, plasticizer, etc. OR Also known as migration – an undesirable greasy cloud effect or white powdery deposit on the surface of a plastic product usually caused by the exudation of an additive. OR The residue that in time, comes out of plastics that contain plasticizers, stabilizers or lubricants. Sometimes called a “haze.” OR A visible exudation or efflorescence on the surface of a plastic. Bloom can be caused by lubricant, plasticizer, etc. OR An undesirable cloudy effect or whitish powdery deposit on the surface of a plastic article or to the surrounding environment caused by the exudation of an ingredient

such as a lubricant, stabilizer pigment, plasticizer, or other non-bonded component.

**Bloom syndrome :** A network of blood vessels and tissue that is made up of closely spaced cells and helps keep harmful substances from reaching the brain. The blood-brain barrier lets some substances, such as water, oxygen, carbon dioxide, and general anesthetics, pass into the brain. It also keeps out bacteria and other substances, such as many anticancer drugs. Also called BBB.

**Bloom-Torre-Machacek syndrome :** The use of drugs to create openings between cells in the blood-brain barrier. The blood-brain barrier is a protective network of blood vessels and tissue that protects the brain from harmful substances, but can also prevent anticancer drugs from reaching the brain. Once the barrier is opened, anticancer drugs may be infused into an artery that goes to the brain, in order to treat brain tumors. Also called BBBD.

**Blooming:** A greyish milky-coloured 'haze' appearing on the surface of the paint film usually caused by moisture attack during drying. OR This greyish, milky-coloured "haze"™ on the surface of the paint film is usually caused by moisture attack during drying. Thoroughly clean down the surface to remove all dirt, grease and surface contaminants, then rub down with a suitable abrasive and dust off prior to re-applying paint.

**Blow forming:** A manufacturing process by which hollow plastic parts are formed. It is a process used to produce hollow objects from thermoplastic.

**BLOW HOLE:** Blow-outs or loss of internal air from a blown film bubble usually due to a rupture caused by fisheyes, gels, or contamination.

**Blow Molding:** A method of fabrication in which a warm plastic parison (hollow tube) is placed between the two halves of a mold (cavity) and, by using air pressure, the parison is forced to assume the shape of the cavity. The air pressure is introduced through the inside of the parison. The air pressure forces the plastic against the surface of the mold that defines the shape of the container. OR Method of fabrication in which a warm plastic parison (hollow tube), is placed between the two halves of a mold cavity and forced to assume the shape of that mold cavity by use of air pressure. OR A method of fabrication in which a parison (hollow tube) is forced into the shape of the mold cavity by internal air pressure. OR A method of fabrication of thermoplastic materials in which a parison (hollow tube) is

forced into the shape of the mold cavity by internal air pressure. BLUEING OFF — The checking of the accuracy of mold cutoff surfaces by putting a thin coating of Prussian Blue on one-half and checking the blue transfer to the other half. OR A process for the production of hollow thermoplastic shapes. This method of fabricating involves a plastic parison (hollow tube) placed between two halves of a mold (cavity) and by using air pressure the parison is forced to take the shape of the cavity. The air pressure is introduced through the inside of the parison. The air pressure forces the plastic against the surface of the mold that defines the shape of the container. OR The process follows the basic steps found in glass blowing. A parison (heated plastic mass, generally a tube) is inflated by air. The air pushes the plastic against the mold cavity to form the desired shape. Once cooled, the plastic is ejected. This method is used to make plastic bottles. OR A method of fabrication of thermoplastic materials in which a parison (hollow tube) is forced into the shape of the mold cavity by internal air pressure. BLUEING OFF — The checking of the accuracy of mold cutoff surfaces by putting a thin coating of Prussian Blue on one-half and checking the blue transfer to the other half. OR Method of fabrication in which a warm plastic hollow tube is placed between the two halves of a mold cavity and forced to assume the shape of that mold cavity by use of internal pressure. This process forms hollow articles such as bottles, tanks, etc. OR Method of fabrication in which a warm plastic parison (hollow tube), is placed between the two halves of a mold cavity and forced to assume the shape of that mold cavity by use of air pressure. OR It is also known as blow forming. It is a manufacturing process whereby hollow plastic parts are formed, e.g. bottles, tanks. In general, there are three main types extrusion blow moulding, injection blow moulding, and stretch blow moulding. D W Plastics does not manufacture blow mouldings. It specialises in plastic extrusions.

**Blow Needles, Extrusion Blow Molding :** Device used to pierce and inflate the parison, usually actuated by an air cylinder.

**Blow Pressure:** The air pressure used to form a hollow part by blow molding. OR The pressure required to form the parison or preform into the shape of the mold cavity, in a blow molding operation.

**Blow Pressure, Extrusion Blow Molding:** Dimension of bottle divided by the parison diameter. Bottles usually have many ratios. However, only the

maximum ratio usually needs to be considered.

**Blow Rate:** The speed at which the air enters the parison during the blow loading cycle.

**Blow up Ratio (BUR):** Term used in blown film extrusion that is the ratio of the diameter of the bubble to the diameter of the die.

**BLOW-UP RATIO:** The ratio of the final tube diameter to the die diameter in blown film extrusion. OR In blown film extrusion, the ratio of the final tube diameter to the die diameter.

**blowdown:** removal of liquids and/or solids from a process vessel or storage vessel or line by the use of pressure; often used to remove materials which, in high concentrations, could cause damage to the vessel or line, or exceed limits established by best engineering practices.

**Blowing & Foaming Agents:** Upon addition to plastics or rubbers and then heating, this chemical generates inert gases which results in the resin assuming a cellular structure. OR Additives for plastics or rubbers that generate inert gases within the resinmatrix when heated. The resulting part construction will contain a cellular structure.

**Blowmolding:** A process for forming hollow containers in which the plastic is placed inside a mold and forced outward via air pressure to assume the shape of that mold cavity.

**Blown Film:** Extrusion of a continuous thin walled tube of plastic through a round die and inflating it to form a bubble. The bubble is then collapsed flat between rollers and slit into layflat film which is wound onto rolls. OR Process involves extruding a continuous thin-walled tube of plastic and inflating it immediately after it leaves the die. The pressure is such that the tube stretches, increasing its diameter and reducing its wall thickness to desired gauge. Air is trapped within the blow tube (bubble) between the die and collapsing rolls which convert it to lay-flat film to facilitate winding onto a roll. OR It is a process that involves extruding a continuous thin walled tube of plastic material, and inflating the material immediately after the plastic leaves the die. Air is trapped within the blow tube (bubble) between the die and collapsing rolls which converts it to lay flat plastic film to facilitate winding onto a roll. D W Plastics only specialises in plastic extrusions and does not manufacture blown film. OR Plastic films produced from synthetic resins (such as polyethylene) by the blown process. In this process, the molten resin is extruded through a circular die into a tube. This

tube is expanded ("blown") by internal air pressure into a larger bubble with a much reduced wall thickness and cooled with external air quenching.

**BLOWN FILM TOWER:** Apparatus for handling film in blown film extrusion between the extruder die and take-up equipment. The blown film -tube passes through the tower where it is cooled, sized, and gauged. Nip rolls are located at the top where the inflated tube is collapsed prior to winding.

**Blown Tubing:** A thermoplastic film which is produced by extruding a tube, applying a slight internal pressure to the tube to expand it while still molten and subsequent cooling to set the tube. The tube is then flattened through guides and wound up flat on rolls. The size of blown tubing is determined by the flat width in inches as wound rather than by the diameter as in the case of rigid types of tubing.

**blowoff:** a controlled outlet on a pipeline, tank, or conduit which is used to discharge water or accumulations of material carried by the water.

**blowout:** a bowl-like depression caused by deflation.

**Blowup Ratio:** In blow molding, the ratio of the mold cavity diameter to the parison diameter. In blown tubing (film), the ratio of the final tube diameter (before gusseting, if any) to the original die diameter.

**blue citrus-based herbal capsule:** An oral capsule formulation of a traditional Chinese herbal medicine with potential analgesic activity. In addition to other herbs, seeds and fruits, blue citrus-based herbal capsule contains the Chinese herb blue citrus (qing pi), which is produced from the dried immature green peel of the tangerine *Citrus reticulata* Blanco. Blue citrus contains large amounts of limonene, citral and synephrine, which may attribute to its analgesic activity. However, due to the complexity of its chemical components, the exact mechanism of action of this agent remains to be determined.

**blue shift:** apparent shortening of starlight as it moves toward you (Doppler).

**blue-green algae:** cyanobacteria; members of the kingdom Monera that are photosynthetic and are found in the soil and in freshwater or saltwater environments.

**blueberry powder supplement:** An orally available, dietary supplement consisting of lyophilized blueberry powder, with antioxidant and potential

chemopreventive and chemosensitizing activity. In addition to vitamins and minerals, blueberries are rich in phytonutrients, such as proanthocyanidins, anthocyanins (e.g. malvidin, delphinidin, pelargonidin, cyanidin, petunidin, and peonidin), hydroxycinnamic acids, hydroxybenzoic acids, pterostilbene, resveratrol, and flavonols (e.g. kaempferol, quercetin and myricetin).

Although the exact mechanism of action through which blueberries may exert their anti-tumor effect has yet to be fully elucidated, the effects of blueberry powder on cancer cells may be attributable to the phytonutrient's antioxidant and pro-apoptotic activities.

**Blush:** A cosmetic imperfection that is created where the resin is injected into the part, usually visible as a blotchy discoloration on the finished part at the site of the gate.

**BLUSHING:** A gloss film turning flat or a clear lacquer turning white, usually caused by moisture condensation during the drying process.

**Blushing:** The tendency of a plastic article to turn white or chalky in areas that are highly stressed. OR The tendency of plastic products to turn white or chalky in areas where pressure is applied.

**Blymphocyte:** Precursors to plasma cells, which are antibody-secreting cells.

**BLYP:** DFT using the Becke exchange functional and the Lee-Yang-Parr correlation functional.

**BMC:** See bulk moulding compound.

**BMD:** A rare, inherited disorder marked by height that is shorter than average, a narrow face with redness and a rash, a high-pitched voice, and fertility problems. Patients with this disorder have an increased risk of cancer, especially leukemia and osteosarcoma (bone cancer). Bloom syndrome is caused by changes in a protein that normally helps cells make copies of the DNA. Changes in this protein cause many breaks, rearrangements, and other mutations in the DNA. It is a type of autosomal recessive genetic disease. Also called Bloom-Torre-Machacek syndrome.

**BMD scan :** A rare, inherited disorder marked by height that is shorter than average, a narrow face with redness and a rash, a high-pitched voice, and fertility problems. Patients with this disorder have an increased risk of cancer, especially leukemia and osteosarcoma (bone cancer). Bloom-Torre-Machacek syndrome is caused by changes in a protein that normally helps

cells make copies of the DNA. Changes in this protein cause many breaks, rearrangements, and other mutations in the DNA. It is a type of autosomal recessive genetic disease. Also called Bloom syndrome.

**BMI:** A measure of the amount of minerals (mostly calcium and phosphorous) contained in a certain volume of bone. BMD measurements are used to diagnose osteoporosis (a condition marked by decreased bone mass), to see how well osteoporosis treatments are working, and to predict how likely the bones are to break. Low BMD can occur in patients treated for cancer. Also called bone density, bone mass, and bone mineral density.

**BMI1 inhibitor PTC596:** An orally active inhibitor of the polycomb ring finger oncogene BMI1 (B-cell-specific Moloney murine leukemia virus integration site 1), with potential antineoplastic activity. Upon oral administration, BMI1 inhibitor PTC596 targets BMI1 expressed by both tumor cells and cancer stem cells (CSCs), and induces hyperphosphorylation of BMI1, leading to its degradation. This inhibits BMI1-mediated signal transduction pathways and results in a reduction of proliferation of BMI1-expressing tumor cells. BMI1, a key protein in the polycomb repressive complex 1 (PRC1), is overexpressed in certain tumor cell types, and plays a key role in CSC survival, proliferation and resistance to chemotherapeutics; its expression is associated with increased tumor aggressiveness and a poor prognosis.

**BMS-182751:** An imaging test that measures bone density (the amount of bone mineral contained in a certain volume of bone) by passing x-rays with two different energy levels through the bone. It is used to diagnose osteoporosis (decrease in bone mass and density). Also called bone mineral density scan, DEXA, DEXA scan, dual energy x-ray absorptiometric scan, dual x-ray absorptiometry, and DXA.

**BMS-184476:** Body mass index. A measure that relates body weight to height. BMI is sometimes used to measure total body fat and whether a person is a healthy weight. Excess body fat is linked to an increased risk of some diseases including heart disease and some cancers. Also called body mass index.

**BMS-188797:** A substance being studied in the treatment of prostate and other types of cancer. It contains the metal platinum and may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called JM 216 and satraplatin.

**BMS-214662:** A nonsedating benzodiazepine derivative with potential antineoplastic activity. Farnesyltransferase inhibitor BMS-214662 inhibits the enzyme farnesyltransferase and the post-translational farnesylation of number of proteins involved in signal transduction, which may result in the inhibition of Ras function and apoptosis in susceptible tumor cells. This agent may reverse the malignant phenotype of H-Ras-transformed cells and has been shown to be active against tumor cells with and without Ras mutations.

**BMS-214662:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called mitotic inhibitors.

**BMS-247550:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called taxane analogs.

**BMS-275291:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called farnesyltransferase inhibitors.

**BMS-354825:** A drug used to treat metastatic or locally advanced breast cancer that has not improved after treatment with certain other anticancer drugs. It is also being studied in the treatment of other types of cancer. BMS-247550 stops the growth of tumor cells by blocking cell division. It is a type of epothilone analog. Also called ixabepilone and Ixempra.

**BMS-599626:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called matrix metalloproteinase inhibitors (MMPiS).

**BNCT:** A drug used to treat certain types of chronic myeloid leukemia and acute lymphoblastic leukemia. BMS-354825 is also being studied in the treatment of certain other blood diseases and types of cancer. BMS-354825 binds to and blocks BCR-ABL and other proteins that help cancer cells grow. It is a type of tyrosine kinase inhibitor. Also called dasatinib and Sprycel.

**boanmycin hydrochloride:** The hydrochloride salt form of boanmycin (aka bleomycin A6), a component of the antibiotic bleomycin produced by *Streptomyces* species, with potential antineoplastic activity. Upon administration, boanmycin forms complexes with iron that reduce molecular oxygen to superoxide and hydroxyl radicals. This causes single- and double-stranded DNA breaks which eventually leads to cell death. Compared to bleomycin, boanmycin appears to have a more favorable toxicity profile.

**board certified oncology pharmacy specialist :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called protein tyrosine kinase inhibitors.

**board method:** This method can be used to help translate a word problem into an equation if there is a total given in the problem.

**boat conformation:** one of the conformations of the cyclohexanes, which resembles a boat. The boat conformation has high energy because of interactions between eclipsed hydrogen atoms or groups.

**boceprevir:** An orally bioavailable, synthetic tripeptide inhibitor of the nonstructural protein 3 and 4A complex (NS3/NS4A), with potential activity against hepatitis C virus (HCV) genotype 1. Upon administration, boceprevir reversibly binds to the active center of the HCV NS3/NS4A and prevents NS3/NS4A protease-mediated polyprotein maturation. This disrupts the processing of viral proteins and the formation of a viral replication complex, which inhibits viral replication in HCV genotype 1-infected host cells. NS3, a serine protease, is essential for the proteolytic cleavages within the HCV polyprotein and plays a key role during HCV viral RNA replication. NS4A is an activating factor for NS3. HCV is a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family. Check for active clinical trials using this agent.

**BOD:** Biochemical Oxygen Demand - the rate at which microorganisms use the oxygen in water or wastewater while stabilizing decomposable organic matter under aerobic conditions. In decomposition, organic matter serves as food for the bacteria and energy results from this oxidation.

**BOD (Biochemical Oxygen Demand):** This is defined as the mass of dissolved oxygen required by a specific volume of solution of the substance for process of biochemical oxidation under prescribed conditions. The measurement of BOD indicates the ability of micro-organisms to metabolise an organic substance in the presence of oxygen and thus indicates the potential for depletion of oxygen by the substance. Refers to degradation.

**BOD test:** A procedure that measures the rate of oxygen use under controlled conditions of time and temperature. Standard test conditions include dark incubation at 20 C for a specified time (usually 5 days).

**Body:** The apparent viscosity of a paint, especially in relation to its appearance and behaviour in the container and during application. A high-

viscosity paint may be termed 'full-bodied'. It can also be used to describe the 'build', or coat-thickness, of an applied coat. OR The thickness or thinness of a liquid paint. OR The principal part of a container, usually the largest piece containing the sides. In bottles, the body is the main portion of the bottle without the neck.

**body image :** A type of radiation therapy. A substance that contains boron is injected into a blood vessel. The boron collects in tumor cells. The patient then receives radiation therapy with atomic particles called neutrons. The neutrons react with the boron to kill the tumor cells without harming normal cells. BNCT is being studied as a treatment for glioblastoma multiforme and recurrent head and neck cancer. Also called boron neutron capture therapy.

**body mass index :** A licensed pharmacist with special training in how to design, give, monitor, and change chemotherapy for cancer patients. Also called BCOP and oncology pharmacy specialist.

**body wave:** a seismic wave that radiates out from the focus of an earthquake and travels through solid rock.

**Body-centered space group:** A crystallographic space group containing a body-centered lattice, a lattice that contains a site in the center of the unit cell. A crystallographic space group containing a lattice point in the center of the unit cell symbolized by I.

**bohr:** One atomic unit of distance, equal to  $0.5292 \text{ \AA}$  .

**Bohr atom:** A model of the atom that explains emission and absorption of radiation as transitions between stationary electronic states in which the electron orbits the nucleus at a definite distance. The Bohr model violates the Heisenberg uncertainty principle, since it postulates definite paths and momenta for electrons as they move around the nucleus. Modern theories usually use atomic orbitals to describe the behavior of electrons in atoms.

**Bohr effect:** The observation made by Christian Bohr that  $\text{H}^+$  and  $\text{CO}_2$  promote the release of oxygen from oxyhemoglobin.

**Bohr radius $0$ :** The atomic unit of length, equal to  $0.529\,177\,2083 \times 10^{-10} \text{ m}$ , with an uncertainty of  $0.000\,000\,0019 \times 10^{-10} \text{ m}$  [1998 CODATA values]

**Bohr Structure:** Bohr atomic structure is considered the classic structure of an atom. Niels Bohr came up with the idea that there is a nucleus with

protons and neutrons. Surrounding that nucleus are spherical shells where electrons can orbit the nucleus. While there are areas where you can expect to find electrons, we now know that they are not always in spherical shells.

**Bohr's atom:** Bohr made significant contributions to the atom. He understood the line spectra-- the reason why only certain wavelengths are emitted when atoms jump down levels.

**Bohrium:** Symbol:"Bh" Atomic Number:"107" Atomic Mass: (264)amu. Bohrium is of the postactinide elements. Scientists have created these in labs and may have found only a few atoms of the element. You will not find these in use anywhere on Earth.

**Boiler:** A process unit in which tubes pass through a combustion furnace. Boiler feedwater is fed into the tubes, and heat transferred from the hot combustion products through the tube walls converts the feedwater to steam.

**boiling:** Conversion of liquid into gas as bubbles of gas that form within the liquid. Boiling begins at the temperature where the vapor pressure of a liquid would be equal to the external pressure on the liquid. OR When boiling, a liquid is evaporating as fast as it can. If you look at a boiling liquid (careful!) you will see that it is forming bubbles in the body of the liquid.

**Boiling Point:** The boiling point is the temperature when a liquid begins to boil and becomes a gas or vapor. It requires the addition of energy for the matter to move from one state to another. OR The temperature at which the pressure exerted by molecules leaving a liquid equals the pressure exerted by the molecules in the air above it. A free-for-all of molecules leaving the liquid then ensues. In a solution, the boiling point will be increased by a number that depends on the number of particles in solution: OR the temperature at which a liquid changes to a gas. OR temperature at which a liquid changes to a gas. OR This is the maximum temperature a liquid can achieve. For water, the boiling point is 100oC (at standard atmospheric pressure). Pure liquids have a single steady boiling point. OR The temperature at which the vapor pressure of a liquid would be equal to the external pressure on the liquid. The standard boiling point is the temperature at which the vapor pressure of a liquid equals standard pressure.

**Boiling point (at a given pressure):** For a pure species, the temperature at which the liquid and vapor can coexist in equilibrium at the given pressure. When applied to the heating of a mixture of liquids exposed to a gas at the given pressure, the temperature at which the mixture begins to boil.

**boiling point elevation:** an increase in the boiling point of a solution, proportional to the concentration of solute particles.

**boiling point elevation:** The boiling point of a solution is higher than the boiling point of the pure solvent. Boiling point elevation is a colligative property.

**Boiling point range:** In the fractional distillation of crude oil, the substances are collected in groups (fractions) according to their boiling point range.

**Boiling-water reactor (BWR):** A common nuclear power reactor design in which water flows upward through the core, where it is heated by fission and allowed to boil in the reactor vessel. The resulting steam then drives turbines, which activate generators to produce electrical power. BWRs operate similarly to electrical plants using fossil fuel, except that the BWRs are powered by 370–800 nuclear fuel assemblies in the reactor core. For additional detail, see Boiling Water Reactors (BWRs).

**Boltzmann constant:** A fundamental constant equal to the ideal gas law constant divided by Avogadro's number, equal to  $1.3805 \times 10^{-23} \text{ J K}^{-1}$ .

**Boltzmann equation:** A statistical definition of entropy, given by  $S = k \ln W$ , where  $S$  and  $k$  are the entropy and Boltzmann's constant, respectively, and  $W$  is the probability of finding the system in a particular state.

**bolus dose :** The way a person thinks about his or her body and how it looks to others.

**bombesin :** A measure that relates body weight to height. BMI is sometimes used to measure total body fat and whether a person is a healthy weight. Excess body fat is linked to an increased risk of some diseases including heart disease and some cancers. Also called BMI.

**BON:** A single dose of a drug or other substance given over a short period of time. It is usually given by infusion or injection into a blood vessel. It may also be given by mouth.

**bond:** The system whereby stones or bricks are laid in over-lapped courses so that vertical joints in one course do not coincide with those in the next.

OR Physical forces holding together two atoms in a molecule OR A force which holds together two atoms, two ions, two molecules, or a combination of these. OR to attach by means of an adhesive. OR The term commonly used to denote the attachment of a given elastomer to some other member, classified as follows: 1) Mechanical: purely physical attachment accomplished by through holes, interlocking fingers, envelope design in silicone rubber 2) Cold: adhesion of previously vulcanized elastomer to another member through use of suitable bonding agent 3) Chemical: adhesion of an elastomer to a previously primed or glass particle surface using heat and pressure, thus curing the silicone rubber

**bond angle:** the angle formed between two adjacent bonds on the same atom.

**BOND COVALENT:** is the sharing of electrons. There is no rip off because the ionization energies of the atoms are not drastically different in magnitude. The result is neither atom is strong enough to remove the electron from the other atom. (Like two kids of equal strength trying to take a ball away from each other. They both can only hold on to it, neither succeeding in taking it and thus they are bonded).

**Bond energy:** The energy required to break a bond. OR Energy change per mole when a bond is broken in the gas phase for a particular substance. OR The energy required to break a bond.

**bond enthalpy:** Enthalpy change per mole when a bond is broken in the gas phase for a particular substance.

**bond function:** Special basis functions that are centered on a bond midpoint (for example) rather than on an atomic nucleus. Not commonly used.

**BOND IONIC:** is formed by electron transfer (the rip off). An element whose electrons are loosely held (first and second columns of chart) surrenders its outer electron(s) to an element with high ionization energy (that therefore has a high electron affinity). The latter are the right hand side of the chart (like the halogens). When the transfer is completed, we have ions produced. The unlike charges of the ions holds them together electrically. Hence, the ionic bond. Elements from opposite sides of the chart have very different ionization energies, so that one atom is strong enough to rip off electrons from the other.

**bond length:** the equilibrium distance between the nuclei of two atoms or groups that are bonded to each other. OR The average distance between the nuclei of two bonded atoms in a stable molecule.

**bond order:** 1. In Lewis structures, the number of electron pairs shared by two atoms. 2. In molecular orbital theory, the net number of electron pairs in bonding orbitals (calculated as half the difference between the number of electrons in bonding orbitals and the number of electrons in antibonding orbitals).

**bond strength:** the amount of energy needed to homolytically fracture a bond (also called ). OR Some measure of how difficult it is to break a chemical bond, for example, a bond energy or bond enthalpy. OR 1) The measure of the force required to separate objects or materials bonded together. 2) The strength of the bond between fiber and matrix. 3) The degree of attraction between adjacent atoms within a molecule, usually expressed in J/mol.

**bond-dissociation energy:** the amount of energy needed to homolytically fracture a bond.

**Bond, Chemical:** A chemical bond is created when two atoms share or give electrons to each other. There are single, double, and triple bonds. Two major types of bonds are ionic and covalent.

**bonding molecular orbital:** the orbital formed by the overlap of adjacent atomic orbitals.

**Bonds:** There are three main kinds of bonds at GCSE level. An ionic bond holds two ions (of opposite charge) together by electrostatic attraction. Ionic bonding occurs between a metal and a non-metal. A good example is sodium chloride. A covalent bond uses a shared pair of electrons to hold two atoms together. This usually occurs between two non-metal atoms. There are covalent bonds between the atoms in ammonia. A metallic bond is formed by a delocalised sea of electrons surrounding the very tightly packed metal atoms.

**bone cancer :** A peptide (small protein) found in the brain, gastrointestinal tract, and lungs. It causes the release of certain hormones and enzymes. It also causes smooth muscles to contract. Bombesin is found at high levels on small cell lung cancer cells and on other types of cancer cells. It is a type of neuropeptide and a type of hormone.

**bone density :** The necrosis (death) of bone tissue caused by treatment with a bisphosphonate (a drug or substance used to treat osteoporosis, bone pain caused by some types of cancer, and high blood calcium). It commonly occurs in the jaw bones. There may be pain, swelling and infection in the areas of necrosis. Also called bisphosphonate-associated osteonecrosis.

**bone marrow :** Primary bone cancer is cancer that forms in cells of the bone. Some types of primary bone cancer are osteosarcoma, Ewing sarcoma, malignant fibrous histiocytoma, and chondrosarcoma. Secondary bone cancer is cancer that spreads to the bone from another part of the body (such as the prostate, breast, or lung).

**bone marrow ablation :** A measure of the amount of minerals (mostly calcium and phosphorous) contained in a certain volume of bone. Bone density measurements are used to diagnose osteoporosis (a condition marked by decreased bone mass), to see how well osteoporosis treatments are working, and to predict how likely the bones are to break. Low bone density can occur in patients treated for cancer. Also called BMD, bone mass, and bone mineral density.

**bone marrow aspiration :** The soft, sponge-like tissue in the center of most bones. It produces white blood cells, red blood cells, and platelets.

**bone marrow aspiration and biopsy :** A procedure to destroy bone marrow using radiation or high doses of anticancer drugs. It is done before a bone marrow or blood stem cell transplant to kill cancer cells and bone marrow cells. This makes room for healthy stem cells.

**bone marrow biopsy :** A procedure in which a small sample of bone marrow is removed, usually from the hip bone, breastbone, or thigh bone. A small area of skin and the surface of the bone underneath are numbed with an anesthetic. Then, a special wide needle is pushed into the bone. A sample of liquid bone marrow is removed with a syringe attached to the needle. The bone marrow is sent to a laboratory to be looked at under a microscope. This procedure may be done at the same time as a bone marrow biopsy.

**bone marrow cancer :** A procedure in which a small sample of bone marrow (soft, sponge-like tissue in the center of most bones) and bone is removed. A small area of skin and the surface of the bone underneath are numbed with an anesthetic. Then a special wide needle is pushed into the bone. A sample of liquid bone marrow is removed with a syringe attached

to the needle. The syringe is then removed and the needle is rotated to remove a sample of the bone and the bone marrow. Both the bone marrow and bone samples are sent to a laboratory to be looked at under a microscope.

**bone marrow metastasis :** A procedure in which a small sample of bone with bone marrow inside it is removed, usually from the hip bone. A small area of skin and the surface of the bone underneath are numbed with an anesthetic. Then, a special, wide needle is pushed into the bone and rotated to remove a sample of bone with the bone marrow inside it. The sample is sent to a laboratory to be looked at under a microscope. This procedure may be done at the same time as a bone marrow aspiration.

**bone marrow transplantation :** Cancer that forms in the blood-forming stem cells of the bone marrow (soft sponge-like tissue in the center of most bones). Bone marrow cancer includes leukemias and multiple myeloma.

**bone mass :** Cancer that has spread from the original (primary) tumor to the bone marrow.

**bone metastasis :** A procedure to replace bone marrow that has been destroyed by treatment with high doses of anticancer drugs or radiation. Transplantation may be autologous (an individual's own marrow saved before treatment), allogeneic (marrow donated by someone else), or syngeneic (marrow donated by an identical twin).

**bone metastasis targeting peptide-11:** A peptide that mimics naturally occurring interleukin-11 (IL-11) with interleukin receptor binding activity. Upon administration, bone metastasis targeting peptide-11 (BMTP-11) binds to interleukin-11 receptor alpha (IL-11Ra) BMTP-11. This agent might be used to deliver therapeutic agents specifically to IL-11Ra-expressing tumor cells while sparing normal cells. IL-11Ra is a cell surface receptor that may be overexpressed by osteosarcoma cells and by prostate cancer cells in prostate cancer bone metastases.

**bone mineral density :** A measure of the amount of minerals (mostly calcium and phosphorous) contained in a certain volume of bone. Bone mass measurements are used to diagnose osteoporosis (a condition marked by decreased bone mass), to see how well osteoporosis treatments are working, and to predict how likely the bones are to break. Low bone mass can occur in patients treated for cancer. Also called BMD, bone density, and bone mineral density.

**bone mineral density scan :** Cancer that has spread from the original (primary) tumor to the bone.

**bone scan :** A measure of the amount of minerals (mostly calcium and phosphorous) contained in a certain volume of bone. Bone mineral density measurements are used to diagnose osteoporosis (a condition marked by decreased bone mass), to see how well osteoporosis treatments are working, and to predict how likely the bones are to break. Low bone mineral density can occur in patients treated for cancer. Also called BMD, bone density, and bone mass.

**bone scintigraphy :** An imaging test that measures bone density (the amount of bone mineral contained in a certain volume of bone) by passing x-rays with two different energy levels through the bone. It is used to diagnose osteoporosis (decrease in bone mass and density). Also called BMD scan, DEXA, DEXA scan, dual energy x-ray absorptiometric scan, dual x-ray absorptiometry, and DXA.

**Bone seeker:** A radioisotope that tends to accumulate in the bones when it is introduced into the body. An example is strontium-90, which behaves chemically like calcium.

**bone-seeking radioisotope :** A procedure to check for abnormal areas or damage in the bones. A very small amount of radioactive material is injected into a vein and travels through the blood. The radioactive material collects in the bones and is detected by a scanner (a special camera that takes pictures of the inside of the body). A bone scan may be used to diagnose bone tumors or cancer that has spread to the bone. It may also be used to help diagnose fractures, bone infections, or other bone problems. Also called bone scintigraphy.

**Bongkreikic acid:** An antibiotic that inhibits the action of ATP-ADP translocase.

**Boniva:** (Other name for: ibandronate sodium)

**Boost:** (Other name for: nutritional supplement drink)

**booster :** A procedure to check for abnormal areas or damage in the bones. A very small amount of radioactive material is injected into a vein and travels through the blood. The radioactive material collects in the bones and is detected by a scanner (a special camera that takes pictures of the inside of the body). A bone scintigraphy may be used to diagnose bone tumors or

cancer that has spread to the bone. It may also be used to help diagnose fractures, bone infections, or other bone problems. Also called bone scan.

**borderline personality disorder :** A radioactive substance that is given through a vein, and collects in bone cells and in tumor cells that have spread to the bone. It kills cancer cells by giving off low-level radiation.

**Bore:** A hole machined in a component which permits the passage of a shaft

**Bore Seal:** A sealing system, usually in a radial orientation, in which the primary sealing surface is between the OD of a silicone rubber seal ring and the ID of a bore

**Boron:** Symbol:"B" Atomic Number:"5" Atomic Mass: 10.81amu. Boron is a non-metallic element never found alone but always with other elements. It is a trace element in your diet. You might find boron in clay pots, detergent, glass, flares, or fiberglass. OR Element 5, atomic weight 10.811. Hard yellow crystals or brown amorphous powder, used as a neutron absorber in nuclear chemistry and as a hardener in alloys.

**boron neutron capture therapy :** In medicine, refers to a vaccination given after a previous vaccination. A booster helps maintain or increase a protective immune response.

**boron phenylalanine :** A serious mental illness marked by unstable moods and impulsive behavior. People with BPD have problems with relationships, family and work life, long-term planning, and self-identity. Symptoms include intense bouts of anger, depression, and anxiety that may lead to self-injury or suicide, drug or alcohol abuse, excessive spending, binge eating, or risky sex. A person with BPD who is diagnosed with cancer may be at an increased risk of suicide. Also called BPD.

**boronophenylalanine-fructose complex:** A boronated phenylalanine complexed with fructose to increase its solubility. When exposed to neutron irradiation, boronophenylalanine absorbs neutrons and self-destructs releasing short-range alpha radiation and 'recoil' lithium in tumor cells, resulting in alpha radiation-induced tumor cell death. This highly selective, localized radiotargeting of tumor cells, known as boron neutron capture therapy (BNCT), spares adjacent normal tissues. OR A type of radiation therapy. A substance that contains boron is injected into a blood vessel. The boron collects in tumor cells. The patient then receives radiation therapy with atomic particles called neutrons. The neutrons react with the boron to

kill the tumor cells without harming normal cells. Boron neutron capture therapy is being studied as a treatment for glioblastoma multiforme and recurrent head and neck cancer. Also called BNCT.

**bortezomib:** A dipeptide boronic acid analogue with antineoplastic activity. Bortezomib reversibly inhibits the 26S proteasome, a large protease complex that degrades ubiquitinated proteins. By blocking the targeted proteolysis normally performed by the proteasome, bortezomib disrupts various cell signaling pathways, leading to cell cycle arrest, apoptosis, and inhibition of angiogenesis. Specifically, the agent inhibits nuclear factor (NF)-kappaB, a protein that is constitutively activated in some cancers, thereby interfering with NF-kappaB-mediated cell survival, tumor growth, and angiogenesis. In vivo, bortezomib delays tumor growth and enhances the cytotoxic effects of radiation and chemotherapy. OR A substance used in a type of radiation therapy called boron neutron capture therapy. Boron phenylalanine is injected into a blood vessel and collects in tumor cells. The patient then receives radiation therapy with atomic particles called neutrons. The neutrons react with boron phenylalanine to kill the tumor cells without harming normal cells. Also called BPA.

**Boss:** A projection of the plastic part, normally round, which is used to strengthen an area of a part; provide a source of fastening; or to provide an alignment mechanism during assembly. OR The round protrusions on plastic parts and molds, often designed for fasteners. OR A raised stud feature that is used to engage fasteners or support features of other parts passing through them. OR Protuberance on a plastic part designed to add strength, facilitate alignment, provide fastenings, etc OR Projection on a plastic part designed to add strength, to facilitate alignment during assembly, to provide for fastenings, etc. OR A raised feature of a molded part designed to add strength, facilitate alignment during assembly or for attachment to another part.

**Boston Round:** A particular shape of container; cross section as well as shoulders are round.

**Bosulif :** (Other name for: bosutinib) OR A substance used in a type of radiation therapy called boron neutron capture therapy. Boronophenylalanine-fructose complex is injected into a blood vessel and collects in tumor cells. The patient then receives radiation therapy with atomic particles called neutrons. The neutrons react with the boron in

boronophenylalanine-fructose complex, producing radioactive particles that kill the tumor cells without harming normal cells. Also called BPA-F.

**bosutinib:** A synthetic quinolone derivative and dual kinase inhibitor that targets both Abl and Src kinases with potential antineoplastic activity. Unlike imatinib, bosutinib inhibits the autophosphorylation of both Abl and Src kinases, resulting in inhibition of cell growth and apoptosis. Because of the dual mechanism of action, this agent may have activity in resistant CML disease, other myeloid malignancies and solid tumors. Abl kinase is upregulated in the presence of the abnormal Bcr-abl fusion protein which is commonly associated with chronic myeloid leukemia (CML).

Overexpression of specific Src kinases is also associated with the imatinib-resistant CML phenotype. Check for active clinical trials using this agent. or A drug used to treat multiple myeloma. It is also used to treat mantle cell lymphoma in patients who have already received at least one other type of treatment and is being studied in the treatment of other types of cancer. Bortezomib blocks several molecular pathways in a cell and may cause cancer cells to die. It is a type of proteasome inhibitor and a type of dipeptidyl boronic acid. Also called PS-341 and velcade.

**Boswellia serrata :** A drug used to treat chronic myelogenous leukemia (CML). It is used in patients who cannot be treated with or have not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Bosulif blocks the action of BCR-ABL and other proteins, which may help keep cancer cells from growing and may kill cancer cells. It is a type of tyrosine kinase inhibitor. Also called bosutinib.

**Boswellia serrata extract:** A standardized extract derived from the plant *Boswellia serrata* of the family Burseraceae with anti-inflammatory activity. *Boswellia serrata* extract contains terpenoid boswellic acids, which are potent inhibitors of 5-lipoxygenase activity and, so, leukotriene synthesis.

**botanical :** A drug used to treat chronic myelogenous leukemia (CML). It is used in patients who cannot be treated with or have not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Bosutinib blocks the action of BCR-ABL and other proteins, which may help keep cancer cells from growing and may kill cancer cells. It is a type of tyrosine kinase inhibitor. Also called Bosulif.

**botanical extracts rinse IZN-6N4:** An oral rinse containing 1% of botanical extracts with potential anti-inflammatory and antimucositis

activity. Upon rinsing with botanical extracts rinse IZN-6N4 in the oral cavity, this agent may prevent inflammation of the mucosal membranes and may decrease chemotherapy- and/or radiation-induced oral mucositis.

Check for active clinical trials using this agent.

**botanical lotion CG428:** A proprietary lotion containing a blend of the four botanicals *Allium cepa* L. (Onion), *Citrus limon* L. (Citrus), *Theobroma cacao* L. (Cocoa), *Paullinia cupana* (Guarana), with potential activity against chemotherapy-induced alopecia (CIA). Upon administration to the scalp, botanical lotion CG428 may normalize the apoptotic process of hair follicular cells and reduce inflammation in the scalp. This may reverse CIA, restore the natural hair cycle, improve hair regrowth, and improve the psychosocial well-being of the affected patient.

**BOTOX:** (Other name for: botulinum toxin type A)

**Botox :** A tree that belongs to the incense tree family. The tree's amber-colored resin is used in incense. The resin has anti-inflammatory effects and has been used to treat arthritis, asthma, and ulcerative colitis. It is also being studied in the treatment of brain tumors. Also called frankincense tree.

**Botox cosmetic:** (Other name for: botulinum toxin type A)

**Bottom Blow:** A specific type of blow molding machine which forms hollow articles by injecting the blowing air into the parison from the bottom of the mold.

**Bottom Plate:** Part of the mold which contains the heel radius and the push-up. OR That part of the mold which contains the heel (base radius) radius and the "push-up" of the container to be formed.

**Bottom rail:** The lowest horizontal member of a framed door.

**Bottom Seal:** Term used to describe bottom of a can liner. The three types of bottom seals are: FLAT SEAL - Straight seal along bottom of a can liner (looks like a pillow case). The flat seal is used to create the strongest possible seal for heavy weight bags. STAR SEAL - The star seal is the most common type of seal in the market. Designed without gussets, the star seal eliminates gaps along the seal where leaks can occur. This allows the bag to easily conform to the shape of the container and distribute the weight of the contents evenly inside the bag. This type of seal maximizes the bag's carrying capacity while minimizing the likelihood of leakage. GUSSET SEAL - A flat-style bag manufactured with both sides tucked in to form

gussets. Also refers to the distance across the open face of the folded side or pleat: can also refer to the tuck or pleat itself.

**Bottoms product:** The product that leaves the bottom of a distillation column. The bottoms product is relatively rich in the less volatile components of the feed to the column.

**bottomset bed:** the finest silt and clay particles that are carried out from a delta into deeper water or slide down a delta front into deeper water.

**botulinum toxin A :** Having to do with, or derived from, plants.

**botulinum toxin type A:** An injectable formulation of a neurotoxin derived through the fermentation of the Hall strain of *Clostridium botulinum* type A with neuromuscular transmission inhibitory and analgesic activities. Upon injection into the affected muscle, the heavy chain portion of onabotulinumtoxinA binds to the cell membrane of the motor nerve and is internalized via endocytosis. Upon entry, the light chain portion of the toxin is activated and cleaves the protein SNAP-25, thereby preventing the fusion of acetylcholine (ACh)-containing synaptic vesicles with the cell membrane and, so, the release of ACh into the neuromuscular junction; subsequent binding of ACh to motor end-plate nicotinic acid receptors and ACh-mediated muscle contraction are thus blocked. In addition to ACh, onabotulinumtoxinA may inhibit the release of neuropeptides, such as substance P and glutamate, which may contribute to its analgesic activity. OR A toxin made by the bacterium *Clostridium botulinum*. It can cause food poisoning. The drug Botox is a form of the toxin that can be used in small amounts to treat certain medical conditions. These include severe underarm sweating and severe muscle spasms in the neck and shoulders. Botox is also used to smooth wrinkles on the face. It is being studied in the treatment of pain in patients with skin leiomyomas (benign smooth muscle tumors) and other conditions. Also called botulinum toxin A and botulinum toxin type A.

**bovine lactoferrin supplement:** A supplement containing lactoferrin derived from bovine milk with potential chemopreventive, immunostimulating, and antimicrobial activity. Upon administration, lactoferrin binds to metal in the oral cavity and may prevent metal-induced oxidation of lipids. This may reduce the metallic taste and taste disturbances induced by certain metal-containing chemotherapeutics; metal-induced lipid oxidation, and the subsequent production of aldehydes and

ketones attributed to the metallic smell. Lactoferrin, a glycoprotein belonging to the transferrin family of metal-binding proteins, can be found in milk and other secretory fluids as well as in polymorphonuclear cells and leukocytes; lactoferrin plays a role in the innate defense of mucosal surfaces and its iron-binding activity is associated with the antibacterial activity. Check for active clinical trials using this agent.

**bowel :** A toxin made by the bacterium *Clostridium botulinum*. It can cause food poisoning. The drug Botox is a form of the toxin that can be used in small amounts to treat certain medical conditions. These include severe underarm sweating and severe muscle spasms in the neck and shoulders. Botulinum toxin A is also used to smooth wrinkles on the face. It is being studied in the treatment of pain in patients with skin leiomyomas (benign smooth muscle tumors) and other conditions. Also called Botox and botulinum toxin type A.

**bowel function :** A toxin made by the bacterium *Clostridium botulinum*. It can cause food poisoning. The drug Botox is a form of the toxin that can be used in small amounts to treat certain medical conditions. These include severe underarm sweating and severe muscle spasms in the neck and shoulders. Botulinum toxin type A is also used to smooth wrinkles on the face. It is being studied in the treatment of pain in patients with skin leiomyomas (benign smooth muscle tumors) and other conditions. Also called Botox and botulinum toxin A.

**bowel movement :** The long, tube-shaped organ in the abdomen that completes the process of digestion. The bowel has two parts, the small bowel and the large bowel. Also called intestine.

**bowel obstruction :** The way the intestines work in terms of how often there are bowel movements, the ability to control when to have a bowel movement, and whether the stools are hard and dry as in constipation or watery as in diarrhea.

**Bowen disease :** Movement of feces (undigested food, bacteria, mucus, and cells from the lining of the intestines) through the bowel and out the anus. Also called defecation.

**Bowen's reaction series:** a description of the progression of mineral formation as magmas cool and crystallize.

**Bowman-Birk inhibitor concentrate:** An extract of soybeans enriched in Bowman-Birk inhibitor (BBI), a soybean-derived, 71-amino acid,

polypeptide and serine protease inhibitor with potential chemopreventive activity. Bowman-Birk inhibitor contains distinct inhibitory sites for trypsin and chymotrypsin. Although the exact mechanism by which BBI suppresses carcinogenesis is unknown, its antiproliferative activity appears to be linked to the chymotrypsin inhibitory region. or A partial or complete block of the small or large intestine that keeps food, liquid, gas, and stool from moving through the intestines in a normal way. Bowel obstructions may be caused by a twist in the intestines, hernias, inflammation, scar tissue from surgery, and certain types of cancer, such as cancers of the stomach, colon, and ovary. They may also be caused by conditions that affect the muscles of the intestine, such as paralysis. Signs and symptoms may include pain and swelling in the abdomen, constipation, diarrhea, vomiting, and problems passing gas. Most bowel obstructions occur in the small intestine. Also called intestinal obstruction.

**Bowman's capsule:** an enlarged cuplike structure below the nephron in the human kidney.

**Box gutter:** Usually a wooden gutter lined with sheet-lead, zinc or asphalt used in roof valleys or parapets.

**Boyle's Law:** A scientist named Robert Boyle came up with an understanding of the way pressure and volume are related (at constant temperatures). His formula shows that the volume of a gas is inversely proportional to the pressure. The idea was written down as  $P=(1/V)k$  (where  $k$  is a constant). OR the volume of a gas varies inversely with pressure. OR The pressure of a ideal gas is inversely proportional to its volume, if the temperature and amount of gas is held constant. Doubling gas pressure halves gas volume, if temperature and amount of gas don't change. If the initial pressure and volume are  $P_1$  and  $V_1$  and the final pressure and volume are  $P_2V_2$ , then  $P_1V_1 = P_2V_2$  at fixed temperature and gas amount.

**BP:** Becke-Perdew. A non-local DFT method employing the Becke exchange and Perdew correlation functionals.

**BP-Cx1-platinum complex BP-C1:** A combination agent composed of the benzo-poly-carbonic-acid polymer BP-Cx1 chelated to platinum with potential antineoplastic activity. Upon intramuscular injection, the polymer moiety of BP-Cx1-Platinum Complex BP-C1 (BP-C1) alters the permeability of the cell membranes, which allows for increased penetration of platinum into tumor cells. In turn, platinum binds to nucleophilic groups

such as GC-rich sites in DNA and induces intrastrand and interstrand DNA cross-links, as well as DNA-protein cross-links. These cross-links result in apoptosis and cell growth inhibition. In addition, the BP-Cx1 ligand is able to stimulate the innate immune system and upregulates a variety of cytokines including interferon, tumor necrosis factor-alpha (TNF-alpha), granulocyte macrophage-colony stimulating factor (GM-CSF), and various interleukins (ILs) such as IL-6 and IL-25. In comparison to cisplatin and other platinum-based compounds, treatment with BP-C1 allows for less platinum administration, which reduces platinum-associated systemic toxicity and side effects, and enhances the safety profile while maintaining or improving its efficacy.

**BPA:** A skin disease marked by scaly or thickened patches on the skin and often caused by prolonged exposure to arsenic. The patches often occur on sun-exposed areas of the skin and in older white men. These patches may become malignant (cancer). Also called precancerous dermatitis and precancerous dermatosis.

**BPA-F:** A substance that is made from soybeans and is being studied in the prevention of cancer. It blocks the action of enzymes that are needed for cancer cells to form. It is a type of protease inhibitor. Also called BBIC.

**BPD:** A substance used in a type of radiation therapy called boron neutron capture therapy. BPA is injected into a blood vessel and collects in tumor cells. The patient then receives radiation therapy with atomic particles called neutrons. The neutrons react with BPA to kill the tumor cells without harming normal cells. Also called boron phenylalanine.

**BPH:** A substance used in a type of radiation therapy called boron neutron capture therapy. BPA-F is injected into a blood vessel and collects in tumor cells. The patient then receives radiation therapy with atomic particles called neutrons. The neutrons react with the boron in BPA-F, producing radioactive particles that kill the tumor cells without harming normal cells. Also called boronophenylalanine-fructose complex.

**BPU:** Borderline personality disorder. A serious mental illness marked by unstable moods and impulsive behavior. People with BPD have problems with relationships, family and work life, long-term planning, and self-identity. Symptoms include intense bouts of anger, depression, and anxiety that may lead to self-injury or suicide, drug or alcohol abuse, excessive spending, binge eating, or risky sex. A person with BPD who is diagnosed

with cancer may be at an increased risk of suicide. Also called borderline personality disorder.

**brachial plexopathy :** A benign (not cancer) condition in which an overgrowth of prostate tissue pushes against the urethra and the bladder, blocking the flow of urine. Also called benign prostatic hyperplasia and benign prostatic hypertrophy.

**brachial plexus :** A substance being studied in the treatment of cancer. It is a type of antitubulin agent. Also called benzoylphenylurea.

**Brachytherapy:** A nuclear medicine procedure during which a sealed radioactive source is implanted directly into a person being treated for cancer (usually of the mouth, breast, lung, prostate, ovaries, or uterus). The radioactive implant may be temporary or permanent, and the radiation attacks the tumor as long as the device remains in place. Brachytherapy uses radioisotopes, such as iridium-192 or iodine-125, which are regulated by the NRC and its Agreement States. For additional information, see Brachytherapy.

**brachytherapy :** A condition marked by numbness, tingling, pain, weakness, or limited movement in the arm or hand. It is caused by an impairment of the brachial plexus, a network of nerves that affect the arm and hand.

**brachyury-expressing modified vaccinia Ankara-TRICOM vaccine:** A cancer vaccine composed of a replication-deficient, attenuated derivative of the vaccinia virus strain Ankara expressing both a CD8<sup>+</sup> T-cell epitope from the brachyury protein and a triad of T-cell co-stimulatory molecules (MVA Brachyury-TRICOM), with potential immunomodulating and antineoplastic activities. Upon subcutaneous administration of the brachyury-expressing modified vaccinia Ankara (MVA)-TRICOM vaccine, the expressed brachyury protein induces specific CD8<sup>+</sup> and CD4<sup>+</sup> T-cell responses against brachyury-expressing tumor cells. This causes both tumor cell lysis and a decrease in the growth of brachyury-expressing tumor cells. Brachyury, a member of the T-box family of transcription factors that is overexpressed in numerous cancer cell types, is correlated with increased epithelial-mesenchymal transition (EMT), cancer resistance and cancer progression. TRICOM, a triad of three human T-cell co-stimulatory molecules, B7.1, ICAM-1 and LFA-3, enhances antigen-specific T-cell activation.

**brachyury-expressing yeast vaccine GI-6301:** A cancer vaccine composed of a heat-killed, recombinant form of the yeast *Saccharomyces cerevisiae* that is genetically modified to express the transcription factor brachyury protein, with potential antineoplastic activity. Upon subcutaneous administration, the brachyury-expressing yeast vaccine GI-6301 is recognized by dendritic cells, processed, and presented by Class I and II MHC molecules on the dendritic cell surface. This elicits a targeted CD4+ and CD8+ T-lymphocyte-mediated immune response. This process kills brachyury-expressing tumor cells. Brachyury is overexpressed in a variety of tumor types and plays an important role in cancer progression and metastasis.

**bradykinesia:** slowed ability to start or s movements

**BRAF (V600E) kinase inhibitor RO5185426 :** A network of nerves that sends signals from the spine to the arm and hand.

**BRAF (V600E) mutation :** A type of radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called implant radiation therapy, internal radiation therapy, and radiation brachytherapy.

**BRAF gene :** A drug used to treat advanced melanoma that has a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. BRAF (V600E) kinase inhibitor RO5185426 blocks this mutated protein, which may stop the growth of cancer cells. It is a type of kinase inhibitor and a type of targeted therapy agent. Also called PLX4032, RG7204, vemurafenib, and Zelboraf.

**BRAF inhibitor ARQ 736:** An orally bioavailable, highly soluble phosphate prodrug of B-raf (BRAF) protein kinase with potential antineoplastic activity. BRAF inhibitor ARQ 736 is converted into its active form ARQ 680 in the presence of phosphatases. In turn, ARQ 680 selectively binds to and inhibits the activity of oncogenic B-raf, which may inhibit the proliferation of tumor cells expressing mutated B-raf gene. B-raf belongs to the raf/mil family of serine/threonine protein kinases and plays a role in regulating the MAP kinase/ERKs signaling pathway, which may be constitutively activated due to BRAF gene mutations. The valine to glutamic acid substitution at residue 600 (V600E) accounts for about 90% of BRAF gene mutations.

**BRAF inhibitor PLX8394:** An orally bioavailable inhibitor of serine/threonine-protein kinase B-raf (BRAF) protein with potential antineoplastic activity. BRAF inhibitor PLX8394 appears to selectively bind to and inhibit the activity of both wild-type and mutated forms of BRAF, which may subsequently inhibit the proliferation of tumor cells which express mutated forms of BRAF. This inhibitor appears to be effective against tumors that express multiple mutated forms of the kinase and may be an effective therapeutic agent for tumors that are resistant to other BRAF inhibitor therapies that are specific for the BRAF V600E mutant. BRAF, a member of the raf family of serine/threonine protein kinases, plays a role in the regulation of MAP kinase/ERK signaling pathways, which may be constitutively activated due to BRAF gene mutations. Mutated forms of BRAF are associated with a number of neoplastic diseases. Check for active clinical trials using this agent.

**BRAF kinase inhibitor :** A specific mutation (change) in the BRAF gene, which makes a protein that is involved in sending signals in cells and in cell growth. This BRAF gene mutation may be found in some types of cancer, including melanoma and colorectal cancer. It may increase the growth and spread of cancer cells. Checking for this BRAF mutation in tumor tissue may help to plan cancer treatment.

**BRAF V600E kinase inhibitor RO5212054:** An orally available small-molecule inhibitor of mutant (V600E) v-raf murine sarcoma viral oncogene homolog B1 (BRAF) with potential antineoplastic activity. BRAF(V600E) kinase inhibitor RO5212054 selectively binds to the ATP-binding site of BRAF(V600E) kinase and inhibits its activity, which may result in an inhibition of an over-activated MAPK signaling pathway downstream in BRAF(V600E) kinase-expressing tumor cells and a reduction in tumor cell proliferation. The valine to glutamic acid substitution at residue 600 accounts for about 90% of BRAF gene mutations; the oncogenic product, BRAF(V600E) kinase, exhibits a markedly elevated activity that over-activates the MAPK signaling pathway. The BRAF(V600E) mutation has been found to occur in approximately 60% of melanomas, and in about 8% of all solid tumors.

**BRAF(V600E) inhibitor CEP-32496:** An orally available v-raf murine sarcoma viral oncogene homolog B1 (B-raf) serine/threonine protein kinase inhibitor with potential antineoplastic activity. CEP-32496 specifically and

selectively inhibits the activity of the mutated form (V600E) of B-raf kinase. This inhibits the activation of the RAF/mitogen-activated protein kinase kinase (MEK)/extracellular signal-related kinase (ERK) signaling pathway and may result in a decrease in the proliferation of tumor cells expressing the mutated B-raf gene. The Raf mutation BRAF V600E, in which valine is substituted for glutamic acid at residue 600, is frequently found in a variety of human tumors and results in the constitutive activation of the RAF/MEK/ERK signaling pathway that regulates cellular proliferation and survival.

**BRAF/EGFR inhibitor BGB-283:** An inhibitor of the serine/threonine protein kinase B-raf (BRAF) and epidermal growth factor receptor (EGFR), with potential antineoplastic activity. BRAF/EGFR inhibitor BGB-283 selectively binds to and inhibits the activity of BRAF and certain BRAF mutant forms, and EGFR. This prevents BRAF- and EGFR-mediated signaling and inhibits the proliferation of tumor cells that either contain a mutated BRAF gene or express over-activated EGFR. In addition, BGB-283 inhibits mutant forms of the Ras proteins K-RAS and N-RAS. BRAF and EGFR are mutated or upregulated in many tumor cell types. Check for active clinical trials using this agent.

**Bragg equation:** The equation that relates the scattering of X-rays from a crystal to the d-spacing between planes:

**Braid:** See “Innerbraid”.

**braided stream:** a stream in which the water has lost its main channel and flows in an interconnecting network of rivulets around numerous bars.

**brain metastasis :** A gene that makes a protein called B-RAF, which is involved in sending signals in cells and in cell growth. This gene may be mutated (changed) in many types of cancer, which causes a change in the B-RAF protein. This can increase the growth and spread of cancer cells.

**brain stem :** A substance that blocks a protein called BRAF. BRAF is a kinase enzyme that helps control cell growth and signaling. It may be found in a mutated (changed) form in some types of cancer, including melanoma and colorectal cancer. Blocking mutated BRAF kinase proteins may help keep cancer cells from growing. Some BRAF kinase inhibitors are used to treat cancer.

**brain stem auditory evoked response test :** Cancer that has spread from the original (primary) tumor to the brain.

**brain stem glioma :** The part of the brain that is connected to the spinal cord.

**brain stem tumor :** A test used to detect some types of hearing loss, such as hearing loss caused by injury or tumors that affect nerves involved in hearing. Electrodes are placed on the head and certain tones or clicking sounds are made. The electrodes measure nerve signals in the brain when it reacts to the sounds. Also called ABR test, auditory brain stem response test, and BAER test.

**brain tumor :** A tumor located in the part of the brain that connects to the spinal cord (the brain stem). It may grow rapidly or slowly, depending on the grade of the tumor.

**brain tumor initiating cell vaccine:** A cell-based cancer vaccine comprised of brain tumor initiating cells (BTICs), with potential immunostimulating and antineoplastic activity. BTICs are from the glioblastoma multiforme (GBM) cell line GBM-6 and contain glioma stem-like cell-associated antigens. Upon administration, the BTIC vaccine may stimulate a specific anti-tumoral cytotoxic T –lymphocyte (CTL) response against brain tumor cancer cells and brain tumor stem like cells, resulting in tumor cell lysis. BTIC have unique antigenicity and have the ability to self-renew; vaccination against BTIC antigens may kill these cells and may prevent tumor recurrences.

**Brakiva:** (Other name for: liposomal topotecan hydrochloride)

**Branch migration:** The ability of a DNA strand partly paired with its complementary strand to move, displacing its homologous resident strand and extending the pairing. OR Movement of the branch point in branched DNA formed from two DNA molecules with identical sequences. See also Holliday intermediate.

**Branched:** In molecular structure of polymers (as opposed to Linear), refers to side chains attached to the main chain. Side chains may be long or short.

**branched chain amino acid supplement:** A nutritional supplement containing essential branched-chain amino acids (BCAAs), including leucine, isoleucine and valine, with potential anti-cachectic, antiangiogenic, hepatocellular carcinoma (HCC)-inhibiting and hepatoprotective activities. Upon oral administration, BCAAs inhibit the expression of both hypoxia-inducible factor 1-alpha subunit (HIF-1a) and vascular endothelial growth

factor (VEGF), which prevents VEGF-mediated angiogenesis in HCC cells. In addition, BCAAs inhibit proliferation and induce apoptosis of HCC cells by both suppressing the expression of insulin-like growth factor (IGF), and inhibiting the phosphatidylinositol 3-kinase (PI3K)/Akt/mammalian target of rapamycin (mTOR) pathway. BCAAs also correct the plasma amino acid imbalance and promote protein metabolism, including the synthesis of albumin and glycogen. They reduce oxidative stress by inducing the activation of genes involved in antioxidant defenses, which prevent the production of reactive oxygen species (ROS). BCAAs also strengthen the immune system by increasing hepatic lymphocytes and stimulating natural killer (NK) cell activity. This supplement is able to improve insulin resistance and promote ammonia detoxification through increased glutamine (Gln) production.

**BRANCHED POLYMERS:** Polymers can be classified as linear or branched. Linear polymers have the monomeric units linked together, linearly, with little or no long chain branching. In branched polymers, side chains are attached to the molecular chain backbone. High-density polyethylene (HDPE) is linear, while low-density polyethylene (LDPE) contains both short and long chain branches. Linear LDPE (LLDPE) is a copolymer with controlled short chain branches. This results in polymer that is "stiffer" than LDPE in shear but "softer" in extension. In extension the LLDPE chains slide by without getting entangled since the chain branches are very short.

**branched-chain alkane:** an alkane with alkyl groups bonded to the central carbon chain.

**Branching :** The modification of the molecular structure of a polymer derived from the growth of a new polymer chain from an active site on an established chain, in a direction different from that of the original chain.

**Branchpoint:** An intermediate in a biochemical pathway that can follow more than one route in following steps.

**brass:** A shiny yellow to yellow-orange alloy that contains about two parts copper for every one part zinc.

**Brassica vegetable:** A vegetable belonging to the Brassica genus of plants in the mustard family with potential chemopreventive activity. Brassica vegetables, including broccoli, cabbage, kale, Brussel sprouts, turnip and cauliflower, contain a significant amount of glucosinolates. Glucosinolate

metabolites, such as sulforaphane and indole-3-carbinol, act as antioxidants and may stimulate endogenous phase II detoxifying enzymes, including glutathione S-transferase and quinone reductase. These biotransformation enzymes play major roles in the detoxification of carcinogenic agents. or A tumor in the part of the brain that connects to the spinal cord (the brain stem).

**Bravais Lattice:** The Bravais lattice is the basic structure of a crystal. Each point of the lattice represents the compounds found in the mineral. The shape of an iron pyrite lattice would be cubic. The smallest combination of elements or atoms that forms the lattice is called the unit cell.

**Brazed Edge or Soldered Edge:** An edge finish completed by brazing or soldering only.

**BRCA1:** The growth of abnormal cells in the tissues of the brain. Brain tumors can be benign (not cancer) or malignant (cancer).

**BRCA2:** A member of the family of vegetables that includes broccoli, Brussels sprouts, cabbage, cauliflower, collard greens, kale, and turnips. These vegetables contain substances that may protect against cancer. Also called cruciferous vegetable.

**BRCAPro :** A gene on chromosome 17 that normally helps to suppress cell growth. A person who inherits certain mutations (changes) in a BRCA1 gene has a higher risk of getting breast, ovarian, prostate, and other types of cancer.

**BRD4 inhibitor PLX51107:** An inhibitor of the bromodomain-containing protein 4 (BRD4), with potential antineoplastic activity. Upon administration, the BRD4 inhibitor PLX51107 binds to the acetylated lysine recognition motifs in the bromodomains of the BRD4 protein, thereby preventing the binding of BRD4 to acetylated lysines on histones. This disrupts chromatin remodeling and gene expression. Prevention of the expression of certain growth-promoting genes may lead to an induction of apoptosis and an inhibition of proliferation in BRD4-overexpressing tumor cells. BRD4, a member of the human bromodomain and extra-terminal (BET) family of proteins, is a transcriptional regulator that is overexpressed in certain tumor cells and plays an important role in cellular proliferation.

**breakdown:** failure of insulator or insulating medium to prevent discharge or current flow. OR The disruptive discharge through insulation due to failure under electrostatic stress.

**Breakdown Voltage :** The voltage required, under specific conditions, to cause failure of an insulation material. See Dielectric Strength.

**breaker:** a high wave in which the crest falls forward in front of the main body of the wave.

**BREAKER PLATE:** A perforated plate located at the rear end of an extruder head or die adaptor serving to support the screen pack. The breaker plate also helps to generate back pressure in the extrusion process. OR A perforated plate located at the rear end of an extruder head. It often supports the screens that prevent foreign particles from entering the die. OR A thick metal piece with many holes drilled through it which reinforces the screen pack through which the molten plastic travels when leaving the barrel of the plastic extrusion machine. Breaker plate and screen combination also converts "rotational memory" of the molten plastic into "longitudinal memory".

**Breakfast cereal:** A possible future application for synthetic polymers... Using polyester instead of wheat could give a product with a much longer shelf life, and you probably couldn't tell the difference once it was covered with sugar and artificial colouring.

**breakthrough pain :** A gene on chromosome 13 that normally helps to suppress cell growth. A person who inherits certain mutations (changes) in a BRCA2 gene has a higher risk of getting breast, ovarian, prostate, and other types of cancer.

**breakwater:** a wall built parallel to the shoreline to provide quiet water.

**breast :** A computer program that uses statistics to predict whether a person has an inherited mutation (change) in the BRCA1 and BRCA2 genes. People who have certain mutations in these genes have a higher than normal risk of breast, ovarian, prostate, and other types of cancer. The program is based on personal and family medical histories of breast and ovarian cancer.

**breast cancer :** A sudden increase in pain that may occur in patients who already have chronic pain from cancer, arthritis, fibromyalgia, or other conditions. Breakthrough pain usually lasts for a short time. During breakthrough pain, the level of pain may be severe but the type of pain and where it is in the body are usually the same as the patient's chronic pain. Breakthrough pain may occur with stress, illness, and certain activities, such as exercising or coughing, or when the dose of pain medicine that the

patient is taking wears off. Breakthrough pain is usually not a symptom of a new condition or a condition that has gotten worse. Also called pain flare.

**breast carcinoma in situ :** Glandular organ located on the chest. The breast is made up of connective tissue, fat, and breast tissue that contains the glands that can make milk. Also called mammary gland.

**breast density :** Cancer that forms in tissues of the breast. The most common type of breast cancer is ductal carcinoma, which begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple). Another type of breast cancer is lobular carcinoma, which begins in the lobules (milk glands) of the breast. Invasive breast cancer is breast cancer that has spread from where it began in the breast ducts or lobules to surrounding normal tissue. Breast cancer occurs in both men and women, although male breast cancer is rare.

**breast duct :** There are 3 types of breast carcinoma in situ: ductal carcinoma in situ (DCIS), lobular carcinoma in situ (LCIS), and Paget disease of the nipple. DCIS is a noninvasive condition in which abnormal cells are found in the lining of a breast duct. The abnormal cells have not spread outside the duct to other tissues in the breast. In some cases, DCIS may become invasive cancer and spread to other tissues. At this time, there is no way to know which lesions could become invasive. LCIS is a condition in which abnormal cells are found in the lobules of the breast. This condition seldom becomes invasive cancer. However, having LCIS in one breast increases the risk of developing breast cancer in either breast. Paget disease of the nipple is a condition in which abnormal cells are found in the nipple only. Also called stage 0 breast carcinoma in situ.

**breast duct endoscopy :** Describes the relative amount of different tissues present in the breast. A dense breast has less fat than glandular and connective tissue. Mammogram films of breasts with higher density are harder to read and interpret than those of less dense breasts.

**Breast Imaging Reporting and Data System :** A thin tube in the breast that carries milk from the breast lobules to the nipple. Also called milk duct.

**breast implant :** A method used to examine the lining of the breast ducts to look for abnormal tissue. A very thin, flexible, lighted tube attached to a camera is inserted through the nipple, and threaded into the breast ducts deep in the breast. Tissue and fluid samples may be removed during the procedure.

**breast lobe :** A method used by radiologists to interpret and report in a standardized manner the results of mammography, ultrasound, and MRI used in breast cancer screening and diagnosis. Also called BI-RADS.

**breast lobule :** A silicone gel-filled or saline-filled sac placed under the chest muscle to restore breast shape.

**breast reconstruction :** A section of the breast that contains the lobules (the glands that make milk).

**breast self-exam :** A small part of a lobe in the breast. A breast lobule is a gland that makes milk.

**breast-conserving surgery :** An exam by a woman of her breasts to check for lumps or other changes.

**breast-sparing surgery :** The long flat bone that forms the center front of the chest wall. The breastbone is attached to the collarbone and the first seven ribs. Also called sternum.

**breastbone :** Surgery to rebuild the shape of the breast after a mastectomy.

**BREATHE:** The ability of a paint film to permit the passage of moisture vapor without causing blistering, cracking, or peeling.

**Breathing:** The opening and closing of a mold to allow gases to escape early in the molding cycle. Also called Degassing. When referring to plastic sheeting, “breathing” indicates permeability to air. OR The opening and closing of a mold to allow gases to escape early in the molding cycle. Also called degassing. OR The opening and closing of a mold to allow gases to escape early in the molding cycle. Also called degassing.

**breccia:** rock composed of coarse-grained, angular fragments of broken rocks that have been cemented together and lithified.

**Breeder:** A reactor that produces more nuclear fuel than it consumes. A fertile material, such as uranium-238, when bombarded by neutrons, is transformed into a fissile material, such as plutonium-239, which can be used as fuel.

**Breeze-block:** A building block made from cement and ashes or coke which is used mainly for internal walls.

**Brent Crude Oil:** Brent Crude Oil is a blend of crude oil streams produced from the Brent and Ninian Fields in the North Sea. This crude blend is noted as a benchmark crude as it is traded under contract with prices determined by open market activity on the International Petroleum

Exchange in London. Brent crude is a light, sweet crude and usually trades at a premium to heavier Middle Eastern grades, and is most suited for the production of gasoline and middle distillates.

**brentuximab vedotin:** An antibody-drug conjugate (ADC) directed against the tumor necrosis factor (TNF) receptor CD30 with potential antineoplastic activity. Brentuximab vedotin is generated by conjugating the humanized anti-CD30 monoclonal antibody SGN-30 to the cytotoxic agent monomethyl auristatin E (MMAE) via a valine-citrulline peptide linker. Upon administration and internalization by CD30-positive tumor cells, brentuximab vedotin undergoes enzymatic cleavage, releasing MMAE into the cytosol; MMAE binds to tubulin and inhibits tubulin polymerization, which may result in G2/M phase arrest and tumor cell apoptosis.

Transiently activated during lymphocyte activation, CD30 (tumor necrosis factor receptor superfamily, member 8; TNFRSF8) may be constitutively expressed in hematologic malignancies including Hodgkin lymphoma and some T-cell non-Hodgkin lymphomas. The linkage system in brentuximab vedotin is highly stable in plasma, resulting in cytotoxic specificity for CD30-positive cells. OR An operation to remove the cancer and some normal tissue around it, but not the breast itself. Some lymph nodes under the arm may be removed for biopsy. Part of the chest wall lining may also be removed if the cancer is near it. Also called breast-sparing surgery, lumpectomy, partial mastectomy, quadrantectomy, and segmental mastectomy.

**brequinar:** A synthetic quinolinecarboxylic acid analogue with antineoplastic properties. Brequinar inhibits the enzyme dihydroorotate dehydrogenase, thereby blocking de novo pyrimidine biosynthesis. This agent may also enhance the in vivo antitumor effect of antineoplastic agents such as 5-FU.

**Breslow depth :** An operation to remove the cancer and some normal tissue around it, but not the breast itself. Some lymph nodes under the arm may be removed for biopsy. Part of the chest wall lining may also be removed if the cancer is near it. Also called breast-conserving surgery, lumpectomy, partial mastectomy, quadrantectomy, and segmental mastectomy.

**Breslow thickness :** A drug used to treat Hodgkin lymphoma in patients who did not get better with other treatment, cannot be treated with

autologous stem cell transplant (ASCT), or have a high risk that the cancer will come back or get worse after ASCT. It is also used to treat systemic anaplastic large cell lymphoma that did not get better with other treatment. It is also being studied in the treatment of other types of lymphoma.

Brentuximab vedotin is made up of a monoclonal antibody linked to an anticancer drug. It binds to a protein called CD30, which is on the surface of some lymphoma cells, and may kill cancer cells. Brentuximab vedotin is a type of antibody-drug conjugate. Also called Adcetris and SGN-35.

**Brevicon:** (Other name for: ethinyl estradiol/norethindrone)

**briciclib sodium:** A benzyl styryl sulfone analog, and a disodium phosphate ester prodrug of ON 013100, with potential antineoplastic activity. Upon hydrolysis, briciclib sodium is converted to ON 013100, which blocks cyclin D mRNA translation and decreases protein expression of cyclin D. This may induce cell cycle arrest and apoptosis in cancer cells overexpressing cyclin D and eventually decrease tumor cell proliferation. This agent may exhibit synergistic antitumor activity in combination with other chemotherapeutic agents. Cyclin D, a member of the cyclin family of cell cycle regulators, plays a key role in cell cycle division and is often overexpressed in a variety of hematologic and solid tumors and is correlated with poor prognosis.

**Bridge tool:** A temporary or interim mold made for the purpose of making production parts until a high-volume production mold is ready. OR An injection mold that makes parts until the final tool is completed. These molds or tools are not meant to be production tools.

**Bridging:** Where a paint film appears to be in continuous contact with a surface but is in reality not in contact at some points, i.e. by spanning or bridging over open cracks with a thick coat of paint. OR Ability of paint to span small gaps or cracks through its cohesion and elastic qualities.

**Bridion:** (Other name for: sugammadex sodium)

**Brief Pain Inventory :** A measure of how deeply a melanoma tumor has grown into the skin. The tumor thickness (depth) is usually measured from the top of the tumor to the deepest tumor cells. If the tumor is ulcerated (the skin is broken), it is measured from the base of the ulcer to the deepest tumor cells. Breslow depth is used to help determine the stage of cancer. Thicker tumors are linked with lower survival rates. Also called Breslow thickness.

**brigatinib:** An orally available inhibitor of receptor tyrosine kinases anaplastic lymphoma kinase (ALK) and the epidermal growth factor receptor (EGFR) with potential antineoplastic activity. Brigatinib binds to and inhibits ALK kinase and ALK fusion proteins as well as EGFR and mutant forms. This leads to the inhibition of ALK kinase and EGFR kinase, disrupts their signaling pathways and eventually inhibits tumor cell growth in susceptible tumor cells. In addition, brigatinib appears to overcome mutation-based resistance. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development; ALK dysregulation and gene rearrangements are associated with a series of tumors. EGFR is overexpressed in a variety of cancer cell types.

**BRIGHT STOCK:** A heavy lubricant stock with a low pour point used in finished blends to provide film strength and to reduce the amount of oil consumed.

**Brighteners:** Are used to add smoother or brighter coatings or finishes. OR Are used to add smoother or brighter coatings.

**brilacidin oral rinse:** An oral rinse containing brilacidin, a defensin mimetic, with potential antimicrobial and anti-mucositic activities. Upon rinsing with the brilacidin oral rinse, brilacidin imitates defensin as a human host defense protein (HDP), and binds to and disrupts the bacterial cell membrane. This causes bacterial cell membrane lysis and leakage of cellular cytoplasmic contents. This inhibits bacterial activity and may prevent or treat radiation-induced mucositis. Defensins, a family of antimicrobial and cytotoxic peptides expressed mainly by epithelial cells and neutrophils, play a key role in the natural human innate immunity against pathogens.

**brincidofovir:** An alkoxyalkyl ester prodrug containing the synthetic, acyclic nucleoside monophosphate analog cidofovir linked, through its phosphonate group, to a lipid, 3-hexadecyloxy-1-propanol, with antiviral activity against double-stranded DNA viruses. Upon oral administration, brincidofovir crosses the intestinal wall and penetrates target viral-infected cells before being cleaved to the free antiviral agent cidofovir. In turn, cidofovir is phosphorylated by pyruvate kinases to its active metabolite cidofovir diphosphate. Cidofovir diphosphate, bearing structural similarity to nucleotides, competes with deoxycytosine-5-triphosphate (dCTP) for viral DNA polymerase and gets incorporated into the growing viral DNA

strands. As a result, it prevents further DNA polymerization and disrupts DNA replication of viruses. Compared to cidofovir, which is given intravenously, hexadecyloxypropyl-cidofovir shows better oral bioavailability, less toxicity and enhanced cellular penetration.

**brine:** Water saturated with salt; a strongly saline solution. OR Brine is a solution of sodium chloride (common salt) OR A solution of sodium chloride (common salt) in water is called brine.

**Bringing forward:** This term is used to describe the preparation and spot priming or other painting which is required to bring repaired or bare surfaces to match the adjacent paintwork so that subsequent painting results in even appearance.

**Brintellix:** (Other name for: vortioxetine hydrobromide)

**British Thermal Unit (B.T.U.):** the quantity of heat required to raise the temperature of one pound of water 1°F from 58.5 to 59.5°F (its point of maximum density).

**british thermal unit (btu):** the quantity of heat necessary to raise the temperature of 1 pound of water by 1 oF. OR The amount of heat required to change the temperature of one pound of water one degree Fahrenheit at sea level.

**brittle strain:** strain that occurs when a stress is great enough to break or fracture a rock.

**Brittle Temperature:** A measure for judging the relative merits of materials for low temperature flexing or impact – i.e., the temperature at which materials rupture by impact under specified conditions.

**brittleness:** the property of matter that is how easily the substance breaks or shatters when force is applied to it. OR Tendency to crack upon physical deformation

**brivanib :** A measure of how deeply a melanoma tumor has grown into the skin. The tumor thickness (depth) is usually measured from the top of the tumor to the deepest tumor cells. If the tumor is ulcerated (the skin is broken), it is measured from the base of the ulcer to the deepest tumor cells. Breslow thickness is used to help determine the stage of cancer. Thicker tumors are linked with lower survival rates. Also called Breslow depth.

**brivanib alaninate:** The alaninate salt of a vascular endothelial growth factor receptor 2 (VEGFR2) inhibitor with potential antineoplastic activity.

Brivanib strongly binds to and inhibits VEGFR2, a tyrosine kinase receptor expressed almost exclusively on vascular endothelial cells; inhibition of VEGFR2 may result in inhibition of tumor angiogenesis, inhibition of tumor cell growth, and tumor regression.

**brivanib alaninate** : A questionnaire used to measure pain.

**brivudine** : A substance being studied in the treatment of cancer. Brivanib may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of vascular endothelial growth factor receptor 2 inhibitor and a type of antiangiogenesis agent.

**brivudine phosphoramidate**: A small molecule phosphoramidate derivative of (E)-5-(2-bromovinyl)-2'-deoxyuridine with potential antineoplastic activity. Selectively active against tumor cells expressing high levels of thymidylate synthase (TS), brivudine phosphoramidate is converted intracellularly by TS to bromovinyldeoxyuridine monophosphate (BVdUMP) which competes with the natural substrate, deoxyuridine monophosphate, for binding to TS. Unlike TS inhibitors, this agent is a reversible substrate for TS catalysis. Thus, TS retains activity and converts BVdUMP into cytotoxic metabolites. As key enzyme in the de novo synthesis of dTMP, TS is an enzyme critical to DNA biosynthesis and is overexpressed in many solid tumors.

**BRM therapy** : A substance being studied in the treatment of cancer. Brivanib alaninate may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of vascular endothelial growth factor receptor 2 inhibitor and a type of antiangiogenesis agent.

**broad-spectrum human papillomavirus vaccine V505**: A non-infectious recombinant cancer vaccine prepared from the human papillomavirus (HPV) with potential immunoprophylactic activity. Vaccination with broad-spectrum human papillomavirus vaccine V505 may stimulate the host immune system to mount humoral and cytotoxic T lymphocyte (CTL) responses against HPV-infected cells. HPV infection, the cause of genital warts, is a risk factor for the development of cancers of the cervix, vagina, vulva, anus, and penis.

**broccoli sprout extract**: A cruciferous vegetable extract with potential chemopreventive activities. Broccoli sprout extract contains a high amount of sulforaphane, a naturally occurring isothiocyanate. Sulforaphane activates the transcription factor NF-E2-related factor 2 (Nrf2), a member

of the basic leucine zipper family, which binds to and activates antioxidant-response elements (AREs). Subsequently, activated AREs mediate the transcription of antioxidant enzymes (particularly glutathione-S-transferase and quinone oxidoreductase), resulting in the detoxification of highly reactive carcinogens. AREs are cis-acting regulatory enhancer elements found in the 5' flanking region of many phase II detoxification enzymes. or A substance that is being studied in the treatment of infections caused by herpesvirus, including herpes-zoster (shingles). It belongs to the family of drugs called antivirals.

**broccoli sprout/broccoli seed extract supplement:** A tablet-based nutritional supplement composed of a mixture of sprout and seed extracts of the cruciferous vegetable broccoli, with potential chemopreventive and antioxidant activities. Broccoli sprout/broccoli seed extract contains a high amount of both the glucosinolate glucoraphanin and the enzyme myrosinase, which catalyzes the production of glucoraphanin to sulforaphane. Upon administration of the broccoli sprout/broccoli seed extract, sulforaphane activates the transcription factor NF-E2-related factor 2 (Nrf2), a member of the basic leucine zipper family, which binds to and activates antioxidant-response elements (AREs). Subsequently, activated AREs promote the transcription of antioxidant and detoxifying enzymes, particularly glutathione-S-transferase and NAD(P)H dehydrogenase [quinone] 1 (NAD(P)H:quinone oxidoreductase; NQO1), resulting in the detoxification of highly reactive carcinogens. This accelerates the elimination of carcinogens, may protect against cellular damage, and prevents cancer formation. AREs are cis-acting regulatory enhancer elements found in the 5' flanking region of many phase II detoxification enzymes. Check for active clinical trials using this agent.

**Broken colour:** A multi-coloured effect obtained usually by the merging of wet paints of different colours during application.

**Broken Mold Marks:** Part surface defects caused by mold damage.

**bromelain:** A proteolytic enzyme obtained from the pineapple plant that cleaves sulhydryl groups. The enzyme is adsorbed intact through the gastrointestinal tract and has demonstrated therapeutic benefit. Bromelain has the ability to modulate cytokines, and has also demonstrated anti-inflammatory activity, immune response activity, and fibrinolytic activity. OR A type of treatment that uses substances made from living organisms to

treat disease. These substances may occur naturally in the body or may be made in the laboratory. Some BRM therapies stimulate or suppress the immune system to help the body fight cancer, infection, and other diseases. Other BRM therapies attack specific cancer cells, which may help keep them from growing or kill them. They may also lessen certain side effects caused by some cancer treatments. Types of BRM therapy include immunotherapy (such as vaccines, cytokines, and some antibodies), gene therapy, and some targeted therapies. Also called biological response modifier therapy, biological therapy, and biotherapy.

**Bromine:** Symbol:"Br" Atomic Number:"35" Atomic Mass: 79.90amu. Bromine is a member of the halogen group. Bromine is the only non-metallic element that is a liquid at room temperature. While it is poisonous you will still find this reddish-brown element used in flame-retardants, water purification systems, and dyes.

**bromocriptine mesylate:** The mesylate salt of bromocriptine, a semisynthetic ergot alkaloid with dopaminergic, antidyskinetic, and antiprolactinemic activities. Bromocriptine selectively binds to and activates postsynaptic dopamine D2 receptors in the corpus striatum of the central nervous system (CNS). Activation of these D2 receptors activate inhibitory G-proteins, which inhibit adenylyl cyclase, preventing signal transduction mediated via cAMP and resulting in the inhibition of neurotransmission and an antidyskinetic effect. This agent also stimulates dopamine D2 receptors in the anterior pituitary gland, which results in the inhibition of prolactin secretion and lactation and may inhibit the proliferation of prolactin-dependent breast cancer cells.

**bromodeoxyuridine:** A halogenated thymidine analogue with potential antineoplastic and radiosensitizing activities. Bromodeoxyuridine competes with thymidine for incorporation into DNA, resulting in DNA mutation and the inhibition of cell proliferation. As a radiosensitizer, this agent is associated with the inhibition of repair of radiation-induced DNA double-strand breaks (DSBs).

**Bromodomain:** A domain consisting of a four-helix bundle that binds peptides containing acetyllysine. Also called an acetyllysine-binding domain. OR domain in proteins that binds to acetylated lysines in histones

**bromodomain inhibitor ABBV-075:** An inhibitor of one or more as of yet undisclosed bromodomain (BRD)-containing protein(s), with potential

antineoplastic activity. Upon administration, the bromodomain inhibitor ABBV-075 binds to the acetyl-lysine binding site in the BRD of certain BRD-containing protein(s), thereby preventing the interaction between those proteins and acetylated histones. This disrupts chromatin remodeling, prevents the expression of certain growth-promoting genes, and leads to an inhibition of cell growth in susceptible tumors.

**bromovinyl-deoxyuridine:** A uridine derivative and nucleoside analog with pro-apoptotic and chemosensitizing properties. In vitro, bromovinyl-deoxyuridine (BVDU) has been shown to downregulate the multifunctional DNA repair enzyme APEX nuclease 1, resulting in the inhibition of DNA repair and the induction of apoptosis. In addition, this agent may inhibit the expression of STAT3 (signal transducer and activator of transcription 3), which may result in the downregulation of vascular endothelial growth factor (VEGF). BVDU has also been found to inhibit the upregulation of chemoresistance genes (Mdr1 and DHFR) during chemotherapy. Overall, the gene expression changes associated with BVDU treatment result in the decrease or prevention of chemoresistance. In addition, this agent has been shown to enhance the cytolytic activity of NK-92 natural killer cells towards a pancreatic cancer cell line in vitro.

**bronchi :** A substance being studied in the prevention of cancer. Broccoli sprout extract comes from newly sprouted broccoli. It causes cells to make enzymes that may protect them against cancer-causing toxins in the body, and it may also block the growth of cancer cells.

**bronchial :** An enzyme found in pineapples that breaks down other proteins, such as collagen and muscle fiber, and has anti-inflammatory properties. It is used as a meat tenderizer in the food industry.

**bronchial adenoma :** The large air passages that lead from the trachea (windpipe) to the lungs.

**bronchial brush biopsy :** Having to do with the bronchi, which are the larger air passages of the lungs, including those that lead from the trachea (windpipe) to the lungs and those within the lungs.

**bronchial brushing :** Cancer that forms in tissues of the bronchi (large air passages in the lungs including those that lead to the lungs from the windpipe).

**bronchial washing :** A procedure in which cells are taken from the inside of the airways that lead to the lungs. A bronchoscope (a thin, tube-like

instrument with a light and a lens for viewing) is inserted through the nose or mouth into the lungs. A small brush is then used to remove cells from the airways. These cells are then looked at under a microscope. A bronchial brush biopsy is used to find cancer and changes in cells that may lead to cancer. It is also used to help diagnose other lung conditions. Also called bronchial brushing.

**bronchiole :** A procedure in which cells are taken from the inside of the airways that lead to the lungs. A bronchoscope (a thin, tube-like instrument with a light and a lens for viewing) is inserted through the nose or mouth into the lungs. A small brush is then used to remove cells from the airways. These cells are then looked at under a microscope. A bronchial brushing is used to find cancer and changes in cells that may lead to cancer. It is also used to help diagnose other lung conditions. Also called bronchial brush biopsy.

**bronchioles:** the branches formed from the bronchi.

**bronchiolitis obliterans :** A procedure in which cells are taken from the inside of the airways that lead to the lungs. A bronchoscope (a thin, tube-like instrument with a light and a lens for viewing) is inserted through the nose or mouth into the lungs. A mild salt solution is washed over the surface of the airways to collect cells, which are then looked at under a microscope. Bronchial washing is used to find infections. It may also help find cancer or changes in cells that may lead to cancer.

**bronchitis :** A tiny branch of air tubes in the lungs.

**bronchodilator :** A condition in which the bronchioles (tiny branches of air tubes in the lungs) become inflamed and blocked. It may be caused by breathing in gases or particles that irritate the bronchioles. This irritation causes scar tissue to form, and makes breathing difficult. Bronchiolitis obliterans may be caused by other factors, and can also occur after a transplant with an organ or stem cells from a matched donor.

**bronchogenic carcinoma :** Inflammation (swelling and reddening) of the bronchi.

**bronchoscope :** A type of drug that causes small airways in the lungs to open up. Bronchodilators are inhaled and are used to treat breathing disorders, such as asthma or emphysema.

**bronchoscopy** : Cancer that begins in the tissue that lines or covers the airways of the lungs, including small cell and non-small cell lung cancer.

**bronchus** : A thin, tube-like instrument used to examine the inside of the trachea, bronchi (air passages that lead to the lungs), and lungs. A bronchoscope has a light and a lens for viewing, and may have a tool to remove tissue.

**Brønsted-Lowry theory of acids and bases:** a Brønsted-Lowry acid is a compound capable of donating a proton (a hydrogen ion), and a Brønsted-Lowry base is capable of accepting a hydrogen ion. In aneutralization, an acid donates a proton to a base, creating a conjugate acid and a conjugate base.

**Brønsted-Lowry theory of acids and bases:** A Brønsted-Lowry acid is a compound capable of donating a proton (a hydrogen ion), and a Brønsted-Lowry base is capable of accepting a hydrogen ion. Inneutralization, an acid donates a proton to a base, creating a conjugate acid and a conjugate base.

**brontictuzumab:** A humanized monoclonal antibody directed against the Notch-1 receptor with potential antineoplastic activity. Upon administration, brontictuzumab binds to Notch-1 on the cell surface, thereby inhibiting Notch-mediated signaling and tumor cell proliferation. Notch 1, a type 1 transmembrane protein belonging to the Notch family, functions as a receptor for membrane bound ligands and has various roles during development; dysregulated Notch signaling is associated with increased cell growth and chemoresistance in cancers. Check for active clinical trials using this agent.

**bronze:** A yellow to yellow-brown alloy that contains mostly copper and tin, with small amounts of other metals.

**bronze diabetes:** bronze skin pigmentation seen in hemochromatosis, coupled with the resultant diabetes

**Bronze paint:** Descriptive of metallic paints composed of copper-bronze or tinted aluminium powder in a clear medium. So-called gold paints are in fact of this type and the term bronze or gold-bronze is used to describe the whole range, irrespective of colour.

**Bronzing:** A metallic lustre or iridescent 'bloom' that may develop on full-coloured paints based on certain pigments, e.g. Prussian and phthalocyanine blues. OR Full coloured paints based on certain pigments, such as Prussian

and phthalocyanine blues, can produce a metallic lustre. To cure this iridescent effect, thoroughly clean down the surface to remove all dirt, grease and surface contaminants, then rub down with a suitable abrasive and dust off before repainting.

**brostallicin:** A synthetic, alpha-bromoacrylic, second-generation minor groove binder (MGB), related to distamycin A, with potential antineoplastic activity. Brostallicin binds to DNA minor groove DNA, after having formed a highly reactive glutathione (GSH)-brostallicin complex in the presence of the enzyme glutathione S-transferase (GST), which is overexpressed in cancer cells; DNA replication and cell division are inhibited, resulting in tumor cell death. Compared to typical MGBs, this agent appears to bind covalently to DNA in a different manner and its activity does not depend on a functional DNA mismatch repair (MMR) mechanism. Accordingly, brostallicin may be effective against MMR-defective tumors that are refractory to various anticancer agents.

**brostallicin hydrochloride :** A procedure that uses a bronchoscope to examine the inside of the trachea, bronchi (air passages that lead to the lungs), and lungs. A bronchoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. The bronchoscope is inserted through the nose or mouth. Bronchoscopy may be used to detect cancer or to perform some treatment procedures.

**Brösted acid:** A material that gives up hydrogen ions in a chemical reaction.

**Brösted base:** A material that accepts hydrogen ions in a chemical reaction.

**Brownian motion:** Small particles suspended in liquid move spontaneously in a random fashion. The motion is caused by unbalanced impacts of molecules on the particle. Brownian motion provided strong circumstantial evidence for the existence of molecules.

**broxuridine :** A large airway that leads from the trachea (windpipe) to a lung. The plural of bronchus is bronchi.

**bruceantin:** A triterpene quassinoid antineoplastic antibiotic isolated from the plant *Brucea antidysenterica*. Bruceantin inhibits the peptidyl transferase elongation reaction, resulting in decreased protein and DNA synthesis. Bruceantin also has antiamebic and antimalarial activity.

**Brunei:** Small country on the north coast of Borneo, wealthy because of its large deposits of crude oil. The Sultan of Brunei has a property in the Northern Territory that is rather larger than the country.

**Brunswick black:** A black varnish, usually a solution of asphaltum.

**Brunswick green:** A green obtained from a mixture of Chrome yellow and Prussian Blue.

**Brush disturbance/floating/flooding:** When pigments have been disturbed in this way, wait until the paint is completely dry. Thoroughly clean down the surface to remove all dirt, grease and surface contaminants, rub down with a suitable abrasive and dust off, then reapply paint.

**bryostatin 1:** A macrocyclic lactone isolated from the bryozoan *Bugula neritina* with antineoplastic activity. Bryostatin-1 binds to and inhibits the cell-signaling enzyme protein kinase C, resulting in the inhibition of tumor cell proliferation, the promotion of tumor cell differentiation, and the induction of tumor cell apoptosis. This agent may act synergistically with other chemotherapeutic agents. OR A substance being studied in the treatment of cancer. Brostallicin hydrochloride binds to DNA and may kill cancer cells. It may also help other drugs kill cancer cells. It is a type of DNA minor groove binding agent.

**BSH:** A drug that makes cancer cells more sensitive to radiation and is also used as a diagnostic agent to determine how fast cancer cells grow.

**BSI-201:** A substance being studied in the treatment of cancer and certain brain conditions such as Alzheimer disease and stroke. It binds to an enzyme involved in cell growth and it may help anticancer drugs work better. Bryostatin 1 comes from a marine organism. It is a type of protein kinase C modulator.

**BSSE:** Basis-set superposition error. An insidious artifact traceable to the fact that one can seldom afford to use a really big basis set. It causes an extra decrease in energy (i.e. more negative energy, greater stability) when two systems (atoms or molecules) are brought together. The energy of one fragment is lowered because its orbitals can use the basis functions on the other fragment, even if the actual electrons and nuclei on the other fragment are not included in the calculation. With a complete basis set, there is no BSSE because the other fragment's basis functions are superfluous. BSSE is usually ignored in thermochemical calculations, except for studies of weak, non-bonded interactions. See "counterpoise."

**BTK inhibitor BGB-3111:** An orally available inhibitor of Bruton tyrosine kinase (BTK) with potential antineoplastic activity. Upon administration, BGB-3111 selectively binds to and inhibits the activity of BTK and prevents the activation of the B-cell antigen receptor (BCR) signaling pathway. This prevents both B-cell activation and BTK-mediated activation of downstream survival pathways. This leads to an inhibition of the growth of malignant B-cells that overexpress BTK. BTK, a member of the TEC family of cytoplasmic tyrosine kinases, is overexpressed in B-cell malignancies; it plays an important role in the development, activation, signaling, proliferation and survival of B-lymphocytes.

**BTK inhibitor CC-292:** An orally bioavailable, selective inhibitor of Bruton's agammaglobulinemia tyrosine kinase (BTK), with potential antineoplastic activity. Upon administration, AVL-292 targets and covalently binds to BTK, thereby preventing its activity. By irreversibly inhibiting BTK, administration of this agent may lead to an inhibition of B cell receptor (BCR) signaling and may inhibit cell proliferation of B-cell malignancies. BTK, a cytoplasmic tyrosine kinase and member of the Tec family of kinases, plays an important role in B lymphocyte development, activation, signaling, proliferation and survival. Check for active clinical trials using this agent.

**BTK inhibitor GDC-0853:** An orally available inhibitor of Bruton's tyrosine kinase (BTK) with potential antineoplastic activity. Upon administration, GDC-0853 inhibits the activity of BTK and prevents the activation of the B-cell antigen receptor (BCR) signaling pathway. This prevents both B-cell activation and BTK-mediated activation of downstream survival pathways, which leads to the inhibition of the growth of malignant B-cells that overexpress BTK. BTK, a member of the Src-related BTK/Tec family of cytoplasmic tyrosine kinases, is overexpressed in B-cell malignancies; it plays an important role in B-lymphocyte development, activation, signaling, proliferation and survival.

**BTK inhibitor ONO-4059:** An orally available formulation containing an inhibitor of Bruton agammaglobulinemia tyrosine kinase (BTK), with potential antineoplastic activity. Upon administration, ONO-4059 covalently binds to BTK within B cells, thereby preventing B-cell receptor signaling and impeding B-cell development. As a result, this agent may inhibit the proliferation of B-cell malignancies. BTK, a cytoplasmic

tyrosine kinase and member of the Tec family of kinases, plays an important role in B lymphocyte development, activation, signaling, proliferation and survival.

**BUBBLE:** A spherical, internal void of air or other gas trapped within a plastic. See VOID.

**Bubble** : A bubble contains a gas. Bubbles in a liquid when it is boiling contain the vapour of that liquid. Bubbles of gas can be formed during a chemical reaction.

**Bubble point (of a mixture of liquids at a given pressure):** The temperature at which the first vapor bubble appears when the mixture is heated

**BUBBLER:** A device inserted into a mold cavity or core, which allows water to flow deep inside the hole into which it is inserted and to discharge through the open end of hole. Uniform cooling of the molds and of isolated mold sections can be achieved in this manner.

**Bubbler mold Cooling (injection molding):** A method of cooling an injection mold in which a stream of cooling liquid flows continuously into a cooling outlet normally positioned at the end opposite the inlet. Uniform cooling can be achieved in this manner.

**BUBBLES:** Air bubbles in a drying paint film caused by excessive brushing during application or by over vigorous mixing that results in air trapment.

**Bubbles:** Air or gas pockets that have formed in the material of the component. Bubbles may vary in size. OR Similar to blisters, gas pockets, or voids that have formed inside the plastic.

**Bubbling/aeration/floating:** There's only one way to cure this problem. Thoroughly clean down the surface to remove all dirt, grease and surface contaminants. Then carefully scrape back any areas of poorly adhering or bubbled coating to a firm edge. Rub down to 'feather' any broken edges, dust off, and reapply paint

**buccal mucosa** : A substance used in a type of radiation therapy called boron neutron capture therapy. BSH is injected into a vein and becomes concentrated in tumor cells. The patient then receives radiation treatment with atomic particles called neutrons. The neutrons react with the boron in

BSH and make radioactive particles that kill the tumor cells without harming normal cells. Also called sodium borocaptate.

**buckminsterfullerene60:** A form of carbon consisting of 60 carbon atoms bound together to make a roughly spherical "buckyball" (which looks rather like a soccer ball).

**budesonide :** A substance being studied in the treatment of some types of cancer. BSI-201 may kill cancer cells. Also called iniparib.

**budesonide/formoterol fumarate dihydrate inhalation aerosol:** An inhalation aerosol formulation containing budesonide and the fumarate dihydrate salt of formoterol with anti-inflammatory and bronchial smooth muscle-relaxing activities. The synthetic corticosteroid steroid budesonide binds to intracellular glucocorticosteroid receptors (GRs), exhibiting inhibitory activities against multiple cell types and mediators associated with allergic inflammation. The long-acting beta-adrenergic receptor agonist formoterol selectively binds to beta-2 adrenergic receptors in bronchial smooth muscle, activating intracellular adenylyl cyclase, an enzyme that catalyzes the conversion of adenosine triphosphate (ATP) to cyclic-3',5'-adenosine monophosphate (cAMP); increased intracellular cAMP result in the relaxation of bronchial smooth muscle and inhibition of the cellular release of mediators of immediate hypersensitivity, especially from mast cells.

**budget:** of a glacier, the ratio between ice gained and ice lost.

**Buffer:** A solution or liquid whose chemical makeup neutralizes acids or bases without a great change in pH. OR a solution selected or prepared to minimize changes in hydrogen ion concentration which would otherwise occur as a result of a chemical reaction.. OR A solution containing both a weak acid and its conjugate base which resists changes in pH brought on by addition of an acid or base to the solution. (see RFF 705.10.09 - BUFFERS) OR A conjugate acid-base pair that is capable of resisting changes in pH when acid or base is added to the system This tendency will be maximal when the conjugate forms are present in equal amounts. OR A solution that can maintain its pH value with little change when acids or bases are added to it. Buffer solutions are usually prepared as mixtures of a weak acid with its own salt or mixtures of salts of weak acids. For example, a 50:50 mixture of 1 M acetic acid and 1 M sodium acetate buffers pH around 4.7. OR A system capable of resisting changes in pH, consisting of a

conjugate acid-base pair in which the ratio of proton acceptor to proton donor is near unity.

**buffer factor (Revelle factor):** The ratio of the instantaneous fractional change in the partial pressure of CO<sub>2</sub> (pCO<sub>2</sub>) exerted by seawater to the fractional change in total CO<sub>2</sub> dissolved in the ocean waters. The buffer factor relates the partial pressure of CO<sub>2</sub> in the ocean to the total ocean CO<sub>2</sub> concentration at constant temperature, alkalinity and salinity. The Revelle factor is a useful parameter for examining the distribution of CO<sub>2</sub> between the atmosphere and the ocean, and measures in part the amount of CO<sub>2</sub> that can be dissolved in the mixed surface layer.

**buffer solutions:** Solutions that resist changes in their pH, even when small amounts of acid or base are added.

**Buffing:** Process of polishing a cured coating to improve release and low friction.

**buformin hydrochloride:** The hydrochloride salt form of buformin, an agent belonging to the biguanide class of antidiabetics with antihyperglycemic activity. Buformin is not metabolized and is excreted in the urine. This agent has an elevated risk of causing lactic acidosis, and has been withdrawn from the market.

**bugbane :** The inner lining of the cheeks.

**bugwort :** A drug used in the treatment of asthma and rhinitis. It is also being studied in the treatment of cancer. Budesonide belongs to the family of drugs called steroids.

**Build:** The actual or apparent thickness of a dried film of paint.

**BUILD:** Thickness or depth of a paint film.

**Build platform:** The support base on an additive machine where parts are built. The maximum build size of a part is dependent on the size of a machine's build platform. Many times a build platform will house a number of different parts of varying geometries.

**BUILDER:** Binds hardness ions, calcium and magnesium, to remove them from solution either as a soluble complex or as a precipitate.

**Bulk density:** The mass of powder in a unit volume. Note this is not the true density of the substance, which is the mass per unit volume in a single crystal. OR The mass per unit of volume in powder form, including the air trapped between particles. OR ASTM D1182-54 test method describes this

measurement of mass per unit volume of a molding powder (in large volume determinations). OR The mass per unit volume of a molding powder as determined in a reasonably large volume. The recommended test method is ASTM D1182-54. OR The density (mass per unit of volume) of a resin in solid form (granular, nodular, pellet, powder, etc.) expressed in g/cc or lbs/ft<sup>3</sup>. OR Weight of a unit of a material, in powdered or granular form, including voids (air) inherent in the material.

**Bulk Factor:** Ratio of the volume of loose molding powder to the volume of the same weight of resin after molding. OR The ratio of the volume of any given mass of loose plastic material to the volume of the same mass of the material after molding. OR A polyester resin/glass fibre premix, for injection or transfer moulding. Also known as dough moulding compound (DMC).

**bulk-forming agent :** An eastern North American perennial herb. A substance obtained from the root of the plant has been used in some cultures to treat a number of medical problems. It is being studied in the treatment of hot flashes and other symptoms of menopause. The scientific name is *Cimicifuga racemosa*. Also called black cohosh, black snakeroot, bugwort, and rattlesnake root.

**Bulk-molding compounds (BMC):** Bulk-molding compounds are used as a premix in composite manufacturing. A BMC consists of a mixture of resin, reinforcements, inert fillers, and other additives which form a puttylike preformed shape, rope or sheet.

**Bulkamid:** (Other name for: polyacrylamide hydrogel)

**bulking agent:** a fine, solid material which is sometimes added to a wastewater stream to produce clarification or coagulation by adding bulk to the solids.

**Bulking sludge:** Clouds of billowing sludge that occur throughout secondary clarifiers and sludge thickeners when sludge becomes too light and will not settle properly. In the activated sludge process, bulking is usually caused by filamentous bacteria. Alken-Murray can cure this condition by applying Alken Nu-Bind and Clear-Flo 7015 to the system.

**BuMel:** An eastern North American perennial herb. A substance obtained from the root of the plant has been used in some cultures to treat a number of medical problems. It is being studied in the treatment of hot flashes and other symptoms of menopause. The scientific name is *Cimicifuga*

racemosa. Also called black cohosh, black snakeroot, bugbane, and rattlesnake root.

**BuMel regimen :** A substance, such as fiber in food, that adds bulk and water to stools so that they can pass more easily through the intestines (lower part of the digestive tract).

**Bumpoff:** A feature in the mold with an undercut. To eject the part, it must bend or stretch around the undercut.

**BUN:** An abbreviation for a chemotherapy combination used to prepare patients with high-risk neuroblastoma for a stem cell transplant. It is also being studied in the treatment of other types of cancer. BuMel includes the drugs busulfan and melphalan hydrochloride. Also called BuMel regimen.

**Bunsen burner:** Common laboratory burner that uses natural gas or propane, developed by German chemist Robert Wilhelm Bunsen during the 19th century. OR A gas burner with adjustable air intake, commonly used in laboratories.

**buoyant:** describes a property that causes materials to appear to float in or on a fluid.

**buparlisib:** An orally bioavailable specific oral inhibitor of the pan-class I phosphatidylinositol 3-kinase (PI3K) family of lipid kinases with potential antineoplastic activity. Buparlisib specifically inhibits class I PIK3 in the PI3K/AKT kinase (or protein kinase B) signaling pathway in an ATP-competitive manner, thereby inhibiting the production of the secondary messenger phosphatidylinositol-3,4,5-trisphosphate and activation of the PI3K signaling pathway. This may result in inhibition of tumor cell growth and survival in susceptible tumor cell populations. Activation of the PI3K signaling pathway is frequently associated with tumorigenesis. Dysregulated PI3K signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**Buphenyl:** (Other name for: sodium phenylbutyrate)

**bupivacaine :** An abbreviation for a chemotherapy combination used to prepare patients with high-risk neuroblastoma for a stem cell transplant. It is also being studied in the treatment of other types of cancer. BuMel regimen includes the drugs busulfan and melphalan hydrochloride. Also called BuMel.

**bupivacaine hydrochloride:** A long-acting, amide-type local anesthetic. Bupivacaine reversibly binds to specific sodium ion channels in the neuronal membrane, resulting in a decrease in the voltage-dependent membrane permeability to sodium ions and membrane stabilization; inhibition of depolarization and nerve impulse conduction; and a reversible loss of sensation. Check for active clinical trials using this agent.

**bupivacaine hydrochloride :** Nitrogen in the blood that comes from urea (a substance formed by the breakdown of protein in the liver). The kidneys filter urea out of the blood and into the urine. A high level of urea nitrogen in the blood may be a sign of a kidney problem. Also called blood urea nitrogen and urea nitrogen.

**bupivacaine hydrochloride liposome injectable suspension:** A liposome-encapsulated formulation of bupivacaine, which is an amide-type, long-acting local anesthetic. Upon administration, bupivacaine reversibly binds to specific sodium ion channels in the neuronal membrane, resulting in both a decrease in the voltage-dependent membrane permeability to sodium ions and membrane stabilization. This leads to inhibition of both depolarization and nerve impulse conduction, and a reversible loss of sensation. Compared to bupivacaine alone, liposomal delivery increases the duration of local anesthetic action and delays the peak plasma concentration of bupivacaine due to its slow release from the liposome.

**buprenorphine hydrochloride :** A drug used to relieve pain by blocking signals at nerve endings. It is being studied in the relief of pain following surgery for cancer. It is a type of local anesthetic. Also called bupivacaine hydrochloride, Marcaine, and Sensorcaine.

**buprenorphine transdermal matrix patch:** A transdermal matrix patch containing the synthetic opioid buprenorphine with analgesic and sedative activities. Buprenorphine binds to and activates the mu-opioid receptors in the central nervous system (CNS), thereby mimicking the effects of the endogenous opiates. Binding to opioid receptors stimulates exchange of GTP for GDP, inhibits adenylate cyclase, and decreases intracellular cAMP. This inhibits the release of various nociceptive neurotransmitters, such as substance P, gamma-aminobutyric acid (GABA), dopamine, acetylcholine, noradrenaline, vasopressin, and somatostatin. In addition, buprenorphine closes N-type voltage-gated calcium channels and opens calcium-dependent inwardly rectifying potassium channels, resulting in hyperpolarization,

reduced neuronal excitability, analgesia and sedation. Buprenorphine is a partial agonist at the mu-opioid receptor and an antagonist at the kappa-opioid receptor in the CNS.

**bupropion hydrochloride:** The hydrochloride salt of an aminoketone antidepressant. The molecular mechanism of the antidepressant effect of bupropion is unknown. This agent does not inhibit monoamine oxidase and, compared to classical tricyclic antidepressants, is a weak blocker of the neuronal uptake of serotonin and norepinephrine. Bupropion also weakly inhibits the neuronal re-uptake of dopamine. or A drug used to relieve pain by blocking signals at nerve endings. It is being studied in the relief of pain following surgery for cancer. It is a type of local anesthetic. Also called bupivacaine, Marcaine, and Sensorcaine.

**burdock :** A drug used to treat moderate to severe pain. It is also used to treat addiction to heroin and other opiates, such as morphine.

Buprenorphine hydrochloride binds to opioid receptors in the central nervous system. It is a type of analgesic agent and a type of opioid.

**buret:** A cylindrical glass tube closed by a stopcock on one end and open on the other, with volume gradations marked on the barrel of the tube, used to precisely dispense a measured amount of a liquid.

**burixafor:** An orally bioavailable inhibitor of CXC chemokine receptor 4 (CXCR4) with receptor binding and hematopoietic stem cell-mobilization activities. Burixafor binds to the chemokine receptor CXCR4, thereby preventing the binding of stromal derived factor-1 (SDF-1 or CXCL12) to the CXCR4 receptor and subsequent receptor activation; this may induce the mobilization of hematopoietic stem and progenitor cells from the bone marrow into blood. CXCR4, a chemokine receptor belonging to the G protein-coupled receptor (GPCR) gene family, plays an important role in chemotaxis and angiogenesis and is upregulated in several tumor cell types; CXCL12/CXCR4 interaction induces retention of hematopoietic cells in the bone marrow.

**Burkitt leukemia :** A drug used to treat depression and certain other disorders. It is also used to help people stop smoking. Bupropion hydrochloride increases the levels of the chemicals dopamine, serotonin, and norepinephrine in the brain. This helps improve mood and can lessen cravings for nicotine. It is a type of antidepressant and a type of nicotine receptor antagonist. Also called Wellbutrin and Zyban.

**Burkitt lymphoma :** A plant whose seeds and root have been used in some cultures to treat certain medical problems. It may have antioxidant effects. The scientific name is *Arctium lappa*. Also called happy major and lappa.

**BURNED:** Showing evidence of thermal decomposition through some discoloration, distortion, or localized destruction of the surface of the plastic.

**Burned :** Showing evidence of excessive heating during processing or use of a plastic, as evidenced by blistering, discoloration, distortion or destruction of the surface.

**Burning off:** The removal of paint by means of heat applied to the surface by means of a blow-lamp.

**burr hole :** A rare, fast-growing type of leukemia (blood cancer) in which too many white blood cells called B lymphocytes form in the blood and bone marrow. It may start in the lymph nodes as Burkitt lymphoma and then spread to the blood and bone marrow, or it may start in the blood and bone marrow without involvement of the lymph nodes. Both Burkitt leukemia and Burkitt lymphoma have been linked to infection with the Epstein-Barr virus.

**Burrs:** Metal protrusions on metal parts due to dull tooling, improperly punched or cut parts of the belt.

**bursitis :** An aggressive (fast-growing) type of B-cell non-Hodgkin lymphoma that occurs most often in children and young adults. The disease may affect the jaw, central nervous system, bowel, kidneys, ovaries, or other organs. There are three main types of Burkitt lymphoma (sporadic, endemic, and immunodeficiency related). Sporadic Burkitt lymphoma occurs throughout the world, and endemic Burkitt lymphoma occurs in Africa. Immunodeficiency-related Burkitt lymphoma is most often seen in AIDS patients.

**Burst Pressure:** The pressure level that is required to burst a tube.

**Burst strength:** the hydraulic pressure required to cause a pipe, fitting, or vessel to fail. This value is typically dependent on the rate at which the pressure is applied as well as the pressure duration.

**buserelin:** A small opening in the skull made with a surgical drill. OR A synthetic analog of gonadotropin-releasing hormone (GnRH). Buserelin binds to and activates pituitary gonadotropin releasing hormone (GnRH)

receptors. Prolonged administration of buserelin results in sustained inhibition of gonadotropin production, suppression of testicular and ovarian steroidogenesis, and reduced levels of circulating gonadotropin and gonadal steroids. Buserelin is more potent than GnRH.

**Bushing (extrusion):** The outer ring of any type of a circular tubing or pipe die which forms the outer surface of the tube or pipe.

**Buspar:** (Other name for: buspirone hydrochloride)

**buspirone :** Inflammation (swelling, pain, and warmth) of a bursa. A bursa is a flat, fluid-filled sac found between a bone and a tendon or muscle. It forms a cushion to help the tendon or muscle slide smoothly over the bone. Bursitis may be caused by long-term overuse, trauma, rheumatoid arthritis, gout, or infection. It usually affects the shoulder, knee, elbow, hip, or foot.

**buspirone hydrochloride:** The hydrochloride salt of an anxiolytic agent chemically and pharmacologically unrelated to benzodiazepines, barbiturates, or other sedative/hypnotic drugs. Although its exact mechanism of action is unknown, buspirone may exert its anti-anxiety effects via serotonin (5-HT<sub>1A</sub>) and dopamine receptors (D<sub>2</sub>) and may indirectly affect other neurotransmitter systems. Unlike typical benzodiazepine anxiolytics, this agent does not exert anticonvulsant or muscle relaxant effects and lacks prominent sedative effects. Check for active clinical trials using this agent.

**busulfan:** A synthetic derivative of dimethane-sulfonate with antineoplastic and cytotoxic properties. Although its mechanism of action is not fully understood, busulfan appears to act through the alkylation of DNA. Following systemic absorption of busulfan, carbonium ions are formed, resulting in DNA alkylation and DNA breaks and inhibition of DNA replication and RNA transcription. OR An anticancer drug that belongs to the family of drugs called gonadotropin-releasing hormones. In prostate cancer therapy, buserelin blocks the production of testosterone in the testicles.

**busulfan-melphalan regimen:** A chemotherapeutic regimen composed of busulfan and melphalan used as a conditioning regimen for stem cell transplantation (SCT).

**Busulfex :** (Other name for: busulfan) OR A drug that is used to treat certain anxiety disorders. It belongs to the family of drugs called anti-anxiety agents.

**Butadiene:** Butadiene is the first member for the olefin chemical family with two double bonds, consisting of four carbons joined by alternate single and double bonds (1,2 propadiene which has three carbon atoms separated by two double bonds only is not a useful chemical owing to its high self reactivity) The largest use for butadiene is in the production of synthetic rubbers, with the majority produced as a by-product from steam crackers. OR A gas which is chemically combined with styrene to create a resin used in latex binders, styrene-butadiene. OR Common monomer in chain-growth polymerisation; an important constituent of ABS rubber. Here is a picture: OR A gas, insoluble in water but soluble in alcohol and ether, obtained from the cracking of petroleum, from coal tar benzene or from acetylene produced from coke and lime. It is widely used in the formation of copolymers with styrene, acrylonitrile, vinyl chloride and other monomeric substances, where it imparts flexibility to the subsequent moldings.

**Butadiene Styrene Plastics:** A synthetic resin derived from the copolymerization of butadiene gas and styrene liquids.

**Butane:** Butane is a gas in the LPG family of petroleum gases that can be separated from the gas stream that is often associated with crude oil as it leaves an oil well. Butane is a four carbon hydrocarbon that can either be arranged as a straight chain (n-butane) or branched (iso-butane). Butane extracted from associated gas is most usually a mixture of these two isomers. N-Butane is more highly valued as a petrochemical feedstock as it yields more ethylene in a steam cracker, while iso-butane has a higher value in gasoline production.

**butane :** A drug used to treat chronic myelogenous leukemia (CML). It is also used with other drugs to prepare patients with CML for a stem cell transplant. It is also being studied in the treatment of other types of cancer. Busulfan attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called Busulfex and Myleran.

**butanol:** An alcohol containing four carbon atoms. Example: 1-butanol.

**buthionine sulfoximine:** A synthetic amino acid. Buthionine sulfoximine irreversibly inhibits gamma-glutamylcysteine synthetase, thereby depleting cells of glutathione, a metabolite that plays a critical role in protecting cells against oxidative stress, and resulting in free radical-induced apoptosis. Elevated glutathione levels are associated with tumor cell resistance to alkylating agents and platinum compounds. By depleting cells of

glutathione, this agent may enhance the in vitro and in vivo cytotoxicities of various chemotherapeutic agents in drug-resistant tumors. Buthionine sulfoximine may also exhibit antiangiogenesis activity. or A drug used to treat chronic myelogenous leukemia (CML). It is also used with other drugs to prepare patients with CML for a stem cell transplant. It is also being studied in the treatment of other types of cancer. Busulfex attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called busulfan and Myleran.

**Butt:** A joint formed between two squared ends which come together but do not overlap. Also used for 'butt hinge' and refers to the type of hinge commonly used for doors and casements.

**Butt Weld:** A joint in a plastic tube or tether that is created by melting two ends and then joining them together, end-to-end. The result is a bond as strong as the original material.

**butte:** a landform resulting from the erosion of a mesa.

**Butterfly Hinge:** Flexible (i.e., living) hinge used in joining the cover to the main body of a flip top dispensing closure. Superior hinge for impact resistance.

**Buttress Thread:** A type of threading in which the thread sides terminate abruptly in threading gradually tapering down to the neck finish. Designed to withstand maximum force in one direction only. Cross section of thread is triangular. OR A design of thread profile (cross section) which takes the form of a truncated triangle or slight modification of that form. It is usually positioned so the right angle is at the bottom of the thread cross section and adjacent to the neck of the bottle finish. The horizontal leg of the right triangle is the bearing surface for a matching cap thread. It is designed to withstand maximum force in one direction only.

**Butyl Acetate:** Butyl acetate is most commonly prepared by esterification, the reaction of acetic acid with n-butyl alcohol. The major end-use for butyl acetate is as a medium-boiling solvent for lacquers and enamels. It is also used as an active solvent for cellulosic resins, chlorinated rubber, polystyrene and methacrylate resins.

**Butylene Plastics:** Plastics based on resins made by the polymerization of butene or copolymerization by butene with one or more unsaturated compounds, the butene being in greatest amount by weight.

**butylscopolamine bromide:** An orally available bromide salt form of butylscopolamine, a quaternary ammonium derivative of the alkaloid scopolamine, with anticholinergic property. Upon oral administration, hyoscine butylbromide binds to and blocks muscarinic receptors located on postganglionic parasympathetic nerve endings and on smooth muscle cells. This blocks the activity of acetylcholine (ACh) and causes its antispasmodic effect in the gastrointestinal (GI), urinary, uterine, and biliary tracts. This agent may also facilitate radiologic visualization of the GI tract.

**By-product:** Is a secondary or incidental product deriving from a manufacturing process or a chemical reaction and is not the primary product or service being produced. A by-product can be useful and marketable, or it can be considered waste.

**Byetta:** (Other name for: exenatide)

**bypass :** A colorless gas that catches fire easily and is used as fuel. It is found in gasoline, lighter fluid, and some aerosol sprays. Butane is also one of many harmful chemicals found in tobacco smoke.

**Byproduct material:** As defined by NRC regulations includes any radioactive material (except enriched uranium or plutonium) produced by a nuclear reactor. It also includes the tailings or wastes produced by the extraction or concentration of uranium or thorium or the fabrication of fuel for nuclear reactors. Additionally, it is any material that has been made radioactive through the use of a particle accelerator or any discrete source of radium-226 used for a commercial, medical, or research activity. In addition, the NRC, in consultation with the EPA, DOE, DHS and others, can designate as byproduct material any source of naturally-occurring radioactive material, other than source material, that it determines would pose a threat to public health and safety or the common defense and security of the United States. For additional detail, see Byproduct Material.

**C cell :** A drug that may help prevent resistance to some anticancer drugs.

**C horizon:** the lowest soil horizon, which lies directly above the bedrock; composed partly of soil and partly of decomposing bedrock fragments.

**C-11 choline :** A surgical procedure in which the doctor creates a new pathway for the flow of body fluids.

**C-11 choline PET-CT scan :** A type of cell in the thyroid. C cells make calcitonin, a hormone that helps control the calcium level in the blood.

**c-ABL:** In medicine, a group of non-scientist volunteers that serves as a link between a community and clinical trial researchers. A CAB may review and monitor clinical trials and help teach the community about the trials. Also called Community Advisory Board.

**c-erbB-2:** A drug used to treat bacterial infections. It belongs to the family of drugs called antibiotics.

**c-erbB-2 positive :** A type of lipid (fat) found in the membranes of cells and the covers of nerves. Some ceramides are important in signal transduction (the process by which a cell responds to substances in its environment) and may cause some types of cells to die. Ceramides are being studied in the treatment of cancer.

**c-fos antisense oligonucleotide :** A drug used to treat certain types of head and neck cancer, and a certain type of colorectal cancer that has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Cetuximab binds to a protein called epidermal growth factor receptor (EGFR), which is on the surface of some types of cancer cells. This may stop cancer cells from growing. Cetuximab is a type of monoclonal antibody. Also called Erbitux.

**c-kit:** A drug used to lessen the toxic effects of substances that block the action of folic acid, especially the anticancer drug methotrexate. Citrovorum factor is used to treat some types of anemia and is also used with fluorouracil to treat colorectal cancer. It is also being studied in the treatment of other types of cancer and other conditions. Citrovorum factor is a form of folic acid. It is a type of chemoprotective agent and a type of chemosensitizing agent. Also called calcium levoleucovorin, leucovorin calcium, and Wellcovorin.

**c-Kit inhibitor PLX9486:** An orally bioavailable protein tyrosine kinase inhibitor of mutated forms of the tumor-associated antigen mast/stem cell factor receptor c-Kit (SCFR), with potential antineoplastic activity. Upon oral administration, c-Kit inhibitor PLX9486 binds to and inhibits specific c-Kit mutants. This may result in an inhibition of tumor cell proliferation in cancer cell types that overexpress these c-Kit mutations. c-Kit, a transmembrane protein and receptor tyrosine kinase, is overexpressed in solid tumors and hematological malignancies; it plays a key role in the regulation of cell differentiation and proliferation. Check for active clinical trials using this agent.

**c-Met inhibitor AMG 208:** A selective small-molecule inhibitor of the proto-oncogene c-Met with potential antineoplastic activity. c-Met inhibitor AMG 208 inhibits the ligand-dependent and ligand-independent activation of c-Met, inhibiting its tyrosine kinase activity, which may result in cell growth inhibition in tumors that overexpress c-Met. C-Met encodes the hepatocyte growth factor receptor tyrosine kinase, plays an important role in epithelial cell proliferation and has been shown to be overexpressed in a variety of cancers. Check for active clinical trials using this agent.

**c-Met inhibitor AMG 337:** An orally bioavailable inhibitor of the proto-oncogene c-Met with potential antineoplastic activity. c-Met inhibitor AMG 337 selectively binds to c-Met, thereby disrupting c-Met signal transduction pathways. This may induce cell death in tumor cells overexpressing c-Met protein or expressing constitutively activated c-Met protein. c-Met protein, the product of the proto-oncogene c-Met, is a receptor tyrosine kinase also known as hepatocyte growth factor receptor (HGFR); this protein is overexpressed or mutated in many tumor cell types and plays key roles in tumor cell proliferation, survival, invasion, and metastasis, and tumor angiogenesis.

**c-Met inhibitor HS-10241:** An orally bioavailable small molecule inhibitor of the oncoprotein c-Met (hepatocyte growth factor receptor; HGFR), with potential antineoplastic activity. Upon oral administration, HS-10241 targets and binds to the c-Met protein, prevents c-Met phosphorylation and disrupts c-Met-dependent signal transduction pathways. This may induce cell death in tumor cells overexpressing c-Met protein or expressing constitutively activated c-Met protein. c-Met protein is overexpressed or mutated in many tumor cell types and plays key roles in tumor cell proliferation, survival, invasion, metastasis, and tumor angiogenesis. Check for active clinical trials using this agent.

**c-Met inhibitor JNJ-38877605:** An orally available, small molecule inhibitor of the proto-oncogene c-Met (hepatocyte growth factor receptor [HGFR]) with potential antineoplastic activity. c-Met inhibitor JNJ-38877605 selectively binds to c-Met, thereby inhibiting c-Met phosphorylation and disrupting c-Met signal transduction pathways. This may induce cell death in tumor cells overexpressing c-Met protein or expressing constitutively activated c-Met protein. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays key roles

in tumor cell proliferation, survival, invasion, metastasis, and tumor angiogenesis.

**c-Met inhibitor MSC2156119J:** An orally bioavailable inhibitor of the proto-oncogene c-Met (also known as hepatocyte growth factor receptor (HGFR)) with potential antineoplastic activity. c-Met inhibitor MSC2156119J selectively binds to c-Met, which inhibits c-Met phosphorylation and disrupts c-Met-mediated signal transduction pathways. This may induce cell death in tumor cells overexpressing c-Met protein or expressing constitutively activated c-Met protein. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays key roles in tumor cell proliferation, survival, invasion, metastasis, and tumor angiogenesis.

**c-myb antisense oligonucleotide G4460:** A 24-base phosphorothiolate antisense oligodeoxynucleotide (ODN) for the proto-oncogene c-myb with potential antineoplastic activity. C-myb antisense oligonucleotide G4460 binds to codon sequences 2 to 9 of c-myb mRNA, inhibiting translation of the transcript. Suppression of c-myb expression with this agent may result in the restoration of normal differentiation pathways, increased antiproliferative effects, and the induction of apoptosis in early progenitor hematopoietic cells and in tumor cells that overexpress c-myb. Tumor-cell overexpression of c-myb blocks differentiation, promotes proliferation, and inhibits apoptosis.

**C-peptide :** A substance that is being studied in the treatment of some types of cancer. It belongs to the family of drugs called biological response modifiers. Also called PF-3512676 and ProMune.

**C-peptide suppression test :** An emergency procedure used to restart a person's heartbeat and breathing after one or both have stopped. It involves giving strong, rapid pushes to the chest to keep blood moving through the body. Usually, it also involves blowing air into the person's mouth to help with breathing and send oxygen to the lungs. Also called cardiopulmonary resuscitation.

**C-stage:** This term describes the final stage of the reaction where the material s relatively insoluble and infusible. OR This term describes the final stage of the reaction where a thermoset material is relativelyinsoluble and infusible.

**C-T closure:** A continuous-thread design that begins near the bottom of the closure skirt and continues upward toward the liner. Closure size designation determines number of turns.

**C-T finish:** A continuous-thread finish that features an uninterrupted protruding helix on the neck of a container to accommodate a screw-type closure.

**C-VISA BikDD: liposome:** A formulation composed of DOTAP:cholesterol liposome nanoparticles complexed with the plasmid C-VISA BiKDD, with potential antineoplastic activity. C-VISA BikDD: liposome consists of a pancreatic-cancer-specific expression vector “VISA” (VP16-GAL4-WPRE integrated systemic amplifier) and a pancreatic-cancer-specific promoter CCKAR (cholecystokinin type A receptor) (CCKAR-VISA or C-VISA) which drives expression of the gene BikDD, a mutant form of the potent proapoptotic gene Bik (Bcl-2 interacting killer). Upon administration and transduction into pancreatic tumor cells, expression of BikDD by C-VISA BikDD:liposome may induce pancreatic tumor cell apoptosis and suppress pancreatic tumor cell proliferation. BikDD binds with greater affinity to anti-apoptotic proteins bcl-2, bcl-x1, bcl-w and Mcl-1 and is more potent than wild-type Bik. DOTAP:cholesterol liposome is composed of cationic lipid dioleoyl-trimethylammonium propane (DOTAP) and cholesterol at molar ratio of 1:1.

**C3 plants:** Plants (e.g., soybean, wheat, and cotton) whose carbon-fixation products have three carbon atoms per molecule. Compared with C4 plants, C3 plants show a greater increase in photosynthesis with a doubling of CO<sub>2</sub> concentration and less decrease in stomatal conductance, which results in an increase in leaf-level water-use efficiency.

**C3-targeted complement inhibitor APL-2:** A pegylated derivative of the cyclic tridecapeptide compstatin and inhibitor of complement component C3 (C3) activation, with potential use as a treatment for various diseases in which excessive complement activation plays a key role, including paroxysmal nocturnal hemoglobinuria (PNH) and age-related macular degeneration (AMD). Upon administration, C3-targeted complement inhibitor APL-2 selectively binds to C3 and blocks the cleavage of C3 into C3a and C3b by C3 convertase. This prevents complement pathway activation, and inhibits complement-mediated inflammation and cell lysis. Pegylation increases compstatin's half-life, and increases its efficacy.

Excessive complement activation plays a key role in various inflammatory and autoimmune diseases, and leads to tissue destruction. C3 is a crucial and central component of the complement system. Check for active clinical trials using this agent.

**C4 plants:** Plants (e.g., maize and sorghum) whose carbon fixation products have four carbon atoms per molecule. Compared with C3 plants, C4 plants show little photosynthetic response to increased CO<sub>2</sub> concentrations above 340 ppm but show a decrease in stomatal conductance, which results in an increase in photosynthetic water-use efficiency.

**CA 15-3:** A radioactive substance being studied in PET imaging to detect certain types of cancer. C-11 choline gets taken up by cells in the body and more of it is taken up by tumor cells than by normal cells. A PET scanner is used to detect which cells in the body have taken up C-11 choline. It is a type of radioimaging agent.

**CA 19-9:** A procedure in which a small amount of C-11 choline (a radioactive form of the vitamin choline) is injected into a vein. A scanner and a computer are used to make detailed pictures of areas inside the body where the C-11 choline collects. Cancer cells take up more C-11 choline than normal cells, so the pictures can be used to find cancer cells in the body. Also called carbon-11 choline PET-CT scan.

**CA 19-9 assay :** A protein found on epithelial cells that is part of a larger protein called MUC 1. CA 15-3 may be found in higher than normal amounts in patients with some types of cancer, including breast cancer. Measuring the amount of CA 15-3 in the blood may be useful in checking how well cancer treatment is working or if cancer has come back. CA 15-3 is a type of tumor marker.

**CA 27.29:** A substance released into the bloodstream by both cancer cells and normal cells. Too much CA 19-9 in the blood can be a sign of pancreatic cancer or other types of cancer or conditions. The amount of CA 19-9 in the blood can be used to help keep track of how well cancer treatments are working or if cancer has come back. It is a type of tumor marker.

**CA-125:** A laboratory test that measures the level of CA 19-9 in the blood. CA 19-9 is a substance released into the blood by both cancer cells and normal cells. Higher than normal amounts of CA 19-9 in the blood can be a

sign of pancreatic or other types of cancer or other conditions. The amount of CA 19-9 in the blood can be used to help keep track of how well cancer treatments are working or if cancer has come back. CA 19-9 is a type of tumor marker.

**CAB:** A protein found on epithelial cells, which line the inside and outside surfaces of the body. It is part of a larger protein called MUC 1. CA 27.29 may be found in higher than normal amounts in patients with some types of cancer, including breast cancer. Measuring the amount of CA 27.29 in the blood may help to find out how well cancer treatment is working or if cancer has come back. CA 27.29 is a type of tumor marker. or A substance that may be found in high amounts in the blood of patients with certain types of cancer, including ovarian cancer. CA-125 levels may also help monitor how well cancer treatments are working or if cancer has come back. Also called cancer antigen 125.

**cabazitaxel:** A semi-synthetic derivative of the natural taxoid 10-deacetylbaaccatin III with potential antineoplastic activity. Cabazitaxel binds to and stabilizes tubulin, resulting in the inhibition of microtubule depolymerization and cell division, cell cycle arrest in the G2/M phase, and the inhibition of tumor cell proliferation. Unlike other taxane compounds, this agent is a poor substrate for the membrane-associated, multidrug resistance (MDR), P-glycoprotein (P-gp) efflux pump and may be useful for treating multidrug-resistant tumors. In addition, cabazitaxel penetrates the blood-brain barrier (BBB). or Surgery in which a healthy blood vessel taken from another part of the body is used to make a new path for blood around a blocked artery leading to the heart. This restores the flow of oxygen and nutrients to the heart. Also called aortocoronary bypass and coronary artery bypass.

**cabergoline:** A synthetic ergoline derivative and a long-acting dopamine receptor agonist with high affinity for the dopamine D2 receptor. Cabergoline exerts an inhibitory effect on prolactin secretion by acting on dopamine receptors present in pituitary lactotrophs. This drug also binds to dopamine D2 receptors in the corpus striatum, thereby mimicking the actions of dopamine on motor control. Cabergoline also possesses antioxidant and neuroprotective properties due to its free radical scavenging activity. Cabergoline is used in the treatment of Parkinson's disease and in the treatment of hyperprolactinemia.

**Cable extrusion:** Process of extruding cables for wire sheathing or coating. Various plastic materials can be used for this process, such as PVC, HDPE, depending on the application of the extruded plastic profile.

**Cabometyx :** (Other name for: cabozantinib-s-malate) OR A drug used with prednisone to treat hormone-resistant prostate cancer that has spread and that had been treated with docetaxel. It is also being studied in the treatment of other types of cancer. Cabazitaxel blocks cell growth by stopping cell division and may kill cancer cells. It is a type of antimetabolic agent. Also called Jevtana and taxoid XRP6258.

**cabozantinib-s-malate:** The s-malate salt form of cabozantinib, an orally bioavailable, small molecule receptor tyrosine kinase (RTK) inhibitor with potential antineoplastic activity. Cabozantinib strongly binds to and inhibits several RTKs, which are often overexpressed in a variety of cancer cell types, including hepatocyte growth factor receptor (MET), RET (rearranged during transfection), vascular endothelial growth factor receptor types 1 (VEGFR-1), 2 (VEGFR-2), and 3 (VEGFR-3), mast/stem cell growth factor (KIT), FMS-like tyrosine kinase 3 (FLT-3), TIE-2 (TEK tyrosine kinase, endothelial), tropomyosin-related kinase B (TRKB) and AXL. This may result in an inhibition of both tumor growth and angiogenesis, and eventually lead to tumor regression. or An enzyme that is involved in many cell processes, such as cell division. The gene for c-ABL is on chromosome 9. In most patients with chronic myelogenous leukemia (CML), the part of chromosome 9 with c-ABL has broken off and traded places with part of chromosome 22 to form the BCR-ABL fusion gene.

**cachexia :** A drug used to treat advanced renal cell carcinoma (a type of kidney cancer) that was treated with antiangiogenesis therapy (a type of anticancer therapy). It is also being studied in the treatment of other types of cancer. Cabometyx blocks certain proteins, which may help keep cancer cells from growing. It may also prevent the growth of new blood vessels that tumors need to grow. Cabometyx contains the active ingredient cabozantinib-s-malate. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor.

**CAD:** A drug used to treat advanced renal cell carcinoma (a type of kidney cancer) that was treated with antiangiogenesis therapy (a type of anticancer therapy). It is used under the brand name Cabometyx to treat this cancer. It is also used under the brand name Cometriq to treat progressive medullary

thyroid cancer that has spread to other parts of the body. Cabozantinib-s-malate is also being studied in the treatment of other types of cancer. It blocks certain proteins, which may help keep cancer cells from growing. It may also prevent the growth of new blood vessels that tumors need to grow. Cabozantinib-s-malate is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor.

**CAD (Computer-aided Design):** The use of computer technology for the design of objects, real or virtual.

**cadazolid:** An oxazolidinone-type antibiotic, with activity against gram-positive bacteria, including *Clostridium difficile*. Although the exact mode of action through which cadazolid exerts its effect has yet to be fully elucidated, upon administration, this agent inhibits bacterial protein synthesis and leads to bacterial cell death.

**Cadmium:** Symbol:"Cd" Atomic Number:"48" Atomic Mass: 112.41amu. Cadmium is one of the transition elements. This bluish metal is actually very soft and can be cut with a knife. You will find it used in nickel-cadmium batteries, nuclear reactors, and as a pigment. It is toxic.

**cadmium :** Loss of body weight and muscle mass, and weakness that may occur in patients with cancer, AIDS, or other chronic diseases.

**CADMIUM PIGMENTS:** Inorganic pigments based on cadmium sulphide and cadmium sulphoselenides used widely in polyethylene. Include cadmium maroon, -orange, -red, and -yellow.

**CADPAC:** Another ab initio package; acronym stands for "Cambridge analytical derivatives package."

**CAF:** A disease in which there is a narrowing or blockage of the coronary arteries (blood vessels that carry blood and oxygen to the heart). CAD is usually caused by atherosclerosis (a buildup of fatty material and plaque inside the coronary arteries). The disease may cause chest pain, shortness of breath during exercise, and heart attacks. The risk of CAD is increased by having a family history of CAD before age 50, older age, smoking tobacco, high blood pressure, high cholesterol, diabetes, lack of exercise, and obesity. Also called coronary artery disease and coronary heart disease.

**CAF regimen:** A chemotherapy regimen consisting of cyclophosphamide, doxorubicin hydrochloride (Adriamycin), and fluorouracil, which may be used in the adjuvant setting for the treatment of nonmetastatic breast cancer

or alone for the treatment of metastatic breast cancer. or A metallic element that occurs naturally in tiny amounts in air, water, soil, and food. It is a byproduct of zinc refining and is used to make batteries, pigments, plastics, alloys, and electroplate. It is also found in tobacco and tobacco smoke. Exposure to high levels of cadmium may cause certain cancers and other health problems.

**caffeine:** An abbreviation for a chemotherapy combination used alone or together with other therapies to treat breast cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs cyclophosphamide, doxorubicin hydrochloride (Adriamycin), and fluorouracil. Also called CAF regimen. OR A naturally occurring xanthine derivative with central nervous system (CNS) stimulating activity. Due to the structural similarity to adenosine, caffeine binds to and blocks adenosine receptors, thereby preventing the inhibitory effects of adenosine on nerve cells. This leads to stimulation of medullary, vagal, vasomotor, and respiratory centers in the brain; and the release of epinephrine. Physiologic responses can include bradycardia, tachycardia, vasoconstriction, CNS excitability, increased respiratory rate, increased blood pressure, increased blood flow to muscles, decreased blood flow to skin and inner organs, and release of glucose by the liver. Due to the interaction between adenosine A<sub>2A</sub> and dopamine D<sub>2</sub> receptors, caffeine can also indirectly increase the levels of dopamine in the brain.

**caffeine<sup>81042</sup>:** A substance found in tea, coffee, and cola that acts as a stimulant. It is extremely soluble in supercritical fluid carbon dioxide and somewhat soluble in water; aqueous solutions of caffeine quickly break down.

**Cage:** Large cylindrical shaped core of a spiral system. The system's main driving component. Also see Drum.

**Cage Bars:** The vertical members that form the driving surface of the cage or drum in a lotension spiral system.

**Cahn-Ingold-Prelog notational system:** a system that labels the three-dimensional arrangement of atoms around a stereogenic center of a molecule by ranking their atomic weights. The letter R indicates a clockwise decline in rank, and S indicates a counterclockwise decline in rank.

**CAIX inhibitor DTP348:** An orally bioavailable, nitroimidazole-based sulfamide, carbonic anhydrase IX (CAIX) inhibitor with potential antineoplastic activity. Upon administration, CAIX inhibitor DTP348 inhibits tumor-associated CAIX, a hypoxia-inducible transmembrane glycoprotein that catalyzes the reversible reaction and rapid interconversion of carbon dioxide and water to carbonic acid, protons, and bicarbonate ions. This prevents the acidification of the tumor's extracellular microenvironment and decreases the intracellular pH. This results in increased cell death in CAIX-expressing, hypoxic tumors. In addition, DTP348, through its nitroimidazole moiety, is able to sensitize hypoxic tumor cells to irradiation. CAIX is overexpressed in various tumors and plays a key role in intra- and extracellular pH regulation, cancer cell progression, survival, migration and invasion.

**cake, sludge:** the material resulting from air drying or dehydrating sludge.

**calaspargase pegol:** An intravenous formulation containing E. coli-derived L-asparaginase II conjugated with succinimidyl carbonate monomethoxypolyethylene glycol (SC-PEG), with potential antineoplastic activity. L-asparaginase hydrolyzes L-asparagine to L-aspartic acid and ammonia, thereby depleting cells of asparagine; asparagine depletion blocks protein synthesis and tumor cell proliferation, especially in the G1 phase of the cell cycle and ultimately induces tumor cell death. Asparagine is critical to protein synthesis in acute lymphoblastic leukemia (ALL) cells which, unlike normal cells, cannot synthesize this amino acid due to the absence of the enzyme asparagine synthase. Pegylation decreases enzyme antigenicity and increases its half life. SC is used as a PEG linker to facilitate attachment to asparaginase and enhances the stability of the formulation. Check for active clinical trials using this agent.

**calbindin :** An abbreviation for a chemotherapy combination used alone or together with other therapies to treat breast cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs cyclophosphamide, doxorubicin hydrochloride (Adriamycin), and fluorouracil. Also called CAF.

**calcification :** A substance found in the leaves and beans of the coffee tree, in tea, yerba mate, guarana berries, and in small amounts in cocoa. It can also be made in the laboratory, and is added to some soft drinks, foods, and medicines. Caffeine increases brain activity, alertness, attention, and energy.

It may also increase blood pressure, heart rate, breathing rate, and the loss of water from the body in urine.

**calcinosis** : A group of proteins that bind calcium and move it into cells. Calbindins are found in many different tissues in the body.

**calcipotriene**: A synthetic vitamin D derivative usually formulated for topical dermatological use, antipsoriatic calcipotriene (calcipotriol) competes equally with active 1,25-hydroxy-2D3 (the natural form of vitamin D) for 1,25-hydroxy-2D3 receptors in regulating cell proliferation and differentiation. It induces differentiation and suppresses proliferation of keratinocytes, reversing abnormal keratinocyte changes in psoriasis, and leads to normalization of epidermal growth. Check for active clinical trials using this agent.

**calcitonin** : Deposits of calcium in the tissues. Calcification in the breast can be seen on a mammogram, but cannot be detected by touch. There are two types of breast calcification, macrocalcification and microcalcification. Macrocalcifications are large deposits and are usually not related to cancer. Microcalcifications are specks of calcium that may be found in an area of rapidly dividing cells. Many microcalcifications clustered together may be a sign of cancer.

**calcitriol**: A condition in which abnormal amounts of calcium salts are found in soft tissue, such as muscle. OR A synthetic physiologically-active analog of vitamin D, specifically the vitamin D3 form. Calcitriol regulates calcium in vivo by promoting absorption in the intestine, reabsorption in the kidneys, and, along with parathyroid hormone, regulation of bone growth. A calcitriol receptor-binding protein appears to exist in the mucosa of human intestine. Calcitriol also induces cell cycle arrest at G0/G1 phase of the cell cycle, cell differentiation, and apoptosis, resulting in inhibition of proliferation of some tumor cell types. This agent may be chemopreventive for colon and prostate cancers. Check for active clinical trials using this agent.

**Calcium**: Symbol:"Ca" Atomic Number:"20" Atomic Mass: 40.06amu. Member of the alkaline earth metals group. Calcium can be found in three percent of the Earth's crust, your bones and cells, and in the shells of ocean creatures.

**calcium** : A hormone formed by the C cells of the thyroid gland. It helps maintain a healthy level of calcium in the blood. When the calcium level is

too high, calcitonin lowers it.

**calcium aluminosilicate anti-diarrheal:** A clay compound consisting of aluminosilicate and calcium ions with potential antidiarrheal activity. Calcium aluminosilicate anti-diarrheal consists of microscopically large flat plates of aluminosilicate separated by calcium ions that may sorb toxic chemotherapeutic drugs and their metabolites and inflammatory proteins such as TNF-alpha, which may help minimize chemotherapy-mediated or radiation therapy-mediated damage to the intestinal epithelium and so therapy-related diarrhea.

**calcium antagonist :** The active form of vitamin D. Calcitriol is formed in the kidneys or made in the laboratory. It is used as a drug to increase calcium levels in the body in order to treat skeletal and tissue-related calcium deficiencies caused by kidney or thyroid disorders.

**Calcium Carbonate:** A chemical compound filler and extender used in thermoplastics, commonly found in rock.

**CALCIUM CARBONATE:** A filler and extender used in thermoplastics. It occurs naturally in the form of minerals such as calcite, chalk, limestone, marble, and whiting.

**calcium carbonate:** A mineral needed for healthy teeth, bones, and other body tissues. It is the most common mineral in the body. A deposit of calcium in body tissues, such as breast tissue, may be a sign of disease. OR The carbonic salt of calcium ( $\text{CaCO}_3$ ). Calcium carbonate is used therapeutically as a phosphate buffer in hemodialysis, as an antacid in gastric hyperacidity for temporary relief of indigestion and heartburn, and as a calcium supplement for preventing and treating osteoporosis.

**Calcium Carbonate:** Mineral based additive used as filler, modifier, and sometimes antiblock agent.

**calcium channel blocker :** A type of drug that keeps calcium from entering the muscle cells of the heart and blood vessels. This causes the blood vessels to relax and widen, which allows the blood to flow more easily and lowers blood pressure. Some calcium antagonists may also slow the heartbeat. Calcium antagonists are used to treat high blood pressure, chest pain (angina), abnormal heartbeat (arrhythmia), and several other conditions. Also called calcium channel blocker.

**calcium chloride:** A crystalline, white substance, soluble in water, calcium chloride is the chloride salt of calcium, a bivalent metallic element with many crucial biological roles. Calcium is a major constituent of the skeleton but plays many roles as an intracellular and plasma ion as well. In medicine, calcium chloride is also used as a 10% solution in injection, for calcium replenishment. Check for active clinical trials using this agent.

**calcium citrate:** The citrate salt of calcium. An element necessary for normal nerve, muscle, and cardiac function, calcium as the citrate salt helps to maintain calcium balance and prevent bone loss when taken orally. This agent may also be chemopreventive for colon and other cancers.

**calcium glucarate:** The orally bioavailable calcium salt of glucaric acid, a natural substance found in many fruits and vegetables, with potential chemopreventive activity. After absorption, glucaric acid is converted to d-glucaro-1,4-lactone which inhibits beta-glucuronidase, an enzyme found in certain bacteria that reside in the human gut. The detoxification of various toxin and sex hormone metabolites depends upon their conjugation to glucuronic acid in the liver and subsequent excretion of glucuronic acid conjugated metabolites in the bile. Bacterial beta-glucuronidase may catalyze the deconjugation of glucuronic acid conjugated metabolites of toxins and sex hormones, thus prolonging exposure to unconjugated and unexcreted toxin and sex hormone metabolites. Accordingly, calcium glucarate supplementation may indirectly inhibit sex hormone-mediated and toxin-mediated tumorigenesis by inhibiting bacterial beta-glucuronidase activity. Elevated bacterial beta-glucuronidase activity may be associated with an increased risk for sex hormone-mediated and toxin-mediated cancers such as breast, prostate, and colon cancers.

**calcium gluconate:** The gluconate salt of calcium. An element or mineral necessary for normal nerve, muscle, and cardiac function, calcium as the gluconate salt helps to maintain calcium balance and prevent bone loss when taken orally. This agent may also be chemopreventive for colon and other cancers. OR A form of the mineral calcium that is used to prevent or treat osteoporosis (a decrease in bone mass and density) and to treat heartburn and upset stomach. It is also being studied in the prevention of bone problems in people with cancer. It is a type of dietary supplement.

**calcium infusion test :** A type of drug that keeps calcium from entering the muscle cells of the heart and blood vessels. This causes the blood

vessels to relax and widen, which allows the blood to flow more easily and lowers blood pressure. Some calcium channel blockers may also slow the heartbeat. Calcium channel blockers are used to treat high blood pressure, chest pain (angina), abnormal heartbeat (arrhythmia), and several other conditions. Also called calcium antagonist.

**calcium levoleucovorin :** The mineral calcium combined with a form of the sugar glucose. It is used to prevent and treat osteoporosis (a decrease in bone mass and density). It is also being studied in the treatment of bone loss and nerve damage caused by chemotherapy. It is a type of dietary supplement.

**Calcium sulfate (CaSO<sub>4</sub>) :** Calcium sulfate or gypsum. The main sources of calcium sulfate are the naturally-occurring gypsum or it is produced as a by-product in a number of industrial processes.

**calcium-41 (41Ca) chloride aqueous solution :** A test used to help diagnose a type of pancreatic islet cell tumor called a gastrinoma. The patient receives a 3-hour infusion of a substance called calcium gluconate and the amount of gastrin in the blood is measured. An increase in the level of gastrin in the blood after the infusion may be a sign of a gastrinoma. OR A drug used to lessen the toxic effects of substances that block the action of folic acid, especially the anticancer drug methotrexate. Calcium levoleucovorin is used to treat some types of anemia and is also used with fluorouracil to treat colorectal cancer. It is also being studied in the treatment of other types of cancer and other conditions. Calcium levoleucovorin is a form of folic acid. It is a type of chemoprotective agent and a type of chemosensitizing agent. Also called citrovorum factor, leucovorin calcium, and Wellcovorin. OR An orally bioavailable aqueous solution containing the chloride salt of the radioisotope calcium-46 (46Ca) with phosphate-binding and radioisotopic activities. Upon administration of calcium-46 chloride aqueous solution, calcium-46 is preferentially taken up by osteoblasts, which generate mineralized osteoid containing calcium. Calcium-46 accumulation and turnover in bone can be measured with bone scintigraphy and urinary isotope excretion testing

**calcium-41 chloride aqueous solution:** An orally bioavailable aqueous solution containing the chloride salt of the radioisotope calcium-41 (41Ca) with phosphate-binding and radioisotopic activities. Upon administration of calcium-41 chloride aqueous solution, calcium-41 is preferentially taken up

by osteoblasts, which generate mineralized osteoid containing calcium. Calcium-41 accumulation and turnover in bone can be measured with bone scintigraphy and urinary isotope excretion.

**calcrete:** A surficial gravel and sand conglomerate cemented by calcium carbonate.

**calculi:** stones, such as those found in kidney or gall bladder

**Calculus bovis/Moschus/Olibanum/Myrrha capsule:** An orally available traditional Chinese medicine (TCM)-based capsule formulation containing Calculus bovis, the dried gallstones of cattle, Moschus, also referred to as deer musk, the resin Olibanum and the resin Myrrha, with potential antineoplastic and chemopreventive activities. Although the exact mechanisms of action through which the active ingredients in the Calculus bovis/Moschus/Olibanum/Myrrha capsule elicit their effects have yet to be fully elucidated, they may, upon intake, exert their antineoplastic activity through modulation of the immune system, inhibition of tumor cell proliferation and induction of apoptosis.

**caldera:** a depression larger than a crater, at least a kilometer in diameter, that forms at the top of a volcano when the summit is destroyed during an eruption or when the crater floor collapses into the magma chamber below.  
OR extinct volcano that has a collapsed cone.

**Caldolor:** (Other name for: ibuprofen intravenous)

**Calendaring:** The process of pressing or smoothing material between rollers. OR A process by which a heated rubber plastic product is squeezed between heavy rollers into thin sheet or film. OR Form of extrusion using two or more counter rotating rolls in which film and sheet is produced by squeezing a hot, viscous material between them. OR A form of extrusion using two or more counter rotating rolls in which film and sheet is produced by squeezing a hot, viscous material between them.

**Calendula officinalis/Plantago major/Cochlearia armoracia/**

**Hamamelis virginiana herbal toothpaste:** A phytochemical-based toothpaste containing Calendula officinalis, Plantago major, Cochlearia armoracia, Hamamelis virginiana with potential soothing activity.

Calendula officinalis/Plantago major/Cochlearia armoracia/ Hamamelis virginiana herbal toothpaste may relieve the discomfort associated with radiation-induced mucositis.

**calendula ointment** : A substance used to diagnose and monitor cancer that has spread to the bones. It is also used to study the turnover of bone tissue and to diagnose other conditions that affect the bones, such as osteoporosis. Calcium-41 ( $^{41}\text{Ca}$ ) is a form of calcium that gives off radiation. It is passed from the body in the urine.

**calfactant**: A sterile suspension composed of an extract of bovine pulmonary surfactant with surfactant activity. Calfactant contains phospholipids, neutral lipids, and hydrophobic surfactant-associated proteins B (SP-B) and C (SP-C). Upon intratracheal administration, this agent, mimicking endogenous pulmonary surfactant, lines the alveoli and smallest bronchioles, keeping alveoli open during expiration by lowering surface tension. Resulting improvements in lung compliance and respiratory gas exchange may lead to improvements in ventilation and oxygenation.

**calgranulin A** : A substance used to study the turnover of bone tissue in certain diseases, such as osteoporosis or cancer that has spread to the bone. Calcium-46 ( $^{46}\text{Ca}$ ) is a form of calcium. It is passed from the body in the urine.

**calgranulin B** : A substance made from the flower of the marigold plant *Calendula officinalis*. Calendula-based skin products have been used to treat minor cuts, burns, and skin irritation. The products that are available in the United States may not contain the same amount or mixture of ingredients and may not be effective. Another product, Calendula ointment, is being studied in France in the prevention of dermatitis in patients having radiation therapy for breast cancer. The ointment being studied is not available in the United States.

**Calibration**: a process of normalizing sensor output by measuring a series of two or more known concentration solutions. The ion analyzer then calculates the offset and slope characteristics of the electrode and uses them to compute the concentration of unknown samples. OR The adjustment, as necessary, of a measuring device such that it responds within the required range and accuracy to known values of input. OR Calibration is correcting a measuring instrument by measuring values whose true values are known. Calibration minimizes systematic error. OR the checking, adjusting, or systematic standardizing of the graduations of a quantitative measuring instrument.

**Calibration (of a process variable measurement instrument):** A procedure in which an instrument is used to measure several independently known process variable values, and a calibration curve of known variable values versus the corresponding instrument readings is plotted. Once the instrument has been calibrated, readings obtained with it can be converted to equivalent process variable values directly from the calibration curve.

**Calibration curve:** a plot of electrode potential versus activity in two or more standardizing solutions. Unknown sample activity is determined by converting electrode potential to activity using the curve.

**caliche:** a hardpan formed by the precipitation of salt by evaporation. OR Also called hardpan; an opaque, reddish-brown-to-white calcareous material, which occurs in layers near the surface of stony soils in arid and semiarid areas.

**Californium:** Symbol:"Cf" Atomic Number:"98" Atomic Mass: (251)amu. Californium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. It is a very radioactive element and you might find it used in medicine.

**Calmodulin:** In vertebrates, a ubiquitous protein in vertebrates that, when bound to calcium, stimulates many enzymes and transporters.

**Calmodulin-dependent kinase:** A protein kinase that is activated by the binding of a  $\text{Ca}^{2+}$ -calmodulin complex.

**Calnexin:** Anchored in the endoplasmic reticulum membrane, a chaperone protein that prevents the export of immature or defective glycoproteins by binding glucose residues on the glycoproteins.

**Caloric homeostasis:** Maintenance of a constant body weight by a complex network of hormonal interactions.

**caloric intake :** A protein that is made by many different types of cells and is involved in processes that take place both inside and outside of the cell. It is made in larger amounts in inflammatory diseases such as rheumatoid arthritis, and in some types of cancer. It is being studied as a biomarker for breast cancer. Also called S100 calcium binding protein A8.

**calorie:** the quantity of heat necessary to raise the temperature of 1 gram of water 1 oC at 1 atmosphere pressure. OR The amount of energy needed to raise the temperature of 1 gram of water by 1 degree Celsius. OR A calorie is a unit scientific measure for heat and energy. You have probably heard of

calories in your food. Scientists measure one calorie as the amount of energy needed to raise the temperature of water (one gram of water) one degree Celsius. OR a unit of energy, equal to 4.184 joules. OR The amount of heat required to raise the temperature of 1 gram of water from 14.5°C to 15.5°C.

**calorie :** A protein that is made by many different types of cells and is involved in processes that take place both inside and outside of the cell. It is made in larger amounts in inflammatory diseases such as rheumatoid arthritis, and in some types of cancer. It is being studied as a biomarker for breast cancer. Also called S100 calcium binding protein A9.

**calorimeter:** Any one of a number of devices used for measuring the heat content. OR An insulated vessel for measuring the amount of heat absorbed or released by a chemical or physical change.

**Calorimetry:** Experimental determination of heat changes arising from chemical or physical change. OR Calorimetry is a technique for measuring the heat generated or lost in a chemical reaction. The reaction is carried out in such a way that as much as possible of the heat change is transferred to another material, raising its temperature. The heat generated can then be calculated from the amount of the material heated and its specific heat. OR Experimental determination of heat absorbed or released by a chemical or physical change.

**CALR gene :** Refers to the number of calories (energy content) consumed.

**calusterone:** A 17-alkylated orally active androgenic steroid. Calusterone may alter the metabolism of estradiol and reduce estrogen production.

**calutron:** A device that separates isotopes (e. g.  $^{235}\text{U}$  from  $^{238}\text{U}$ ) by ionizing the sample, accelerating the ions in a strong electric field, and then passing them through a strong magnetic field. The magnetic field bends the trajectories of the ions with high charge-to-mass ratio more, allowing ions to be separated by mass and collected.

**Calvin cycle:** The incorporation of  $\text{CO}_2$  into glucose by enzymatic reactions. OR In plants, a cyclic metabolic pathway in which carbon dioxide is incorporated into ribulose 1,5-bisphosphate to give compounds that can be used for the synthesis of glucose. OR The cyclic pathway used by plants to fix carbon dioxide and produce triose phosphates.

**calving:** the breaking off of large blocks of ice from a glacier.

**Calx** : It was believed to be an ash-like substance which is left when the phlogiston leaves a metal. Although we now believe that metals form metal oxides when they burn, we no longer believe the phlogiston theory.

**Cam:** A portion of the mold that is pushed into place as the mold closes, using a cam-actuated slide. Typically, side actions are used to resolve an undercut, or sometimes to allow an undrafted outside wall. As the mold opens, the side action pulls away from the part, allowing the part to be ejected. Also called a “side-action.”

**CAM :** A measurement of the energy content of food. The body needs calories as to perform its functions, such as breathing, circulating the blood, and physical activity. When a person is sick, their body may need extra calories to fight fever or other problems.

**CAM (Computer-aided Manufacturing):** The use of computer software to control machine tools and related machinery in the manufacturing of workpieces.

**CAM plants (crassulacean acid metabolism):** Plants (e.g, cactus and other succulents) that, unlike the C3 and C4 plants, temporarily separate the processes of carbon dioxide uptake and fixation when grown under arid conditions. They take up gaseous carbon dioxide at night when the stomata are open and water loss is minimal. During the day when the stomata are closed, the stored CO<sub>2</sub> is released and chemically processed. When CAM plants are not under water stress, they then follow C3 photosynthesis.

**cAMP:** 3',5' cyclic adenosine monophosphate The cAMP molecule plays a key role in metabolic regulation.

**cAMP:** See cyclic AMP.

**Campath :** A gene that makes a protein called calreticulin, which is involved in many cell functions. Calreticulin helps control the amount of calcium that is stored in cells. This is thought to play a role in the control of gene activity, cell growth and movement, the attachment of cells to one another, and cell death. Mutated (changed) forms of the CALR gene have been found in some types of blood conditions, including essential thrombocythemia and primary myelofibrosis.

**camphor :** Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices generally are not considered standard medical approaches.

Standard treatments go through a long and careful research process to prove they are safe and effective, but less is known about most types of CAM. CAM may include dietary supplements, megadose vitamins, herbal preparations, special teas, acupuncture, massage therapy, magnet therapy, spiritual healing, and meditation. Also called complementary and alternative medicine.

**Camptogen:** (Other name for: rubitecan)

**Camptosar :** A drug used to treat B-cell chronic lymphocytic leukemia. It is also being studied in the treatment of other types of cancer. Campath binds to a protein called CD52, which is found on some types of immune cells and cancer cells. This may help the immune system kill cancer cells. Campath is a type of monoclonal antibody. Also called alemtuzumab.

**camptothecin :** A substance that comes from the wood and bark of the camphor tree or is made in the laboratory. It has a very unique smell and taste and is used in commercial products (for example, mothballs). Camphor is used in topical anti-infective and anti-pruritic (anti-itching) agents.

**camptothecin analog :** A drug used alone or with other drugs to treat colon cancer or rectal cancer that has spread to other parts of the body or has come back after treatment with fluorouracil. It is also being studied in the treatment of other types of cancer. Camptosar blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of topoisomerase inhibitor and a type of camptothecin analog. Also called CPT 11 and irinotecan hydrochloride.

**camptothecin analogue TLC388:** A synthetic analogue of camptothecin with potential antineoplastic and radio-sensitizing activities. Camptothecin analogue TLC388 selectively stabilizes topoisomerase I-DNA covalent complexes during S-phase, thereby inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when encountered by the DNA replication machinery. Topoisomerase I relaxes negative super-coiled DNA during replication and transcription. This agent has been chemically modified to enhance the potency and stability of camptothecin.

**camptothecin-20(S)-O-propionate hydrate:** The hydrated, crystalline propionate ester (attached in position C-20) prodrug of camptothecin, an alkaloid isolated from the Chinese tree *Camptotheca acuminata*, with

potential antineoplastic activity. Upon entry into cells, camptothecin-20(S)-O-propionate is hydrolyzed by esterases into the active form camptothecin. Camptothecin selectively stabilizes topoisomerase I-DNA covalent complexes, thereby inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when encountered by the DNA replication machinery, thus inhibiting DNA replication and triggering apoptotic cell death. Camptothecin readily undergoes hydrolysis at physiological pH, changing its conformation from the active, S-configured lactone structure to an inactive carboxylate form. The ester chain in the vicinity of the S-configured lactone moiety, a key determinant for the chemotherapeutic efficacy of the camptothecins, inhibits protein binding, rendering this agent resistant to hydrolysis and prolonging its half-life.

**Can Liner:** Term used for garbage, trash or waste bags. It is used in industrial, institutional and medical applications. Can Liner Standard Colors are clear, black, white, gray, red, blue and yellow.

**CANAL RAY TUBE:** showed that ions are produced by electron bombardment. The simplest positive ion,  $H^{+1}$ , is the PROTON.

**canarypox-hIL-12 melanoma vaccine:** A vaccine consisting of a replication-defective recombinant canarypox virus (ALVAC) that encodes the gene for human interleukin-12 (hIL-12). Produced mainly by B-cells, IL-12 is an endogenous cytokine that activates natural killer (NK) cells, promotes cytotoxic T lymphocyte (CTL) responses, induces the release of interferon-gamma (IFN-gamma), and may exhibit antitumor and anti-angiogenic effects. Vaccination with canarypox-hIL-12 melanoma vaccine may stimulate the host immune system to mount an immune response against tumor cells, thereby inhibiting tumor growth and/or metastasis.

**Cancell :** An anticancer drug that belongs to the family of drugs called topoisomerase inhibitors.

**cancer:** Cancer is a disease which results from the development of a malignant tumour and its spread into the surrounding tissues. See tumour.

**cancer :** An anticancer drug related in structure to camptothecin, a topoisomerase inhibitor. One such drug is aminocamptothecin.

**cancer antigen 125 :** A liquid that has been promoted as a treatment for a wide range of diseases, including cancer. The ingredients thought to be in Cancell have been tested, and none of them have been shown to be effective

in treating any form of cancer. Cancell is not available in the United States. Also called 126-F, Cantron, Jim's Juice, JS-101, JS-114, Protocol, and Sheridan's Formula.

**cancer cell line** : A term for diseases in which abnormal cells divide without control and can invade nearby tissues. Cancer cells can also spread to other parts of the body through the blood and lymph systems. There are several main types of cancer. Carcinoma is a cancer that begins in the skin or in tissues that line or cover internal organs. Sarcoma is a cancer that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue. Leukemia is a cancer that starts in blood-forming tissue, such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the blood. Lymphoma and multiple myeloma are cancers that begin in the cells of the immune system. Central nervous system cancers are cancers that begin in the tissues of the brain and spinal cord. Also called malignancy.

**cancer cluster** : A substance that may be found in high amounts in the blood of patients with certain types of cancer, including ovarian cancer. Cancer antigen 125 levels may also help monitor how well cancer treatments are working or if cancer has come back. Also called CA-125.

**Cancer Information Service** : Cancer cells that keep dividing and growing over time, under certain conditions in a laboratory. Cancer cell lines are used in research to study the biology of cancer and to test cancer treatments.

**Cancer Intervention and Surveillance Modeling Network** : The occurrence of a larger-than-expected number of cases of cancer within a group of people in a geographic area over a period of time.

**cancer of the adrenal cortex** : The Cancer Information Service is the National Cancer Institute's link to the public, interpreting and explaining research findings in a clear and understandable manner, and providing personalized responses to specific questions about cancer. Access the CIS by calling 1-800-4-CANCER (1-800-422-6237), or by using the LiveHelp instant-messaging service at Also called CIS.

**cancer of unknown primary origin** : A group of researchers supported by the National Cancer Institute (NCI) who use statistical models to help understand how cancer prevention, screening, and treatment programs can affect the number of new cases of cancer diagnosed each year and the

number of deaths from cancer each year. The Cancer Intervention and Surveillance Modeling Network is now studying breast, colorectal, esophageal, lung, and prostate cancers. The models they create help guide future cancer control strategies, research priorities, policies, and decision making. Also called CISNET.

**cancer peptide vaccine S-588410:** A cancer peptide vaccine containing five human leukocyte antigen (HLA)-A\*2402-restricted epitope peptides derived from as of yet not disclosed oncoantigens, with potential immunostimulating and antineoplastic activities. Upon administration of the cancer peptide vaccine S-588410, the peptides may stimulate a cytotoxic T-lymphocyte (CTL) response against cancer cells expressing the antigens. This decreases proliferation of susceptible tumor cells.

**cancer stemness kinase inhibitor BBI503:** An orally available cancer cell stemness kinase inhibitor with potential antineoplastic activity. Although the exact target has not been fully elucidated, BBI503 targets and inhibits one or more pathways involved in cancer stem cell survival. As a result, cancer stem cell (CSC) growth as well as heterogeneous cancer cell growth is inhibited. CSCs, self-replicating cells able to differentiate into heterogeneous cancer cells, appear to be responsible for both tumor relapse and metastasis.

**cancer subtype :** A rare cancer that forms in the outer layer of tissue of the adrenal gland (a small organ on top of each kidney that makes steroid hormones, adrenaline, and noradrenaline to control heart rate, blood pressure, and other body functions). Also called adrenocortical cancer and adrenocortical carcinoma.

**cancer treatment vaccine :** A case in which cancer cells are found in the body, but the place where the cells first started growing (the origin or primary site) cannot be determined. Also called carcinoma of unknown primary and CUP.

**cancer vaccine :** Describes the smaller groups that a type of cancer can be divided into, based on certain characteristics of the cancer cells. These characteristics include how the cancer cells look under a microscope and whether there are certain substances in or on the cells or certain changes to the DNA of the cells. It is important to know the subtype of a cancer in order to plan treatment and determine prognosis.

**cancer-related post-traumatic stress :** A type of vaccine that is usually made from a patient's own tumor cells or from substances taken from tumor cells. A cancer vaccine may help the immune system kill cancer cells. Also called cancer vaccine.

**Candidas:** (Other name for: caspofungin acetate)

**candesartan cilexetil:** A synthetic, benzimidazole-derived angiotensin II receptor antagonist prodrug with antihypertensive activity. After hydrolysis of candesartan cilexetil to candesartan during gastrointestinal absorption, candesartan selectively competes with angiotensin II for the binding of the angiotensin II receptor subtype 1 (AT1) in vascular smooth muscle, blocking angiotensin II-mediated vasoconstriction and inducing vasodilatation. In addition, antagonism of AT1 in the adrenal gland inhibits angiotensin II-stimulated aldosterone synthesis and secretion by the adrenal cortex; sodium and water excretion increase, followed by a reduction in plasma volume and blood pressure.

**candidiasis :** A type of vaccine that is usually made from a patient's own tumor cells or from substances taken from tumor cells. A cancer vaccine may help the immune system kill cancer cells. Also called cancer treatment vaccine.

**candidosis :** A condition that develops in some people who are diagnosed with cancer. Symptoms of cancer-related post-traumatic stress (PTS) include having frightening thoughts or trouble sleeping, being distracted or overexcited, feeling alone, or losing interest in daily activities. Symptoms may also include feelings of shock, fear, helplessness, or horror. Cancer-related PTS can occur anytime after diagnosis, including during or after treatment. Relaxation training, counseling, support groups, and certain medicines may be used to reduce symptoms of PTS.

**canertinib :** A condition in which *Candida albicans*, a type of yeast, grows out of control in moist skin areas of the body. It is usually a result of a weakened immune system, but can be a side effect of chemotherapy or treatment with antibiotics. Candidiasis usually affects the mouth (oral candidiasis); however, rarely, it spreads throughout the entire body. Also called candidosis and thrush.

**canertinib dihydrochloride:** The hydrochloride salt of an orally bio-available quinazoline with potential antineoplastic and radiosensitizing activities. Canertinib binds to the intracellular domains of epidermal growth

factor receptor tyrosine kinases (ErbB family), irreversibly inhibiting their signal transduction functions and resulting in tumor cell apoptosis and suppression of tumor cell proliferation. This agent also acts as a radiosensitizing agent and displays synergistic activity with other chemotherapeutic agents.

**canertinib dihydrochloride :** A condition in which *Candida albicans*, a type of yeast, grows out of control in moist skin areas of the body. It is usually a result of a weakened immune system, but can be a side effect of chemotherapy or treatment with antibiotics. Candidosis usually affects the mouth (oral candidosis); however, rarely, it spreads throughout the entire body. Also called candidiasis and thrush.

**canfosfamide hydrochloride:** The hydrochloride salt of a modified glutathione analogue with potential antineoplastic activity. Canfosfamide is selectively activated by glutathione S-transferase P1-1 into an alkylating metabolite that forms covalent linkages with nucleophilic centers in tumor cell DNA, which may induce a cellular stress response and cytotoxicity, and decrease tumor proliferation. S-transferase P1-1 is an enzyme that is overexpressed in many human malignancies.

**Canister:** See Dry cask storage.

**Cannabics SR:** (Other name for: Cannabis extract oil SR capsule)

**Cannabics SR capsules:** (Other name for: Cannabis extract oil SR capsule)

**cannabidiol:** A phytocannabinoid derived from *Cannabis* species, which is devoid of psychoactive activity, with analgesic, anti-inflammatory, antineoplastic and chemopreventive activities. Upon administration, cannabidiol (CBD) exerts its anti-proliferative, anti-angiogenic and pro-apoptotic activity through various mechanisms, which likely do not involve signaling by cannabinoid receptor 1 (CB1), CB2, or vanilloid receptor 1. CBD stimulates endoplasmic reticulum (ER) stress and inhibits AKT/mTOR signaling, thereby activating autophagy and promoting apoptosis. In addition, CBD enhances the generation of reactive oxygen species (ROS), which further enhances apoptosis. This agent also upregulates the expression of intercellular adhesion molecule 1 (ICAM-1) and tissue inhibitor of matrix metalloproteinases-1 (TIMP1) and decreases the expression of inhibitor of DNA binding 1 (ID-1). This inhibits cancer cell invasiveness and metastasis. CBD may also activate the transient

receptor potential vanilloid type 2 (TRPV2), which may increase the uptake of various cytotoxic agents in cancer cells. The analgesic effect of CBD is mediated through the binding of this agent to and activation of CB1.

**cannabinoid :** A substance being studied in the treatment of some types of cancer. Canertinib blocks the action of proteins called epidermal growth factor receptors, and may cause cancer cells to die. It is a type of tyrosine kinase inhibitor. Also called canertinib dihydrochloride and CI-1033.

**cannabinol:** A cannabinoid isolated from the plant Cannabis that is a metabolite of tetrahydrocannabinol (THC), with potential immunosuppressive and anti-inflammatory activities. Cannabinol preferentially binds to the cannabinoid G-protein coupled receptor CB2, which is mainly expressed on a variety of immune cells, such as T-cells, B-cells, macrophages and dendritic cells. Stimulation of CB2 receptors by cannabinol may both trigger apoptosis in these cells and inhibit the production of a variety of cytokines. Cannabinol exerts minimal affinity for CB1 and has a weak effect on the central nervous system.

**Cannabis :** A substance being studied in the treatment of some types of cancer. Canertinib dihydrochloride blocks the action of proteins called epidermal growth factor receptors, and may cause cancer cells to die. It is a type of tyrosine kinase inhibitor. Also called canertinib and CI-1033.

**Cannabis extract oil SR capsule:** A sustained-release (SR), oil-based oral capsule composed of a cannabis extract, which contains a variety of cannabinoids but is comprised mainly of tetrahydrocannabinol (THC), with potential anti-cachectic and analgesic activities. Upon oral administration, the cannabinoids bind to the cannabinoid G-protein coupled receptor CB1, which is located in both central and peripheral neurons; CB1 receptor activation inhibits adenylyl cyclase, increases various signal transduction pathways, and modulates the activity of various ion channels. This provides an analgesic effect, increases appetite, decreases chemotherapy-induced nausea and vomiting, and improves weight gain. The formulation allows for the immediate release of cannabinoids and quick onset of action, which is followed by a gradual release of cannabinoids. The SR form facilitates longer lasting therapeutic effects and causes fewer psychoactive side effects when compared to non-SR cannabinoid-containing oral formulations.

**canopy:** The branches and leaves of woody plants that are formed some distance above the ground.

**canthosis nigricans:** brown to black, poorly defined, velvety hyperpigmentation of the skin

**Cantilever:** Horizontal structural member with one end attached to the support columns and the other end free, that the belt supports are mounted on.

**Cantron :** A type of chemical in marijuana that causes drug-like effects all through the body, including the central nervous system and the immune system. The main active cannabinoid in marijuana is delta-9-tetrahydrocannabinol (THC). Cannabinoids may help treat the symptoms of cancer or the side effects of cancer treatment.

**cantuzumab ravtansine:** An immunotoxin of a humanized monoclonal antibody C242 (MoAb HuC242) conjugated with a derivative of cytotoxic agent maytansine, DM4, with potential antitumor activity. Cantuzumab ravtansine is generated based on MoAb C242, which is raised against a cell surface superantigen, CA242, found in a variety of human tumor cells. Upon binding and entry, the immunoconjugate releases the maytansinoid agent DM4, which binds to tubulin, thereby affecting microtubule assembly/disassembly dynamics. As a result, this agent prevents cell division and reduces cell growth of cancer cells that express CA242. Check for active clinical trials using this agent.

**Canvas:** A cotton fabric weighing more than four ounces per square yard. (Used as the base material for NEMA grades C, CE and some L grade laminates.)

**Canvaxin:** (Other name for: polyvalent melanoma vaccine)

**CAP:** The catabolite gene activator protein, sometimes incorrectly referred to as the CRP protein. The latter term, in small letters (crp), should be used to refer to the gene but not to the protein. OR The top of any work but especially short term for capital. OR See catabolite gene activator protein.

**CAP-1:** The dried leaves and flowering tops of the Cannabis sativa or Cannabis indica plant. Cannabis contains active chemicals called cannabinoids that cause drug-like effects all through the body, including the central nervous system and the immune system. Cannabis may help treat the symptoms of cancer or the side effects of cancer treatment, such as nausea and vomiting, pain, and cachexia (loss of body weight and muscle mass). Also called marijuana.

**Capability:** The maximum load that a generating unit, generating station, or other electrical apparatus can carry under specified conditions for a given period of time without exceeding approved limits of temperature and stress.

**Capacitance:** the property of an electric nonconductor that permits the storage of energy as a result of the separation of charge that occurs when opposite surfaces of the nonconductor are maintained at a difference of potential.

**Capacity:** The amount of electric power that a generating unit can produce. The amount of electric power that a manufacturer rates its generator, turbine transformer, transmission, circuit, or system, is able to produce. OR (1) The amount of space provided inside a container for a given amount of product. (2) The total amount of volume inside the container. The latter is more correctly called the overflow capacity. OR The amount of space inside a container that holds a given amount of product. 1) the amount of space provided inside a container for a given amount of product. 2) the total amount of volume inside the container. The latter is more correctly called the overflow capacity.

**Capacity charge:** One of two elements in a two-part pricing method used in capacity transactions (the other element is the energy charge). The capacity charge, sometimes called the demand charge, is assessed on the capacity (amount of electric power) being purchased. OR The ratio of the available capacity (the amount of electrical power actually produced by a generating unit) to the theoretical capacity (the amount of electrical power that could theoretically have been produced if the generating unit had operated continuously at full power) during a given time period.

**Capacity factor (gross):** The ratio of the gross electricity generated, for the time considered, to the energy that could have been generated at continuous full-power operation during the same period.

**Capacity factor (net):** The ratio of the net electricity generated, for the time considered, to the energy that could have been generated at continuous full-power operation during the same period.

**Capacity utilization:** A percentage representing the extent to which a generating unit fulfilled its capacity in generating electric power over a given time period. This percentage is defined as the margin between the unit's available capacity (the amount of electrical power the unit actually produced) and its theoretical capacity (the amount of electrical power that

could have been produced if the unit had operated continuously at full power) during a certain time period. Capacity utilization is computed by dividing the amount actually produced by the theoretical capacity, and multiplying by 100.

**capecitabine:** A fluoropyrimidine carbamate belonging to the class of antineoplastic agents called antimetabolites. As a prodrug, capecitabine is selectively activated by tumor cells to its cytotoxic moiety, 5-fluorouracil (5-FU); subsequently, 5-FU is metabolized to two active metabolites, 5-fluoro-2-deoxyuridine monophosphate (FdUMP) and 5-fluorouridine triphosphate (FUTP) by both tumor cells and normal cells. FdUMP inhibits DNA synthesis and cell division by reducing normal thymidine production, while FUTP inhibits RNA and protein synthesis by competing with uridine triphosphate for incorporation into the RNA strand.

**capecitabine :** A liquid that has been promoted as a treatment for a wide range of diseases, including cancer. The ingredients thought to be in Cantron have been tested, and none of them have been shown to be effective in treating any form of cancer. Cantron is not available in the United States. Also called 126-F, Cancell, Jim's Juice, JS-101, JS-114, Protocol, and Sheridan's Formula.

**capecitabine rapidly disintegrating tablet:** A rapidly disintegrating film-coated tablet composed of the fluoropyrimidine carbamate antimetabolite capecitabine with antineoplastic activity. As a prodrug, capecitabine is converted to 5'-deoxy-5-fluorocytidine (5'-DFCR) by hepatic carboxylesterase and then to 5'-deoxy-5-fluorouridine (5'-DFUR) by cytidine deaminase and is eventually activated by thymidine phosphorylase to its cytotoxic moiety, 5-fluorouracil (5-FU); subsequently, 5-FU is metabolized to two active metabolites, 5-fluoro-2-deoxyuridine monophosphate (FdUMP) and 5-fluorouridine triphosphate (FUTP). FdUMP inhibits DNA synthesis and cell division by reducing normal thymidine triphosphate production, while FUTP inhibits RNA and protein synthesis by competing with uridine triphosphate for incorporation into the RNA strand. Capecitabine rapidly disintegrating tablet (RDT) contains the water insoluble, disintegrating agent crospovidone which very rapidly disperses and swells in water making this RDT easier to swallow than the traditional capecitabine tablet. A rapidly disintegrating film-coated tablet composed of the fluoropyrimidine carbamate antimetabolite capecitabine

with antineoplastic activity. As a prodrug, capecitabine is converted to 5'-deoxy-5-fluorocytidine (5'-DFCR) by hepatic carboxylesterase and then to 5'-deoxy-5-fluorouridine (5'-DFUR) by cytidine deaminase and is eventually activated by thymidine phosphorylase to its cytotoxic moiety, 5-fluorouracil (5-FU); subsequently, 5-FU is metabolized to two active metabolites, 5-fluoro-2-deoxyuridine monophosphate (FdUMP) and 5-fluorouridine triphosphate (FUTP). FdUMP inhibits DNA synthesis and cell division by reducing normal thymidine triphosphate production, while FUTP inhibits RNA and protein synthesis by competing with uridine triphosphate for incorporation into the RNA strand. Capecitabine rapidly disintegrating tablet (RDT) contains the water insoluble, disintegrating agent crospovidone which very rapidly disperses and swells in water making this RDT easier to swallow than the traditional capecitabine tablet.

**Capesaris:** (Other name for: estrogen receptor agonist GTx-758)

**Caphosol:** (Other name for: supersaturated calcium phosphate rinse)

**capillaries:** the microscopic blood vessels between the arteries and the veins.

**capillary:** water that works its way upward in the ground through adhesion to rock particles and cohesion to itself.

**capillary :** A small piece of a tumor marker called carcinoembryonic antigen (CEA). CEA may be found in the blood of people who have colon cancer, other types of cancer or diseases, or who smoke tobacco. CAP-1 is used to make a vaccine that may help stimulate the body's immune system to kill cancer cells. Also called carcinoembryonic antigen peptide-1 and CEA peptide-1.

**capillary action:** the process by which surface tension causes water to rise up into unfilled pore spaces.

**capillary fringe:** the lower part of the unsaturated zone that draws water upward from the saturated zone.

**capillary leak syndrome :** A drug used to treat stage III colon cancer in patients who had surgery to remove the cancer. It is also used to treat metastatic breast cancer that has not improved after treatment with certain other anticancer drugs. Capecitabine is being studied in the treatment of other types of cancer. It is taken up by cancer cells and breaks down into 5-

fluorouracil, a substance that kills tumor cells. Capecitabine is a type of antimetabolite. Also called Xeloda.

**CAPILLARY VISCOMETER:** An instrument used to measure polymer melt viscosity. It consists of a heated reservoir used to melt the polymer, which is subsequently pushed by a piston and flows through a 1-mm- to 2-mm-diameter round die. From the force required to move the piston and the corresponding volumetric flow rate, the viscosity can be determined. The Rabinowitsch correction is necessary to account for the shear thinning effects and the Bagley correction to account for the excess pressure drop at the die entrance (see RABINOWITSCH CORRECTION and BAGLEY CORRECTION).

**CAPIRI:** The smallest type of blood vessel. A capillary connects an arteriole (small artery) to a venule (small vein) to form a network of blood vessels in almost all parts of the body. The wall of a capillary is thin and leaky, and capillaries are involved in the exchange of fluids and gases between tissues and the blood.

**CAPIRI regimen :** A condition in which fluid and proteins leak out of tiny blood vessels and flow into surrounding tissues, resulting in dangerously low blood pressure. Capillary leak syndrome may lead to multiple organ failure and shock.

**Capital:** The ornamental mouldings at the top of a column pier or pilaster.

**caplacizumab:** A humanized, bivalent anti-von Willebrand factor (VWF) nanobody, with potential anti-platelet and anti-thrombotic activities. Upon administration, caplacizumab specifically binds, with its two identical monovalent moieties, to the A1 domain of the adhesive glycoprotein VWF, thereby inhibiting and neutralizing VWF activity. This prevents the interaction of ultra-large VWF (ULVWF) with the platelet glycoprotein (GP)Ib-IX-V receptor complex, and prevents ULVWF-mediated platelet adhesion, and aggregation, which reduces thrombus formation. VWF is a glycoprotein and plays a key role in blood coagulation. Increased VWF, which is seen in a number of diseases, is associated with an increased risk in thrombosis; in thrombotic thrombocytopenic purpura (TTP), increased levels of ULVWF and thus increased and abnormal platelet aggregation are seen due to impaired breakdown of ULVWF. The nanobody formulation allows for rapid distribution, onset of action and clearance. The nanobody is based on the smallest functional fragments of the immunoglobulin heavy-

chain variable domains that occur naturally in the Camelidae family. Check for active clinical trials using this agent.

**capmatinib:** An orally bioavailable inhibitor of the proto-oncogene c-Met (hepatocyte growth factor receptor [HGFR]) with potential antineoplastic activity. Capmatinib selectively binds to c-Met, thereby inhibiting c-Met phosphorylation and disrupting c-Met signal transduction pathways. This may induce cell death in tumor cells overexpressing c-Met protein or expressing constitutively activated c-Met protein. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays key roles in tumor cell proliferation, survival, invasion, metastasis, and tumor angiogenesis.

**Capoten:** (Other name for: captopril)

**CAPOX :** An abbreviation for a chemotherapy combination used to treat colorectal cancer that has spread to other parts of the body. It is also used to treat esophageal cancer and stomach cancer that are advanced or have spread to other parts of the body. It includes the drugs capecitabine (Xeloda) and irinotecan hydrochloride. Also called CAPIRI regimen, XELIRI, and XELIRI regimen.

**CAPOX regimen :** An abbreviation for a chemotherapy combination used to treat colorectal cancer that has spread to other parts of the body. It is also used to treat esophageal cancer and stomach cancer that are advanced or have spread to other parts of the body. It includes the drugs capecitabine (Xeloda) and irinotecan hydrochloride. Also called CAPIRI, XELIRI, and XELIRI regimen. OR A regimen consisting of capecitabine and oxaliplatin used as a treatment for advanced stage colorectal cancer. This regimen differs from a similar regimen, XELOX, with regards to the dosing schedule for oxaliplatin.

**Capping:** A failure of tablets evidenced by the loss of layers of the tablet during routine handling. OR Covalent modification involving the addition of a modified guanidine group in a 5'-5" linkageIt occurs only in eukaryotes, primarily on mRNA molecules.

**Caprelsa :** An abbreviation for a chemotherapy combination used to treat advanced colorectal cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs capecitabine and oxaliplatin. Also called CAPOX regimen. OR (Other name for: vandetanib)

**Caprolactam:** Caprolactam is a six-carbon one-nitrogen ring that is used to produce nylon 6. The caprolactam ring is opened through hydrolysis and the linear chains are polymerized in a continuous process to produce nylon 6.

**capromab pendetide :** An abbreviation for a chemotherapy combination used to treat advanced colorectal cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs capecitabine and oxaliplatin. Also called CAPOX.

**capsaicin :** A drug used to treat medullary thyroid cancer that has spread to other parts of the body and cannot be treated by surgery. It is also being studied in the treatment of other types of cancer. Caprelsa prevents the growth of new blood vessels that tumors need to grow. It also blocks enzymes needed for cell growth and may kill cancer cells. It is a type of antiangiogenesis agent and a type of tyrosine kinase inhibitor. Also called vandetanib and ZD6474.

**Capsaicin receptors:** Ion channels expressed in nociceptors that open in response to noxious stimuli such as heat, acidity or chemicals such as capsaicin, the chemical responsible for the “hot” taste of spicy food. Also called the vanilloid receptor 1 (VR1).

**Capsid:** The protein coat surrounding viral DNA or RNA. OR The protein coat of a virion or virus particle.

**capsule :** A substance used to detect prostate cancer. It contains a monoclonal antibody that binds to prostate cells, linked to a substance that can bind radioisotopes. Capromab pendetide is combined with indium 111 and injected into the body. A gamma camera (a special camera that detects radioactivity) is used to find prostate cancer cells in the body. Capromab pendetide is a type of immunoconjugate. Also called ProstaScint.

**capsule endoscope :** A component of certain plants, including cayenne and red pepper, used topically for peripheral nerve pain. It is also being studied for controlling mucositis pain after chemotherapy and radiation therapy.

**capsule endoscopy :** In medicine, a sac of tissue and blood vessels that surrounds an organ, joint, or tumor. A capsule is also a form used for medicine that is taken by mouth. It usually has a shell made of gelatin with the medicine inside.

**Captisol-enabled Melphalan IV:** (Other name for: melphalan hydrochloride/sulfobutyl ether beta-cyclodextrin complex)

**captopril:** A sulfhydryl-containing analog of proline with antihypertensive activity and potential antineoplastic activity. Captopril competitively inhibits angiotensin converting enzyme (ACE), thereby decreasing levels of angiotensin II, increasing plasma renin activity, and decreasing aldosterone secretion. This agent may also inhibit tumor angiogenesis by inhibiting endothelial cell matrix metalloproteinases (MMPs) and endothelial cell migration. Captopril may also exhibit antineoplastic activity independent of effects on tumor angiogenesis. or A device used to look at the inside of the intestines and other parts of the digestive tract. It is a capsule that is about the size of a large pill, with a lens, a light, a camera, a radio transmitter, and a battery inside. The patient swallows the capsule and it takes pictures as it travels through the digestive tract. The pictures are sent to a small recorder that is worn on the patient's waist or shoulder. The pictures are then viewed on a computer by the doctor to check for signs of disease. The capsule endoscope passes out of the body during a bowel movement. Also called wireless capsule endoscope.

**CAR T-cell therapy :** A procedure used to look at the inside of the intestines and other parts of the digestive tract. The patient swallows a capsule about the size of a large pill. The capsule contains a tiny wireless camera that travels through the digestive tract. It takes pictures of the inside of the digestive tract and sends them to a small recorder that is worn on the patient's waist or shoulder. The pictures are then viewed on a computer by the doctor to check for signs of disease. The capsule passes out of the body during a bowel movement.

**Carac:** (Other name for: topical fluorouracil) or A drug used to treat high blood pressure that is also being studied in the prevention of side effects caused by radiation therapy used in the treatment of cancer. It belongs to the family of drugs called ACE inhibitors.

**caracemide:** An agent derived from acetohydroxamic acid with potential antineoplastic activity. Caracemide inhibits ribonuclease reductase, resulting in decreased DNA synthesis and tumor growth; it also inhibits acetylcholinesterase. In vivo, caracemide contributes to the formation of the neurotoxin methyl isocyanate; this effect, along with the agent's

acetylcholinesterase activity, may be responsible for the severe central nervous system toxicity observed in clinical trials.

**carbamazepine:** A tricyclic compound chemically related to tricyclic antidepressants (TCA) with anticonvulsant and analgesic properties. Carbamazepine exerts its anticonvulsant activity by reducing polysynaptic responses and blocking post-tetanic potentiation. Its analgesic activity is not understood; however, carbamazepine is commonly used to treat pain associated with trigeminal neuralgia.

**carbamide :** A type of treatment in which a patient's T cells (a type of immune system cell) are changed in the laboratory so they will attack cancer cells. T cells are taken from a patient's blood. Then the gene for a special receptor that binds to a certain protein on the patient's cancer cells is added in the laboratory. The special receptor is called a chimeric antigen receptor (CAR). Large numbers of the CAR T cells are grown in the laboratory and given to the patient by infusion. CAR T-cell therapy is being studied in the treatment of some types of cancer. Also called chimeric antigen receptor T-cell therapy.

**Carbamoyl phosphate synthetase:** An enzyme that begins the urea cycle by catalyzing the synthesis of carbamoyl phosphate from bicarbonate, ammonium ion, and ATP. The enzyme also catalyzes the initial reaction in pyrimidine biosynthesis.

**carbanion:** a carbon atom bearing a negative charge; a carbon anion. OR A negatively charged carbon atom.

**Carbanion:** An anion where the negative charge is localised on a carbon atom is imaginatively called a carbanion. The best way to generate a carbanion is to remove a H<sup>+</sup> ion from a hydrocarbon. Since carbanions are conjugate bases to very very very weak acids indeed, they are fiendishly reactive bases.

**carbendazim :** A drug used to treat cancers of the breast, colon, rectum, stomach, and pancreas. Under the brand names Carac, Tolak, Efudex, and Fluoroplex, it is used as a cream to treat actinic keratosis (a skin condition that may become cancer). It is also used under the brand name Efudex as a cream to treat basal cell skin cancer that is superficial (not invasive) and cannot be removed by surgery. Carac is being studied in the treatment of other conditions and types of cancer. It stops cells from making DNA and

may kill cancer cells. Carac is a type of antimetabolite. Also called 5-fluorouracil, 5-FU, Efudex, Fluoroplex, fluorouracil, and Tolak.

**carbene:** an electrically uncharged molecule that contains a carbon atom with only two single bonds and just six electrons in its valence shell.

**Carbenium:** If a negatively charged hydride (H<sup>-</sup>) ion is removed from a hydrocarbon, what is left is a positively charged carbenium ion, a form of carbocation.

**carbenoid:** a chemical that resembles a carbene in its chemical reactions.

**Carbo-Tax regimen :** A chemotherapy combination used to treat endometrial, ovarian, and head and neck cancers, and non-small cell lung cancer that has spread. It includes the drugs carboplatin and paclitaxel (Taxol). Also called Carbo-Tax regimen, carboplatin-Taxol, CaT regimen, and PC regimen.

**Carbocaine:** (Other name for: mepivacaine hydrochloride)

**Carbocation:** A positively-charged chemical species where the positive charge is localised on a carbon atom. Both carbenium ions (which have three bonds to a positively charged carbon) and carbonium ions (which may have five or more bonds to a positively charged carbon) are examples of carbocations. OR Carbon compound with a positive charge localised on a carbon atom. OR a carbon cation; a carbon atom bearing a positive charge (sometimes referred to as a "carbonium ion"). OR A positively charged carbon atom; also called a carbonium ion.

**carbocyclic:** Being or having an organic ring of carbon atoms.

**carbogen:** An inhalant consisting of hyperoxic gas (95%-98% oxygen and 2%-5% carbon dioxide) with radiosensitizing properties. Inhaled carbogen reduces diffusion-limited tumor hypoxia, increasing tumor radiosensitivity due to the increased availability of molecular oxygen for cytotoxic radiation-induced oxygen free radical production. Check for active clinical trials using this agent. or A substance formed by the breakdown of protein in the liver. The kidneys filter carbamide out of the blood and into the urine. Carbamide can also be made in the laboratory. A topical form of carbamide is being studied in the treatment of hand-foot syndrome (pain, swelling, numbness, tingling, or redness of the hands or feet that may occur as a side effect of certain anticancer drugs). Also called urea.

**carbohydrate:** An organic compound with the general formula  $C_x(H_2O)_y$ . OR A chemical compound made up of a chain or ring of carbon atoms to which hydrogen and oxygen atoms are attached in a defined ratio (2:1); includes simple sugars like glucose and complex sugars like chitin (the exoskeleton of crabs) OR A polyhydroxy aldehyde or ketone. OR A class of organic compounds including sugars and starches. The name comes from the fact that many (but not all) carbohydrates have empirical formula  $CH_2O$ .

**carbohydrate :** An anticancer drug that belongs to the family of drugs called antifungal agents.

**carbohydrate supplement drink:** A nutritional supplement drink containing 12.5% carbohydrates, which may enhance recovery following gastrointestinal (GI) surgery. Oral intake of the carbohydrate drink before surgery may prevent insulin resistance and associated hyperglycemia. It may also maintain adequate protein balance and muscle function. Ultimately, giving carbohydrates immediately before surgery may improve overall recovery time and return of GI function. It may also decrease muscle loss.

**carbohydrates:** Carbohydrates are compounds containing carbon, hydrogen, and oxygen. Many of them have the general formula  $C_x(H_2O)_y$ . They provide energy for the body. We find them in foods such as bread, pasta, rice (which contains starch) and sugary foods. OR the primary energy source for living things; composed of carbon, hydrogen, and oxygen. OR Saccharides, which are aldehyde or ketone compounds with multiple hydroxyl groups. Also defined as organic compounds with the empirical formula  $(CH_2O)_n$ .

**carbolic acid :** An inhaled form of oxygen and carbon dioxide that has more oxygen than air has. It is being studied in the treatment of cancer and other conditions. It may increase the amount of oxygen in cancer cells, which may make them easier to kill with radiation therapy. Carbogen is a type of radiosensitizing agent.

**Carbon:** Symbol:"C" Atomic Number:"6" Atomic Mass: 12.01amu. Carbon is one of the most important elements on Earth. It is classified as a non-metal and found in rocks, plants, and animals. You will find carbon all over the planet including gasoline, charcoal, diamonds, and plastics. OR An element with atomic number 6. Carbon is a nonmetal found in

all organic compounds. Carbon occurs naturally as diamond, graphite, and buckminsterfullerene.

**Carbon Black:** A black pigment produced by the incomplete burning of natural gas or oil. It is widely used as filler, particularly in the rubber industry. Because it possesses useful ultraviolet properties. It is also used in polyethylene compounds intended for such applications as cold water piping and black agricultural sheet. OR A multi-functional pigment used in plastics as a conductor of electricity, a pigment, a filler-extender, and as a UV stabilizer. A black pigment produced by the incomplete burning of natural gas or oil. It is widely used as a filler, particularly in the rubber industry. Because it possesses useful ultraviolet protective properties. It is also much used in molding compounds intended for outside weathering applications. OR A black material used as a filler in rubber. It gives the rubber its black color and the hardness characteristics OR A black pigment produced by the incomplete burning of natural gas or oil. Widely used as a filler, particularly in the rubber industry due to its useful ultraviolet protective properties. It is also much used in molding compounds intended for outside weathering applications.

**carbon budget:** The balance of the exchanges (incomes and losses) of carbon between the carbon reservoirs or between one specific loop (e.g., atmosphere - biosphere) of the carbon cycle. An examination of the carbon budget of a pool or reservoir can provide information about whether the pool or reservoir is functioning as a source or sink for CO<sub>2</sub>.

**carbon C 11 alpha-methyltryptophan:** A radiopharmaceutical containing an analogue of tryptophan, alpha-methyltryptophan (AMT), labeled with carbon 11 (<sup>11</sup>C), used to measure serotonin synthesis in the human brain using positron emission tomography (PET). Upon administration and once it crosses the blood-brain barrier and into the cytoplasm of serotonergic neurons, carbon C 11 alpha-methyltryptophan acts as a substrate for the enzyme tryptophan hydroxylase and undergoes conversion to carbon C 11 alpha-methyl-5-hydroxytryptophan, also known as C 11 alpha-methyl-serotonin (AMS). C 11 AMS accumulates in serotonergic nerve terminals in proportion to the synthesis rate of serotonin because C 11 AMS cannot be broken down by the enzyme monoamine oxidase, and thus the synthesis rate of serotonin can be imaged using PET. C 11 AMT is not incorporated

into proteins, nor are metabolites released into the blood pool, making C 11 AMT an excellent tracer for serotonin synthesis in vivo.

**carbon C 11 choline:** A radiotracer consisting of choline labeled with the positron-emitting isotope carbon C 11 with potential imaging use. Upon administration, carbon C 11 choline incorporates into tumor cells through an active, carrier-mediated transport mechanism for choline and then is phosphorylated intracellularly by choline kinase, an enzyme frequently upregulated in human tumors, yielding phosphoryl C-11 choline. In turn, phosphoryl C-11 choline is integrated into phospholipids in the cell membrane as part of phosphatidylcholine. As the proliferation of cancer cells is much higher than normal cells, tumor cells exhibit an increased rate of carbon C 11 choline uptake and incorporation, allowing tumor imaging with positron emission tomography (PET).

**carbon C 11 erlotinib hydrochloride:** The hydrochloride salt form of the quinazoline derivative erlotinib labeled with the positron-emitting isotope carbon C 11, with potential use in imaging. Competing with adenosine triphosphate, erlotinib reversibly binds to the intracellular catalytic tyrosine kinase domain of the epidermal growth factor receptor (EGFR). Following exposure to this agent, EGFR expression status can be determined and EGFR overexpressing tumor cells can be visualized using positron emission tomography (PET) imaging. This may be useful in determining the tumor cell response to a particular EGFR kinase inhibitor in individual patients. EGFR, a receptor tyrosine kinase, is overexpressed in numerous cancer cell types, and plays a significant role in tumor cell progression.

**carbon C 11 N-desmethyl-loperamide:** A radiopharmaceutical containing N-desmethyl loperamide (dLop) labeled with carbon 11 (<sup>11</sup>C), used to measure the activity of efflux transporter P-glycoprotein (P-gp) in positron emission tomography (PET). Upon administration, carbon C 11 N-desmethyl-loperamide acts as a substrate for the efflux transporter P-gp. Upon uptake by P-gp at the blood-brain barrier (BBB) and subsequent PET imaging, this radioligand may allow for prediction of P-gp function and expression in brain tumor patients. As P-gp activity may influence response to therapy, measuring P-gp activity may be beneficial when choosing chemotherapy. P-gp, encoded by the MDR-1 gene and a member of the ATP-binding cassette (ABC) superfamily of transmembrane transporters, is

overexpressed by some MDR tumors and may contribute to multidrug resistance to chemotherapy. Check for active clinical trials using this agent.

**carbon C 11 PBR-28:** A radioconjugate composed of a ligand for the 18 kDa translocator protein (TSPO) conjugated to the radioisotope carbon C 11, that can be used as a diagnostic imaging agent to detect TSPO-expressing cells using positron emission tomography (PET). Upon administration of carbon C 11 PBR-28, the PBR-28 moiety targets and binds to TSPO-expressing cells. Upon PET, carbon C 11 can be detected and TSPO-expressing cells can be visualized. This can facilitate detection of inflammatory sites and cancer cells. TSPO, also called the peripheral benzodiazepine receptor (PBR), is found on the outer mitochondrial membrane and is overexpressed on a variety of cancer cells and during inflammation.

**carbon C 11 sarcosine:** A radiotracer consisting of sarcosine, the N-methyl derivative of the amino acid glycine, labeled with the positron-emitting isotope carbon C 11, that can be used for tumor imaging upon positron emission tomography/computed tomography (PET/CT). Upon administration, C-11 sarcosine is taken up by and accumulates in tumor cells, thereby allowing tumor imaging with PET/CT. Sarcosine, a non-proteinogenic amino acid and oncometabolite, is elevated in certain tumor cell types. Its expression seems to correlate with increased tumor invasiveness.

**carbon C 11 sepantronium bromide:** A radiotracer composed of the bromide salt form of sepantronium, a small-molecule survivin antagonist and proapoptotic agent, labeled with the radionuclide carbon C 11, with potential positron emission tomography (PET) imaging activity. Upon administration, sepantronium is selectively taken up by tumor cells, binds to the survivin promoter and inhibits the transcription of survivin, which results in decreased survivin expression. Upon PET imaging, the tissue distribution of sepantronium and its tumor uptake can be assessed. Survivin, a member of the inhibitor of apoptosis (IAP) gene family, is overexpressed in a variety of human cancers; its expression in tumors is associated with a more aggressive phenotype, increased cancer cell proliferation, shorter survival times, and a decreased response to chemotherapy.

**carbon C 11 temozolomide:** A radioconjugate composed of temozolomide, a imidazotetrazine analog of dacarbazine, labeled with the

radioisotope carbon C11, with potential positron emission tomography (PET) imaging activity. As a cytotoxic alkylating agent, temozolomide is hydrolyzed at physiologic pH to the pharmacologically active compound, 5-(3-methyl-(triazen-1-yl)-imidazole)-4-carboxamide (MTIC). MTIC is further hydrolyzed to 5-aminoimidazole-4-carboxamide (AIC) and a methyldiazonium cation. The cation is able to methylate DNA, particularly at the O6 and N7 positions of guanine residues, resulting in cell cycle arrest, inhibition of DNA replication and the induction of apoptosis.

Temozolomide is metabolized to MITC at all sites, crosses the blood-brain-barrier and penetrates well into the central nervous system. Upon PET, the biodistribution, uptake in cancer cells and the efficacy of temozolomide can be assessed.

**carbon C 13 acetate:** The non-radioactive, naturally occurring isotope of acetate, carbon C 13 acetate, with potential use for metabolic tumor imaging upon nuclear magnetic resonance (NMR) spectroscopy. Upon infusion, carbon C 13 acetate is taken up by cancer cells and is utilized by metabolic pathways in the tumor cell. Specifically, the tumor cells oxidize acetate, in the form of acetyl coenzyme A (acetyl-CoA), in the citric acid cycle. Upon <sup>13</sup>C-NMR, the metabolic phenotype of a tumor can be assessed. Certain alternative metabolic pathways are activated in tumor cells and use substrates other than glucose, such as acetate, for acetyl-CoA production.

**carbon C 13 dextromethorphan:** A radioconjugate consisting of dextromethorphan, a synthetic, methylated dextrorotatory analogue of levorphanol, conjugated with carbon-13 [<sup>13</sup>C] with radiotracer activity. <sup>13</sup>C-dextromethorphan can be used in a breath-test phenotype assay of CYP2D6 activity, based on the principle that CYP2D6-mediated O-demethylation cleaves a <sup>13</sup>CH<sub>3</sub> that enters the body's carbon pool to be eliminated ultimately as <sup>13</sup>CO<sub>2</sub> in expired air, which can be measured. The <sup>13</sup>C-dextromethorphan breath test may prove useful in identifying poor CYP2D6 metabolizers of such important clinical drugs as tamoxifen.

**carbon C 13 lycopene:** Carbon C 13 labeled lycopene used as a tracer for carotenoid metabolism studies in vivo. After oral administration of carbon C 13 lycopene, in combination with C 13 labeled phytoene and phytofluene, the absorption kinetics, distribution patterns, metabolism and targets of these carotenoids can be measured upon imaging of the non-radioactive C

13. Lycopene, a carotenoid pigment found in high concentrations in tomatoes as well as in other fruits and vegetables, serves as an antioxidant in vivo; its intake has been associated with a reduced risk of certain types of cancer and cardiovascular diseases. Check for active clinical trials using this agent.

**carbon C 13 octanoate:** The sodium salt form of the medium-chain fatty acid octanoate, and labeled with the isotope carbon C13, used in the octanoate breath test (OBT) to assess hepatic mitochondrial function. Upon ingestion of carbon C13 octanoate, this agent is metabolized in the liver via mitochondrial beta-oxidation. Upon determination of the ratio between  $^{13}\text{C}/^{12}\text{C}$  of  $\text{CO}_2$  in exhaled breath, liver function can be accessed.

**carbon C 13 phytoene:** A 40-carbon hydrocarbon precursor of carotenoids radiolabeled to carbon C 13 and potentially used for tracer purposes of phytoene in vivo. Upon administration, phytoene is taken up and accumulates in various tissues. Upon imaging of the radioisotope, the distribution patterns and metabolism of phytoene can be further elucidated which may aid in the understanding of the bioactivity of this agent. Phytoene is a colorless precursor of many carotenoids, including the antioxidant lycopene.

**carbon C 13 phytofluene:** A 40-carbon hydrocarbon precursor of carotenoids radiolabeled to carbon C 13 and potentially used for tracer purposes of phytofluene in vivo. Upon administration, phytofluene is taken up and accumulates in various tissues. Upon imaging of the radioisotope, the distribution patterns and metabolism of phytofluene can be further elucidated which may aid in the understanding of the bioactivity of this agent. Phytofluene is a colorless precursor of many carotenoids, including the antioxidant lycopene. Check for active clinical trials using this agent.

**carbon C 13/nitrogen N 15-labeled valine:** A radioconjugate composed of the essential amino acid valine radiolabeled to carbon C 13 and nitrogen N 15, that can potentially be used as a tracer for protein metabolism in vivo using mass spectrometry (MS). Upon administration of carbon C 13/nitrogen N 15-labeled valine, the exogenous valine is taken up by cells and incorporated into proteins. Upon imaging, protein biomarkers containing radiolabeled valine are secreted by tumor cells and can be identified by MS. This may aid in cancer diagnosis and prognosis.

Compared to normal cells, tumor cells rapidly take up amino acids to use as protein building blocks.

**carbon C 14 anlotinib hydrochloride:** A radioconjugate composed of the orally bioavailable hydrochloride salt form of anlotinib, a receptor tyrosine kinase (RTK) inhibitor, labeled with the radioisotope carbon C 14, with potential use for evaluating the pharmacokinetic profile of anlotinib. Upon administration of carbon C 14 anlotinib hydrochloride, anlotinib targets multiple RTKs, including vascular endothelial growth factor receptor type 2 (VEGFR2) and type 3 (VEGFR3). This agent may both inhibit angiogenesis and halt cell growth in tumor cells that overexpress these RTKs. Labeling of anlotinib with the radioactive tracer carbon C 14 permits the evaluation of this agent's pharmacokinetic profile, including its absorption, distribution, metabolism, and excretion (ADME).

**carbon C 14 dacomitinib:** A radioconjugate consisting of an orally bioavailable small-molecule inhibitor of the epidermal growth factor receptor (erbB or HER) family of tyrosine kinases radiolabeled with carbon-14 with potential antineoplastic and beta-emitting radioisotope activity. Dacomitinib specifically and irreversibly binds to and inhibits human Her-1, Her-2, and Her-4, resulting in the proliferation inhibition and apoptosis of tumor cells that overexpress these receptors. The HER receptor family of tyrosine kinases, often overexpressed by a variety of tumor cell types, may contribute to tumor cell proliferation, differentiation, migration, and survival. Dacomitinib radiolabeled with carbon C-14 may be used as a radiotracer in pharmacological studies of dacomitinib metabolism.

**carbon C 14 eribulin acetate:** A radioconjugate containing the acetate salt of eribulin, labeled with the beta particle-emitting radioisotope carbon C 14, with radioisotopic and potential antineoplastic activities. Upon administration, eribulin binds to the vinca domain of tubulin and inhibits the polymerization of tubulin and the assembly of microtubules, resulting in inhibition of mitotic spindle assembly, induction of cell cycle arrest at G2/M phase, and, potentially, tumor regression. The radioisotope moiety of this agent acts as a radioactive tracer.

**carbon C 14 gilteritinib:** A radioconjugate composed of gilteritinib, an inhibitor of the receptor tyrosine kinases (RTKs) FMS-related tyrosine kinase 3 (FLT3, STK1, or FLK2), AXL (UFO or JTK11) and anaplastic lymphoma kinase (ALK or CD246), labeled with the radioisotope carbon C

14, with potential use for evaluating the pharmacokinetic profile of gilteritinib. Gilteritinib binds to and inhibits both the wild-type and mutated forms of FLT3, AXL and ALK. This may result in an inhibition of FLT3, AXL, and ALK-mediated signal transduction pathways and the reduction of tumor cell proliferation in cancers that overexpress these RTKs. Labeling of gilteritinib with the radioactive tracer carbon C 14 allows for the evaluation of gilteritinib's pharmacokinetic profile, including its absorption, distribution, metabolism, and excretion (ADME).

**carbon C 14 ombrabulin:** A synthetic water-soluble analogue of combretastatin A4, derived from the South African willow bush (*Combretum caffrum*), labeled with carbon C 14 with potential antineoplastic activity. The ombrabulin moiety of carbon C 14 ombrabulin binds to the colchicine binding site of endothelial cell tubulin, thereby inhibiting tubulin polymerization and inducing mitotic arrest and apoptosis in endothelial cells. As apoptotic endothelial cells detach from their substrata, tumor blood vessels collapse; the acute disruption of tumor blood flow may result in tumor necrosis. The radioisotope moiety of this agent acts as a radioactive tracer.

**carbon C 14 oxaliplatin:** A radioconjugate composed of the platinum agent oxaliplatin labeled with the isotope carbon C 14, that can be used to predict the response to oxaliplatin therapy using accelerator mass spectrometry (AMS). Upon intravenous administration of a microdose of carbon C 14 oxaliplatin, the oxaliplatin moiety covalently links to DNA and forms mono- and di-DNA adducts. The platinum-DNA adduct formation can be measured through quantification of C14-labeled drug-DNA adducts by using AMS. By measuring the microdose-induced DNA damage, the response to oxaliplatin-based chemotherapy can be assessed and predicted. Measurements that indicate either low drug-DNA adduct formation or increased DNA repair (C14 removal from DNA) are correlated with increased resistance to platinum-based chemotherapeutics.

**carbon C 14 roniciclib:** An orally bioavailable radioconjugate composed of roniciclib, a cyclin dependent kinase (CDK) inhibitor, radiolabeled with carbon C 14, with potential use for evaluating the pharmacokinetic profile of roniciclib. Roniciclib selectively binds to and inhibits the activity of various CDK subtypes, which leads to cell cycle arrest and an inhibition of tumor cell proliferation. Labeling of roniciclib with the radioactive tracer

carbon C 14 allows for the evaluation of roniciclib's pharmacokinetic profile, including its absorption, distribution, metabolism, and excretion (ADME). CDKs, serine/threonine kinases overexpressed in various tumor cell types, play key roles in the regulation of both cell cycle progression and cellular proliferation.

**carbon C 14 selumetinib:** A radioconjugate containing the orally available selumetinib, an inhibitor of mitogen-activated protein kinase kinase (MEK or MAPK/ERK kinase) types 1 and 2, labeled with the radioisotope carbon C 14. Upon oral administration, selumetinib selectively inhibits MEK1/2, which prevents the activation of MEK1/2 dependent effector proteins and transcription factors. This leads to an inhibition of cellular proliferation in MEK1/2-overexpressing tumor cells. MEK 1 and 2 are dual-specificity kinases that are essential mediators in the activation of the RAS/RAF/MEK/ERK pathway and are often upregulated in various cancer cells. Selumetinib radiolabeled with carbon C-14 may be used as a radiotracer for pharmacokinetic studies of this agent, including its absorption, distribution, metabolism and excretion (ADME).

**carbon C 14 telotristat etiprate:** An orally bioavailable, tryptophan hydroxylase (TPH) inhibitor prodrug labeled with carbon C 14, which could be used to evaluate the pharmacokinetic profile of telotristat etiprate. Upon administration, telotristat etiprate is converted to its active moiety, telotristat (LP-778902), which binds to and blocks the activity of TPH. This may result in a reduction in peripheral serotonin (5-HT) production and improvement of serotonin-mediated gastrointestinal adverse side effects, such as severe diarrhea. TPH, the rate-limiting enzyme in serotonin biosynthesis, is overexpressed in carcinoid tumor cells. Telotristat radiolabeled with carbon C 14 facilitates the evaluation of the pharmacokinetic characteristics of this agent, including its absorption, distribution, metabolism, and excretion (ADME).

**carbon C 14 vemurafenib:** A radioconjugate composed of vemurafenib, an ATP-competitive, small-molecule inhibitor of BRAF(V600E) kinase, labeled with the radioisotope carbon C 14, with potential use for evaluating the pharmacokinetic profile of vemurafenib. Vemurafenib selectively binds to the ATP-binding site of BRAF(V600E) kinase and inhibits its activity, which may result in both an inhibition of an over-activated MAPK signaling pathway in BRAF(V600E) kinase-expressing tumor cells and a

reduction in tumor cell proliferation. Labeling of vemurafenib with the radioactive tracer carbon C 14 allows for the evaluation of vemurafenib's pharmacokinetic profile, including its absorption, distribution, metabolism, and excretion (ADME). The BRAF(V600E) gene mutation in which valine is substituted for glutamic acid at residue 600 (V600E), is found in many cancer cell types and plays a key role in the over-activation of the MAPK signaling pathway.

**carbon C 14-labeled ixazomib:** A radioconjugate comprised of the orally-available, reversible 20S proteasome inhibitor ixazomib that is labeled with the isotope carbon C 14. Upon administration, the ixazomib moiety hydrolyzes and generates its active form, MLN2238, which inhibits the activity of the 20S catalytic core subunit of the proteasome. This blocks the targeted proteolysis normally performed by the proteasome, which results in an accumulation of unwanted or misfolded proteins. The accumulation of protein may disrupt various cell signaling pathways, induce apoptosis, and inhibit tumor growth. In addition, this agent targets tumor suppressor microRNA-33b (miR-33b). Labeling with the radioactive tracer carbon C 14 allows for evaluation of ixazomib's absorption, distribution, metabolism and excretion (ADME).

**carbon C14 lenvatinib mesylate:** A radioconjugate composed of the orally bioavailable mesylate salt form of lenvatinib, a receptor tyrosine kinase (RTK) inhibitor, labeled with the radioisotope carbon C 14, with potential use for evaluating the pharmacokinetic profile of lenvatinib. Upon administration of carbon C14 lenvatinib mesylate, lenvatinib targets and binds strongly to multiple RTKs, including vascular endothelial growth factor receptor 1 (VEGFR1;FLT1), VEGFR2 (KDR), VEGFR3 (FLT4), fibroblast growth factor receptor 1 (FGFR1), FGFR2, FGFR3, and FGFR4, platelet derived growth factor receptor alpha (PDGFR $\alpha$ ), KIT, and RET. This inhibits growth of tumor cells that overexpress these RTKs. Labeling of lenvatinib with the radioactive tracer carbon C 14 permits the evaluation of lenvatinib's pharmacokinetic profile, including its absorption, distribution, metabolism, and excretion (ADME).

**carbon cycle:** All parts (reservoirs) and fluxes of carbon; usually thought of as a series of the four main reservoirs of carbon interconnected by pathways of exchange. The four reservoirs, regions of the Earth in which carbon behaves in a systematic manner, are the atmosphere, terrestrial

biosphere (usually includes fresh water systems), oceans, and sediments (includes fossil fuels). Each of these global reservoirs may be subdivided into smaller pools ranging in size from individual communities or ecosystems to the total of all living organisms (biota). Carbon exchanges from reservoir to reservoir by various chemical, physical, geological, and biological processes.

**carbon density:** The amount of carbon per unit area for a given ecosystem or vegetation type, based on climatic conditions, topography, vegetative-cover type and amount, soils, and maturity of the vegetative stands.

**Carbon dioxide:** A heat-trapping gas (CO<sub>2</sub>) that plays a role in global warming. OR This is a slightly acidic gas that is formed when carbon burns in air (or oxygen). It does not support combustion and so a burning splint will be extinguished by the gas. However, this is NOT the test for carbon dioxide. To test for the gas, bubble it into limewater. A milky white precipitate shows that the gas is carbon dioxide. Carbon dioxide is produced during respiration (this is true whether the respiration is by animals, plants or even anaerobic respiration of yeast during fermentation). OR A colorless, odorless gas produced by respiration and combustion of carbon-containing fuels. OR A colourless, non-poisonous gas that is a normal part of the ambient air. Carbon dioxide is formed in combustion of fossil fuel and carbon-containing materials, in fermentation, and in respiration of animals and human beings and employed by plants in the photosynthesis of carbohydrates.

**carbon dioxide :** A sugar molecule. Carbohydrates can be small and simple (for example, glucose) or they can be large and complex (for example, polysaccharides such as starch, chitin or cellulose).

**carbon dioxide fertilization:** Enhancement of plant growth or of the net primary production by CO<sub>2</sub> enrichment that could occur in natural or agricultural systems as a result of an increase in the atmospheric concentration of CO<sub>2</sub>.

**carbon dioxide reference gas:** A mixture of a known quantity of CO<sub>2</sub>-in-air or CO<sub>2</sub>-in-N<sub>2</sub> used to calibrate carbon dioxide analyzers.

**carbon fixation reactions:** In photosynthetic cells, the light-independent enzymatic reactions involved in the synthesis of glucose from CO<sub>2</sub>, ATP, and NADPH; also known as the dark reactions.

**carbon flux:** The rate of exchange of carbon between pools (reservoirs).

**Carbon Footprint:** The amount of carbon dioxide and other related greenhouse gasses (GHG) emitted into the atmosphere from an organization, manufacturing facility or process. P&G measures and reports on this metric on behalf of all of our manufacturing sites throughout the world once annually as part of our overall Corporate Sustainability strategy and goals.

**carbon isotope ratio:** Ratio of carbon-12 to either of the other, less common, carbon isotopes, carbon- 13 or carbon-14.

**Carbon monoxide:** A poisonous, local air pollutant (CO) produced when fuel such as petroleum does not burn completely OR A colorless, odorless, poisonous gas produced by incomplete combustion. OR This has the formula CO and is a possible product if a fuel burns in a poor supply of air. It is a toxic gas. It can be removed from the exhaust gases of cars by the use of a catalytic converter. You should be able to write a word equation for its formation during a combustion reaction.

**carbon monoxide :** A very poisonous chemical substance made from tar and also found in some plants and essential oils (scented liquid taken from plants). Carboic acid is used to make plastics, nylon, epoxy, medicines, and to kill germs. Also called phenol.

**carbon nanoparticle-based formulation:** A nanoparticle-based formulation containing carbon, with both a mean size of 150 nm, and potential use as a stain for lymph node draining. Upon injection of the carbon nanoparticles at the tumor site, these nanoparticles travel to regional lymph nodes and stain the lymph nodes black due to the presence of the carbon. This may allow for a more precise surgical removal of tumor-draining lymph nodes. Check for active clinical trials using this agent.

**carbon pool:** The reservoir containing carbon as a principal element in the geochemical cycle.

**carbon sink:** A pool (reservoir) that absorbs or takes up released carbon from another part of the carbon cycle. For example, if the net exchange between the biosphere and the atmosphere is toward the atmosphere, the biosphere is the source, and the atmosphere is the sink.

**carbon source:** A pool (reservoir) that releases carbon to another part of the carbon cycle.

**Carbon steels** : Steel can contain up to 1.5% of carbon. This is much less than the 4% found in cast iron.

**carbon-11 acetate:** The acetate salt of the radioisotope carbon-11. Although the mechanism is unclear, carbon-11 acetate preferentially accumulates in tumor tissue, serving as a tracer for imaging tumors with positron emission tomography (PET). Check for active clinical trials using this agent. or A colorless, odorless gas. It is a waste product made by the body. Carbon dioxide travels in the blood from the body's tissues to the lungs. Breathing out clears carbon dioxide from the lungs.

**carbon-11 choline PET-CT scan :** A poisonous gas that has no color or odor. It is given off by burning fuel (as in exhaust from cars or household heaters) and tobacco products. Carbon monoxide prevents red blood cells from carrying enough oxygen for cells and tissues to live.

**carbon-based resources:** The recoverable fossil fuel (coal, gas, crude oils, oil shale, and tar sands) and biomass that can be used in fuel production and consumption.

**carbonate hardness:** Water hardness due to the presence of calcium and magnesium carbonates and bicarbonates. The "noncarbonate hardness" is due mostly to calcium and magnesium sulfates, chlorides, and nitrates.

**Carbonate Mineral:** A mineral that is made up of compounds with a carbonate group bonded to a metal. Calcite is a good example of a carbonate mineral.

**carbonate<sup>32-</sup>:** 1. an inorganic ion with a charge of -2, containing carbon bound directly to three oxygens in a flat triangular arrangement. 2. A compound containing CO<sub>3</sub><sup>2-</sup> ions.

**carbonates:** the family of minerals composed of carbon and oxygen.

**Carbonium:** If there are five or more bonds to a single carbon atoms, it will be short of electrons and have a positive charge - this species is called a carbonium ion, a form of carbocation. The easiest way to make one is to add a hydrogen ion (H<sup>+</sup>).

**Carbonium ion:** A carbon compound that contains a positively charged carbon atom; a carbonium atom is critical for catalysis by lysozyme

**carbonyl:** A divalent group consisting of a carbon atom with a double-bond to oxygen. For example, acetone (CH<sub>3</sub>-(C=O)-CH<sub>3</sub>) is a carbonyl group linking two methyl groups. Also refers to a compound of a metal

with carbon monoxide, such as iron carbonyl,  $\text{Fe}(\text{CO})_5$ . OR organic functional group occurring in aldehydes, ketones, carboxylic acids, esters and their derivatives.

**carboplatin:** A second-generation platinum compound with a broad spectrum of antineoplastic properties. Carboplatin contains a platinum atom complexed with two ammonia groups and a cyclobutane-dicarboxyl residue. This agent is activated intracellularly to form reactive platinum complexes that bind to nucleophilic groups such as GC-rich sites in DNA, thereby inducing intrastrand and interstrand DNA cross-links, as well as DNA-protein cross-links. These carboplatin-induced DNA and protein effects result in apoptosis and cell growth inhibition. This agent possesses tumoricidal activity similar to that of its parent compound, cisplatin, but is more stable and less toxic. or A radioactive form of carbon that is used in positron emission tomography (PET) scanning.

**carboplatin-paclitaxel-bevacizumab regimen :** A procedure in which a small amount of carbon-11 choline (a radioactive form of the vitamin choline) is injected into a vein. A scanner and a computer are used to make detailed pictures of areas inside the body where the carbon-11 choline collects. Cancer cells take up more carbon-11 choline than normal cells, so the pictures can be used to find cancer cells in the body. Also called C-11 choline PET-CT scan.

**carboplatin-Taxol :** A drug that is used to treat advanced ovarian cancer that has never been treated or symptoms of ovarian cancer that has come back after treatment with other anticancer drugs. It is also used with other drugs to treat advanced, metastatic, or recurrent non-small cell lung cancer and is being studied in the treatment of other types of cancer. Carboplatin is a form of the anticancer drug cisplatin and causes fewer side effects in patients. It attaches to DNA in cells and may kill cancer cells. It is a type of platinum compound. Also called Paraplatin.

**carboplatin-Taxol regimen:** A chemotherapy regimen consisting of carboplatin and paclitaxel (Taxol) used for the treatment of endometrial, epithelial ovarian, head and neck, and advanced-stage non-small cell lung cancers. Or A chemotherapy combination used to treat advanced, nonsquamous non-small cell lung cancer. It includes the drugs carboplatin, paclitaxel (Taxol), and bevacizumab. Also called carboplatin-Taxol-bevacizumab regimen.

**carboplatin-Taxol-bevacizumab regimen:** A chemoimmunotherapy regimen consisting of carboplatin, paclitaxel (Taxol) and bevacizumab used for the treatment of advanced-stage, nonsquamous non-small cell lung cancer. Or A chemotherapy combination used to treat endometrial, ovarian, and head and neck cancers, and non-small cell lung cancer that has spread. It includes the drugs carboplatin and paclitaxel (Taxol). Also called Carbo-Tax regimen, carboplatin-Taxol regimen, CaT regimen, and PC regimen.

**carboxyamidotriazole:** An orally-active agent with potential antineoplastic activity. Carboxyamidotriazole binds to and inhibits non-voltage-operated  $\text{Ca}^{2+}$  channels, blocking both  $\text{Ca}^{2+}$  influx into cells and  $\text{Ca}^{2+}$  release from intracellular stores and resulting in the disruption of calcium channel-mediated signal transduction and inhibition of vascular endothelial growth factor (VEGF) signaling, endothelial proliferation, and angiogenesis. This agent may also inhibit tumor cell growth, invasion and metastasis. OR A chemotherapy combination used to treat advanced, nonsquamous non-small cell lung cancer. It includes the drugs carboplatin, paclitaxel (Taxol), and bevacizumab. Also called carboplatin-paclitaxel-bevacizumab regimen.

**carboxyamidotriazole orotate:** The orotate salt form of carboxyamidotriazole (CAI), an orally bioavailable small molecule with potential antiangiogenic and antiproliferative activities. Carboxyamidotriazole binds to and inhibits non-voltage-operated calcium channels, blocking both  $\text{Ca}^{2+}$  influx into cells and  $\text{Ca}^{2+}$  release from intracellular stores, resulting in the disruption of calcium channel-mediated signal transduction. CAI inhibits PI3 activity and vascular endothelial growth factor (VEGF) signaling. This may inhibit endothelial proliferation, tumor cell growth, invasion and metastasis.

**Carboxyl Group:** Carboxyl groups are chemical functional groups with one carbon, one hydrogen, and two oxygen atoms ( $\text{COOH}$ ). You will find these on many of the amino acids. It also makes molecules that are considered weak carboxylic acids. It is also defined as a polyatomic ion.

**carboxyl-terminal residue:** The only amino acid residue in a polypeptide chain with a free  $\alpha$ -carboxyl group; defines the carboxyl terminus of the polypeptide.

**Carboxylase:** An enzyme that catalyzes a carboxyl transfer reaction; biotin is usually required as a coenzyme.

**Carboxylate group:** When a carboxylic (alkanoic) acid is deprotonated (i.e., loses a  $H^+$  ion) what is left is a negatively-charged carboxylate ion.

**carboxylesterase-expressing allogeneic neural stem cells:** A preparation of allogeneic neural stem cells (NSC), derived from a human fetal cell line, that are adenovirally-transduced to express a modified form of the human enzyme carboxylesterase (CE) hCE1m6, with potential adjuvant activity. Upon intracranial administration, NSCs localize to tumor sites, due to their tumor-trophic nature, and transiently express hCE1m6. Intravenous co-administration of the prodrug irinotecan allows for the selective conversion by hCE1m6 to its active metabolite and topoisomerase I inhibitor, SN-38, in the vicinity of tumor sites. This leads to a local anti-neoplastic effect and causes reduced toxicity and increased therapeutic efficacy of irinotecan. Since NSCs freely cross the blood-brain barrier, these cells can also be intravenously administered to target brain tumor cells. hCE1m6 shows increased activity as compared to unmodified human CE.

**carboxylic acids:** The carboxylic acids are a family of organic compounds containing the  $-COOH$  grouping. They are examples of weak acids. OR A carboxylic acid is an organic molecule with a  $-(C=O)-OH$  group. The group is also written as  $-COOH$  and is called a carboxyl group. The hydrogen on the  $-COOH$  group ionizes in water; carboxylic acids are weak acids. The simplest carboxylic acids are formic acid ( $H-COOH$ ) and acetic acid ( $CH_3-COOH$ ). OR Any carbon compound containing the functional group  $-C(O)OH$ . Formic acid ( $HCOOH$ ) gives the distinctive smell of crushed ants, while acetic acid ( $CH_3COOH$ ) gives VB its distinctive odour and taste. OR A molecule containing a carbon atom attached to a hydroxyl group and to an oxygen atom by a double bond.

**carboxypeptidase-G2 :** A chemotherapy combination used to treat endometrial, ovarian, and head and neck cancers, and non-small cell lung cancer that has spread. It includes the drugs carboplatin and paclitaxel (Taxol). Also called carboplatin-Taxol, carboplatin-Taxol regimen, CaT regimen, and PC regimen.

**carboxyphenyl retinamide:** A synthetic phenylretinamide analogue of retinol (vitamin A) with potential antineoplastic and chemopreventive activities. Carboxyphenyl retinamide induces cell differentiation and inhibits tumor cell growth and carcinogenesis. This agent may also induce cell cycle arrest in the G1 phase in some cancer cell types.

**carboy:** A very large bottle. Glass carboys are usually encased in a wire mesh or wooden box for protection.

**carbutamide:** A first-generation sulfonylurea with hypoglycemic activity. Carbutamide was one of the first sulfonylurea compounds used but was withdrawn from the market due to toxic effects on bone marrow. This agent has a long half-life.

**carcinoembryonic antigen :** An anticancer drug that belongs to the family of drugs called angiogenesis inhibitors.

**Carcinoembryonic antigen (CEA):** A membrane glycoprotein of the fetal gastrointestinal cells that is not significantly expressed after birth. High serum levels of CEA are evident in many patients with colorectal cancer.

**carcinoembryonic antigen assay :** A drug used to treat toxic levels of methotrexate (an anticancer drug) in the blood of patients with kidney problems. It is a bacterial enzyme that breaks down proteins and other substances, such as methotrexate. Carboxypeptidase-G2 may also help certain drugs kill cancer cells. It is a type of chemoprotective agent and a type of prodrug activator. Also called glucarpidase and Voraxaze.

**carcinoembryonic antigen peptide 1:** A nine amino acid peptide fragment of carcinoembryonic antigen (CEA), a protein that is overexpressed in several cancer cell types, including gastrointestinal, breast, and non-small cell lung. Autologous vaccination with activated autologous dendritic cells (DC) or peripheral blood mononuclear cells (PBMC) which have been exposed to CEA peptide 1 in vitro may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing CEA, thereby inhibiting tumor growth. Check for active clinical trials using this agent.

**carcinoembryonic antigen peptide 1-6D:** A 9-residue human leukocyte antigen (HLA)-restricted fragment of carcinoembryonic antigen (CEA). CEA:571-579 peptide, which has the amino acid sequence YLSGANLNL, may elicit a cytotoxic T lymphocyte (CTL) immune response against tumors expressing CEA.

**carcinoembryonic antigen peptide 1-6D virus-like replicon particles vaccine:** A cancer vaccine, consisting of alphavirus vector-derived virus-like replicon particles expressing the 9-amino-acid carcinoembryonic antigen peptide (CAP) 1-6D, with potential antineoplastic activity.

Vaccination with this agent may elicit a cytotoxic T lymphocyte (CTL) immune response against CEA-expressing tumor cells.

**carcinoembryonic antigen peptide-1** : A substance that may be found in the blood of people who have colon cancer, other types of cancer or diseases, or who smoke tobacco. Carcinoembryonic antigen levels may help keep track of how well cancer treatments are working or if cancer has come back. It is a type of tumor marker. Also called CEA.

**carcinoembryonic antigen RNA-pulsed DC cancer vaccine**: A vaccine comprising autologous dendritic cells pulsed with mRNA-encoded Carcinoembryonic Antigen (CEA) that targets tumor cells expressing CEA.

**carcinoembryonic antigen-expressing measles virus**: An attenuated oncolytic Edmonston (Ed) strain of measles virus (MV) encoding the soluble extracellular N-terminal domain of human carcinoembryonic antigen (CEA) (MV-CEA) with potential antineoplastic activity. The cellular receptor of MV is human CD46 antigen, a type 1 integral membrane glycoprotein found on nearly all human tissues and overexpressed on many cancer cell types. Mediated through CD46, both haemagglutinin and fusion glycoproteins of MV are required for the attachment to and fusion of host cell membranes, thereby leading to syncytia and cell lysis. The expressed CEA, a tumor associated antigen, can be detected in serum and used as a sensitive marker to monitor viral gene expression in order to easily optimize individual therapy. Compared to wild-type MV, the Ed strain of MV has a lower affinity for the MV receptor signaling lymphocyte-activation molecule (CD150), mainly expressed in B- and T-lymphocytes, but a higher affinity for CD46.

**carcinogen**: A cancer-causing agent. OR An agent, chemical, physical or biological, that can act on living tissue in such a way as to cause a malignant neoplasm (WHO, 1980). OR A substance that has been proven by medical research showing direct correlation to cause cancer in humans OR A chemical that can cause cancer.

**carcinogen** : A laboratory test that measures the level of carcinoembryonic antigen (CEA) in the blood. An increased amount of CEA may be found in the blood of people who have colon cancer or other types of cancer, certain other diseases, or who smoke. The amount of CEA in the blood may also help keep track of how well cancer treatments are working or if cancer has come back. CEA is a type of tumor marker. Also called CEA assay.

**carcinogenesis:** The induction by chemical, physical, or biological agents, of neoplasms that are usually not observed, an earlier induction of neoplasms that are usually observed, and/or the induction of more neoplasms than are usually found although fundamental differences in the mechanisms may be involved (IARC, 1977).

**carcinogenesis :** A small piece of a tumor marker called carcinoembryonic antigen (CEA). CEA may be found in the blood of people who have colon cancer, other types of cancer or diseases, or who smoke tobacco.

Carcinoembryonic antigen peptide-1 is used to make a vaccine that may help stimulate the body's immune system to kill cancer cells. Also called CAP-1 and CEA peptide-1.

**carcinoid syndrome :** Any substance that causes cancer.

**carcinoid tumor :** The process by which normal cells are transformed into cancer cells.

**carcinoma :** A combination of symptoms caused by the release of serotonin and other substances from carcinoid tumors of the gastrointestinal tract. Symptoms may include flushing of the face, flat angiomas (small collections of dilated blood vessels) of the skin, diarrhea, bronchial spasms, rapid pulse, and sudden drops in blood pressure.

**carcinoma in situ :** A slow-growing type of tumor usually found in the gastrointestinal system (most often in the small intestine and rectum), and sometimes in the lungs or other sites. Carcinoid tumors may spread to the liver or other sites in the body, and they may secrete substances such as serotonin or prostaglandins, causing carcinoid syndrome.

**carcinoma of unknown primary :** Cancer that begins in the skin or in tissues that line or cover internal organs.

**carcinomatosis :** A group of abnormal cells that remain in the place where they first formed. They have not spread. These abnormal cells may become cancer and spread into nearby normal tissue. Also called stage 0 disease.

**carcinomatous lymphangitis :** A case in which cancer cells are found in the body, but the place where the cells first started growing (the origin or primary site) cannot be determined. Also called cancer of unknown primary origin and CUP.

**carcinomatous meningitis :** A condition in which cancer is spread widely throughout the body, or, in some cases, to a relatively large region of the

body. Also called carcinosis.

**carcinosisarcoma** : A condition in which cancer cells spread from the original (primary) tumor and invade lymph vessels (thin tubes that carry lymph and white blood cells through the body's lymph system). The invaded lymph vessels then fill up with cancer cells and become blocked. Although carcinomatous lymphangitis can occur anywhere in the body, it commonly happens in the lungs. It can happen in many types of cancer but is most common in breast, lung, colon, stomach, pancreatic, and prostate cancer. Also called lymphangitic carcinomatosis.

**carcinosis** : A serious problem that may occur in cancer in which cancer cells spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). It can happen in many types of cancer, but is the most common in melanoma, breast, lung, and gastrointestinal cancer. The cancer may cause the meninges to be inflamed. Also called leptomenigeal carcinoma, leptomenigeal carcinomatosis, leptomenigeal metastasis, menigeal carcinomatosis, menigeal metastasis, and neoplastic meningitis.

**carcinostatic** : A malignant tumor that is a mixture of carcinoma (cancer of epithelial tissue, which is skin and tissue that lines or covers the internal organs) and sarcoma (cancer of connective tissue, such as bone, cartilage, and fat).

**cardiac** : A condition in which cancer is spread widely throughout the body, or, in some cases, to a relatively large region of the body. Also called carcinomatosis.

**cardiac muscle**: the involuntary muscle found in the heart; contains actin and myosin filaments.

**cardiac pacemaker** : Pertaining to slowing or stopping the growth of cancer.

**cardiac sarcoma** : Having to do with the heart.

**cardin** : An electronic device that is implanted in the body to monitor heart rate and rhythm. It gives the heart electrical stimulation when it does not beat normally. It runs on batteries and has long, thin wires that connect it to the heart. Also called artificial pacemaker and pacemaker.

**Cardiolite**: (Other name for: Tc 99m sestamibi)

**cardiologist** : A rare cancer that develops in tissues of the heart. Also called heart cancer.

**cardiology** : A plant whose leaves, stems, and flowers have been used in some cultures to treat certain medical problems. Cardin may have anti-inflammatory and anticancer effects. The scientific name is *Cnicus benedictus*. Also called blessed thistle, holy thistle, spotted thistle, and St. Benedict's thistle.

**cardiopulmonary** : A doctor who has special training to diagnose and treat diseases of the heart and blood vessels.

**cardiopulmonary resuscitation** : A branch of medicine that specializes in diagnosing and treating diseases of the heart, blood vessels, and circulatory system. These diseases include coronary artery disease, heart rhythm problems, and heart failure.

**Cardiotonic steroids**: Compounds derived from cholesterol that inhibit the Na<sup>+</sup>-K<sup>+</sup> pump by blocking the dephosphorylation of the E2 conformation of the pump protein. Inhibition of the pump in cardiac tissue cells leads to a higher level of sodium ion in the cells, which slows the extrusion of calcium ion and enhances cardiac muscle contractility.

**cardiotoxicity** : Having to do with the heart and lungs.

**cardiovascular** : An emergency procedure used to restart a person's heartbeat and breathing after one or both have stopped. It involves giving strong, rapid pushes to the chest to keep blood moving through the body. Usually, it also involves blowing air into the person's mouth to help with breathing and send oxygen to the lungs. Also called CPR.

**cardiovascular disease** : Toxicity that affects the heart.

**Cardizem**: (Other name for: diltiazem hydrochloride)

**Cardura** : (Other name for: doxazosin mesylate) OR Having to do with the heart and blood vessels.

**caregiver** : A type of disease that affects the heart or blood vessels. The risk of certain cardiovascular diseases may be increased by smoking, high blood pressure, high cholesterol, unhealthy diet, lack of exercise, and obesity. The most common cardiovascular disease is coronary artery disease (narrow or blocked coronary arteries), which can lead to chest pain, heart attacks, or stroke. Other cardiovascular diseases include congestive heart

failure, heart rhythm problems, congenital heart disease (heart disease at birth), and endocarditis (inflamed inner layer of the heart). Also called heart disease.

**carfilzomib:** A drug used to treat high blood pressure and urinary problems caused by an enlarged prostate. It relaxes muscle tissue in blood vessels and in the prostate. Cardura is a type of alpha blocker. Also called doxazosin and doxazosin mesylate. OR An epoxomicin derivate with potential antineoplastic activity. Carfilzomib irreversibly binds to and inhibits the chymotrypsin-like activity of the 20S proteasome, an enzyme responsible for degrading a large variety of cellular proteins. Inhibition of proteasome-mediated proteolysis results in an accumulation of polyubiquinated proteins, which may lead to cell cycle arrest, induction of apoptosis, and inhibition of tumor growth. Check for active clinical trials using this agent.

**caricotamide/tretazicar:** A combination therapy consisting of the prodrug tretazicar and the enzyme co-substrate caricotamide with potential antineoplastic activity. In the presence of separately and simultaneously administered caricotamide, tretazicar is converted to the short-lived cytotoxic DNA cross-linking agent dinitrobenzamide by NAD(P)H quinone oxidoreductase 2 (NQO2), resulting in the inhibition of DNA replication and the induction of apoptosis. NQO2 has been found to be elevated in certain cancers such as hepatocellular carcinoma (HCC).

**carina of trachea :** A person who gives care to people who need help taking care of themselves. Examples include children, the elderly, or patients who have chronic illnesses or are disabled. Caregivers may be health professionals, family members, friends, social workers, or members of the clergy. They may give care at home or in a hospital or other health care setting.

**carlumab:** A recombinant monoclonal antibody directed against human CC chemokine ligand 2 (CCL2) with potential antineoplastic activity. Carlumab binds to and inhibits CCL2, which may result in inhibition of angiogenesis and, so, tumor cell proliferation. Endothelium-derived CCL2 (monocyte chemoattractant protein; MCP1) is a member of the beta-chemokine family, can stimulate monocyte/macrophage migration and smooth muscle cell (SMC) proliferation, and plays a role in angiogenesis and tumor cell migration; CCL2 induction of angiogenesis may involve the

upregulation of hypoxia-inducible factor 1 alpha (HIF-1 alpha) gene expression which, in turn, induces vascular endothelial growth factor-A (VEGF-A) gene expression.

**Carmubris:** (Other name for: carmustine)

**carmustine:** An antineoplastic nitrosourea. Carmustine alkylates and cross-links DNA during all phases of the cell cycle, resulting in disruption of DNA function, cell cycle arrest, and apoptosis. This agent also carbamoylates proteins, including DNA repair enzymes, resulting in an enhanced cytotoxic effect. Carmustine is highly lipophilic and crosses the blood-brain barrier readily.

**carmustine :** A drug used alone or with other drugs to treat multiple myeloma that has gotten worse or come back after treatment with other anticancer therapy. It is also being studied in the treatment of other types of cancer. Carfilzomib blocks the action of enzymes called proteasomes, which may help keep cancer cells from growing and may kill them. It is a type of proteasome inhibitor. Also called Kyprolis.

**carmustine implant :** A ridge at the base of the trachea (windpipe) that separates the openings of the right and left main bronchi (the large air passages that lead from the trachea to the lungs). Also called tracheal carina.

**carmustine sustained-release implant wafer:** A sustained release (SR) implant wafer containing the lipophilic nitrosourea carmustine (BCNU) with antineoplastic activity. Upon intracranial administration of the implant wafer and subsequent release of BCNU from the wafer, this agent alkylates and cross-links DNA during all phases of the cell cycle, resulting in the disruption of DNA function, cell cycle arrest, and apoptosis. This wafer contains the biodegradable copolymer PLGA (poly(lactide-co-glycolide) as the major drug delivery vehicle which is slowly degraded into water and carbon dioxide thereby continuously releasing BCNU over approximately 3-4 weeks. Compared to systemic administration of BCNU alone, this local SR formulation is able to maintain higher drug concentrations locally over a longer period of time while minimizing exposure to other tissues.

**Carney complex :** A drug used to treat certain types of brain tumors. It is also used with prednisone to treat multiple myeloma and with other drugs to treat Hodgkin lymphoma and non-Hodgkin lymphoma that have not gotten better with other treatment or have come back. It is also being studied in the

treatment of other types of cancer. Carmustine damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent and a type of nitrosourea. Also called BCNU and BiCNU.

**Carney dyad :** A biodegradable wafer that is used to deliver the anticancer drug carmustine directly into a brain tumor site after the tumor has been removed by surgery. Also called Gliadel Wafer and polifeprosan 20 carmustine implant.

**Carney syndrome :** A rare, inherited disorder marked by dark spots on the skin and tumors in the heart, endocrine glands, skin, and nerves. There are two types of Carney complex, which are caused by mutations (changes) in different genes. Also called Carney syndrome.

**Carney triad :** A rare, inherited disorder marked by tumors of the gastrointestinal tract and tumors that form in embryonic nervous tissue in the head, neck, and torso. Also called Carney-Stratakis dyad and Carney-Stratakis syndrome.

**Carney-Stratakis dyad :** A rare, inherited disorder marked by dark spots on the skin and tumors in the heart, endocrine glands, skin, and nerves. There are two types of Carney syndrome, which are caused by mutations (changes) in different genes. Also called Carney complex.

**Carney-Stratakis syndrome :** A very rare disorder marked by tumors of the gastrointestinal tract (usually the stomach), tumors that form in embryonic nervous tissue in the head, neck, and torso, and tumors that form in cartilage in the lungs. Sometimes tumors also form in the adrenal glands and esophagus. Carney triad is most common in young females.

**Carnitine:** A zwitterionic compound formed from lysine that acts as a carrier of long-chain fatty acids from the cytosol to the mitochondrial matrix.

**carnitine :** A rare, inherited disorder marked by tumors of the gastrointestinal tract and tumors that form in embryonic nervous tissue in the head, neck, and torso. Also called Carney dyad and Carney-Stratakis syndrome.

**Carnitor :** (Other name for: levocarnitine) OR A rare, inherited disorder marked by tumors of the gastrointestinal tract and tumors that form in embryonic nervous tissue in the head, neck, and torso. Also called Carney dyad and Carney-Stratakis dyad.

**carnivores:** animals that eat other animals.

**carotene:** Carotene is an unsaturated hydrocarbon pigment found in many plants. Carotene is the basic building block of vitamin A.

**carotenoid :** A substance made in the muscle and liver tissue and found in certain foods, such as meat, poultry, fish, and some dairy products. It is used by many cells in the body to make energy from fatty acids.

**Carotenoids:** Lipid-soluble pigments that are made from isoprene units. OR Extended polyenes that absorb light between 400 and 500 nm and serve as accessory pigments in photosynthesis by funneling the energy to the photosynthetic reaction center. OR Lipid-soluble photosynthetic pigments made up of isoprene units.

**Carothers:** Wallace Hume Carrothers (1896-1937) carried out the key early experiments that led to commercial polyesters, nylons, and neoprene while working for the DuPont corporation and almost single-handedly created the polymer industry in the United States. His amazing scientific achievements did not bring him happiness, and he tragically committed suicide by taking cyanide.

**carotid artery :** A form of carnitine, which is a substance made in muscle and liver tissue and found in certain foods, such as meat, poultry, fish, and some dairy products. Carnitor is also a drug that is used to treat patients who do not make enough carnitine and is being studied as a way to prevent tissue damage caused by chemotherapy. Carnitine is a type of dietary supplement. Also called L-carnitine and levocarnitine.

**carrageenan-containing gel:** A water-based, vaginal moisturizing gel containing a mixture of lambda- and kappa- carrageenans, sulfated polysaccharides derived from red seaweed (*Chondrus crispus*), with potential microbicidal activity against various viruses, including human papillomavirus (HPV), human immunodeficiencyvirus (HIV) and human herpes simplex virus (HSV). Upon vaginal insertion via an applicator, carrageenan specifically binds to the viral capsids, which prevents the binding of virions to heparan sulfate proteoglycan (HSPG) receptors or other, as of yet not fully identified, cellular proteins. In addition, the viral binding of carrageenan may also interfere with conformational changes within the virions after cellular attachment. This inhibits viral infection. Certain HPV types cause cervical cancer; therefore, the prevention of HPV

infection by this gel may subsequently prevent the development of cervical cancer.

**CARREAU MODEL:** A mathematical expression describing the shear thinning behavior of polymers. It is more realistic than the power-law model because it fits the data very well at both high and low shear rates.

**Carrier:** The liquid portion of a coating (solvent or water) in which solids are dissolved or suspended. OR an inactive substance (usually another benign polymer) that is used to transmit an additive to a given polymer, and then facilitate its distribution through the base polymer during melt processing.

**carrier :** In classical genetics, an individual who carries one deleterious allele for an autosomal recessive disorder. In clinical discussions, may refer to an individual who carries a deleterious allele that predisposes to disease.

**carrier frequency :** The proportion of individuals in a population who have a single copy of a specific recessive gene mutation; also sometimes applied to the prevalence of mutations in dominantly acting genes such as BRCA1 and BRCA2. Also called carrier rate.

**carrier oil :** A yellow, red, or orange substance found mostly in plants, including carrots, sweet potatoes, dark green leafy vegetables, and many fruits, grains, and oils. Some carotenoids are changed into vitamin A in the body and some are being studied in the prevention of cancer. A carotenoid is a type of antioxidant and a type of provitamin.

**carrier rate :** The proportion of individuals in a population who have a single copy of a specific recessive gene mutation; also sometimes applied to the prevalence of mutations in dominantly acting genes such as BRCA1 and BRCA2. Also called carrier frequency.

**Carrier-linked prodrug:** Prodrugs which contain the active compound linked to a removable carrier group. Removal is generally through hydrolysis.

**carrot/Ji-Lin ginseng/licorice root/tangerine peel soy beverage:** A soy-based powdered nutritional supplement drink containing carrot, Jilin ginseng, licorice root and tangerine peel with potential antioxidant, immunomodulating and protective activities. Besides vitamin C, E and other phytochemicals, carrot/Jilin ginseng/licorice root/tangerine peel/soy

beverage contains a high amount of soy protein. This beverage may have a beneficial effect on overall nutrition and the immune system.

**carrying capacity:** a situation when a population has reached the maximum size that the environment can support.

**cART:** A major artery that carries blood from the heart to the head. There is a carotid artery on each side of the neck, and each one splits into two branches. The interior branch carries blood to the brain and eyes, and the exterior branch carries blood to the face, tongue, and outside parts of the head.

**cartesian coordinates:** The positions in space of the atoms in a molecule listed as triples (x, y, z).

**cartilage :** (Other name for: shark cartilage) OR An oil with little or no scent that is used to dilute or “carry” essential oils (scented liquid taken from plants).

**Cartridge heaters:** Pencil-shaped electrical heater devices sometimes placed in molds to raise the temperature level of the mold. Especially beneficial when molding high-temperature crystalline materials.

**carubicin:** An anthracycline antineoplastic antibiotic isolated from the bacterium *Actinomadura carminata*. Carubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis.

**carvedilol:** A synthetic antihypertensive methoxyphenoxy-2-propanol derivative with no intrinsic sympathomimetic activity, Carvedilol acts as a nonselective beta-adrenoceptor blocking agent (S(-) enantiomer) and as an alpha 1-adrenoceptor blocker (R(+) and S(-) enantiomers). It acts more strongly on beta-receptors than on alpha 1-receptors, reduces peripheral vascular resistance by vasodilation, and prevents reflex tachycardia (beta-blockade) so that heart rate is either unchanged or decreased. Carvedilol also reduces renin release through beta-blockade. Check for active clinical trials using this agent.

**carvedilol phosphate :** Treatment that uses a combination of three or more drugs to treat HIV infection. cART stops the virus from making copies of itself in the body. This may lessen the damage to the immune system caused by HIV and may slow down the development of AIDS. It may also help prevent transmission of HIV to others, including from mother to child

during birth. Also called combination antiretroviral therapy, HAART, and highly active antiretroviral therapy.

**carvedilol phosphate extended-release capsule:** An extended-release capsule formulation containing the phosphate salt of carvedilol, a nonselective beta-adrenergic blocking agent with alpha 1-adrenergic blocking activity. Carvedilol is a racemic mixture; the S(-) enantiomer non-selectively binds to and blocks beta-adrenergic receptors, exerting negative inotropic and chronotropic effects, leading to a reduction in cardiac output. Both R(+) and S(-) enantiomers bind to and block alpha 1-adrenergic receptors with equal potency, causing vasodilation and a reduction in peripheral vascular resistance. This agent has no intrinsic sympathomimetic activity.

**carzelesin :** A tough, flexible tissue that lines joints and gives structure to the nose, ears, larynx, and other parts of the body.

**Cascade, enzymatic:** A sequence of reactions, in which at each step a product stimulates an ensuing reaction, generating an amplification of a relatively small stimulus or signal.

**case:** refers to the way a noun or pronoun is used in a phrase, clause, or sentence; case can be subjective, objective, or possessive. OR The smallest shipping unit for poly bags containing multiple cartons.

**case control study:** A study that starts with the identification of persons with the disease (or other outcome variable) of interest, and a suitable control (comparison, reference) group of persons without the disease. The relationship of an attribute to the disease is examined by comparing the diseased and nondiseased with regard to how frequently the attribute is present or, if quantitative, the levels of the attribute, in each of the groups.

**CASE HARDEN:** To harden surface of a piece of steel to a relatively shallow depth.

**case management nurse :** A drug used to treat high blood pressure and certain heart problems. It is also being studied in the prevention and treatment of side effects caused by some anticancer drugs. Carvedilol phosphate blocks certain receptors on nerve cells and causes blood vessels to dilate (widen). It is a type of antihypertensive agent and a type of antianginal agent. Also called Coreg.

**case report :** An anticancer drug that belongs to the family of drugs called alkylating agents.

**case series :** A registered nurse who has special training in how to plan, manage, and evaluate all aspects of patient care, especially for patients who get treatment over a long time. Also called nurse case manager.

**case-control study :** A detailed report of the diagnosis, treatment, and follow-up of an individual patient. Case reports also contain some demographic information about the patient (for example, age, gender, ethnic origin).

**casein/whey protein/soy protein/pea protein/fat mix/EPA/DHA-based nutritional supplement:** A gluten-free, calorie-rich nutritional supplement containing all essential vitamins, minerals, and trace elements, as well as protein, fat and carbohydrates. The protein contained in this supplement is derived from a variety of sources, including casein, whey, soy and pea; it helps maintain digestive health throughout the gastrointestinal tract and reduces the risk of digestive complications. This supplement contains the essential omega-3 polyunsaturated fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). DHA and EPA are incorporated into cell membranes and affect the production of pro-inflammatory mediators, eliciting an anti-inflammatory effect. Medium chain triglycerides (MCT) in this supplement enhance fat absorption. Upon oral intake of this nutritional supplement, the ingredients may prevent both malnutrition and weight loss.

**caseinate protein isolate:** An isolate comprised of the sodium or calcium salt of the glycoprotein casein, the primary protein found in milk and other dairy products, with anti-catabolic activity.

**Casement:** A window hinged to open along one of its vertical edges.

**Cask:** A heavily shielded container used for the dry storage or shipment (or both) of radioactive materials such as spent nuclear fuel or other high-level radioactive waste. Casks are often made from lead, concrete, or steel. Casks must meet regulatory requirements and are not intended for long-term disposal in a repository. For additional detail, see Dry Cask Storage and Dry Spent Fuel Storage Designs: NRC Approved for General Use.

**Casodex :** (Other name for: bicalutamide) OR A group or series of case reports involving patients who were given similar treatment. Reports of case series usually contain detailed information about the individual patients. This includes demographic information (for example, age, gender,

ethnic origin) and information on diagnosis, treatment, response to treatment, and follow-up after treatment.

**casopitant mesylate:** The mesylate salt of a centrally-acting neurokinin 1 (NK1) receptor antagonist with antidepressant and antiemetic activities. Casopitant competitively binds to and blocks the activity of the NK1 receptor, thereby inhibiting NK1-receptor binding of the endogenous tachykinin neuropeptide substance P (SP), which may result in antiemetic effects. SP is found in neurons of vagal afferent fibers innervating the brain-stem nucleus tractus solitarius and the area postrema, which contains the chemoreceptor trigger zone (CTZ), and may be elevated in response to chemotherapy. The NK1 receptor is a G-protein receptor coupled to the inositol phosphate signal-transduction pathway and is found in both the nucleus tractus solitarius and the area postrema.

**Caspases:** Cysteine proteases that participate in the proteolytic cascade in apoptosis.

**casprofungin acetate:** The acetate salt of an antimycotic echinocandin lipopeptide, semisynthetically derived from a fermentation product of the fungus *Glarea lozoyensis*. Casprofungin inhibits 1,3-beta-glucan synthase, resulting in decreased synthesis of beta(1,3)-D-glucan (an essential component of the fungal cell wall), weakening of the fungal cell wall, and fungal cell wall rupture. This agent is active against *Aspergillus* and *Candida* species. OR A study that compares two groups of people: those with the disease or condition under study (cases) and a very similar group of people who do not have the disease or condition (controls). Researchers study the medical and lifestyle histories of the people in each group to learn what factors may be associated with the disease or condition. For example, one group may have been exposed to a particular substance that the other was not. Also called retrospective study.

**CASPT2:** Complete active space, second-order perturbation theory. This is one formulation of MP2 theory using a CASSCF reference instead of a HF reference. A high-level multireference theory.

**CASSCF:** Complete active space self-consistent field. A type of MCSCF calculation in which the configurations are chosen to be all those obtainable (i.e., full CI) using a specified number of electrons and a specified set of orbitals. The set of orbitals is called the "active space," and

the specified electrons are called "active." In many cases, it requires experience and skill to select the active space correctly.

**cast:** a fossil formed when the organic remains dissolved, leaving an opening (mold) shaped like the organism and later filled with calcite or silica. OR To form a "plastic" object by pouring a fluid monomer-polymer solution into an open mold where it finishes polymerizing. (2) Forming plastic film and sheet by pouring the liquid resin onto a moving belt or by precipitation in a chemical bath. OR To form a "plastic" object by pouring a fluid monomer-polymer solution into an open mold where it finishes polymerizing.

**Cast Film:** A cast film is made by depositing a layer of plastic onto a surface then solidifying and removing the film from that surface. The plastic layer can be in molten form, in a solution, or in dispersion. OR Plastic film produced from synthetic resins (such as polyethylene) by the cast process. In this process, the molten resin is extruded through a slot die onto an internally cooled chill roll. OR A cast film is made by depositing a layer of plastic onto a surface then solidifying and removing the film from that surface. The plastic layer can be in molten form, in a solution, or in a dispersion. OR a resinous product prepared by pouring liquid resins into a mold and heat treating the mass to harden it.

**Cast iron** : This is iron as it comes out of the blast furnace. It contains around 4% carbon and so is brittle. Some of the carbon is removed as the cast iron is converted to steel.

**Casting:** The process of forming objects using fluid plastic poured into a mold. OR The process of forming solid or hollow articles from fluid plastic mixtures or resins by pouring or injecting the fluid into a mold or against a substrate with little or no pressure, followed by solidification and removal of the formed object. OR The process of forming solid or hollow articles from fluid plastic mixtures or resins by pouring or injecting the fluid into a mold or against a substrate with little or no pressure, followed by solidification and removal of the formed object.

**Castleman disease** : A drug used with another drug to treat prostate cancer that has spread to other parts of the body. Casodex binds to proteins called androgen receptors, which are found in some prostate cancer cells. These proteins bind to androgens (male hormones) and may cause cancer cells to

grow. Casodex blocks these proteins and may keep cancer cells from growing. It is a type of antiandrogen. Also called bicalutamide.

**castrate-resistant prostate cancer :** A drug used to prevent or treat infections caused by a fungus (a type of microorganism). It belongs to the family of drugs called antifungal agents.

**castration :** A rare disorder in which benign (not cancer) growths form in lymph node tissue. There are two main ways that Castleman disease occurs: localized (unicentric) and multicentric. Unicentric Castleman disease affects only one group of lymph nodes in one part of the body, usually in the chest or abdomen. It may not cause symptoms. Multicentric Castleman disease affects many groups of lymph nodes and lymphoid tissue all through the body. It can weaken the immune system and cause problems such as infection, fever, weight loss, fatigue, night sweats, nerve damage, and anemia. People with Castleman disease have an increased risk of lymphoma. Also called angiofollicular lymph node hyperplasia and giant lymph node hyperplasia.

**CaT regimen :** Prostate cancer that keeps growing even when the amount of testosterone in the body is reduced to very low levels. Many early-stage prostate cancers need normal levels of testosterone to grow, but castrate-resistant prostate cancers do not. Also called CRPC.

**CAT scan :** Removal or destruction of the testicles or ovaries using radiation, surgery, or drugs. Medical castration refers to the use of drugs to suppress the function of the ovaries or testicles.

**CAT-8015:** A chemotherapy combination used to treat endometrial, ovarian, and head and neck cancers, and non-small cell lung cancer that has spread. It includes the drugs carboplatin and paclitaxel (Taxol). Also called Carbo-Tax regimen, carboplatin-Taxol, carboplatin-Taxol regimen, and PC regimen.

**Catabolic:** A type of reaction or series of reactions in which complex molecules are broken down into simpler ones; the opposite of anabolic

**catabolism:** the breakdown or digestion of large, complex molecules. OR That part of metabolism that is concerned with degradation reactions. OR

The set of metabolic reactions that transform fuels into cellular energy. OR The phase of intermediary metabolism concerned with the energyyielding degradation of nutrient molecules.

**Catabolite activator protein (CAP):** The camp response protein; when bound to camp, CAP binds to an inverted repeated of the lac operon, near position -61 relative to the start site of transcription, to stimulate transcription. OR A specific regulatory protein that controls initiation of transcription of the genes producing the enzymes required for a bacterial cell to use some other nutrient when glucose is lacking.

**Catabolite repression:** The general repression of transcription of genes associated with catabolism that is seen in the presence of glucose. OR The repression by glucose of catabolic enzymes required for the catabolism of carbohydrates other than glucose.

**Catalase:** A ubiquitous heme protein that catalyzes the dismutation of hydrogen peroxide into molecular oxygen and water.

**catalysis:** A process in which a catalyst increases the speed of a chemical reaction.

**Catalysis by approximation:** Enhancing the rate of a reaction by bringing multiple substrates together along a single binding surface of an enzyme.

**Catalyst:** A chemical compound (usually an organic peroxide) which initiates polymerisation of a resin. (Also known as a hardener.) OR the acceleration (or retardation) of a chemical reaction by the presence of a comparatively small amount of a foreign substance called a catalyst. OR A substance that changes the rate of a chemical reaction without itself undergoing a permanent change or becoming part of the molecular composition of the product. OR A substance which markedly speeds up the cure of a compound when added in minor quantity as compared to the amounts of primary reactants. OR A substance that increases the rate of a chemical reaction, without being consumed or produced by the reaction. Catalysts speed both the forward and reverse reactions, without changing the position of equilibrium. Enzymes are catalysts for many biochemical reactions. OR a substance that helps along a chemical reaction or change without being changed itself. OR A substance that speeds up a chemical or biochemical reaction that would have occurred anyway (without help), but at a much slower rate; enzymes are biological catalysts OR a substance that affects the rate of a reaction in which it participates; however, it is not altered or used up in the process. OR a substance that affects the rate of a reaction in which it participates; however, it is not altered or used up in the process. Platinum metal is a catalyst in alkyne hydrogenation, for example.

OR a substance that accelerates a chemical reaction without itself being consumed. OR An ingredient that speeds up a chemical reaction; sometimes used in two component paint systems. OR Compound that accelerates the rate of a chemical reaction, and is not itself consumed in the reaction. OR Substance whose presence increases the rate of a chemical reaction, e.g., acid catalyst added to an epoxy resin system to accelerate drying time. OR A catalyst is a substance that alters (usually speeds up) the rate of a chemical reaction, but remains chemically unchanged itself at the end of the reaction. OR A substance that significantly increases the rate of a chemical reaction, although it is neither a reactant nor a product. OR A substance that alters the velocity of a chemical reaction and may be recovered essentially unaltered in form and amount at the end of the reaction. OR Substance that speeds up a chemical process without actually changing the products of reaction. OR A substance which increases the rate of a chemical reaction, but itself remains unchanged at the end of the reaction. OR A catalyst is a compound or element that can increase the rate of a chemical reaction. Catalysts can lower activation energy of a reaction to help a reaction proceed faster and with less energy.

**Catalytic antibodies:** Antibodies generated by using transition-state analogs of a particular reaction as antigens. Such antibodies often function as catalysts for the reaction. Also called abzymes.

**catalytic converter:** A catalytic converter is a honeycomb structure coated with precious metal catalysts, used in a car's exhaust to reduce air pollution. OR This is a device fitted to the exhaust pipe of a car in order to convert the harmful gases into less harmful ones. The particular gases to be removed are carbon monoxide and the nitrogen oxides. After conversion, these become nitrogen (already 4/5 of the atmosphere) and carbon dioxide (although a pollutant since it is a greenhouse gas, the amount of carbon dioxide released in this way is very small compared to the amount emitted by burning the fuel).

**Catalytic Cracking:** A method of cracking that uses a catalyst to convert hydrocarbons to positively charged carbocations, which then break down into smaller molecules. This can be carried out at much lower temperatures than thermal cracking - still hot, 500-600°C as compared to around 700°C, but that difference adds up to a lot of \$\$\$.

**Catalytic group:** An amino acid or cofactor at an enzymes active site that directly participates in the making or breaking of covalent bonds.

**Catalytic RNA:** One of a class of RNA molecules that display enzymatic activity.

**Catalytic site:** The site of an enzyme involved in the catalytic process.  
OR See active site.

**Catalytic triad:** A constellation of three residues, found in many proteolytic enzymes, in which two of the residues convert the remaining residue, usually a serine or cysteine, into a potent nucleophile.

**catanadromous:** Fish that swim downstream to spawn.

**Catapres :** (Other name for: clonidine hydrochloride) OR A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The pictures are taken from different angles and are used to create 3-dimensional (3-D) views of tissues and organs. A dye may be injected into a vein or swallowed to help the tissues and organs show up more clearly. A CAT scan may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called computed tomography scan, computerized axial tomography scan, computerized tomography, and CT scan.

**cataract :** A monoclonal antibody linked to a toxic substance. It is being studied in the treatment of some types of B-cell cancer. CAT-8015 is made in the laboratory. It binds to CD22, a protein on the surface of normal B cells and B-cell tumors, and kills the cells. Also called anti-CD22 immunotoxin CAT-8015.

**catechin :** A drug used to treat high blood pressure. It is also being studied in the treatment of certain types of cancer pain and as an aid to stop smoking. It blocks the release of chemicals from nerve endings that make blood vessels constrict (get narrower). Catapres is a type of antihypertensive agent and a type of alpha-adrenergic agonist. Also called clonidine hydrochloride.

**catechol :** A condition in which the lens of the eye becomes cloudy. Symptoms include blurred, cloudy, or double vision; sensitivity to light; and difficulty seeing at night. Without treatment, cataracts can cause blindness. There are many different types and causes of cataracts. They may occur in people of all ages, but are most common in the elderly.

**catecholamine :** A substance found in tea that helps protect cells from damage caused by free radicals. Free radicals are unstable molecules that are made during normal cell metabolism (chemical changes that take place in a cell). They can build up in cells and cause damage to other molecules. This damage may increase the risk of cancer and other diseases. Catechins are being studied in the prevention and treatment of cancer. A catechin is a type of antioxidant.

**catecholamines:** Hormones, such as epinephrine, that are amino derivatives of catechol.

**Category of radioactive sources:** The categories for radioactive sources are defined by the IAEA's Code of Conduct to help ensure that radioactive sources are used within an appropriate framework of radiation safety and security. · Category 1 sources, if not safely managed or securely protected, would be likely to cause permanent injury to a person who handled them or was otherwise in contact with them for more than a few minutes. It would probably be fatal to be close to this amount of unshielded material for a period of a few minutes to an hour. These sources are typically used in practices such as radiothermal generators, irradiators, and radiation teletherapy. · Category 2 sources, if not safely managed or securely protected, could cause permanent injury to a person who handled them or was otherwise in contact with them for a short time (minutes to hours). It could possibly be fatal to be close to this amount of unshielded radioactive material for a period of hours to days. These sources are typically used in practices such as industrial gamma radiography, high dose rate brachytherapy and medium dose rate brachytherapy. · Category 3 sources, if not safely managed or securely protected, could cause permanent injury to a person who handled them or was otherwise in contact with them for some hours. It could possibly -- although it is unlikely -- be fatal to be close to this amount of unshielded radioactive material for a period of days to weeks. These sources are typically used in practices such as fixed industrial gauges involving high activity sources (for example, level gauges, dredger gauges, conveyor gauges, and spinning pipe gauges) and well logging.

**Catemer:** A network extending throughout a system; a type of hydrogen bonding arrangement consisting of an infinite chain.

**Catenane:** An interlocked pair of circular structures, such as covalently closed DNA molecules.

**Catenation:** The linking of molecules without any direct covalent bonding between them, as when two circular DNA molecules interlock like the links in a chain.

**Caternary:** A measure of the difference in length of strands in a specified length of roving, as a result of unequal tension.

**cathepsin-activatable Cy5 fluorescent imaging probe LUM015:** A cathepsin-activatable fluorescent probe with imaging activity. The cathepsin-activatable fluorescent probe LUM015 contains the Cy5 fluorophore linked, via a pan-cathepsin protease cleavable peptide, to a fluorescent quencher. Upon injection, the peptide in LUM015 can be cleaved by cathepsins overexpressed by tumor cells, which releases the quencher and activates the fluorophore. Upon imaging, tumor cells expressing cathepsin family proteases can be detected.

**catheter :** A chemical originally isolated from a type of mimosa tree. Catechol is used as an astringent, an antiseptic, and in photography, electroplating, and making other chemicals. It can also be made in the laboratory.

**cathode:** Electrode where electrons are gained (reduction) in redox reactions. OR A negative electrode. It is the electrode from which current leaves an electrolytic cell. OR A cathode is a negative electrode. OR The electrode at which reduction occurs.

**cathode ray:** A negatively charged beam that emanates from the cathode of a discharge tube. Cathode rays are streams of electrons.

**cation:** a positively charged atom or group of atoms, or a radical which moves to the negative pole (cathode) during electrolysis. OR A cation is a positively charged ion. Metals typically form cations. OR A positively charged ion. OR an ion with a positive charge. OR a positively charged ion. OR an atom or molecule with a positive charge. OR A positively charged ion.

**Cation exchange:** The ability of a soil or other solid to exchange cations (positive ions such as calcium) with a liquid.

**cation-exchange resin:** An insoluble polymer with fixed negative charges; used in the chromatographic separation of cationic substances.

**Cationic cation:** A positively charged chemical species, like the ammonium  $\text{NH}_4^+$  and scandium  $\text{Sc}^{4+}$  ions, is called a cation. In an electrochemical cell, a cation will move towards the cathode to gain an electron to remove its excess positive charge.

**cationic liposome-encapsulated paclitaxel:** A cationic liposome preparation of paclitaxel with antineoplastic activity. Paclitaxel, the active ingredient in cationic liposome-encapsulated paclitaxel, binds to tubulin and inhibits the disassembly of microtubules, resulting in the inhibition of mitosis and cellular proliferation, and apoptosis. Cationic liposome encapsulation of paclitaxel allows the delivery of high doses of paclitaxel to target tissues while minimizing systemic toxicity. Tumor endothelial cells may preferentially bind and internalize cationic liposomes.

**Cationic monomer :** A building block in polyacrylamide flocculant polymers. Makes the polymer cationically charged.

**cationic polymerization:** occurs via a cation intermediate and is less efficient than free-radical polymerization.

**Cationic product :** A product carrying positive charge in its structure.

**CATIONIC SURFACTANT:** A surfactant in which the hydrophile is positively charged. Examples; quaternary ammonium salts. (see RFF 750.10.01 - SURFACTANTS).

**catumaxomab:** A trifunctional bispecific monoclonal antibody with potential antineoplastic activity. Catumaxomab has two antigen-recognition sites: one for human CD3, a T cell surface antigen; and one for human epithelial cell adhesion molecule (EpCAM), a cell surface antigen expressed by a variety of epithelial tumor cells. In addition, the modified Fc portion of this antibody binds Fc receptors on antigen presenting cells (APCs) such as macrophages and dendritic cells (DCs). Catumaxomab brings T cells, EpCAM-expressing epithelial tumor cells and APCs together into tricellular complexes, which may result in a potent cytotoxic T-lymphocyte (CTL) response against EpCAM-expressing epithelial tumor cells. Fc-mediated binding of APCs in the tricellular complex potentiates EpCAM antigen presentation to T cells and the activation of anti-tumor cytotoxic T cell functions. Check for active clinical trials using this agent.

**CAULKING COMPOUND:** A semidrying or slow drying plastic material used to seal joints or fill crevices around windows, chimneys.

**cause-specific survival :** A type of neurohormone (a chemical that is made by nerve cells and used to send signals to other cells). Catecholamines are important in stress responses. High levels cause high blood pressure which can lead to headaches, sweating, pounding of the heart, pain in the chest, and anxiety. Examples of catecholamines include dopamine, epinephrine (adrenaline), and norepinephrine (noradrenaline).

**caustic:** capable of destroying or eating away by chemical action; a hydroxide of a light metal. OR Corrosive; able to eat away or destroy by chemical action.

**Caustic Soda:** When used in industrial processes, sodium hydroxide is often known as caustic soda.

**cauterize :** A flexible tube used to deliver fluids into or withdraw fluids from the body.

**Caverject:** (Other name for: alprostadil)

**CAVITY:** Depression in mold, which usually forms the outer surface of the molded part; depending on number of such depressions, molds are designated as a single cavity or multi-cavity. OR The features of a mold which are directly responsible for forming the final shape of a molded part OR The void between the A-side and B-side that is filled to create the injection-molded part. The A-side of the mold is also sometimes called the cavity. OR Depression in mold, which usually forms the outer surface of the molded part; depending on number of such depressions, molds are designated as a single cavity or multi-cavity. OR A depression or female portion of the mold that creates the external plastic part surface. OR A depression or set of depressions in a plastic-forming mold. OR The part of the mold that contains the reverse image of the product being formed. OR Concave in mold, which usually forms the outer surface of the molded part; depending on number of such depressions, molds are designated as a single cavity or multi-cavity. OR Depression in a mold made by casting, machining, hobbing, or a combination of these methods; depending on number of such depressions, molds are designated as Single-Cavity or Multi-Cavity. OR A depression, or a set of matching depressions, in a plastics-forming mold which forms the outer surfaces of the molded articles. OR A depression, or a set of matching depressions, in a plastics-forming mold which forms the outer surfaces of the molded articles. OR

The machined shape within a mold which created the form of the plastic part.

**cavity :** The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, to the date of death from the disease. Patients who die from causes unrelated to the disease are not counted in this measurement. In a clinical trial, measuring the cause-specific survival is one way to see how well a new treatment works. Also called CSS.

**Cavity Pressure:** Pressure on the melt inside the space between core and cavity as the melt moves to fill the mould.

**CB10-277:** A synthetic derivative of dimethylphenyl-triazene related to dacarbazine, with antineoplastic properties. Related to the agent dacarbazine, CB10-277 is converted *in vivo* to a monomethyl triazene form that alkylates DNA, resulting in inhibition of DNA replication and repair; in addition, this agent may act as a purine analogue, resulting in inhibition of DNA synthesis, and may interact with protein sulfhydryl groups. Check for active clinical trials using this agent.

**CBC:** To destroy tissue using a hot or cold instrument, an electrical current, or a chemical that burns or dissolves the tissue. This process may be used to kill certain types of small tumors or to seal off blood vessels to stop bleeding.

**CBC with differential :** A hollow area or hole. It may describe a body cavity (such as the space within the abdomen) or a hole in a tooth caused by decay.

**CBE:** A measure of the number of red blood cells, white blood cells, and platelets in the blood. The amount of hemoglobin (substance in the blood that carries oxygen) and the hematocrit (the amount of whole blood that is made up of red blood cells) are also measured. A CBC is used to help diagnose and monitor many conditions. Also called blood cell count, complete blood count, and full blood count.

**CBP/beta-catenin antagonist PRI-724:** A potent, specific inhibitor of the canonical Wnt signaling pathway in cancer stem cells with potential antineoplastic activity. Wnt signaling pathway inhibitor PRI-724 specifically inhibits the recruiting of beta-catenin with its coactivator CBP (the binding protein of the cAMP response element-binding protein CREB); together with other transcription factors beta-catenin/CBP binds to WRE (Wnt-responsive element) and activates transcription of a wide range of

target genes of Wnt/beta-catenin signaling. Blocking the interaction of CBP and beta-catenin by this agent prevents gene expression of many proteins necessary for growth, thereby potentially suppressing cancer cell growth. The Wnt/beta-catenin signaling pathway regulates cell morphology, motility, and proliferation; aberrant regulation of this pathway leads to neoplastic proliferation. Check for active clinical trials using this agent.

**CBS:** Complete basis set. Indicates that some method of basis set extrapolation was applied in an attempt to determine the result that would have been obtained using an infinitely large basis set. The two major extrapolation methods are (1) repeating the calculation with increasingly large basis sets and making an empirical extrapolation, and (2) using analytical formulas that are correct to second-order. See the chapters by Martin and by Petersson in this book.

**CBT:** A measure of the number of red blood cells, white blood cells, and platelets in the blood, including the different types of white blood cells (neutrophils, lymphocytes, monocytes, basophils, and eosinophils). The amount of hemoglobin (substance in the blood that carries oxygen) and the hematocrit (the amount of whole blood that is made up of red blood cells) are also measured. A CBC with differential is used to help diagnose and monitor many different conditions, including anemia and infection. Also called blood cell count with differential.

**CBT-1:** A physical exam of the breast performed by a health care provider to check for lumps or other changes. Also called clinical breast exam.

**cc :** A type of psychotherapy that helps patients change their behavior by changing the way they think and feel about certain things. It is used to treat mental, emotional, personality, and behavioral disorders. Also called cognitive behavior therapy and cognitive therapy.

**CC-1088:** A substance taken from plants that is being studied in the treatment of cancer. It may help drugs kill tumor cells that have become resistant to drugs. It is a type of multidrug resistance inhibitor and a type of P-glycoprotein antagonist. Also called MDR modulator CBT-1.

**CC-1088:** An analog of thalidomide with potential antineoplastic activity that belongs to the functional class of agents called selective cytokine inhibitory drugs (SelCIDs). SelCIDs inhibit phosphodiesterase-4 (PDE 4), an enzyme involved in tumor necrosis factor alpha (TNF alpha) production.

CC-1088 inhibits production of the cytokines vascular endothelial growth factor (VEGF) (a pro-angiogenic factor) and interleukin-6 (IL-6).

**CC-401:** A second generation ATP-competitive anthrapyrazolone c-Jun N terminal kinase (JNK) inhibitor with potential antineoplastic activity. Based on the chemistry of SP600125, another anthrapyrazolone inhibitor of JNK, CC-401 competitively binds the ATP binding site of JNK, resulting in inhibition of the phosphorylation of the N-terminal activation domain of transcription factor c-Jun; decreased transcription activity of c-Jun; and a variety of cellular effects including decreased cellular proliferation.

**CC-4047:** A measure of volume in the metric system. One thousand ccs equal one liter. Also called cubic centimeter, milliliter, and ml.

**CC-49:** A drug that is being studied in the treatment of cancer. It is similar but not identical to thalidomide. CC-1088 belongs to the family of drugs called angiogenesis inhibitors.

**CC-5013:** A type of monoclonal antibody used in cancer detection or therapy. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells.

**CC-8490:** A benzopyran with potential antineoplastic activity. CC-8490 acts as a selective estrogen receptor modulator (SERM), inhibiting the proliferation of estrogen-sensitive breast cancer cells. This agent also inhibits growth and induces apoptosis of glioblastoma cells via a mechanism independent of estrogen receptor-related mechanisms. OR A substance that is being studied in the treatment of cancer. It is made by combining the monoclonal antibody CC49 with a chemical called streptavidin. It can find tumor cells that have the protein TAG-72 on their surface, including colon, prostate, breast, and ovary cancer cells. After CC49-streptavidin binds to cancer cells, a radioactive compound called yttrium Y 90 DOTA-biotin will find those cells and kill them.

**cc-pV(T+d)Z:** Correlation-consistent polarized valence triple-zeta basis set with an additional tight d function on elements with atomic number greater than 12.

**cc-pV5Z:** Correlation-consistent polarized valence quintuple-zeta basis set. See cc-pVDZ.

**cc-pVDZ:** Correlation-consistent polarized valence double-zeta basis set. The smallest in a series of "correlation consistent" basis sets developed by

Dunning and coworkers for high-level calculations. It has been observed that properties computed using successively larger basis sets of this series appear to converge exponentially, presumably to the corresponding CBS values.

**cc-pVQZ:** Correlation-consistent polarized valence quadruple-zeta basis set. See cc-pVDZ.

**cc-pVTZ:** Correlation-consistent polarized valence triple-zeta basis set. See cc-pVDZ.

**CC49-streptavidin :** A drug that is a form of thalidomide, and is used to treat multiple myeloma that has not gotten better with other anticancer drugs. It is also being studied in the treatment of other types of cancer. CC-4047 may help the immune system kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of immunomodulating agent and a type of antiangiogenesis agent. Also called pomalidomide and Pomalyst.

**CCD:** Coupled-cluster, doubles. A theory of electron correlation that is complete to infinite order but only for a subset of possible excitations (doubles, for CCD). See " CI ."

**CCI-779:** A drug that is similar to thalidomide, and is used to treat multiple myeloma and certain types of anemia. It is also used to treat mantle cell lymphoma that has come back or has not gotten better after other treatment. It is being studied in the treatment of other conditions and types of cancer. CC-5013 may help the immune system kill abnormal blood cells or cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of immunomodulating agent. Also called lenalidomide and Revlimid.

**CCL21-expressing H1944 cell vaccine:** A cancer cell vaccine comprised of the allogeneic human lung adenocarcinoma cell line H1944 that has been transduced ex vivo with adenoviral vector encoding human cytokine chemokine C-C motif ligand 21 (CCL21), with potential immunomodulating and antineoplastic activities. Upon administration, CCL21-expressing H1944 cell vaccine expresses the chemokine CCL21, which may induce an antitumoral cytotoxic T-lymphocyte immune response in the tumor microenvironment. CCL21 has been shown to attract antigen presenting cells (APCs), like leukocytes and DCs, and natural killer (NK) cells and their T-cell effectors to induce a cytotoxic immune response.

H1944 cells contain tumor-associated antigens (TAAs) overexpressed in non-small cell lung cancer (NSCLC). Check for active clinical trials using this agent.

**cCLB8:** A substance that is being studied in the treatment of brain cancer. It belongs to the family of drugs called benzopyrans.

**CCNU:** A drug used to treat advanced renal cell carcinoma (a type of kidney cancer). It is also being studied in the treatment of other types of cancer. CCI-779 blocks a protein involved in cell division, and may kill cancer cells. It is a type of rapamycin analog and a type of serine/threonine kinase inhibitor. Also called temsirolimus and Torisel.

**CCR2 antagonist CCX872-B:** An orally available human C-C chemokine receptor type 2 (CCR2) antagonist, with potential immunomodulating and antineoplastic activities. Upon oral administration, CCR2 antagonist CCX872-B specifically binds to CCR2 and prevents the binding to its cognate endothelium-derived chemokine ligand CCL2 (monocyte chemoattractant protein-1 or MCP1). This may result in the inhibition of both CCR2 activation and CCR2-mediated signal transduction, which may inhibit inflammatory processes, angiogenesis, tumor cell migration, and tumor cell proliferation. The G-protein coupled receptor CCR2 is expressed on the surface of monocytes and macrophages, and stimulates their migration and infiltration; it plays a key role in inflammation. CCR2 is overexpressed in certain cancer cell types, where it is involved in angiogenesis, tumor cell migration and proliferation.

**CCR2 antagonist PF-04136309:** An orally available human chemokine receptor 2 (CCR2) antagonist with potential immunomodulating and antineoplastic activities. Upon oral administration, CCR2 antagonist PF-04136309 specifically binds to CCR2 and prevents binding of the endothelium-derived chemokine ligand CCL2 (monocyte chemoattractant protein-1 or MCP1) to its receptor CCR2, which may result in inhibition of CCR2 activation and signal transduction. This may inhibit inflammatory processes as well as angiogenesis, tumor cell migration, and tumor cell proliferation. The G-protein coupled receptor CCR2 is expressed on the surface of monocytes and macrophages, stimulates the migration and infiltration of these cell types, and plays an important role in inflammation, angiogenesis, and tumor cell migration and proliferation. Check for active clinical trials using this agent.

**CCSD:** Coupled-cluster, singles and doubles. (See CCD.)

**CCSD(T):** Coupled-cluster, singles and doubles with approximate triples. (See CCD.) Triples contributions are determined perturbatively. CCSD(T) is the cheapest of the usual approximations to full CCSDT, but appears to be the best. The most popular high-level (i.e., lots of electron correlation) method. Size-consistent. Very expensive.

**CCSDT:** Coupled-cluster, singles and doubles and triples. (See CCD.) Extra-high level of electron correlation: incredibly expensive, rarely used.

**CCSG:** A drug used to treat a rare condition called Castleman disease in patients who do not have HIV or human herpesvirus 8. It is also being studied in the treatment of multiple myeloma. CCLB8 binds to a protein called interleukin-6 (IL-6), which is made by some white blood cells and other cells in the body. CCLB8 may help reduce inflammation and stop the growth of cancer cells or abnormal blood cells. It is a type of monoclonal antibody. Also called anti-IL-6 chimeric monoclonal antibody, CNTO 328, siltuximab, and Sylvant.

**CD-expressing Bifidobacterium APS001F:** A recombinant anaerobic bacterium, *Bifidobacterium longum*, encoding the cytosine deaminase (CD) gene with potential antineoplastic adjuvant activity. Upon injection, the CD-expressing bifidobacterium preferentially localizes and grows in the hypoxic environment of the tumor and expresses CD, an enzyme that catalyzes the intracellular conversion of the prodrug flucytosine (5-FC) into the antineoplastic agent 5-fluorouracil (5-FU). Upon administration of 5-FC, and subsequent localized conversion into 5-FU and its cytotoxic active metabolites, the tumor is specifically exposed to cytotoxic agents while the exposure to normal tissues is minimal. Check for active clinical trials using this agent.

**CD105/Yb-1/SOX2/CDH3/MDM2 polypeptide plasmid DNA vaccine:**

A plasmid DNA vaccine containing the mammalian expression vector pUMVC3 (pNGVL3) encoding epitopes of CD105 (Endoglin), Y-box binding protein 1 (Yb-1), SRY-box 2 (SOX2), cadherin 3 (CDH3), and murine double minute 2 (MDM2) proteins, with potential immunomodulating and antineoplastic activities. Upon intradermal administration of pUMVC3-CD105/Yb-1/SOX2/CDH3/MDM2-epitopes plasmid DNA vaccine, the plasmid transfects cells and the peptides are expressed. This generates a specific memory Th1 (T-helper) cell immune

response, stimulates secretion of cytokines by the T cells and leads to a cytotoxic T-lymphocyte (CTL) response against CD105/Yb-1/SOX2/CDH3/MDM2-expressing tumor cells. CD105/Yb-1/SOX2/CDH3/MDM2 proteins are highly immunogenic tumor associated antigens that are overexpressed in breast cancer. Additionally, these antigens are associated with breast cancer stem cells and with epithelial to mesenchymal transformation (EMT).

**CD117:** A drug used to treat brain tumors that have already been treated with surgery or radiation therapy. It is also used to treat Hodgkin lymphoma that has not gotten better with other types of treatment or has come back. It is being studied in the treatment of other types of cancer. CCNU damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called Gleostine and lomustine.

**CD133 antigen peptide-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine comprised of autologous dendritic cells (DCs) pulsed with human leukocyte antigen (HLA)-A2-restricted peptides derived from the CD133 antigen, with potential antineoplastic activity. Upon intradermal administration, the CD133 antigen peptide-pulsed autologous DC vaccine may stimulate an anti-tumoral cytotoxic T-lymphocyte (CTL) response against CD133-expressing tumor cells, resulting in tumor cell lysis. CD133, a cancer stem cell marker, is expressed on hematopoietic stem and progenitor cells and overexpressed on many types of cancer cells; it is associated with resistance to chemotherapy and increased cancer survival. HLA-A2 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T-cells. Epitope design that is restricted to those epitopes that bind most efficiently to HLA-A2 may improve antigenic peptide immunogenicity.

**CD134:** Funds awarded to certain U.S. institutions by the National Cancer Institute (NCI) for them to become cancer centers in the United States, based on scientific merit. The funds help the cancer centers improve the way they are run and develop new ways to prevent, diagnose, and treat cancer. To receive the award, one goal of the cancer center must be to turn clinical and basic research into better health care. Also called P30 Cancer Center Support Grant.

**CD138CAR-CD137/TCRzeta-expressing T lymphocytes:** T-lymphocytes transduced with a retroviral vector expressing a chimeric

antigen receptor (CAR) specific for syndecan-1 (CD138) (CART-138 T cells) coupled to the signaling domain of 4-1BB (CD137), and the zeta chain of the T-cell receptor (TCRzeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, CD138CAR-CD137/TCRzeta -expressing T lymphocytes direct the T-lymphocytes to syndecan-1-expressing tumor cells and induces selective toxicity in those tumor cells. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of syndecan-1. Syndecan-1, a type 1 transmembrane proteoglycan and tumor associated antigen, is overexpressed in a variety of cancer cells. It plays a key role in the regulation of cell growth, differentiation, and adhesion, and its expression is correlated with poor prognosis.

**CD19/CD3 dual-affinity retargeting protein JNJ-64052781:** An anti-CD19/anti-CD3 bispecific, humanized antibody-like protein, with potential immunostimulatory and antineoplastic activities. Anti-CD19/anti-CD3 dual-affinity retargeting (DART) protein JNJ-64052781 possesses two antigen-recognition and binding sites, one for the CD3 complex, a group of T-cell surface glycoproteins that complex with the T-cell receptor (TCR), and one for CD19, a tumor-associated antigen (TAA) overexpressed on the surface of B-cells. Upon administration, JNJ-64052781 binds to CD3-expressing T-cells and CD19-expressing cancer cells, thereby crosslinking CD19-expressing tumor B-cells and cytotoxic T-lymphocytes (CTLs). This may result in a potent CTL-mediated cell lysis of CD19-expressing B-lymphocytes. CD19, a B-cell specific membrane antigen, is expressed during normal B-cell development and on B-cell malignancies.

**CD19CAR-CD28zeta-4-1BB-expressing allogeneic T lymphocytes:** Allogeneic T-lymphocytes transduced with a retroviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) coupled to the costimulatory signaling domain CD28, the signaling domain of 4-1BB (CD137), and the zeta chain of the T-cell receptor (TCR), with potential immunomodulating and antineoplastic activities. Upon transfusion, CD19CAR-CD28 zeta-4-1BB-expressing allogeneic T lymphocytes directs the T-lymphocytes to and induces selective toxicity in CD19-expressing tumor cells. CD28, a T-cell surface-associated co-stimulatory molecule, is required for T-cell activation, proliferation, and survival. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19.

Furthermore, inclusion of the 4-1BB signaling domain may increase the antitumor activity compared to the inclusion of the CD28 costimulatory domain and TCR zeta chain alone. CD19 antigen is a B-cell specific cell surface antigen, which is expressed in all B-cell lineage malignancies.

#### **CD19CAR-CD3zeta-4-1BB-CD28-expressing autologous T**

**lymphocytes:** Autologous T-lymphocytes transduced with a retroviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) coupled to three co-stimulatory signaling domains derived from CD28, 4-1BB (CD137), and the zeta chain of the T-cell receptor (TCR)/CD3 complex (CD3-zeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, the CD19CAR-CD3zeta-4-1BB-CD28-expressing autologous T-lymphocytes direct the T-lymphocytes to CD19-expressing tumor cells and induce their selective toxicity. CD28, a T-cell surface-associated co-stimulatory molecule, is required for T-cell activation, proliferation, and survival. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19. CD3-zeta is a transmembrane signaling adaptor polypeptide that regulates the assembly of TCR complexes, modulates the expression of the complex on the cell surface and plays a key role in antigen recognition. CD19 antigen, a B-cell specific cell surface antigen, is expressed in all B-cell lineage malignancies.

#### **CD19CAR-CD3zeta-4-1BB-expressing allogeneic T lymphocytes:**

Allogeneic T-lymphocytes transduced with a modified lentiviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) and the zeta chain of the TCR/CD3 complex (CD3-zeta), coupled to the signaling domain of 4-1BB (CD137), with potential immunomodulating and antineoplastic activities. Upon transfusion, CD19CAR-CD3zeta-4-1BB-expressing allogeneic T-lymphocytes direct the T-lymphocytes to CD19-expressing tumor cells, thereby inducing a selective toxicity in CD19-expressing tumor cells. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19 and the inclusion of this signaling domain may increase the antitumor activity compared to the inclusion of the CD3-zeta chain alone. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies.

**CD19CAR-CD3zeta-4-1BB-expressing autologous T lymphocytes:**

Autologous T-lymphocytes transduced with a modified lentiviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) and the zeta chain of the TCR/CD3 complex (CD3-zeta), coupled to the signaling domain of 4-1BB (CD137), with potential immunomodulating and antineoplastic activities. Upon transfusion, CD19CAR-CD3zeta-4-1BB-expressing autologous T-lymphocytes direct the T-lymphocytes to CD19-expressing tumor cells, thereby inducing a selective toxicity in CD19-expressing tumor cells. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19 and the inclusion of this signaling domain may increase the antitumor activity compared to the inclusion of the CD3-zeta chain alone. CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. CD3-zeta (or CD247) is a transmembrane signaling adaptor polypeptide that regulates the assembly of complete TCR complexes and their expression on the cell surface.

**CD19CAR-CD3zeta-expressing autologous T lymphocytes:** Autologous T-lymphocytes transduced with a modified lentiviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) and the zeta chain of the TCR/CD3 complex (CD3-zeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, CD19CAR-CD3zeta-expressing autologous T-lymphocytes are directed to CD19-expressing tumor cells, thereby inducing a selective toxicity only in these tumor cells. The CD19 antigen is a B-cell specific cell surface antigen expressed in all B-cell lineage malignancies. CD3-zeta (or CD247) is a transmembrane signaling adaptor polypeptide that regulates the assembly of complete T-cell receptor complexes and their expression on the cell surface.

**CD20:** A protein found on the surface of many different types of cells. It binds to a substance called stem cell factor (SCF), which causes certain types of blood cells to grow. CD117 may also be found in higher than normal amounts, or in a changed form, on some types of cancer cells, including gastrointestinal stromal tumors and melanoma. Measuring the amount of CD117 in tumor tissue may help diagnose cancer and plan treatment. CD117 is a type of receptor tyrosine kinase and a type of tumor marker. Also called c-kit and stem cell factor receptor.

**CD20 antigen :** A protein being studied in the treatment of cancer. Substances that attach to CD134 on the surface of T cells (a type of white blood cell) may help the T cells grow and kill more cancer cells. CD134 is a type of tumor necrosis factor (TNF) receptor. Also called OX-40.

**CD20-targeted polypeptide TRU-015:** A proprietary antibody-based single-chain polypeptide with B cell-depleting activity. Significantly smaller than a whole antibody, CD20-targeted polypeptide TRU-015 binds specifically to the B cell-specific cell surface antigen CD20 with full immunoglobulin Fv fragment-type target binding activity and full immunoglobulin Fc fragment-type effector function. This agent transiently depletes CD20-bearing B cells by inducing B cell -directed complement dependent cytotoxicity (CDC) and antibody-dependent cell-mediated cytotoxicity (ADCC) and B cell apoptosis.

**CD24 extracellular domain-IgG1 Fc domain recombinant fusion protein CD24Fc:** A recombinant fusion protein composed of the extracellular domain of the mature human glycoprotein CD24 linked to a human immunoglobulin G1 (IgG1) Fc domain, with potential immune checkpoint inhibitory, anti-inflammatory and antineoplastic activities. Upon administration, the CD24 extracellular domain-IgG1 Fc domain recombinant fusion protein CD24Fc binds to injured cell components, also called DAMPs (Danger-Associated Molecular Patterns), thereby preventing the interaction of DAMPs with toll-like receptors (TLRs) and inhibiting both nuclear factor-kappa B (NFkB) activation and secretion of inflammatory cytokines. In addition, CD24Fc binds to and activates Siglec G/10, a sialic acid-binding immunoglobulin-type lectin, and stimulates SHP-1-mediated inhibitory signaling, preventing NFkB activation and secretion of inflammatory mediators, which further prevents inflammatory responses. DAMPs activate the innate immune system. CD24 binds to both DAMPs and Siglec G/10 to regulate immune responses. CD24/Siglec G/10 interaction plays a key role in a number of immune-mediated diseases including graft-versus-host disease (GvHD), multiple sclerosis and rheumatoid arthritis.

**CD28CAR/CD137CAR-expressing T lymphocytes:** Third generation, chimeric antigen receptor (CAR) cells composed of T-lymphocytes transduced with a lentiviral vector expressing a CAR consisting of an a single chain variable fragment specific for a particular antigen, coupled to

the two co-stimulatory signaling domains Cluster of Differentiation 28 (CD28) and Cluster of Differentiation 137 (CD137; 4-1BB), and the zeta chain of the T-cell receptor (TCR)/CD3 complex (CD3-zeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, CD28CAR/CD137CAR-expressing T-lymphocytes are directed to, and induce selective toxicity in tumor cells expressing the particular antigen. CD28, a T-cell surface-associated co-stimulatory molecule that is required for T-cell activation, proliferation, and survival. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of the antigen. Furthermore, inclusion of the 4-1BB signaling domain may increase the antitumor activity when compared to the inclusion of the CD28 co-stimulatory domain and CD3-zeta alone.

**CD3/CD28 costimulated vaccine-primed autologous T-cells:** A population of T cells that have been sensitized to vaccine tumor antigen(s) in vivo; collected from the patient; co-stimulated with antibodies to the T-cell cell surface proteins CD3 and CD28 and expanded ex vivo; and then infused into the same patient. CD3, part of the T cell receptor complex, and CD28, a T-cell surface-associated co-stimulatory molecule, are both required for full T-cell activation. Adoptive transfer of CD3/CD28 costimulated vaccine-primed autologous T-cells may induce the production of interferon-gamma (IFN-gamma) and granulocyte-macrophage colony-stimulating factor (GM-CSF) and associated antitumor effects and a graft-versus-tumor (GVT) response. Check for active clinical trials using this agent.

**CD30 CAR-expressing autologous T lymphocytes:** A preparation of autologous T lymphocytes that have been genetically modified to express a chimeric antigen receptor (CAR) specific for the CD30 antigen, with potential immunostimulating and antineoplastic activities. Upon administration, the CD30 CAR-expressing autologous T lymphocytes specifically recognize and bind to CD30-expressing tumor cells, resulting in tumor cell lysis. CD30, a cell surface receptor and a member of the tumor necrosis factor (TNF) receptor superfamily, is transiently expressed on activated lymphocytes and is constitutively expressed in hematologic malignancies.

**CD33-targeting antibody-drug conjugate IMGN779:** An antibody-drug conjugate (ADC) consisting of the humanized monoclonal antibody

Z4681A conjugated, via a cleavable disulfide linker, to the cytotoxic DNA alkylating agent DGN462, which is an indolino-benzodiazepine dimer containing a mono-imine moiety, with potential antineoplastic activity. The monoclonal antibody portion of anti-CD33 monoclonal antibody-DGN462 conjugate IMG779 specifically binds to the cell surface antigen CD33 expressed on myeloid leukemia cells; upon internalization, the DGN462 moiety is released, and covalently binds to and alkylates DNA, thereby causing cell cycle arrest, apoptosis and inhibition of cell growth in myeloid leukemia cells that express CD33. CD33 is expressed on normal non-pluripotent hematopoietic stem cells and myeloid leukemia cells. Check for active clinical trials using this agent.

**CD33CAR-CD3zeta-4-1BB-expressing autologous T-lymphocytes:**

Autologous T-lymphocytes transduced with a retroviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD33 scFv (single chain variable fragment) coupled to the signaling domain of 4-1BB (CD137) and the zeta chain of the T-cell receptor (TCRzeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, CD33-specific CAR retroviral vector-transduced autologous T lymphocytes target CD33-expressing tumor cells and induce selective toxicity in CD33-expressing tumor cells. Following binding to CD33, the 4-1BB co-stimulatory molecule signaling domain enhances both activation and signaling. Inclusion of the 4-1BB signaling domain may also increase the antitumor activity when compared to the inclusion of the CD3-zeta chain alone. CD33 is expressed on normal non-pluripotent hematopoietic stem cells as well as on myeloid leukemia cells.

**CD34 antigen :** A protein found on B cells (a type of white blood cell). It may be found in higher than normal amounts in patients with certain types of B-cell lymphomas and leukemias. Measuring the amount of CD20 on blood cells may help to diagnose cancer or plan cancer treatment. CD20 is a type of tumor marker. Also called CD20 antigen.

**CD34/TK75-transduced donor lymphocytes:** A preparation of donor T-lymphocytes that are transfected with a retroviral vector encoding a chimeric suicide gene consisting of the extracellular and transmembrane domains of human CD34 and mutant 75 of the herpes simplex virus thymidine kinase (HSV-TK75) with potential controllable immunomodulating activity. Donor T cell therapy following allogeneic

hematopoietic stem cell (HSC) transplantation may result in a graft-versus-leukemia (GVL) and help control transplant-related viral infections. In the event that graft-versus-host disease (GVHD) develops due to donor lymphocyte infusion, CD34/TK75-transduced donor lymphocytes may be selectively eliminated by administration of the prodrug antiviral agent ganciclovir GCV. In CD34/T75-transduced donor lymphocytes, GCV is phosphorylated by expressed HSV-TK75 to its monophosphate form and, subsequently, converted into its active triphosphate form, which specifically kills the donor lymphocytes. The expressed CD34 moiety of the chimeric suicide gene serves as a selection marker; mutant 75 of HSV-TK confers increased GCV sensitivity.

**CD4:** A protein present on the surface of helper T cells that, along with the T-cell receptor, binds to class II MHC proteins on antigen-presenting cells. CD4 is the source of the specificity of helper T cells for class II MHC interactions.

**CD4-positive T lymphocyte :** A protein found on the surface of some bone marrow and blood cells.

**CD4+CD25+ regulatory T cells:** Regulatory T cells that express CD4 and CD25 (interleukin 2 receptor) antigens, with immunomodulating activity.. CD4+CD25+ T regulatory cells (Tregs), a subset of CD4+ T cells expressing high levels of CD25 and the transcription factor Foxp3, are essential in maintaining immunologic homeostasis, preventing autoimmunity by suppressing self-reactive T cells; CD4+CD25+ Tregs may induce tolerance to allogeneic organ transplants such as hematopoietic stem cell transplants (HSCTs).

**CD40 agonist monoclonal antibody CP-870,893:** A fully human monoclonal antibody (mAb) agonist of the cell surface receptor CD40 with potential immunostimulatory and antineoplastic activities. Similar to the CD40 ligand (CD40L or CD154), CD40 agonist monoclonal antibody CP-870,893 binds to CD40 on a variety of immune cell types, triggering the cellular proliferation and activation of antigen-presenting cells (APCs), activating B cells and T cells, and enhancing the immune response; in addition, this agent may activate CD40 present on the surfaces of some solid tumor cells, resulting in apoptosis and decreased tumor growth. CD40, a member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on various immune cells, many B-cell malignancies, and some

solid tumors, mediating both indirect tumor cell killing through the activation of the immune system and direct tumor cell apoptosis. Check for active clinical trials using this agent.

**CD40 agonist monoclonal antibody RO7009789:** A monoclonal antibody agonist of the cell surface receptor CD40, with potential immunostimulatory and antineoplastic activities. Similar to the endogenous CD40 ligand (CD40L or CD154), CD40 agonist monoclonal antibody RO7009789 binds to CD40 on a variety of immune cell types. This triggers the cellular proliferation and activation of antigen-presenting cells (APCs), and activates B cells and T cells, resulting in an enhanced immune response. RO7009789 also binds to and activates CD40 present on the surfaces of some solid tumor cells, leading to apoptosis and decreased tumor growth. CD40, a cell surface receptor and member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on various immune cells and certain cancer cells; it mediates both indirect tumor cell killing through the activation of the immune system and direct tumor cell apoptosis.

**CD40 agonistic monoclonal antibody APX005M:** A humanized monoclonal antibody agonist of the cell surface receptor CD40, with potential immunostimulatory and antineoplastic activities. Similar to the endogenous CD40 ligand (CD40L or CD154), CD40 agonistic monoclonal antibody APX005M binds to CD40 on a variety of immune cell types. This triggers the cellular proliferation and activation of antigen-presenting cells (APCs), and activates B-cells, and effector and memory T-cells. This results in an enhanced immune response against tumor cells. APX005M also binds to and activates CD40 present on the surfaces of some solid tumor cells, leading to apoptosis and decreased tumor growth. CD40, a cell surface receptor and member of the tumor necrosis factor (TNF) receptor superfamily, is expressed on various immune cells and certain cancer cells; it mediates both indirect tumor cell killing through the activation of the immune system and direct tumor cell apoptosis.

**CD40-ligand :** A protein found on B cells (a type of white blood cell). It may be found in higher than normal amounts in patients with certain types of B-cell lymphomas and leukemias. Measuring the amount of CD20 antigen on blood cells may help to diagnose cancer or plan cancer treatment. CD20 antigen is a type of tumor marker. Also called CD20.

**CD8:** A cell-surface protein expressed by cytotoxic T cells that, in conjunction with the T cell receptor, recognizes class I MHC-peptide complexes. CD8 binds to the MHC protein itself.

**CD80:** A substance that is being studied in the treatment of cancer. It binds to certain immune cells and may suppress cancer growth.

**CD95 ECD/IgG-Fc fusion protein APG101:** A human, soluble fusion protein consisting of the extracellular domain of the CD95 receptor fused to the Fc-domain of the human IgG antibody, with potential antineoplastic activity. CD95 ECD/IgG-Fc fusion protein APG101 binds to the CD95 ligand (CD95L) and blocks the binding of CD95L to the CD95 receptor. In tumor cells, blockage of CD95L-mediated signaling pathways may prevent cell migration and invasive cell growth; in healthy cells, blockage of CD95L-mediated signaling pathways may prevent apoptosis and may protect cell damage. Activation of the CD95 receptor plays an important role in the initiation of apoptosis in healthy cells or the invasive growth of cancer cells. Check for active clinical trials using this agent.

**CDA inhibitor E7727/decitabine combination agent ASTX727:** An orally available combination agent containing the cytidine deaminase (CDA) inhibitor E7727 and the cytidine antimetabolite decitabine, with potential antineoplastic activity. Upon oral administration of ASTX727, the CDA inhibitor E7727 binds to and inhibits CDA, an enzyme primarily found in the gastrointestinal (GI) tract and liver that catalyzes the deamination of cytidine and cytidine analogs. This prevents the breakdown of decitabine, increasing its bioavailability and efficacy while decreasing GI toxicity due to the administration of lower doses of decitabine. Decitabine exerts its antineoplastic activity through the incorporation of its triphosphate form into DNA, which inhibits DNA methyltransferase and results in hypomethylation of DNA. This interferes with DNA replication and decreases tumor cell growth.

**CDC:** A type of immune cell that stimulates killer T cells, macrophages, and B cells to make immune responses. A CD4-positive T lymphocyte is a type of white blood cell and a type of lymphocyte. Also called helper T cell.

**CDC7 inhibitor TAK-931:** An orally bioavailable inhibitor of cell division cycle 7 (cell division cycle 7-related protein kinase; CDC7), with potential antineoplastic activity. Upon administration, TAK-931 binds to and inhibits CDC7; this prevents the initiation of DNA replication during mitosis, which

causes cell cycle arrest and induces apoptosis. This inhibits cell growth in CDC7-overexpressing tumor cells. CDC7, a serine/threonine kinase and cell division cycle protein, is overexpressed in a variety of cancers and plays a key role in the activation of DNA replication and the regulation of cell cycle progression.

**CDC7 kinase inhibitor BMS-863233:** An orally bioavailable cell division cycle 7 homolog (CDC7) kinase inhibitor with potential antineoplastic activity. CDC7 kinase inhibitor BMS-863233 binds to and inhibits the activity of CDC7, which may result in the inhibition of DNA replication and mitosis, the induction of tumor cell apoptosis, and the inhibition of tumor cell proliferation in CDC7-overexpressing tumor cells. CDC7, a serine-threonine kinase overexpressed in a variety of tumor cell types, plays an essential role in the initiation of DNA replication by activating origins of replication.

**CDC7 kinase inhibitor NMS-1116354:** An orally bioavailable cell division cycle 7 homolog (CDC7) kinase inhibitor with potential antineoplastic activity. CDC7 kinase inhibitor NMS-1116354 binds to and inhibits the activity of CDC7, which may result in the inhibition of DNA replication and mitosis, the induction of tumor cell apoptosis, and the inhibition of tumor cell proliferation in CDC7-overexpressing tumor cells. The serine-threonine kinase CDC7 initiates DNA replication by phosphorylating MCM2 (minichromosome maintenance complex component 2) at Ser40 and Ser53.

**CDDO:** A protein found on the surface of some immune system cells, including B cells and monocytes. Cells with CD80 on their surface cause T cells to make substances that help control immune responses. Also called B7-1.

**CDK inhibitor AT7519M :** A U.S. federal government agency whose mission is to protect public health by preventing and controlling disease, injury, and disability. The CDC promotes healthy behaviors and safe, healthy environments. It keeps track of health trends, tries to find the cause of health problems and outbreaks of disease, and responds to new public health threats. The CDC works with state health departments and other organizations throughout the country and the world to help prevent and control disease. The CDC is part of the U.S. Public Health Service of the

Department of Health and Human Services (DHHS). Also called Centers for Disease Control and Prevention.

**CDK inhibitor P276-00:** A flavone and cyclin dependent kinase (CDK) inhibitor with potential antineoplastic activity. P276-00 selectively binds to and inhibits Cdk4/cyclin D1, Cdk1/cyclin B and Cdk9/cyclin T1, serine/threonine kinases that play key roles in the regulation of the cell cycle and cellular proliferation. Inhibition of these kinases leads to cell cycle arrest during the G1/S transition, thereby leading to an induction of apoptosis, and inhibition of tumor cell proliferation.

**CDK inhibitor SCH 727965 :** A substance being studied in the treatment of some types of cancer. CDDO may block enzymes involved in inflammation and cancer growth. It is a type of antineoplastic plant product.

**CDK inhibitor SNS-032:** A 2-aminothiazole-derived, small-molecule cyclin dependent kinase (CDK) inhibitor with potential antineoplastic activity. CDK inhibitor SNS-032 selectively binds to CDKs 2, 7, and 9, preventing their phosphorylation and activation; inhibition of CDK activity may result in cell cycle arrest, the induction of apoptosis and decreased tumor cell proliferation in susceptible tumor cell populations. This agent has been shown to sensitize radioresistant tumor cells to ionizing radiation.

**CDK2/5/9 inhibitor CYC065:** An orally bioavailable inhibitor of cyclin dependent kinases 2, 5 and 9 (CDK2/5/9), with potential antineoplastic and chemoprotective activities. Upon oral administration, CYC065 selectively binds to and inhibits the activity of CDK2, 5 and 9, which leads to inhibition of CDK2, 5 and 9-dependent cellular pathways, downregulation of genes involved in the pro-survival pathway, prevention of the activation of DNA double-strand break repair pathways, and induction of both cell cycle arrest and apoptosis. This inhibits the proliferation of CDK2/5/9-overexpressing tumor cells. In addition, CYC065 protects hematopoietic stem and progenitor cells (HSPCs), prevents myelosuppression, and preserves the function of the bone marrow. CDKs are serine/threonine kinases involved in the regulation of the cell cycle and may be overexpressed in certain cancer cell types; they play key roles in tumor cell proliferation, the regulation of transcription, and DNA damage repair.

**CDK2/TRKA inhibitor PHA-848125 AC:** An orally bioavailable inhibitor of cyclin-dependent kinases (CDKs) and thropomyosin receptor kinase A (TRKA), with potential antineoplastic activity. CDK2/TRKA

inhibitor PHA-848125 AC potently inhibits cyclin-dependent kinase 2 (CDK2) and exhibits activity against other CDKs including CDK1 and CDK4, in addition to TRKA. Inhibition of these kinases may result in cell cycle arrest and apoptosis of tumor cells that express these kinases. CDKs are serine/threonine kinases involved in regulation of the cell cycle and may be overexpressed in some cancer cell types. The neurotrophin receptor TRKA is mutated in a variety of cancer cell types.

**CDK4 inhibitor P1446A-05:** A protein kinase inhibitor specific for the cyclin-dependent kinase 4 (CDK4) with potential antineoplastic activity. CDK4 inhibitor P1446A-05 specifically inhibits CDK4-mediated G1-S phase transition, arresting cell cycling and inhibiting cancer cell growth. The serine/threonine kinase CDK4 is found in a complex with D-type G1 cyclins and is the first kinase to become activated upon mitogenic stimulation, releasing cells from a quiescent stage into the G1/S growth cycling stage; CDK-cyclin complexes have been shown to phosphorylate the retinoblastoma (Rb) transcription factor in early G1, displacing histone deacetylase (HDAC) and blocking transcriptional repression. Check for active clinical trials using this agent.

**CDK4/6 inhibitor SHR6390:** A cyclin-dependent kinase (CDK) inhibitor with potential antineoplastic activity. Upon administration, CDK4/6 inhibitor SHR6390 selectively inhibits cyclin-dependent kinase 4 (CDK4) and 6 (CDK6). This inhibits retinoblastoma (Rb) protein phosphorylation early in the G1 phase, which prevents CDK-mediated G1-S phase transition and leads to cell cycle arrest. This suppresses DNA replication and decreases tumor cell proliferation. CDK4 and 6 are serine/threonine kinases that are upregulated in many tumor cell types and play a key role in the regulation of cell cycle progression.

**CDKI AT7519:** An orally bioavailable small molecule with potential antineoplastic activity. AT7519M selectively binds to and inhibits cyclin dependent kinases (CDKs), which may result in cell cycle arrest, induction of apoptosis, and inhibition of tumor cell proliferation. CDKs are serine/threonine kinases involved in regulation of the cell cycle and may be overexpressed in some types of cancer cells.

**CDKI R547:** An orally bioavailable diaminopyrimidine cyclin-dependent kinase inhibitor (CDKI) with potential antineoplastic activity. CDKI R547 selectively binds to and inhibits CDKs, especially CDK1/cyclin B,

CDK2/cyclin E, and CDK4/cyclin D1. The inhibition of CDKs results in cell cycle arrest, inhibition of tumor cell proliferation, and induction of apoptosis. Through CDK inhibition, this agent also reduces phosphorylation of the retinoblastoma (Rb) protein, thus preventing activation of transcription factor E2F and so further suppressing tumor cell proliferation. CDKs are ATP-dependent serine/threonine kinases that are important regulators of cell cycle progression and are frequently overexpressed in tumor cells.

**CDKs/JAK2/FLT3 inhibitor TG02 citrate:** An orally bioavailable citrate salt form of TG02, a multi-kinase inhibitor for cyclin dependent kinase (CDK) subtypes 1, 2, 7 and 9, Janus-associated kinase 2 (JAK2), FMS-related tyrosine kinase 3 (FLT3, FLK2, STK1), with potential antineoplastic activity. Upon oral administration, CDK/JAK2/FLT3 Inhibitor TG02 binds to and inhibits the CDK subtypes, JAK2, and FLT3. TG02 also inhibits, to a lesser extent, TYK2, TYRO3, STAT5 and P38delta. This may result in both an induction of apoptosis and an inhibition of tumor cell proliferation in cancer cells that overexpress these kinases. JAK2, often upregulated or mutated in a variety of cancer cells, mediates STAT3 activation and plays a key role in tumor cell proliferation and survival. CDKs are serine/threonine kinases that play key roles in the regulation of the cell cycle and cellular proliferation. FLT3, a class III tyrosine kinase receptor, is overexpressed or mutated in most B lineage and acute myeloid leukemias.

**Cdna:** DNA complementary to an mRNA sequence. OR See complementary DNA.

**cDNA:** Complementary DNA, made in vitro from the mRNA by the enzyme reverse transcriptase using deoxyribonucleotide triphosphates. Unlike mRNA, cDNA can be easily propagated and sequenced.

**CDP-alcohol:** Activated form of an alcohol that can be used in the synthesis of phosphoglycerides by combining with diacylglycerol at the free hydroxyl group on glycerol; for instance, CDP-choline can react with diacylglycerol to form the phospholipid phosphatidylcholine.

**CDP-diacylglycerol (cytidine diphosphodiacylglycerol):** Formed from phosphatidate and cytidine triphosphate (CTP); activated diacylglycerol used in the synthesis of phosphoglycerides such as phosphatidyl serine.

**Ce-Vi-Sol:** (Other name for: ascorbic acid)

**CEA:** A substance being studied in the treatment of some types of cancer. CDK inhibitor AT7519M blocks enzymes needed for cells to divide. It is a type of cyclin-dependent kinase inhibitor. Also called AT7519M.

**CEA assay :** A substance being studied in the treatment of advanced melanoma (a type of skin cancer) and other types of cancer. It blocks cell division and may cause cancer cells to die. It is a type of cyclin-dependent kinase inhibitor. Also called dinaciclib.

**CEA peptide-1 :** A substance that may be found in the blood of people who have colon cancer, other types of cancer or diseases, or who smoke tobacco. CEA levels may help keep track of how well cancer treatments are working or if cancer has come back. It is a type of tumor marker. Also called carcinoembryonic antigen.

**CEA-Scan:** (Other name for: arcitumomab)

**CEA/tetanus toxoid T helper epitope fusion protein-expressing DNA plasmid vaccine:** A plasmid vaccine encoding wild type human carcinoembryonic antigen (CEA) fused to a tetanus toxoid T helper epitope, with potential antineoplastic activity. Upon vaccination and subsequent intradermal electroporation, CEA/tetanus toxoid T helper epitope fusion protein-expressing DNA plasmid vaccine may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against CEA-expressing tumor cells. CEA, a tumor associated antigen, is overexpressed in a variety of cancer cell types. The tetanus toxoid helper peptide epitope, obtained from the bacterial *Clostridium tetani* toxoid, binds to class II MHC molecules and increases the helper T-cell response thereby inducing an increased and long-term immune response.

**CeaVac:** (Other name for: monoclonal antibody 3H1 anti-idiotypic vaccine)

**CEBPA-targeting saRNA MTL-CEBPA liposome:** A lipid-based nanoparticle formulation composed of liposomes encapsulating a small oligonucleotide encoding a small activating RNA (saRNA) targeting the CCAAT enhancer binding protein alpha (CEBPA; C/EBP -  $\alpha$ ) gene, with potential antineoplastic activity. Although the exact mechanism of action through which saRNAs exert their effect(s) is still largely being investigated, it appears that, upon administration, the CEBPA-targeting saRNA MTL-CEBPA liposome targets and binds to a specific DNA regulatory target region, most likely the promoter region, for the CEBPA gene. This restores CEBPA gene transcription, and increases both CEBPA

mRNA levels and protein expression. This in turn activates the expression of tumor suppressor genes and may halt proliferation of susceptible tumor cells. Specifically, upregulation of CEBPA in liver cells abrogates liver cancer cell proliferation, prevents liver failure and normalizes liver function. CEBPA, a transcription factor that plays a key role in the regulation of the expression of genes with many functions, including those involved in cellular proliferation, metastasis and normal hepatocyte function, is found in many tissues, including liver cells, adipose tissue and myeloid cells. CEBPA is downregulated in certain types of cancer cells, such as liver cancer cells. saRNA is a short, double-stranded RNA that is structurally related to small interfering RNAs (siRNAs); saRNA is most likely to bind to a target site on the promoter of the CEBPA gene and upregulates its gene expression.

**cebranopadol:** An orally available antagonist of the nociceptin receptor opioid receptor like -1 (ORL-1), with potential analgesic activity. Upon oral administration, cebranopadol binds to ORL-1 and prevents its interaction with nociceptin. This leads to a decrease of nociceptin/ORL-1-mediated signaling and interferes with the sensation of pain, which results in an analgesic effect. Nociceptin is a neuropeptide involved in the regulation of pain.

**Cecon:** (Other name for: ascorbic acid)

**cecum:** a blind sac that is the meeting point of the small and large intestines.

**cecum :** A laboratory test that measures the level of carcinoembryonic antigen (CEA) in the blood. An increased amount of CEA may be found in the blood of people who have colon cancer or other types of cancer, certain other diseases, or who smoke. The amount of CEA in the blood may also help keep track of how well cancer treatments are working or if cancer has come back. CEA is a type of tumor marker. Also called carcinoembryonic antigen assay.

**cedarwood :** A small piece of a tumor marker called carcinoembryonic antigen (CEA). CEA may be found in the blood of people who have colon cancer, other types of cancer or diseases, or who smoke tobacco. CEA peptide-1 is used to make a vaccine that may help stimulate the body's immune system to kill cancer cells. Also called CAP-1 and carcinoembryonic antigen peptide-1.

**cediranib maleate:** The maleate salt of an indole ether quinazoline derivative with antineoplastic activities. Competing with adenosine triphosphate, cediranib binds to and inhibits all three vascular endothelial growth factor receptor (VEGFR-1,-2,-3) tyrosine kinases, thereby blocking VEGF-signaling, angiogenesis, and tumor cell growth.

**cediranib maleate :** A pouch that forms the first part of the large intestine. It connects the small intestine to the colon, which is part of the large intestine.

**cefazolin sodium:** The sodium salt of cefazolin, a beta-lactam antibiotic and first-generation cephalosporin with bactericidal activity. Cefazolin binds to and inactivates penicillin-binding proteins (PBP) located on the inner membrane of the bacterial cell wall. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity, which results in the weakening of the bacterial cell wall and cell lysis.

**cefepime :** A type of evergreen tree with hard fragrant wood that is a member of the cypress family. The oil from the wood is used in soaps, shampoos, bath salts, perfumes, aromatherapy, and to keep insects away. The scientific name is *Juniperus virginiana*. Also called Eastern red cedar and red cedar.

**cefepime hydrochloride:** The hydrochloride salt of a semi-synthetic, beta-lactamase-resistant, fourth-generation cephalosporin antibiotic derived from an *Acremonium* fungal species with broad-spectrum bactericidal activity. Administered parenterally, cefepime inhibits bacterial cell wall synthesis by binding to and inactivating penicillin-binding proteins (PBP) located on the inner membrane of the bacterial cell wall. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity, resulting in a reduction of bacterial cell wall stability and cell lysis. This agent is more active against a variety of Gram-positive pathogens compared to third-generation cephalosporins.

**cefixime:** A broad-spectrum, third-generation cephalosporin antibiotic derived semisynthetically from the marine fungus *Cephalosporium acremonium* with antibacterial activity. As does penicillin, the beta-lactam antibiotic cefixime inhibits bacterial cell wall synthesis by disrupting peptidoglycan synthesis, resulting in a reduction in bacterial cell wall stability and bacterial cell lysis. Stable in the presence of a variety of beta-

lactamases, this agent is more active against gram-negative bacteria and less active against gram-positive bacteria compared to second-generation cephalosporins.

**cefixime** : A substance being studied in the treatment of some types of cancer. Cediranib maleate may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of antiangiogenesis agent and a type of vascular endothelial growth factor (VEGF) receptor tyrosine kinase inhibitor. Also called AZD2171 and Recentin.

**cefmetazole sodium**: The sodium salt of the second-generation, semi-synthetic, beta-lactam cephalosporin cefmetazole with antibacterial activity. Cefmetazole binds to penicillin-binding proteins (PBPs) and prevents the crosslinking of peptidoglycan, which may result in the inhibition of cell wall synthesis, the loss of cell wall integrity, and bacterial cell wall rupture. PBPs are transpeptidases that are responsible for peptidoglycan crosslinking.

**cefotaxime**: A third generation semisynthetic cephalosporin antibiotic with bactericidal activity. Cefotaxime inhibits mucopeptide synthesis by binding to and inactivating penicillin binding proteins thereby interfering with the final transpeptidation step required for cross-linking of peptidoglycan units which are a component of bacterial cell walls. This results in a reduction of cell wall stability and causes cell lysis.

**cefpodoxime proxetil**: A third generation semi-synthetic cephalosporin and a beta-lactam antibiotic with bactericidal activity. Cefpodoxime's effect is dependent on its binding to penicillin-binding proteins (PBPs) located in the bacterial cytoplasmic membrane. Binding results in the inhibition of the transpeptidase enzymes, thereby preventing cross-linking of the pentaglycine bridge with the fourth residue of the pentapeptide and interrupting consequent synthesis of peptidoglycan chains. As a result, cefpodoxime inhibits bacterial septum and cell wall synthesis formation.

**ceftazidime sodium**: The sodium salt of ceftazidime, a third-generation cephalosporin antibiotic with bactericidal activity. Ceftazidime binds to and inactivates penicillin-binding proteins (PBPs), enzymes located on the inner membrane of the bacterial cell wall, resulting in the weakening of the bacterial cell wall and cell lysis. Compared to the second and first generation cephalosporins, ceftazidime is more active against gram-

negative bacteria and less active against gram-positive bacteria. Ceftazidime also crosses the blood-brain barrier and reaches therapeutic concentrations in the central nervous system (CNS). PBPs participate in the terminal stages of assembling the bacterial cell wall, and in reshaping the cell wall during cell division. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity.

**ceftazidime/avibactam sodium:** A combination preparation containing the third-generation cephalosporin ceftazidime and the sodium salt form of avibactam, a non-beta-lactam beta-lactamase inhibitor, with antibiotic and beta-lactamase inhibiting activity, respectively. Upon administration, ceftazidime binds to essential penicillin-binding proteins (PBPs) and inhibits cell wall synthesis in certain bacteria. Avibactam binds to and inactivates beta-lactamases, thereby protecting ceftazidime from degradation and increasing ceftazidime's efficacy. Check for active clinical trials using this agent.

**ceftobiprole medocaril:** A water-soluble prodrug of ceftobiprole, a pyrrolidinone cephalosporin antibiotic, with bactericidal activity. Ceftobiprole binds to and inactivates penicillin-binding proteins (PBPs), enzymes involved in the terminal stages of bacterial cell wall assembly and cell wall reshaping during bacterial growth and division. This agent exhibits a broad spectrum of activity against gram-negative and gram-positive pathogens including methicillin-resistant *S. aureus* (MRSA), vancomycin-intermediate *S. aureus* (VISA) and vancomycin-resistant *S. aureus* (VRSA). Ceftobiprole is refractory to hydrolysis by class A and class C lactamases.

**ceftriaxone :** A drug used to treat infection. It belongs to the family of drugs called cephalosporin antibiotics.

**ceftriaxone sodium:** The sodium salt form of ceftriaxone, a beta-lactam, third-generation cephalosporin antibiotic with bactericidal activity. Ceftriaxone binds to and inactivates penicillin-binding proteins (PBP) located on the inner membrane of the bacterial cell wall. PBPs participate in the terminal stages of assembling the bacterial cell wall, and in reshaping the cell wall during cell division. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity. This results in the weakening of the bacterial cell wall and causes cell lysis. Compared to the second and first generation cephalosporins, ceftriaxone is more active against gram-negative bacteria

and less active against gram-positive bacteria. Ceftriaxone also crosses the blood-brain barrier and reaches therapeutic concentrations in the central nervous system (CNS).

**Ceiling Temperature:** Above a certain temperature, monomers can no longer be persuaded to form polymers by chain polymerisation. This occurs when the loss in entropy arising from joining many molecules into one outweighs the energetic benefit of converting double bonds to single bonds. A chain-growth polymer raised above the ceiling temperature will degrade, or depolymerise.

**ceiling value (CV):** The maximum permissible airborne concentration of a potentially toxic substance and is a concentration that should never be exceeded in the breathing zone.

**Celebrex:** (Other name for: celecoxib)

**celecoxib:** A nonsteroidal anti-inflammatory drug (NSAID) with a diaryl-substituted pyrazole structure. Celecoxib selectively inhibits cyclooxygenase-2 activity (COX-2); COX-2 inhibition may result in apoptosis and a reduction in tumor angiogenesis and metastasis. Check for active clinical trials using this agent. or An antibiotic drug used to treat infection. It belongs to the family of drugs called cephalosporins.

**Celestone:** (Other name for: betamethasone)

**Celexa:** (Other name for: citalopram hydrobromide)

**Celexa :** A drug used to treat infection. It belongs to the family of drugs called cephalosporin antibiotics.

**celiac disease :** A drug that reduces pain. Celecoxib belongs to the family of drugs called nonsteroidal anti-inflammatory agents. It is being studied in the prevention of cancer.

**Celiptium:** (Other name for: elliptinium acetate)

**cell :** A drug used to treat depression. It belongs to the families of drugs called antidepressant agents and selective serotonin reuptake inhibitors (SSRIs). Also called citalopram.

**cell body:** the main portion of the nerve cell.

**Cell commitment:** That stage in a cell's life when it becomes committed to a certain line of development.

**cell culture :** A digestive disease that is caused by an immune response to a protein called gluten, which is found in wheat, rye, barley, and oats. Celiac disease damages the lining of the small intestine and interferes with the absorption of nutrients from food. A person with celiac disease may become malnourished no matter how much food is consumed.

**cell cycle:** many repetitions of cellular growth and reproduction; divided into interphase and mitosis. OR All of those stages that a cell passes through from one cell generation to the next.

**cell cycle :** In biology, the smallest unit that can live on its own and that makes up all living organisms and the tissues of the body. A cell has three main parts: the cell membrane, the nucleus, and the cytoplasm. The cell membrane surrounds the cell and controls the substances that go into and out of the cell. The nucleus is a structure inside the cell that contains the nucleolus and most of the cell's DNA. It is also where most RNA is made. The cytoplasm is the fluid inside the cell. It contains other tiny cell parts that have specific functions, including the Golgi complex, the mitochondria, and the endoplasmic reticulum. The cytoplasm is where most chemical reactions take place and most proteins get made. The human body has more than 30 trillion cells.

**cell cycle checkpoint/DNA repair antagonist IC83:** A proprietary agent with potential antineoplastic activity. Cell cycle checkpoint/DNA repair antagonist IC83 IC83 inhibits cell cycle checkpoint/DNA repair enzymes, which may result in enhanced cytotoxicity of DNA damaging agents and diminished tumor cell resistance to chemotherapy and radiation therapy. Cell cycle checkpoint/DNA repair enzymes are involved in the recognition and repair of damaged DNA and are overexpressed in many types of cancer cells.

**cell cycle inhibitor :** The growth of microorganisms such as bacteria and yeast, or human, plant, or animal cells in the laboratory. Cell cultures may be used to diagnose infections, to test new drugs, and in research.

**cell differentiation :** The process a cell goes through each time it divides. The cell cycle consists of a series of steps during which the chromosomes and other cell material double to make two copies. The cell then divides into two daughter cells, each receiving one copy of the doubled material. The cell cycle is complete when each daughter cell is surrounded by its own outer membrane. Also called mitotic cycle.

**Cell line:** An established clone originally derived from a whole organism through a long process of cultivation.

**Cell lineage:** The pedigree of cells resulting from binary fission.

**cell motility :** A substance used to block the cell division cycle, which is a series of steps a cell goes through each time it divides. There are many different types of cell cycle inhibitors. Some only work at specific steps in the cell cycle. Others work at any point in the cell cycle. Certain drugs that inhibit the cell cycle are being studied in the treatment of cancer.

**cell proliferation :** The process during which young, immature (unspecialized) cells take on individual characteristics and reach their mature (specialized) form and function.

**cell respiration :** The ability of a cell to move.

**Cell type:** Cells within an organism that have the same genetic makeup but have different properties owing to differences in gene expression.

**cell type :** An increase in the number of cells as a result of cell growth and cell division.

**cell wall:** a strong membrane outside the plasma membrane present in certain cells, such as bacteria and plants. OR A tough outer coating found in many plant, fungal, and bacterial cells that accounts for their ability to withstand mechanical stress or abrupt changes in osmotic pressure. Cell walls always contain a carbohydrate component and frequently also a peptide and a lipid component.

**cell-cell signaling :** A chemical process in which oxygen is used to make energy from carbohydrates (sugars). Also called aerobic metabolism, aerobic respiration, and oxidative metabolism.

**cell-cycle regulation :** The transfer of information from one cell to another. Cells signal each other by direct contact with each other or by the release of a substance from one cell that is taken up by another cell. Cell-cell signaling is important for cells to grow and work normally. Cells that lose the ability to respond to signals from other cells may become cancer cells. Also called cell-to-cell signaling and intercellular communication.

**cell-mediated immunity:** the process in which the T lymphocytes interact with the microorganisms cell-to-cell and destroy them.

**cell-to-cell signaling :** A drug used to prevent graft-versus-host disease (GVHD) after organ transplants. It is also being studied in the prevention of

GVHD after stem cell transplants for cancer, and in the treatment of some autoimmune disorders. CellCept is a type of immunosuppressive agent. Also called mycophenolate mofetil.

**CellCept :** Describes the kinds of cells found in normal or cancer tissue. The cell type is usually identified by looking under a microscope. Some examples of cell types are lymphocytes, melanocytes, and squamous cells. In cancer, it is important to know the cell type in order to diagnose the cancer, plan treatment, and determine prognosis.

**cells:** the fundamental units of living things.

**Cellular Manufacturing:** The process of manufacturing which is a subsection of just-in-time manufacturing and lean manufacturing. The goal of cellular manufacturing is to move as quickly as possible, make a wide variety of similar products, while making as little waste as possible.

**cellular adhesion :** Any process that controls the series of events by which a cell goes through the cell cycle. During the cell cycle, a cell makes a copy of its DNA and other contents, and divides in two. When cell cycle regulation doesn't happen correctly, cells may divide in an uncontrolled way, and diseases such as cancer can occur.

**cellular adoptive immunotherapy :** The transfer of information from one cell to another. Cells signal each other by direct contact with each other or by the release of a substance from one cell that is taken up by another cell. Cell-to-cell signaling is important for cells to grow and work normally. Cells that lose the ability to respond to signals from other cells may become cancer cells. Also called cell-cell signaling and intercellular communication.

**Cellular immune response:** A system for cellular recognition of foreign substances that employs cellattached T-cell receptors to eliminate cells infected by a pathogen or to elicit a particular antigenic response by stimulating B-lymphocyte antibody production.

**cellular metabolism :** The close adherence (bonding) to adjoining cell surfaces.

**Cellular Plastic:** Plastics containing numerous small cells, some interconnected others not, distributed throughout the mass. Used for lighter weight plastic extrusions and other PVC products. OR Plastics containing

numerous small cavities (cells), interconnecting or not distributed throughout the mass.

**cellular respiration:** the process by which animals and other organisms obtain the energy available in carbohydrates.

**Cellulase:** No, not a misspelling of cellulose... Cellulase is an enzyme capable of depolymerising cellulose to form glucose. Chemists like these sort of words - see if your teacher can tell you the definitions of 'filtrate' and 'filtrant' without having to think about it for a couple of minutes... And if they get that one right, test them out on 'carbenium' and 'carbonium' ions!

**cellulitis :** A treatment used to help the immune system fight diseases, such as cancer and infections with certain viruses. T cells are collected from a patient and grown in the laboratory. This increases the number of T cells that are able to kill cancer cells or fight infections. These T cells are given back to the patient to help the immune system fight disease. Also called adoptive cellular therapy.

**Celluloid:** A thermoplastics material made by the intimate blending of cellulose nitrate with camphor. Alcohol is normally employed as a volatile solvent to assist plasticization, and is subsequently removed.

**Cellulose:** A polysaccharide (carbohydrate) found in plants. It is a structural carbohydrate that is an important part of the cell walls. It protects and strengthens the plant. It is a long chain of glucose molecules connected by a different type of glycosidic bond than the one found in starches. OR Cellulose is a large component of the biomass of plants and the main source of food energy for the world's termite population. It can be considered to be a condensation polymer of glucose, like starch, but the links between the glucose monomers are slightly different. OR An unbranched homopolysaccharide in plants, composed of glucose residues in  $\alpha$ -1,4 linkage; the major structural polysaccharide in plants. OR ure cellulose. OR inert substance, chemically a carbohydrate, which is the chief component of the solid structure of plants, wood, cotton, linen, etc. OR A polysaccharide made of linked glucose molecules that strengthens the cell walls of most plants. See also: What is cellulose? OR A natural high polymeric carbohydrate found in most plants; the main constituent of dried woods, jute, flax, hemp, ramie, etc. Cotton is almost p

**cellulose :** The sum of all chemical changes that take place in a cell through which energy and basic components are provided for essential processes, including the synthesis of new molecules and the breakdown and removal of others.

**Cellulose Acetate:** a class of resins made from a cellulose base, either cotton linters or purified wood pulp, by the action of acetic anhydride and acetic acid.

**Cellulose paint:** Paint in which the binder consists essentially of nitrocellulose or cellulose acetate dissolved in suitable solvent.

**Cellulose Propionate:** An ester of cellulose made by the action of propionic acid and its anhydride on purified cellulose. It is used as the basis of a thermoplastic molding material.

**Cellulose Triacetate:** A cellulosic material made by reacting purified cellulose with acetic anhydride in the presence of a catalyst. It is used in the form of film and fibers. Films and sheet are cast from clear solutions on to “drums” with highly polished surfaces. The film, which is of excellent clarity, has high tensile strength, and good heat resistance and dimensional stability. Applications include book jackets, magnetic recording tapes, and various types of packaging. Cellulose triacetate sheet has somewhat similar properties to those of the film and is used to make such articles as safety goggles, map wallets and transparent covers of many kinds.

**Celsius:** A common but non-SI unit of temperature, defined by assigning temperatures of 0°C and 100°C to the freezing and boiling points of water, respectively. OR also referred to as Centigrade, is equal to the difference between the temperature in Fahrenheit less 32 and the quantity divisible by 1.8°C = (°F32) ÷ 1.8.

**CEM:** An acute, spreading infection of the deep tissues of the skin and muscle that causes the skin to become warm and tender and may also cause fever, chills, swollen lymph nodes, and blisters.

**CEM regimen:** A regimen containing carboplatin, etoposide and melphalan used for the treatment of childhood neuroblastoma. Or A building block of plant cells and fiber. Cellulose cannot be digested by people, and is used to add bulk to the diet.

**Cement:** a dispersion of “solution” of unvulcanized rubber or a plastic in a volatile solvent. This meaning is peculiar to the plastic and rubber

industries and may or may not be an adhesive composition. OR Limestone is heated to a high temperature with clay and then powdered. It is mixed with sand and water to make mortar.

**cementation:** the step in lithification in which minerals fill some or all of the pore space and adhere to the sediment fragments, thus producing a sedimentary rock. OR This is one of the processes of sedimentary rock formation. The water is squeezed out from the gaps between the grains of sand etc of the wet sediment. This leaves behind the mineral salts which can act as a kind of glue to hold the grains together.

**cenersen:** A phosphorothioate oligonucleotide harboring nucleotide sequences complementary to tumor suppressor p53 mRNA. Cenersen hybridizes with p53 mRNA molecules, and induces Rnase H dependent hydrolysis of p53 transcripts in the double stranded section of the hybrids, thereby resulting in loss of p53 production. Loss of p53 activity leads to sensitization of cancer cells to other therapeutics.

**cenisertib:** An orally bioavailable, synthetic, small-molecule multi-Aurora kinase inhibitor with potential antineoplastic activity. Cenisertib selectively binds to and inhibits multiple Aurora kinases (AKs), which may result in the inhibition of cell division and proliferation, and the induction of apoptosis in tumor cells that overexpress AKs. Overexpressed in certain tumor cell types, AKs, a family of serine-threonine kinases, are important regulators of cell division and proliferation that are involved in controlling chromatid segregation. Check for active clinical trials using this agent.

**Cenolate:** (Other name for: ascorbic acid)

**CENTER FOLD:** A roll of film that has a fold on one side and slit on the other in the machine direction allowing the film to be unfolded to twice its roll width.

**Center Gated mold:** An injection mold wherein the cavity is filled with resin through an orifice interconnecting the nozzle and the center of the cavity area. Normally, this orifice is located at the bottom of the cavity when forming items such as containers, tumblers, bowls, etc. OR An injection or transfer mold wherein the cavity is filled with molding material through a sprue or gate directly into the center of the part.

**Center Link Position:** Distance between inside edge of belt and centerline of center link in small radius belts.

**Centerfold:** Film which is folded on one side and opens on the other.

**Centers for Disease Control and Prevention :** An abbreviation for a chemotherapy combination used to treat high-risk neuroblastoma. It includes the drugs carboplatin, etoposide, and melphalan. Also called CEM regimen.

**centi-:** Prefix used in the SI system meaning "one hundredth of". For example 1 cm means "one hundredth of a meter"; 2.3 cg could also be written " $2.3 \times 10^{-2}$  g" or "0.023 g".

**centimeter :** An abbreviation for a chemotherapy combination used to treat high-risk neuroblastoma. It includes the drugs carboplatin, etoposide, and melphalan. Also called CEM.

**central angle:** an angle whose vertex is the center of the circle. The measure of a central angle is equal to the measure of its arc.

**central atom:** In a Lewis structure, usually the atom that is the least electronegative.

**central dogma:** The organizing principle of molecular biology: genetic information flows from DNA to RNA to protein.

**central nervous system :** A U.S. federal government agency whose mission is to protect public health by preventing and controlling disease, injury, and disability. The Centers for Disease Control and Prevention promotes healthy behaviors and safe, healthy environments. It keeps track of health trends, tries to find the cause of health problems and outbreaks of disease, and responds to new public health threats. The Centers for Disease Control and Prevention works with state health departments and other organizations throughout the country and the world to help prevent and control disease. The Centers for Disease Control and Prevention is part of the U.S. Public Health Service of the Department of Health and Human Services (DHHS). Also called CDC.

**central nervous system depressant :** A measure of length in the metric system. There are 100 centimeters in a meter and  $2\frac{1}{2}$  centimeters in an inch.

**central nervous system metastasis :** The brain and spinal cord. Also called CNS.

**central nervous system primitive neuroectodermal tumor :** A type of drug that slows down brain activity, which causes the muscles to relax and calms and soothes a person. Central nervous system depressants are used to

treat insomnia (trouble sleeping), anxiety, panic attacks, and seizures. They may also be used to relieve anxiety and tension before surgery. Examples of central nervous system depressants are benzodiazepines, barbiturates, and certain sleep medicines. Central nervous system depressants are sometimes called sedatives or tranquilizers. Also called CNS depressant.

**central nervous system prophylaxis :** Cancer that has spread from the original (primary) tumor to the central nervous system (CNS). Also called CNS metastasis.

**central nervous system sanctuary therapy :** A type of cancer that arises from a particular type of cell within the brain or spinal cord. Also called CNS PNET.

**central nervous system stimulant :** Chemotherapy or radiation therapy given to the central nervous system (CNS) as a preventive treatment. It kills cancer cells that may be in the brain and spinal cord, even though no cancer has been detected there. Also called central nervous system sanctuary therapy, CNS prophylaxis, and CNS sanctuary therapy.

**central nervous system tumor :** Chemotherapy or radiation therapy given to the central nervous system (CNS) as a preventive treatment. It kills cancer cells that may be in the brain and spinal cord, even though no cancer has been detected there. Also called central nervous system prophylaxis, CNS prophylaxis, and CNS sanctuary therapy.

**central venous access catheter :** A type of drug that increases the levels of certain chemicals in the brain and increases alertness, attention, energy, and physical activity. Central nervous system stimulants also raise blood pressure and increase heart rate and breathing rate. They are used to treat depression, attention deficit hyperactivity disorder (a disorder in which a person has problems paying attention, controlling actions, and remaining still or quiet), and narcolepsy (a sleep disorder). Also called CNS stimulant.

**Centrifugal Casting:** A method of forming thermoplastic resins in which the granular resin is placed in a rotatable container, heated to molten condition by the transfer of heat through the walls of the container, and rotated so that the centrifugal force induced will force the molten resin to conform to the configuration of the interior surface of the container. Used to fabricate large diameter pipes and similar cylindrical items.

**Centring:** A temporary timber support for an arch during its construction.

**centriole:** a cylinder-like organelle that assists in chromosomal migration during mitosis.

**centromere:** the place of attachment of the two homologous chromatids during prophase in mitosis. OR The attachment site of mitotic spindles in chromosomes. OR A specialized site within a chromosome, serving as the attachment point for the mitotic or meiotic spindle.

**CEOP regimen:** A chemotherapy regimen consisting of cyclophosphamide, epirubicin, Oncovin (vincristine), and prednisone which may be used in the treatment of aggressive non-Hodgkin lymphomas.

**cEOR:** Chemically enhanced oil recovery, one of three primary techniques used in enhanced oil recovery which is a process used to modify reservoir conditions, hydrocarbon characteristics or both to help produce more oil from the reservoir.

**CEP-2563 dihydrochloride :** A tumor of the central nervous system, including brain stem glioma, craniopharyngioma, medulloblastoma, and meningioma. Also called CNS tumor.

**CEP-701:** A device used to draw blood and give treatments, including intravenous fluids, drugs, or blood transfusions. A thin, flexible tube is inserted into a vein, usually below the collarbone. It is guided (threaded) into a large vein above the right side of the heart called the superior vena cava. A needle is inserted into a port outside of the body to draw blood or give fluids. A central venous access catheter may stay in place for weeks or months and helps avoid the need for repeated needle sticks. There are several types of central venous access catheters.

**CEPA:** Coupled electron pair approximation. An approximate coupled-cluster-type method. Pretty high level.

**cephalexin:** A beta-lactam, first-generation cephalosporin antibiotic with bactericidal activity. Cephalexin binds to and inactivates penicillin-binding proteins (PBP) located on the inner membrane of the bacterial cell wall. Inactivation of PBPs interferes with the cross-linking of peptidoglycan chains necessary for bacterial cell wall strength and rigidity. This results in the weakening of the bacterial cell wall and causes cell lysis. Compared to second and third generation cephalosporins, cephalexin is more active against gram-positive and less active against gram-negative organisms.

**cephalexin** : A substance being studied in the treatment of some types of cancer. CEP-2563 dihydrochloride blocks certain proteins involved in the growth of some tumors and may kill cancer cells. It is a type of receptor tyrosine kinase inhibitor.

**cephalosporin** : A drug being studied in the treatment of acute leukemias and some other types of cancer. It binds to a protein that is present on the surface of some types of cancer cells and stops them from dividing. CEP-701 is a type of receptor tyrosine kinase inhibitor and a type of indolocarbazole alkaloid. Also called lestaurtinib.

**Cepheid**: a star that varies in its light output.

**ceramide**: One of a number of a class of sphingolipids, N-acyl derivatives with long chains. Ceramide is the core molecule for the synthesis of sphingomyelin, an essential lipid for myelination and neurotransmission; it may function as a second messenger to stimulate differentiation, inhibit proliferation, and induce apoptosis. Check for active clinical trials using this agent. or An antibiotic drug that belongs to the family of drugs called cephalosporins.

**Ceramide ( N-acyl sphingosine)**: N A sphingosine with a long-chain acyl group attached to the amino group.

**Cerazette**: (Other name for: desogestral)

**cerebellar hemangioblastoma** : A protein involved in normal cell growth. It is found on some types of cancer cells, including breast and ovarian. Cancer cells removed from the body may be tested for the presence of c-erbB-2 to help decide the best type of treatment. c-erbB-2 is a type of receptor tyrosine kinase. Also called HER2/neu, human EGF receptor 2, and human epidermal growth factor receptor 2.

**cerebellar mutism syndrome** : Describes cancer cells that have too much of a protein called HER2 on their surface. In normal cells, HER2 helps to control cell growth. When it is made in larger than normal amounts by cancer cells, the cells may grow more quickly and be more likely to spread to other parts of the body. Checking to see if a cancer is c-erbB-2 positive may help plan treatment, which may include drugs that kill c-erbB-2 positive cancer cells. Cancers that may be c-erbB-2 positive include breast, bladder, pancreatic, ovarian, and stomach cancers. Also called HER2 positive and human epidermal growth factor receptor 2 positive.

**cerebellopontine :** A benign, slow-growing tumor in the cerebellum (part of the brain at the back of the head), made up of abnormal blood vessel growth. People with von Hippel-Landau disease have an increased risk of developing hemangioblastomas.

**cerebellum:** a portion of the hindbrain that serves as a coordinating center for motor activity.

**cerebellum :** A condition that may occur in patients who have had surgery to remove a tumor in certain parts of the brain, including the cerebellum. Cerebellar mutism syndrome usually appears 1 or 2 days after surgery. Symptoms include loss of speech, trouble swallowing and eating, loss of balance, trouble walking, loss of muscle tone, mood swings, and changes in personality. Many of these symptoms go away over time. Also called CMS.

**cerebral hemisphere :** Having to do with two structures of the brain, the cerebellum (located at the lower back of the brain) and the pons (located at the base of the brain in front of the cerebellum) and the area between them.

**Cerebroside:** A sphingolipid in which glucose or galactose is linked to the terminal hydroxyl group of a ceramide. OR Sphingolipid containing one sugar residue as a head group.

**cerebrospinal fluid :** The portion of the brain in the back of the head between the cerebrum and the brain stem. The cerebellum controls balance for walking and standing, and other complex motor functions.

**cerebrospinal fluid diversion :** One half of the cerebrum, the part of the brain that controls muscle functions and also controls speech, thought, emotions, reading, writing, and learning. The right hemisphere controls the muscles on the left side of the body, and the left hemisphere controls the muscles on the right side of the body.

**cerebrovascular accident :** The fluid that flows in and around the hollow spaces of the brain and spinal cord, and between two of the meninges (the thin layers of tissue that cover and protect the brain and spinal cord). Cerebrospinal fluid is made by tissue called the choroid plexus in the ventricles (hollow spaces) in the brain. Also called CSF.

**cerebrum:** the portion of the forebrain that controls higher mental activity, such as learning, memory, logic, creativity, and emotion.

**cerebrum :** A process used to drain fluid that has built up around the brain and spinal cord. A shunt (a long, thin tube) is placed in a ventricle of the

brain and threaded under the skin to another part of the body, usually the abdomen. The shunt carries excess fluid away from the brain so it may be absorbed elsewhere in the body.

**ceremony :** In medicine, a loss of blood flow to part of the brain, which damages brain tissue. Cerebrovascular accidents are caused by blood clots and broken blood vessels in the brain. Symptoms include dizziness, numbness, weakness on one side of the body, and problems with talking, writing, or understanding language. The risk of cerebrovascular accident is increased by high blood pressure, older age, smoking, diabetes, high cholesterol, heart disease, atherosclerosis (a buildup of fatty material and plaque inside the coronary arteries), and a family history of cerebrovascular accident. Also called CVA and stroke.

**Cereport:** (Other name for: loperamide)

**Cerespan:** (Other name for: papaverine)

**ceritinib:** An orally available inhibitor of the receptor tyrosine kinase activity of anaplastic lymphoma kinase (ALK) with antineoplastic activity. Upon administration, ceritinib binds to and inhibits wild-type ALK kinase, ALK fusion proteins and ALK point mutation variants. Inhibition of ALK leads to both the disruption of ALK-mediated signaling and the inhibition of cell growth in ALK-overexpressing tumor cells. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development. ALK dysregulation and gene rearrangements are associated with a variety of tumor cell types. OR The largest part of the brain. It is divided into two hemispheres, or halves, called the cerebral hemispheres. Areas within the cerebrum control muscle functions and also control speech, thought, emotions, reading, writing, and learning.

**Cerium:** Symbol:"Ce" Atomic Number:"58" Atomic Mass: 140.12amu. Cerium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. You can find this silvery colored metal in air conditioners, your computer, and even the oven.

**certolizumab:** A Fab fragment of a recombinant, humanized monoclonal antibody directed against the proinflammatory cytokine tumor necrosis factor-alpha (TNF-alpha), with anti-inflammatory activity. Upon administration, certolizumab binds to TNF-alpha, preventing the interaction of this cytokine with endogenous cell surface receptors, thereby rendering TNF-alpha inactive and inhibiting TNF-mediated inflammatory responses.

TNF-alpha is a protein involved in inflammation, cell survival, and apoptosis.

**Cerubidine:** (Other name for: daunorubicin hydrochloride)

**Cerubidine :** A series of acts performed for a special occasion or to mark a rite of passage. Ceremonies can be casual or formal.

**Cervarix:** (Other name for: human papillomavirus 16/18 L1 virus-like particle/AS04 vaccine) or A drug used to treat non-small cell lung cancer that has spread to other parts of the body and has a mutated (changed) form of a gene called anaplastic lymphoma kinase (ALK). It is used in patients whose cancer has gotten worse after treatment with or who cannot receive certain anticancer drugs. Ceritinib blocks the protein made by the mutated ALK gene. Blocking this protein may stop the growth and spread of cancer cells. Ceritinib is a type of tyrosine kinase inhibitor. Also called Zykadia.

**Cervene:** (Other name for: TGFa-PE38 immunotoxin)

**cervical :** A drug used to treat acute leukemias and some other types of cancer. It blocks a certain enzyme needed for cell division and DNA repair, and it may kill cancer cells. Cerubidine is a type of anthracycline antibiotic and a type of topoisomerase inhibitor. Also called daunomycin hydrochloride and daunorubicin hydrochloride.

**cervical adenocarcinoma :** A vaccine used to prevent cervical cancer caused by human papillomavirus (HPV) types 16 and 18. Cervarix is approved for use in females aged 9 to 25 years. It is a type of bivalent vaccine (a vaccine that works against two different viruses or other microorganisms). Also called recombinant human papillomavirus bivalent vaccine.

**cervical cancer :** Relating to the neck, or to the neck of any organ or structure. Cervical lymph nodes are located in the neck. Cervical cancer refers to cancer of the uterine cervix, which is the lower, narrow end (the “neck”) of the uterus.

**cervical dysplasia :** A type of cervical cancer that begins in the glandular cells of the cervix. These cells make mucus and are found in tissue that lines the inner part of the cervix and the uterus. Cervical adenocarcinoma is less common than cervical squamous cell carcinoma.

**cervical intraepithelial neoplasia :** Cancer that forms in tissues of the cervix (the organ connecting the uterus and vagina). It is usually a slow-

growing cancer that may not have symptoms but can be found with regular Pap tests (a procedure in which cells are scraped from the cervix and looked at under a microscope). Cervical cancer is almost always caused by human papillomavirus (HPV) infection.

**cervical intraepithelial neoplasia grade 2/3 :** The abnormal growth of cells on the surface of the cervix. Cervical dysplasia is usually caused by certain types of human papillomavirus (HPV) and is found when a Pap test or cervical biopsy is done. It can be mild, moderate, or severe, depending on how abnormal the cells look under a microscope and how much of the cervical tissue is affected. Cervical dysplasia is not cancer, but may become cancer and spread to nearby normal tissue.

**cervical squamous cell carcinoma :** Abnormal cells are found on the surface of the cervix. Cervical intraepithelial neoplasia is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. Cervical intraepithelial neoplasia is not cancer, but may become cancer and spread to nearby normal tissue. It is graded on a scale of 1 to 3, based on how abnormal the cells look under a microscope and how much of the cervical tissue is affected. For example, CIN 1 has slightly abnormal cells and is less likely to become cancer than CIN 2 or CIN 3. Also called CIN.

**cervical squamous intraepithelial neoplasia 1 :** Abnormal cells are found on the surface of the cervix. Cervical intraepithelial neoplasia grade 2/3 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. Cervical intraepithelial neoplasia grade 2/3 has features of CIN 2 and CIN 3. It is not cancer, but may become cancer and spread to nearby normal tissue if not treated. Treatment for cervical intraepithelial neoplasia grade 2/3 may include cryotherapy, laser therapy, loop electrosurgical procedure (LEEP), or cone biopsy to remove or destroy the abnormal tissue. Also called CIN 2/3.

**cervical squamous intraepithelial neoplasia 2 :** A type of cervical cancer that begins in squamous cells of the cervix. Cervical squamous cells are found in tissue that lines the outer part of the cervix. They are thin, flat cells that look like fish scales under a microscope. Most cervical cancers are squamous cell carcinomas.

**cervical squamous intraepithelial neoplasia 3 :** Slightly abnormal cells are found on the surface of the cervix. Cervical squamous intraepithelial

neoplasia 1 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. Cervical squamous intraepithelial neoplasia 1 is not cancer and usually goes away on its own without treatment. Sometimes it becomes cancer and spreads to nearby normal tissue. Cervical squamous intraepithelial neoplasia 1 is sometimes called low-grade or mild dysplasia. Also called CIN 1.

**cervicectomy :** Moderately abnormal cells are found on the surface of the cervix. Cervical squamous intraepithelial neoplasia 2 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. Cervical squamous intraepithelial neoplasia 2 is not cancer, but may become cancer and spread to nearby normal tissue if not treated. Treatment for cervical squamous intraepithelial neoplasia 2 may include cryotherapy, laser therapy, loop electrosurgical procedure (LEEP), or cone biopsy to remove or destroy the abnormal tissue. Cervical squamous intraepithelial neoplasia 2 is sometimes called high-grade or moderate dysplasia. Also called CIN 2.

**CerviPrep :** Severely abnormal cells are found on the surface of the cervix. Cervical squamous intraepithelial neoplasia 3 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. If not treated, these abnormal cells may become cancer and spread to nearby normal tissue. Treatment for cervical squamous intraepithelial neoplasia 3 may include cryotherapy, laser therapy, loop electrosurgical procedure (LEEP), or cone biopsy to remove or destroy the abnormal tissue. Cervical squamous intraepithelial neoplasia 3 is sometimes called high-grade or severe dysplasia. Also called CIN 3 and stage 0 cervical carcinoma in situ.

**cervix:** the opening at the lower end of the uterus.

**cervix :** Surgery to remove the cervix (the end of the uterus that forms a canal between the uterus and the vagina). The upper part of the vagina and certain pelvic lymph nodes may also be removed. Also called trachelectomy.

**Cesamet :** A device used to deliver drugs directly to the cervix (the lower, narrow end of the uterus that forms a canal between the uterus and vagina). The CerviPrep covers the cervix and protects surrounding tissue. Drugs may be injected into the inner part of the cervix through a syringe attached to the device.

**Cesium:** Symbol:"Cs" Atomic Number:"55" Atomic Mass: 132.91amu. One of the alkali metal group. This element can be found in many minerals. When pure it is a silvery-white color and is used in atomic clocks and photoelectric cells. It is one of three metals found in a liquid state at room temperature.

**cesium Cs 131:** An unstable radioisotope of cesium (Cs) with radiocytotoxic application. Cs-131 is a gamma photon-emitting radionuclide with high energy and a relatively short half-life of 9.7 days. When used in prostate brachytherapy, Cs-131 demonstrated advantages over other commonly used isotopes.

**cesium Cs 137:** A radioactive isotope of cesium with an atomic mass of 139 and potential application in radiotherapy. Cesium Cs 137 is prevalent due to its spontaneous production, which occurs as a result of nuclear fission of other radioactive materials, such as uranium and plutonium. This radionuclide has a relatively long half-life, 30 years, and decays by emitting beta particles. Both Cs 137 and its metastable nuclear isomer, barium-137m, emit gamma radiation of moderate energy and so are used in sterilization procedures in the food industry or in hospital environments.

**Cess Pools:** This system is similar to a septic tank. in performance. Sewage water usually seeps through the open bottom and portholes in the sides of the walls. These can also clog up with overuse and the introduction of detergents and other material which slow up the bacterial action.

**Cetacort:** (Other name for: therapeutic hydrocortisone)

**Cetane:** (Other name for: ascorbic acid)

**cetuximab:** The lower, narrow end of the uterus that forms a canal between the uterus and vagina. OR A recombinant, chimeric monoclonal antibody directed against the epidermal growth factor (EGFR) with antineoplastic activity. Cetuximab binds to the extracellular domain of the EGFR, thereby preventing the activation and subsequent dimerization of the receptor; the decrease in receptor activation and dimerization may result in an inhibition in signal transduction and anti-proliferative effects. This agent may inhibit EGFR-dependent primary tumor growth and metastasis. EGFR is overexpressed on the cell surfaces of various solid tumors.

**cetuximab-IR700 conjugate RM-1929:** A chemical conjugate composed of the dye IR700 linked to cetuximab, a monoclonal antibody directed against the epidermal growth factor receptor (EGFR), with potential

antineoplastic activity. Upon injection, the cetuximab moiety targets and binds to EGFR-expressing tumor cells, resulting in the internalization of the conjugate. Upon localized application of near-infrared (NIR) light, the IR700 dye becomes activated, disrupts the cell membrane and selectively kills the EGFR-expressing tumor cells. EGFR, a tyrosine kinase receptor, is overexpressed in a variety of cancers.

**cetuximab-IRDye 800:** An immunoconjugate comprised of the recombinant chimeric monoclonal antibody cetuximab conjugated to the N-hydroxysuccinamide (NHS) ester form of the near-infrared (NIR) fluorescent dye IRDye 800CW (cetuximab-IRDye 800) with potential imaging use. The antibody moiety of cetuximab-IRDye 800 binds to the extracellular domain of the epidermal growth factor receptor (EGFR). Upon binding, IRDye 800 may be detected using NIR imaging, which facilitates the visualization and quantification of EGFR-expressing tumor cells. EGFR is a receptor tyrosine kinase that may be overexpressed on the cell surfaces of various tumor types.

**Cevalin:** (Other name for: ascorbic acid)

**cevimeline hydrochloride:** A cholinergic analogue with glandular secretion stimulatory activity. Cevimeline binds to and activates muscarinic receptors, thereby increasing the secretions in exocrine salivary and sweat glands. This cholinergic agonist also increases the tone of smooth muscle in the gastrointestinal and urinary tracts. Cevimeline is being studied as a treatment for dry mouth caused by radiation therapy to the head and neck. Check for active clinical trials using this agent.

**cevimeline hydrochloride :** A synthetic pill form of an active chemical in marijuana called delta-9-tetrahydrocannabinol (THC). Cesamet is used to treat nausea and vomiting caused by chemotherapy in patients who have not been helped by other therapy. It is a type of cannabinoid. Also called nabilone.

**cFMS tyrosine kinase inhibitor ARRY-382:** A small molecule and orally available inhibitor of colony-stimulating factor-1 receptor (CSF1R; cFMS) with potential antineoplastic activity. cFMS tyrosine kinase inhibitor ARRY-382 binds to and inhibits the activity of cFMS. By preventing colony-stimulating factor-1 (CSF-1)-cFMS signaling, this agent may inhibit tumor cell proliferation in cFMS-overexpressing tumor cells. cFMS, a tyrosine kinase receptor, is overexpressed in certain tumor cell types and

plays an essential role in macrophage differentiation and regulation of cell proliferation. Check for active clinical trials using this agent.

**CFRP:** Carbon fibre reinforced plastic.

**CFS:** A drug used to treat certain disorders of the salivary gland. It is also being studied as a treatment for dry mouth caused by radiation therapy to the head and neck. It increases the amount of saliva and sweat made by saliva and sweat glands. Cevimeline hydrochloride is a type of cholinergic agonist. Also called Evoxac.

**CFU:** Viable micro-organisms (bacteria, yeasts & mould) capable of growth under the prescribed conditions (medium, atmosphere, time and temperature) develop into visible colonies (colony forming units) which are counted. The term colony forming unit (CFU) is used because a colony may result from a single micro-organism or from a clump / cluster of micro-organisms.

**CgA:** A substance that has been studied in the treatment of cancer and is being studied in the treatment of rheumatoid arthritis and certain skin conditions. It blocks the production of a protein called c-fos, which helps control cell growth. This may kill cancer cells that need c-fos to grow. It is a type of antisense oligonucleotide. Also called antisense c-fos.

**Cgmp phosphodiesterase:** An enzyme that hydrolyzes cyclic GMP to GMP; in the visual system, this hydrolysis leads to the generation of an action potential.

**Cgmp-gated calcium channel:** A channel in rod cells that opens in response to cgmp to allow entry of calcium and sodium ions into the cell; closing of the channel in response to cgmp hydrolysis initiates the visual signal-transduction pathway.

**CGP 48664:** A condition that lasts for more than 6 months in which a person feels tired most of the time. They may also have trouble concentrating and carrying out daily activities. Other symptoms include sore throat, fever, muscle weakness, headache, and joint pain. Also called chronic fatigue syndrome.

**cgs:** An older metric system of units that uses centimeters, grams, and seconds as base units.

**cGTO:** Contracted gaussian-type orbital. The usual basis function; it's a linear combination of gaussian functions with the linear coefficients fixed,

then multiplied by an angular function. So one set of p-functions contains three cGTO's (px, py, and pz), i.e, three basis functions. See "primitives."

**Ch14.18:** A protein found inside neuroendocrine cells, which release CgA and certain hormones into the blood. CgA may be found in higher than normal amounts in patients with certain neuroendocrine tumors, small cell lung cancer, prostate cancer, and other conditions. Measuring the amount of CgA in the blood may help to diagnose cancer or other conditions or find out how well treatment is working or if cancer has come back. CgA is a type of tumor marker. Also called chromogranin A.

**Chain Driven Belts:** A belt construction which provides positive traction by incorporating two or more rows of chain attached to cross rods or flatbar. Chains commonly used for this purpose are attachments, pintle and roller, which are connected by means of cross members.

**Chain Reaction:** A really dodgy film starring Keanu Reeves. Also, a mechanism that has no reason to stop, since the product is just as reactive as the reactants. OR a reaction that, once started, produces sufficient energy to keep the reaction running. These reactions proceed by a series of steps, which produce intermediates, energy, and products. OR a reaction that, once started, produces sufficient energy to keep the reaction running. These reactions proceed by a series of steps, which produce intermediates, energy, and products. OR A reaction that initiates its own repetition. In a fission chain reaction, a fissionable nucleus absorbs a neutron and fissions spontaneously, releasing additional neutrons. These, in turn, can be absorbed by other fissionable nuclei, releasing still more neutrons. A fission chain reaction is self-sustaining when the number of neutrons released in a given time equals or exceeds the number of neutrons lost by absorption in nonfissionable material or by escape from the system.

**chair conformation:** a conformation of cyclohexane that resembles a chair and has less energy than a boat conformation.

**Chalking:** A powdery residue on the surface of a material often resulting from degradation. OR Dry chalk-like appearance or deposit on the surface of a plastic. See HAZE and BLOOM.

**Chalking:** Formation of a powder on the surface of a paint film caused by disintegration of the binder during weathering. Can be affected by the choice of pigment or binder. OR The disintegration of paint film into a faded powdery substance. Chalking occurs when the binder cannot

withstand harsh environmental conditions. Re-painting over a chalky surface is difficult unless a paint has the high adhesion provided by acrylic binders.

**Chamberlain procedure :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called S-adenosylmethionine decarboxylase inhibitors.

**Chamfer:** An arris edge or angle that has been slightly pared off or bevelled. OR Also known as a “bevel,” it is a flat truncated corner.

**chamomile:** The flower-heads of either the plant *Anthemis nobilis* or the plant *Matricaria chamomilla*. Chamomile has a warm aromatic odour and a very bitter taste and contains volatile oils which are a mixture of butyl and amyl angelates and valerates. Due to its coumarin constituents, large doses may interfere with coagulation. Check for active clinical trials using this agent. OR A drug used with granulocyte-macrophage colony-stimulating factor (GM-CSF), aldesleukin (IL-2), and 13-cis-retinoic acid to treat high-risk neuroblastoma. It is used in children whose disease has improved with other anticancer treatment. Ch14.18 binds to a substance called GD2, which is found on some types of cancer cells. Ch14.18 may block GD2 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called dinutuximab, MOAB Ch14.18, monoclonal antibody Ch14.18, and Unituxin.

**Change over- Fill/Pack Switch over point fill to pack:** The point on injection stroke at which filling phase with speed profile ends and pack or pressure phase with pressure profile starts.

**Channel:** a pin or wire lead to which you apply or form which you read the analog or digital signal. OR A protein passage that is continuous and that allows ions to flow rapidly through a eukaryotic membrane from a compartment of higher to a compartment of lower concentration. Channels (also known as pores in bacteria) are generally composed of four to six subunits, or domains, and are gated by membrane potential, allosteric effectors, or covalent modification.

**CHANNEL DEPTH RATIO:** In an extruder screw, the ratio of the depth of the first channel at the hopper end to the depth of the last channel in the metering section.

**channeling:** The direct transfer of a reaction product (common intermediate) from the active site of one enzyme to the active site of a

different enzyme catalyzing the next step in a sequential pathway.

**Chantix :** (Other name for: varenicline) OR A procedure in which a tube is inserted into the chest to view the tissues and organs in the area between the lungs and between the breastbone and heart. The tube is inserted through an incision next to the breastbone. This procedure is usually used to get a tissue sample from the lymph nodes on the left side of the chest. Also called anterior mediastinotomy.

**Chaperone proteins:** Slow atpases that bind newly synthesized proteins and assist their proper folding.

**chaplain :** A family of plants with daisy-like flowers. Two types are German chamomile and Roman or English chamomile. These are used in teas to calm and relax, to improve sleep, and to help with stomach problems. The essential oil (scented liquid taken from plants) of chamomile is used in perfumes, shampoos, lotions, and aromatherapy.

**charge:** Describes an object's ability to repel or attract other objects. Protons have positive charges while electrons have negative charges. Like charges repel each other while opposite charges, such as protons and electrons, attract one another. OR The amount of material used to load a mold at one time or during one cycle. The measurement or weight of material necessary to fill a mold during one cycle. OR The amount of material used to load a mold at one time or during one cycle. OR The measurement or weight of material necessary to fill a mold during one cycle.

**Charged particle:** An ion. An elementary particle (part of an element) carrying a positive or negative electric charge.

**charged-particle radiation therapy :** A drug used to help people stop smoking by acting the same way nicotine acts in the brain. It is a type of nicotine receptor partial agonist. Also called varenicline tartrate.

**Charles' Law:** A scientist named Jacques Charles did many experiments involving gas volumes and temperatures. He determined that the volume a gas needs is directly proportional to the temperature of the system (assuming a constant pressure). The formula goes:  $V = Tk$  (where  $k$  is a constant). OR the volume of a gas varies directly with absolute temperature. OR The volume of a gas is directly proportional to its temperature in kelvins, if pressure and amount of gas remain constant. Doubling the kelvin temperature of a gas at constant pressure will double its

volume. If  $V_1$  and  $T_1$  are the initial volume and temperature, the final volume and temperature ratio  $V_2/T_2 = V_1/T_1$  if pressure and moles of gas are unchanged.

**Charpy Impact Test :** A destructive test of impact resistance, consisting of placing a test coupon in a horizontal position between two supports, then applying a blow of known magnitude. If the specimen does not break, a new specimen is put in position and the magnitude is increased until the specimen breaks.

**chaste tree berry :** A member of the clergy in charge of a chapel or who works with the military or with an institution, such as a hospital.

**Check ring:** A ring shaped component that slides back and forth over the tip end of the screw. The check ring eliminates the flow of molten material backwards over the screw during the injection process.

**CHECKING:** A kind of paint failure in which many small cracks appear in the surface of the paint.

**checkpoint kinase inhibitor AZD7762:** A synthetic small molecule inhibitor of checkpoint kinases (Chks) with potential chemosensitizing activity. AZD7762 binds to and inhibits Chks, which may prevent cell cycle arrest and subsequent nucleotide excision repair in DNA-damaged tumor cells, resulting in tumor cell apoptosis. This agent may enhance the cytotoxicity of DNA-damaging agents. Chks are protein kinases that regulate either G1/S or G2/M transitions in the cell cycle. In the presence of DNA damage or incomplete DNA replication, Chks become activated and initiate cell cycle arrest to allow DNA repair or the completion of DNA replication. Check for active clinical trials using this agent.

**Cheesiness:** The character of a paint film which, although dry, is still soft and mechanically weak. OR A paint film that has dried in this condition is mechanically weak and needs to be completely removed. Carefully clean down the surfaces and allow to dry before reapplying paint.

**Chelate:** A molecule that contains more than one binding site and frequently binds to another molecule through more than one binding site at the same time. OR A stable complex of a metal with one or more polydentate ligands. For example, calcium complexes with EDTA to form a chelate.

**chelated:** Combined with a metal to form a chelate ring, in which a metal ion is held by coordinate bonds.

**chelating agent:** A ligand that binds to a metal using more than one atom; a polydentate ligand.

**chelating agent :** A type of external radiation therapy that uses a special machine to make invisible, high-energy particles (protons or helium ions) that kill cancer cells. This type of radiation may cause less damage to nearby healthy tissue than radiation therapy with high-energy x-rays.

**CHELATION:** A process in which a metal ion is coordinatively bound to an organic molecule forming a heterocyclic ring.

**chemabrasion :** An extract made from the fruit of the chaste tree (*Vitex agnus-castus*) found in parts of Asia and Europe. It is claimed to treat infertility and to lessen symptoms that may occur before or during a woman's menstrual period, such as headaches and irregular bleeding. Chaste tree berry may affect levels of reproductive hormones in the blood. It is a type of phytomedicine. Also called monk's pepper and Vitex.

**ChemDraw:** A software package used to draw molecules.

**chemexfoliation :** A chemical compound that binds tightly to metal ions. In medicine, chelating agents are used to remove toxic metals from the body. They are also being studied in the treatment of cancer.

**CHEMFET (Chemically Modified FET or Chemically Sensitive FET):** an electrochemical microsensor involving the deposition of a polymeric ionselective membrane on the surface of the FET (field effect transistor) transducer. The appropriate composition of the ionselective membrane allows designing of CHEMFET with required selectivity. In this case, the introduction of an additional hydrogel layer (polyHEMA), soaked with an internal solution, between the gate oxide of an ISFET and an ionselective membrane is required.

**chemical:** 1 of or pertaining to chemistry. 2. a substance.

**chemical :** A procedure used to improve the way certain skin problems look. These problems include acne scars, wrinkles, or skin changes caused by long-term sun exposure. A chemical solution is put on the skin to dissolve the top layers of skin cells. Also called chemexfoliation and chemical peel.

**chemical analysis:** the use of a standard chemical analytical procedures to determine the concentration of a specific analyte in a sample, or qualitatively or quantitatively measure a specific parameter of a sample.

**Chemical biology:** A field of study that blends chemistry and biology and involves the application of chemical techniques and tools, often compounds produced through synthetic chemistry, to the study and manipulation of biological systems

**chemical bond:** A chemical bond is a strong attraction between two or more atoms. Bonds hold atoms in molecules and crystals together. There are many types of chemical bonds, but all involve electrons which are either shared or transferred between the bonded atoms.

**Chemical bonding:** A method for bonding rubber to secondary parts by applying special adhesives or having a glass element on part prior to liquid silicone molding

**chemical change:** A chemical change is a reaction in which new substances are formed. OR A chemical change is a dissociation, recombination, or rearrangement of atoms.

**chemical changes:** Processes or events that have altered the fundamental structure of something.

**chemical coagulation:** the destabilization and initial aggregation of colloidal and finely divided suspended matter by the addition of a flocculating chemical.

**Chemical Combination:** A chemical reaction in which two elements or compounds are combined to form a more complex compound.

**Chemical Decomposition:** This is the molecular action of the larger process of decomposition. Compounds are broken down into simpler compounds and elements.

**Chemical engineers:** People who carry out chemical reactions in ten-ton reactors instead of test tubes. Real chemists tend to assume that chemical engineers just mix up reactions that other people have developed in big buckets, but I've looked at some of the books they have to read and they're full of hairy maths, so some parts of what they do must be kind of tricky. Their main job is actually to design the buckets, how they're stirred, and how things get in and out of them, so that they don't explode, shower the

surrounding countryside with toxic waste, or otherwise cost the chemical company too much money. See Industrial Chemist.

**chemical equation:** An expression of a fundamental change in the chemical substances. OR a shorthand way of describing a chemical change using symbols of elements and formulas of compounds. OR A compact notation for describing a chemical change. The formulas of the reactants are added together on the left hand side of the equation; the formulas of the products are added together on the right side. Coefficients are inserted before the formulas to ensure that the equation is balanced. The phase in which each substance is found is usually indicated in parentheses after each formula. For example,  $2 \text{H}_2(\text{g}) + \text{O}_2(\text{g}) = 2 \text{H}_2\text{O}(\text{g})$  indicates that 2 moles of hydrogen gas combine with one mole of oxygen gas to produce two moles of steam.

**Chemical equation** : (Don't confuse this with chemical formula) If you are asked for a symbol equation it must be balanced. OR show what reacts with what, what new substances are formed, and their reacting ratios.

**Chemical Forces:** Chemical forces act on the bonds of molecules and atoms. They change the chemical makeup of systems. Physical forces are different from chemical forces in that they do not change the chemical makeup of molecules.

**chemical formula:** a representation of a compound to show its composition using symbols and subscript numbers. OR (Don't confuse this with chemical equation) This is the chemical code for a substance. If the substance forms molecules the formula tells us how many atoms of each element are in the molecule. OR show which elements are present and their ratios.

**Chemical genomics:** The study of gene responses to chemical compounds. The main goal is to rapidly identify new drugs and drug targets

**chemical imbalance** : A procedure used to improve the way certain skin problems look. These problems include acne scars, wrinkles, or skin changes caused by long-term sun exposure. A chemical solution is put on the skin to dissolve the top layers of skin cells. Also called chemabrasion and chemical peel.

**Chemical library:** A collection of chemicals that are stored along with related information such as the chemical structure, purity, quantity, and other characteristics of the substance

**chemical oxygen demand:** the amount of oxygen required for the chemical oxidation of organics in a liquid; a chemical test that determines the oxygen equivalent of the amount of organic matter oxidizable by potassium dichromate in a 50% sulfuric acid solution.

**chemical peel :** A substance made up of elements, such as hydrogen or sodium.

**chemical potential:** The chemical potential is a partial molar Gibbs free energy, defined as  $\mu_i = (G/n_i)_{T,P,n_j}$ . The definition means that the chemical potential is the change in Gibbs free energy when one mole of a substance is added to a very large amount of a sample. Chemical potential is a measure of chemical stability that can be used to predict and interpret phase changes and chemical reactions. Substances with higher chemical potential will react or move from one phase to another to lower the overall Gibbs free energy of the system. For example, consider a mixture of ice and water. If the ice melts, the chemical potential of the water was lower than that of the ice. If the water freezes, the chemical potential of the ice was lower.

**Chemical precipitation:** Precipitation induced by addition of chemicals; the process of softening water by the addition of lime and soda ash as the precipitants. OR (1) the process of utilizing chemicals to produce a separable solid phase within a liquid medium; in analytical chemistry, precipitation is used to separate a solid phase in an aqueous solution. (2) the process of softening water by the addition of lime and soda ash as the precipitants.

**CHEMICAL PROPERTIES:** are such things as reactivity, oxidation states, flammability, and corrosiveness.

**chemical property:** Measurement of a chemical property involves a chemical change. For example, determining the flammability of gasoline involves burning it, producing carbon dioxide and water.

**Chemical recombination:** Following an ionization event, the positively and negatively charged ion pairs may or may not realign themselves to form the same chemical substance they formed before ionization. Thus, chemical recombination could change the chemical composition of the material bombarded by ionizing radiation.

**Chemical Replacement:** A chemical reaction where one element is replaced by another. Copper and sulfuric acid combine to create copper sulfate and hydrogen.

**Chemical Resistance:** the degree to which a given plastic will resist degradation due to contact with certain chemicals. This characteristic will usually vary with chemical concentration and temperature.

**chemical sedimentary rock:** a sedimentary rock resulting from biological or chemical processes, generally underwater, that crystallizes minerals that accumulate on the sea floor.

**Chemical sensor :** a miniaturized analytical device, which can deliver realtime and online information on the presence of specific compounds or ions in the complex samples.

**chemical shift:** a position in an NMR spectrum, relative to TMS, at which a nucleus absorbs.

**CHEMICAL SYMBOLS:** are abbreviations for the elements.

**chemical weathering:** the breaking down of rock material by chemical means, forming a new substance.

**chemical weathering:** the process by which rain, water, and atmospheric gases decompose minerals, destroy chemical and mineralogical bonds, and form new minerals.

**Chemical weathering :** Rocks can be broken down by many effects. Chemical weathering is where this breakdown is caused by chemical action. This is often due to acidic rainfall and is made worse when the rain is made extra acidic by pollution (acid rain).

**chemiluminescence:** A chemical reaction that releases energy as electromagnetic radiation.

**Cheminformatics:** The use of computer and information technologies to study problems in chemistry

**chemiosmosis:** the subdivision of cellular respiration in which the energy given off by electrons is used to pump protons across a membrane and synthesize ATP.

**Chemiosmotic coupling:** Coupling of ATP synthesis to electron transfer via an electrochemical  $H^+$  gradient across a membrane. The coupling of ATP synthesis to an electrochemical potential gradient across a membrane.

**Chemiosmotic hypothesis:** The idea that electron transfer in the respiratory chain is used to pump protons across the inner mitochondrial membrane, establishing a proton gradient; this gradient (the proton-motive force) drives the synthesis of ATP by ATP synthase.

**chemistry:** The science of matter and the changes in matter. OR The study of matter and its transformations. See What is chemistry? for other definitions.

**Chemoattractants:** Substances, such as glucose, that, when present in the form of a gradient, cause bacteria to swim toward the source of the gradient.

**Chemoautotroph:** An organism that obtains its energy from the oxidation of chemical compounds and uses only organic compounds as a source of carbon. Example: nitrifiers.

**chemobiokinetics:** The process of the uptake of chemical substances by the body, the biotransformation they undergo, the distribution of the substances and their metabolites in the tissues, and the elimination of the substances and their metabolites from the body. Both the amounts and the concentrations of the substances and their metabolites are studied. The term has essentially the same meaning as pharmaco-kinetics, but the latter term should be restricted to the study of pharmaceutical substances (WHO, 1979).

**chemoembolization :** Too much or too little of any substance that helps the body work the way it should. A chemical imbalance may be caused by certain tumors and can cause changes in behavior or emotion.

**chemoimmunotherapy :** A procedure used to improve the way certain skin problems look. These problems include acne scars, wrinkles, or skin changes caused by long-term sun exposure. A chemical solution is put on the skin to dissolve the top layers of skin cells. Also called chemabrasion and chemexfoliation.

**Chemooptical interface :** the receptor part (see optomembrane) of a fiber optic chemical sensor containing an immobilized reagent (e.g. indicator, dye or chromoionophore), which converts chemical information on the sample into changes of its spectral properties (absorbance, fluorescence).

**Chemophase:** (Other name for: recombinant human hyaluronidase)

**chemoprevention :** A procedure in which the blood supply to a tumor is blocked after anticancer drugs are given in blood vessels near the tumor. Sometimes, the anticancer drugs are attached to small beads that are injected into an artery that feeds the tumor. The beads block blood flow to the tumor as they release the drug. This allows a higher amount of drug to reach the tumor for a longer period of time, which may kill more cancer

cells. It also causes fewer side effects because very little of the drug reaches other parts of the body. Chemoembolization is used to treat liver cancer. Also called TACE and transarterial chemoembolization.

**chemoprevention study :** Chemotherapy combined with immunotherapy. Chemotherapy uses different drugs to kill or slow the growth of cancer cells; immunotherapy uses treatments to stimulate or restore the ability of the immune system to fight cancer.

**chemoprotective agent :** The use of drugs, vitamins, or other agents to try to reduce the risk of, or delay the development or recurrence of, cancer.

**chemoradiation :** In cancer prevention, a clinical trial that studies whether taking certain medicines, vitamins, minerals, or food supplements can prevent cancer. Also called agent study.

**chemoradiotherapy :** A type of drug that helps protect healthy tissue from some of the side effects caused by certain anticancer drugs. For example, in patients receiving certain anticancer drugs, amifostine helps protect the kidneys, mesna helps protect the bladder, and dexrazoxane (Zinecard) helps reduce heart damage.

**chemoreceptors:** the specialized receptor cells that transmit smell and taste.

**chemoreduction :** Treatment that combines chemotherapy with radiation therapy. Also called chemoradiotherapy.

**Chemorepellants:** Potentially harmful substances, such phenol, that, when present in the form of a gradient, cause bacteria to swim away from the source of the gradient.

**chemosensitivity :** Treatment that combines chemotherapy with radiation therapy. Also called chemoradiation.

**chemosensitivity assay :** Chemotherapy given to shrink a retinoblastoma tumor before treatment with radiation or surgery. It is a type of neoadjuvant therapy.

**chemosensitizer :** The susceptibility of tumor cells to the cell-killing effects of anticancer drugs.

**chemotaxis:** A cell's sensing of and movement toward, or away from, a specific chemical agent.

**chemotherapeutic agent :** A laboratory test that measures the number of tumor cells that are killed by a cancer drug. The test is done after the tumor

cells are removed from the body. A chemosensitivity assay may help in choosing the best drug or drugs for the cancer being treated.

**chemotherapy** : A drug that makes tumor cells more sensitive to the effects of chemotherapy.

**Chemotroph**: An organism that obtains its energy from the oxidation of chemical compounds. OR An organism that obtains energy by metabolizing organic compounds derived from other organisms.

**Chemotrophs**: Organisms that obtain energy by the oxidation of foodstuffs. See also phototrophs.

**Chequer-plate**: A patterned steel plate used for flooring.

**Chernozem (Tchernozem)**: A major group of dark-colored zonal soils with a rich and deep humus horizon occurring in temperate-to-cool, subhumid climates.

**cherry-red spot**: a red circular area surrounded by gray-white retina as seen during an eye examination typical in lysosomal storage diseases such as Tay-Sachs disease

**chest wall** : A drug used to treat cancer.

**chest x-ray** : Treatment that uses drugs to stop the growth of cancer cells, either by killing the cells or by stopping them from dividing. Chemotherapy may be given by mouth, injection, or infusion, or on the skin, depending on the type and stage of the cancer being treated. It may be given alone or with other treatments, such as surgery, radiation therapy, or biologic therapy.

**chewing tobacco** : The muscles, bones, and joints that make up the area of the body between the neck and the abdomen.

**Chey**: A protein in the bacterial chemotaxis signaling pathway that, when phosphorylated, leads to clockwise rotation of the flagellum, causing tumbling, and that, when dephosphorylated, leads to counterclockwise rotation and smooth swimming.

**CHF**: An x-ray of the structures inside the chest. An x-ray is a type of high-energy radiation that can go through the body and onto film, making pictures of areas inside the chest, which can be used to diagnose disease.

**chiasma** : A type of smokeless tobacco made from cured tobacco leaves. It may be sweetened and flavored with licorice and other substances. It comes in the form of loose tobacco leaves, pellets or “bits” (leaf tobacco rolled into small pellets), plugs (leaf tobacco pressed and held together with some

type of sweetener), or twists (leaf tobacco rolled into rope-like strands and twisted). It is placed in the mouth, usually between the cheek and lower lip, and may be chewed. Chewing tobacco contains nicotine and many harmful, cancer-causing chemicals. Using it can lead to nicotine addiction and can cause cancers of the mouth, throat, esophagus, and pancreas. Chewing tobacco use may also cause gum disease, heart disease, stroke, and other health problems. Also called spit tobacco.

**chiauranib:** An orally available, small molecule inhibitor of select serine-threonine kinases, including aurora kinase B (aurora B), vascular endothelial growth factor receptors (VEGFRs), stem cell factor receptor (c-KIT), and platelet-derived growth factor receptors (PDGFRs), with potential antineoplastic activity. Upon oral administration, chiauranib binds to and inhibits the activity of aurora B, VEGFRs, c-kit and PDGFRs, which may result in a decrease in the proliferation of tumor cells that overexpress these kinases. These kinases are overexpressed by a variety of cancer cell types.

**chidamide:** An orally bioavailable benzamide type inhibitor of histone deacetylase (HDAC) isoenzymes 1, 2, 3 and 10, with potential antineoplastic activity. Chidamide selectively binds to and inhibits HDAC leading to an increase of acetylation levels of histone protein H3. This agent also inhibits the expression of signaling kinases in the PI3K/Akt and MAPK/Ras signaling pathways and may result in cell cycle arrest and the induction of tumor cell apoptosis. This may inhibit tumor cell proliferation in susceptible tumor cells. HDACs, a class of enzymes that deacetylate chromatin histone proteins, are upregulated in many tumor types and play key roles in gene expression. Compared to some other benzamide type HDAC inhibitors, chidamide is more stable, more resistant to degradation and has a longer half-life.

**child-life specialist :** A term used to describe cancers that occur between birth and 15 years of age. Childhood cancers are very rare and may differ from adult cancers in the way they grow and spread, how they are treated, and how they respond to treatment. Common types of childhood cancer include leukemia (begins in blood-forming tissue such as bone marrow), lymphoma (begins in the cells of the immune system), neuroblastoma (begins in certain nerve cells), retinoblastoma (begins in the tissues of the

retina), Wilms tumor (a type of kidney cancer), and cancers of the brain, bone, and soft tissue.

**child-life worker :** A group of children with cancer that has been formed based on certain characteristics of the children and their disease. These may include age at diagnosis, stage of cancer, and cancer biology. Risk groups may also be based on the chance of being cured or the chance that the cancer will come back. Childhood cancer risk groups are used to plan treatment and follow-up care for certain types of cancer, such as neuroblastoma and rhabdomyosarcoma. Risk groups may be described as low risk, intermediate risk, or high risk.

**childhood acute lymphoblastic leukemia risk group system :** A condition in which the heart has trouble pumping blood through the body. It may develop over a long period of time. Symptoms include shortness of breath, problems exercising, fatigue, and swelling of the feet, ankles, and abdomen. CHF may be caused by coronary artery disease, a heart attack, or high blood pressure. It usually occurs in people aged 65 years or older. Also called chronic heart failure.

**childhood cancer :** An anatomy term for an X-shaped crossing (for example, of nerves or tendons).

**childhood cancer risk group :** A way of grouping patients that is used to plan treatment for children with acute lymphoblastic leukemia. A risk group is based on the patient's age and white blood cell count at diagnosis. Risk groups are described as either standard (low) risk or high risk. Other factors that affect the risk group include the type of leukemia cells, whether there are certain chromosome changes, and how quickly the leukemia responds to treatment.

**Children's Oncology Group :** A healthcare professional who is trained in the emotional and developmental needs of children. The child-life specialist helps children and their families understand medical issues and gives psychological and emotional support. Also called child-life worker.

**chill zone:** the fine-grained edge of a rock intrusion.

**chimeric :** A healthcare professional who is trained in the emotional and developmental needs of children. The child-life worker helps children and their families understand medical issues and gives psychological and emotional support. Also called child-life specialist.

**chimeric antigen receptor T-cell therapy :** A group of clinical cancer research organizations that get support from the National Cancer Institute to study childhood cancers. The main goal of Children's Oncology Group is to conduct clinical trials of new treatments for childhood and adolescent cancers at cancer centers in the United States, Canada, Europe, and Australia. Also called COG.

**Chimeric DNA:** Recombinant DNA whose components originate from two or more different sources. OR A recombinant DNA molecule containing unrelated genes.

**chimeric fibril-reactive monoclonal antibody 111F4:** A chimeric monoclonal antibody specifically targeting human immunoglobulin light chain (LC)-related fibrils, which may potentially be used in the treatment of light chain-associated (AL) amyloidosis. Upon administration, chimeric fibril-reactive monoclonal antibody 111F4 targets and binds to the amyloid-related, conformational epitope on LC-related fibrils. This inhibits fibrillogenesis, induces an Fc-mediated cellular inflammatory response, increases degradation and elimination of AL amyloidomas, and prevents systemic LC-associated amyloid deposits. In AL amyloidosis the amyloid fibrils are composed of immunoglobulin light chain fragments.

**chimeric humanized anti-CD47 antibody:** A humanized, high-chimeric antibody targeting the human cell surface antigen CD47, with potential phagocytosis-inducing and antineoplastic activities. Upon administration, chimeric humanized anti-CD47 antibody selectively binds to CD47 expressed on tumor cells and blocks the interaction of CD47 with signal regulatory protein alpha (SIRPa), a protein expressed on phagocytic cells. This prevents CD47/SIRPa-mediated signaling and abrogates the CD47/SIRPa-mediated inhibition of phagocytosis. This induces pro-phagocytic signaling mediated by the binding of calreticulin (CRT), which is specifically expressed on the surface of tumor cells, to low-density lipoprotein (LDL) receptor-related protein-1 (LRP-1), expressed on macrophages. This results in macrophage activation and the specific phagocytosis of tumor cells. In addition, blocking CD47 signaling activates both an anti-tumor T-lymphocyte immune response and T cell-mediated killing of CD47-expressing tumor cells. CD47, also called integrin-associated protein (IAP), is a tumor-associated antigen (TAA) expressed on normal, healthy hematopoietic stem cells (HSC) and overexpressed on the

surface of a variety of cancer cells. Expression of CD47, and its interaction with SIRPa, leads to the inhibition of macrophage activation and protects cancer cells from phagocytosis, thereby allowing cancer cells to proliferate. Check for active clinical trials using this agent.

**Chimney breast:** The projection formed in a room by the flue and fireplace.

**Chinese herbal formulation LC09:** A traditional Chinese medicine (TCM) decoction containing Herba Epimedii that can be used for chemotherapy-induced hand-foot syndrome (HFS; Palmar-Plantar Erythrodysesthesia; PPE). Soaking of the affected hands and feet with TCM Formula LC09 may reduce the severity of HFS and may decrease HFS-associated pain. Check for active clinical trials using this agent.

**Chinese herbal formulation PHY906:** An oral traditional Chinese herbal formulation in powder form containing a spray dried aqueous extract from the herbs *Scutellaria baicalensis*, *Glycyrrhiza uralensis*, *Ziziphus jujuba* and *Paeonia lactiflora* with potential immunomodulating and chemoprotective activities. Although the mechanism of actions remain to be fully elucidated, PHY906 possesses a wide range of pharmacological activities such as the enhancement of oral uptake of pharmacologically active agents, inhibition of CYP3A4, modulation of certain cytokines, macrophages and lymphocytes, and inhibition of expression of MMP, NF- $\kappa$ B, beta-glucuronidase, the NK-1 receptor, and the delta-opioid receptor.

**Chinese herbs:** Herbs used in Chinese Herbal Therapy for toxicity attenuation.

**Chinese meridian theory :** Having parts of different origins. In medicine, refers to a person, organ, or tissue that contains cells with different genes than the rest of the person, organ, or tissue. This may happen because of a mutation (genetic change) that occurs during development, or as a result of a transplant of cells, organs, or tissues from another person or from a different species. In the laboratory, a chimeric protein can be made by combining two different genes. For example, a chimeric antibody is made by joining antibody genes from two different species, such as human and mouse.

**Chinese rhubarb :** A type of treatment in which a patient's T cells (a type of immune system cell) are changed in the laboratory so they will attack cancer cells. T cells are taken from a patient's blood. Then the gene for a

special receptor that binds to a certain protein on the patient's cancer cells is added in the laboratory. The special receptor is called a chimeric antigen receptor (CAR). Large numbers of the CAR T cells are grown in the laboratory and given to the patient by infusion. Chimeric antigen receptor T-cell therapy is being studied in the treatment of some types of cancer. Also called CAR T-cell therapy.

**ChiNing decoction:** A decoction of Liang Ge San, a traditional Chinese herbal medicine, with potential anti-inflammatory and anti-stomatitis activities. Although the complete mechanism of action through which the ChiNing decoction works has yet to be fully elucidated, upon oral administration, the active ingredients may inhibit the inflammatory response, possibly by reducing the levels of pro-inflammatory cytokines, such as interleukin 6 (IL-6) and tumor necrosis factor-alpha (TNF $\alpha$ ), in the saliva. This may protect the oral mucosa against these inflammatory mediators, and may reduce and relieve radiation-induced stomatitis and the associated pain.

**Chipboard:** A building board or sheet made from wood chips bonded with resin or plastic.

**Chipping:** The failure of a paint film whereby the film chips away from the under surface, e.g. paint applied over varnish will chip if knocked leaving the varnish on the surface. OR Paint applied over varnish or wood stain can sometimes chip off if knocked. Should this happen, you'll first need to thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Then carefully scrape back poorly adhering or defective paint to a firm edge and rub down to 'feather' broken edges. If chipping is severe, the surface will need to be totally stripped back. Dust off prior to replying paint.

**CHIR-265:** In traditional Chinese medicine, meridians are channels that form a network in the body, through which qi (vital energy) flows. Blocked qi causes pain or illness. The flow of qi is restored by using pressure, needles, suction, or heat at hundreds of specific points along the meridians.

**chiral:** describes a molecule that is not superimposable on its mirror image; like the relationship of a left hand to a right hand. OR Having nonsuperimposable mirror images. For example, a shoe or a glove is chiral. OR Relating to a molecule that cannot be superimposed on its mirror image.

**chiral center:** An atom in a molecule that causes chirality, usually an atom that is bound to four different groups. A molecule can have chirality without having a chiral center, and a molecule may also have more than one chiral centers.

**Chiral compound:** A compound that contains at least one asymmetric atom and is optically active. OR A compound that can exist in two forms that are non-superimposable images of one another. OR A compound that contains an asymmetric center (chiral atom or chiral center) and thus can occur in two nonsuperimposable mirror-image forms (enantiomers).

**chiral molecule:** a molecule that has a chiral center and rotates plane-polarized light.

**Chirality:** The ability of a chemical substance to exist in two mirror-image forms, each of which rotates polarized light in opposite directions

**ChiRhoStim :** (Other name for: synthetic human secretin) OR The root of this plant has been used in some cultures to treat certain medical problems. It may have anti-inflammatory and anticancer effects. The scientific name is *Rheum palmatum* or *Rheum officinale*. Also called da-huang, Indian rhubarb, rhubarb, and Turkish rhubarb.

**Chirocaine:** (Other name for: levobupivacaine hydrochloride)

**chiropractic therapy :** A substance being studied in the treatment of melanoma. CHIR-265 may block the growth of tumors and the growth of blood vessels from surrounding tissue to the tumor. It is a type of Raf kinase inhibitor and angiogenesis inhibitor.

**chitin :** A drug used to help diagnose gastrinomas (tumors that cause too much gastric acid to be made) and other problems with the pancreas. It is also used to increase secretions from the pancreas and to help identify a duct called the ampulla of Vater. ChiRhoStim is a form of secretin that is made in the laboratory. Secretin causes the pancreas, liver, and stomach to release substances that help digest food. Also called secretin human and synthetic human secretin.

**Chk1 inhibitor GDC-0425:** An orally bioavailable inhibitor of checkpoint kinase 1 (chk1), with potential antineoplastic and chemosensitization activities. Upon oral administration, chk1 inhibitor GDC-0425 selectively binds to chk1, thereby preventing activity of chk1 and abrogating the repair of damaged DNA. This may lead to an accumulation of damaged DNA,

inhibition of cell cycle arrest, and induction of apoptosis. GDC-0425 may potentiate the cytotoxicity of DNA-damaging agents and reverse tumor cell resistance to chemotherapeutic agents. Chk1, an ATP-dependent serine/threonine kinase, mediates cell cycle checkpoint control, is essential for DNA repair, and plays a key role in resistance to chemotherapeutic agents. Check for active clinical trials using this agent.

**Chk1 inhibitor GDC-0575:** A small molecule inhibitor of cell cycle checkpoint kinase 1 (Chk1), with potential chemosensitization activity. Chk1 inhibitor GDC-0575 specifically binds to and inhibits Chk1; this may result in tumor cells bypassing Chk1-dependent cell cycle arrest in the S and G2/M phases, which permits the cells to undergo DNA repair prior to entry into mitosis. Therefore, Chk1 inhibition may sensitize tumor cells to the DNA damaging effects of certain chemotherapeutic agents. Chk1 is an ATP-dependent serine-threonine kinase that phosphorylates cdc25 phosphatases in response to DNA damage. This results in both inhibitory tyrosine phosphorylation of cyclin-dependent kinase (CDK)-cyclin complexes and cell cycle arrest, which facilitates DNA damage repair.

**chk1 inhibitor PF-477736:** A proprietary compound targeting cell cycle checkpoint kinase 1 (chk1) with potential chemopotential activity. Chk1 inhibitor PF-477736 inhibits chk1, an ATP-dependent serine-threonine kinase that is a key component in the DNA replication-monitoring S/G2 checkpoint system. By overriding the last checkpoint defense against DNA damaging agent-induced lethal damage, chk1 inhibitor PF-477736 may potentiate the antitumor efficacy of various chemotherapeutic agents against tumor cells with intrinsic checkpoint defects.

**Chk1 inhibitor SCH 900776:** An agent targeting cell cycle checkpoint kinase 1 (Chk1) with potential radiosensitization and chemosensitization activities. Chk1 inhibitor SCH 900776 specifically binds to and inhibits Chk1, which may result in tumor cells bypassing Chk1-dependent cell cycle arrest in the S and G2/M phases to undergo DNA repair prior to entry into mitosis; tumor cells may thus be sensitized to the DNA-damaging effects of ionizing radiation and alkylating chemotherapeutic agents. Chk1 is an ATP-dependent serine-threonine kinase that in response to DNA damage phosphorylates cdc25 phosphatases, resulting in inhibitory tyrosine phosphorylation of CDK-cyclin complexes and cell cycle arrest.

**Chlamydophila psittaci** : A type of therapy in which the hands are used to manipulate the spine or other parts of the body. Sometimes, heat and ice, relaxation techniques, exercise, and other treatments are also used.

Chiropractic therapy may be used to treat conditions such as back pain, neck pain, headache, and hand or foot problems, and to improve overall health. It is a type of complementary and alternative medicine (CAM).

**chlorambucil**: An orally-active antineoplastic aromatic nitrogen mustard. Chlorambucil alkylates and cross-links DNA during all phases of the cell cycle, resulting in disruption of DNA function, cell cycle arrest, and apoptosis. OR A type of polysaccharide (sugar molecule) that is made by some plants and animals. The hard outer shell of shrimp, lobsters, and many insects is made of chitin.

**chlorambucil-prednisone** : A type of bacterium that can infect humans and animals. It spreads to humans from infected birds and can cause a lung infection called psittacosis. It may also cause an infection of the conjunctiva (the membrane that lines the eyelids and covers the white part of the eye). This may increase the risk of a type of lymphoma called ocular adnexa MALT lymphoma, which is a type of B-cell lymphoma.

**chlorambucil-prednisone regimen**: A chemotherapy regimen consisting of chlorambucil and prednisone used for the treatment of chronic lymphocytic leukemia.

**chlorambucil-prednisone regimen** : A drug used to treat several types of leukemias and lymphomas. It blocks cell growth by damaging the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called Leukeran.

**Chloramines**: Compounds formed by the reaction of hypochlorous acid (or aqueous chlorine) with ammonia.

**Chloramphenicol**: An antibiotic that inhibits the peptidyl transferase activity of the prokaryotic 50S ribosomal subunit.

**Chloraprep**: (Other name for: chlorhexidine/ethyl alcohol mouthwash)

**chlorhexidine**: A biguanide compound used as an antiseptic agent with topical antibacterial activity. Chlorhexidine is positively charged and reacts with the negatively charged microbial cell surface, thereby destroying the integrity of the cell membrane. Subsequently, chlorhexidine penetrates into the cell and causes leakage of intracellular components leading to cell

death. Since gram positive bacteria are more negatively charged, they are more sensitive to this agent.

**chlorhexidine gluconate:** The gluconate salt form of chlorhexidine, a biguanide compound used as an antiseptic agent with topical antibacterial activity. Chlorhexidine gluconate is positively charged and reacts with the negatively charged microbial cell surface, thereby destroying the integrity of the cell membrane. Subsequently, chlorhexidine gluconate penetrates into the cell and causes leakage of intracellular components leading to cell death. Since gram positive bacteria are more negatively charged, they are more sensitive to this agent. Check for active clinical trials using this agent.

**chlorhexidine/ethyl alcohol mouthwash:** A mouthwash containing the biguanide chlorhexidine and ethyl alcohol, with topical antibacterial activity. Upon rinsing the oral cavity with the chlorhexidine/ethyl alcohol mouthwash, the positively charged chlorhexidine cation exerts its antibacterial activity through binding to the negatively charged microbial cell surface, which destroys the integrity of the cell membrane. This causes leakage of intracellular components leading to cell death. Ethyl alcohol denatures bacterial proteins, and dissolves and disrupts the bacterial lipid membrane, thereby killing the bacteria. This reduces oral colonization with harmful bacteria and may prevent oral mucositis.

**Chlorinated paraffins:** Flame-retardant additives for polyester resins.

**Chlorinated Polyvinyl Chloride Plastics:** Plastics based on chlorinated polyvinyl chloride in which the chlorinated polyvinyl chloride is in the greatest amount of weight.

**Chlorinated rubber:** Superseded in many cases by Acrylated rubber due to the trichloromethane. Natural rubber reacted with chlorine to produce a hard resin-like substance which forms the basis of binder for a range of specialised paints.

**Chlorination:** The application of chlorine to water or wastewater, generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results. OR the addition of chlorine to water or wastewater, generally for the purpose of disinfecting, but frequently done to achieve other biological or chemical results.

**chlorination break point:** the addition of chlorine to water, sewage, or industrial waste containing free ammonia to the point where free residual chlorine is available.

**chlorination, free residual:** the addition of chlorine to water, sewage or industrial wastes to produce, directly or through the destruction of ammonia or certain organic nitrogenous compounds, a free available chlorine residual.

**Chlorine:** Symbol:"Cl" Atomic Number:"17" Atomic Mass: 35.45amu. Chlorine is a green/yellow gas with a very bad smell. It is very reactive and combines with many elements. It is a member of the halogen group. You can find chlorine in bleaches, papermaking, swimming pools, tap water, and table salt. OR Chlorine is a member of the halogen grouping of elements, noted for their high reactivity. Chlorine is also highly toxic and is therefore rarely transported any distance, being produced and consumed at the same site. Chlorine is produced by the electro-chemical separation from brine (concentrated salt-water), which is a highly power-intensive process that also co-produces caustic soda. OR In its normal state, chlorine is a greenish yellow gas. It is the eleventh most common element in the earth's crust and is widespread in nature. Chlorine is a key building block of modern chemistry and used in three principal ways: direct use (e.g., to disinfect water); as a raw material for chlorine-containing products (e.g., plastics, pharmaceuticals, pesticides) and as an intermediate to manufacture non-chlorinated products. Effective oxidizing agent.

**chlorine :** A chemotherapy combination used to treat chronic lymphocytic leukemia (CLL). It includes the drugs chlorambucil hydrochloride and prednisone. Also called chlorambucil-prednisone regimen, CP, and CP regimen.

**chlorine demand:** the quantity of chlorine absorbed by wastewater (or water) in a given length of time.

**Chlorine dioxide ( ClO<sub>2</sub> ) :** This reddish-yellow gas crystallizes as orange crystals at  $-59\text{ }^{\circ}\text{C}$ . As one of several oxides of chlorine, it is a potent and useful oxidizing agent used in water treatment and in bleaching.

**chlorine, available:** the quantity of chlorine released by a bleaching powder when treated with acid.

**chlorine, combined available residual:** that portion of the total residual chlorine remaining in water, sewage or industrial waste at the end of a specified contact period, which will react chemically and biologically as chloramines or organic chloramines.

**chlorine, total residual:** free residual chlorine plus combined residual chlorine.

**Chlorobenzene:** Chlorobenzene is produced by the chlorination of benzene in the liquid phase. The major use of chlorobenzene is as an intermediate for the production of nitrochlorobenzenes and diphenyl oxide, which are used to produce herbicides, dyes and rubber.

**Chlorofluorocarbon Plastics:** Plastics based on polymers made with monomers composed of chlorine, fluorine, and carbon only.

**chlorofluorocarbons:** Synthetic compounds containing carbon, chlorine, fluorine, and sometimes hydrogen that are used in refrigerants, propellants, the manufacture of foams, and cleaning solvents. OR A family of inert nontoxic and easily liquified chemicals used in refrigeration, air conditioning, packaging, and insulation or as solvents or aerosol propellants. Because they are not destroyed in the lower atmosphere, they drift into the upper atmosphere where their chlorine components destroy ozone.

**chlorogenic acid:** A polyphenol and the ester of caffeic acid and quinic acid that is found in coffee and black tea, with potential antioxidant and chemopreventive activities. Chlorogenic acid scavenges free radicals, which inhibits DNA damage and may protect against the induction of carcinogenesis. In addition, this agent may upregulate the expression of genes involved in the activation of the immune system and enhance activation and proliferation of cytotoxic T-lymphocytes, macrophages, and natural killer cells. Chlorogenic acid also inhibits the activity of matrix metalloproteinases.

**chloroma :** A chemotherapy combination used to treat chronic lymphocytic leukemia (CLL). It includes the drugs chlorambucil hydrochloride and prednisone. Also called chlorambucil-prednisone, CP, and CP regimen.

**chlorophyll:** The catalytic substance in photosynthesis that contains a  $Mg^{2+}$  ion in the center of a specialized ring structure known as a porphyrin. Porphyrins have a central portion containing nitrogen atoms that can attach to a metal ion. OR Chlorophyll is the pigment in plants that absorbs light rays. The organic compound found in plants that captures the energy from the sun and releases the energy to form chemical bonds. The capture of light is the first step of photosynthesis. Chlorophyll is found in

the chloroplasts of plants and there are many different types of the compound. Chlorophyll has many forms and gives plants their green color. The key element in chlorophyll is magnesium (Mg). OR green pigment that makes up a photosystem that absorbs energy from the sun during photosynthesis. OR A green photosynthetic pigment that is made of a magnesium dihydroporphyrin complex. OR A substituted tetrapyrrole that is the principal photoreceptor in plants.

**chlorophylls:** A family of green pigments functioning as receptors of light energy in photosynthesis; magnesium-porphyrin complexes.

**chloroplast:** an organelle within green plants in which photosynthesis occurs. OR An organelle in the cells of green plants. It contains chlorophyll and functions in photosynthesis and protein synthesis. OR A chlorophyll-containing photosynthetic organelle, found in eukaryotic cells, that can harness light energy. OR The plant organelle in which photosynthesis takes place. OR Chlorophyll-containing photosynthetic organelles in some eukaryotic cells.

**chloroquine:** A 4-aminoquinoline with antimalarial, anti-inflammatory, and potential chemosensitization and radiosensitization activities. Although the mechanism is not well understood, chloroquine is shown to inhibit the parasitic enzyme heme polymerase that converts the toxic heme into non-toxic hemazoin, thereby resulting in the accumulation of toxic heme within the parasite. This agent may also interfere with the biosynthesis of nucleic acids. Chloroquine's potential chemosensitizing and radiosensitizing activities in cancer may be related to its inhibition of autophagy, a cellular mechanism involving lysosomal degradation that minimizes the production of reactive oxygen species (ROS) related to tumor reoxygenation and tumor exposure to chemotherapeutic agents and radiation.

**chloroquinoxaline sulfonamide:** A chlorinated heterocyclic sulfanilamide with potential antineoplastic activity and potential immunosuppressive activity. Chloroquinoxaline sulfonamide poisons topoisomerase II alpha and topoisomerase II beta, thereby causing double-stranded breaks in DNA, accumulation of unrepaired DNA, and apoptosis. This agent also exhibits lymphotoxicity by inhibiting lymphocyte activation in a cell cycle-specific manner.

**chloroquinoxaline sulfonamide :** A chemical used in manufacturing, as a bleach, and to kill bacteria and other organisms in water.

**chlorotoxin :** A malignant, green-colored tumor of myeloid cells (a type of immature white blood cell). This tumor is usually associated with myelogenous leukemia. Also called granulocytic sarcoma.

**chlorotoxin-indocyanine green imaging Agent BLZ-100:** A tumor-targeting imaging agent composed of the tumor-specific peptide chlorotoxin (CTX), a 36-amino acid neurotoxin found in the venom of the *Leiurus quinquestriatus* scorpion, linked to the fluorescent dye indocyanine green (ICG), with potential tumor imaging activity using a near-infrared (NIR) imaging system. Upon intravenous administration of BLZ-100, the CTX moiety of BLZ-100 specifically binds to and is internalized by cancer cells of neuroectodermal origin. Using a NIR imaging system, the ICG, which emits light in the NIR range, permits the intraoperative visualization of tumor cells. This leads to the clear distinction of healthy tissues from tumor cells, and facilitates the surgical removal of tumor tissue while sparing normal, healthy cells.

**chlorozotocin:** A glucose-linked chloroethylnitrosourea with potential antineoplastic activity. Chlorozotocin alkylates DNA and proteins, induces the formation of interstrand DNA and DNA-protein crosslinks, and causes DNA strand breakage, thereby damaging DNA and resulting in cell death. This agent has been shown to exhibit antitumor and immunomodulatory effects in cell lines and animal models. Chlorozotocin is a mutagen and is less myelotoxic than other nitrosoureas.

**chlorpromazine:** A phenothiazine and traditional antipsychotic agent with anti-emetic activity. Chlorpromazine exerts its antipsychotic effect by blocking postsynaptic dopamine receptors in cortical and limbic areas of the brain, thereby preventing the excess of dopamine in the brain. This leads to a reduction in psychotic symptoms, such as hallucinations and delusions. Chlorpromazine appears to exert its anti-emetic activity by blocking the dopamine receptors in the chemical trigger zone (CTZ) in the brain, thereby relieving nausea and vomiting.

**chlorpropamide:** A long-acting, first-generation sulfonylurea with hypoglycemic activity. Compared to other sulfonylureas, chlorpropamide has an increased risk of prolonged hypoglycemia because of its long half-life. Check for active clinical trials using this agent.

**chlorzoxazone:** A benzoxazolone derivative with mild sedative and centrally-acting muscle relaxant activities. Although its exact mechanism of

action is unknown, chlorzoxazone (CZ) appears to act at the spinal cord and subcortical levels of the brain to inhibit multisynaptic reflex arcs involved in producing and maintaining muscle spasms. This agent is extensively hydroxylated by cytochrome P450 2E1 (CYP2E1) to 6-hydroxychlorzoxazone (HCZ),<sup>11,12</sup> which is subsequently glucuronidated and eliminated renally. Highly selective for CYP2E1, CZ may be used as a selective probe for phenotyping CYP2E1 in humans; the ratio of HCZ-to-CZ plasma concentrations obtained 2 to 4 hours after oral administration of CZ may be used as a phenotypic measure of CYP2E1 enzymatic activity. Check for active clinical trials using this agent.

**choanal atresia:** blockage in the back of the nasal passage

**cholangiocarcinoma :** A substance being studied in the treatment of cancer. It is a type of topoisomerase inhibitor. Also called CQS.

**cholangiosarcoma :** A substance being studied in the diagnosis and treatment of glioma (a type of brain cancer) and other types of cancer. It binds to cancer cells in the brain and peripheral nervous system and may keep them from spreading. Chlorotoxin comes from the venom of a type of scorpion. A form of chlorotoxin made in the laboratory is called TM-601. Chlorotoxin is a type of neurotoxin. Also called CTX.

**cholecalciferol:** A steroid hormone produced in the skin when exposed to ultraviolet light or obtained from dietary sources. The active form of cholecalciferol, 1,25-dihydroxycholecalciferol (calcitriol) plays an important role in maintaining blood calcium and phosphorus levels and mineralization of bone. The activated form of cholecalciferol binds to vitamin D receptors and modulates gene expression. This leads to an increase in serum calcium concentrations by increasing intestinal absorption of phosphorus and calcium, promoting distal renal tubular reabsorption of calcium and increasing osteoclastic resorption. OR A rare cancer that forms in the bile ducts. A bile duct is a tube that carries bile (fluid made by the liver) between the liver and gallbladder and the small intestine. Intrahepatic cholangiocarcinoma is found inside the liver. Extrahepatic cholangiocarcinoma is found outside the liver. Also called bile duct cancer.

**cholecalciferol/d-alpha tocopherol/L-selenomethionine/green tea extract/saw palmetto berry extract/daidzein/genistein/lycopene prostate health supplement:** A dietary supplement consisting of a blend of 8 natural ingredients with potential antineoplastic and chemopreventive

activities. This dietary supplement contains vitamin D3 (as cholecalciferol), vitamin E (as d-alpha tocopherol), selenium (as L-selenomethionine), epigallocatechin (green tea extract), saw palmetto (berry extract), lycopene, and the isoflavonoids daidzein and genistein. This combination preparation may decrease prostate cell growth and inhibit prostate carcinogenesis.

**cholecalciferol/whey protein isolate/EPA/DHA-based nutritional supplement:** A gluten-free, energy-rich, non-complete nutritional supplement drink composed of juice from the concentrates of apple pear, pomegranate, purple chokeberry and passion fruit, plus fish oil derived from salmon and cod, the minerals potassium, phosphorus and iodine, whey protein isolate derived from cow's milk, tocopherols (vitamin E), and cholecalciferol (vitamin D3) with potential anti-cachexic activity. Upon oral intake of the cholecalciferol/whey protein isolate/EPA/DHA-based nutritional supplement, the protein components maintain digestive health throughout the gastrointestinal (GI) tract and reduce the risk of digestive complications. The essential omega-3 polyunsaturated fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) from the fish oil are incorporated into cell membranes and affect the production of pro-inflammatory mediators, which elicits an anti-inflammatory effect. Cholecalciferol plays an important role in maintaining bone mineralization and regulating blood calcium and phosphorus levels. Tocopherols neutralize free radicals, thereby protecting tissues and organs from oxidative damage. In particular, alpha-tocopherol gets incorporated into biological membranes, maintains cell membrane integrity and protects the cell against damage. This nutritional supplement may prevent both malnutrition and weight loss. Check for active clinical trials using this agent.

**cholelith :** A tumor of the connective tissues of the bile ducts.

**Cholera toxin:** A toxin that consists of a catalytic domain and a membrane-penetration domain; the catalytic subunit ADP-ribosylates the G stimulatory protein, persistently activating it, leading to activation of ion pumps and subsequent efflux of large amounts of Na<sup>+</sup> and water into the gut.

**CholestaGel:** (Other name for: colesevelam hydrochloride)

**cholestasis :** A nutrient that the body needs in small amounts to function and stay healthy. Cholecalciferol helps the body use calcium and phosphorus to make strong bones and teeth. It is fat-soluble (can dissolve in

fats and oils) and is found in fatty fish, egg yolks, and dairy products. Skin exposed to sunshine can also make cholecalciferol. Not enough cholecalciferol can cause a bone disease called rickets. It is being studied in the prevention and treatment of some types of cancer. Also called vitamin D.

**Cholesterol:** A lipid unique to animal cells that is used in the construction of cell membranes and as a building block for some hormones

**Cholesterol:** A sterol that is an important constituent of eukaryotic membranes as well as lipoproteins; also a precursor of steroid hormones.

**cholesterol :** Solid material that forms in the gallbladder or common bile duct. Choleliths are made of cholesterol or other substances found in the gallbladder. They may occur as one large stone or as many small ones, and vary from the size of a golf ball to a grain of sand. Also called gallstone.

**Choletec:** (Other name for: technetium Tc 99m mebrofenin)

**choline :** Any condition in which the release of bile from the liver is blocked. The blockage can occur in the liver (intrahepatic cholestasis) or in the bile ducts (extrahepatic cholestasis).

**choline kinase alpha inhibitor TCD-717:** A small-molecule inhibitor of choline kinase alpha (CHKA), with potential antineoplastic activity. TCD-717 targets and binds to CHKA, an enzyme that plays a key role in the synthesis of phosphatidylcholine, the major phospholipid in eukaryotic cell membranes. Blockade of this enzyme induces cells to activate a different route for phospholipid production which causes a toxic effect and eventually leads to cell destruction. CHKA, overexpressed in human cancer cells while only minimally expressed in normal cells, appears to play a significant role in cellular proliferation, evasion of apoptosis, increased cell motility and metastasis.

**choline magnesium trisalicylate:** A nonsteroidal anti-inflammatory drug (NSAID) belonging to the salicylate family. Choline magnesium trisalicylate inhibits inflammation-related prostaglandin synthesis. This agent's analgesic effect is mediated through peripheral and central pathways, resulting in a decrease in pain perception; its antipyretic effect is mediated via the hypothalamic heat regulation center.

**choline magnesium trisalicylate :** A waxy, fat-like substance made in the liver, and found in the blood and in all cells of the body. Cholesterol is

important for good health and is needed for making cell walls, tissues, hormones, vitamin D, and bile acid. Cholesterol also comes from eating foods taken from animals such as egg yolks, meat, and whole-milk dairy products. Too much cholesterol in the blood may build up in blood vessel walls, block blood flow to tissues and organs, and increase the risk of developing heart disease and stroke.

**cholinesterase and pseudocholinesterase inhibitors:** These are substances which inhibit the cholinesterase-enzyme activity and thus enhance and subsequently prevent transmission of nerve impulses from one nerve cell to another or to a muscle.

**chondrocyte :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Choline helps cells make membranes, make a neurotransmitter (a chemical that helps nerve cells communicate with other cells), and remove fat from the liver. It is found in whole milk, beef liver, eggs, soy foods, and peanuts. Choline is water-soluble (can dissolve in water) and must be taken in every day. Not enough choline can cause diseases of the heart and blood vessels and damage to the liver. A form of choline is being studied in the treatment of some types of cancer and to reduce pain and fever. Choline is also being studied together with vitamin B12 in the prevention and treatment of cancer.

**chondroitin sulfate :** A substance used to treat arthritis and relieve pain, inflammation, and fever. It is also being studied in the treatment of acute myeloid leukemia (AML). Choline magnesium trisalicylate blocks the action of a substance that sends a pain message to the brain. It is a type of nonsteroidal anti-inflammatory drug (NSAID). Also called Trilisate.

**chondrosarcoma :** Cartilage cell. Chondrocytes make the structural components of cartilage.

**CHOP :** The major glycosaminoglycan (a type of sugar molecule) in cartilage.

**CHOP regimen:** A chemotherapy regimen consisting of cyclophosphamide, hydroxydaunorubicin hydrochloride (doxorubicin hydrochloride), vincristine and prednisone used to treat both indolent and aggressive forms of non-Hodgkin lymphoma. OR A type of cancer that forms in bone cartilage. It usually starts in the pelvis (between the hip bones), the shoulder, the ribs, or at the ends of the long bones of the arms and legs. A rare type of chondrosarcoma called extraskeletal

chondrosarcoma does not form in bone cartilage. Instead, it forms in the soft tissues of the upper part of the arms and legs. Chondrosarcoma can occur at any age but is more common in people older than 40 years. It is a type of bone cancer.

**CHOPE** : An abbreviation for a chemotherapy combination that is used to treat non-Hodgkin lymphoma and is being studied in the treatment of other types of cancer. It includes the drugs cyclophosphamide, doxorubicin hydrochloride (hydroxydaunorubicin), vincristine sulfate (Oncovin), and prednisone. Also called CHOP regimen.

**CHOPE regimen** : An abbreviation for a chemotherapy combination that is used to treat non-Hodgkin lymphoma and is being studied in the treatment of other types of cancer. It includes the drugs cyclophosphamide, doxorubicin hydrochloride (hydroxydaunorubicin), vincristine sulfate (Oncovin), and prednisone. Also called CHOP.

**Chopped Strand** : A type of fiber reinforcement consisting of strands of individual glass fibers which have been chopped into short pieces. OR Short strands cut from continuous filament strands of reinforcing fibre, not held together by any means.

**chord**: a line segment joining any two points on a circle.

**chordae tendineae**: tendons that connect the papillary muscles to the tricuspid and mitral valves

**chordates**: animals with rods along their backs, including reptiles, amphibians, birds, and mammals.

**chordoma** : An abbreviation for a chemotherapy combination that is used to treat non-Hodgkin lymphoma. It includes the drugs cyclophosphamide, doxorubicin hydrochloride (hydroxydaunorubicin), vincristine sulfate (Oncovin), prednisone, and etoposide phosphate. Also called CHOPE regimen.

**choreoathetosis**: occurrence of involuntary movements in combination with chorea which itself refers to irregular, rapid, uncontrolled, and excessive movements

**chorioadenoma destruens** : An abbreviation for a chemotherapy combination that is used to treat non-Hodgkin lymphoma. It includes the drugs cyclophosphamide, doxorubicin hydrochloride

(hydroxydaunorubicin), vincristine sulfate (Oncovin), prednisone, and etoposide phosphate. Also called CHOPE.

**chorioallantoic membrane :** A type of bone cancer that usually starts in the lower spinal column or at the base of the skull.

**chorioblastoma :** A type of cancer that grows into the muscular wall of the uterus. It is formed after conception (fertilization of an egg by a sperm). It may spread to other parts of the body, such as the vagina, vulva, and lung. Also called invasive hydatidiform mole.

**choriocarcinoma :** The membrane in hens' eggs that helps chicken embryos get enough oxygen and calcium for development. The calcium comes from the egg shell.

**chorioepithelioma :** A malignant, fast-growing tumor that develops from trophoblastic cells (cells that help an embryo attach to the uterus and help form the placenta). Almost all chorioblastomas form in the uterus after fertilization of an egg by a sperm, but a small number form in a testis or an ovary. Chorioblastomas spread through the blood to other organs, especially the lungs. They are a type of gestational trophoblastic disease. Also called choriocarcinoma, chorioepithelioma, and chorionic carcinoma.

**chorionic carcinoma :** A malignant, fast-growing tumor that develops from trophoblastic cells (cells that help an embryo attach to the uterus and help form the placenta). Almost all choriocarcinomas form in the uterus after fertilization of an egg by a sperm, but a small number form in a testis or an ovary. Choriocarcinomas spread through the blood to other organs, especially the lungs. They are a type of gestational trophoblastic disease. Also called chorioblastoma, chorioepithelioma, and chorionic carcinoma.

**choroid :** A malignant, fast-growing tumor that develops from trophoblastic cells (cells that help an embryo attach to the uterus and help form the placenta). Almost all chorioepitheliomas form in the uterus after fertilization of an egg by a sperm, but a small number form in a testis or an ovary. Chorioepitheliomas spread through the blood to other organs, especially the lungs. They are a type of gestational trophoblastic disease. Also called chorioblastoma, choriocarcinoma, and chorionic carcinoma.

**choroid plexus :** A malignant, fast-growing tumor that develops from trophoblastic cells (cells that help an embryo attach to the uterus and help form the placenta). Almost all chorionic carcinomas form in the uterus after fertilization of an egg by a sperm, but a small number form in a testis or an

ovary. Chorionic carcinomas spread through the blood to other organs, especially the lungs. They are a type of gestational trophoblastic disease. Also called chorioblastoma, choriocarcinoma, and chorioepithelioma.

**choroid plexus tumor :** A thin layer of tissue that is part of the middle layer of the wall of the eye, between the sclera (white outer layer of the eye) and the retina (the inner layer of nerve tissue at the back of the eye). The choroid is filled with blood vessels that bring oxygen and nutrients to the eye.

**CHP-NY-ESO-1 peptide vaccine IMF-001:** A peptide cancer vaccine containing nanoparticles of cholesteryl hydrophobized pullulan (CHP) complexed with the cancer-testis antigen NY-ESO-1 protein, with potential immunostimulating and antineoplastic activities. Upon administration, CHP-NY-ESO-1 peptide vaccine IMF-001 may stimulate the host immune system to mount a humoral and cytotoxic T-cell response against tumor cells expressing NY-ESO-1 antigen, resulting in tumor cell lysis. The self-aggregating CHP, composed of a pullulan backbone and cholesterol branches, forms stable colloidal nanoparticles in water. NY-ESO-1, an antigen found in normal testis, is upregulated in various cancers, including bladder, breast, hepatocellular, melanoma, and prostate cancers.

**CHPP:** A network of blood vessels and cells in the ventricles (fluid-filled spaces) of the brain. The blood vessels are covered by a thin layer of cells that make cerebrospinal fluid.

**Christmas Tree:** Condition caused by over tensioning of the turn curve belts, typically in spiral systems, in which one edge of the belt bows in the direction of, or opposite of belt travel.

**Chroma:** refers to the strength of the color or how far it is from a neutral gray of the same value. Colors of low chroma are often called weak; colors of high chroma are often called highly saturated, strong, or vivid. For example, a pale pink would have low chroma, and a vivid fluorescent yellow would have very high chroma. In color space chroma would increase as you move away from the vertical axis radially.

**chromaffin cell :** A rare tumor that forms in the choroid plexus (a network of blood vessels and cells in the fluid-filled spaces of the brain). These tumors are most common in children younger than 2 years. Choroid plexus tumors may be benign (not cancer) or malignant (cancer).

**chromatid:** homologous chromosomes joined to each other at the centromere; present during the prophase of mitosis.

**chromatin:** compacted DNA and protein. OR The nucleoprotein fibers of eukaryotic chromosomes. OR Nucleoprotein chromosomal material consisting mainly of DNA and histones. OR A filamentous complex of DNA, histones, and other proteins, constituting the eukaryotic chromosome.

**Chromatin immunoprecipitation (chip):** A technique for identifying the binding sites of DNA-binding proteins. The protein is cross-linked to DNA to which it is bound in chromatin, and the DNA is fragmented into small pieces. Antibodies to the bound protein are used to isolate the chromatin fragments with the bound protein. The cross-linking is reversed, and the DNA is isolated and characterized.

**Chromatin remodeling machine:** A complex of proteins that contain domains homologous to helicases and use the energy of ATP hydrolysis to shift the positions of nucleosomes and induce other conformational changes in chromatin.

**chromatography:** Any process for separating materials using two phases, one stationary, and one moving. One example: gas chromatography (gas as moving phase, solid as stationary phase). OR The separation of the components of a mixture by use of differences in their interactions with a stationary medium. OR A procedure for separating chemically similar molecules. Segregation is usually carried out on paper or in glass or metal columns with the help of different solvents. The paper or glass columns contain porous solids with functional groups that have limited affinities for the molecules being separated. OR Chromatography is a method for separating mixtures based on differences in the speed at which they migrate over or through a stationary phase. OR A process in which complex mixtures of molecules are separated by many repeated partitionings between a flowing (mobile) phase and a stationary phase. OR Literally means coloured writing, it is a technique used to separate coloured materials. You can use chromatography to separate the colours of ink (maybe black ink contains red, blue and brown dyes) or food colourings (smarties are good for this). Forensic science uses chromatography to investigate substances found at the scene of a crime and can trace DNA etc. or A procedure that bathes the abdominal cavity in fluid that contains anticancer drugs. This fluid is warmer than body temperature. This

procedure appears to kill cancer cells without harming normal cells. Also called continuous hyperthermic peritoneal perfusion.

**CHROME PIGMENTS:** Pigments based on basic lead chromate. Included are chrome yellow and orange. They have intense colors, good acid resistance, and heat stability.

**Chromium:** Symbol:"Cr" Atomic Number:"24" Atomic Mass: 52.00amu. Chromium is one of the transition elements. You can find chromium in rubies and other minerals, in utensils, and in the process of making chrome parts for cars and motorcycles.

**Chromium Plating:** An electrolytic process that deposits a hard film of chromium metal onto working surfaces of other where resistance to corrosion, abrasion, and/or erosion is needed OR An electrolytic process that deposits a hard film of chromium metal onto working surfaces of other metals where resistance to corrosion, abrasion. and/or erosion is needed. OR An electrolytic process that deposits a hard film of chromium metal onto working surfaces of other metals where resistance to corrosion, abrasion and/or erosion is needed.

**chromodomain:** domain in proteins that binds to methylated histones

**chromogranin A :** A type of cell that makes neurohormones (chemicals that are made by nerve cells and used to send signals to other cells) and releases them into the blood. Chromaffin cells make epinephrine (adrenaline) and norepinephrine (noradrenaline). They are found in the adrenal glands or in groups of nerve cells called ganglia.

**Chromoionophore:** in fiber optic chemical sensors, an appropriate reagent i.e. chromogenic ionophore (chromoionophore or fluoroionophore), that is responsible for the ion recognition process in an optomembrane. The chromoionophore molecules include an ionrecognizing complexing center (ionophoric moiety) coupled with a chromogenic group, which transduces the chemical information into the changes in optical signal. The selectivity of the optomembrane is governed by the selectivity of the ionchromoionophore complex formation.

**chromomycin A3:** A glycosidic antineoplastic antibiotic isolated from the bacterium *Streptomyces griseus*. Chromomycin A3 reversibly binds to guanine-cytosine (G-C) base pairs in the minor groove of DNA, thereby inhibiting RNA synthesis. This agent is used as a fluorescent chromosome dye.

**Chromophore:** A light-absorbing group, such as 11-cis-retinal in rhodopsin. OR A group or substructure on a molecule that is responsible for the absorption of light.

**chromosomal aberration:** Any abnormality of chromosome number or structure may be described as an aberration.

**chromosome:** This is a structure in the nucleus of the cell composed of deoxyribonucleic acid (DNA) and protein; the chromosome forms the basis of heredity and carries genetic information in DNA in the form of sequence of nitrogenous bases. OR A thread-like structure, visible in the cell nucleus during metaphase, that carries the hereditary information. OR A single large DNA molecule and its associated proteins, containing many genes; stores and transmits genetic information.

**chromosome :** Discrete physical structures inside a cell nucleus that consist of proteins and DNA organized into genes. OR A laboratory technique used to separate different substances in a mixture. A gas or a liquid is used to pass the mixture through a column, paper, or special plate that contains absorbing materials. The substances in the mixture are separated based on how far they move through the material. The different substances may be visible to the eye or detected by a special machine.

**chromosome 17 :** A protein found inside neuroendocrine cells, which release chromogranin A and certain hormones into the blood.

Chromogranin A may be found in higher than normal amounts in patients with certain neuroendocrine tumors, small cell lung cancer, prostate cancer, and other conditions. Measuring the amount of chromogranin A in the blood may help to diagnose cancer or other conditions or find out how well treatment is working or if cancer has come back. Chromogranin A is a type of tumor marker. Also called CgA.

**chromosome 3 :** Part of a cell that contains genetic information. Except for sperm and eggs, all human cells contain 46 chromosomes.

**chromosome 7 :** One of a pair of chromosomes that is part of the 46 chromosomes found in the nucleus of most human cells. Specific changes in chromosome 7 may be found in patients with certain genetic conditions and some types of cancer, including bladder cancer, brain cancer, and leukemia. Checking for these changes may help diagnose cancer or find out if cancer has come back. Chromosome 7 is a type of tumor marker.

**Chromosome puff:** A swollen region of a giant chromosome; the swelling reflects a high degree of transcription activity.

**Chromosome walking:** A technique for analyzing long stretches of DNA by sequential subcloning and rescreening of overlapping segments.

**chromosomes:** linear units of DNA.

**chromosphere:** reddish layer of the Sun that is hydrogen burning.

**chronic :** One of a pair of chromosomes that is part of the 46 chromosomes found in the nucleus of most human cells. Specific changes in chromosome 3 may be found in patients with certain genetic conditions or some types of cancer, including bladder cancer. Checking for these changes may help diagnose cancer or find out if cancer has come back. Chromosome 3 is a type of tumor marker.

**chronic bacterial prostatitis :** One of a pair of chromosomes that is part of the 46 chromosomes found in the nucleus of most human cells. Specific changes in chromosome 7 may be found in patients with certain genetic conditions or some types of cancer, including bladder cancer, leukemia, and lymphoma. Checking for these changes may help diagnose cancer or find out if cancer has come back. Chromosome 7 is a type of tumor marker.

**chronic bronchitis :** A disease or condition that persists or progresses over a long period of time.

**chronic cough :** Inflammation of the prostate gland that is caused by a bacterial infection and that continues or gets worse over a long period of time. The infection may seem to go away but keeps coming back. Symptoms include body aches, pain in the lower back and genital area, a burning feeling during urination, and problems with emptying the bladder all the way.

**chronic effects:** Effects that develop slowly and have a long duration. They are often, but not always, irreversible. Some irreversible effects may appear a long time after the chemical substance was present in the sensitive tissue. For such delayed or late effects, the latent period (or the "time to occurrence" of an observable effect) may be very long, particularly if the level of exposure is low (WHO, 1979).

**chronic eosinophilic leukemia :** A lung condition that develops over time in which the bronchi (large air passages that lead to the lungs) become inflamed and scarred. This causes the bronchi to make large amounts of

mucus and can lead to a chronic cough and breathing problems. The most common cause of chronic bronchitis is cigarette smoking. It may also be caused by infection or by breathing in secondhand tobacco smoke, chemical fumes, or other forms of air pollution. Chronic bronchitis usually does not go away completely. It is a type of chronic obstructive pulmonary disease (COPD).

**chronic fatigue syndrome :** A cough that lasts for 8 weeks or longer. It may occur with other symptoms, including a runny or stuffy nose, extra mucus in the back of the throat, wheezing, shortness of breath, or heartburn. A chronic cough may be caused by allergies, sinus infections, asthma, gastroesophageal reflux disease (GERD), or other conditions. It may also be caused by smoking tobacco or by breathing in secondhand tobacco smoke over a long period of time. It usually improves when the problem that caused the cough is treated. For example, a chronic cough may get better when a person quits smoking.

**chronic granulocytic leukemia :** A disease in which too many eosinophils (a type of white blood cell) are found in the bone marrow, blood, and other tissues. Chronic eosinophilic leukemia may stay the same for many years, or it may progress quickly to acute leukemia.

**chronic heart failure :** A condition that lasts for more than 6 months in which a person feels tired most of the time. They may also have trouble concentrating and carrying out daily activities. Other symptoms include sore throat, fever, muscle weakness, headache, and joint pain. Also called CFS.

**chronic idiopathic myelofibrosis :** An indolent (slow-growing) cancer in which too many myeloblasts are found in the blood and bone marrow. Myeloblasts are a type of immature blood cell that makes white blood cells called myeloid cells. Chronic granulocytic leukemia may get worse over time as the number of myeloblasts increases in the blood and bone marrow. This may cause fever, fatigue, easy bleeding, anemia, infection, a swollen spleen, bone pain, or other signs and symptoms. Chronic granulocytic leukemia is usually marked by a chromosome change called the Philadelphia chromosome, in which a piece of chromosome 9 and a piece of chromosome 22 break off and trade places with each other. It usually occurs in older adults and rarely occurs in children. Also called chronic myelogenous leukemia, chronic myeloid leukemia, and CML.

**chronic leukemia** : A condition in which the heart has trouble pumping blood through the body. It may develop over a long period of time. Symptoms include shortness of breath, problems exercising, fatigue, and swelling of the feet, ankles, and abdomen. Chronic heart failure may be caused by coronary artery disease, a heart attack, or high blood pressure. It usually occurs in people aged 65 years or older. Also called CHF.

**chronic lung disease** : A progressive, chronic disease in which the bone marrow is replaced by fibrous tissue and blood is made in organs such as the liver and the spleen, instead of in the bone marrow. This disease is marked by an enlarged spleen and progressive anemia. Also called agnogenic myeloid metaplasia, idiopathic myelofibrosis, myelosclerosis with myeloid metaplasia, and primary myelofibrosis.

**chronic lymphocytic leukemia** : A slowly progressing cancer that starts in blood-forming tissues such as the bone marrow, and causes large numbers of white blood cells to be produced and enter the blood stream.

**chronic lymphocytic leukemia/small lymphocytic lymphoma** : A type of disorder that affects the lungs and other parts of the respiratory system. It usually develops slowly, and may get worse over time. Chronic lung disease may be caused by smoking tobacco or by breathing in secondhand tobacco smoke, chemical fumes, dust, or other forms of air pollution. Types of chronic lung disease include asthma, chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, asbestosis, pneumonitis, and other lung conditions. Also called CLD.

**chronic myelogenous leukemia** : An indolent (slow-growing) cancer in which too many immature lymphocytes (white blood cells) are found mostly in the blood and bone marrow. Sometimes, in later stages of the disease, cancer cells are found in the lymph nodes and the disease is called small lymphocytic lymphoma. Also called CLL.

**chronic myeloid leukemia** : An indolent (slow-growing) cancer in which immature lymphocytes (white blood cells) are found in the blood and bone marrow and/or in the lymph nodes. Chronic lymphocytic leukemia (CLL) and small lymphocytic lymphoma (SLL) are the same disease, but in CLL cancer cells are found mostly in the blood and bone marrow. In SLL cancer cells are found mostly in the lymph nodes. Chronic lymphocytic leukemia/small lymphocytic lymphoma is a type of non-Hodgkin lymphoma. Also called CLL/SLL.

**chronic myelomonocytic leukemia :** An indolent (slow-growing) cancer in which too many myeloblasts are found in the blood and bone marrow. Myeloblasts are a type of immature blood cell that makes white blood cells called myeloid cells. Chronic myelogenous leukemia may get worse over time as the number of myeloblasts increases in the blood and bone marrow. This may cause fever, fatigue, easy bleeding, anemia, infection, a swollen spleen, bone pain, or other signs and symptoms. Chronic myelogenous leukemia is usually marked by a chromosome change called the Philadelphia chromosome, in which a piece of chromosome 9 and a piece of chromosome 22 break off and trade places with each other. It usually occurs in older adults and rarely occurs in children. Also called chronic granulocytic leukemia, chronic myeloid leukemia, and CML.

**chronic myeloproliferative neoplasm :** An indolent (slow-growing) cancer in which too many myeloblasts are found in the blood and bone marrow. Myeloblasts are a type of immature blood cell that makes white blood cells called myeloid cells. Chronic myeloid leukemia may get worse over time as the number of myeloblasts increases in the blood and bone marrow. This may cause fever, fatigue, easy bleeding, anemia, infection, a swollen spleen, bone pain, or other signs and symptoms. Chronic myeloid leukemia is usually marked by a chromosome change called the Philadelphia chromosome, in which a piece of chromosome 9 and a piece of chromosome 22 break off and trade places with each other. It usually occurs in older adults and rarely occurs in children. Also called chronic granulocytic leukemia, chronic myelogenous leukemia, and CML.

**chronic neutrophilic leukemia :** A slowly progressing type of myelodysplastic/myeloproliferative disease in which too many myelomonocytes (a type of white blood cell) are in the bone marrow, crowding out other normal blood cells, such as other white blood cells, red blood cells, and platelets. Also called CMML.

**chronic obstructive pulmonary disease :** A type of disease in which the bone marrow makes too many red blood cells, platelets, or certain white blood cells. Chronic myeloproliferative neoplasms usually get worse over time as the number of extra cells build up in the blood and/or bone marrow. This may cause bleeding problems, anemia, infection, fatigue, or other signs and symptoms. Certain chronic myeloproliferative neoplasms may become acute myeloid leukemia (AML). Chronic myeloproliferative

neoplasms include chronic myelogenous leukemia (CML), polycythemia vera, primary myelofibrosis, essential thrombocythemia, chronic neutrophilic leukemia, and chronic eosinophilic leukemia. Also called myeloproliferative neoplasm.

**chronic pain :** A disease in which too many neutrophils (a type of white blood cell) are found in the blood. The extra neutrophils may cause the spleen and liver to become enlarged. Chronic neutrophilic leukemia may stay the same for many years or it may progress quickly to acute leukemia.

**chronic phase :** A type of lung disease marked by permanent damage to tissues in the lungs, making it hard to breathe. Chronic obstructive pulmonary disease includes chronic bronchitis, in which the bronchi (large air passages) are inflamed and scarred, and emphysema, in which the alveoli (tiny air sacs) are damaged. It develops over many years and is usually caused by cigarette smoking. Also called COPD.

**chronic phase chronic myelogenous leukemia :** Pain that can range from mild to severe, and persists or progresses over a long period of time.

**chronic prostatitis/chronic pelvic pain syndrome :** Refers to the early stages of chronic myelogenous leukemia or chronic lymphocytic leukemia. The number of mature and immature abnormal white blood cells in the bone marrow and blood is higher than normal, but lower than in the accelerated or blast phase.

**chronic toxicity test:** A study in which animals are observed during the whole life span (or the major part of the life span) and in which exposure to the test material takes place over the whole observation time or a substantial part thereof. The term "long-term toxicity study" is sometimes used as a synonym for "chronic toxicity study" and sometimes to signify a study that falls in between subacute (short-term toxicity studies) and chronic toxicity studies (WHO, 1978a).

**chrysotherapy :** A phase of chronic myelogenous leukemia in which fewer than 10% of the cells in the blood and bone marrow are blast cells (immature blood cells). This phase may last from several months to several years, and there may be no symptoms of leukemia.

**CHS 828:** A condition of the prostate gland that continues or gets worse over a long period of time. Symptoms include body aches, pain in the lower back and genital area, a burning feeling during urination, and problems with emptying the bladder all the way. Also called CP/CPPS.

**chyle** : A procedure that uses gold salts (a salt form of the metal element gold) to treat diseases, such as rheumatoid arthritis. The gold salts stop cells from releasing chemicals that can harm tissues. Also called aurotherapy and gold therapy.

**chylomicron**: A plasma lipoprotein consisting of a large droplet of triacylglycerols stabilized by a coat of protein and phospholipid; carries lipids from the intestine to the tissues.

**Chylomicrons**: Lipoprotein particles that transport dietary triacylglycerols from the intestine to other tissues; apolipoprotein B-48 is a protein component of chylomicrons.

**chyme**: a soupy liquid formed in the stomach from the churning of the bolus with gastric juices.

**CI**: Cast Iron; an abbreviation widely used in building. OR Configuration interaction. A theory of electron correlation. A large set of Hartree-Fock-type configurations (Slater determinants) is used as a many-electron basis set. The coefficient of each configuration is determined variationally so as to minimize the total energy of this wavefunction. Recovers the "dynamic" electron correlation important in bonding. Reliability and expense depend upon the size of the CI, e.g., CISD was popular before coupled-cluster methods caught on. Ordinary, truncated CI (CIS, CISD, etc.) is not size-consistent, so determining bond energies requires "supermolecule" calculations.

**CI-1033**: A drug that is being studied in the treatment of solid tumors.

**CI-958**: A milky-white fluid that forms in the small intestine during digestion. It is made of lymph fluid and fats. Special lymph vessels carry chyle from the intestines to the blood.

**CI-980**: A substance being studied in the treatment of some types of cancer. CI-1033 blocks the action of proteins called epidermal growth factor receptors, and may cause cancer cells to die. It is a type of tyrosine kinase inhibitor. Also called canertinib and canertinib dihydrochloride.

**CI-994**: A substance being studied in the treatment of some types of cancer. CI-958 binds to DNA and stops cells, including cancer cells, from repairing damage to DNA and from making more DNA, RNA, and protein. It is a type of DNA intercalator. Also called sedoxantrone trihydrochloride.

**Cialis :** (Other name for: tadalafil) OR An anticancer drug that belongs to the family of drugs called mitotic inhibitors. Also called mivobulin isethionate.

**ciclopirox olamine lotion:** A lotion preparation of the olamine salt of ciclopirox, a synthetic hydroxypyridone derivative with broad-spectrum antifungal and anti-inflammatory activities. Although its mechanism of action is not well understood, ciclopirox may chelate trivalent cations, such as  $Fe^{3+}$  and  $Al^{3+}$ , thereby inhibiting the availability of essential metal co-factors for enzymes, which may result in a loss of enzyme activities that are essential for cellular metabolism, organization of cell wall structure, and other crucial cell functions in a wide variety of fungal species. This agent may also disrupt DNA repair, cell division signals and mitotic spindles as well as some elements of intracellular transport in susceptible fungi. Ciclopirox exhibits anti-inflammatory activity by inhibiting 5-lipoxygenase and cyclooxygenase (COX).

**ciclopirox olamine oral:** An aqueous suspension of the olamine salt form of ciclopirox, a synthetic, broad-spectrum hydroxypyridone antifungal agent with additional antibacterial and anti-inflammatory activities. Although the exact mechanism of action of ciclopirox has yet to be fully elucidated, this agent is able to chelate trivalent cations, such as  $Fe^{3+}$ , thereby inhibiting the availability of essential co-factors for enzymes. This may lead to a loss of activity of enzymes that are essential for cellular metabolism, organization of cell wall structure and other crucial cell functions. In addition, ciclopirox exerts its anti-inflammatory activity by inhibiting 5-lipoxygenase and cyclooxygenase (COX).

**CID:** Configuration interaction, doubles. A CI that only includes those determinants that correspond to double excitations from the reference (which is usually Hartree-Fock).

**Cidan herbal capsule:** A capsule-based formulation containing artificial bezoar, *Strychni pulveratum* (strychnos powder), camphol alcohol (borneol or borneo camphor) and extracts from Zedoary rhizome (*Rhizoma curcumae*), *Pseudobulbus cremastrae seu pleiones* (dried pseudobulb of *Cremastra appendiculata*), Yatantzu (seed of *Brucca javanica*), beehive, *Bombyx mori* (*Bombyx batryticatus* or silkworm), Danshen (dried root of *Salvia miltiorrhiza* or red sage root), *Radix astragali*, and *Angelica*, with potential antineoplastic activity. Upon oral administration of the cidan

herbal capsule, the active ingredients in the plant extracts may induce tumor cell apoptosis and reduce tumor cell proliferation.

**cidofovir:** A synthetic, acyclic, monophosphate nucleotide analog of deoxycytidine with antiviral activity, and mostly used against cytomegalovirus (CMV). After incorporation into the host cell, cidofovir is phosphorylated by pyruvate kinases to its active metabolite cidofovir diphosphate. Cidofovir diphosphate, bearing structural similarity to nucleotides, competes with deoxycytosine-5-triphosphate (dCTP) for viral DNA polymerase and gets incorporated into the growing viral DNA strands. As a result, it prevents further DNA polymerization and disrupts DNA replication of viruses.

**cidofovir :** A substance being studied in the treatment of non-small cell lung cancer. Also called N-acetyldinaline.

**cigar :** A drug used to treat erectile dysfunction. It is also being studied in the treatment of sexual problems in patients treated with radiation or surgery for prostate cancer. Cialis blocks the action of a certain enzyme, which can result in increased blood flow to the penis, causing an erection. It is a type of cGMP phosphodiesterase type 5 (PDE5) inhibitor. Also called tadalafil.

**cigarette :** A drug used in the treatment of infections caused by viruses.

**cilengitide :** A cyclic Arg-Gly-Asp peptide with potential antineoplastic activity. Cilengitide binds to and inhibits the activities of the  $\alpha(v)\beta(3)$  and  $\alpha(v)\beta(5)$  integrins, thereby inhibiting endothelial cell-cell interactions, endothelial cell-matrix interactions, and angiogenesis. OR A tube-shaped tobacco product that is made of tightly rolled, cured tobacco leaves in a tobacco leaf wrapper or a wrapper that contains tobacco. It may also have other ingredients, including substances to add different flavors. A cigar is lit on one end and smoked, but the smoke is usually not inhaled into the lungs. Cigars contain nicotine and many cancer-causing chemicals that are harmful to both smokers and nonsmokers. Smoking cigars can lead to nicotine addiction and can cause cancers of the mouth, larynx (voice box), esophagus, lung, and pancreas. Heavy cigar smoking can also increase the risk of heart disease and lung diseases, such as emphysema and chronic bronchitis.

**Cilia:** Hairlike organelles made of microtubules that protrude from the surface of the cell and move liquid past the cell surface; responsible for

movement of many single-celled organisms.

**ciliary body** : A tube-shaped tobacco product that is made of finely cut, cured tobacco leaves wrapped in thin paper. It may also have other ingredients, including substances to add different flavors. A cigarette is lit on one end and smoked, and the smoke is usually inhaled into the lungs. Cigarettes contain nicotine and many cancer-causing chemicals that are harmful to both smokers and nonsmokers. Smoking cigarettes can lead to nicotine addiction and can cause many types of cancer, including cancers of the lung, larynx, mouth, esophagus, throat, kidney, bladder, pancreas, stomach, and cervix, and acute myeloid leukemia. Smoking cigarettes also causes other health problems, including heart disease, stroke, and lung diseases, such as emphysema and chronic bronchitis.

**Ciliates**: A class of protozoans distinguished by short hairs on all or part of their bodies.

**cimetidine**: A substance that is being studied as an anticancer and antiangiogenesis drug. Also called EMD 121974. OR A histamine H(2)-receptor antagonist. Enhancing anti-tumor cell-mediated responses, cimetidine blocks histamine's ability to stimulate suppressor T lymphocyte activity and to inhibit natural killer (NK) cell activity and interleukin-2 production. Cimetidine also may inhibit tumor growth by suppressing histamine's growth-factor activity and blocking histamine-induced stimulation of vascular endothelial growth factor (VEGF), a pro-angiogenic growth factor.

**CIN** : A part of the middle layer of the wall of the eye. The ciliary body includes the ring-shaped muscle that changes the size of the pupil and the shape of the lens when the eye focuses. It also makes the fluid that fills the eye.

**CIN 1** : A drug usually used to treat stomach ulcers and heartburn. It is also commonly used in a regimen to prevent allergic reactions.

**CIN 2** : Abnormal cells are found on the surface of the cervix. CIN is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. CIN is not cancer, but may become cancer and spread to nearby normal tissue. It is graded on a scale of 1 to 3, based on how abnormal the cells look under a microscope and how much of the cervical tissue is affected. For example, CIN 1 has slightly abnormal

cells and is less likely to become cancer than CIN 2 or CIN 3. Also called cervical intraepithelial neoplasia.

**CIN 2/3 :** Slightly abnormal cells are found on the surface of the cervix. CIN 1 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. CIN 1 is not cancer and usually goes away on its own without treatment. Sometimes it becomes cancer and spreads to nearby normal tissue. CIN 1 is sometimes called low-grade or mild dysplasia. Also called cervical squamous intraepithelial neoplasia 1.

**CIN 3 :** Moderately abnormal cells are found on the surface of the cervix. CIN 2 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. CIN 2 is not cancer, but may become cancer and spread to nearby normal tissue if not treated. Treatment for CIN 2 may include cryotherapy, laser therapy, loop electrosurgical procedure (LEEP), or cone biopsy to remove or destroy the abnormal tissue. CIN 2 is sometimes called high-grade or moderate dysplasia. Also called cervical squamous intraepithelial neoplasia 2.

**cinacalcet hydrochloride:** The orally bioavailable hydrochloride salt of the calcimimetic cinacalcet. Cinacalcet increases the sensitivity of calcium-sensing receptors on chief cells in the parathyroid gland to extracellular calcium, thereby reducing parathyroid hormone (PTH) secretion. A reduction in PTH levels inhibits osteoclast activity, which may result in a decrease in cortical bone turnover and bone fibrosis, and normalization of serum calcium and phosphorus levels. In addition, by reducing PTH levels, cinacalcet may reduce PSA levels; PTH appears to raise PSA levels and may increase prostate cancer cell growth.

**cinder cone:** a feature composed of pyroclastic material (not lavas) ejected from a volcanic vent.

**cinder cone:** steep cone of a volcano formed from ash and loose rock.

**cinobufagin:** A bufadienolide compound extracted from the dried venom secreted by the parotid glands of toads and one of the glycosides in the traditional Chinese medicine ChanSu, with potential antineoplastic activity. Although the mechanism of action of cinobufagin is still under investigation, it has been found to suppress cancer cell proliferation and cause apoptosis in cancer cells via a sequence of apoptotic modulators that include mitochondrial Bax and cytosolic chromosome c, and caspases 3, 8,

and 9. Possible upstream mediators of cinobufagin-induced apoptosis include Fas and p53. Check for active clinical trials using this agent.

**cintredekin besudotox:** A recombinant chimeric protein with potent antitumor activity. Cintredekin besudotox is composed of interleukin-13 (IL13), a pleiotropic immunoregulatory cytokine, linked to a mutated form of pseudomonas exotoxin A; this agent targets and kills tumor cells that express the IL13 receptor (IL13R). The IL13 moiety attaches to the IL13R on the tumor cell membrane, facilitating the entry of the exotoxin. The exotoxin moiety induces caspase-mediated apoptosis of tumor cells via a mechanism involving mitochondrial damage; it also catalyzes the transfer of ADP ribose from nicotinamide adenine dinucleotide (NAD) to elongation factor-2 in eukaryotic cells, thereby inactivating elongation factor 2 and inhibiting protein synthesis.

**Cipro :** (Other name for: ciprofloxacin) OR Abnormal cells are found on the surface of the cervix. CIN 2/3 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. CIN 2/3 has features of CIN 2 and CIN 3. It is not cancer, but may become cancer and spread to nearby normal tissue if not treated. Treatment for CIN 2/3 may include cryotherapy, laser therapy, loop electrosurgical procedure (LEEP), or cone biopsy to remove or destroy the abnormal tissue. Also called cervical intraepithelial neoplasia grade 2/3.

**ciprofloxacin:** A synthetic broad spectrum fluoroquinolone antibiotic. Ciprofloxacin binds to and inhibits bacterial DNA gyrase, an enzyme essential for DNA replication. This agent is more active against Gram-negative bacteria than Gram-positive bacteria. Check for active clinical trials using this agent.

**ciprofloxacin :** Severely abnormal cells are found on the surface of the cervix. CIN 3 is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. If not treated, these abnormal cells may become cancer and spread to nearby normal tissue. Treatment for CIN 3 may include cryotherapy, laser therapy, loop electrosurgical procedure (LEEP), or cone biopsy to remove or destroy the abnormal tissue. CIN 3 is sometimes called high-grade or severe dysplasia. Also called cervical squamous intraepithelial neoplasia 3 and stage 0 cervical carcinoma in situ.

**Circadin:** (Other name for: therapeutic melatonin)

**circle:** in a plane, the set of points all equidistant from a given point.

**circuit:** a path through which an electrical current can flow when the path is complete. OR In filament winding, the winding produced by a single revolution of mandrel or form.

**circulation :** A drug that is used to treat infections caused by bacteria and is being studied in the treatment of bladder cancer. Cipro is a type of fluoroquinolone. Also called ciprofloxacin.

**circulatory system:** the transport system in animals.

**circulatory system :** A drug that is used to treat infections caused by bacteria and is being studied in the treatment of bladder cancer. Ciprofloxacin is a type of fluoroquinolone. Also called Cipro.

**circum-Pacific belt:** an earthquake belt that follows the rim of the Pacific Ocean.

**circumcision :** In the body, the flow of blood through the heart and blood vessels, and the flow of lymph through the lymph vessels.

**circumference:** the distance around a circle; equals  $2 \times \pi \times \text{radius}$  or  $\pi \times \text{diameter}$  ( $C = 2\pi r$  or  $\pi d$ ).

**cirtuzumab:** A humanized monoclonal antibody against the extracellular domain of the human receptor tyrosine kinase-like orphan receptor 1 (ROR1), with potential antineoplastic activity. Upon administration, cirtuzumab binds to ROR1 and blocks ROR1-mediated signaling. This prevents tumor cell proliferation in cancer cells overexpressing ROR1. ROR1, also known as neurotrophic tyrosine kinase, receptor-related 1 (NTRKR1), is normally expressed during embryogenesis. It is overexpressed in certain leukemias and solid tumors, but minimally expressed in healthy cells.

**cirque:** a steep-sided, circular hollow carved in the top of a mountain from an alpine glacier.

**cirrhosis :** The system that contains the heart and the blood vessels and moves blood throughout the body. This system helps tissues get enough oxygen and nutrients, and it helps them get rid of waste products. The lymph system, which connects with the blood system, is often considered part of the circulatory system.

**cirrus:** very high clouds formed by ice crystals; look like feathers; usually associated with fair weather.

**CIS:** Configuration interaction, singles. (See CID.) The simplest method for calculating electronically excited states; limited to singly-excited states. Contains no electron correlation and has no effect on the ground state (Hartree-Fock) energy.

**CIS:** Surgery to remove part or all of the foreskin (loose skin that covers the head of the penis).

**cis and trans isomers:** See geometric isomers.

**Cis dominance:** Property of a sequence or a gene that exerts a dominant effect on a gene to which it is linked.

**cis-urocanic acid:** A derivative of the amino acid histidine, formed in the mammalian skin from trans-urocanic acid upon ultraviolet radiation, and protodynamic agent, with potential anti-inflammatory and antiproliferative activity. Upon intravesical instillation of cis-urocanic acid (cis-UCA), this agent is protonated at the imidazolyl moiety in the mildly acidic extracellular tumor environment and penetrates into the cancer cell. Once inside the cell and due to the slightly alkaline pH inside the tumor cell, cis-UCA is deprotonated, i.e. the imidazolyl proton is released into the cytosol which eventually raises the intracellular acidity. This acidification impairs many cellular processes, such as metabolic activity, and may lead to cell cycle arrest, an induction of cellular apoptosis and necrotic cell death. In addition, cis-UCA enhances ERK and JNK signaling pathways by inhibiting the activity of serine/threonine and tyrosine phosphatases.

**cisatracurium besylate:** A non-depolarizing skeletal muscle relaxant of the benzyliisoquinolinium class. Cisatracurium besylate acts as a competitive acetylcholine antagonist that binds to nicotinic receptors at the neuromuscular junction. Compared to other neuromuscular blocking agents, it is intermediate in its onset and duration of action. Cisatracurium besylate is used to maintain neuromuscular relaxation during major surgical procedures, primarily to facilitate endotracheal intubation. Cisatracurium besylate can cause bronchospasms, hypotension, and bradycardia.

**CISD:** Configuration interaction, singles and doubles. A CI that only includes those determinants that correspond to single or double excitations from the reference (which is usually Hartree-Fock). Declining popularity.

**CISNET:** A type of chronic, progressive liver disease in which liver cells are replaced by scar tissue.

**cisplatin:** An inorganic platinum agent (cis-diamminedichloroplatinum) with antineoplastic activity. Cisplatin forms highly reactive, charged, platinum complexes which bind to nucleophilic groups such as GC-rich sites in DNA, inducing intrastrand and interstrand DNA cross-links, as well as DNA-protein cross-links. These cross-links result in apoptosis and cell growth inhibition. or The CIS is the National Cancer Institute's link to the public, interpreting and explaining research findings in a clear and understandable manner, and providing personalized responses to specific questions about cancer. Access the CIS by calling 1-800-4-CANCER (1-800-422-6237), or by using the LiveHelp instant-messaging service at Also called Cancer Information Service.

**cisplatin-e therapeutic implant:** An injectable gel comprised of a collagen matrix containing the inorganic platinum (Pt) agent cisplatin and the sympathomimetic agent epinephrine with potential antineoplastic activity. After intratumoral injection, cisplatin forms highly reactive, positively charged, platinum complexes, which covalently bind to nucleophilic groups in DNA, preferably at the N7 position of guanine bases. This induces both intra- and inter-strand DNA cross-links. In addition, cisplatin forms DNA-Pt-protein cross-links. Cross-link formation results in both the induction of apoptosis and cell growth inhibition. Epinephrine, a potent vasoconstrictor, is added to the gel to both enhance the penetration of cisplatin into tumor tissue and reduce its dispersion into the surrounding tissues. Intratumoral injection of cisplatin-E therapeutic implant may increase local chemotherapeutic efficacy, as compared to the systemic administration of cisplatin, while reducing its systemic toxicity. Check for active clinical trials using this agent.

**Cissing:** The failure of paint to form a continuous film by forming into "droplets". Usually caused by grease or other contamination on the surface being painted.

**Cissing on new paintwork:** The paint can't adhere to the surface because of contamination by oil, grease, wax or polish. So the paint draws back, leaving unpainted areas, usually in the form of small spots. To remedy the situation, allow the surface to dry and thoroughly harden, then rub it down using wet and dry abrasive paper (or waterproof silicon carbide) and warm water with a bit of detergent. Rinse the surface thoroughly and allow to dry before repainting.

**Cistane:** (Other name for: isotretinoin)

**Cistern:** Reservoir for storing water, nowadays usually ceramic or plastic.

**Cistron:** A genetic unit that encodes a single polypeptide chain. OR A unit of DNA or RNA corresponding to one gene.

**citalopram :** A group of researchers supported by the National Cancer Institute (NCI) who use statistical models to help understand how cancer prevention, screening, and treatment programs can affect the number of new cases of cancer diagnosed each year and the number of deaths from cancer each year. The CISNET is now studying breast, colorectal, esophageal, lung, and prostate cancers. The models they create help guide future cancer control strategies, research priorities, policies, and decision making. Also called Cancer Intervention and Surveillance Modeling Network.

**citalopram hydrobromide:** The orally bioavailable hydrobromide salt of the racemic bicyclic phthalene derivative citalopram with antidepressant activity. As a selective serotonin reuptake inhibitor (SSRI), citalopram selectively inhibits the CNS neuronal reuptake of serotonin, thereby potentiating serotonergic activity in the central nervous system (CNS). This agent has minimal effects on the CNS neuronal reuptake of norepinephrine (NE) and dopamine (DA).

**citatumab bogatox:** A fusion protein immunotoxin consisting of a humanized, single-chain monoclonal antibody Fab fragment specific for the epithelial cell adhesion molecule (EpCAM) conjugated with a modified bouganin cytotoxin with potential antineoplastic activity. Citatumab bogatox binds to EpCAM, delivering modified bouganin cytotoxin directly to EpCam-positive tumor cells, which may result in the inhibition of tumor cell protein synthesis and tumor cell death. EpCAM, a cell surface protein, is expressed by a variety of tumor cells and is frequently found in head and neck cancers. Bouganin is a plant-derived ribosome-inactivating protein (RIP), a toxic plant N-glycosidase that depurinates the universally conserved alpha-sarcin loop of ribosomal rRNA, inactivating the ribosome and preventing protein synthesis. Compared to unmodified bouganins, modified bouganins may have a reduced propensity to activate human T cells. Check for active clinical trials using this agent.

**citicoline:** A nutritional supplement and source of choline and cytidine with potential neuroprotective and nootropic activity. Citicoline, also known as cytidine-5-diphosphocholine or CDP-choline, is hydrolyzed into

cytidine and choline in the intestine. Following absorption, both cytidine and choline are dispersed, utilized in various biosynthesis pathways, and cross the blood-brain barrier for resynthesis into citicoline in the brain, which is the rate-limiting product in the synthesis of phosphatidylcholine. This agent also increases acetylcholine (ACh), norepinephrine (NE) and dopamine levels in the central nervous system (CNS). In addition, citicoline is involved in the preservation of sphingomyelin and cardiolipin and the restoration of Na<sup>+</sup>/K<sup>+</sup>-ATPase activity. Citicoline also increases glutathione synthesis and glutathione reductase activity, and exerts antiapoptotic effects. Check for active clinical trials using this agent.

**Citracal:** (Other name for: calcium citrate)

**Citrate synthase:** An enzyme that catalyzes the condensation of acetyl coa with oxaloacetate to form citrate, initiating the citric acid cycle.

**Citric Acid:** Derived from citrus fruit or by fermentation of crude sugar, also used as antioxidant, sequestrant, dispersing agent. Helps adjust pH. No toxicity in diluted amounts.

**Citric acid cycle:** A cyclic series of metabolic reactions that completely oxidize acetyl units to carbon dioxide. Also known as the tricarboxylic acid cycle (after citrate) or the Krebs cycle, after Hans Krebs, who elucidated the cyclic nature of the pathway. OR A cyclic system of enzymatic reactions for the oxidation of acetyl residues to carbon dioxide, in which formation of citrate is the first step; also known as the Krebs cycle or tricarboxylic acid cycle.

**citric acid/potassium-sodium citrate :** A drug used to treat cancers of the bladder, ovaries, and testicles. It is used in patients whose cancer cannot be treated with or has not gotten better with other anticancer treatment. It is also being studied in the treatment of other types of cancer. Cisplatin contains the metal platinum. It kills cancer cells by damaging their DNA and stopping them from dividing. It is a type of DNA crosslinking agent. Also called Platinol and Platinol-AQ.

**Citroma:** (Other name for: magnesium citrate)

**citrovorum factor :** A drug used to treat depression. It belongs to the families of drugs called antidepressant agents and selective serotonin reuptake inhibitors (SSRIs). Also called Celexa.

**Civacir:** (Other name for: hepatitis C immune globulin intravenous)

**cixutumumab:** A fully human IgG1 monoclonal antibody directed against the human insulin-like growth factor-1 receptor (IGF-1R) with potential antineoplastic activity. Cixutumumab selectively binds to membrane-bound IGF-1R, thereby preventing the binding of the natural ligand IGF-1 and the subsequent activation of PI3K/AKT signaling pathway. Downregulation of the PI3K/AKT survival pathway may result in the induction of cancer cell apoptosis and may decrease cancer cellular proliferation. IGF-1R, a receptor tyrosine kinase of the insulin receptor superfamily overexpressed by many cancer cell types, stimulates cell proliferation, enables oncogenic transformation, and suppresses apoptosis; IGF-1R signaling has been implicated in tumorigenesis and metastasis. OR A drug used in the treatment of metabolic acidosis (a disorder in which the blood is too acidic).

**CK2-targeting synthetic peptide CIGB-300:** A synthetic peptide targeting the substrates of casein kinase 2 (CK2), with potential antineoplastic activity. Upon administration and nucleolar localization, CK2-targeting synthetic peptide CIGB-300 binds to phosphoacceptor sites on the CK2's substrates, in particular the oncoprotein nucleophosmin (B23 or NPM1). This blocks the activation of B23 and induces apoptosis, thereby inhibiting tumor cell growth in susceptible tumor cells. CK2, a protein kinase often overexpressed in a variety of cancer cell types, appears to be correlated with malignant transformation, tumor growth and survival. Overexpression of B23 has been correlated with increased cellular growth and proliferation as well as inhibition of differentiation and apoptosis.

**Cladding:** The term used to describe the surface covering of a building particularly in sheeting or boarding.

**Cladding:** The thin-walled metal tube that forms the outer jacket of a nuclear fuel rod. It prevents corrosion of the fuel by the coolant and the release of fission products into the coolant. Aluminum, stainless steel, and zirconium alloys are common cladding materials. OR Sometimes referred to as "sidings," it is extruded PVC-U boards that are used as outdoor weather-resistant façade panels.

**cladribine:** A purine nucleoside antimetabolite analogue. Cladribine triphosphate, a phosphorylated metabolite of cladribine, incorporates into DNA, resulting in single-strand breaks in DNA, depletion of nicotinamide adenine dinucleotide (NAD) and adenosine triphosphate (ATP), and apoptosis. Because this agent is resistant to adenosine deaminase, an

enzyme that inactivates some antineoplastic agents, it is selectively toxic to lymphocytes and monocytes which exhibit little deoxynucleotide deaminase activity. OR A substance being studied in the treatment of some types of cancer. It is a monoclonal antibody that is made in the laboratory and can bind to substances in the body. Cixutumumab blocks the action of a protein needed for cell growth and may kill cancer cells. It is a type of insulin-like growth factor-1 receptor (IGF-1R) inhibitor. Also called IMC-A12.

**Clafen:** (Other name for: cyclophosphamide)

**Claforan:** (Other name for: cefotaxime)

**Clamp:** The part of an injection molding machine incorporating the platens that provides the force necessary to hold the mold closed during injection of the molten resin and open the mold to eject the molded part. OR A part of the injection molding machine that holds the molds closed during the casting process. OR The mechanism that holds the mold in location during the molding process.

**Clamp force:** The force, in tons, that the clamp unit of a molding machine exerts to keep the mold closed during the injection process. OR The force required to hold the mold shut so resin cannot escape during injection. Measured in tons, as in “we have a 700 ton press” OR It is force applied by the machines clamping unit to the mould during filling, packing and holding phases of moulding cycle. Unit is Tons or kN.

**Clamp unit:** That section of the molding machine containing the clamping mechanism This is used to close the mold and keep it closed against injection pressure created by the injection process The clamp unit also contains the ejection mechanism.

**Clamping Area :** The largest rated molding area an injection press can hold closed under full molding pressure.

**CLAMPING FORCE:** In injection molding and in transfer molding, the pressure which is applied to the mold to keep it closed, in opposition to the fluid pressure of the compressed molding material, within the mold cavity (cavities) and the runner system. OR The force applied to the mold to keep it closed, in opposition to the fluid pressure of the compressed molding material within the mold cavity and the runner system.

**CLAMPING PLATE:** A plate fitted to a mold and used to fasten mold to a molding machine. OR A plate fitted to a mold and used to fasten the mold

to a plate OR A plate fitted to a mold and used to fasten mold to a molding machine.

**Clamping Plate:** A plate fitted to a mold and used to fasten the mold to a platen. OR A plate fitted to a mold and used to fasten the mold to a molding machine.

**Clamping Pressure:** The pressure applied to the mold to keep it closed during the molding cycle. OR In injection molding and in transfer molding, the pressure which is applied to the mold to keep it closed, in opposition to the fluid pressure of the compressed molding material. OR The pressure applied to the mold to keep it closed during a cycle of an silicone injection molding machine

**Clamshells:** Clear plastic packaging that showcases an array of products from retail, food, medical, etc. The word clamshell indicates that the formed plastic package has one or more hinges.

**Claravis:** (Other name for: isotretinoin)

**Clarification:** the composite wastewater treatment process consisting of flash mixing of coagulants, pH adjusting chemicals, and/or polyelectrolytes, flocculation, and sedimentation. OR A process in which suspended material is removed from a wastewater. This may be accomplished by sedimentation, with or without chemicals, or filtration.

**Clarifier:** Settling tank, sedimentation basin. A tank or basin in which wastewater is held for a period of time, during which the heavier solids settle to the bottom and the lighter material will float to the water surface. OR a unit which provides for settling and removal of solids from wastewater. OR An additive that increases the transparency of a material. OR An upflow solids contact tank with a volume of one million gallons. The clarifier removes the suspended solids, organic material, taste, odor and color from the waste water. The clarification is accomplished by feeding coagulant, which forms flocs in the water with the impurities, The flocs with the impurities settle readily to the bottom of the clarifier. A rotating rake located in the bottom of the clarifier collects these impurities toward the center of the clarifier and removes them to waste. OR Additive used in resins to improve transparency or translucency. OR Additives used in resins to improve the transparency or translucency of the finished plastic extrusion profiles and other plastic products.

**Clarinol:** (Other name for: conjugated linoleic acid)

**clarithromycin:** A semisynthetic 14-membered ring macrolide antibiotic. Clarithromycin binds to the 50S ribosomal subunit and inhibits RNA-dependent protein synthesis in susceptible organisms. Clarithromycin has been shown to eradicate gastric MALT (mucosa-associated lymphoid tissue) lymphomas, presumably due to the eradication of tumorigenic *Helicobacter pylori* infection. This agent also acts as a biological response modulator, possibly inhibiting angiogenesis and tumor growth through alterations in growth factor expression. Check for active clinical trials using this agent. or A protein found on the surface of many different types of cells. It binds to a substance called stem cell factor (SCF), which causes certain types of blood cells to grow. C-kit may also be found in higher than normal amounts, or in a changed form, on some types of cancer cells, including gastrointestinal stromal tumors and melanoma. Measuring the amount of c-kit in tumor tissue may help diagnose cancer and plan treatment. C-kit is a type of receptor tyrosine kinase and a type of tumor marker. Also called CD117 and stem cell factor receptor.

**Claritin:** (Other name for: loratadine)

**Clarity:** Freedom of haze or cloudiness in a plastic material.

**Clark level I skin cancer :** An anticancer drug that belongs to the family of drugs called antimetabolites.

**Clark level II skin cancer :** An antibiotic drug used in the treatment of infections. It belongs to the family of drugs called macrolides.

**Clark level III skin cancer :** Skin cancer that is found only in the epidermis (outer layer of skin).

**Clark level IV skin cancer :** Skin cancer that has spread from the epidermis (outer layer of skin) down into the papillary dermis (the thin top layer of the dermis).

**Clark level V skin cancer :** Skin cancer that has spread down through the papillary dermis (the thin top layer of the dermis) but not into the reticular dermis (the thick bottom layer of the dermis).

**Clark levels :** Skin cancer that has spread down into the reticular dermis (the thick bottom layer of the dermis).

**class:** a grouping of similar orders.

**Class 1 PI3K family inhibitor XL147:** An orally bioavailable small molecule, targeting the class I phosphatidylinositol 3 kinase (PI3K) family

of lipid kinases, with potential antineoplastic activity. Class 1 PI3K kinase family inhibitor XL147 reversibly binds to class 1 PI3Ks in an ATP-competitive manner, inhibiting the production of the secondary messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3) and activation of the PI3K signaling pathway; this may result in inhibition of tumor cell growth and survival in susceptible tumor cell populations. Activation of the PI3K signaling pathway is frequently associated with tumorigenesis. Dysregulated PI3K signaling may contribute to tumor resistance to a variety of antineoplastic agents including genotoxic agents and receptor tyrosine kinase inhibitors.

**Class I MHC proteins:** Membrane proteins that tightly bind proteolytic fragments of cellular proteins and present them to the scrutiny of T cells. A foreign protein presented in a class I MHC protein provokes attack by killer T cells that initiate apoptosis in the target cell.

**Class II MHC proteins:** Proteins expressed only in antigen-presenting cells; Class II MHC proteins display peptides derived by the destruction of proteins internalized by endocytosis.

**Class switching:** A step in the differentiation of an antibody-producing cells in which the cells switch from producing igm antibodies to producing one or the other classes of antibodies while maintaining the same antigen specificity.

**classical Hodgkin lymphoma :** Skin cancer that has spread down into the subcutaneous tissue (tissue beneath the skin).

**Classified information:** Information that could be used by an adversary to harm the U.S. or its allies and thus must be protected. The NRC has two types of classified information. The first type, known as national security information, is information that is classified by an Executive Order. Its release would damage national security to some degree. The second type, known as restricted data, is information that is classified by the Atomic Energy Act. It would assist individuals or organizations in designing, manufacturing, or using nuclear weapons. Access to both types of information is restricted to authorized persons who have been properly cleared and have a “need to know” the information for their official duties. For additional detail, see Classified Information.

**clastic:** pieces of rocks.

**clastic sedimentary rock:** a sedimentary rock formed from the consolidation of material such as gravel, sand, or clay (sediment) derived from the weathering and breakdown of preexisting rocks.

**clastogen:** A clastogen is any substance which causes chromosomal breaks.

**Clathrin:** A protein that coats the cytosolic side of coated pits and can form a lattice around the pit, excising it from the membrane to form a coated vesicle.

**claudiximab:** A monoclonal antibody directed against the antigen GC182 with potential immunostimulatory and antineoplastic activities. Upon administration, claudiximab specifically binds to GC128, which may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against GC182-expressing tumor cells, resulting in decreased tumor cell proliferation. The CD20-like antigen GC182, a gastric differentiation protein, is often overexpressed on the cell surfaces of a variety of tumor cells, including gastric, pancreatic, esophageal cancer and non-small cell lung cancer (NSCLC) cells. Check for active clinical trials using this agent.

**Claus model :** A system for describing how deep skin cancer has spread into the skin. Levels I-V describe the layers of skin involved.

**clause:** a group of related words, but unlike a phrase, a clause has a subject and predicate.

**Clausius-Clapeyron equation:** The Clausius-Clapeyron equation predicts the temperature dependence of vapor pressures of pure liquids or solids:  $\ln(P/P^\circ) = -\frac{H}{RT} + \frac{H}{RT^\circ}$  where  $P$  is the vapor pressure,  $P^\circ$  is a vapor pressure at a known temperature  $T^\circ$ ,  $H$  is an enthalpy of vaporization if the substance is a liquid or an enthalpy of sublimation if it's a solid,  $R$  is the ideal gas law constant, and  $T$  is the temperature (in kelvins).

**clavicle :** The most common type of Hodgkin lymphoma, which is a cancer of the immune system. Classical Hodgkin lymphoma is marked by the presence of a type of cell called the Reed-Sternberg cell.

**CLD:** A computer program that uses statistics to predict a person's risk for developing breast cancer based on family history.

**Cleanup system:** A system used for continuously filtering and demineralizing a reactor coolant system to reduce contamination levels and

to minimize corrosion.

**clear cell :** One of a pair of bones at the base of the front of the neck. The clavicles connect the breastbone to the shoulder blades. Also called collarbone.

**clear cell adenocarcinoma :** A type of disorder that affects the lungs and other parts of the respiratory system. It usually develops slowly, and may get worse over time. CLD may be caused by smoking tobacco or by breathing in secondhand tobacco smoke, chemical fumes, dust, or other forms of air pollution. Types of CLD include asthma, chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, asbestosis, pneumonitis, and other lung conditions. Also called chronic lung disease.

**clear cell carcinoma :** A type of cell that looks clear inside when viewed under a microscope.

**clear cell sarcoma of soft tissue :** A rare type of tumor, usually of the female genital tract, in which the insides of the cells look clear when viewed under a microscope. Also called clear cell carcinoma and mesonephroma.

**clear cell sarcoma of the kidney :** A rare type of tumor, usually of the female genital tract, in which the insides of the cells look clear when viewed under a microscope. Also called clear cell adenocarcinoma and mesonephroma.

**Clear Coating:** A transparent protective and/or decorative film; generally the final coat of sealer applied to automotive finishes.

**CLEAR COATING:** A transparent protective and/or decorative film.

**clear cutting:** A forest-management technique that involves harvesting all the trees in one area at one time.

**Clearance:** The space between components in a mechanical system which is present to allow for manufacturing, thermal, and dynamic variations in the size and position of the components.

**Clearcole:** A mixture of glue-size and whiting used as a primer or undercoat beneath size-bound distemper. Also spelt clairolle and clearcolle.

**clearing fractions:** A method of simplifying an equation by multiplying both sides of the equation by the least common denominator before solving it. This method results in an equation with only integers and no fractions.

**Cleatrac Belting (CTB):** Precision balanced weave wire mesh fabric consisting of alternating right and left-hand spirals joined by crimped connecting rods.

**cleavage:** the ability of a mineral to break along preferred directions, usually along the faces of layered crystals. OR the way a mineral splits or breaks along weak bonds in planes.

**cleaved :** A soft tissue tumor that begins in a tendon (tough, cord-like tissue that connects muscle to bone or to another part of the body). Under the microscope, clear cell sarcoma of soft tissue may look a lot like melanoma (a type of skin cancer). Clear cell sarcoma of soft tissue usually occurs in the leg or arm and it often spreads to nearby lymph nodes. It is most common in young adults.

**clergy :** A rare type of kidney cancer, in which the inside of the cells look clear when viewed under a microscope. Clear cell sarcoma can spread from the kidney to other organs, most commonly the bone, but also including the lungs, brain, and soft tissues of the body.

**clevidipine butyrate injectable emulsion:** An injectable phospholipid emulsion containing the butyrate salt of the synthetic, short-acting, dihydropyridine L-type calcium channel antagonist clevidipine with antihypertensive activity. Clevidipine specifically binds to calcium channels in vascular smooth muscle cells, inhibiting the influx of extracellular calcium ions into vascular smooth muscle cells. This results in dilatation of systemic arteries, a decrease in systemic vascular resistance and so a decrease in arterial blood pressure. This agent is metabolized by esterases in the blood and extravascular tissues to an inactive carboxylic acid metabolite.

**Cleviprex:** (Other name for: clevidipine butyrate injectable emulsion)

**clevidine:** A synthetic pyrimidine analogue with activity against hepatitis B virus (HBV). Intracellularly, clevidine is phosphorylated to its active metabolites, clevidine monophosphate and triphosphate. The triphosphate metabolite competes with thymidine for incorporation into viral DNA, thereby causing DNA chain termination and inhibiting the function of HBV DNA polymerase (reverse transcriptase). Clevidine has a long half-life and shows significant reduction of covalently closed circular DNA (cccDNA), therefore the patient is less likely to have a relapse after treatment is discontinued.

**cliché:** trite, overused expressions, many of which rely on figurative language and should be avoided in writing.

**climate:** the overall temperature, precipitation, and weather conditions for an area. OR The statistical collection and representation of the weather conditions for a specified area during a specified time interval, usually decades, together with a description of the state of the external system or boundary conditions. The properties that characterize the climate are thermal (temperatures of the surface air, water, land, and ice), kinetic (wind and ocean currents, together with associated vertical motions and the motions of air masses, aqueous humidity, cloudiness and cloud water content, groundwater, lake lands, and water content of snow on land and sea ice), and static (pressure and density of the atmosphere and ocean, composition of the dry air, salinity of the oceans, and the geometric boundaries and physical constants of the system). These properties are interconnected by the various physical processes such as precipitation, evaporation, infrared radiation, convection, advection, and turbulence.

**climate change:** The long-term fluctuations in temperature, precipitation, wind, and all other aspects of the Earth's climate. External processes, such as solar-irradiance variations, variations of the Earth's orbital parameters (eccentricity, precession, and inclination), lithosphere motions, and volcanic activity, are factors in climatic variation. Internal variations of the climate system also produce fluctuations of sufficient magnitude and variability to explain observed climate change through the feedback processes interrelating the components of the climate system.

**climate sensitivity:** The magnitude of a climatic response to a perturbing influence. In mathematical modeling of the climate, the difference between simulations as a function of change in a given parameter.

**climate signal:** A statistically significant difference between the control and disturbed (see climate sensitivity) simulations of a climate model.

**climate system:** The five physical components (atmosphere, hydrosphere, cryosphere, lithosphere, and biosphere) that are responsible for the climate and its variations.

**climate variation:** The change in one or more climatic variables over a specified time.

**climatic analog:** A past climate situation in which changes similar to the present occurred. Used in making climatic projections.

**climatic anomaly:** The deviation of a particular climatic variable from the mean or normal over a specified time.

**climatic optimum:** The period in history from about 5000 to about 2500 B.C. during which surface air temperatures were warmer than at present in nearly all regions of the world. In the Arctic region, the temperature rose many degrees, and in temperate regions, the increase was 1.0 degrees - 1.7 degrees C. In this period, glaciers and ice sheets receded greatly, and the melt-water raised sea level by about 3 meters.

**clindamycin phosphate:** The phosphate salt form of clindamycin, a semi-synthetic, chlorinated broad spectrum antibiotic produced by chemical modification of lincomycin. Clindamycin phosphate is used in topical preparations.

**clindamycin/hydrocortisone lotion:** A topical lotion, containing clindamycin and hydrocortisone, with antibacterial and anti-inflammatory activities. Clindamycin, a lincomycin antibiotic, binds to the 50S subunit of the bacterial ribosome, thereby inhibiting bacterial protein synthesis. As a glucocorticoid agonist, hydrocortisone promotes protein catabolism, gluconeogenesis, capillary wall stability, renal excretion of calcium, and suppression of immune and inflammatory responses.

**clinical :** Having to do with the appearance of cells when viewed under a microscope. The nucleus of cleaved cells appears divided or segmented.

**clinical breast exam :** Ordained individuals who perform spiritual and/or religious functions.

**clinical practice guidelines :** Having to do with the examination and treatment of patients.

**clinical research :** A physical exam of the breast performed by a health care provider to check for lumps or other changes. Also called CBE.

**clinical researcher :** Guidelines developed to help health care professionals and patients make decisions about screening, prevention, or treatment of a specific health condition.

**clinical resistance :** Research in which people, or data or samples of tissue from people, are studied to understand health and disease. Clinical research helps find new and better ways to detect, diagnose, treat, and prevent disease. Types of clinical research include clinical trials, which test new

treatments for a disease, and natural history studies, which collect health information to understand how a disease develops and progresses over time.

**clinical series :** A health professional who works directly with patients, or uses data from patients, to do research on health and disease and to develop new treatments. Clinical researchers may also do research on how health care practices affect health and disease.

**clinical stage :** The failure of a cancer to shrink after treatment.

**clinical staging :** A case series in which the patients receive treatment in a clinic or other medical facility.

**clinical study :** The stage of cancer (amount or spread of cancer in the body) that is based on tests that are done before surgery. These include physical exams, imaging tests, laboratory tests (such as blood tests), and biopsies.

**Clinical trial:** A scientific study in which physician-researchers study the effects of potential medicines on people; usually conducted in three phases (I, II, and III) that determine safety, whether the treatment works, and if it's better than current therapies, respectively

**clinical trial :** A method used to find out the stage of cancer (amount or spread of cancer in the body) using tests that are done before surgery. These include physical exams, imaging tests, laboratory tests (such as blood tests), and biopsies.

**clinical trial phase :** A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called clinical trial.

**clinical trial sponsor :** A type of research study that tests how well new medical approaches work in people. These studies test new methods of screening, prevention, diagnosis, or treatment of a disease. Also called clinical study.

**clinician :** A part of the clinical research process that answers specific questions about whether treatments that are being studied work and are safe. Phase I trials test the best way to give a new treatment and the best dose. Phase II trials test whether a new treatment has an effect on the disease. Phase III trials compare the results of people taking a new treatment with the results of people taking the standard treatment. Phase IV

trials are done using thousands of people after a treatment has been approved and marketed, to check for side effects that were not seen in the phase III trial.

**Clino-San vaginal lubricant:** A vaginal lubricant formulated as a topical gel used to prevent and treat vaginal dryness. With a pH similar to that of normal vaginal discharge, Clino-San vaginal lubricant may reduce dryness, pain and irritation often caused by insufficient vaginal discharge due to atrophy of the vulvovaginal mucosa.

**ClinOleic:** (Other name for: olive oil/soya oil/egg lecithin-based emulsion)

**Clinoril:** (Other name for: sulindac)

**clioquinol:** An orally bioavailable, lipophilic, copper-binding, halogenated 8-hydroxyquinoline with antifungal, antiparasitic and potential antitumor activities. Clioquinol forms a stable chelate with copper (copper (II) ions), which inhibits the chymotrypsin-like activity of the proteasome; consequently, ubiquitinated proteins may accumulate in tumor cells, followed by tumor cell apoptosis and the inhibition of tumor angiogenesis. In addition, the clioquinol-copper complex appears to decrease the expression of androgen receptors (AR) in human copper-enriched prostate cancer cells. Serum levels of copper are often elevated in patients with cancer; copper chelation may inhibit copper-dependent endothelial cell proliferation and tumor secretion of angiogenic factors.

**CLL:** A person, company, institution, group, or organization that oversees or pays for a clinical trial and collects and analyzes the data. Also called trial sponsor.

**CLL/SLL:** A health professional who takes care of patients.

**clobetasol propionate:** The propionate salt form of clobetasol, a topical synthetic corticosteroid with anti-inflammatory, anti-pruritic, and vasoconstrictive properties. Clobetasol propionate exerts its effect by binding to cytoplasmic glucocorticoid receptors and subsequently activates glucocorticoid receptor mediated gene expression. This results in synthesis of certain anti-inflammatory proteins, while inhibiting the synthesis of certain inflammatory mediators. Specifically, clobetasol propionate appears to induce phospholipase A2 inhibitory proteins, thereby controlling the release of the inflammatory precursor arachidonic acid from membrane phospholipids by phospholipase A2.

**clodronate** : An indolent (slow-growing) cancer in which too many immature lymphocytes (white blood cells) are found mostly in the blood and bone marrow. Sometimes, in later stages of the disease, cancer cells are found in the lymph nodes and the disease is called small lymphocytic lymphoma. Also called chronic lymphocytic leukemia.

**clodronate disodium**: The disodium salt of a nitrogen-free bisphosphonate analog of naturally occurring pyrophosphate. Clodronate binds to calcium and inhibits osteoclastic bone resorption and hydroxyapatite crystal formation and dissolution, resulting in a reduction of bone turnover. This agent may control malignancy-associated hypercalcemia, inhibit osteolytic bone metastasis and decrease pain.

**clofarabine**: A second generation purine nucleoside analog with antineoplastic activity. Clofarabine is phosphorylated intracellularly to the cytotoxic active 5'-triphosphate metabolite, which inhibits the enzymatic activities of ribonucleotide reductase and DNA polymerase, resulting in inhibition of DNA repair and synthesis of DNA and RNA. This nucleoside analog also disrupts mitochondrial function and membrane integrity, resulting in the release of pre-apoptotic factors, including cytochrome C and apoptotic-inducing factor, which activate apoptosis.

**clofarabine** : An indolent (slow-growing) cancer in which immature lymphocytes (white blood cells) are found in the blood and bone marrow and/or in the lymph nodes. CLL (chronic lymphocytic leukemia) and SLL (small lymphocytic lymphoma) are the same disease, but in CLL cancer cells are found mostly in the blood and bone marrow. In SLL cancer cells are found mostly in the lymph nodes. CLL/SLL is a type of non-Hodgkin lymphoma. Also called chronic lymphocytic leukemia/small lymphocytic lymphoma.

**Clofarex**: (Other name for: clofarabine)

**clofibrate**: An aryloxyisobutyric acid derivate with antihyperlipidemic activity. Although the exact mechanism of action has not been fully characterized, clofibrate may enhance the conversion of very-low-density lipoprotein (VLDL) to low-density lipoprotein (LDL), decreasing the production of hepatic VLDL, inhibiting cholesterol production, and increasing fecal excretion of neutral sterols.

**Clolar**: (Other name for: clofarabine) A drug used in the treatment of hypercalcemia (abnormally high levels of calcium in the blood) and cancer

that has spread to the bone (bone metastases). It may decrease pain, the risk of fractures, and the development of new bone metastases.

**Clomid:** (Other name for: clomiphene citrate)

**clomiphene citrate:** The citrate salt form of clomiphene, a triphenylethylene nonsteroidal ovulatory stimulant evaluated for antineoplastic activity against breast cancer. Clomiphene has both estrogenic and anti-estrogenic activities that compete with estrogen for binding at estrogen receptor sites in target tissues. This agent causes the release of the pituitary gonadotropins follicle stimulating hormone (FSH) and luteinizing hormone (LH), leading to ovulation. Check for active clinical trials using this agent.

**Clone:** One of a group of genetically identical cells or organisms derived from a common ancestor. OR An identical copy of a DNA sequence or entire gene; one or more cells derived from and identical to a single ancestor cell OR to isolate a gene or specific sequence of DNA.

**clonidine hydrochloride:** The hydrochloride salt form of clonidine, an imidazoline derivative and centrally-acting alpha-adrenergic agonist as well as antagonist with antihypertensive activity. Clonidine hydrochloride binds to and stimulates central alpha-2 adrenergic receptors, thereby decreasing sympathetic outflow to the heart, kidneys, and peripheral vasculature. The reduction in sympathetic outflow, leads to decreased peripheral vascular resistance, decreased blood pressure, and decreased heart rate. or A drug used to treat certain types of acute lymphoblastic leukemia in children. It is also being studied in the treatment of other types of cancer. Clofarabine is a type of nucleoside analog. Also called Clolar.

**Clonidine Lauriad:** (Other name for: clonidine-containing mucoadhesive buccal tablet)

**clonidine-containing mucoadhesive buccal tablet:** An extended release, proprietary mucoadhesive buccal tablet formulation containing the hydrochloride salt form of clonidine, the imidazoline derivative and adrenergic alpha 2 receptor agonist, with anti-inflammatory activity. Upon contact of the tablet with the buccal mucosa, clonidine binds to the adrenergic receptors on macrophages and lymphocytes and may reduce the release of pro-inflammatory mediators such as tumor necrosis factor alpha (TNFalpha). As a result, this agent may prevent chemoradiation therapy-induced mucositis.

**cloning:** The production of large numbers of identical DNA molecules or cells from a single ancestral DNA molecule or cell.

**Cloning vector:** A self-replicating entity to which foreign DNA can be covalently attached for purposes of amplification in host cells.

**clopidogrel bisulfate:** A thienopyridine with antiplatelet activity.

Clopidogrel bisulfate irreversibly alters the platelet receptor for adenosine diphosphate (ADP), thereby blocking the binding of ADP to its receptor, inhibiting ADP-mediated activation of the glycoprotein complex GPIIb/IIIa, and inhibiting fibrinogen binding to platelets and platelet adhesion and aggregation.

**Cloretazine :** (Other name for: larmustine) or A drug used to treat certain types of acute lymphoblastic leukemia in children. It is also being studied in the treatment of other types of cancer. Clolar is a type of nucleoside analog. Also called clofarabine.

**Close-packing theory:** A theory of crystal packing advanced by Kitaigorodskii that states a crystal will contain the closest possible packing of molecules.

**closed system:** A closed system is a system from which the products of reactions taking place within the system cannot escape. OR A system that exchanges neither matter nor energy with the surroundings. See also system.

**Closed-head drum:** A container that is supplied to the customer with the TOP and BOTTOM ends seamed to the body. (Also known as a tight-head drum.)

**Closed-loop Control :** System for monitoring and automatically adjusting injection molding process conditions such as temperature, pressure and time. The automatic changes keep part production within preset tolerances.

**closed-shell electron configuration:** a stable electron configuration in which all of the electrons are located in the lowest energy orbitals available.

**Clostridium butyricum-containing probiotic:** A probiotic containing the anaerobic, butyric acid-forming Gram-positive bacterium *Clostridium butyricum* (*C. butyricum*), with potential immunomodulatory activity. Upon oral administration of *C. butyricum*-containing probiotic, *C. butyricum* modulates the composition of the normal gastrointestinal (GI) microflora and help maintain adequate colonization of the GI tract, thereby improving

digestion and preventing GI disturbances. This bacterium creates an environment unfavorable to pathogens by adhering to human epithelial cells, thereby forming a protective mucosal barrier. This prevents attachment of pathogens and reduces the risk of infection. Dietary supplementation with this bacterium may restore or enhance intestinal immunity.

**Clostridium difficile :** A drug used to treat high blood pressure. It is also being studied in the treatment of certain types of cancer pain and as an aid to stop smoking. It blocks the release of chemicals from nerve endings that make blood vessels constrict (get narrower). Clonidine hydrochloride is a type of antihypertensive agent and a type of alpha-adrenergic agonist. Also called Catapres.

**Clostridium novyi-NT spores:** Spores of Clostridium novyi-NT, an attenuated strain of the obligate anaerobe Clostridium novyi, with potential immunostimulating and oncolytic activities. Upon intravenous administration, Clostridium novyi-NT spores germinate exclusively in hypoxic tissue, such as avascular regions of tumors. Germination results in lysis and destruction of surrounding viable tumor cells. Although C. novyi-NT spores do not proliferate in oxygenated tumor regions, they may stimulate the immune system to mount a cytolytic immune response against tumor cells, both hypoxic and well-oxygenated.

**closure:** A mathematical term which says that if you operated on any two real numbers A and B with +, -, \* or /, you get a real number. OR A device used to seal off the opening of the bottle to prevent the loss of its contents. OR A metal or plastic cap which effects a primary seal when properly applied to the container.

**clotrimazole:** A synthetic, imidazole derivate with broad-spectrum, antifungal activity. Clotrimazole inhibits biosynthesis of sterols, particularly ergosterol, an essential component of the fungal cell membrane, thereby damaging and affecting the permeability of the cell membrane. This results in leakage and loss of essential intracellular compounds, and eventually causes cell lysis.

**cloud:** A visible mass of condensed water vapor particles or ice suspended above the Earth's surface. Clouds may be classified on their visible appearance, height, or form.

**cloud albedo:** Reflectivity that varies from less than 10 to more than 90% of the insolation and depends on drop sizes, liquid water content, water vapor content, thickness of the cloud, and the sun's zenith angle. The smaller the drops and the greater the liquid water content, the greater the cloud albedo, if all other factors are the same.

**cloud feedback:** The coupling between cloudiness and surface air temperature in which a change in surface temperature could lead to a change in clouds, which could then amplify or diminish the initial temperature perturbation. For example, an increase in surface air temperature could increase the evaporation; this in turn might increase the extent of cloud cover. Increased cloud cover would reduce the solar radiation reaching the Earth's surface, thereby lowering the surface temperature. This is an example of negative feedback and does not include the effects of longwave radiation or the advection in the oceans and the atmosphere, which must also be considered in the overall relationship of the climate system.

**CLOUD POINT:** Anionics - the temperature at which a product becomes turbid when it is cooled under specific conditions.

**clove cigarette :** A drug used to treat acute myelogenous leukemia (AML). It is also being studied in the treatment of several other types of cancer. It blocks cell growth by damaging the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called laromustine and Onrigin.

**cluster sampling:** (i) A method of sampling in which the population is divided into aggregates (or clusters) of items bound together in a certain manner. A sample of these clusters is taken at random and all the items which constitute them are included in the sample (ISO, 1977); (ii) a sampling method in which each unit selected is a group of persons (all persons in a city block, a family, etc.) rather than an individual (Last, 1988).

**cMet CAR-mRNA electroporated autologous T lymphocytes:** A preparation of autologous T-lymphocytes that have been electroporated with an mRNA encoding a chimeric antigen receptor (CAR) consisting of an anti-human hepatocyte growth factor receptor (HGFR or cMet) scFv (single chain variable fragment) and the zeta chain of the TCR/CD3 complex (CD3-zeta) coupled to the co-stimulatory molecule 4-1BB (CD137), with potential antineoplastic activities. Upon intratumoral administration, cMet CAR-mRNA electroporated autologous T lymphocytes direct T-cells to

cMet-expressing tumor cells, which induces a selective toxicity in cMet-expressing tumor cells and causes tumor cell lysis. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of cMet. The inclusion of the 4-1BB signaling domain may increase the antitumor activity as compared to the inclusion of the CD3-zeta chain alone. The mRNA CAR is expressed for a limited amount of time, which can prevent serious, unforeseen side effects. cMet, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis.

**CMF:** A type of bacterium found in human and animal waste. *Clostridium difficile* is a common cause of diarrhea that occurs in hospitals. It can also cause diarrhea or other intestinal disorders in patients treated with antibiotics.

**CMF regimen:** A chemotherapy regimen consisting of cyclophosphamide, methotrexate, and fluorouracil, which may be used in the adjuvant setting for the treatment of nonmetastatic breast cancer or alone for the treatment of metastatic breast cancer.

**CMF regimen :** A type of cigarette that is made in Indonesia. It is made using a mixture of tobacco, cloves, and other ingredients. Clove cigarettes contain nicotine and many cancer-causing chemicals that are harmful to both smokers and nonsmokers. Smoking clove cigarettes can lead to nicotine addiction and can cause lung cancer and other lung conditions. Also called kretek.

**CML:** An abbreviation for a chemotherapy combination used alone or with other therapies to treat breast cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs cyclophosphamide, methotrexate, and fluorouracil. Also called CMF regimen.

**CMML:** An abbreviation for a chemotherapy combination used alone or with other therapies to treat breast cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs cyclophosphamide, methotrexate, and fluorouracil. Also called CMF.

**CMS:** An indolent (slow-growing) cancer in which too many myeloblasts are found in the blood and bone marrow. Myeloblasts are a type of immature blood cell that makes white blood cells called myeloid cells. CML may get worse over time as the number of myeloblasts increases in

the blood and bone marrow. This may cause fever, fatigue, easy bleeding, anemia, infection, a swollen spleen, bone pain, or other signs and symptoms. CML is usually marked by a chromosome change called the Philadelphia chromosome, in which a piece of chromosome 9 and a piece of chromosome 22 break off and trade places with each other. It usually occurs in older adults and rarely occurs in children. Also called chronic granulocytic leukemia, chronic myelogenous leukemia, and chronic myeloid leukemia.

**CMV:** A slowly progressing type of myelodysplastic/myeloproliferative disease in which too many myelomonocytes (a type of white blood cell) are in the bone marrow, crowding out other normal blood cells, such as other white blood cells, red blood cells, and platelets. Also called chronic myelomonocytic leukemia.

**CMV pp65 peptide:** A peptide derived from cytomegalovirus (CMV) internal matrix protein pp65. CMV pp65 peptide antigen is used in recombinant vaccinia virus as an HLA-A-restricted epitope to produce vaccines and specific CD8+ and CD4+ cell responses against CMV infection, a serious complication of allogeneic bone marrow transplantation (BMT). In BMT, CMV infection may be prevented by passive immunization with donor-derived CMV-pp65-specific T-cell clones if provided early post-BMT.

**CMVpp65-A\*0201 peptide vaccine:** A peptide-based cancer vaccine containing a mutated form of the HLA-A\*0201-restricted cytomegaloviral epitope CMVpp65(495-503) with potential immunostimulatory and antitumor activities. Upon subcutaneous administration, CMVpp65-A\*0201 peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against CMV-positive cells, resulting in cell lysis. HLA-A\*0201 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*0201 may improve antigenic peptide immunogenicity. CMVpp65, a tegument protein of the herpes virus CMV, is the main viral antigen found in peripheral blood mononuclear cells (PBMCs) after viral infection and may activate cell-mediated immunity.

**CMVpp65/gB plasmid vaccine ASP0113:** A poloxamer-formulated, bivalent DNA vaccine containing two plasmids encoding both the human cytomegaloviral (CMV) tegument phosphoprotein 65 (pp65), a major

internal matrix protein, and glycoprotein B (gB), an important CMV component responsible for attachment and entry into cells, with potential immunostimulatory properties. Upon intramuscular injection of CMVpp65/gB plasmid vaccine ASP0113, the expressed proteins may activate the immune system to mount both cellular and humoral immune responses against CMV-positive cells. This results in cell lysis of CMV-infected cells and prevents both viral replication and the development of CMV disease. This vaccine also provides active immunization and protective immunity against CMV infection in CMV-negative patients exposed to infected donor cells or tissues in transplant recipients. CMV infection can cause serious complications in patients receiving either allogeneic hematopoietic cell transplants (HCT) or solid organ transplants. The poloxamer-based delivery system enhances DNA delivery.

**CNDO:** A semi-empirical method ("complete neglect of differential overlap").

**CNDO-109-activated allogeneic natural killer cells:** A preparation of non-interleukin-2 primed, tumor activated allogeneic natural killer (NK) cells with potential immunostimulating activity. The allogeneic NK cells obtained from a first or second degree relative of the patient are co-incubated with a lysate from the CTV-1 cell line, a minimally differentiated myeloid line derived from an acute myelogenous leukemia patient. Infusion of CNDO-109-activated allogeneic NK cells may be able to lyse and destroy NK-resistant tumor cells and a broad spectrum of tumor cells. Check for active clinical trials using this agent.

**CNGRC peptide-TNF alpha conjugate:** A cytokine-peptide conjugate composed of the cytokine tumor necrosis factor alpha (TNF-alpha) chemically linked to the peptide CNGRC. The peptide moiety CNGRC, a ligand for the membrane-bound metalloprotease CD13, binds to endothelial cells of the angiogenic vasculature that express CD13 (also known as aminopeptidase N); subsequently, the TNF-alpha moiety induces apoptosis in endothelial cells expressing CD13, thereby inhibiting tumor-associated angiogenesis.

**cnicin :** A condition that may occur in patients who have had surgery to remove a tumor in certain parts of the brain, including the cerebellum. CMS usually appears 1 or 2 days after surgery. Symptoms include loss of speech, trouble swallowing and eating, loss of balance, trouble walking, loss of

muscle tone, mood swings, and changes in personality. Many of these symptoms go away over time. Also called cerebellar mutism syndrome.

**CNS:** A virus that may be carried in an inactive state for life by healthy individuals. It is a cause of severe pneumonia in people with a suppressed immune system, such as those undergoing bone marrow transplantation or those with leukemia or lymphoma. Also called cytomegalovirus.

**CNS depressant :** A substance found in certain plants, including blessed thistle. It has been used in some cultures to treat certain medical problems. It may have anti-inflammatory and anticancer effects. Cnicin is a type of sesquiterpene lactone.

**CNS metastasis :** The brain and spinal cord. Also called central nervous system.

**CNS PNET :** A type of drug that slows down brain activity, which causes the muscles to relax and calms and soothes a person. CNS depressants are used to treat insomnia (trouble sleeping), anxiety, panic attacks, and seizures. They may also be used to relieve anxiety and tension before surgery. Examples of CNS depressants are benzodiazepines, barbiturates, and certain sleep medicines. CNS depressants are sometimes called sedatives or tranquilizers. Also called central nervous system depressant.

**CNS prophylaxis :** Cancer that has spread from the original (primary) tumor to the central nervous system (CNS). Also called central nervous system metastasis.

**CNS sanctuary therapy :** A type of cancer that arises from a particular type of cell within the brain or spinal cord. Also called central nervous system primitive neuroectodermal tumor.

**CNS stimulant :** Chemotherapy or radiation therapy given to the central nervous system (CNS) as a preventive treatment. It kills cancer cells that may be in the brain and spinal cord, even though no cancer has been detected there. Also called central nervous system prophylaxis, central nervous system sanctuary therapy, and CNS sanctuary therapy.

**CNS tumor :** Chemotherapy or radiation therapy given to the central nervous system (CNS) as a preventive treatment. It kills cancer cells that may be in the brain and spinal cord, even though no cancer has been detected there. Also called central nervous system prophylaxis, central nervous system sanctuary therapy, and CNS prophylaxis.

**CNTO 328:** A type of drug that increases the levels of certain chemicals in the brain and increases alertness, attention, energy, and physical activity. CNS stimulants also raise blood pressure and increase heart rate and breathing rate. They are used to treat depression, attention deficit hyperactivity disorder (a disorder in which a person has problems paying attention, controlling actions, and remaining still or quiet), and narcolepsy (a sleep disorder). Also called central nervous system stimulant.

**CNV:** Refers to the genetic trait involving the number of copies of a particular gene present in the genome of an individual. Genetic variants, including insertions, deletions, and duplications of segments of DNA, are also collectively referred to as CNVs. CNVs account for a significant proportion of the genetic variation between individuals. Also called copy number variant.

**co-culture :** The small bone at the bottom of the spine. It is made up of 3-5 fused bones. Also called tailbone.

**Co-extrusion:** The simultaneous extrusion of two or more different thermoplastic resins into a sandwich-like film with clearly distinguishable individual layers. This involves a process where parts are blow-molded with walls containing two or more layers of different material. Coextrusion offers wide latitude for material selection and also allows the use of recycled materials. A material with good barrier properties, for example, can be used for the inside and outside surfaces of a blow molded bottle, while recycled material can be used for the internal layer. (Modern Plastics Encyclopedia 1995). OR The technique of extruding two or more materials through a single die being fed by separate extruders. OR The process used to form a multilayer structure from two or more polymers. OR The process of combining two or more layers of extrudate to produce a multiple layer product in a single step. OR The process of extruding two or more materials through a single die with two or more orifices arranged so that the extrudates merge and weld together into a laminar structure before chilling. OR involves the extrusion process where two or more layers of different material are extruded together to form the wall of the tubing or item being formed.

**Co-Injection:** Simultaneous or near simultaneous injection of multiple materials.

**Co-Rax:** (Other name for: warfarin)

**co-trimoxazole :** A substance used to make drugs that prevent and treat blood clots in blood vessels and treat certain heart conditions. Coumarin is taken from certain plants and can also be made in the laboratory. It is a type of anticoagulant.

**coactivated T cell :** A tumor of the central nervous system (CNS), including brain stem glioma, craniopharyngioma, medulloblastoma, and meningioma. Also called central nervous system tumor.

**Coactivator:** A molecule that functions together with a protein apoactivator. For example, cAMP is a coactivator of the CAP protein.

**Coagulant :** Coagulation is the first step in separation process, where impurities in the water are collected to larger coagulated particles with the aid of coagulant. The coagulant is a water treatment chemical based on aluminum or iron salts. The coagulation is usually followed by flocculation in which, with the aid of polymers, the coagulated particles are bound together and even larger flocculated particles are formed. The large particles are then separated from the water with suitable separation process like clarification, flotation or filtration. See also "Flocculant."

**Coagulants:** Chemicals which cause very fine particles to clump (floc) together into larger particles. This makes it easier to separate the solids from the water by settling, skimming, draining, or filtering.

**coagulation:** the clumping of particles in order to settle out impurities; often induced by chemicals such as lime or alum. OR

Coagulation and coalescence are both words that are used to describe what happens when small particles in a dispersion combine together to form large ones. One example is what happens to milk (a nice disperse emulsion) if it is left at the back of the fridge too long. Coagulation is used when the particles that are combining are more or less solids, and coalescence is usually restricted to droplets of liquid.

**coal:** a dark-colored sedimentary rock that contains a high percentage of organic plant material.

**Coalesce:** To combine into one body or to grow together.

**COALESCING:** The settling or drying of an emulsion paint as the water evaporates.

**Coarse stuff:** The first coating in plaster work particularly on lathing or rough brickwork.

**coast:** the strip of land near the ocean that includes the beach and the immediate inland area beside it.

**coastal straightening:** the process of the headlands being cut back and the flanking beaches being widened.

**coastal zone:** Lands and waters adjacent to the coast that exert an influence on the uses of the sea and its ecology or whose uses and ecology are affected by the sea.

**Coastdown:** An action that permits the reactor power level to decrease gradually as the fuel in the core is depleted.

**Coat:** Term used generally to describe a single application of any type of paint or varnish.

**Coated pits:** Specialized regions of the plasma membrane containing localized cell-membrane receptors. The cytosolic side of these indentations is coated with the protein clathrin.

**Coating:** A paint, varnish, lacquer or other finish used to create a protective and/or decorative layer. Generally used to refer to paints and coatings applied in an industrial setting as part of the original equipment manufacturer's (OEM) process.

**Coating:** A uniform layer of chemical primers or adhesives applied to a surface to produce a chemical bond between the liquid silicone rubber and substrate. May also refer to 2-component silicone molding or special surface treatments that can be applied to silicone rubber to achieve desired properties OR Plastic that has not been recycled commonly has coating of a substrate by extruding a thin film of molten polymer plastic and pressing it onto the substrate.

**COATING:** paint, varnish, lacquer or other finish used to create a protective and/or decorative layer.

**cobalamin:** See coenzyme B12.

**cobalamin :** A drug used to treat a rare condition called Castleman disease in patients who do not have HIV or human herpesvirus 8. It is also being studied in the treatment of multiple myeloma. CNTO 328 binds to a protein called interleukin-6 (IL-6), which is made by some white blood cells and other cells in the body. CNTO 328 may help reduce inflammation and stop the growth of cancer cells or abnormal blood cells. It is a type of

monoclonal antibody. Also called anti-IL-6 chimeric monoclonal antibody, cCLB8, siltuximab, and Sylvant.

**Cobalamin (vitamin B<sub>12</sub>):** A complex taking part in a number of reactions including the formation of deoxyribonucleosides from ribonucleosides.

**Cobalt:** Symbol:"Co" Atomic Number:"27" Atomic Mass: 58.93amu. Cobalt is one of the transition elements. You can find cobalt in magnets, stainless steel, pottery, and Vitamin B-12.

**cobalt 60 :** A T cell that has been coated with monoclonal antibodies to enhance its ability to kill tumor cells.

**Cobalt accelerator:** Accelerates cure of polyester resins.

**cobimetinib:** An orally bioavailable small-molecule inhibitor of mitogen-activated protein kinase kinase 1 (MAP2K1 or MEK1), with potential antineoplastic activity. Cobimetinib specifically binds to and inhibits the catalytic activity of MEK1, resulting in inhibition of extracellular signal-related kinase 2 (ERK2) phosphorylation and activation and decreased tumor cell proliferation. Preclinical studies have demonstrated that this agent is effective in inhibiting the growth of tumor cells bearing a B-RAF mutation, which has been found to be associated with many tumor types. A threonine-tyrosine kinase and a key component of the RAS/RAF/MEK/ERK signaling pathway that is frequently activated in human tumors, MEK1 is required for the transmission of growth-promoting signals from numerous receptor tyrosine kinases. or A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Cobalamin helps make red blood cells, DNA, RNA, energy, and tissues, and keeps nerve cells healthy. It is found in liver, meat, eggs, poultry, shellfish, milk, and milk products. Cobalamin is water-soluble (can dissolve in water) and must be taken in every day. Not enough cobalamin can cause certain types of anemia (a condition in which the number of red blood cells is below normal) and neurologic disorders. It is being studied with folate in the prevention and treatment of some types of cancer. Also called cyanocobalamin and vitamin B12.

**cocci:** spherical bacteria (singular, coccus).

**Cocculus/nux vomica/tabacum/petroleum extract:** A homeopathic herbal formulation with potential anti-emetic activity. Cocculus/nux vomica/tabacum/petroleum extract contains equal homeopathic units of the following extracts: extract of Cocculus indicus (fish berry), the fruit of the

southeast Asian/Indian climbing plant Anamirta cocculus; extract of the seeds of Strychnos nux vomica (poison nut), an evergreen tree native to southeast Asia; extract of Nicotiana tabacum (tobacco); and petroleum. Although the exact mechanism(s) of action for this formulation has yet to be fully elucidated, alkaloids in these plant extracts have been shown to relieve nausea, vomiting, and, in some cases, dizziness.

**coccyx** : A radioactive form of the metal cobalt, which is used as a source of radiation to treat cancer.

**cochlea**: a snail-like series of coiled tubes within the skull that assist hearing.

**Cockayne syndrome** : A drug used with vemurafenib to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. Cobimetinib blocks certain proteins, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor and a type of targeted therapy. Also called Cotellic.

**cocoa extract**: A dietary supplement containing cocoa extract derived from the cacao bean, with potential vasodilating, anti-inflammatory, cardiovascular protective, neuroprotective, cognition enhancing and chemopreventive activities. Cocoa extract contains flavonoids, including high levels of epicatechin, catechin, procyanidins and xanthines, such as theobromine. Upon oral administration, the bioactive ingredients in the cocoa extract inhibit angiotensin-converting enzyme (ACE) and increase the production of nitric oxide (NO) through the activation of endothelial nitric oxide synthase (eNOS). This causes vasodilation, improves blood flow, and decreases blood pressure. The cocoa extract also improves insulin sensitivity, enhances cognition, and decreases the production of pro-inflammatory molecules. In addition, this extract exerts antioxidant effects and is able to scavenge reactive oxygen species (ROS). As a result, healthy cells are protected from oxidative stress and DNA damage.

**Cocrystal**: A mixed crystal or crystal that contains two different molecules.

**COD**: Chemical oxygen demand - the amount of oxygen in mg/l required to oxidize both organic and oxidizable inorganic compounds.

**COD (Chemical Oxygen Demand):** The amount of oxygen required to oxidize the substance chemically. Refers to degradation.

**codeine phosphate:** The phosphate salt of codeine, a naturally occurring phenanthrene alkaloid and opioid agonist with analgesic, antidiarrheal and antitussive activities. Codeine mimics the actions of endogenous opioids by binding to the opioid receptors at many sites within the central nervous system (CNS). Stimulation of mu-subtype opioid receptors results in a decrease in the release of nociceptive neurotransmitters such as substance P, GABA, dopamine, acetylcholine and noradrenaline; in addition, the codeine metabolite morphine induces opening of G-protein-coupled inwardly rectifying potassium (GIRK) channels and blocks the opening of N-type voltage-gated calcium channels, resulting in hyperpolarization and reduced neuronal excitability. Stimulation of gut mu-subtype opioid receptors results in a reduction in intestinal motility and delayed intestinal transit times. Antitussive activity is mediated through codeine's action on the cough center in the medulla.

**codeine phosphate :** A genetic condition characterized by short stature, premature aging, sensitivity to light, and possibly deafness and mental retardation.

**Coding strand:** The strand of DNA that has the same sequence as the RNA transcript except it contains thymine (T) in place of uracil (U).

**Codon:** In a messenger RNA molecule, a sequence of three bases that represents a particular amino acid. OR Nucleotide triplet in mRNA that encodes for a particular amino acid. OR In DNA or RNA, a sequence of 3 consecutive nucleotides that codes for a specific amino acid or signals the termination of gene translation (stop or termination codon).

**coefficient:** The number in front of a variable. For example, 4 is the coefficient in the term  $4x$ .

**Coefficient of Expansion .:** The fractional change in length (sometimes volume, specified) of a material for a unit change in temperature. Values for plastics range from 0.01 to 0.2 mils/in., C OR A number expressing the amount of frictional effect: static or dynamic.

**COEFFICIENT OF FRICTION:** Resistance to movement of-sliding or rolling surfaces of solid bodies in contact with each other. OR A measure of the resistance to sliding of one surface in contact with another. Low values mean easy sliding. The coefficient of friction of a packed bed of

plastic pellets on a polished screw surface is around 0.25, and about 0.4 on the barrel (rougher) surface. Pressure, temperature and surface characteristics affect the value of the coefficient of friction. OR static: the ratio of the limiting friction developed to the corresponding normal pressure, if two surfaces move relative to each other.

**Coefficient of Friction:** The force resisting the relative motion of solid surfaces, fluid layers, and material elements sliding against each other.

**Coefficient of Thermal Expansion:** The unit change in dimension of a material for a unit change in temperature. OR Average expansion per degree over a stated temperature range, expressed as a fraction of initial dimension, linear or volumetric OR OR The change in length of a material for a unit change in temperature, per unit of length.

**Coenzyme:** An organic molecule that associates with enzymes and affects their activity. OR A small organic molecule required for the activity of many enzymes; vitamins are often components of coenzymes. OR An organic cofactor required for the action of certain enzymes; often contains a vitamin as a component.

**coenzyme A:** A pantothenic acid-containing coenzyme serving as an acyl group carrier in certain enzymatic reactions.

**Coenzyme A (coa):** A coenzyme consisting of an adenine nucleotide linked to pantothenate, which is itself linked to mercaptoethylamine; universal carrier of acyl groups, which are bound to the mercaptoethylamine unit.

**coenzyme B12:** An enzymatic cofactor derived from the vitamin cobalamin, involved in certain types of carbon skeletal rearrangements.

**Coenzyme Q:** A mobile electron carrier that is a component of the respiratory chain; it shuttles between the oxidized ubiquinone form to the reduced ubiquinol form through a semiquinone intermediate; accepts electrons from NADH-Q reductase as well as succinate-Q reductase.

**coenzyme Q10:** A naturally occurring benzoquinone important in electron transport in mitochondrial membranes. Coenzyme-Q functions as an endogenous antioxidant; deficiencies of this enzyme have been observed in patients with many different types of cancer and limited studies have suggested that coenzyme-Q may induce tumor regression in patients with

breast cancer. This agent may have immunostimulatory effects. or A mixture of two or more different kinds of cells that are grown together.

**coenzymes:** organic molecules that act as cofactors, such as NAD and FAD.

**Coextrusion:** The process of combining two or more layers of plastic extrusions to produce a multiple layer product in a single step using one tool. A co-extrusion requires compatible PVC materials that will bond together to form a strong finished part. It can be either a dual hardness (rigid/flexible PVC) co-extrusion or a two-colour co-extrusion where two colours are extruded together. OR Coextrusion A process of extruding two materials simultaneously through the same die. For examples, see our extruded tubing page. OR The process of extruding two or more materials through a single die with two or more orifices arranged so that the extrudates merge and weld together into a laminar structure before chilling. OR The process of combining two or more layers of extrudate to produce a multiple layer product in a single step. OR Extrusion of film having multiple, distinct layers of materials using two or more extruders through a common die assembly. Co-extrusion allows resin combinations to be used to produce films having properties not obtainable through blending in a single layer extrusion.

**COF:** The coefficient of friction is a measurement of "slipperiness" of plastic films and laminates. Measurements are usually done film surface to film surface. Measurements can be done to other surfaces as well, but not recommended because COF values can be distorted by variations in surface finishes and contamination on test surface.

**Cofactor:** A helper molecule (either inorganic, such as a metal ion, or organic, such as a vitamin) required by an enzyme OR A small molecule required for enzyme activity It could be organic in nature, like a coenzyme, or inorganic in nature, like a metallic cation. OR An inorganic ion or a coenzyme required for enzyme activity. OR ions or molecules that associate with enzymes and are required for enzymatic reactions to take place.

**CoFactor:** (Other name for: folitixorin)

**coffee dietary supplement:** A dietary supplement containing coffee, with potential gastrointestinal (GI) tract stimulating activity. Following consumption of the dietary supplement, the coffee may both stimulate

peristalsis and increase bowel movement. The supplement may also stimulate the central nervous system, suppress appetite and cause weight loss.

**coffee enema :** A drug used to treat pain, cough, and diarrhea. It is made from opium or morphine and binds to opioid receptors in the central nervous system. Codeine phosphate is a type of opiate, a type of analgesic agent, a type of antitussive agent, and a type of antidiarrheal agent.

**COG :** A nutrient that the body needs in small amounts to function and stay healthy. Coenzyme Q10 helps mitochondria (small structures in the cell) make energy. It is an antioxidant that helps prevent cell damage caused by free radicals (highly reactive chemicals). Coenzyme Q10 is fat-soluble (can dissolve in fats and oils) and is found in fatty fish, beef, soybeans, peanuts, and spinach. It is being studied in the prevention and treatment of some types of cancer and heart disease and in the relief of side effects caused by some cancer treatments. Also called CoQ10, Q10, ubiquinone, and vitamin Q10.

**cognate:** Describing two biomolecules that normally interact; for example, an enzyme and its normal substrate, or a receptor and its normal ligand.

**cognition :** The injection of coffee through the anus into the colon (large intestine). Coffee enemas are being tested in the treatment of pancreatic cancer.

**cognitive behavior therapy :** A group of clinical cancer research organizations that get support from the National Cancer Institute to study childhood cancers. The main goal of COG is to conduct clinical trials of new treatments for childhood and adolescent cancers at cancer centers in the United States, Canada, Europe, and Australia. Also called Children's Oncology Group.

**cognitive therapy :** The mental process of thinking, learning, remembering, being aware of surroundings, and using judgment.

**COGSWELL'S METHOD:** An approximate method for extensional viscosity measurement. It uses the excess pressure drop value in the die entrance (i.e. from the Bagley Correction). Reproducible measurements are usually possible in the elongation (extension, or stretch) rate range of 5 s<sup>-1</sup> to 50 s<sup>-1</sup>.

**Cohesion:** Cohesive forces of attraction happen between molecules of the same type. Two water droplets that are close to each other will combine into one because of cohesive forces. OR A bonding together of a single substance to itself. Internal adhesion. OR Cohesion just means "sticking together" and cohesive forces are the forces that enable something to stick to itself. For example, if you glue two objects together and then break them apart, a cohesive failure is where the glue itself breaks, as opposed to an adhesive failure where the break is at the join between the glue and one of the objects. OR Attraction of molecules within a coating (how it holds together). OR the attraction that holds together the molecules within one substance. OR Attraction between like molecules.

**Cohesive ends:** In double-stranded DNA molecules, complementary single-stranded ends produced by staggered cuts. Specific cohesive ends in DNA can be produced by certain restriction enzymes, such as *ecori*, and can then be used to join unrelated DNA molecules by annealing and joining with DNA ligase.

**cohort :** A type of psychotherapy that helps patients change their behavior by changing the way they think and feel about certain things. It is used to treat mental, emotional, personality, and behavioral disorders. Also called CBT and cognitive therapy.

**cohort study:** The method of epidemiologic study in which subsets of a defined population can be identified who are, have been, or in the future may be exposed or not exposed, or exposed in different degrees, to a factor or factors hypothesized to influence the probability of occurrence of a given disease or other outcome. The alternative terms for a cohort study, i.e., follow-up, longitudinal, and prospective study, describe an essential feature of the method, which is observation of the population for a sufficient number of person-years to generate reliable incidence or mortality rates in the population subsets. This generally implies study of a large population, study for a prolonged period (years), or both (Last, 1988). OR A type of psychotherapy that helps patients change their behavior by changing the way they think and feel about certain things. It is used to treat mental, emotional, personality, and behavioral disorders. Also called CBT and cognitive behavior therapy.

**Coil tubing:** Coil tubing, or coiled tubing is made to withstand kinking and tangling for uses where the hose needs to move.

**Coiled Hose:** Coiled Hose: Coiled hose is a type of coiled tubing that has a reinforcement like a braided thread or other reinforcement.

**cointegrate:** An intermediate in the migration of certain DNA transposons in which the donor DNA and target DNA are covalently attached.

**Coke** : Coal is heated in the absence of air (so not burned) to drive off volatile components and form coke. It is a raw material in the blast furnace as a source of carbon.

**COL-3:** A research study that compares a particular outcome (such as lung cancer) in groups of individuals who are alike in many ways but differ by a certain characteristic (for example, female nurses who smoke compared with those who do not smoke).

**COL18A1:** A group of individuals who share a common trait, such as birth year. In medicine, a cohort is a group that is part of a clinical trial or study and is observed over a period of time.

**Colchicine:** An alkaloid from the autumn crocus that prevents polymerization of tubulin to form microtubules; as a consequence, it inhibits the cell cycle at metaphase.

**colchicine:** An alkaloid isolated from *Colchicum autumnale* with anti-gout and anti-inflammatory activities. The exact mechanism of action by which colchicine exerts its effect has not been completely established. Colchicine binds to tubulin, thereby interfering with the polymerization of tubulin, interrupting microtubule dynamics, and disrupting mitosis. This leads to an inhibition of migration of leukocytes and other inflammatory cells, thereby reducing the inflammatory response to deposited urate crystals. Colchicine may also interrupt the cycle of monosodium urate crystal deposition in joint tissues, thereby also preventing the resultant inflammatory response.

Overall, colchicine decreases leukocyte chemotaxis/migration and phagocytosis to inflamed areas, and inhibits the formation and release of a chemotactic glycoprotein that is produced during phagocytosis of urate crystals. or A substance being studied in the treatment of cancer. COL18A1 is made from a type of collagen (a protein found in cartilage and other connective tissue). It may prevent the growth of new blood vessels that tumors need to grow. COL18A1 is a type of antiangiogenesis agent. Also called endostatin.

**cold contaminant-free iobenguane I 131:** An I 131 radioiodinated synthetic analogue of the neurotransmitter norepinephrine, manufactured

with a proprietary process, with radioisotopic and potential antineoplastic activities. cold contaminant-free iobenguane I 131 (MIBG) localizes to adrenergic tissue and may be used to image or eradicate tumor cells that accumulate and metabolize norepinephrine. This agent is manufactured using a technology that avoids the production of unwanted "cold contaminants" (i.e., carrier molecules), which may cause undesirable side effects and compete with MIBG for binding on target receptor sites.

**Cold Flexibility:** Flexibility following silicone rubber exposure to a specified low temperature for a specified period of time

**Cold Flow:** change in dimensions or shape of some materials when subjected to external weight or pressure at room temperature. OR A term describing the tendency of certain materials to continue to deform or "creep" under constant sealing pressure OR Tendency of plastic materials to migrate slowly under heavy loads and/or over time.

**Cold Flow Lines :** Imperfections within the part wall due to thickening or solidification of resin prior to full cavity fill.

**Cold Flow or Creep:** A time-dependent strain of solids resulting from stress. OR The process of compression molding involving shaping an unheated compound in a mold under pressure then heating the article to cure it.

**cold front:** the leading edge of a cold air mass.

**cold ischemia :** A substance being studied in the treatment of cancer. COL-3 may block the growth of new blood vessels that tumors need to grow. It is a type of matrix metalloproteinase inhibitor and a type of antiangiogenesis agent.

**cold ischemia time :** A drug used to treat gout (inflamed joints caused by a buildup of uric acid). It comes from the crocus plant *Colchicum autumnale*. Colchicine blocks cell division and the movement of certain immune cells to areas that are inflamed. It is a type of alkaloid and a type of mitotic inhibitor.

**cold knife cone biopsy :** In surgery, the cooling of a tissue, organ, or body part after its blood supply has been reduced or cut off. This can occur while the organ is still in the body or after it is removed from the body if the organ is to be used for transplantation.

**cold knife conization :** In surgery, the time between the chilling of a tissue, organ, or body part after its blood supply has been reduced or cut off and the time it is warmed by having its blood supply restored. This can occur while the organ is still in the body or after it is removed from the body if the organ is to be used for transplantation.

**cold nodule :** A procedure in which a cone-shaped piece of abnormal tissue is removed from the cervix using a scalpel or laser knife. Some of the tissue is then checked under a microscope for signs of disease, such as cervical cancer. Cold knife cone biopsy may also be used to treat certain cervical conditions. Also called cold knife conization.

**Cold Runner:** Runner less liquid silicone injection molding system of delivering liquid silicone to heated cavity

**Cold Seal:** This is a term to describe pressure sensitive adhesive coating on plastic films or laminates that will allow the packages to be sealed by application of pressure (with no heat or with minimal heat).

**Cold shutdown:** The term used to define a reactor coolant system at atmospheric pressure and at a temperature below 200 degrees Fahrenheit following a reactor cooldown.

**Cold Slug:** The first bit of material to enter a silicone injection mold; so called because in passing through a sprue orifice it is cured OR A defect characterized by a small non-uniform area on the part caused by an improperly heated piece of plastic becoming attached to the part. OR The first material to enter an injection mold. So called because in passing through the sprue orifice it is cooled below the effective molding temperature.

**Cold Slug Well:** Space provided directly opposite the spruce opening in an injection mold to trap the cold slug. OR A depression (normally circular) in the ejection half of an injection mold, opposite the sprue, designed to receive the first front, or "cold" portion, of molten plastic during the injection process. OR Space provided directly opposite the sprue opening in an injection mold to trap the cold slug.

**Cold Stretch:** Pulling operation, usually on extruded filaments, to improve tensile properties.

**COLD-fX:** (Other name for: North American ginseng extract AFX-2)

**colectomy** : A procedure in which a cone-shaped piece of abnormal tissue is removed from the cervix using a scalpel or laser knife. Some of the tissue is then checked under a microscope for signs of disease, such as cervical cancer. Cold knife conization may also be used to treat certain cervical conditions. Also called cold knife cone biopsy.

**colesevelam hydrochloride**: A hydrochloride salt form of colesevelam, a non-absorbed polymer that binds bile acids in the intestine and lowers serum lipids.

**Coliform bacteria**: Non-pathogenic microbes found in fecal matter that indicate the presence of water pollution; are thereby a guide to the suitability for potable use.

**coliform organisms**: any of a number of organisms whose presence in wastewater is an indicator of pollution and of potentially dangerous bacterial contamination.

**colitis** : When radioactive material is used to examine the thyroid with a scanner, nodules that collect less radioactive material than the surrounding thyroid tissue are considered "cold." A nodule that is cold does not make thyroid hormone. Cold nodules may be benign (not cancer) or malignant (cancer). Cold nodules are sometimes called hypofunctioning nodules.

**collagen** : An operation to remove all or part of the colon. When only part of the colon is removed, it is called a partial colectomy. In an open colectomy, one long incision is made in the wall of the abdomen and doctors can see the colon directly. In a laparoscopic-assisted colectomy, several small incisions are made and a thin, lighted tube attached to a video camera is inserted through one opening to guide the surgery. Surgical instruments are inserted through the other openings to perform the surgery.

**collagen disease** : Inflammation of the colon.

**collagen/aloe vera/vitamin E/lidocaine topical hydrogel**: A topical preparation containing collagen, aloe vera, vitamin E, and lidocaine hydrochloride with wound-healing activity. The four ingredients of collagen/aloe vera/vitamin E/lidocaine topical hydrogel may promote wound repair and new tissue growth in which : collagen, a structural protein in connective tissue, provides a connective tissue matrix for the attachment of various cells involved in wound repair; aloe vera carbohydrate polymers provide a moist wound environment; vitamin E promotes blood vessel formation; and lidocaine acts as a local anesthetic.

**collagenase :** A fibrous protein found in cartilage and other connective tissue.

**collarbone :** A term previously used to describe chronic diseases of the connective tissue (e.g., rheumatoid arthritis, systemic lupus erythematosus, and systemic sclerosis), but now is thought to be more appropriate for diseases associated with defects in collagen, which is a component of the connective tissue.

**collecting duct :** A type of enzyme that breaks down the protein collagen.

**Collective dose:** As defined in Title 10, Section 20.1003, of the Code of Federal Regulations (10 CFR 20.1003), this is the sum of the individual doses received in a given period by a specified population from exposure to a specified source of radiation. For related information, see Doses in Our Daily Lives, Sources of Radiation, and Measuring Radiation.

**collective noun:** a word that stands for a group of things is called a collective noun.

**collective patient perspective :** One of a pair of bones at the base of the front of the neck. The collarbones connect the breastbone to the shoulder blades. Also called clavicle.

**colligative property:** Properties of a solution that depend on the number of solute molecules present, but not on the nature of the solute. Osmotic pressure, vapor pressure, freezing point depression, and boiling point elevation are examples of colligative properties. OR Properties of a solution that depend only on the number of particles dissolved in it, not the properties of the particles themselves. The main colligative properties addressed at this web site are boiling point elevation and freezing point depression. OR Properties of solutions that depend on the number of solute particles per unit volume; for example, freezing-point depression.

**collision boundary:** a convergent boundary that separates two continental plates that are pushed into contact.

**collision frequency:** The average number of collisions that a molecule undergoes each second.

**collision theory:** A theory that explains reaction rates in terms of collisions between reactant molecules.

**colloid:** A substance consisting of particles dispersed throughout another substance. OR A colloid is a finely dispersed mixture of two or more substances that do not dissolve in each other. OR A substance with components of one or two phases, a type of mixture intermediate between homogeneous solution and heterogeneous mixture with properties also intermediate between a solution and a mixture. The size of dispersed phase particles in a colloid range from one nanometer to one micrometer. Behavior in solution surface chemistry and colloid chemistry is dependent on the surface charge and the potential distribution in the surrounding electrical double layer. OR If the size of a particle is of the order 10 nm to 1 micron ( $10^{-8}$  to  $10^{-6}$  metres), then a mixture of these particles with a continuous phase (e. g., tiny particles of dust in air or polymer in water) will have properties that are intermediate between those of a true solution and a mixture of largish particles in a substance. Three key things to remember about colloids are: OR a mixture in which the substance is split into tiny particles and spread within a second substance. Examples include smoke and fog. OR A colloid is a heterogeneous mixture composed of tiny particles suspended in another material. The particles are larger than molecules but less than 1  $\mu\text{m}$  in diameter. Particles this small do not settle out and pass right through filter paper. Milk is an example of a colloid. The particles can be solid, tiny droplets of liquid, or tiny bubbles of gas; the suspending medium can be a solid, liquid, or gas (although gas-gas colloids aren't possible).

**colloidal gold-bound tumor necrosis factor:** The last part of a long, twisting tube that collects urine from the nephrons (cellular structures in the kidney that filter blood and form urine) and moves it into the renal pelvis and ureters. Also called renal collecting tubule. OR A nanoparticle delivery system for recombinant human tumor necrosis factor (TNF) consisting of recombinant TNF bound to pegylated colloidal gold nanoparticles with potential antineoplastic activity. Upon intravenous administration, colloidal gold-bound recombinant human TNF travels through the bloodstream, avoiding immune detection and uptake by the reticuloendothelial system because of nanoparticle pegylation. Due to their size, the colloidal gold nanoparticles exit the circulatory system only at hyperpermeable tumor neovasculature sites; TNF then binds to and activates tumor cell TNF receptors, which may result in an increase in tumor cell apoptosis and a reduction in tumor cell proliferation. Compared to the administration of

unbound TNF, colloidal gold-bound TNF may improve the efficacy and safety of TNF administration by delivering TNF specifically to tumor tissue.

**colloidal oatmeal cream:** A colloidal oatmeal-based skin cream with potential moisturizing and skin protecting activity. Upon application to the skin, colloidal oatmeal cream forms a protective barrier and thereby prevents water loss, provides moisture to the skin and protects the skin from damage. Check for active clinical trials using this agent.

**Colloidal silica:** Molecular formula: SiO<sub>2</sub>. Monodispersed silicon dioxide particles, usually between 0-1000 nanometers in diameter, usually in solution.

**Colloids:** Very small, finely divided solids (particles that do not dissolve) that remain dispersed in a liquid for a long time due to their small size and electrical charge.

**coloanal anastomosis :** An understanding of the disease experiences of many patients and the ability to describe this collective experience separately from a person's own disease experience. In cancer research, a collective patient perspective may help scientific researchers develop clinical trials that help meet the needs of more patients.

**coloanal pull-through :** A substance being studied in the treatment of some types of cancer. Colloidal gold-bound tumor necrosis factor is made in the laboratory by binding a cancer-killing protein called tumor necrosis factor (TNF) to the surface of very tiny particles of gold. These TNF-gold particles may kill cancer cells without harming healthy tissue. Also called Aurimmune and TNF-bound colloidal gold.

**colon:** used primarily when introducing a list, introducing a quotation or formal statement, or introducing a restatement or explanation.

**colon :** A surgical procedure in which the colon is attached to the anus after the rectum has been removed. Also called coloanal pull-through.

**colon cancer :** A surgical procedure in which the colon is attached to the anus after the rectum has been removed. Also called coloanal anastomosis.

**colon crypt :** The longest part of the large intestine, which is a tube-like organ connected to the small intestine at one end and the anus at the other. The colon removes water and some nutrients and electrolytes from partially

digested food. The remaining material, solid waste called stool, moves through the colon to the rectum and leaves the body through the anus.

**colon polyp** : Cancer that forms in the tissues of the colon (the longest part of the large intestine). Most colon cancers are adenocarcinomas (cancers that begin in cells that make and release mucus and other fluids).

**colonoscope** : Tube-like gland found in the lining of the colon and rectum. Colon crypt cells renew the lining of the intestine and make mucus. Also called gland of Lieberkuhn.

**colonoscopy** : An abnormal growth of tissue in the lining of the bowel. Polyps are a risk factor for colon cancer.

**colony-stimulating factor** : A thin, tube-like instrument used to examine the inside of the colon. A colonoscope has a light and a lens for viewing and may have a tool to remove tissue.

**Color:** Color is a measure of reflected wavelengths of light. Colors are also only useful to organisms that can see with the visible spectrum of light. An element like gold may have a yellow color while mercury will be highly reflective and silvery (like silver color). OR an easy test in the identification of minerals, but not always reliable.

**Color Concentrate:** A measured amount of dye or pigment incorporated into a predetermined amount of plastic. This pigmented or colored plastic is then mixed into larger quantities of plastic material used for molding. The "concentrate" is added to the bulk of plastic in measured quantity in order to produce a precise, predetermined color of the molded bottles. OR A plastics compound which contains a high percentage of pigment to be blended into base resins. The term masterbatch is sometimes used for color concentrate as well as for concentration of other additives. OR A plastics compound which contains a high percentage of color pigment blended with a carrier resin.

**Color Concentrate (also know as Colorant, Pigment)** : A plastic compound which contains a high percentage of pigment, to be blended in appropriate amounts with the base resin so that the correct final color is achieved.

**Color dimorphism:** The existence of two crystalline forms of the same compound in which each exists as a different color.

**Color Jet Printing:** This system involves two main components, the core and the binder. It begins with a layer of the core laid out on the building platform, and then the binder is ejected from inkjet printer heads. This effectively bonds and sets the material, while adding the color.

**Color Space:** all of the measurement systems used to quantify color use three independent variables. (This is easy to understand when we think of a light brilliant blue versus a dark dull blue.) These three components thus create a three dimensional color space where every unique color has a unique position. Munsell developed one of the early systems using the variables hue, value, and chroma. Each system may have different names for the three variables.

**Color Tolerance:** a color tolerance is a compromise between the difference in color values that can be perceived (what one can see) and what is acceptable and achievable in multiple samples. In essence it is a distance measurement from target, either in a specific variable direction ( $L^*$ ,  $a^*$ , or  $b^*$ ), or in total distance  $\Delta E$  (which is always a positive number).

**Colorant:** A pigment system usually in pelletized, powder or liquid form which is mixed with resin to produce the desired color.

**COLORANT:** Dyes or pigments which impart color to plastics. The dyes are synthetic or natural compounds of submicroscopic size, soluble in common solutions, yielding transparent colors. Pigments are organic and inorganic substances with larger particle sizes and are usually insoluble in common solvents. OR an agent used to impart color and/or appearance to a material. Colorants include black, white, and color pigments, dyes, metallic particles, fluorescent and pearlescent agents, marbling, and other special effects. OR A pigment system, usually in pelletized form, powder or liquid, which is mixed with resin to produce the desired color. OR Concentrated color that can be added to paints to make a specific color. Proper color of a diamond OR Colourants are, e.g., dyes, pigments or coloured chemicals added to another substance(s) to cause a change in colour or shade.

**Colorant (also know as Color Concentrate, Pigment) :** A plastic compound which contains a highpercentage of pigment, to be blended in appropriate amounts with the base resin so that the correct final color is achieved.

**Colorants & Pigments:** Are additive used to change the color of the plastic. They can be a powder or a resin/color premix.

**colorectal** : Examination of the inside of the colon using a colonoscope, inserted into the rectum. A colonoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**colorectal cancer** : A substance that stimulates the production of blood cells. Colony-stimulating factors include granulocyte colony-stimulating factor (G-CSF), granulocyte-macrophage colony-stimulating factor (GM-CSF), and promegapoeitin.

**COLORIMETER**: An instrument for measuring and matching colors.

**colorimetry**: A method for chemical analysis that relates color intensity to the concentration of analyte.

**colostomy** : Having to do with the colon or the rectum.

**colostomy irrigation** : Cancer that develops in the colon (the longest part of the large intestine) and/or the rectum (the last several inches of the large intestine before the anus).

**Colour change (fillers)**: Fillers are absorbent and have a different porosity than the substrate, which can cause variations in colour. Therefore, fillers should be applied as early as possible in the process to avoid variations in gloss, sheen or colour. Before repainting, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants, then rub down with a suitable abrasive and dust off the whole surface. Prime with one coat Dulux Alkali Resisting Primer thinned with up to one part Dulux Thinner 41 or white spirit to 10 parts paint.

**Colour Concentrate**: Is a compound containing high pigment that is blended into base resin.

**Colour pigment**: Also known as masterbatch. A concentrated blend of pigment, additives, filler, etc., that are added to the base plastic polymer in appropriate amounts to achieve the required colour.

**Colour retention**: The ability of paint to keep its original colour and resist fading.

**Colourant**: A pigment dispersed in a medium which is used for tinting a paint after manufacture.

**colposcope** : An opening into the colon from the outside of the body. A colostomy provides a new path for waste material to leave the body after part of the colon has been removed. Or A procedure in which a patient with

a colostomy flushes the colon with water, using a tube that is inserted into the stoma (a surgically created opening in the body that connects an organ or area inside the body with the outside). This causes the colon to empty and pass stool through the stoma into a bag. The procedure should be done at the same time every day. It may allow colostomy patients to have better control over their bodies.

**Colprosterone:** (Other name for: therapeutic progesterone)

**Column:** Long vertical cylinder or shaft supporting a roof beam or entablature, or alone as a monument. OR pillar of rock formed when a stalactite and stalagmite merge.

**Column :** The structural member that forms the main support for the entire spiral system and is located circumferentially around the system.

**column chromatography:** Column chromatography is a method for separating mixtures. A solution containing the mixture is passed through a narrow tube packed with a stationary phase. Different substances in the mixture have different affinities for the stationary phase, and so move through the tube at different rates. This allows the substances in the mixture to be detected or collected separately as they reach the end of the tube.

**columnar structures:** cooled and contracted flood basalt in vertical, parallel, generally six-sided columns.

**coma :** A lighted magnifying instrument used to check the cervix, vagina, and vulva for signs of disease.

**Combix:** (Other name for: ferumoxtran-10)

**combination antiretroviral therapy :** A procedure in which a lighted, magnifying instrument called a colposcope is used to examine the cervix, vagina, and vulva. During colposcopy, an instrument called a speculum is inserted into the vagina to widen it so that the cervix can be seen more easily. A vinegar solution may be used to make abnormal tissue easier to see with the colposcope. Tissue samples may be taken using a spoon-shaped instrument called a curette and checked under a microscope for signs of disease. Colposcopy may be used to check for cancers of the cervix, vagina, and vulva, and changes that may lead to cancer.

**combination chemotherapy :** A condition in which a patient is in a state of deep sleep and cannot be awakened. A coma may be caused by many things, including trauma, drugs, toxins, or certain diseases.

**Combination electrode:** a combination of a sensing electrode and a reference electrode contained in one unit.

**combination reaction:** A reaction in which two or more substances are chemically bonded together to produce a product. For example,  $2 \text{Na(s)} + \text{Cl}_2\text{(g)} \rightarrow 2 \text{NaCl(s)}$  is a combination reaction.

**combination therapy :** Treatment that uses a combination of three or more drugs to treat HIV infection. Combination antiretroviral therapy stops the virus from making copies of itself in the body. This may lessen the damage to the immune system caused by HIV and may slow down the development of AIDS. It may also help prevent transmission of HIV to others, including from mother to child during birth. Also called cART, HAART, and highly active antiretroviral therapy.

**Combinatorial Chemistry:** Combinatorial chemistry comprises of methods used to generate libraries of compounds with sizes ranging from hundreds to millions, in a single process. OR The random assembly of various chemical units into chemical libraries of new synthetic compounds OR The process of producing large populations of molecules en masse and then selecting for a particular biochemical property.

**Combinatorial control:** A means of controlling gene expression in eukaryotes in which each transcription factor, rather than acting on its own to effect transcription, recruits other proteins to build up large complexes that regulate the transcription machinery.

**Combinatorial Library:** Large collections of synthesised compounds generated through combinatorial chemistry.

**combined androgen blockade :** Treatment using more than one anticancer drug.

**Combined available:** The concentration of chlorine which is combined with ammonia ( $\text{NH}_3$ ) as chloramine or as other chloro derivatives, yet is still available to oxidize organic matter.

**Combined Gas Law:** There came a time when scientists combined the ideas in Boyle's Law and Charles' Law. The result was the combined gas law that worked for pressure, temperature, and volume. The formula goes:  $(P_1V_1)/T_1=(P_2V_2)/T_2$ . From this formula you can determine the values of pressure, volume, or temperature when you know the values of one system and all but one of the values for a second system.

**Combined license (COL):** An NRC-issued license that authorizes a licensee to construct and (with certain specified conditions) operate a nuclear power plant at a specific site, in accordance with established laws and regulations. A COL is valid for 40 years (with the possibility of a 20-year renewal). For additional detail, see Combined License Applications.

**Combined sewer:** A sewer designed to carry both sanitary wastewaters and storm or surface-water runoff.

**combining like terms:** The process of adding or subtracting like terms.

**COMBINING WEIGHT:** The apparent equivalent weight of, for example, a sulfonic acid, where two or more acidic components, in this case the sulfonic acid product and sulfuric acid impurity, are present. (see RFF 705.10.51 - COMBINING WEIGHT).

**Combotox:** (Other name for: deglycosylated ricin A chain-conjugated anti-CD19/anti-CD22 immunotoxins)

**combretastatin A1 diphosphate:** The diphosphate prodrug of the stilbenoid combretastatin A1, originally isolated from the plant *Combretum caffrum*, with vascular-disrupting and antineoplastic activities. Upon administration, combretastatin A1 diphosphate (CA1P) is dephosphorylated to the active metabolite combretastatin A1 (CA1), which promotes rapid microtubule depolymerization; endothelial cell mitotic arrest and apoptosis, destruction of the tumor vasculature, disruption of tumor blood flow and tumor cell necrosis may ensue. In addition, orthoquinone intermediates, metabolized from combretastatin A1 by oxidative enzymes found to be elevated levels in some tumor types, may bind to tumor cell thiol-specific antioxidant proteins and DNA, and stimulate oxidative stress by enhancing superoxide/hydrogen peroxide production. CA1 binds to tubulin at the same site as colchicine but with higher affinity.

**combretastatin A4 phosphate :** Therapy that combines more than one method of treatment. Also called multimodality therapy and multimodality treatment.

**COMBUSTIBLE LIQUID:** A liquid which has a flash point above 100F.

**combustion:** When substances combine with oxygen and release energy. OR Rapid oxidation (burning) accompanied by the release of heat. OR Combustion is the burning of a substance in air or oxygen to produce oxides. OR A chemical reaction between a fuel and an oxidizing agent that

produces heat (and usually, light). For example, the combustion of methane is represented as  $\text{CH}_4(\text{g}) + 2 \text{O}_2(\text{g}) = \text{CO}_2(\text{g}) + 2 \text{H}_2\text{O}()$ . OR This is a scientific word for the burning of a fuel.

**comedo carcinoma :** Treatment used to block androgen (male hormone) activity in the body. This may be done by giving an antiandrogen drug and removing the testicles (orchiectomy) or by giving an antiandrogen drug with a gonadotropin-releasing hormone (GnRH) agonist. Combined androgen blockade may stop the growth of cancer cells that need androgens to grow, and is used in the treatment of prostate cancer. Also called complete androgen blockade and total androgen blockade.

**comet:** a mass of frozen gases, ice, and rock that orbits the Sun.

**Cometriq:** (Other name for: cabozantinib-s-malate)

**Cometriq :** A substance being studied in the treatment of cancer. It decreases the flow of blood to tumors and may kill cancer cells.

Combretastatin A4 phosphate comes from the African bush willow. It is a type of tubulin-binding agent and a type of vascular targeting agent.

**comfort care :** A type of ductal carcinoma in situ (very early-stage breast cancer).

**comma:** the most frequently used internal punctuation in sentences; commas are used after introductory clauses and phrases, with restrictive and nonrestrictive elements, with appositives, between items in a series, between modifiers in a series, to join independent clauses, and to set off interrupting elements.

**Commensalism:** When two organisms coexist, with one organism deriving food or other benefits from another, without causing harm to the other organism. Often this relationship offers two-way benefits. For a more powerful version of this co-operation see synergism. A natural consortium of commensal bacteria residing in saliva and the digestive system of fish, crustaceans and mammals, including humans, are necessary for proper digestion of foods into simple water-soluble compounds that can easily pass through intestinal walls to feed the host's body. A natural consortium of commensal bacteria will take up residence in the skin and coat of mammals, reducing objectionable odors from sweat and excess production of natural oils, meant to lubricate and protect the skin from the environment, when disinfectants are avoided in soaps, shampoos and skin care products. These commensal bacteria will try to protect their natural home by mechanically

preventing invasion by pathogenic (disease-causing fungi and bacteria). Many natural commensal bacteria are exploited by pharmaceutical companies to produce antibiotics, used to cure some of the worst pathogenic organisms, but incorrect use and overuse of antibiotics is leading some pathogenic organisms to develop resistance to the most commonly used antibiotics. Natural commensal bacteria will produce a cocktail of antibiotics or will vary the antibiotics they produce to discourage pathogens they encounter from developing resistance. OR a relationship in which one population receives a benefit from an association while the other is neither benefited nor harmed.

**Commercial match:** Although paints are matched to a standard there is always some "tolerance"™ between batches. It is possible therefore that there may be a variation in shade between different batches although each batch is a good "commercial match"™ to standard.

**Commercial sector (energy users):** Generally, nonmanufacturing business establishments, including hotels, motels, and restaurants; wholesalers and retail stores; and health, social, and educational institutions. However, utilities may categorize commercial service as all consumers whose demand or annual usage exceeds some specified limit that is categorized as residential service.

**Commingling:** Assembly of a reinforcement yarn with a thermoplastic in yarn or thread form, in a predetermined ratio. OR Shredding. A mechanical treatment process which cuts large pieces of waste into smaller pieces so that they won't plug pipes or damage equipment.

**Commit:** (Other name for: nicotine lozenge)

**Committed dose equivalent (CDE):** As defined in Title 10, Section 20.1003, of the Code of Federal Regulations (10 CFR 20.1003), the CDE (HT,50) is the dose to some specific organ or tissue of reference (T) that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

**Committed effective dose equivalent (CEDE):** As defined in Title 10, Section 20.1003, of the Code of Federal Regulations (10 CFR 20.1003), the CEDE (HE,50) is the sum of the products of the committed dose equivalents for each of the body organs or tissues that are irradiated multiplied by the weighting factors (WT) applicable to each of those organs or tissues ( $HE,50 = \sum WTHT.50$ ).

**Committed step:** The first irreversible step in a metabolic pathway under physiologic conditions; this step is catalyzed by an allosteric enzyme and commits the product to a particular chemical fate.

**COMMODITY RESIN:** High-volume, low-priced resins like polyethylene (PE), polypropylene (PP), styrene (PS, etc), acrylic (PMMA), vinyl (PVC etc.).

**common bile duct :** A drug used to treat progressive medullary thyroid cancer that has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Cometriq blocks certain proteins, which may help keep cancer cells from growing. It may also prevent the growth of new blood vessels that tumors need to grow. Cometriq contains the active ingredient cabozantinib-s-malate. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor.

**common hepatic duct :** Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of comfort care is to prevent or treat as early as possible the symptoms of a disease, side effects caused by treatment of a disease, and psychological, social, and spiritual problems related to a disease or its treatment. Also called palliative care, supportive care, and symptom management.

**common intermediate:** A chemical compound common to two chemical reactions, as a product of one and a reactant in the other.

**community:** a situation in which populations of organisms each contain a habitat and a niche.

**Community Advisory Board :** A tube that carries bile from the liver and the gallbladder through the pancreas and into the duodenum (the upper part of the small intestine). It is formed where the ducts from the liver and gallbladder are joined. It is part of the biliary duct system.

**commutative property of addition:** The order of the terms does not change the sum.

**commutativity:** A math property which states:  $A+B=B+A$  and  $A*B=B*A$ .

**Comonomer:** A monomer that is polymerised along with one or more other monomers to make a copolymer. All the different comonomers used in a copolymerisation are incorporated into each chain. OR One of the compounds that constitute a copolymer.

**comorbidity** : A tube that carries bile from the liver. It starts where the right and left hepatic (liver) ducts join outside the liver. It ends where the cystic duct from the gall bladder joins it to form the common bile duct. It is part of the biliary duct system.

**Compact**: A group of two or more States that have formed business alliances to dispose of low-level radioactive waste on a regional basis. For details, see Low-Level Waste Disposal, and for locations, see Low-Level Waste Compacts.

**compaction**: the step in lithification in which the grains of sediment are packed more tightly together.

**comparative anatomy**: comparing the anatomical structures of modern day organisms with fossils to yield clues to the type of organisms that roamed earth long ago. OR In medicine, a group of non-scientist volunteers that serves as a link between a community and clinical trial researchers. A Community Advisory Board may review and monitor clinical trials and help teach the community about the trials. Also called CAB.

**comparative biochemistry**: the comparison of biochemical processes of modern day organisms with fossils and ancient species; modern biochemistry indicates there is a biochemical similarity in all living things.

**comparative degree**: used with adjectives and adverbs to compare two people, things, or actions.

**Comparative Molecular Field Analysis (CoMFA)**: A 3D QSAR software

**Compartmentation**: The location of metabolites, enzymes, or pathways in different membrane-bound organelles in eukaryotic cells.

**compartments**: The body is composed of a large number of organs, tissues, cells, and fluids, any one of which could be referred to as a compartment. In chemobiokinetics, a compartment often refers collectively to the organs, tissues, cells, and fluids for which the rates of uptake and subsequent distribution and elimination are sufficiently similar to preclude kinetic resolution (WHO, 1979).

**Compass**: A compass is a scientific instrument that tells the user the direction of magnetic north. South is directly opposite north, east is to the right, and west is to the left.

**compassionate use trial** : The condition of having two or more diseases at the same time.

**Compatibility:** The capacity of different materials from different sources or of different compositions to be combined and applied so as to yield no visible or mechanically measurable differences in the cured film or application properties. OR Paints which can be mixed together without adversely affecting any of their properties, or the application of one type of paint over a different type without either being adversely affected. OR The ability of two or more substances to mix together without separation

**competing reactions:** two reactions that start with the same reactants but form different products.

**Competitive inhibition:** The reduction in the OR A type of enzyme inhibition reversed by increasing the substrate concentration; a competitive inhibitor generally competes with the normal substrate or ligand for a protein's binding site. rate of enzyme activity observed when the enzyme can bind the substrate or the inhibitor but not both. Many competitive inhibitors resemble the substrate and compete with it for binding to the active site. Relief from inhibition by saturation with substrate is a kinetic hallmark of competitive inhibition.

**complement:** The percentage that would add to 100%. For example, 42% is the complement of 58%.

**complement (predicate nominative or predicate adjective):** an element in a predicate that identifies or describes the subject; a complement can be either a noun (called a predicate noun or predicate nominative), or an adjective (called a predicate adjective).

**complement C5 inhibitor ALXN1210:** A longer-acting antibody directed against terminal complement protein C5, with potential anti-inflammatory activity. Upon administration, complement C5 inhibitor ALXN1210 binds to terminal complement protein C5, thereby blocking C5 cleavage into pro-inflammatory components and preventing the complement-mediated destruction of red blood cells (RBCs) as seen in paroxysmal nocturnal hemoglobinuria (PNH). Compared to other anti-C5 antibodies, ALXN1210 is longer-acting and allows for monthly dosing. C5, a complement pathway protein, is expressed at high levels by the liver.

**complement protein :** The comparison of the structure (anatomy) of one animal or plant with the structure of a different animal or plant.

**Complementarity-determining region (CDR):** In immunoglobulin L and H chains, polypeptide segments that display great sequence variability and

are responsible for antigenic specificity.

**complementary:** Having a molecular surface with chemical groups arranged to interact specifically with chemical groups on another molecule.

**complementary and alternative medicine :** A way to provide an investigational therapy to a patient who is not eligible to receive that therapy in a clinical trial, but who has a serious or life-threatening illness for which other treatments are not available. Compassionate use trials allow patients to receive promising but not yet fully studied or approved cancer therapies when no other treatment option exists. Also called expanded access trial.

**complementary angles:** two angles the sum of whose measures is  $90^\circ$ .

**Complementary base sequence:** For a given sequence of nucleic acids, the nucleic acids that are related to them by the rules of base pairing.

**Complementary colours:** Contrasting or opposite colours which accentuate one another when placed side by side.

**complementary DNA (cDNA):** A DNA used in DNA cloning, usually made by reverse transcriptase; complementary to a given mRNA.

**complementary medicine :** One of a group of about 20 proteins that is found in the blood and is important in fighting infections and other diseases.

**complete androgen blockade :** Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices generally are not considered standard medical approaches. Standard treatments go through a long and careful research process to prove they are safe and effective, but less is known about most types of complementary and alternative medicine. Complementary and alternative medicine may include dietary supplements, megadose vitamins, herbal preparations, special teas, acupuncture, massage therapy, magnet therapy, spiritual healing, and meditation. Also called CAM.

**complete blood count :** Treatments that are used along with standard treatments, but are not considered standard. Standard treatments are based on the results of scientific research and are currently accepted and widely used. Less research has been done for most types of complementary medicine. Complementary medicine includes acupuncture, dietary supplements, massage therapy, hypnosis, and meditation. For example,

acupuncture may be used with certain drugs to help lessen cancer pain or nausea and vomiting.

**complete combustion:** A combustion reaction that converts all of the fuel's carbon, hydrogen, sulfur, and nitrogen into carbon dioxide, water, sulfur dioxide, and N<sub>2</sub> respectively.

**complete hysterectomy :** Treatment used to block androgen (male hormone) activity in the body. This may be done by giving an antiandrogen drug and removing the testicles (orchiectomy) or by giving an antiandrogen drug with a gonadotropin-releasing hormone (GnRH) agonist. Complete androgen blockade may stop the growth of cancer cells that need androgens to grow, and is used in the treatment of prostate cancer. Also called combined androgen blockade and total androgen blockade.

**complete ionic equation:** A balanced equation that describes a reaction occurring in solution, in which all strong electrolytes are written as dissociated ions.

**complete metastasectomy :** A measure of the number of red blood cells, white blood cells, and platelets in the blood. The amount of hemoglobin (substance in the blood that carries oxygen) and the hematocrit (the amount of whole blood that is made up of red blood cells) are also measured. A complete blood count is used to help diagnose and monitor many conditions. Also called blood cell count, CBC, and full blood count.

**complete predicate:** the verb or verb phrase and the words that modify or complete it.

**complete remission :** Surgery to remove the entire uterus, including the cervix. Also called total hysterectomy.

**complete response :** Surgery to remove all metastases (tumors formed from cells that have spread from the primary tumor).

**complete subject:** the noun or pronoun and the words that modify or complete it.

**complex:** an intermediate formed when a cation is attracted to the high electron density of a  $\pi$  bond.

**complex decongestive therapy :** The disappearance of all signs of cancer in response to treatment. This does not always mean the cancer has been cured. Also called complete response.

**complex ion:** An ion formed by combination of simpler ions or molecules; for example,  $\text{Co}^{2+}$  combines with six molecules of water to form the complex ion  $\text{Co}(\text{H}_2\text{O})_6^{2+}$ .

**complex sentence:** contains one independent clause and one or more subordinate clauses.

**complexing:** the use of chelating or sequestering agents to form relatively loose chemical bonding as a means of treating certain pollutants such as nickel, copper, and cobalt.

**Complexing agent:** any species that combines with an ion to form an undissociated species; the resulting complex stays in solution and does not precipitate. Complexing agents are used as titrants and to bind ions that may interfere with direct measurements. OR A ligand that binds to a metal ion to form a complex.

**complexometric titration:** A titration based on a reaction between a ligand and a metal ion to form a complex. For example, free  $\text{Ca}^{2+}$  in milk powder can be determined by titrating a milk powder sample with EDTA solution, which chelates calcium ion. Endpoints in complexometric titrations are often determined using organochromic indicators.

**compliance :** The disappearance of all signs of cancer in response to treatment. This does not always mean the cancer has been cured. Also called complete remission.

**complication :** Treatment to reduce lymphedema (swelling caused by a buildup of lymph fluid in tissue). This therapy uses massage to move the fluid away from areas where lymph vessels are blocked, damaged, or removed by surgery. This helps remove extra fluid. The affected area is then wrapped in a special bandage. Later, a compression garment (tight-fitting, elastic piece of clothing) is worn to keep fluid from building up again.

**component:** 1. A substance whose concentration must be specified to describe the state of a mixture in which reactions are occurring. 2. A substance present in a mixture in which no reactions occur.

**Composite:** 1) a structure or an entity made up of distinct components. 2) a complex material, such as fiberglass, in which two or more distinct, structurally complementary substances, especially glasses and polymers, combine to produce structural or functional properties not present in any

individual components. 3) reinforced laminates (i.e., canvas phenolic, glass epoxy, etc.) OR A composite material is defined as a combination of two or more materials that results in better properties than when the individual components are used alone. Unlike metal alloys, each material retains its separate chemical, physical and mechanical properties. The two constituents are normally a fibre and a matrix. OR A structural non-homogenous material consisting of a combination of materials.

Typically, one of the materials is a strengthening agent, the other being a thermoset or thermoplastic resin. OR 1) A structure or an entity made up of distinct components. 2) A complex material, such as fiberglass, in which two or more distinct, structurally complementary substances, especially glasses and polymers, combine to produce structural or functional properties not present in any individual component. 3) Reinforced laminates (i.e., canvas phenolic, glass epoxy, etc.). OR A structural material consisting of a combination of materials. Typically, one of the materials is a strengthening agent, the other being a thermoset or thermoplastic resin. OR 1) a structure or an entity made up of distinct components. 2) a complex material, such as fiberglass, in which two or more distinct, structurally complementary substances, especially glasses and polymers, combine to produce structural or functional properties not present in any individual component. 3) reinforced laminates (i.e., canvas phenolic, glass epoxy, etc.). OR A structural non-homogenous material consisting of a combination of materials. Typically, one of the materials is a strengthening agent, the other being a thermoset or thermoplastic resin.

**composite hemangioendothelioma :** The act of following a medical regimen or schedule correctly and consistently, including taking medicines or following a diet.

**composite lymphoma :** In medicine, a medical problem that occurs during a disease, or after a procedure or treatment. The complication may be caused by the disease, procedure, or treatment or may be unrelated to them.

**composite volcano:** a volcano consisting of a cone of alternating layers of solidified lava and rock particles. OR a volcano that consists of alternating layers of lava and pyroclastic debris; built up over millions of years, such volcanos are characterized by long periods of dormancy.

**Composition Percentage:** This value tells the percentage of a solution that could be a percentage of mass or percentage by volume. It is determined by

dividing the value for the solute by the value for the solution and then multiplying by 100 to get the percentage. Seven milliliters of HCl divided by 100 milliliters of water creates a 7 percent by volume solution.

**Compostable:** Compostable materials are capable of undergoing biological decomposition in a compost site, to the extent that they are not visually distinguishable and break down to carbon dioxide, water, inorganic compounds, and biomass, at a rate consistent with known compostable materials (e.g. cellulose). See also 'compostable plastic'.

**Compostable plastic:** A polymer is 'compostable' when it is biodegradable under composting conditions. The polymer must meet the following criteria: a) Break down under the action of microorganisms (bacteria, fungi, and algae); b) Total mineralization is obtained (conversion into CO<sub>2</sub>, H<sub>2</sub>O, inorganic compounds and biomass under aerobic conditions); c) The mineralization rate is compatible with the composting process and consistent with known compostable materials (e.g. cellulose).

**composting:** The controlled biological decomposition of organic solid wastes under aerobic (in the presence of oxygen) conditions. Organic materials are transformed into soil enhancers such as humus and mulch. OR The natural biological decomposition of organic material in the presence of air to form a humus-like material. OR The term used to describe the activity of breaking down plant and animal material using microorganisms under aerobic conditions. For successful composting there must be sufficient water and air to allow the microorganisms to break down the material, and the compost should reach and maintain a warm temperature.

**Compound:** A chemical combination of two or more elements combined in a fixed and definite proportion by weight. OR Any plastic material prepared for subsequent manufacturing processes, specifically in extrusion, molding or calendaring. OR These are chemical combinations of materials which include all the materials necessary for the finished product. They include BMC (Bulk Molding Compounds), SMC (Sheet Molding Compounds) and TMC (Thick Molding Compounds). OR A mixture of the resin and all additives. OR a combination of ingredients before being processed or made not a finished product. Sometimes used as a synonym for material, formulation. OR A mixture of a polymer and associated chemical ingredients necessary to produce a finished high consistency rubber material. The term is commonly used when referring to a specific

rubber not liquid silicone rubber which is delivered in closed system OR These are chemical combinations of materials which include all the materials necessary for the finished product. They include BMC (Bulk Molding Compounds), SMC (Sheet Molding Compounds) and TMC (Thick Molding Compounds). OR These are chemical combinations of materials which include all the materials necessary for the finished product. OR A mixture of resin and the ingredients necessary to modify the resin to a form suitable for processing into finished articles. OR A mixture of resin(s) and additives usually formed in a separate machine downstream from the primary reactor. OR A mixture of resin and the ingredients necessary to modify the resin to a form suitable for processing into finished articles. OR A substance containing two or more different kinds of atoms chemically joined together. OR a molecule made up of two or more elements. OR A compound is a material formed from elements chemically combined in definite proportions by mass. For example, water is formed from chemically bound hydrogen and oxygen. Any pure water sample contains 2 g of hydrogen for every 16 g of oxygen. OR a substance made up of two or more elements that are combined chemically. OR two or more elements combined; a substance having different properties than of the elements used. OR Two or more atoms joined together chemically, with covalent or ionic bonds. OR is two or more elements chemically combined. OR A compound is a substance made up of more than one type of atom. OR a substance formed by the chemical combination of two or more elements. OR a collection of molecules.

**compound :** A blood vessel tumor that is made up of different types of cells and has features that are both benign (not cancer) and malignant (cancer). Composite hemangioendotheliomas usually form on or under the skin on the arms or legs. They may also form on the head, neck, or chest. Composite hemangioendotheliomas may spread to nearby lymph nodes, but usually do not spread to other parts of the body. They may come back in the same place after treatment. They are most common in adults. Composite hemangioendotheliomas are a type of vascular tumor.

**Compound 42:** (Other name for: warfarin)

**compound adjectives:** adjectives that are hyphenated when they appear before a noun.

**compound adverbs:** while most compound adverbs are written as two words, those beginning with over or under are spelled as one word.

**Compound Balanced Weave:** A fabric consisting of alternating right and left hand spirals nested together, and joined by three or more crimped connecting rods. In some fabrics straight connecting rods are used.

**compound heterozygosity :** The presence of two different mutated alleles at a particular gene locus.

**compound Kushen injection:** A traditional Chinese medicine (TCM) formulation composed of compound Kushen injection (CKI) containing aqueous extracts from the roots of Kushen (*Radix Sophorae Flavescentis*) and Baituling (*Rhizoma Smilacis Glabrae*), with potential antineoplastic and immunomodulating activities. CKI contains numerous chemicals including alkaloids, such as matrine and oxymatrine, flavonoids, alkylxanthenes, quinones, triterpene glycosides, fatty acids, and essential oils. Although the exact mechanism(s) of action through which CKI exerts its effects has yet to be fully elucidated, CKI is able to interfere with the activation of various signal transduction pathways, such as the Wnt/beta-catenin signaling pathway, inhibit nuclear factor-kappa B (NF- $\kappa$ B) activation, and block the activity of multiple receptor tyrosine kinases, such as epidermal growth factor receptor (EGFR) and vascular endothelial growth factor receptor (VEGFR). CKI induces apoptosis in and inhibits proliferation, migration, invasion and adhesion of tumor cells. CKI also modulates the production of inflammatory mediators.

**compound nevus :** A rare form of lymphoma (cancer that begins in cells of the immune system) in which different types of lymphoma cells occur at the same time. The different lymphoma cells may form in the same tissue or organ or in many different tissues or organs. The composite lymphoma may contain different types of non-Hodgkin lymphoma cells or both Hodgkin and non-Hodgkin lymphoma cells.

**compound preposition:** prepositions made up of more than one word.

**compound sentence:** has two or more independent clauses, joined by coordinating conjunctions, and no subordinate clauses.

**compound sodium lactate solution:** A multiple electrolyte, isotonic, crystalloid solution for intravenous infusion containing sodium chloride, potassium chloride, calcium chloride dihydrate, and sodium lactate, which can restore the electrolyte balance, normalize pH, and provide water for

hydration. Upon intravenous administration, the compound sodium lactate solution will replace any lost body fluids and electrolytes thereby providing hydration as well as normalizing electrolyte concentrations. In addition, conversion of sodium lactate to bicarbonate increases plasma bicarbonate levels, which facilitates the removal of hydrogen ions from the blood stream, raises blood pH and normalizes the acid-base balance.

**compound subjects:** refers to more than one actor in a sentence.

**compound word:** combination of two words can create a spelling problem; a dictionary is your best guide to correct spelling.

**compound-complex sentence:** joins two or more independent clauses with one or more subordinate clauses.

**COMPOUNDING:** The combination of polymers with other materials either by means of mechanical (dry) blending or melt state blending. OR The process of selection of additives and their incorporation into a polymer. Compounding is done to obtain desirable properties for particular uses. Modification of the polymer properties is done by ingredients such as polymeric resins, plasticizers, fillers, reinforcing agents, various stabilizers, lubricants, coloring agents, flame retardants, etc. OR The process required to mix polymer(s) with all of the additives that are necessary to provide the end user with a finished grade with suitable properties. OR The process required to mix the polymer with all of the materials that are necessary to provide the end user with a finished product.

**Compounding:** combining a polymer with various additives during melt processing (while the polymer is in a molten state). The mixed, molten material is then extruded, cut into pellet form, and packaged for use by an end user. When the additive is a colorant, the resulting colored material is termed a fully compounded color. Since the compounding process adds cost, compounding is usually only done when other blending methods are unsuitable.

**comprehensive cancer center :** In science, a substance made from two or more different elements that have been chemically joined. Examples of compounds include water (H<sub>2</sub>O), which is made from the elements hydrogen and oxygen, and table salt (NaCl), which is made from the elements sodium and chloride.

**comprehensive pediatric cancer center :** A pressing or squeezing together. In medicine, it can describe a structure, such as a tumor, that

presses on another part of the body, such as a nerve. It can also describe the flattening of soft tissue, such as the breast, that occurs during a mammogram (x-ray of the breast).

**Compressed Spiral Edges:** An edge finish in which the outer turns of the spirals are compressed to a specified distance.

**compressibility factor:**  $z = PV/nRT$  for a gas. If  $z=1$ , then  $PV=nRT$  (the ideal gas equation of state) and the gas is said to behave ideally.

**compression :** A type of break in a bone caused by pressure and in which the bone collapses. Compression fractures usually occur in the spine (backbone) and in bones made weak by cancer or by osteoporosis (a decrease in bone mass and density).

**compression bandage :** A tight-fitting, elastic garment, such as a sleeve or stocking. Compression garments are used in the treatment of lymphedema (swelling caused by a buildup of lymph fluid in tissue). They are also used to improve blood flow.

**compression fracture :** A machine used to keep blood and lymph flowing by pushing air through bands or sleeves that are placed on the arms or legs.

**compression garment :** An uncontrollable urge to say or do something without an obvious reason. A person may repeat a behavior, such as hand-washing, over and over.

**COMPRESSION MOLD:** A mold which is open when the material is introduced and which shapes the material by heat and by the pressure of closing. OR A technique of thermoset molding in which the molding compound (generally preheated) is placed in the heated open mold cavity, mold is closed, under pressure (usually in a hydraulic press) causing the material to flow and completely fill the cavity, pressure being held until the material has cured. A method of molding in which the molding material, generally preheated, is placed in an open heated mold cavity, the mold is closed with a top force, pressure is applied to force the material into contact with all mold areas. OR The process of molding a material in a confined shape by applying pressure and usually heat.

**Compression Molding:** A traditional molding process in which the uncured high consistency rubber compound is placed directly into the mold cavity, and compressed to its final shape by the closure of the mold. Considered unacceptable for many applications because parts must be

deflash causing debris. OR The name of this molding method says everything. A heated plastic material is placed in a heated mold and is then compressed into shape. The plastic can be in bulk but often comes in sheets. The heating process, called curing, insures the final part will maintain its integrity. This molding method is often used to make large objects such as automobile components. OR The process of molding a material in a confined shape by applying pressure and usually heat. OR A method of molding in which the molding material, generally preheated, is placed in an open heated mold cavity, the mold is closed with a top force, pressure is applied to force the material into contact with all mold areas, and heat and pressure are maintained until the molding material has cured. This process is most often used with thermoses. OR A technique of thermoset molding in which the molding compound (generally preheated) is placed in the heated open mold cavity, mold is closed, under pressure (usually in a hydraulic press) causing the material to flow and completely fill the cavity, pressure being held until the material has cured. OR A method of molding in which the molding material, generally preheated, is placed in an open heated mold cavity, the mold is closed with a top force, pressure is applied to force the material into contact with all mold areas, and heat and pressure are maintained until the molding material has cured. This process is most often used with thermoses. OR A process for manufacturing FRP parts in which a charge of SMC or BMC of predetermined weight is placed between two dies and then heat and pressure are applied. The moulding compound flows to fill the die and cures within a few minutes. (Thermoplastic composites, usually consisting of glass fibre and polypropylene can also be compression moulded.) OR A method of molding in which the molding material, generally preheated, is placed in an open heated mold cavity, the mold is closed with a top force, pressure is applied to force the material into contact with all mold areas.

**compression pump :** A method to examine the inside of the colon by taking a series of x-rays. A computer is used to make 2-dimensional (2-D) and 3-D pictures of the colon from these x-rays. The pictures can be saved, changed to give better viewing angles, and reviewed after the procedure, even years later. Also called computed tomography colonography, CT colonography, CTC, and virtual colonoscopy.

**COMPRESSION RATIO:** In an extruder screw, the ratio of volume available in the first flight at the hopper to the last flight at the end of the

screw. OR In single-screw extruders the channel depth in the solids-conveying zone under the hopper is much larger than in the metering (pumping) zone. The depth ratio, usually in the range of 2.0–4.0, is referred to as the compression ratio. The low bulk density solid polymer bed is compressed as it is forced to go through a gradually decreasing depth and melts as it is sheared against the barrel wall. OR In an extruder screw, the ratio of volume available in the first flight at the hopper to the last flight at the end of the screw. OR In an extruder screw, the ratio of the volume of the channel at the first flight of the screw to the volume at the last flight in the metering section. OR A factor that determines the amount of shear that is imparted to plastic material as it travels through the barrel. It is determined by dividing the depth of the screw flight in the feed section by the depth of the screw flight in the metering section. OR In an extruder screw, the ratio of volume available in the first flight at the hopper to the last flight at the end of the screw.

**Compression Section:** The transition section of a screw channel in which a reduction in the screw channel volume occurs.

**Compression Set:** Permanent deformation experienced by a rubber material when compressed for a period of time. The term is commonly used in reference to a test conducted under specific conditions wherein the permanent deformation is expressed as a percentage and measured after a prescribed period of time. Low compression set is desirable in molded rubber parts such as seals and gaskets, which must retain their dimensions to maintain an effective seal OR unrecoverable deformation (strain) that remains in a material after compressive loading has been removed.

**Compression strength:** The crushing load at failure of a material, divided by cross-sectional area of the specimen.

**COMPRESSION ZONE:** The second zone in an extruder screw. It receives material from the feed zone and delivers it to the metering zone. It is sometimes referred to as the melting zone. OR Also called the transition or melting zone. Zone in the extruder's screw barrel. Most of the plastic compound is melted in this section, and the channel depth gets progressively smaller.

**Compressive Strength:** crushing a load at failure divided by the original sectional area of the specimen. OR Crushing load at the failure of a specimen divided by the original sectional area of the specimen. OR The

ability of a material to sustain a force in a direction opposite of tension. OR The ability of a material to resist a force that tends to crush it. OR The maximum compressive stress carried by a test specimen during a compression test OR For a container, the shape in which various cross sections have a common center. OR Crushing load at the failure of a specimen divided by the original sectional area of the specimen. OR The ability of a material to resist a force that tends to crush it. OR

**compressor:** a device that raises the pressure of a gas.

**compulsion :** A procedure that uses x-rays to create a series of detailed pictures of the blood vessels and blood flow inside the body. The pictures are taken from different angles and are created by a computer linked to an x-ray machine. A dye is injected into a vein to make the blood vessels and blood flow easier to see on the x-ray. Computed tomography angiography may be used to check for aneurysms (a bulge in the blood vessel wall), blockages in the arteries, blood clots, and other blood vessel problems. Also called CT angiography and CTA.

**Computational Chemistry:** A branch of chemistry that specialises in using computers to help solve chemistry problems. OR A branch of chemistry concerned with the prediction or simulation of chemical properties, structures, or processes using numerical techniques.

**computed tomographic colonography :** A method to examine the inside of the colon by taking a series of x-rays. A computer is used to make 2-dimensional (2-D) and 3-D pictures of the colon from these x-rays. The pictures can be saved, changed to give better viewing angles, and reviewed after the procedure, even years later. Also called computed tomographic colonography, CT colonography, CTC, and virtual colonoscopy.

**computed tomography angiography :** A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The pictures are taken from different angles and are used to create 3-dimensional (3-D) views of tissues and organs. A dye may be injected into a vein or swallowed to help the tissues and organs show up more clearly. A computed tomography scan may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called CAT scan, computerized axial tomography scan, computerized tomography, and CT scan.

**computed tomography colonography :** A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The pictures are taken from different angles and are used to create 3-dimensional (3-D) views of tissues and organs. A dye may be injected into a vein or swallowed to help the tissues and organs show up more clearly. A computerized axial tomography scan may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called CAT scan, computed tomography scan, computerized tomography, and CT scan.

**computed tomography scan :** A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The pictures are taken from different angles and are used to create 3-dimensional (3-D) views of tissues and organs. A dye may be injected into a vein or swallowed to help the tissues and organs show up more clearly. A computerized tomography may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called CAT scan, computed tomography scan, computerized axial tomography scan, and CT scan.

**computer-assisted drug design:** Using computational chemistry to discover, enhance, or study drugs and related biologically active molecules.

**computerized axial tomography scan :** In science, the amount of a substance, such as a salt, that is in a certain amount of tissue or liquid, such as blood. A substance becomes more concentrated when less water is present. For example, the salt in urine may become more concentrated when a person doesn't drink enough water.

**computerized tomography :** In biology, the beginning of pregnancy, marked by fertilization of an egg by a sperm.

**conatumumab:** A fully human monoclonal agonist antibody directed against the extracellular domain of human TRAIL (tumor necrosis factor-related apoptosis-inducing ligand) receptor 2 (TR-2) with potential antineoplastic activity. Conatumumab mimics the activity of native TRAIL, binding to and activating TR-2, thereby activating caspase cascades and inducing tumor cell apoptosis. TR-2 is expressed by a variety of solid tumors and cancers of hematopoietic origin.

**concave polygon:** a polygon which contains at least one diagonal outside the figure.

**Concentraid:** (Other name for: desmopressin acetate)

**concentrate:** To increase the amount of substance present in a unit amount of mixture. For example, allowing solvent to evaporate from a solution concentrates the solution.

**concentrated:** being of full strength, or undiluted. OR Having a relatively large amount of substance present in a unit amount of mixture. For example, a 12 M HCl solution is more concentrated than an 0.001 M HCl solution.

**concentrated beet crystals:** A formulation containing concentrated beetroot crystals, with potential antioxidant and protective activities. Concentrated beetroot crystals contain antioxidants, including betacyanin, which scavenge free radicals, and high levels of nitrates and folic acid. Intake of concentrated beetroot crystals leads to the conversion of nitrate to nitric oxide (NO). This may have a beneficial effect on blood flow and blood pressure through the stimulation of NO-mediated vasodilation. Additionally, this agent may decrease fatigue and increase physical performance.

**Concentrated Solution:** A solution (liquid mixture) that has a large amount of solute dissolved. As you add more sugar to a glass of water, the sugar solution becomes more concentrated.

**concentrated, fortified, collagen protein hydrolysate liquid**

**supplement:** A liquid-based nutritional supplement containing enzyme-hydrolyzed concentrated protein derived from collagen, and fortified with L-tryptophan, with potential anti-cachexic and wound-healing activities. The concentrated, fortified, collagen protein hydrolysate liquid supplement contains all essential and non-essential amino acids. Upon oral administration, this supplement may improve both gastric functioning and gastrointestinal (GI) health, thereby reducing vomiting and diarrhea. The hydrolyzed protein helps to alleviate the digestive burden and allows for fast and efficient absorption and utilization of the protein. This may prevent both malnutrition and weight loss.

**concentration:** in solutions, the mass, volume, or number of moles of solute present in proportion to the amount of solvent or total solution. Common measures are: molarity, normality, percent, molality, and by specific gravity scales. OR The amount of substance in a specified space. OR Concentration is the amount of one substance in a system relative to the

amount of other substances. If you have a glass of water, the concentration of water in the glass is 100%. A glass of salt water will have a specific concentration of salt in the water. OR A general term referring to the quantity of a material or substance contained in unit quantity of a given medium. When the term concentration is used without further qualification, it now means amount of substance concentration (WHO, 1979). OR the total mass of an ion or molecule in a given volume of solution (see: activity). When measuring ionic concentration by ionselective electrodes, it is important to note that the concentration used in the calibration graphs and calculated for the samples is the concentration of the free ion in solution, not the concentration of the compound from which this ion is derived. A distinction must also be made between the concentration of the free unbound ions and the total concentration, which may include any ions, bound to complexing agents and any atoms in undissociated molecules. OR the relative abundance of a solute in a solution. OR the amount of a solvent compared to the solute in a solution. OR 1. A measure of the amount of substance present in a unit amount of mixture. The amounts can be expressed as moles, masses, or volumes. 2. The process of increasing the amount of substance in a given amount of mixture.

**concentration :** A drug used to treat certain behavior disorders, such as attention deficit hyperactivity disorder (ADHD). It is also being studied as a way to improve brain function in patients treated with anticancer drugs. Concerta acts on certain parts of the brain. It is a type of central nervous system stimulant. Also called methylphenidate hydrochloride and Ritalin.

**concentric circles:** circles with the same center.

**Concentricity:** The characteristic of circles or circular cylindrical surfaces of different radii having a common center. OR crushing a load at failure divided by the original sectional area of the specimen. OR Relationship of all inside dimensions to all outside dimensions. usually as with diameter expressed in thousandths of an inch T1R (Total Indicator Reading) OR A condition in which two or more features (cylinder, cones, spheres, hexagons, etc..) in any combination, have a common axis OR Relationship of all inside dimensions to all outside dimensions usually as with diameter expressed in thousandths of an inch TIR (Total Indicator Reading)

**conception :** Occurring or existing at the same time as something else. In medicine, it may refer to a condition a person has or a medication a person

is taking that is not being studied in the clinical trial he or she is taking part in.

**Concerta :** (Other name for: methylphenidate hydrochloride) OR A treatment that is given at the same time as another.

**concerted:** taking place at the same time without the formation of an intermediate.

**Concerted mechanism:** A model explaining the kinetics of allosteric enzymes in which the transitions of all of the active sites between the T state and the R state occur simultaneously.

**conclusions:** the final paragraph or paragraphs of an essay, and should give a reader a sense of completion.

**concomitant :** In medicine, a health problem with certain characteristics or symptoms.

**Concrete :** This is formed by mixing cement, sand, stones (or crushed rock) and water. It can be poured into a hole to form a block for building foundations or into a mould to produce a variety of shapes (eg girders and railway sleepers). It can be reinforced by being poured around steel cables or mesh. OR Tangible, easily understood. OR the final paragraph or paragraphs of an essay, and should give a reader a sense of completion. OR A mixture of cement, sand, gravel and water.

**concurrent therapy :** A type of learning in which repeated exposure to something may affect a person's behavior when they encounter an unrelated object, sound, or smell that occurred at the same time as the initial exposure. For example, a patient who always feels sick after receiving chemotherapy in a clinic that smells a certain way may be conditioned to feel sick when smelling the same odor in a different place.

**condensate:** water obtained by evaporation or a product that has changed from a gaseous or vaporous form to a liquid form. OR A condensate is an example of moisture that has condensed. Condensate might be created during the process of distillation. When you boil water and it condenses on the lid of the pot, you have created a condensate. OR Water that has been produced by the cooling of steam in a condenser.

**condensation:** The process of vapor molecules forming a liquid. OR A process in which an entering gas is cooled and/or compressed, causing one or more of the gas components to liquefy. Uncondensed gases and liquid

condensate leave the condenser as separate streams. OR the process of a substance changing states from gas to liquid. OR 1. The conversion of a gas into a liquid is called condensation. Condensation usually occurs when a gas is cooled below its boiling point. 2. A reaction that involves linking of two molecules with the elimination of water (or another small molecule). OR A chemical reaction in which two or more molecules combine with the separation of water or some other simple substance. If a polymer is formed, the condensation process is called Polycondensation. See also Polymerization.

**Condensation Point:** The condensation point is when a gas reaches a temperature to become a liquid. Energy is taken out of the atoms in the gas state and they condense, forming drops of liquid. You can also think of the point in nature when water vapor cools and forms small droplets, such as dew in the morning.

**Condensation Polymerisation:** Also known as Step-Growth Polymerisation. A way of making polymers in which every polymer chain grows continuously through the course of the reaction, remaining quite small until almost all the monomer has reacted.

**condensation reaction:** a reaction in which two molecules join to form a product and release a small molecule such as water. OR a reaction in which two molecules join with the liberation of a small stable molecule.

**condensed formula:** a formula in which the single bonds between the atoms are not shown with lines.

**Condenser:** A large heat exchanger designed to cool exhaust steam from a turbine below the boiling point so that it can be returned to the heat source as water. In a pressurized-water reactor, the water is returned to the steam generator. In a boiling-water reactor, it returns to the reactor core. The heat removed from the steam by the condenser is transferred to a circulating water system and is exhausted to the environment, either through a cooling tower or directly into a body of water.

**condition :** A situation in which one signal, or stimulus, is given just before another signal. After this happens several times, the first signal alone can cause the response that would usually need the second signal.

**conditional acceptable daily intake:** A conditional acceptable daily intake is one that is established for a pesticide in order to limit its use to those situations where no satisfactory substitutes are available. This definition

will be the subject of further discussion. The allocation of conditional ADIs for intentional food additives has been superseded (Vettorazzi, 1980).

**conditionally replicative adenovirus 5/3-delta24:** A replication competent, oncolytic adenovirus serotype 5 (Ad5) with its knob domain of fiber protein substituted by that of the serotype 3 (Ad5/3-delta24), with potential oncolytic activity. Upon administration, oncolytic adenovirus Ad5/3-delta24 binds to specific Ad3 receptors that are highly expressed on certain tumor cells. This results in the replication of oncolytic adenovirus Ad5/3-delta24 in tumor cells and induces tumor cell lysis which may potentially result in the activation of a systemic immune response against tumor-associated antigens. The Ad5/3-delta24 has a 24 base-pair deletion in constant region 2 of the E1A gene which allows for selective replication in cells that are defective in the retinoblastoma gene (Rb) or cyclin-dependent kinase inhibitor-2A (CDKN2A or p16INK4a). As most tumor cells are defective in the Rb/p16 pathway, this virus selectively replicates in these cells. The replacement of the Ad5 fiber knob, which mediates viral-cell receptor binding, allows for a Coxsackie-adenovirus receptor (CAR)-independent infection of tumor cells; CAR expression is often deficient on cancer cells. Check for active clinical trials using this agent.

**conditioned response :** The treatments used to prepare a patient for stem cell transplantation (a procedure in which a person receives blood stem cells, which make any type of blood cell). A conditioning regimen may include chemotherapy, monoclonal antibody therapy, and radiation to the entire body. It helps make room in the patient's bone marrow for new blood stem cells to grow, helps prevent the patient's body from rejecting the transplanted cells, and helps kill any cancer cells that are in the body.

**conditioned stimulus :** A raised growth on the surface of the genitals caused by human papillomavirus (HPV) infection. The HPV in condyloma is very contagious and can be spread by skin-to-skin contact, usually during oral, anal, or genital sex with an infected partner. Also called genital wart.

**Conditioning:** The subjection of a material to a stipulated treatment so that it will respond in a uniform way to subsequent testing or processing. The term is frequently used to refer to the treatment given to specimens before testing. OR Exposing a molded part to a set of conditions (such as hot oil), which impart favorable characteristics to the product See anneal. OR

Subjecting a material to standard environmental and/or a non-standard stress state prior to testing or use.

**conditioning regimen :** A procedure in which a cone-shaped piece of abnormal tissue is removed from the cervix. A scalpel, a laser knife, or a thin wire loop heated by an electric current may be used to remove the tissue. The tissue is then checked under a microscope for signs of disease. Cone biopsy may be used to check for cervical cancer or to treat certain cervical conditions. Types of cone biopsy are LEEP (loop electrosurgical excision procedure) and cold knife conization (cold knife cone biopsy). Also called conization.

**conductance:** a measure of the conducting power of a solution equal to the reciprocal of the resistance. The resistance is expressed in ohms.

**conduction:** transfer of energy through solids by direct contact.

**Conductive Silicone Rubber:** A silicone rubber capable of conducting electricity. Most generally applied to silicone rubber products used to conduct static electricity or as an RF shield

**conductivity:** ability of a material to carry current or heat. OR a measure of the ability of a solution to conduct electricity. It is the reciprocal of resistivity, which relates the resistance of a conductor (in ohms), to its length and cross sectional area. Units of conductivity are Siemens per centimeter (S/cm). Conductivity is measured with a conductivity cell. This contains two platinum electrodes of known area rigidly fixed at 1 cm apart. The electrolytic conductivity of the solution is determined by passing an alternating current between the electrodes. The conductivity is related to the ionic strength of the solution. OR The reciprocal of volume resistivity. It is the conductance of a unit cube of any material. OR the reciprocal of volume resistivity. It is the conductance of a unit cube of any material. OR A wire, or combination of wires not insulated from each other, suitable for carrying electricity.

**Conductor:** Material that can support flow of electric current. Fluoropolymer coatings are normally insulators, but can be modified with certain fillers and pigments to make them conductive.

**Conduit:** A pipe or channel for conveying water; a trough or pipe for containing wires or cables.

**condyloma :** A mental state in which one is not thinking clearly.

**Cone:** A photoreceptor cell that functions in bright light and is responsible for color vision.

**CONE AND PLATE INSTRUMENT (also called the Weissenberg Rheogoniometer):** A device to measure viscosity by determining the torque necessary to rotate a cone over a flat plate with molten polymer in between. The angle is very small so that the rotational flow is nearly parallel. The device can also be used to determine the (first) normal stress difference by measuring the normal force tending to separate the cone from the plate surface (see NORMAL STRESSES).

**cone biopsy :** A condition or trait present at birth. It may be the result of genetic or non-genetic factors.

**cone cells:** cells of the eye that detect color.

**cone of depression:** the area and shape of a drawdown around a well.

**configuration:** the specific arrangement of atoms and groups in three-dimensional space. A configuration is characteristic of a specific stereoisomer.

**Configuration:** The spatial arrangement in which atoms are covalently linked in a molecule.

**configuration:** The spatial arrangement of an organic molecule that is conferred by the presence of either (1) double bonds, about which there is no freedom of rotation, or (2) chiral centers, around which substituent groups are arranged in a specific sequence. Configurational isomers cannot be interconverted without breaking one or more covalent bonds.

**Configurational polymorphism:** A type of polymorphism in which one labile isomer of a compound (e.g., a keto form) is present in one polymorph and another labile isomer (e.g., an enol form) is present in the other polymorph.

**confined aquifer:** an aquifer overlain by a less permeable bed that keeps the water in the aquifer under pressure.

**confining pressure:** see geostatic pressure.

**conformation:** a specific three-dimensional shape of a molecule at any given time. Conformation can change by rotation around a single bond. OR The three-dimensional arrangement adopted by a molecule, usually a complex macromolecule. Molecules with the same configuration can have more than one conformation. OR The spatial arrangement of substituent

groups that are free to assume different positions in space, without breaking any bonds, because of the freedom of bond rotation.

**conformation-sensitive gel electrophoresis** : A type of mutation testing in which a segment of DNA is screened for mismatched pairing between normal and mutated base pairs. Also called CSGE.

**conformation,  $\beta$** : See  $\beta$  conformation.

**Conformational Blocker**: Groups introduced during drug design to prevent a molecule from adopting particular conformations.

**Conformational polymorphism**: A type of polymorphism in which the conformation of the independent molecule in each polymorph is different.

**conformers**: Molecular arrangements that differ only by rotations around single bonds. For example, the "boat" and "chair" forms of cyclohexane are conformers.

**confounding** :1. A situation in which the effects of two processes are not separated. The distortion of the apparent effect of an exposure on risk brought about by the association with other factors that can influence the outcome.2. A relationship between the effects of two or more causal factors as observed in a set of data, such that it is not logically possible to separate the contribution that any single causal factor has made an effect.3. A situation in which a measure of the effect of an exposure on risk is distorted because of the association of exposure with other factor(s) that influence the outcome under study.

**confounding variable** : A variable that can cause or prevent the outcome of interest, is not an intermediate variable, and is not associated with the factor under investigation. Such a variable must be controlled in order to obtain an undistorted estimate of the effect of the study factor on risk (Last, 1988).

**confusion** : A benign (not cancer) blood vessel tumor that is fully formed at birth. Congenital hemangiomas usually form on the skin of the head and neck or arms and legs. They may also form in organs, such as the liver. Congenital hemangiomas may be raised or flat and usually appear as purple-red lesions on the skin. Some congenital hemangiomas go away on their own; others only partly go away or do not go away at all. Congenital hemangiomas are a type of vascular tumor.

**congener:** 1. Elements belonging to the same group on the periodic table. For example, sodium and potassium are congeners. 2. Compounds produced by identical synthesis reactions and procedures.

**congeners:** elements with similar properties, arranged in columns of the periodic table.

**congenital :** A condition or trait present at birth. It may be the result of genetic or non-genetic factors. OR A very rare disorder in which the bone marrow doesn't make enough red blood cells. It is usually seen in the first year of life. Patients may have deformed thumbs and other physical problems. They also have an increased risk of leukemia and sarcoma, especially osteosarcoma (bone cancer). Patients with congenital hypoplastic anemia may have a mutation (change) in one of the genes that make proteins found in the cell's ribosomes. Also called Blackfan–Diamond anemia, congenital pure red cell aplasia, DBA, Diamond-Blackfan anemia, erythropoiesis imperfecta, and inherited erythroblastopenia.

**congenital hemangioma :** A type of kidney tumor that is usually found before birth by ultrasound or within the first 3 months of life. It contains fibroblastic cells (connective tissue cells), and may spread to the other kidney or to nearby tissue. Congenital mesoblastic nephroma is more common in males.

**congenital hypoplastic anemia :** An inherited disorder in which there is a lower-than-normal number of neutrophils (a type of white blood cell that is important in fighting infections). Infants with the disorder get infections caused by bacteria, and are at an increased risk of acute myelogenous leukemia (AML) or myelodysplasia (a bone marrow disorder). Also called genetic infantile agranulocytosis, infantile genetic agranulocytosis, Kostmann disease, Kostmann neutropenia, and Kostmann syndrome.

**congenital mesoblastic nephroma :** A very rare disorder in which the bone marrow doesn't make enough red blood cells. It is usually seen in the first year of life. Patients may have deformed thumbs and other physical problems. They also have an increased risk of leukemia and sarcoma, especially osteosarcoma (bone cancer). Patients with congenital pure red cell aplasia may have a mutation (change) in one of the genes that make proteins found in the cell's ribosomes. Also called Blackfan–Diamond anemia, congenital hypoplastic anemia, DBA, Diamond-Blackfan anemia, erythropoiesis imperfecta, and inherited erythroblastopenia.

**congenital neutropenia :** Weakness of the heart muscle that leads to a buildup of fluid in body tissues.

**congenital pure red cell aplasia :** A procedure in which a cone-shaped piece of abnormal tissue is removed from the cervix. A scalpel, a laser knife, or a thin wire loop heated by an electric current may be used to remove the tissue. The tissue is then checked under a microscope for signs of disease. Conization may be used to check for cervical cancer or to treat certain cervical conditions. Types of conization are LEEP (loop electrosurgical excision procedure) and cold knife conization (cold knife cone biopsy). Also called cone biopsy.

**congestive heart failure :** A compound formed by chemically joining two or more different substances. For example, an antibody-drug conjugate is made up of a monoclonal antibody that is chemically linked to a drug. Some conjugates are used to treat cancer.

**congruent:** exactly alike. Identical in shape and size.

**conization :** A membrane that lines the inner surface of the eyelid and also covers the front part of the eye. Conjunctivitis is inflammation of the conjunctiva.

**conjugate:** an acid and base that are related by removing or adding a single hydrogen ion.

**conjunctate :** A condition in which the conjunctiva (membranes lining the eyelids and covering the white part of the eye) become inflamed or infected. Also called pinkeye.

**conjugate acid:** the acid that results when a Brønsted-Lowry base accepts a hydrogen ion.

**conjugate acid:** A substance which can lose a  $H^+$  ion to form a base. OR A conjugate acid is a molecule that is created when you start with a base and add a proton.

**conjugate acid-base pair:** A proton donor and its corresponding deprotonated species; for example, acetic acid (donor) and acetate (acceptor).

**conjugate base:** A conjugate base is a molecule that is created when you start with an acid and remove a proton. OR A substance which can gain a  $H^+$  ion to form an acid.

**conjugate redox pair:** An electron donor and its corresponding electron acceptor form; for example,  $\text{Cu}^+$  (donor) and  $\text{Cu}^{2+}$  (acceptor), or NADH (donor) and  $\text{NAD}^+$  (acceptor).

**conjugated double bonds:** carbon-carbon double bonds that are separated from one another by just one single bond; for example,

**conjugated estrogens:** Purified orally bioavailable female sex hormones isolated from pregnant mare urine or synthetically derived from plant materials and primarily conjugated as sulfate esters. Estrogen binds to and activates specific nuclear receptors, which, in turn, bind to estrogen response elements (EREs) in target genes, resulting in histone acetylation, alteration of chromatin conformation, and initiation of transcription.

**conjugated estrogens/bazedoxifene:** A combination preparation of conjugated estrogens and the selective estrogen receptor modulator (SERM) bazedoxifene that can be used for hormone replacement purposes. The conjugated estrogens increase the diminishing levels of estrogen in menopausal and postmenopausal women by binding to and activating estrogen receptors (ERs), which, in turn, bind to estrogen response elements (EREs) in target genes; this results in the transcription of estrogen-regulated genes. Maintaining adequate estrogen levels decreases symptoms such as hot flashes, night sweats, irregular menstruation, fat redistribution, mood swings, sleep disorders, vaginal dryness and osteoporosis. Bazedoxifene specifically binds to and activates ERs in certain tissues, including liver, bone, breast, and endometrium, and also promotes the transcription of estrogen-regulated genes in these tissues. However, bazedoxifene acts as an estrogen antagonist in uterine and breast tissue, thereby blocking the proliferative effects of estrogen-binding to ER-positive cells in these tissues.

**conjugated linoleic acid:** A slightly altered form of linoleic acid, an omega-6 fatty acid important to human health found in beef and dairy fats.

**conjugated protein:** A protein containing one or more prosthetic groups.

**conjugation:** the overlapping in all directions of a series of p orbitals. This process usually occurs in a molecule with alternating double and single bonds.

**conjunction:** words that join or link elements.

**conjunctiva:** The term applied to the mucous membrane that covers the eyeball and undersurface of the eyelids. OR A substance made by the pancreas. Connecting peptide and insulin are both part of a larger molecule that gets split apart before being released into the blood. Abnormal blood levels of connecting peptide may occur in certain diseases, such as diabetes or cancer. Also called C-peptide.

**conjunctive (sentence) adverbs:** words that look like coordinating conjunctions but are actually adverbs.

**conjunctivitis :** Supporting tissue that surrounds other tissues and organs. Specialized connective tissue includes bone, cartilage, blood, and fat.

**connate water:** water trapped in the original sediments during deposition and lithification.

**connecting peptide :** A level of sedation in which a person is asleep but wakes when spoken to or touched. Conscious sedation is caused by special drugs and is used to help relieve anxiety during certain medical or surgical procedures. Drugs that relieve pain may be given at the same time. Also called moderate sedation.

**connective tissue :** A clinical study that includes all eligible patients identified by the researchers during the study registration period. The patients are treated in the order in which they are identified. This type of study usually does not have a control group.

**Connector Rod:** A wire or rod of any shape (usually round) either straight or crimped, used for joining belt components.

**consanguinity :** Genetic relatedness between individuals who are descendants of at least one common ancestor.

**conscious sedation :** A program of the National Institutes of Health to bring together an independent group of experts to review scientific evidence related to an important public health issue. For a specific issue, a panel of experts (such as doctors and scientists) reviews reports and papers on the subject, s to information presented by other experts in the field, and hears comments from the general public. Based on the evidence presented, the panel writes a report summarizing the findings, which is made available to the public. The report is not intended to be a practice guideline.

**consecutive:** next to each other

**consecutive case series :** A document with important information about a medical procedure or treatment, a clinical trial, or genetic testing. It also includes information on possible risks and benefits. If a person chooses to take part in the treatment, procedure, trial, or testing, he or she signs the form to give official consent.

**consecutive even integers:** Integers that are adjacent in an ordered list of even integers. For example, 4 and 6 are two consecutive even integers.

**consecutive integers:** Integers that are adjacent on a number line. For example, 7, 8, and 9 are three consecutive integers.

**consecutive odd integers:** Integers that are adjacent in an ordered list of odd integers. For example, 1 and 3 are two consecutive odd integers.

**Consensus Development Program :** A process in which patients are given important information, including possible risks and benefits, about a medical procedure or treatment, a clinical trial, or genetic testing. This is to help them decide if they want to be treated, tested, or take part in the trial. Patients are also given any new information that might affect their decision to continue. Also called informed consent.

**Consensus sequence:** Idealized base sequence that represents common features of a promoter site. OR A DNA or amino acid sequence consisting of the residues that occur most commonly at each position within a set of similar sequences. OR In nucleic acids, the "average" sequence that signals a certain type of action by a specific protein. The sequences actually observed usually vary around this average.

**consent form :** Treatment that is given after cancer has disappeared following the initial therapy. Consolidation therapy is used to kill any cancer cells that may be left in the body. It may include radiation therapy, a stem cell transplant, or treatment with drugs that kill cancer cells. Also called intensification therapy and postremission therapy.

**consent process :** A process of information exchange between a clinician and an individual or their legal proxy designed to facilitate autonomous, informed decision making. The informed consent process for genetic testing should include an explanation of the medical and psychosocial risks, benefits, limitations, and potential implications of genetic analysis, a discussion of privacy, confidentiality, the documentation and handling of genetic test results, as well as options for managing the hereditary disease risk. Also called informed consent. OR A condition in which stool becomes

hard, dry, and difficult to pass, and bowel movements don't happen very often. Other symptoms may include painful bowel movements, and feeling bloated, uncomfortable, and sluggish.

**Conservation of Matter:** Name of the concept that explains how mass cannot be created or destroyed during a chemical reaction.

**conservative substitution:** Replacement of an amino acid residue in a polypeptide by another residue with similar properties; for example, substitution of Glu by Asp. OR Mutations that replace one amino acid with another similar in size and chemical properties.

**Consistency:** A term used to describe the thickness of a paint in the can. While paints of thick consistency are usually expected to be difficult to spread, this will not be the case with 'Gel' and 'Thixotropic' paints. Paints can usually be brought to a thinner consistency by thinning. OR The resistance of a paint to flow. A paint with high consistency flows slowly; with low consistency it flows readily.

**CONSISTENCY INDEX:** In the power-law viscosity model , which describes the reduction of viscosity as the shear rate increases (shear thinning),  $m$  is the consistency index (which is a function of temperature). It corresponds to the value of the viscosity for shear rate

**consolidation therapy :** A type of acupuncture based on a form of Oriental medicine in which treatment is based on a person's constitution. According to this type of medicine, the constitution is the specific way a person's organs affect health and how he or she looks, thinks, behaves, and responds to treatment. Also called Korean acupuncture.

**Constant pressure gradient :** pressure drop per unit length. The constant pressure gradient principlesays that the most efficient filling pattern is when the pressure gradient is constant along the flow path.

**Constant region:** The carboxyl-terminal end of an immunoglobulin G (igg) light chain or an igg heavy chain. For many antibodies, these parts of the polypeptide chains have amino acid sequences that are very similar to one another; a light chain has one constant region, whereas a heavy chain has three such regions, each of which specifies a compact domain in the native immunoglobulin molecule.

**Constant-T:** (Other name for: theophylline)

**constellation:** a group of stars that appears to be in a pattern.

**constipation :** The DNA in germ cells (egg and sperm cells that join to form an embryo). Constitutional DNA is the source of DNA for all other cells in the body. Also called germline DNA.

**constitutional acupuncture :** Touching or very close together.

**constitutional DNA :** Constitutional DNA refers to tissue derived from reproductive cells (egg or sperm) that become incorporated into the DNA of every cell in the body of the offspring. A germline mutation may be passed from parent to offspring. Also called germline DNA.

**constitutional DNA :** Lymphoma in which the lymph nodes containing cancer are next to each other.

**constitutive enzymes:** Enzymes required at all times by a cell and present at some constant level; for example, many enzymes of the central metabolic pathways. Sometimes called "housekeeping enzymes." OR Enzymes synthesized in fixed amounts, regardless of growth conditions.

**Constitutive genes:** Genes that are not subject to regulation and are constantly transcribed.

**construct validity:** The extent to which the measurement corresponds to theoretical concepts (constructs) concerning the phenomenon under study. For example, if on theoretical grounds, the phenomenon should change with age, a measurement with construct validity would reflect such a change.

**Construction recapture:** The maximum number of years that could be added to a facility's license expiration date to recapture the period between the date the NRC issued the facility's construction permit to the date it granted an operating license. A licensee must submit an application to request this extension. For further information, see the Staff Requirements Memorandum regarding SECY-98-296, "Agency Policy Regarding Licensee Recapture of Low-Power Testing or Shutdown Time for Nuclear Power Plants."

**constructive interference:** When the peaks and troughs of two interfering waves match, the amplitudes add to give the resultant wave a higher amplitude.

**consultand :** An individual who presents for genetic counseling. Also called counselee.

**consumers:** the organisms within an ecosystem that meet their energy needs by feeding on the producers.

**contact:** the plane of separation between any two different kinds of rocks.

**Contact angle:** A means of quantifying the nonstick properties of a coating by measuring the ability of a liquid to wet its surface.

**contact coagulation:** a water clarification process which involves the addition of a coagulant with appropriate mixing for the purpose of floc formation within a filter media, which will be periodically back-flushed to permit the separation of the resulting solids from the main wastewater stream.

**contact metamorphic deposit:** a hydrothermal deposit that results from hot solutions that leave a cooling intrusion and deposit minerals in cracks in country rock.

**contact metamorphism:** the process by which country rock surrounding a hot magma intrusion is metamorphosed by the high heat flow coming from the intrusion.

**contact metamorphism:** the process of changing rocks into metamorphic rocks by nearby magma.

**Contact Metamorphism:** Metamorphic rocks that have been formed in areas where volcanic activity has occurred. The heat from the lava directly heats the neighboring rocks and causes them to reform. There are more crystals in this type of metamorphic rock.

**Contact stabilization:** Contact stabilization is a modification of the conventional activated sludge process. In contact stabilization, two aeration tanks are used. One tank is for separate reaeration of the return sludge for at least four hours before it is permitted to flow into the other aeration tank to be mixed with the primary effluent requiring treatment.

**Contact time:** A solid-state NMR term referring to the length of the spin-lock period in which the Larmor frequencies of the proton and carbon are matched.

**Containment building:** The air-tight building, which houses a nuclear reactor and its pressurizer, reactor coolant pumps, steam generator, and other equipment or piping that might otherwise release fission products to the atmosphere in the event of an accident. Such buildings are usually made of steel-reinforced concrete.

**Containment structure:** A gas-tight shell or other enclosure around a nuclear reactor to confine fission products that otherwise might be

released to the atmosphere in the event of an accident. Such enclosures are usually dome-shaped and made of steel-reinforced concrete.

**contaminant:** In some contexts (e.g., in relation to gas cleaning equipment), used as a synonym for pollutant (ISO, 1979).

**Contamination:** Undesirable radiological, chemical, or biological material (with a potentially harmful effect) that is either airborne, or deposited in (or on the surface of) structures, objects, soil, water, or living organisms in a concentration that makes the medium unfit for its next intended use. OR a general term signifying the introduction into water of microorganisms, chemicals, wastes or sewage which renders the water unfit for its intended use.

**contamination plume:** the elongate area of contaminated groundwater that is downgradient from the point source of leakage.

**Contego:** (Other name for: autologous tumor infiltrating lymphocytes LN-144)

**content validity:** The extent to which the measurement incorporates the domain of the phenomenon under study. For example, a measurement of functional health status should embrace activities of daily living, occupational, family, and social functioning, etc.

**contiguous :** A pouch formed from a piece of small intestine to hold urine after the bladder has been removed.

**contiguous lymphoma :** In medicine, a treatment plan that gives immediate rewards for desired changes in behavior. It is based on the principle that if a good behavior is rewarded, it is more likely to be repeated. This is often used in the treatment of drug and alcohol abuse, and is being studied as a smoking cessation method.

**continent reservoir :** A procedure that bathes the abdominal cavity in fluid that contains anticancer drugs. This fluid is warmer than body temperature. This procedure appears to kill cancer cells without harming normal cells. Also called CHPP.

**continent-continent convergence:** the result when two continents collide.

**continental crust:** The layer of the Earth that lies under continents and the continental shelves. It ranges in thickness from 35 to 60 km. Its upper layer has a density of 2.7 g/cm<sup>3</sup> and is composed of rocks that are rich in silica and alumina.

**continental divide:** that topographic ridgeline that separates the streams that flow in opposite directions and empty into different oceans.

**continental drift:** the theory that the continents were once joined together and somehow then split and moved apart.

**continental glaciation:** glaciation that affects a broader, flatter part of a continental land mass than does alpine glaciation.

**continental glacier:** a thick sheet of ice covering a mass of land all year round, moving outward from the thickest part; found only in Greenland and Antarctica.

**continental plate:** A thick continental crust.

**continental rise:** a very low-angle ridge of sediment that forms between the lower part of the continental slope and the abyssal plain.

**continental shelf:** a shallow, very gently sloping platform that extends seaward from the edge of a continent. OR ocean bottom along the coasts with a low gradient.

**continental shelves:** Those parts of the continent that are covered by water. They are several to more than 322 km wide and about 122 m deep. At the edges of the shelves, the continental slopes drop rapidly from 100 to 200 m to 3000 to 3700 m.

**continental slope:** an area that extends from the seaward edge of a continental shelf into the deep ocean at an average angle of 4 to 5 degrees.

**continental slope:** ocean bottom that connects the continental shelf to the deep ocean floor.

**continental slopes:** See continental shelves.

**contingency management :** The administration of a fluid into a blood vessel, usually over a prolonged period of time.

**continuous branch:** the type of magmatic differentiation in which minerals form continuously during cooling.

**continuous hyperthermic peritoneal perfusion :** In medicine, describes the delivery of health care over a period of time. In patients with a disease, this covers all phases of illness from diagnosis to the end of life.

**continuous infusion :** The use of drugs, devices, or surgery to prevent pregnancy. There are many different types of contraception. These include barrier methods to keep sperm from fertilizing the egg, hormone methods,

intrauterine devices (IUDs), and surgery to close the fallopian tubes in women or close off the two tubes that carry sperm out of the testicles in men. Also called birth control.

**Continuous Service Temperature:** The highest temperature at which a material can perform reliably in long term application - long term being, however, OR The highest temperature at which a material can perform reliably in long term application - as defined by the manufacturer. Inconsistently defined by the manufacturers.

**continuous spectrum:** A plot of the relative absorbance or intensity of emitted light vs. wavelength or frequency that shows a smooth variation, rather than a series of sharp peaks or bands.

**Continuous Thread (CT) Finish:** An uninterrupted protruding helix on the neck of a bottle to hold a screw type closure.

**continuum of care :** A company hired by another company or research center to take over certain parts of running a clinical trial. The company may design, manage, and monitor the trial, and analyze the results. Also called CRO.

**contour current:** a current that flows parallel to the edge of a continental slope.

**contour farming:** planting crops along contour lines on a hill to help prevent soil erosion.

**contour interval:** the elevation difference between contour lines.

**contour line:** line connecting points of equal elevation.

**Contoured pins:** Ejector pins with the ends shaped to match a sloping surface on the part.

**contraception :** A permanent tightening of the muscles, tendons, skin, and nearby tissues that causes the joints to shorten and become very stiff. This prevents normal movement of a joint or other body part. Contractures may be caused by injury, scarring, and nerve damage, or by not using the muscles. It may also occur at some point in time after a stem cell transplant that caused chronic graft-versus-host disease.

**contract:** to become smaller, closer together

**Contract Research Organization :** A symptom or medical condition that makes a particular treatment or procedure inadvisable because a person is likely to have a bad reaction. For example, having a bleeding disorder is a

contraindication for taking aspirin because treatment with aspirin may cause excess bleeding.

**Contracting area (disc, cylinder, or rectangle) equation:** A kinetics equation used to fit solid-state kinetic data to a two-dimensional advancement of a phase boundary from the outer edges inward across the surface of the solid.

**Contracting volume (cube or sphere) equation:** A kinetics equation used to fit solid-state kinetic data to a three-dimensional advancement of a phase boundary from the surface inward through the solid.

**contraction:** Refers to the particular choice of scheme for generating the linear combinations of gaussian functions that constitute a contracted basis set. (See cGTO.) A "generally-contracted" basis set is one in which each primitive is used in many basis functions. A "segmented" basis set, in contrast, is one in which each primitive is used in only one (or maybe two) contracted function.

**contracture :** Having to do with the opposite side of the body.

**contraindication :** A series of x-ray pictures of the esophagus taken after a patient drinks a liquid containing barium sulfate (a form of the silver-white metallic element barium). The barium sulfate coats and outlines the inner wall of the esophagus so that it can be seen on the x-ray pictures. Also called esophagram.

**contralateral :** A dye or other substance that helps show abnormal areas inside the body. It is given by injection into a vein, by enema, or by mouth. Contrast material may be used with x-rays, CT scans, MRI, or other imaging tests.

**contrast agent CS-1000:** An aqueous colloidal nanoemulsion containing perfluorocarbon (PFC) polymers that can be used as a tracer for cell tracking purposes during fluorine-19 (<sup>19</sup>F) magnetic resonance imaging (MRI). Upon administration of the contrast agent CS-1000 to cells *ex vivo*, this agent freely enters the cells. Upon introduction of these cells into the patient and subsequent <sup>19</sup>F MRI, the amount of fluorine can be detected and cellular persistence, survival and distribution of the treated cells can be assessed. The emulsion allows for fast entry of the fluorinated polymers into cells; the polymers do not degrade and remain in the cells.

**contrast esophagram** : An animal in a study that does not receive the treatment being tested. Comparing the health of control animals with the health of treated animals allows researchers to evaluate the effects of a treatment more accurately.

**contrast material** : In a clinical trial, the group that does not receive the new treatment being studied. This group is compared to the group that receives the new treatment, to see if the new treatment works.

**control animal** : A clinical study that includes a comparison (control) group. The comparison group receives a placebo, another treatment, or no treatment at all.

**control group** : An experiment or clinical trial that includes a comparison (control) group.

**control limit**: A regulatory value applied to the airborne concentration in the workplace of a potentially toxic substance which is judged to be "reasonably practicable" for the whole spectrum of work activities and which must not normally be exceeded.

**Control rod**: A rod, plate, or tube containing a material such as hafnium, boron, etc., used to control the power of a nuclear reactor. By absorbing neutrons, a control rod prevents the neutrons from causing further fissions.

**Control room**: The area in a nuclear power plant from which most of the plant's power production and emergency safety equipment can be operated by remote control.

**Controlled area**: At a nuclear facility, an area outside a restricted area but within the site boundary, to which the licensee can limit access for any reason.

**controlled clinical trial** : A drug or other substance that is tightly controlled by the government because it may be abused or cause addiction. The control applies to the way the substance is made, used, handled, stored, and distributed. Controlled substances include opioids, stimulants, depressants, hallucinogens, and anabolic steroids. Controlled substances with known medical use, such as morphine, Valium, and Ritalin, are available only by prescription from a licensed medical professional. Other controlled substances, such as heroin and LSD, have no known medical use and are illegal in the United States.

**Controlled frictional heating :** runners designed to deliver a higher melt temperature to the cavity. This results in lower stress levels in the part without causing material degradation due to long exposure to elevated temperatures in the barrel.

**controlled study :** A system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. Also called allopathic medicine, biomedicine, mainstream medicine, orthodox medicine, and Western medicine.

**controlled substance :** Treatment that is widely accepted and used by most healthcare professionals. It is different from alternative or complementary therapies, which are not as widely used. Examples of conventional therapy for cancer include chemotherapy, radiation therapy, and surgery. Also called conventional treatment.

**controls matched:** Controls (persons) who are selected so that they are similar to the study group, or cases, in specific characteristics. Some commonly used matching variables are age, sex, race and socio-economic status (Last, 1988).

**convection:** transfer of energy in fluids; can create currents by density differences.

**convection:** Atmospheric or oceanic motions that are predominately vertical and that result in vertical transport and mixing of atmospheric or oceanic properties. Because the most striking meteorological features result if atmospheric convective motion occurs in conjunction with the rising current of air (i.e., updrafts), convection is sometimes used to imply only upward vertical motion.

**convection currents:** currents within a material that are driven mostly by changing temperature gradients.

**convective adjustment:** A numerical procedure applied in many atmospheric models to approximate the vertical nonradiative heat transport. This procedure adjusts the lapse rate whenever necessary so that some prescribed critical lapse rate is never exceeded.

**Conventional kinesin:** A motor protein, built around a P-loop ntpase core, that has several structural features in common with myosin; conventional kinesin moves toward the plus end of microtubules.

**conventional medicine :** Treatment that is widely accepted and used by most healthcare professionals. It is different from alternative or complementary therapies, which are not as widely used. Examples of conventional treatment for cancer include chemotherapy, radiation therapy, and surgery. Also called conventional therapy.

**conventional therapy :** A condition in which muscles contract and relax quickly and cause uncontrolled shaking of the body. Head injuries, high fevers, some medical disorders, and certain drugs can cause convulsions. They may also occur during seizures caused by epilepsy.

**Conventional treatment:** The preliminary treatment, sedimentation, flotation, trickling filter, rotating biological contactor, activated sludge and chlorination of wastewater.

**conventional treatment :** A laboratory test to identify antibodies that can bind to the surface of red blood cells or platelets and destroy them. This test is used to diagnose certain blood disorders in which patients make antibodies to their own red blood cells or platelets. It is also used to determine blood type. Also called antiglobulin test.

**Conventional Weave:** A fabric consisting of a series of either all right or all left hand spirals each turned into the preceding spiral to form a continuous belt. (For basic types, see one directional and sectional weave.)

**convergence:** The quasi-horizontal flow of a fluid toward a common destination from different directions. When waters of different origins come together at a point or along a line (convergence line), the denser water from one side sinks under the lighter water from other side. The ocean convergence lines are the polar, subtropical, tropical, and equatorial. Also see divergence.

**convergent boundary:** a fault boundary marked by plates that come together.

**Convergent Die:** A die in which the internal channels leading to the orifice are converging (only applicable to dies for hollow bodies).

**Convergent evolution:** The process by which different evolutionary pathways arrive at the same solution to a biochemical problem.

**converging plate boundary:** region where plates move toward each other.

**Conversion:** Changing from one substance to another. As food matter is changed to cell growth or to carbon dioxide. OR The term used to indicate

converting plastic bags from a continuous roll to separate bags in a given configuration.

**conversion factor:** A conversion factor is a fraction that relates one unit to another. Multiplying a measurement by a conversion factor changes the units of the measurement. For example, since 1 in = 2.54 cm, to convert 10 inches to centimeters,  $(10 \text{ in}) = 25.4 \text{ cm}$

**Conversion Fahrenheit to Celsius:**  $F = (^{\circ} \text{C} \times 9/5) + 32$  or  $C = (^{\circ} \text{F} - 32) \times 5/9$

**CONVERTOR:** A term used in the packaging industry. Converters buy plastic film or sheeting in the form of roll stock and convert it to useful forms by slitting, die cutting, heat sealing, etc. for resale to packaging firms.

**convex polygon:** a polygon in which all diagonals lie within the figure.

**Conveyor:** A mechanical device to transport material from one point to another, often continuously.

**convulsion :** A type of lung disease marked by permanent damage to tissues in the lungs, making it hard to breathe. COPD includes chronic bronchitis, in which the bronchi (large air passages) are inflamed and scarred, and emphysema, in which the alveoli (tiny air sacs) are damaged. It develops over many years and is usually caused by cigarette smoking. Also called chronic obstructive pulmonary disease.

**Cool colours:** Any of the hues in which blue predominates. Opposite to 'warm colours'.

**Coolant:** A substance circulated through a nuclear reactor to remove or transfer heat. The most commonly used coolant in the United States is water. Other coolants include heavy water, air, carbon dioxide, helium, liquid sodium, and a sodium-potassium alloy.

**Cooldown:** The gradual decrease in reactor fuel rod temperature caused by the removal of heat from the reactor coolant system after the reactor has been shutdown.

**Cooley anemia:** is thalassemia major which refers to thalassemias associated with total loss of  $\beta$ -globin (referred to as  $\beta^0$ -thalassemia) or partial loss (referred to as  $\beta^+$ -thalassemia)

**COOLING CHANNELS:** Channels or passageways located within the body of a mold through which a cooling medium can be circulated to control temperature on the mold surface. May also be used for heating a

mold by circulating steam, hot oil or other heated fluid through channels as in molding of the thermosetting and some thermoplastic materials. OR : It is the channels through which coolant is flown to remove heat from the mould. The channels are to be located thoughtfully in the core and cavity so that the temperature distribution over the mould surface is constant with little acceptable variation. OR Channels located within the body of a plastic injection mold through which a cooling fluid is circulated to control the mold surface temperature OR Channels or passageways located within the body of a mold through which a cooling medium can be circulated to control temperature on the mold surface. May also be used for heating a mold by circulating steam. hot oil or other heated fluid through channels as in molding of the thermosetting and some thermoplastic materials. OR Drilled holes or channels machined into various plates or components of an injection mold providing a flow path for cooling medium (such as water) to control the temperature of the mold. OR Channels or passageways located within the body of a mold through which a cooling medium can be circulated to control temperature on the mold surface. OR Channels located within the body of a mold through which a cooling medium is circulated to control the mold surface temperature.

**COOLING FIXTURE:** Block of metal or wood holding the shape of a molded piece which is used to maintain the proper shape or dimensional accuracy of a molding after it is removed from the mold until it is cool enough to retain its shape without further appreciable distortion. Also called: 'Shrink Fixture. OR Block of metal or wood holding the shape of a molded piece which is used to maintain the proper shape or dimensional accuracy of a molding after it is removed from the mold until it is cool enough to retain its shape without further appreciable distortion. Also called: 'Shrink Fixture'.

**Cooling Fixture:** Block of metal or wood holding the shape of a molded piece which is used to maintain the proper shape or dimensional accuracy of a molding after it is removed from the mold until it is cool enough to retain its shape without further distortion. Also known as Shrink Fixture.

**Cooling Tank:** A tank typically containing water through which extrusion is constantly passed for cooling.

**Cooling time:** the elapsed time required for the melt to reach its Vicat softening temperature. OR The amount of time required for the plastic to

reach its hardened state.

**cooling tower:** a device for cooling water through a combination of sensible and evaporative heat transfer. Water passes over a number of wooden or plastic racks known as “fill”, that act as a heat-transfer surface. OR A heat exchanger designed to aid in the cooling of water that was used to cool exhaust steam exiting the turbines of a power plant. Cooling towers transfer exhaust heat into the air instead of into a body of water.

**Coombs test :** An abbreviation for a chemotherapy combination that is often used with radiation therapy to treat certain types of childhood Hodgkin lymphoma in males. It includes the drugs cyclophosphamide, vincristine sulfate (Oncovin), prednisone, and dacarbazine. Also called COPDAC regimen.

**Cooperative binding:** A situation in which the binding of one ligand to a macromolecule favors the binding of another. For example, DNA cooperatively binds histone molecules, and hemoglobin cooperatively binds oxygen molecules.

**Cooperativity:** A property of many allosteric enzymes in which the binding of substrate to one active site favors the transition of all active sites from the T state to the R state, leading to an increase in enzyme activity.

**Coordinate induction:** The simultaneous expression of two or more genes.

**Coordinate Measuring Machine:** A coordinate measuring machine (CMM) is a device for measuring the physical geometrical characteristics of an object. This machine may be manually controlled by an operator or it may be computer controlled. Measurements are defined by a probe attached to the third moving axis of this machine. Probes may be mechanical, optical, laser, or white light.

**coordinate system:** rectangular grid system for plotting points.

**coordinating conjunction:** (and, but, for, nor, or, so, and yet) join words, phrases, or clauses that are grammatically equal in rank.

**coordination number:** The number of bonds formed by the central atom in a metal-ligand complex.

**Copal:** A group of natural resins which were formerly used in the manufacture of varnish but which have now been superseded by synthetic resins.

**copanlisib:** A phosphoinositide 3-kinase (PI3K) inhibitor with potential antineoplastic activity. Copanlisib inhibits the activation of the PI3K signaling pathway, which may result in inhibition of tumor cell growth and survival in susceptible tumor cell populations. Activation of the PI3K signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K signaling may contribute to tumor resistance to a variety of antineoplastic agents. Check for active clinical trials using this agent.

**COPD:** An abbreviation for a chemotherapy combination that is often used with radiation therapy to treat certain types of childhood Hodgkin lymphoma in males. It includes the drugs cyclophosphamide, vincristine sulfate (Oncovin), prednisone, and dacarbazine. Also called COPDAC.

**COPDAC:** To adjust to new situations and overcome problems.

**COPDAC regimen :** The methods a person uses to deal with stressful situations. These may help a person face a situation, take action, and be flexible and persistent in solving problems. OR A chemotherapy regimen consisting of cyclophosphamide, vincristine sulfate, prednisone and dacarbazine used for the treatment of male children with classical Hodgkin lymphoma (HL).

**cope :** A molecule made up of two or more different kinds of small molecules called monomers. The monomers are joined together in a repeating pattern.

**Copernicus, Nicholas:** astronomer who developed the heliocentric model.

**coping skills :** An abbreviation for a chemotherapy combination used to treat Hodgkin and non-Hodgkin lymphomas. It includes the drugs cyclophosphamide, vincristine sulfate (Oncovin), procarbazine hydrochloride, and prednisone. Also called COPP regimen.

**Copolymer:** the product of simultaneous polymerization of two or more polymerizable chemicals, commonly known as monomers. OR The chemical reaction of two different monomers with each other, result in a unique new polymer. OR A polymer resulting from the polymerization reaction between two chemically different monomers. OR Two monomers polymerized together to form a polymer. OR A polymer derived from more than one type of monomer. OR a polymer formed through the inter-polymerization of two (or more) chemically different monomers with each other. OR Polymers resulting from the polymerization reaction of two monomers that are chemically altered. OR This term usually, but not

always, denotes a polymer of two chemically distinct monomers. OR The chemical reaction of two different monomers with each other, result in a unique new polymer. OR This term usually, but not always, denotes a polymer of two chemically distinct monomers. OR The chemical reaction of two different monomers with each other, result in a compound. OR The chemical reaction of two different monomers with each other, result in a compound. OR A material whose chemical structure is made of long chains of two differently structured chemical units (Monomers) which repeat a more or less regular pattern in the chain. OR A polymer that is made up of more than one monomer unit. A copolymer has each of its comonomers in every chain. There are a number of different types of copolymer which describe the nature of the arrangement of the comonomers within the polymer chain. For the two monomer units A and B we can have: OR The product obtained when two or more compounds are chemically reacted with each other (co-polymerised) to produce a resinous type material. Copolymers form the basis of many types of paint and plastics. OR A polymer composed of two or more different monomers. The different monomers can be linked randomly, or in repeating sequences, or in blocks, or as side chains off the main chain.

**copolymer :** An abbreviation for a chemotherapy combination used to treat Hodgkin and non-Hodgkin lymphomas. It includes the drugs cyclophosphamide, vincristine sulfate (Oncovin), procarbazine hydrochloride, and prednisone. Also called COPP.

**Copolymerisation:** Incorporation of more than one monomer into a polymer chain.

**COPP :** An abbreviation for a chemotherapy combination used to treat Hodgkin lymphoma in children. It may be used with radiation therapy. COPP-ABV includes the drugs cyclophosphamide, vincristine sulfate (Oncovin), procarbazine hydrochloride, prednisone, doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, and vinblastine sulfate. Also called COPP-ABV regimen.

**COPP regimen :** A derivative of the original MOPP regimen consisting of cyclophosphamide, vincristine, procarbazine and prednisone used as an initial treatment for Hodgkin's lymphoma. Also used for the treatment of non-Hodgkin's lymphoma. OR An abbreviation for a chemotherapy combination used to treat Hodgkin lymphoma in children. It may be used

with radiation therapy. COPP-ABV regimen includes the drugs cyclophosphamide, vincristine sulfate (Oncovin), procarbazine hydrochloride, prednisone, doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, and vinblastine sulfate. Also called COPP-ABV.

**COPP-ABV:** A substance being studied in PET imaging to detect certain types of tumors. Copper Cu 64 is a radioactive substance. It is linked to ATSM, which is taken up by tissues that have low levels of oxygen, such as some tumor tissues. A PET scanner is used to detect which cells in the body have taken up copper Cu 64-ATSM. It is a type of radioimaging agent.

**COPP-ABV regimen :** A regimen consisting of cyclophosphamide, vincristine, prednisone and procarbazine (COPP) alternating with doxorubicin, bleomycin and vinblastine (ABV), used in combination with radiation therapy for the treatment of low-risk, childhood Hodgkin's lymphoma. OR A nutrient that the body needs in small amounts to function and stay healthy. CoQ10 helps mitochondria (small structures in the cell) make energy. It is an antioxidant that helps prevent cell damage caused by free radicals (highly reactive chemicals). CoQ10 is fat-soluble (can dissolve in fats and oils) and is found in fatty fish, beef, soybeans, peanuts, and spinach. It is being studied in the prevention and treatment of some types of cancer and heart disease and in the relief of side effects caused by some cancer treatments. Also called coenzyme Q10, Q10, ubiquinone, and vitamin Q10.

**Copper:** Symbol:"Cu" Atomic Number:"29" Atomic Mass: 63.55amu. Copper is one of the transition elements. Copper is one of the most well known metals. Humans have used it for thousands of years. It is a reddish color and can be found alone or in many different minerals. You might find copper in pipes, coins, alloys, and electronics.

**Copper Clad Laminate:** laminates (i.e., FR4) having copper foil bonded to one or both surfaces and intended primarily for use in printed circuits.

**copper Cu 62 ethylglyoxal bis(thiosemicarbazone):** A radiopharmaceutical composed of the nonspecific perfusion agent ethylglyoxal bis(thiosemicarbazone) (ETS) linked to the beta-emitting, radioisotope copper Cu 62, with potential tumor imaging activity upon positron emitting tomography (PET). Upon injection, copper Cu 62-ETS distributes to various organs, especially the kidneys and the myocardium. Upon PET imaging, tumor blood flow can be visualized and the efficacy of

antineoplastic and anti-angiogenic chemotherapeutics can be assessed. Cu<sup>62</sup>-ETS has a short half life of 9.74 minutes. ETS has an enhanced hyperemic response compared to other perfusion agents.

**copper Cu 62-ATSM:** A radioconjugate consisting of a lipophilic, neutral, bioreductive copper-bis(thiosemicarbazone) complex, copper-diacetyl-bis(N<sup>4</sup>-methylthiosemicarbazone) (Cu-ATSM), labeled with the beta-emitting radioisotope copper Cu 62, with hypoxia-selective and positron emitting tomography (PET) radioimaging activities. With a high membrane permeability and low reduction potential, copper Cu 62-ATSM easily enters cells. This agent can only be reduced by mitochondria found in hypoxic cells with abnormally high electron concentrations. This chemical reaction traps Cu 62-ATSM in the cell, which allows for the selective accumulation of this agent in hypoxic cells compared to normoxic cells. The extent of copper Cu 62-ATSM retention in tissue is inversely related to the state of tissue oxygenation allowing the quantitation of tissue hypoxia with PET. This provides information about diagnosis, prognosis, treatment options and outcomes for certain cancers. The short half-life of copper Cu 62 (9.7 minutes) reduces the amount of radiation a patient is subjected to and allows for several imaging studies to be performed. Hypoxic tumors are associated with increased malignancy and resistance to radiation and chemotherapy.

**copper Cu 62-PTSM:** A radioconjugate consisting of a lipophilic, bioreductive copper(II)bis(thiosemicarbazone) complex, copper-pyruvaldehyde-bis(N<sup>4</sup>-methylthiosemicarbazone) (Cu-PTSM), linked to the beta-emitting, radioisotope copper Cu 62, with potential perfusion and positron emitting tomography (PET) tumor imaging activities. Upon injection, the distribution of copper Cu 62-PTSM correlates with blood flow. This agent's high membrane permeability allows for rapid diffusion into cells. Once it enters the cell, <sup>62</sup>Cu-PTSM is then reduced by the mitochondria, which prevents diffusion of the agent out of the cell. Upon PET imaging, tumor blood flow can be visualized and tumor perfusion can be assessed. Compared with other copper radionuclides, the short half-life of copper Cu 62 (9.7 minutes) reduces the amount of radiation a patient is subjected to and allows for several imaging studies to be performed. PTSM lacks selectivity for hypoxic cells.

**copper Cu 64 anti-CEA monoclonal antibody M5A:** A radioimmunoconjugate consisting of a humanized monoclonal antibody directed against the human carcinoembryonic antigen, carcinoembryonic antigen-related cell adhesion molecule 5 (CEA or CEACAM5), which is conjugated with the radioisotope copper Cu 64 via the chelator tetra-azacyclododecanetetra-acetic acid (DOTA), with potential use as an imaging agent during positron emission tomography (PET). Upon administration, the antibody moiety of copper Cu 64 anti-CEA monoclonal antibody M5A specifically binds to cells expressing CEA. Upon binding, the radioisotope moiety can be detected using PET, thereby allowing the imaging and quantification of CEA-expressing tumor cells. CEA, a tumor associated antigen and a member of the CEA family of proteins, plays a key role in cell migration, cell invasion, and cell adhesion and is overexpressed by a variety of cancer types.

**copper Cu 64 plerixafor:** A radioconjugate labeled with the positron-emitting radioisotope, copper Cu 64, and also composed of plerixafor, a bicyclam and hematopoietic stem cell-mobilizing agent that targets the chemokine receptor CXCR4, with tumor imaging potential using positron emission tomography (PET)/computed tomography (CT). Upon administration, the plerixafor moiety blocks the binding of stromal cell-derived factor-1alpha (SDF-1alpha or CXCL12) to the cellular receptor CXCR4. In turn, the CXCR4-expressing tumor cells can be visualized using PET/CT and the resulting images could be used to predict a tumor's response to certain treatments. The expression of CXCR4 on cancer cells has been correlated with increased tumor cell survival, tumor progression, and increased metastatic potential.

**copper Cu 64 TP3805:** A peptide analog of pituitary adenylate cyclase-activating peptide (PACAP) radiolabeled with the positron-emitting radioisotope copper Cu 64, with potential diagnostic ability upon positron emission tomography (PET) imaging. The peptide moiety of copper Cu 64 TP3805 is able to bind to vasoactive intestinal peptide/pituitary adenylate cyclase activating peptide receptors 1 (VPAC1). Upon PET imaging, the cancer cells expressing VPAC1 can be visualized and this may allow for early detection. The oncogenic product VPAC1 is overexpressed in a variety of cancer cell types, moreover, it is overexpressed in 100% of breast tumors at the onset of the cancer. Compared to other positron-emitting radioisotopes, Cu 64 has a longer half life.

**copper Cu 64 trastuzumab:** A diagnostic radioimmunoconjugate comprised of the recombinant humanized monoclonal antibody trastuzumab conjugated with the positron-emitting radioisotope copper Cu 64. Copper Cu 64 trastuzumab binds to the extracellular domain of human epidermal growth factor receptor 2 (HER2), allowing the detection of HER2 distribution using positron emission tomography (PET).

**copper Cu 64-ATSM:** An operation on the vocal cords or on the spinal cord. OR A radioconjugate consisting of a lipophilic copper(II)bis(thiosemicarbazone) labeled with the positron- and beta-emitting isotope (<sup>64</sup>Cu) with hypoxia-selective and antineoplastic activities. With a high membrane permeability and redox potential, copper Cu 64-ATSM is preferentially taken up by hypoxic cells compared to normoxic cells; the extent of retention in tissue is inversely related to the state of tissue oxygenation allowing the quantitation of tissue hypoxia by positron emission tomography (PET). In addition, the radioactive copper moiety of this agent may deliver a selective cytotoxic dose of beta radiation to hypoxic tumor cells.

**copper Cu 64-DOTA B-Fab:** A radioimmunoconjugate containing a bivalent monospecific tandem immunoglobulin fragment (B-Fab) derived from the humanized monoclonal antibody DS6 targeting the tumor-associated mucin-1 (MUC1)-sialoglycotope CA6 conjugated with the bifunctional, macrocyclic chelating agent 1,4,7,10-tetra-azacyclododecane-1,4,7,10-tetra-acetic acid (DOTA) and labeled with the radioisotope copper Cu 64 with potential use as an imaging agent for CA6-expressing tumors using positron emission tomography (PET). The B-Fab moiety of copper Cu 64-DOTA B-Fab binds, with high affinity, to the cell surface antigen CA6. Upon binding, the radioisotope moiety may be detected using PET, thereby allowing the imaging and quantification of CA6-expressing tumor cells. This tracer could be used to select patients who could benefit from and to monitor efficacy of CA6-targeted anti-cancer therapies. Compared to DS6, the antibody fragment allows for increased tumor penetration, faster blood clearance, and more rapid renal elimination. The CA6 epitope is found on a variety of solid tumors.

**copper Cu 64-DOTA-AE105:** A radiotracer composed of AE105, a urokinase-type plasminogen activator receptor (uPAR) peptide antagonist, conjugated with DOTA and labeled with the radionuclide copper Cu 64,

with potential imaging activity upon positron emission tomography (PET). Upon administration, the AE105 moiety of copper Cu 64-DOTA-AE105 targets and binds to uPAR-expressing tumor cells. Upon PET imaging, the copper Cu 64 moiety can be visualized, uPAR-expressing tumor cells can be quantified and the degree of tumor aggressiveness can be assessed. uPAR expression is correlated with increased tumor invasiveness and aggressiveness as well as a poor prognosis.

**copper Cu 64-DOTA-anti-HER3 monoclonal antibody U3-1287:** A radioimmunoconjugate of the fully human monoclonal antibody against the third member of the epidermal growth factor receptor (EGFR), HER3 or ERBB3, conjugated with the bifunctional, macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and labeled with radioisotope copper Cu 64, with potential diagnostic properties upon positron emission tomography (PET) imaging and antineoplastic activity. The antibody moiety of copper Cu 64-DOTA-anti-HER3 monoclonal antibody U3-1287 binds to and blocks the activation of HER3, thereby resulting in the inhibition of EGFR-dependent PI3K/AKT signaling and the subsequent inhibition of cellular proliferation and differentiation. The Cu 64 moiety may be detected using positron emission tomography (PET), thereby allowing the imaging and quantification of HER3-expressing tumor cells. HER3, which lacks the kinase domain conveying ligand-binding signaling by forming heterodimers with other EGFR members that have kinase activity, is frequently overexpressed in solid tumors.

**copper Cu 64-DOTA-rituximab:** A radioimmunoconjugate containing rituximab, a recombinant chimeric murine/human antibody directed against the human CD20 antigen, conjugated with the bifunctional, macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and labeled with the radioisotope copper Cu 64 with potential diagnostic properties upon positron emission tomography (PET) imaging. The monoclonal antibody moiety of copper Cu 64-DOTA-Rituximab specifically binds to cell surface antigen CD20. Upon binding, the radioisotope moiety may be detected using PET, thereby allowing the imaging and quantification of CD20-expressing tumor cells. CD20 is a non-glycosylated phosphoprotein that is exclusively expressed on B cells during most stages of B cell development and is often overexpressed in B-cell malignancies. Check for active clinical trials using this agent.

**copper Cu 64-DOTA-trastuzumab:** A radioimmunoconjugate containing the recombinant humanized monoclonal antibody trastuzumab conjugated with the bifunctional, macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and labeled with the radioisotope copper Cu 64 with radioisotopic activity and potential use as an imaging agent. The trastuzumab moiety of copper Cu 64-DOTA-trastuzumab binds with high affinity to the extracellular domain of human epidermal growth factor receptor 2 (HER2). Upon binding, the radioisotope moiety may be detected using positron emission tomography (PET), thereby allowing the imaging and quantification of HER2-expressing tumor cells. HER2, a tyrosine kinase and client protein of heat shock protein 90 (Hsp90), may be overexpressed on the cell surfaces of various tumor cell types.

**copper gluconate:** The orally bioavailable copper salt of D-gluconic acid. In addition to its roles as an enzyme cofactor for cytochrome C oxidase and superoxide dismutase, copper forms complexes with the thiocarbamate disulfiram (DSF) forming DSF-copper complexes, which enhances the DSF-mediated inhibition of the 26S proteasome; proteasome inhibition may result in inhibition of cellular protein degradation, cessation of cell cycle progression, inhibition of cellular proliferation, and the induction of apoptosis in susceptible tumor cell populations.

**copper supplement:** An element with atomic symbol Cu, atomic number 29, and atomic weight 63. Check for active clinical trials using this agent.

**copy number variant :** Refers to the genetic trait involving the number of copies of a particular gene present in the genome of an individual. Genetic variants, including insertions, deletions, and duplications of segments of DNA, are also collectively referred to as copy number variants. Copy number variants account for a significant proportion of the genetic variation between individuals. Also called CNV.

**CoQ10:** A drug used to treat certain types of abnormal heart rhythms that have not gotten better with other drugs. Corderone affects the electrical activity of the heart. It is a type of antiarrhythmic agent. Also called amiodarone hydrochloride.

**Corbel:** A piece of brick, stone or metal projecting from a wall to support a load or a bracket.

**Cordarone:** (Other name for: amiodarone hydrochloride)

**cordectomy** : An anticancer drug that belongs to a family of drugs called antitumor antibiotics.

**Corderone** : The removal of a tissue sample with a wide needle for examination under a microscope. Also called core needle biopsy.

**cordycepin**: The removal of a tissue sample with a wide needle for examination under a microscope. Also called core biopsy. OR A purine nucleoside antimetabolite and antibiotic isolated from the fungus *Cordyceps militaris* with potential antineoplastic activity. Cordycepin is an adenosine analogue, which is readily phosphorylated to its mono-, di-, and triphosphate intracellularly. Triphosphate cordycepin can be incorporated into RNA, and inhibits transcription elongation and RNA synthesis due to the absence of a hydroxyl moiety at the 3' position. Because it can be converted to an inactive metabolite by adenosine deaminase, this agent must be administered with an adenosine deaminase inhibitor in order to be effective. Cordycepin has displayed cytotoxicity against some leukemic cell lines in vitro.

**Core**: The central member of a sandwich construction (can be honeycomb material, foamed plastic, or solid sheet) to which the face of the sandwich are attached; the central member of a plywood assembly. (2) A channel in a mold for circulation of heat-transfer media. (3) Part of a complex mold that molds undercut parts. Cores are usually withdrawn to one side before the main sections of the mold open. Also called Core Pin. OR Rigid cardboard tube onto which film is wound. Typical cores have either 3 inch or 6 inch inside diameters. OR (1) Male element in a die which produces a hole or recess in part. (2) Part of a complex mold that molds undercut parts. Cores are usually withdrawn to one side before the main sections of the mold opens. (Usually called Side Cores). (3) A channel in a mold for circulation of a heat-transfer medium. Also called "Force." OR A portion of the mold that goes inside a cavity to form the interior of a hollow part. Cores are normally found on the B-side of a mold, thus, the B-side is sometimes called the core. OR The mail portion of a liquid silicone rubber injection or plastic mold. OR A protrusion or set of matching protrusions, which form the inner surface of a plastic part. They are often considered they "male" side of the part. OR (1) Male element in a die which produces a hole or recess in part. (2) Part of a complex mold that molds undercut parts. Cores are usually withdrawn to one side before the main sections of the mold

opens. (Usually called Side Cores.) (3) A channel in a mold for circulation of a heat-transfer medium. Also called "Force." OR A protrusion, or set of matching protrusions, in a plastics forming mold which forms the inner surfaces of the molded articles. OR The pressure applied to the mold to keep it closed during a cycle, usually expressed in tons. OR The part of a mold that allows the internal shaping of a product such as the internal threads of a cap. OR . A) an extended or male portion of the mold that creates the internal plastic part surface. B) a pin or protrusion designed to produce a hole or depression in the plastic part. OR the zone of the earth that includes the inner and outer core. OR The central portion of a nuclear reactor, which contains the fuel assemblies, moderator, neutron poisons, control rods, and support structures. The reactor core is where fission takes place.

**Core & Cavity Set:** A sub set of a liquid silicone rubber injection or plastic mold that fits within a mold base. This technique generally lowers silicone or plastic tooling investment

**Core Bar:** A steel bar used to hold machined core in place in the liquid silicone injection mold

**core biopsy :** A drug used to treat high blood pressure and certain heart problems. It is also being studied in the prevention and treatment of side effects caused by some anticancer drugs. Coreg blocks certain receptors on nerve cells and causes blood vessels to dilate (widen). It is a type of antihypertensive agent and a type of antianginal agent. Also called carvedilol phosphate.

**Core damage frequency:** An expression of the likelihood that, given the way a reactor is designed and operated, an accident could cause the fuel in the reactor to be damaged.

**Core Drill:** A device for making cooling channels in a mold.

**core electron:** Electrons occupying completely filled shells under the valence shell.

**Core glycosylation:** The addition of carbohydrates to proteins and the processing of these carbohydrates that takes place in the endoplasmic reticulum.

**Core melt accident:** An event or sequence of events that result in the melting of part of the fuel in the reactor core.

**core needle biopsy :** A substance being studied in the treatment of breast cancer and other types of cancer. Coriolus versicolor is a type of mushroom. Its extract is used with other treatments in some cultures to treat cancer and other conditions. The extract may boost the immune system, slow the growth of some tumor cells, and lessen the side effects of chemotherapy and radiation therapy. It is a type of biological response modifier (BRM) and a type of dietary supplement.

**Core particles:** Particles resulting from micrococcal nuclease digestion of nucleosomes, consisting of 140-bp DNA and the histone octamer of a nucleosome.

**Core pin:** A fixed element in the mold that creates a void in the part. It is often easier to machine a core pin as a separate element and add it to the A-side or B-side as needed. Steel core pins are sometimes used in aluminum molds to create tall, thin cores that might be too fragile if machined out of the bulk aluminum of the mold.

**Core-cavity:** A term used to describe a mold created by mating A-side and B-side mold halves.

**Cored Rolls:** Bags or tubing is rolled on cardboard cylinders (looks similar to a roll of paper towels).

**Coreg:** (Other name for: carvedilol) OR The transparent part of the eye that covers the iris and the pupil and allows light to enter the inside.

**Coreg CR:** (Other name for: carvedilol phosphate extended-release capsule)

**Coreless Rolls:** Bags are rolled with perforations or are interleaved in a roll configuration.

**Corepressor:** A small molecule that binds to a repressor protein; the corepressor-repressor complex then binds to the operator DNA of a particular operon to inhibit transcription.

**Corgard:** (Other name for: nadolol)

**Cori cycle:** A cyclic metabolic pathway in which lactate from active muscle is converted into glucose by the liver, which in turn supplies newly synthesized glucose to muscle and other tissues.

**Cori disease:** A disease in which the structure of liver and muscle glycogen is abnormal and the amount is increased; it is due to an inability to

hydrolyze the  $\alpha$ -1,6-glycosidic bonds in glycogen; liver function is compromised.

**CORING:** (molded part design) — The removal of excess material from the cross section of a molded part to attain a more uniform wall thickness.

**Coriolis effect:** The tendency for an object moving above the Earth to turn to the right in the Northern Hemisphere and to the left in the Southern Hemisphere relative to the Earth's surface. The effect arises because the Earth rotates and is not, therefore, an inertial reference frame.

**Coriolus versicolor extract:** An extract derived from the mushroom *Coriolus versicolor*, containing polysaccharide K (PSK) and polysaccharide-peptide (PSP), with potential immunomodulating and antineoplastic activities. *Coriolus versicolor* extract has been shown to stimulate the production of lymphocytes and cytokines, such as interferons and interleukins, and may exhibit antioxidant activities. However, the precise mechanism of action(s) of this agent is unknown.

**Coriolus versicolor extract :** Surgery in which a healthy blood vessel taken from another part of the body is used to make a new path for blood around a blocked artery leading to the heart. This restores the flow of oxygen and nutrients to the heart. Also called aortocoronary bypass and CAB.

**cork:** a tough tissue that combines with the phloem to become the bark of vascular plants.

**Cork finish:** The bottle opening (finish) that is sealed with a cork.

**cornea :** A disease in which there is a narrowing or blockage of the coronary arteries (blood vessels that carry blood and oxygen to the heart). Coronary artery disease is usually caused by atherosclerosis (a buildup of fatty material and plaque inside the coronary arteries). The disease may cause chest pain, shortness of breath during exercise, and heart attacks. The risk of coronary artery disease is increased by having a family history of coronary artery disease before age 50, older age, smoking tobacco, high blood pressure, high cholesterol, diabetes, lack of exercise, and obesity. Also called CAD and coronary heart disease.

**Cornerstone of Safety:** Nuclear plant activities that are essential for the safe operation of the facility. These cornerstones are grouped under the categories of reactor safety, radiation safety, and safeguards.

**Cornice:** A projecting moulding decorating the top of a building or wall, e.g. the moulding between wall and ceiling.

**corona:** outermost layer surrounding the Sun.

**CORONA DISCHARGE:** A method of rendering the surface of inert plastics such as polyethylene more receptive to inks, adhesives, or coatings by subjecting their surfaces to an electrical discharge. Typical method is to pass film over a grounded metal cylinder above which a high voltage electrode is spaced to leave a small air gap.—The corona discharge oxidizes the film leading to the formation of polar groups. The surface now becomes receptive to the coatings.

**Corona Resistance:** A current passing through a conductor induces a surrounding electrostatic field. When voids exist in the insulation near the conductor, the high voltage electrostatic field may ionize and rapidly accelerate some of the air molecules, ionizing them, and thereby “eating” a hole in the insulation. Resistance to this process is called corona resistance.

**Corona Treat:** The process by which the surface energy of plastic film is increased to allow adhesion of adhesives, inks, and coatings.

**CORONA TREATMENT:** Surface treatment of plastic parts by exposing them to an electrical corona discharge to increase their receptivity to inks, paints and adhesives. OR Impingement of AC power on a component to bombard with free radicals thus improving the ability to bond to a surface.

**coronary arteries:** the arteries that supply the heart muscle with blood.

**coronary artery bypass :** A disease in which there is a narrowing or blockage of the coronary arteries (blood vessels that carry blood and oxygen to the heart). Coronary heart disease is usually caused by atherosclerosis (a buildup of fatty material and plaque inside the coronary arteries). The disease may cause chest pain, shortness of breath during exercise, and heart attacks. The risk of coronary heart disease is increased by having a family history of coronary heart disease before age 50, older age, smoking tobacco, high blood pressure, high cholesterol, diabetes, lack of exercise, and obesity. Also called CAD and coronary artery disease.

**coronary artery disease :** The body of the uterus.

**coronary heart disease :** Any steroid hormone made in the adrenal cortex (the outer part of the adrenal gland). They are also made in the laboratory. Corticosteroids have many different effects in the body, and are used to treat

many different conditions. They may be used as hormone replacement, to suppress the immune system, and to treat some side effects of cancer and its treatment. Corticosteroids are also used to treat certain lymphomas and lymphoid leukemias.

**corpus :** A hormone made in the pituitary gland. Corticotropin acts on the outer part of the adrenal gland to control its release of corticosteroid hormones. More corticotropin is made during times of stress. Also called ACTH and adrenocorticotrophic hormone.

**corpus luteum:** the mass of cells derived from the female follicle that secretes progesterone.

**Corrective Action Program:** The system by which a utility finds and fixes problems at the nuclear plant. It includes a process for evaluating the safety significance of the problems, setting priorities in correcting the problems, and tracking them until they have been corrected.

**correlation effects:** The effect upon the quantity of interest attributable to the inclusion of dynamic electron correlation.

**correlation energy:** The difference between the Hartree-Fock energy and the FCI energy for a given basis set. Most of this energy is attributable to the correlation among the positions of electrons of opposite spin, caused by their coulombic repulsion. See dynamic and non-dynamic correlation.

**correlative conjunction:** conjunctions that come in matched pairs, like not only/but also.

**corresponding:** in the same position. Coinciding.

**Corrosion:** chemical action which causes destruction of the surface of a material by oxidation or chemical combination. Also caused by reduction of the electrical efficiency between a metal and a contiguous substance or to the disintegrating effects of strong electrical currents or ground return currents in electrical systems. The latter is known as electrolytic corrosion.

**corrosion:** Corrosion is a reaction with oxygen, water, or acid that results in the disintegration of the material under attack. OR Process of metal decomposition (oxidation) in which metal ions are united with oxygen to form metal oxides. Fluoropolymer coatings provide excellent barriers against corrosion. OR A destructive attack of metal caused by oxidation, e.g., rust on ferrous metals or white deposit forming on aluminium.

Corrosion destroys the surface of metal and this process is accelerated in

chemical or salt laden atmospheres. OR Corrosion is a reaction that involves action of an oxidizing agent on a metal. The oxidizing agent is often oxygen dissolved in water. See How Iron Rusts for examples. OR chemical action which causes destruction of the surface of a material by oxidation or chemical combination. Also, caused by reduction of the electrical efficiency between metal and the continuous substance or to the disintegrating effects of strong electrical currents or ground return currents in electrical systems. The latter is known as electrolytic corrosion.

**Corrosion inhibition:** Corrosion can be defined as the unwanted production of a salt from a metal. Adding acid or oxygen are good ways to do this. The main ways of slowing corrosion down (inhibition) are by providing an impermeable coating to stop the chemical reaction from occurring in the first place, or by providing a more easily attacked metal which will be consumed first (a 'sacrificial anode')

**Corrosion Inhibitor:** A type of metal paint or primer that prevents rust by preventing moisture from reaching the metal. Zinc phosphate, barium metaborate and strontium chromate (all pigments) are common ingredients in corrosion-inhibitive coatings. These pigments absorb any moisture that enters the paint film.

**CORROSION INHIBITOR:** An additive or a system used for protecting metal surfaces from chemical attack by water or other materials producing sulfides or oxides which result in metal fatigue or degradation.

**Corrosion Resistance:** A broad term applying to the ability of plastics to resist many environments. OR The ability to withstand the effect of oxidation. OR Term that applies to the ability of plastics to resist degradation in many environments. OR A broad term applying to the ability of plastics to resist degradation in many environments, usually due to oxidation.

**corrosive of tissue:** The descriptor applied to any substance which destroys tissues on direct contact.

**Corrugated medium :** Papers used as fluting for the production of corrugated board.

**Cort-Dome:** (Other name for: therapeutic hydrocortisone)

**Cortalone:** (Other name for: prednisolone)

**Cortef:** (Other name for: therapeutic hydrocortisone)

**Cortenema:** (Other name for: therapeutic hydrocortisone)

**cortex:** the outer portion of the adrenal gland.

**corticotropin acetate:** A synthetic therapeutic agent which is chemically identical to or similar to the endogenous human corticotropin-releasing factor (hCRF). Synthesized in the hypothalamus, hCRF stimulates the anterior pituitary gland to secrete adrenocorticotropic hormone (ACTH). In cerebral edema, hCRF acts by impeding the flow of fluid from blood vessels into brain tissue, thereby decreasing edema and stabilizing intracranial pressure. This agent possesses anti-edema properties independent of adrenal gland function.

**corticosteroid :** A hormone made by the adrenal cortex (the outer layer of the adrenal gland). It helps the body use glucose (a sugar), protein, and fats. Cortisol made in the laboratory is called hydrocortisone. It is used to treat many conditions, including inflammation, allergies, and some cancers. Cortisol is a type of glucocorticoid hormone.

**corticosteroids:** the steroids secreted from the adrenal glands. OR Steroid hormones formed by the adrenal cortex.

**corticotropin :** A natural steroid hormone produced in the adrenal gland. It can also be made in the laboratory. Cortisone reduces swelling and can suppress immune responses.

**corticotropin-releasing hormone:** A hormone synthesized in the hypothalamus and regulates the secretion of adrenocorticotropic hormone (ACTH).

**cortisol :** A bacterium that can cause skin disorders. Substances taken from this bacterium can stimulate the immune system and may help kill cancer cells.

**cortisone :** A drug used to treat Ewing sarcoma, gestational trophoblastic tumor, Wilms tumor, and certain types of testicular cancer. It is also used to treat rhabdomyosarcoma in children. It is being studied in the treatment of other types of cancer. Cosmegen comes from the bacterium *Streptomyces parvulus*. It damages the cell's DNA and may kill cancer cells. It is a type of anticancer antibiotic. Also called actinomycin D and dactinomycin.

**Cortispray:** (Other name for: therapeutic hydrocortisone)

**Cortril:** (Other name for: therapeutic hydrocortisone)

**Corynebacterium granulosum :** A rare, genetic disorder marked by developmental problems, being shorter than normal, mental retardation, heart problems, unusual facial features, and extra folds of skin around the neck, hands, and feet. People with Costello syndrome have an increased risk of certain types of cancer, such as rhabdomyosarcoma (a soft tissue tumor) and neuroblastoma (cancer of immature nerve cells).

**Corynebacterium granulosum P40:** An insoluble fraction isolated from the bacterium *Corynebacterium granulosum* with potential cancer immunotherapeutic activity. As a non-specific immunostimulant, *Corynebacterium granulosum* P40 activates the reticulo-endothelial system; induces the production of certain cytokines; enhances macrophage activity; and potentiates a delayed-type hypersensitivity response when co-administered with an antigen.

**cosegregation :** The transmission, together, of 2 or more genes on the same chromosome, as a result of their being in very close physical proximity to one another (i.e., linked).

**Cosmegen :** A drug used with vemurafenib to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. Cotellic blocks certain proteins, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor and a type of targeted therapy. Also called cobimetinib.

**Cosmic radiation:** A source of natural background radiation, which originates in outer space and is composed of penetrating ionizing radiation (both particulate and electromagnetic). The sun and stars send a constant stream of cosmic radiation to Earth, much like a steady drizzle of rain. Differences in elevation, atmospheric conditions, and the Earth's magnetic field can change the amount (or dose) of cosmic radiation that we receive. Secondary cosmic rays, formed by interactions in the Earth's atmosphere, account for about 45 to 50 millirem of the 360 millirem of background radiation that an average individual receives in a year. For related information, see Natural Background Sources.

**Cosmid:** A DNA molecule with cos ends from lambda-bacteriophage that can be packaged in vitro into a virus for infection purposes . OR A cloning

vector, used for cloning large DNA fragments; generally contains segments derived from bacteriophages and various plasmids.

**Costello syndrome :** A drug used in the treatment of infections caused by bacteria and protozoa. It is a combination of two anti-infection drugs, sulfamethoxazole and trimethoprim.

**Cot curve:** A curve that indicates the rate of DNA-DNA annealing as a function of DNA concentration and time.

**Cotara:** (Other name for: iodine I 131 monoclonal antibody TNT-1/B)

**Cotellic :** A substance being studied in the treatment of several types of cancer. It comes from the seed of the cotton plant (*Gossypium*). It blocks the growth of cells and may kill cancer cells. Cottonseed meal toxin may also act as a male contraceptive (a type of birth control). Also called gossypol.

**Cotrim:** (Other name for: trimethoprim-sulfamethoxazole)

**cottonseed meal toxin :** An estrogen-like substance (phytoestrogen) made by some plants. Coumestans may have anticancer effects.

**cotyledon:** A leaf or leaves of the embryos of seed plants. They can function in food storage and can become photosynthetic when the seed germinates.

**COUETTE FLOW (also called DRAG FLOW):** The flow between two surfaces caused by the movement of one relative to the other. The fluid is literally dragged by the moving wall. For parallel flat surfaces the resulting velocity profile is linear, varying from zero at the stationary wall to the velocity of the moving surface.

**Coulomb:** An Amp(ere) of current is what you get one one Coulomb worth of electric charge flows past a point in one second - i.e.,  $1 \text{ A} = 1 \text{ C/s}$ .

One mole of electrons has a charge of 96 500 C, which is called a Farad.  
OR The SI unit of electric charge, equal to the amount of charge delivered by a current of 1 ampere running for 1 second. One mole of electrons has a charge of about 96487 C.

**coulombic interactions:** Attractions between opposite charges or repulsions between like charges that grow stronger as the charges become closer to each other.

**Coulter method:** A technique for determination of particle size distribution in which suspended particles pass through an orifice while

changes in the resistance at the gap are recorded.

**Coumadin:** (Other name for: warfarin)

**coumarin:** O hydroxycinnamic acid. Pleasant smelling compound found in many plants and released on wilting. Has anticoagulant activity by competing with Vitamin K.

**coumarin :** A type of coumestan. Coumestans are estrogen-like substances (phytoestrogens) made by some plants. Coumestans may have anticancer effects.

**coumestan :** The process by which a professional counselor helps a person cope with mental or emotional distress, and understand and solve personal problems.

**coumestrol :** A specialist who talks to patients and their families about emotional and personal matters, and can help them make decisions. Also called mental health counselor.

**counselee :** An individual who presents for genetic counseling. Also called consultand.

**counseling :** An inherited disorder marked by the formation of many noncancerous growths called hamartomas. These growths occur in the skin, breast, thyroid, colon, intestines, and inside of the mouth. Patients with Cowden disease are at increased risk of certain types of cancer, including breast and thyroid. Also called Cowden syndrome and multiple hamartoma syndrome.

**counselor :** An inherited disorder marked by the formation of many noncancerous growths called hamartomas. These growths occur in the skin, breast, thyroid, colon, intestines, and inside of the mouth. Patients with Cowden syndrome are at increased risk of certain types of cancer, including breast and thyroid. Also called Cowden disease and multiple hamartoma syndrome.

**count mean diameter:** The mean of the diameters of all particles in the population (IAEA, 1978).

**count median diameter:** The diameter in the population above which there are as many particles with larger diameter as there are particles with smaller diameters (IAEA, 1978).

**Counter:** A general designation applied to radiation detection instruments or survey meters that detect and measure radiation. The signal

that announces an ionization event is called a count. For related information, see Detecting Radiation.

**Counterbore:** A recessed circular area, commonly used to fit the head of an ejector pin (return pin, sucker pin, etc.) in the ejector plate.

**counterpoise:** The most common, but still controversial, correction for BSSE. The BSSE is approximated as the energy difference between (1) an isolated fragment and (2) the fragment accompanied by the basis functions, but not the atoms, of its companion fragment(s).

**country rock:** the surrounding rock that magma invades in the formation of intrusive rocks.

**coupled cluster:** In diagrammatic perturbation theory, an excited configuration that is "coupled" to the reference configuration.

**Coupled reaction:** The pairing of an endergonic reaction with an exergonic reaction, such as the hydrolysis of ATP, so that the pair of reactions will take place under cellular conditions. OR Two chemical reactions that have a common intermediate and thus a means of energy transfer from one to the other.

**couples:** A half-reaction which explicitly shows electron transfer

**Coupling agent:** A substance which promotes or establishes a stronger bond at the resin matrix/reinforcement interface. OR A material that is used to form a chemical bridge between the resin and glass fiber or mineral fiber. By acting as an interface, bonding is enhanced. OR A material that is used to form a chemical bridge between the resin and an additive such as glass fiber or mineral fiber. By acting as an interface, bonding is enhanced.

**coupling constant (J):** the separation in frequency units between multiple peaks in one chemical shift. This separation results from spin-spin coupling.

**Course:** A horizontal layer of bricks or stones in a wall.

**Covalence:** Covalence is the ability of an element to bond with other elements by sharing electrons across a bond. Covalent compounds can be made with single, double, and triple bonds. These bonds are not as easily broken in solution as electrovalent compounds. Two covalent bonds happen between carbon and two oxygen atoms in carbon dioxide.

**covalent bond:** Bonds that hold atoms together by the sharing of electrons. OR A chemical bond where electrons are shared between two atoms. In this type of bond no ions are found. You can find covalent bonds in many

compounds. You will find covalent bonds when carbon bonds to other elements. OR A covalent bond is a bond between atoms of non-metal elements formed by sharing one (or more) pairs of electrons. OR atoms linked together by sharing valence electrons. OR a bond formed by the sharing of electrons between atoms. OR A force that holds together two or more atoms, formed when electrons travel between the atoms' nuclei (and are thus "shared") OR A covalent bond is a very strong attraction between two or more atoms that are sharing their electrons. In structural formulas, covalent bonds are represented by a line drawn between the symbols of the bonded atoms. OR A chemical bond that involves sharing of electron pairs. OR When two atoms share at least one pair of electrons.

**Covalent catalysis:** Catalysis in which the active site contains a reactive group that becomes temporarily covalently modified in the course of catalysis.

**covalent compound:** A compound made of molecules- not ions. The atoms in the compound are bound together by shared electrons. Also called a molecular compound.

**Covalent intermediate:** In a catalytic mechanism, an intermediate comprising a component of the substrate covalently bound to the enzyme.

**Covalent modification:** The attachment to and removal of chemical groups from an enzyme and the consequent change in the catalytic properties of that enzyme. Catalytic properties of many enzymes are altered by the covalent attachment and removal of phosphoryl groups, whereas a smaller number of others undergo reversible attachment of AMP units from ATP.

**covalent radius:** Value assigned to an atom such that the sum of the covalent radii of atoms A and B is (approximately) the A-B bond length.

**Cove:** Any kind of concave moulding usually large.

**Cover fillit:** Any beading small moulding or strip used to cover a joint.

**COVERAGE:** The area over which a given amount of paint will spread and hide the previous surface. (Usually expressed in square feet per gallon).

**Covering power:** This term should not be used as it can be confused between the two qualities of hiding-power or opacity and of spreading power or area covered by a given amount of paint. "opacity"™ and "spreading capacity"™ are better terms to use.

**Cowden disease :** A type of drug that is used to treat inflammation and pain, and is being studied in the prevention and treatment of cancer. COX inhibitors belong to the family of drugs called nonsteroidal anti-inflammatory drugs (NSAIDs). Also called cyclooxygenase inhibitor.

**Cowden syndrome :** An enzyme that speeds up the formation of substances that cause inflammation and pain. It may also cause tumor cells to grow. Some tumors have high levels of COX-2 and blocking its activity may reduce tumor growth. Also called cyclooxygenase-2 and prostaglandin-endoperoxide synthase 2.

**COX inhibitor :** A nonsteroidal anti-inflammatory drug used to relieve pain and inflammation. COX-2 inhibitors are being studied in the prevention of colon polyps, and as anticancer drugs. Also called cyclooxygenase-2 inhibitor.

**COX-2 :** A drug used to treat high blood pressure. Cozaar blocks the action of chemicals that make blood vessels constrict (get narrower). It is a type of angiotensin II receptor antagonist. Also called losartan and losartan potassium.

**COX-2 inhibitor :** A chemotherapy combination used to treat chronic lymphocytic leukemia (CLL). It includes the drugs chlorambucil hydrochloride and prednisone. Also called chlorambucil-prednisone, chlorambucil-prednisone regimen, and CP regimen.

**COX-MERZ RULE:** Frequently, instead of (steady) viscosity measurements by a capillary and/or a cone-and-plate instrument, dynamic measurements are performed (easier) by applying a sinusoidal deformation in the cone-and-plate. The COX-MERZ rule states that the (steady) viscosity versus shear rate curve is virtually identical to the dynamic viscosity versus frequency curve. It is valid for most common polymers. Since it is easier to get the dynamic data over a very wide range of frequencies, it is used extensively in industry.

**coxa valga:** deformity of the hip where the angle formed between the head and neck of the femur and its shaft is increased

**coxsackievirus A21:** A naturally occurring enterovirus with potential antitumor activity. Upon intratumoral administration, coxsackievirus A21 targets and binds to intracellular adhesion molecule 1 (ICAM-1) and decay acceleration factor (DAF), both cell surface molecules that are both overexpressed on certain malignant cells. After entering the cells,

coxsackievirus A21 replicates in these cancer cells, thereby causing cancer cell lysis. This results in a reduction of tumor cell growth.

**Cozaar :** (Other name for: losartan potassium)

**CP:** A condition of the prostate gland that continues or gets worse over a long period of time. Symptoms include body aches, pain in the lower back and genital area, a burning feeling during urination, and problems with emptying the bladder all the way. Also called chronic prostatitis/chronic pelvic pain syndrome.

**CP regimen :** A drug used to treat certain types of non-small cell lung cancer. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that cannot be removed by surgery or has spread to other parts of the body. It is being studied in the treatment of other types of cancer. CP-358,774 blocks a protein called epidermal growth factor receptor (EGFR), which may help keep cancer cells from growing. It is a type of EGFR tyrosine kinase inhibitor. Also called erlotinib hydrochloride, OSI-774, and Tarceva.

**CP-358,774:** A substance that is being studied in the treatment of cancer.

**CP-4055:** A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called vascular endothelial growth factor (VEGF) receptor inhibitors and angiogenesis inhibitors.

**CP-547,632:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called ErbB receptor tyrosine kinase inhibitors.

**CP-609,754:** A substance made by the pancreas. C-peptide and insulin are both part of a larger molecule that gets split apart before being released into the blood. Abnormal blood levels of C-peptide may occur in certain diseases, such as diabetes or cancer. Also called connecting peptide.

**CP-724,714:** An orally bioavailable quinazoline with potential antineoplastic activity. CP-724,714 selectively binds to the intracellular domain of HER2, reversibly inhibiting its tyrosine kinase activity and resulting in suppression of tumor cell growth. HER2, a member of the epidermal growth factor receptor (EGFR) family, is overexpressed in many adenocarcinomas, particularly breast cancers. OR A test used to help diagnose a type of pancreatic tumor called an insulinoma. After fasting, the patient receives an injection of insulin and the level of C-peptide (a

substance released with insulin by the pancreas) in the blood is measured. In patients who have an insulinoma, the level of C-peptide is higher than normal.

**CP/PPS:** A drug used to treat advanced acute myeloid leukemia (AML). It is a form of the anticancer drug cytarabine that may work in patients with leukemia that is resistant to cytarabine. CP-4055 blocks cell division and may kill cancer cells. It is a type of antimetabolite. Also called Elacyt and elacytarabine.

**CP4071:** A substance that is being studied in the treatment of cancer.

**CPE:** Chlorinated Polyethylene

**CpG 7909:** A drug used alone or with other drugs to treat colon cancer or rectal cancer that has spread to other parts of the body or has come back after treatment with fluorouracil. It is also being studied in the treatment of other types of cancer. CPT 11 blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of topoisomerase inhibitor and a type of camptothecin analog. Also called Camptosar and irinotecan hydrochloride.

**Cpg islands:** Regions of DNA rich in the sequence cpg, usually located at the 5' region of genes; the cytosine bases of these islands can be methylated to inhibit transcription of the associated gene.

**CpG oligodeoxynucleotide:** A synthetic oligodeoxynucleotide, containing unmethylated CpG motifs derived from bacterial DNA, with immunostimulatory activities. A CpG oligodeoxynucleotide (CpG ODN) binds to and activates a Toll-like receptor 9 (TLR9) and is taken up into cells by endocytosis; once internalized, it may activate numerous signaling transduction pathways resulting in the release of multiple cytokines. Through activation of TLR9, a CpG ODN can directly stimulate B-lymphocytes, dendritic and NK cells, resulting in an increase in innate immunity and antibody-dependant cell cytotoxicity (ADCC). Additionally, a CpG ODN can indirectly modulate T-cell responses, through the release of cytokines (IL-12 and IFN gamma), to induce a preferential shift to the Th1 (helper) phenotype resulting in enhanced CD8+ cellular cytotoxicity.

**CpG oligodeoxynucleotide GNKG168:** A synthetic, 21-mer, unmethylated CpG motif-based oligodeoxynucleotide (ODN), with immunostimulatory activity. CpG oligodeoxynucleotide GNKG168 binds to and activates Toll-like receptor 9 (TLR9) and is taken up into cells by

endocytosis; once internalized, it may activate numerous signaling transduction pathways resulting in the release of multiple cytokines, such as immunoglobulins (Igs), interferons (IFNs), interleukins (ILs) and tumor necrosis factor (TNF). Through activation of TLR9, this ODN can directly stimulate B-lymphocytes, dendritic and natural killer (NK) cells, resulting in an increase in innate immunity and antibody-dependent cellular cytotoxicity (ADCC). In addition, through the release of IL-12 and IFN, this agent may induce a preferential shift to the T-helper 1(Th1) phenotype resulting in enhanced CD8+ T cell-mediated antitumor cytotoxicity. Check for active clinical trials using this agent.

**CPR:** A substance being studied in the treatment of cancer. It is a type of topoisomerase inhibitor. Also called chloroquinoxaline sulfonamide.

**CPT 11:** A substance being studied in the treatment of several types of cancer. It blocks enzymes needed for cell division and may kill cancer cells. It is a type of histone deacetylase (HDAC) inhibitor.

**CPVC:** Chlorinated Polyvinyl Chloride

**CQS:** A sharp pain that occurs when a muscle suddenly contracts (tightens up). Cramps commonly occur in the abdomen and legs.

**CR:** Child Resistant, indicates that a package will pass a test protocol administered by the U.S. Consumer Product Safety Commission.

**CR2-fH fusion protein TT30:** A recombinant, chimeric human fusion protein consisting of the iC3b/C3d-binding region of human complement receptor type 2 (CR2/CD21) linked to the alternative complement pathway (ACP) inhibitory domain of human factor H (fH) (CR2-fH), with potential complement system inhibiting activity. Via its C3 binding domain, TT30 selectively binds to complement-activated cell surfaces and via its fH binding domain regulates ACP activity. This suppresses excessive complement activity and may result in an inhibition of ACP-mediated hemolysis of paroxysmal nocturnal hemoglobinuria (PNH) red blood cells (RBCs) as well as preventing ACP-induced tissue damage. Factor H is a key regulator in the activation of ACP. Check for active clinical trials using this agent.

**CRA-024781:** A rare, benign (not cancer) brain tumor that usually forms near the pituitary gland and the hypothalamus. Craniopharyngiomas are slow-growing and do not spread to other parts of the brain or to other parts of the body. However, they may grow and press on nearby parts of the

brain, including the pituitary gland, hypothalamus, optic chiasm, optic nerves, and fluid-filled spaces in the brain. This may cause problems with growth, vision, and making certain hormones. Craniopharyngiomas usually occur in children and young adults.

**Crack/Splits/Chips:** A physical separation or tearing of the part.

**Cracking:** Actual separation of moulded material, visible on opposite surfaces of a part and extending through the thickness (fracture). OR Sharp breaks or fissures in silicone rubber surfaces resulting from excessive strain or exposure to adverse environmental factors OR The process in which large molecules found in crude oil are broken down into smaller molecules. See Catalytic Cracking and Thermal Cracking OR The type of paint failure characterized by breaks in irregular lines wide enough to expose the underlying surface.

**Cracking of plaster:** It is quite normal for small cracks to appear in plaster on interior walls and ceilings, either through drying out in new homes or movement of the building in older homes. Simply cut out the cracks, dust off and fill with a suitable interior filler. Allow to dry, then rub down smooth and dust off to create a clean, smooth surface for decorating.

**Cracking on outside paintwork:** This cracking develops as the paint begins to lose flexibility and it no longer expands and contracts with the substrate. The more layers of paint, the worse the problem. Small areas of cracking can be treated by scraping and rubbing down. But large areas will need to be completely removed with a hot air gun or suitable chemical paint remover. Bare surfaces should be primed with an appropriate Dulux Primer before painting.

**Cracking/crazing/crocodiling:** Fine lines or cracks usually occurring when a hard drying material is applied over a soft material e.g. gloss paints applied over bituminous coatings.

**Crackle finish:** The application of a top coating designed to "shrink"™ and crack exposing a different colour underneath.

**cramp :** An operation in which a piece of the skull is removed. A craniotomy may be done so doctors can remove a brain tumor or abnormal brain tissue. It may also be done to remove blood or blood clots from the brain, relieve pressure in the brain after an injury or stroke, repair a brain aneurysm (a bulge in a blood vessel wall) or skull fractures, or treat other

brain conditions. The piece of skull that is removed is usually put back in place after the brain problem has been treated.

**craniopharyngioma :** The bones that form the head. The cranium is made up of cranial bones (bones that surround and protect the brain) and facial bones (bones that form the eye sockets, nose, cheeks, jaw, and other parts of the face). An opening at the base of the cranium is where the spinal cord connects to the brain. Also called skull.

**craniosynostosis:** premature fusion of the cranial sutures

**craniotomy :** A strong, urgent, or abnormal desire for a certain substance or activity. There are different types of cravings, such as food cravings or cravings for addictive substances, including alcohol, drugs, or nicotine. Nicotine cravings are common after a person quits smoking and may come and go over time.

**cranium :** A substance that is made by the body and used to store energy. It is being studied in the treatment of weight loss related to cancer. It is derived from the amino acid arginine.

**Crassulacean acid metabolism:** An adaptation by plants living in arid environment; the C4 pathway concentrates carbon dioxide at night, and vapor exchange with the environment is curtailed during the heat of the day by closure of the stomata.

**crater:** impact mark left on a planet or moon by a collision with a another object.

**craton:** a continental interior that has been structurally inactive for a prolonged time, usually hundreds of millions of years or longer.

**craving :** A compound that is excreted from the body in urine. Creatinine levels are measured to monitor kidney function.

**CRAWLING:** Varnish defect in which poor adhesion of varnish to surface in some spots causes it to gather up in globs.

**Crazing:** fine cracks at or under the surface of a plastic. OR Fine cracks which may extend in a network on or under the surface or through a layer of plastic material. OR Fine cracks which may extend in a network on or under the surface or through a layer of a plastic material. OR Small cracks near or on the surface of plastic materials. OR A small, shallow surface imperfection. OR A defect that causes small cracks often caused by over-stressing the plastic material. OR Fine cracks which may extend in a

network or under the surface of a moulded part. OR Small cracks near or on the surface of plastic materials. OR minute lines appearing in or near the surface of materials such as plastics, usually resulting as a response to environment. Crazeing cannot be felt by running a fingernail across it. (If the fingernail catches, it is a crack.)

**CRAZING:** Fine cracks which may extend in a network on or under the surface or through a layer of plastic material. OR Defect in plastics articles characterized by distinct surface cracks or minute frost-like internal cracks, resulting from stresses within the article which exceed the tensile strength of the plastic.

**Crazeing:** Similar to 'cracking' but usually referring to overall haphazard cracking rather than continuous or straight splitting. 'Checking' is a similar defect but in smaller scale.

**CRAZING:** Small, interlacing cracks on surface of finish.

**creatine :** A drug used to lower the amount of cholesterol and other harmful substances, such as triglycerides, in the blood. It is also being studied in the prevention and treatment of some types of cancer and other conditions. Crestor blocks an enzyme that helps make cholesterol in the body and it helps break down cholesterol. It also may cause cancer cells to die and may inhibit the growth of blood vessels that cancer cells need to grow. It is a type of HMG-CoA reductase inhibitor and a type of statin. Also called rosuvastatin calcium.

**creatine monohydrate:** The monohydrate form of creatine similar or identical to endogenous creatine produced in the liver, kidneys, and pancreas. Creatine, in phosphate form, helps supply energy to muscle cells for contraction. After intense effort, when ATP deposits are depleted, creatine phosphate donates phosphate groups toward the fast synthesis of ATP. Dietary supplementation with creatine may improve muscle wasting associated with cancer and other chronic diseases.

**Creatine phosphate (phosphocreatine):** In muscle, a compound with a high phosphoryl transfer potential that is used to regenerate ATP from ADP during the initial seconds of muscle contraction.

**creatinine :** A disorder marked by the sudden and unexpected death of a healthy child who is younger than one year old, usually during sleep. The cause of crib death is not known. Also called SIDS and sudden infant death syndrome.

**Creep:** The progressive relaxation of an elastomeric material under constant sealing pressure (compressive load) OR The “set” that a molded part takes under stress, and does not return to its original shape. Also known as “memory”. OR the dimensional change with time of a material under load. At room temperature it is also called cold flow. OR The dimensional change with time of a material under load, following the initial instantaneous elastic deformation. Creep at room temperature is sometimes called "Cold Flow". OR Due to its viscoelastic nature, a plastic subjected to a load for a period of time tends to deform more than it would from the same load released immediately after application, and the degree of this deformation is dependent of the load duration. OR the unit elongation of a particular dimension under load for a specific time following the initial elastic elongation caused by load application. It is expressed usually in inches per inch per unit of time. OR Creep is the permanent deformation resulting from prolonged application of a stress below the material's yield point. OR The dimensional change with time of a material under load, following the initial instantaneous elastic deformation. Creep at room temperature is sometimes called “Cold Flow”. OR The dimensional change with time of a material under load. At room temperature it is also called cold flow.

**CREEPING FLOW:** Flow at very low Reynolds Number i.e.  $Re \ll 1$ , where the dimensionless Reynolds number is defined as From Fluid Mechanics it is known that when  $Re$  is more than 2100 the flow is turbulent and below 2100 the flow is laminar. Molten polymer flows through channels and process equipment usually occur at  $Re = 10^{-4} - 10^{-2}$ , that is under creeping flow conditions. The creeping flow assumption implies that the fluid inertia is negligible.

**crenolanib:** An orally bioavailable small molecule, targeting the platelet-derived growth factor receptor (PDGFR), with potential antineoplastic activity. Crenolanib binds to and inhibits PDGFR, which may result in the inhibition of PDGFR-related signal transduction pathways, and, so, the inhibition of tumor angiogenesis and tumor cell proliferation. PDGFR, up-regulated in many tumor cell types, is a receptor tyrosine kinase essential to cell migration and the development of the microvasculature.

**crenolanib besylate:** The besylate salt form of crenolanib, an orally bioavailable benzimidazole targeting the platelet-derived growth factor

receptor (PDGFR) subtypes alpha and beta and FMS-related tyrosine kinase 3 (Flt3), with potential antineoplastic activity. Upon oral administration, crenolanib binds to and inhibits both wild-type and mutated forms of PDGFR and Flt3, which may result in the inhibition of PDGFR- and Flt3-related signal transduction pathways. This results in inhibition of tumor angiogenesis and tumor cell proliferation in PDGFR and/or Flt3 overexpressing tumor cells. PDGFR and Flt3, class III receptor tyrosine kinases, are upregulated or mutated in many tumor cell types.

**Creon:** (Other name for: pancrelipase)

**Crestor:** (Other name for: rosuvastatin calcium) or Pierced with small holes as in a sieve. Refers to the appearance of a tumor when viewed under a microscope. The tumor appears to have open spaces or small holes inside.

**crevasse:** a deep crack or fissure in a glacier.

**crib death :** Immediate, short-term counseling (talking with a professional counselor) to stop a critical emotional incident (e.g., attempted suicide or drug overdose) from getting worse. Crisis intervention is not meant to solve the problem that led up to the crisis.

**cribriform :** An anticancer drug that interferes with the DNA in cancer cells.

**cridanimod sodium:** The sodium salt form of cridanimod, a small molecule that can increase progesterone receptor (PR) expression, with potential antineoplastic adjuvant activity. Upon intramuscular administration, cridanimod is able to induce the expression of PR in endometrial cancer. This could increase the sensitivity of endometrial cancer cells to progestin monotherapy. In combination with a progestin, cancer cells could be eradicated through increased PR-mediated signaling, leading to an inhibition of luteinizing hormone (LH) release from the pituitary gland, via a negative feedback mechanism, and, eventually, an inhibition of estrogen release from the ovaries. This leads to an inhibition of cellular growth in estrogen-dependent tumor cells. In addition, this agent is able to increase the production and release of interferon (IFN) alpha and beta. PR is often downregulated in endometrial cancer and makes it resistant to progestin-mediated hormone therapy.

**Crimped Connectors:** Round wire formed into peaks and valleys to house spirals. This crimp design pre-seats and stabilizes spirals, which reduces break-in stretch and prevents lateral spiral movement.

**crisis intervention :** A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of the anaplastic lymphoma kinase (ALK) gene or the ROS1 gene. It is also being studied in the treatment of other types of cancer. Crizotinib blocks the proteins made by the mutated ALK and ROS1 genes. Blocking these proteins may stop the growth and spread of cancer cells. Crizotinib may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called MET tyrosine kinase inhibitor PF-02341066, PF-02341066, and Xalkori.

**crisnatol mesylate :** A company hired by another company or research center to take over certain parts of running a clinical trial. The company may design, manage, and monitor the trial, and analyze the results. Also called Contract Research Organization.

**cristae:** the folds of the inner mitochondrial membrane.

**Cristanaspase:** (Other name for: asparaginase)

**criteria:** Validated sets of data used as a basis for judgement (WHO, 1979).

**criterion validity:** The extent to which the measurement correlates with an external criterion of the phenomenon under study. Two aspects of criterion validity can be distinguished.

**Critical concentration:** The concentration of G-actin monomers above which polymerization occurs and below which depolymerization occurs. The critical concentration is equal to the dissociation constant (Kd) of an actin monomer from a filament.

**critical concentration for a cell:** The concentration at which undesirable (or adverse) functional changes, reversible or irreversible, occur in the cell (Task Group on Metal Toxicity, 1976).

**critical effect:** The first adverse effect that appears when the critical concentration in the critical organ is reached in an individual (or the adverse effect that occurs as a result of the lowest dose in the critical organ) (WHO, 1979).

**critical group:** That part of the target population most in need of protection (WHO, 1979).

**Critical mass:** The smallest mass of fissionable material that will support a self-sustaining chain reaction.

**CRITICAL MICELLE CONCENTRATION:** The solution concentration of a surfactant at which micelles start to form in that solution. (see RFF 705.10.03 - SURFACE TENSION).

**critical molar volumec:** The molar volume at the critical point.

**critical organ:** ()The organ whose damage (by radiation) results in the greatest injury to the individual (or his descendants). The injury may result from inherent radiosensitivity or indispensability of the organ, or from high dose, or from a combination of all three (ICRP, 1965). OR That part of the body that is most susceptible to radiation damage under the specific conditions under consideration.

**critical organ (critical tissue):** ()The particular organ that first attains the critical concentration (of metal) under specified circumstances of exposure and for a given population (Task Group on Metal Toxicology, 1976).

**critical organ concentration (critical tissue concentration):** The mean concentration in the organ (tissue) at the time the most sensitive type of cell reaches the critical concentration (Task Group on Metal Toxicity, 1976).

**critical period:** A period during the development of a human, animal, or vegetable body, which is of particular importance in the life cycle if the normal full development of some anatomical, physiological, metabolic, or psychological structure or function is to be attained (WHO, 1972).

**critical point:** a point in a phase diagram where the liquid and gas states cease to be distinct. OR State at which two phases of a substance first become indistinguishable. For example, at pressures higher than 217.6 atm and temperatures above 374°C, the meniscus between steam and liquid water will vanish; the two phases become indistinguishable and are referred to as a supercritical fluid.

**critical pressure:** The lowest pressure required to transform a gas into a liquid at the critical temperature. OR Pressure needed to force a gas into a liquid state when the gas is at its critical temperature.

**Critical pressure, Pc:** The highest pressure at which distinct vapor and liquid phases can coexist for a species.

**critical pressurec:** The pressure at the critical point.

**Critical Temperature:** A temperature beyond which a gas cannot be turned into a liquid no matter how much pressure is applied. The process of liquefaction cannot occur above the critical temperature.

**critical temperature:** One of three parameters (critical pressure and critical molar volume being the other two) defining the point at which random thermal molecular motion become so violent that attractive forces are unable to bring about condensation even when the molecules are squeezed together; a temperature above which a vapor cannot be turned into a liquid no matter how much pressure is applied.

**Critical temperature,  $T_c$ :** The highest temperature at which distinct vapor and liquid phases can coexist for a species. The critical temperature and pressure, collectively referred to as the critical constants, are listed for various species in table B.1

**critical temperature<sub>ec</sub>:** The temperature at the critical point. A gas above the critical temperature will never condense into a liquid, no matter how much pressure is applied. Most substances have a critical temperature that is about 1.5 to 1.7 times the standard boiling point, in kelvin.

**Criticality:** The normal operating condition of a reactor, in which nuclear fuel sustains a fission chain reaction. A reactor achieves criticality (and is said to be critical) when each fission event releases a sufficient number of neutrons to sustain an ongoing series of reactions.

**Crixivan:** (Other name for: indinavir sulfate)

**crizotinib:** An orally available aminopyridine-based inhibitor of the receptor tyrosine kinase anaplastic lymphoma kinase (ALK) and the c-Met/hepatocyte growth factor receptor (HGFR) with antineoplastic activity. Crizotinib, in an ATP-competitive manner, binds to and inhibits ALK kinase and ALK fusion proteins. In addition, crizotinib inhibits c-Met kinase, and disrupts the c-Met signaling pathway. Altogether, this agent inhibits tumor cell growth. ALK belongs to the insulin receptor superfamily and plays an important role in nervous system development. ALK dysregulation and gene rearrangements are associated with a series of tumors. or A condition in which the gastrointestinal tract is inflamed over a long period of time. Crohn disease usually affects the small intestine and colon. Symptoms include fever, diarrhea, stomach cramps, vomiting, and weight loss. Crohn disease increases the risk of colorectal cancer and small

intestine cancer. It is a type of inflammatory bowel disease (IBD). Also called regional enteritis.

**CRO:** Describes the process inside a cell that occurs when the same signal is shared by two or more signaling pathways. Usually, a signal caused by the binding of a substance to a molecule on or inside a cell is passed from one molecule to another in the same pathway.

**Crohn disease :** Prostate cancer that keeps growing even when the amount of testosterone in the body is reduced to very low levels. Many early-stage prostate cancers need normal levels of testosterone to grow, but CRPCs do not. Also called castrate-resistant prostate cancer.

**Crohn disease-like reaction :** Discrete aggregates of lymphoid white blood cells, some with germinal centers and surrounding fibrosis, commonly found around some colorectal adenocarcinomas in the absence of a clinical or pathological diagnosis of Crohn disease. Also called Crohn-like reaction.

**Crohn-like reaction :** Discrete aggregates of lymphoid white blood cells, some with germinal centers and surrounding fibrosis, commonly found around some colorectal adenocarcinomas in the absence of a clinical or pathological diagnosis of Crohn disease. Also called Crohn disease-like reaction.

**crolibulin:** A small molecule tubulin polymerization inhibitor with potential antineoplastic activity. Crolibulin binds to the colchicine-binding site on beta-tubulin and inhibits the polymerization of tubulin into microtubules, which may result in cell cycle arrest, the induction of apoptosis, and the inhibition of tumor cell proliferation. As a vascular disruption agent (VDA), this agent also disrupts tumor neovascularization, which may result in a reduction in tumor blood flow and tumor hypoxia and ischemic necrosis.

**cromolyn sodium inhalant PA101:** A solution containing a high concentration of cromolyn sodium, with potential mast cell stabilizing, anti-tussive and anti-inflammatory activities. Upon inhalation of PA101 via a nebulizer, cromolyn blocks calcium ion influx into mast cells, thereby preventing the degranulation of mast cells in the lungs. This blocks the release of pro-inflammatory mediators from mast cells, such as histamine and slow-reacting substance of anaphylaxis (SRS-A), and prevents both bronchoconstriction and an inflammatory response. In indolent systemic

mastocytosis (ISM), PA101 may be able to reduce the symptoms associated with this disease.

**crop water-use efficiency:** A measure at the ecosystem level of how well plants use available water in growth. The grams of dry weight gained by plants during the growing season per unit land area are divided by the millimeters of water lost (including evaporation directly from the soil).

**Cross Laminate:** A laminate in which some of the layers of material are oriented approximately at right angles to the remaining layers with respect to the grain or strongest direction in tension.

**Cross Linking:** The forming of chemical bonds between the molecular chains of a plastic during curing, so that it cannot be re-softened and re-moulded, thus becoming a thermoset. OR A process in which bonds are formed joining adjacent molecules. At low density, these bonds add to the elasticity of the polymer and at high density eventually produce rigidity in the polymer.

**CROSS MODEL:** A mathematical expression describing the shear thinning behavior of polymers. It is more realistic than the power-law model because it fits the data very well at both high and low shear rates. where  $h_0$ ,  $l$ ,  $n$  are curve fitting parameters and  $\dot{\gamma}$  is the shear rate. Due to the mathematical complexities it is not possible to obtain analytical solutions with this model, but it is excellent for numerical simulations of flow processes. This model is very popular in injection molding simulations (cavity filling) and in the characterization of the flow behavior of polymers produced with metallocene catalysts.

**Cross Over:** Length of straight running belt between centers of two cages on a two cage one belt system.

**Cross polarization:** A technique which provides enhancement of nuclei with a low magnetic gyro ratio ( $g$ ) by transferring proton magnetization to the observed nucleus via matched spin-locking (Hartmann–Hahn) conditions at both frequencies. Since the sensitivity enhancement occurs on each scan (according to the ratios of the  $g$  values) the experiment can be repeated much faster because of the faster relaxation of the higher  $g$  nuclei.

**Cross Section-Axial:** When the part is flat (relative), the cross section that is at 90 to the linear plane

**Cross Section-Radial:** When the part is flat (relative), the cross section in the linear plane

**cross-bedding:** a sedimentary structure in which the bedding planes of a particular unit are inclined compared to the bedding of the enclosing rocks.

**Cross-cutting Area:** Nuclear plant activity that affects most or all safety cornerstones. These include the problem identification and resolution, human performance, and "safety-conscious work environment."

**Cross-linking:** The formation of chemical links between the molecular chains in polymers. This process can be achieved by chemical reaction, vulcanization, and electron bombardment. OR the setting –up of chemical valence links between molecular chains of polymer molecules, leading to the formation of a three-dimensional network of polymer chains which is infusible and insoluble. This usually reduces the thermoplasticity of the material. OR the setting-up of chemical valence links between the molecular chains of polymer molecules, leading to the formation of a three-dimensional network of polymer chains which is infusible and insoluble. This usually reduces the thermoplasticity of the material. OR The formation of chemical links between the molecular chains in polymers. This process can be achieved by chemical reaction, vulcanization, and electron bombardment. OR Formation of a 3-dimensional network of polymer chains, which completely prevents flow (e.g. vulcanized rubber). or The formation of chemical links between the molecular chains in polymers. This process can be achieved by chemical reaction, vulcanization, and electron bombardment.

**Cross-linking Agents:** A chemical or chemicals that bond the silicone rubber polymer chains of a silicone rubber together during the liquid silicone molding process

**Cross-Sectional Compression:** The deformation placed on a silicone rubber part to affect a seal. It is expressed as a percentage of the seal's original cross-section

**cross-sectional study :** A study that examines the relationship between diseases (or other health-related characteristics) and other variables of interest as they exist in a defined population at one particular time. The presence or absence of disease and the presence or absence of the other variables (or, if they are quantitative, their level) are determined in each member of the study population or in a representative sample at one

particular time. The relationship between a variable and the disease can be examined (1) in terms of the prevalence of disease in different population subgroups defined according to the presence or absence (or level) of the variables (2) in terms of the presence or absence (or level) of the variables in the diseased versus the nondiseased. Note that disease prevalence rather than incidence is normally recorded in a cross-sectional study. The temporal sequence of cause and effect cannot necessarily be determined in a cross-sectional study. See also morbidity survey (Last, 1988).

**cross-talk :** A member of the family of vegetables that includes broccoli, Brussels sprouts, cabbage, cauliflower, collard greens, kale, and turnips. These vegetables contain substances that may protect against cancer. Also called Brassica vegetable.

**CROSSHEAD:** A device for changing the extrudate flow direction, usually by 90°, so that it can be blow molded or coat wire or coat shapes.

**Crosshead (extrusion):** A device generally employed in wire coating which is attached to the discharge end of the extruder cylinder, designed to facilitate extruding material at an angle. Normally, this is a 90 degree angle to the longitudinal axis of the screw.

**Crosshead Die:** An extrusion die which produces an extrudate on an axis which is at an angle to that of the extruder barrel.

**crossing over:** a process during prophase I in which segments of DNA from one chromatid in the tetrad pass to another chromatid in the tetrad.

**Crosslinking:** Quality of thermosetting plastic resins in which polymer chains combine during the curing process. In general, the greater the crosslinking, the tougher and more chemically resistant the coating.

**crotoxin:** A specific complex of toxic proteins from the venom of *Crotalus durissus terrificus* (South American rattlesnake). It can be separated into a phospholipase A and crotapotin fragment; the latter consists of three different amino acid chains, potentiates the enzyme, and is specifically neurotoxic.

**CRPC:** A procedure in which an extremely cold liquid or an instrument called a cryoprobe is used to freeze and destroy abnormal tissue. A cryoprobe is cooled with substances such as liquid nitrogen, liquid nitrous oxide, or compressed argon gas. Cryoablation may be used to treat certain

types of cancer and some conditions that may become cancer. Also called cryosurgery and cryotherapy.

**CRT:** Cell residence time - the amount of time in days that an average "bug" remains in the process. Also termed "sludge age".

**cruciferous vegetable :** The process of cooling and storing cells, tissues, or organs at very low or freezing temperatures to save them for future use. Also called cryopreservation.

**Crud:** A colloquial term for corrosion and wear products (rust particles, etc.) that become radioactive (i.e., activated) when exposed to radiation.

**crude death rate:** See death rate.

**crude oil:** Crude oil is a liquid formed from tiny sea creatures and plants that died millions of years ago. It contains a mixture of hydrocarbons. It is the raw material for many fuels and plastics. OR Crude oil is a naturally occurring liquid that consists of a wide mixture of hydrocarbons created by the high pressure and temperature decomposition of organic materials. Commercially viable crude oil reserves are found in distinct geographic regions, with the Middle East, the North Sea and Venezuela featuring amongst the key sources of supply. The vast majority of transportation fuels and petrochemical feedstocks are derived from the processing of crude oil. OR Tarry goop consisting of mixed carbon compounds with a highly variable composition. Not much to look at, but the basis for the chemical industry, modern transport, and many shopping sprees at Harrods. OR a liquid containing hydrocarbons that forms in organic- or fossil-rich sediments and rocks.

**crust:** the outermost zone of the earth, its exterior layer. OR the thin, outer layer of the solid part of the Earth.

**crustal rebound:** the process by which crustal rocks that were down-warped by a glacier's weight slowly return to normal elevation after the glacier's retreat.

**cryoablation :** The process of cooling and storing cells, tissues, or organs at very low or freezing temperatures to save them for future use. Also called cryobanking.

**cryobanking :** A procedure in which an extremely cold liquid or an instrument called a cryoprobe is used to freeze and destroy abnormal tissue. A cryoprobe is cooled with substances such as liquid nitrogen, liquid

nitrous oxide, or compressed argon gas. Cryosurgery may be used to treat certain types of cancer and some conditions that may become cancer. Also called cryoablation and cryotherapy.

**cryogen:** A gas that has been liquified by lowering temperature, usually to a temperature under about  $-100^{\circ}\text{C}$ .

**Cryogenic Processes:** Reduction of parts to very low temperatures usually associated with liquid nitrogen. Commonly used to create assemblies or to deflash or degate a part.

**cryopreservation :** A procedure in which an extremely cold liquid or an instrument called a cryoprobe is used to freeze and destroy abnormal tissue. A cryoprobe is cooled with substances such as liquid nitrogen, liquid nitrous oxide, or compressed argon gas. Cryotherapy may be used to treat certain types of cancer and some conditions that may become cancer. Also called cryoablation and cryosurgery.

**cryosphere:** The portion of the climate system consisting of the world's ice masses and snow deposits, which includes the continental ice sheets, mountain glaciers, sea ice, surface snow cover, and lake and river ice. Changes in snow cover on the land surfaces are by and large seasonal and closely tied to the mechanics of atmospheric circulation. The glaciers and ice sheets are closely related to the global hydrologic cycle and to variations of sea level and change in volume and extent over periods ranging from hundreds to millions of years.

**cryosurgery :** A condition in which one or both testicles fail to move from the abdomen, where they develop before birth, into the scrotum. Cryptorchidism may increase the risk for development of testicular cancer. Also called undescended testicles.

**cryotherapy :** The fluid that flows in and around the hollow spaces of the brain and spinal cord, and between two of the meninges (the thin layers of tissue that cover and protect the brain and spinal cord). CSF is made by tissue called the choroid plexus in the ventricles (hollow spaces) in the brain. Also called cerebrospinal fluid.

**cryptorchidism :** A type of tumor found in breast or prostate tissue. It is often large and bulky and grows quickly. It may be benign (not cancer) or malignant (cancer) and may spread to other parts of the body. Also called cystosarcoma phyllodes and phyllodes tumor.

**Crystal:** A large number of objects that are all the same size and shape and are attracted to one another will tend to form repeating three-dimensional structures, instead of lying about randomly. A more complicated crystal will be formed if more than one kind of object is present. You are probably most familiar with crystals of simple covalent solids (like sugar) or ionic solids (like table salt), where the attractive forces between perfectly ordinary molecules and ions line up in an orderly fashion to give structure that we can actually see on the macroscopic scale. It is possible to form crystals even of proteins with molecular weights approaching a million, as each molecule of a protein will have the same molecular weight and three-dimensional shape, and we have all seen 'crystals' of oranges stacked in fruit shops. OR A sample of a crystalline solid that has a regular shape bound by plane surfaces (facets) that intersect at characteristic angles. The shape results from the arrangement of the substances atoms, ions, or molecules. Most crystals contain defects that can strongly affect their optical and electrical properties. OR A homogeneous solid having an orderly and repetitive three-dimensional arrangement of its atoms.

**Crystal Cleavage:** Cleavage is the way a crystal breaks when it is fractured. A crystal usually breaks along points of molecular weakness leaving a smooth break between two surfaces. The fresh surface is not as smooth as the naturally occurring surfaces of the crystal. There are four types of cleavage: none, distinct, indistinct, and perfect. Diamond cutters hope for perfect cleavage when they cut diamonds.

**crystal field splitting energy:** Ligands complexed to a metal ion will raise the energy of some of its d orbitals and lower the energy of others. The difference in energy is called the crystal field splitting energy.

**crystal field theory:** The color, spectra, and magnetic properties of metal-ligand complexes can be explained by modeling the effect of ligands on metal's d orbital energies.

**Crystal form:** A general term used to refer to the various types of crystalline solids of the same compound that can be obtained (i.e., polymorphs and pseudopolymorphs); synonymous with crystal modification.

**Crystal Fracture:** Crystals fracture in the same way anything would fracture. It is an uneven break. If you were to hit an ice cube with a hammer, it would fracture in an uneven manner.

**Crystal habit:** Crystals with the same internal structure but different external shape, thus, crystal in which different faces have developed during growth; synonymous with morphology.

**Crystal Habit:** The general form a crystal takes. This is a larger formation than the actual shape of a crystal. While a crystal shape can be cubic, groups of crystals can form a shape that is bladed or prismatic.

**Crystal Lattice:** A crystal lattice is a very exact organization of atoms that allows for a specific place for every molecule or atom in the solid. If a solid is made up of pure elements or compounds, it can create a very specific structure. A good example of a crystal lattice is a diamond. Salt (NaCl) has a specific cube shape for the crystal. One sodium atom connects to one chlorine atom and that combination repeats. The final structure is a cube.

**Crystal lattice:** The three-dimensional molecular repetition of the motif within a crystal.

**Crystal packing:** The arrangement of molecules in a crystal and the contacts between these molecules.

**Crystal ripening:** The process of reaching equilibrium after a crystallization is largely complete by continued stirring. This may bring about changes in crystal size, shape and perfection as high-energy sites are driven to equilibrium.

**crystal shape:** the arrangement of molecules in a mineral.

**Crystal structure:** The internal arrangement of atoms (and thus molecules) in a solid. The crystal structure is determined by X-ray crystallographic techniques and includes information about intramolecular and intermolecular contacts.

**Crystal system:** The space group and crystal lattice to which a crystal structure belongs.

**Crystal Twinning:** Crystal twinning occurs when two crystals grow in different directions and eventually intersecting. There are two basic types: penetration and contact. Penetration twin crystals intersect. Contact twin crystals meet at a center point.

**Crystalline:** the regular, geometric arrangement of atoms in a solid. OR A plastic material in which the molecular structure becomes mobile only after being heated above its melting point See amorphous. OR It is the structure

of polymer where the molecules are arranged in a very regular repeating lattice structure.

**Crystalline form:** A solid form that is crystalline; a solid form that gives a diffraction pattern. This include polymorphs, solvates, hydrates, and desolvated solvates.

**crystalline genistein formulation AXP107-11:** An orally available crystalline formulation of genistein, a soy-derived isoflavone and phytoestrogen with potential antineoplastic, chemosensitizing, and antioxidant activities. Similar to genistein, crystalline genistein formulation AXP107-11 increases expression of phosphatase and tensin homolog (PTEN), which deactivates protein kinase Akt and mitogen-activated protein kinases (MAPK1 and 3; ERK2 and 1), thereby disrupting PI3K/Akt signal transduction and inducing apoptosis. This agent also induces antioxidant enzymes through AMP-activated protein kinase (AMPK) activation, inhibits NF- $\kappa$ B activation and decreases inflammation response, thereby sensitizing tumors to chemotherapy. Compared to genistein itself, this crystalline formulation shows improved solubility and bioavailability. Check for active clinical trials using this agent.

**Crystalline Solid:** A crystalline solid has a specific organization of molecules and atoms. These are the classic crystals of the world such as diamonds and all gemstones. They are often made up of specific molecules and have very structured geometric shapes. These solids also have more clearly defined melting points. Table salt would be a good example of a crystalline solid. OR A solid that has a repeating, regular three-dimensional arrangement of atoms, molecules, or ions.

**Crystallinity:** A molecular structure resulting from the formation of solid crystals with a geometric pattern. OR crystalline polymers are those whose molecules are chemically and geometrically regular in structure. However, polymers are never fully crystalline, and should ideally be referred to as semi-crystalline polymers. Polyoxymethylene (POM), commonly called acetal, and polyamide (PA), commonly called nylon, are both examples of crystalline polymers. Acrylonitrile-butadiene-styrene (ABS), is an example of a non-crystalline, or amorphous, terpolymer. or The state of molecular structure in some resins denoting uniformity and compactness of the molecular chain. OR a molecular structure resulting from the formation of solid crystals with a geometric pattern. OR A state of molecular structure in

some resins which denotes uniformity and compactness of the molecular chains forming the polymer. Normally can be attributed to the formation of solid crystals having a definite geometric form. OR Ordered repeated structures (crystals) encountered in polymers below a certain temperature. Most polymers are semi-crystalline containing both crystalline and amorphous regions (see also GLASS TRANSITION and MELTING POINT). OR a molecular structure resulting from the formation of solid crystals with a geometric pattern. or A state of molecular structure in some resins which denotes uniformity and compactness of the molecular chains forming the polymer. Normally can be attributed to the formation of solid crystals having a definite geometric form. OR A state of molecular structure in some resins attributed to the existence of solid crystals with a definite geometric form, Such structures are characterized by uniformity and compactness.

**Crystallinity:** The ratio of crystalline and amorphous components in a sample. High crystallinity connotes a low amorphous component.

**crystallite:** A perfect crystalline part of a larger imperfect crystal. Real crystals are usually built of a large number of crystallites.

**Crystallization:** A process in which a liquid solution is cooled, or solvent is evaporated, to an extent that solid crystals of solute form. The crystals in the slurry (suspension of solids in a liquid) leaving the crystallizer may subsequently be separated from the liquid in a filter or centrifuge. OR Production of a purer sample of a substance by slow precipitation of crystals from a solution of the substance. OR The process of forming pure crystals by freezing a liquid, evaporating a solution, or precipitating a solid from solution. Impurities remain in the liquid, so crystallization is often to purify solid substances.

**CSF:** The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, to the date of death from the disease. Patients who die from causes unrelated to the disease are not counted in this measurement. In a clinical trial, measuring the CSS is one way to see how well a new treatment works. Also called cause-specific survival.

**CSGE:** A type of mutation testing in which a segment of DNA is screened for mismatched pairing between normal and mutated base pairs. Also called conformation-sensitive gel electrophoresis.

**CSP:** A procedure that uses x-rays to create a series of detailed pictures of the blood vessels and blood flow inside the body. The pictures are taken from different angles and are created by a computer linked to an x-ray machine. A dye is injected into a vein to make the blood vessels and blood flow easier to see on the x-ray. CT angiography may be used to check for aneurysms (a bulge in the blood vessel wall), blockages in the arteries, blood clots, and other blood vessel problems. Also called computed tomography angiography and CTA.

**CSS:** A method to examine the inside of the colon by taking a series of x-rays. A computer is used to make 2-dimensional (2-D) and 3-D pictures of the colon from these x-rays. The pictures can be saved, changed to give better viewing angles, and reviewed after the procedure, even years later. Also called computed tomographic colonography, computed tomography colonography, CTC, and virtual colonoscopy.

**CT angiography :** A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The pictures are taken from different angles and are used to create 3-dimensional (3-D) views of tissues and organs. A dye may be injected into a vein or swallowed to help the tissues and organs show up more clearly. A CT scan may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called CAT scan, computed tomography scan, computerized axial tomography scan, and computerized tomography.

**CT colonography :** A form of the anticancer drug paclitaxel combined with a protein called poliglumex that may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of breast cancer, ovarian cancer, lung cancer, and other types of cancer. It belongs to the family of drugs called mitotic inhibitors. Also called paclitaxel poliglumex, paclitaxel polyglutamate, and Xyotax.

**CT scan :** A form of the anticancer drug camptothecin that may have fewer side effects and work better than camptothecin. It is being studied in the treatment of cancer. It is a type of DNA topoisomerase inhibitor. Also called polyglutamate camptothecin.

**CT-2103:** A substance that is being studied in the treatment of cancer. It may prevent the growth of blood vessels from surrounding tissue into a solid tumor.

**CT-2106:** A substance being studied in the treatment of cancer. CT-322 may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of vascular endothelial growth factor receptor-2 (VEGFR-2) inhibitor and a type of antiangiogenesis agent. Also called Angiocept and VEGFR-2 inhibitor CT-322.

**CT-2584:** A substance being studied in the treatment of some types of cancer. It may stop cancer cell growth by blocking certain enzymes. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called MLN518 and tandutinib.

**CT-322:** A procedure that uses x-rays to create a series of detailed pictures of the blood vessels and blood flow inside the body. The pictures are taken from different angles and are created by a computer linked to an x-ray machine. A dye is injected into a vein to make the blood vessels and blood flow easier to see on the x-ray. CTA may be used to check for aneurysms (a bulge in the blood vessel wall), blockages in the arteries, blood clots, and other blood vessel problems. Also called computed tomography angiography and CT angiography.

**CT-guided biopsy :** A substance being studied in the diagnosis and treatment of glioma (a type of brain cancer) and other types of cancer. It binds to cancer cells in the brain and peripheral nervous system and may keep them from spreading. CTX comes from the venom of a type of scorpion. A form of CTX made in the laboratory is called TM-601. CTX is a type of neurotoxin. Also called chlorotoxin.

**CT53518:** A method to examine the inside of the colon by taking a series of x-rays. A computer is used to make 2-dimensional (2-D) and 3-D pictures of the colon from these x-rays. The pictures can be saved, changed to give better viewing angles, and reviewed after the procedure, even years later. Also called computed tomographic colonography, computed tomography colonography, CT colonography, and virtual colonoscopy.

**CTA:** A biopsy procedure that uses a CT scan (a special type of x-ray linked to a computer) to find an abnormal area in the body and help guide the removal of a sample of tissue from that area. A needle is usually used to remove the sample, which is then checked under a microscope for signs of disease. A CT-guided biopsy may be done when the abnormal area is deep inside the body or when the doctor cannot feel a lump or mass.

**CTC:** A protein found on T cells (a type of immune cell) that helps keep the body's immune responses in check. When CTLA-4 is bound to another protein called B7, it helps keep T cells from killing other cells, including cancer cells. Some anticancer drugs, called immune checkpoint inhibitors, are used to block CTLA-4. When this protein is blocked, the "brakes" on the immune system are released and the ability of T cells to kill cancer cells is increased.

**CTLA-4:** A drug that is used to treat many types of cancer and is being studied in the treatment of other types of cancer. It is also used to treat some types of kidney disease in children. CTX attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called cyclophosphamide and Cytosan.

**CTP-37-DT vaccine:** A vaccine composed of synthetic peptides derived from beta-human chorionic gonadotropin (hCG) conjugated to diphtheria toxoid. Vaccination with this peptide may elicit the host immune response against hCG-producing cancer cells.

**CTX:** A measure of volume in the metric system. One thousand cubic centimeters equal one liter. Also called cc, milliliter, and ml. or A drug used to treat certain bacterial skin and bloodstream infections in adults. Cubicin is also being studied in the treatment of fever and neutropenia (an abnormal decrease in the number of neutrophils, a type of white blood cell) in patients with cancer. It is a type of antibiotic. Also called daptomycin.

**cube:** a six-sided solid. All sides are equal squares and all edges are equal.

**Cube-root kinetics:** A diminishing sphere kinetics model with regard to particles of radius  $r$ :

**cubic centimeter :** The ability to understand, interact, and work well with people of different cultures. In medicine, one goal of cultural competency is to help make sure that the quality of the healthcare is equal among different cultural groups.

**Cubic Crystal:** A crystal shaped like a cube. A cube has six sides and might look like a die from a board game.

**Cubic crystal class:** A crystal class containing four three-fold rotation axis, one along each unit cell diagonal. This class contains 36 space groups and has two restrictions: 1) the lengths of all axes are equal, and 2) all angles are equal to  $90^\circ$ .

**Cubicin:** (Other name for: daptomycin) or The beliefs, values, and behaviors that are shared within a group, such as a religious group or a nation. Culture includes language, customs, and beliefs about roles and relationships. In medicine, culture also refers to the growth of microorganisms, such as bacteria and yeast, or human, plant, or animal cells or tissue in the laboratory.

**Cull:** Material remaining in a transfer chamber after mold has been filled. Unless there is a slight excess in the charge, the operator cannot be sure cavity is filled. Charge is generally regulated to control thickness of cull.

**cultural competency :** A human, plant, or animal cell that has been adapted to grow in the laboratory. Cultured cells may be used to diagnose infections, to test new drugs, and in research.

**culture :** Cells of a single type (human, animal, or plant) that have been adapted to grow continuously in the laboratory and are used in research.

**cultured cell :** A live form of a bacterium that makes lactic acid (a substance that is made from sugars found in milk and is also made in the body). Culturelle is given to help with digestion and normal bowel function. It may also help keep the gastrointestinal (GI) tract healthy. It is being studied in the prevention of infections in patients having donor stem cell transplants and in other conditions. Also called Lactobacillus rhamnosus GG.

**cultured cell line :** In medicine, the total amount of a drug or radiation given to a patient over time; for example, the total dose of radiation given in a series of radiation treatments.

**Culturelle:** (Other name for: Lactobacillus rhamnosus GG)

**Culturelle :** The total amount of a substance or radiation that a person is exposed to over time. Cumulative exposure to a harmful substance or radiation may increase the risk of certain diseases or conditions.

**Cumene:** Cumene is a chemical intermediate almost exclusively consumed in the production of phenol. Cumene is a propylene derivative produced by the reaction of propylene and benzene. Cumene production is widespread geographically, and almost all new plants are integrated with phenol. Alternative names for cumene include: isopropyl benzene, (1-methylethyl)benzene, 2-phenylpropane

**Cumulative dose:** The total dose that an occupationally exposed worker receives as a result of repeated exposures to ionizing radiation to the same portion of the body, or to the whole body, over time. For additional detail, see Information for Radiation Workers.

**cumulative dose :** A measure of the total risk that a certain event will happen during a given period of time. In cancer research, it is the likelihood that a person who is free of a certain type of cancer will develop that cancer by a specific age. For example, a woman with no known risk factors for breast cancer has a cumulative risk of getting breast cancer over a lifetime of 90 years of about 12-13%. This means one out of every eight women will get breast cancer by age 90 years.

**cumulative effect (functional accumulation):** Occurs when repeated doses of a toxic substance or harmful radiation summate to give an enhanced effect (WHO, 1979).

**cumulative exposure :** A case in which cancer cells are found in the body, but the place where the cells first started growing (the origin or primary site) cannot be determined. Also called cancer of unknown primary origin and carcinoma of unknown primary.

**Cumulative feedback inhibition:** A regulatory strategy in which the enzyme catalyzing the committed step common to several pathways is incrementally inhibited by the products of each of the pathways. Thus, each inhibitor can reduce the activity of the enzyme even if other inhibitors are bound at saturating levels.

**cumulative incidence ratio:** The ratio of the cumulative incidence rate in the exposed to the cumulative incidence rate in the unexposed (Last, 1983).

**cumulative incidence, cumulative incidence rate:** The number or proportion of a group of people who experience the onset of a health related event during a specified time interval; this interval is generally the same for all members of the group, but, as in lifetime incidence, it may vary from person to person without reference to age (Last, 1988).

**cumulative risk :** A procedure in which a rounded glass cup is warmed and placed upside down over an area of the body, creating suction that holds the cup to the skin. Cupping increases the flow of blood. In traditional Chinese medicine, it is also thought to increase the flow of qi (vital energy).

**cumulonimbus:** cumulus cloud that builds vertically; usually associated with a cold front and thunderstorms.

**cumulus:** puffy, cotton-like clouds formed by rising air.

**CUP:** Surgery to remove all malignant (cancerous) tissue, which is meant to cure the disease. This includes removing part or all of the cancerous organ or tissue and a small amount of healthy tissue around it. Nearby lymph nodes may also be removed. Curative surgery works best for localized cancer. Chemotherapy or radiation therapy may be given before surgery to shrink the tumor or after surgery to kill any cancer cells that remain.

**cupping :** A yellow pigment of the spice turmeric that is being studied in cancer prevention.

**Cuprenil:** (Other name for: penicillamine)

**cupric<sup>2+</sup>:** Deprecated. 1. the copper(II) ion,  $\text{Cu}^{2+}$ . 2. A compound that contains copper in the +2 oxidation state.

**Cuprimine:** (Other name for: penicillamine)

**cuprous<sup>+</sup>:** Deprecated. 1. the copper(I) ion,  $\text{Cu}^{+}$ . 2. A compound that contains copper in the +1 oxidation state.

**curative surgery :** To heal or restore health; a treatment to restore health.

**curcumin:** A phytopolyphenol pigment isolated from the plant *Curcuma longa*, commonly known as turmeric, with a variety of pharmacologic properties. Curcumin blocks the formation of reactive-oxygen species, possesses anti-inflammatory properties as a result of inhibition of cyclooxygenases (COX) and other enzymes involved in inflammation; and disrupts cell signal transduction by various mechanisms including inhibition of protein kinase C. These effects may play a role in the agent's observed antineoplastic properties, which include inhibition of tumor cell proliferation and suppression of chemically induced carcinogenesis and tumor growth in animal models of cancer. orRemoval of tissue with a curette (a spoon-shaped instrument with a sharp edge).

**curcumin-based gel:** A proprietary topical gel formulation containing an extract of curcumin, the polyphenol derived from the plant *Curcuma longa*, with potential anti-inflammatory, antioxidant, and wound healing activities. Upon topical administration to the affected areas, curcumin inhibits a variety of pro-inflammatory enzymes and reduces the production of certain

pro-inflammatory mediators. Curcumin also blocks the formation of reactive oxygen species (ROS), neutralizes free radicals and prevents oxidative stress and DNA damage. In addition, curcumin inhibits phosphorylase kinase (PhK) in the skin, which prevents multiple PhK-mediated signal transduction pathways that are induced upon skin injury. This further prevents inflammation, promotes healing and reduces scar tissue formation. The proprietary curcumin-based gel also provides moisture to the skin and contains tetrahydropiperine (THP), which is derived from black pepper fruit and increases skin uptake of curcumin.

**curcumin/green tea extract/Polygonum cuspidatum extract/soybean extract capsule:** An oral capsule containing curcumin, green tea extract, Polygonum cuspidatum extract, and soybean extract, with antioxidant and potential chemopreventive activities. The antioxidants in curcumin/green tea extract/Polygonum cuspidatum extract/soybean extract capsule bind to and neutralize free-radicals, which may prevent their genotoxic and carcinogenic effects.

**CURE:** To change the physical properties of a material by chemical reaction, which may be condensation. polymerization. or vulcanization: usually accomplished by the action of heat and catalysts. along or in combination. with or without pressure. OR to change the physical, chemical, or electrical properties of a material by chemical reaction, by the action of heat and catalysts alone or in combination, with or without pressure. Specifically to convert low molecular weight polymer or resin to an insoluble infusible state. OR The process of changing the properties of polymer into a more stable substance or material. OR The technique of cross-linking a plastics material. OR The process of changing properties of polymer into a more stable and usable condition. This is accomplished by the use of heat, radiation, or reaction with chemical additives. OR The heat induced process that causes a chemical change in the liquid silicone rubber material, turning it into the finished silicone rubber part OR The process of hardening of a thermosetting resin (by cross-linking of the molecular structure), under the influence of heat and/or curing agents. OR The process of allowing a plastic to harden or stabilize. OR The process of changing properties of polymer into a more stable and usable condition. This is accomplished by the use of heat, radiation, or reaction with chemical additives. or to change the physical, chemical or electrical properties of a material by chemical reaction, by the action of heat and catalysts alone or in

combination, with or without pressure. Specifically to convert a low molecular weight polymer or resin to an insoluble, infusible state. OR To change the physical properties of a material by chemical reaction, which may be condensation, polymerization, or vulcanization: usually accomplished by the action of heat and catalysts along with or in combination with or without pressure. OR The process of changing properties of polymer into a more stable and usable condition. This is accomplished by the use of heat, radiation, or reaction with chemical additives.

**cure :** A spoon-shaped instrument with a sharp edge.

**Cure Cycle:** The time periods at defined conditions to which a reacting thermosetting material is processed to reach a desired property level.

**Cure schedule:** The time/temperature relationship required to cure a coating.

**Cure Time:** The preset time needed to complete the liquid silicone rubber curing process

**Cure, Curing:** The process whereby a liquid coating becomes a hard film.

**curettage :** A condition in which there is too much cortisol (a hormone made by the outer layer of the adrenal gland) in the body. In Cushing disease, this happens when an adenoma (benign tumor) in the pituitary gland makes too much adrenocorticotrophic hormone (ACTH). This causes the adrenal gland to make too much cortisol. Symptoms include a round face, thin arms and legs, severe fatigue and muscle weakness, high blood pressure and high blood sugar, purple or pink stretch marks on the skin, and weight gain, especially in the abdomen.

**urette :** A condition in which there is too much cortisol (a hormone made by the outer layer of the adrenal gland) in the body. Cushing syndrome may be caused by taking too many steroid drugs or by certain types of tumors. Tumors that make adrenocorticotrophic hormone (ACTH) cause the adrenal gland to make too much cortisol. Symptoms of Cushing syndrome include a round face, thin arms and legs, severe fatigue and muscle weakness, high blood pressure, high blood sugar, purple or pink stretch marks on the skin, and weight gain, especially in the abdomen.

**Curie (Ci):** One of three units used to measure the intensity of radioactivity in a sample of material. This value refers to the amount

of ionizing radiation released when an element (such as uranium) spontaneously emits energy as a result of the radioactive decay (or disintegration) of an unstable atom. Radioactivity is also the term used to describe the rate at which radioactive material emits radiation, or how many atoms in the material decay (or disintegrate) in a given time period. As such, 1 Ci is equal to 37 billion ( $3.7 \times 10^{10}$ ) disintegrations per second, so 1 Ci also equals 37 billion ( $3.7 \times 10^{10}$ ) Becquerels (Bq). A curie is also a quantity of any radionuclide that decays at a rate of 37 billion disintegrations per second (1 gram of radium, for example). The curie is named for Marie and Pierre Curie, who discovered radium in 1898.

**Curie point:** Temperature above which a ferromagnetic material loses its ferromagnetism.

**Curing:** The chemical process by which paints dry. Most commonly used when referring to the chemical reaction by which two-pack products dry e.g. two-pack epoxies two-pack polyurethane. OR Final conversion or drying of a coating material. OR The forming of a polymer by polymerization and/or Cross Linking.

**Curing agents:** Chemical compounds used to cure thermosetting resins.

**Curing Temperature:** Temperature at which a cast, molded, or extruded product, a resin-impregnated reinforcing material, an adhesive, etc., is subjected to curing. OR Temperature at which a cast, molded or extruded product, a resin-impregnated reinforcing material, or adhesive. etc., is subjected to curing. OR The temperature of liquid silicone rubber thermoset vulcanization OR Temperature at which a cast, molded or extruded product, a resin-impregnated reinforcing material, or adhesive etc., is subjected to curing.

**Curing Time:** The period of time that a reacting thermosetting material is exposed to specific conditions to reach a specified property level. OR The time taken for a resin to cure (polymerise) to its full extent. With a cold-curing resin, the time is measured from addition of either activator or catalyst. Curing time can be influenced by other chemical aids – retarder or accelerator.

**Curium:** Symbol: "Cm" Atomic Number: "96" Atomic Mass: (247)amu. Curium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. It is a very radioactive element but has been used in satellites and space exploration.

**current:** a movement of electrons through a conductor. Measured in amperes.

**Curretab:** (Other name for: medroxyprogesterone)

**Curtain Coating:** A method of coating which may be employed with low viscosity resins or solutions, suspensions, or emulsions of resins in which the substrate to be coated is passed through and perpendicular to a freely falling liquid “curtain” (or “waterfall”). The flow rate of the falling liquid and the linear speed of the substrate passing through the curtain are coordinated in accordance with the thickness of coating desired.

**Curvature:** A condition in which the parison is not straight, but somewhat bending and shifting to one side, leading to a deviation from the vertical direction of extrusion. Centering of ring and mandrel can often relieve this defect.

**Cushing disease :** A substance being studied in the treatment of cancer. It blocks the production of a protein called clusterin, which helps cells live longer. This may kill cancer cells that need clusterin to grow. It may also make cells more sensitive to anticancer drugs. It is a type of antisense oligonucleotide, and a type of chemosensitizing agent. Also called OGX-011.

**Cushing syndrome :** Having to do with the skin.

**Cushion:** A pad of material left in the barrel at the end of the injection stroke. It is excessive to the amount needed to fill the mold and acts as a focus point for holding pressure against the cooling melt. OR It is the a small amount of melt that is left in the barrel at the end of injection, follow up pressure. The cushion prevents the screw tip from making contact to the head of barrel

**custirsen sodium:** The eicosasodium salt of a mixed-backbone antisense oligodeoxynucleotide with chemosensitizing properties. Custirsen inhibits testosterone-repressed prostate message-2 (TRPM-2). Administration of custirsen abrogates the anti-apoptotic effect of TRPM-2, thereby sensitizing cells to chemotherapy and resulting in tumor cell death. TRPM-2 is an anti-apoptotic clusterin that is overexpressed by prostate cancer cells and is associated with chemoresistance.

**custirsen sodium :** Cancer that has spread from the breast to the skin.

**CUSTOM COLOR:** Special colors made by adding colorant to paint or by intermixing colors, which permits the retailer to match a color selected by the consumer.

**Custom Molder:** A firm specializing in the molding of items or components to the specifications of another firm which handles the sale or distribution of the item, or incorporates the custom molded components in one of its own products.

**Cut-off:** The line where the two halves of a compression mold come together; also called Flash Groove or Pinch-off.

**Cut-through resistance:** A coating film's resistance to penetration resulting from the combined application of sharp edges, heat and pressure.

**cutaneous :** Any of a group of T-cell non-Hodgkin lymphomas that begins in the skin as an itchy, red rash that can thicken or form a tumor. The most common types are mycosis fungoides and Sézary syndrome.

**cutaneous breast cancer :** In medicine, a loss of blood flow to part of the brain, which damages brain tissue. CVAs are caused by blood clots and broken blood vessels in the brain. Symptoms include dizziness, numbness, weakness on one side of the body, and problems with talking, writing, or understanding language. The risk of CVA is increased by high blood pressure, older age, smoking, diabetes, high cholesterol, heart disease, atherosclerosis (a buildup of fatty material and plaque inside the coronary arteries), and a family history of CVA. Also called cerebrovascular accident and stroke.

**cutaneous leiomyoma :** A benign tumor that arises from smooth muscle tissue in a hair follicle, forming a papule. Cutaneous leiomyomas (or leiomyomata) can be painful in the presence of cold or tactile stimuli.

**cutaneous lichen amyloidosis :** Itchy papules that are brownish-red in color and typically appear on the shins, thighs, feet, or neck.

**cutaneous T-cell lymphoma :** An abbreviation for a chemotherapy combination used to treat slow-growing forms of non-Hodgkin lymphoma (NHL) and chronic lymphocytic leukemia (CLL). It includes the drugs cyclophosphamide, vincristine sulfate, and prednisone. Also called CVP regimen.

**Cutting Nest-:** A formed nest for formed product to sit in while being cut. Ensures a clean and accurate cut

**CVA:** An abbreviation for a chemotherapy combination used to treat slow-growing forms of non-Hodgkin lymphoma (NHL) and chronic lymphocytic leukemia (CLL). It includes the drugs cyclophosphamide, vincristine sulfate, and prednisone. Also called CVP.

**CVP:** A poisonous chemical found in some foods and plants, tobacco smoke, and when certain substances are burned. It is used to make products such as paper, fabric, and plastic, and is used as a pesticide. Cyanide keeps cells in the body from using oxygen, so they die. Exposure to cyanide may cause serious health effects, including death.

**CVP regimen:** A regimen consisting of cyclophosphamide, vincristine and prednisone used to treat indolent forms of non-Hodgkin lymphoma. It is also used for the treatment of chronic lymphocytic leukemia.

**CVP regimen :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Cyanocobalamin helps make red blood cells, DNA, RNA, energy, and tissues, and keeps nerve cells healthy. It is found in liver, meat, eggs, poultry, shellfish, milk, and milk products. Cyanocobalamin is water-soluble (can dissolve in water) and must be taken in every day. Not enough cyanocobalamin can cause certain types of anemia (a condition in which the number of red blood cells is below normal) and neurologic disorders. It is being studied with folate in the prevention and treatment of some types of cancer. Also called cobalamin and vitamin B12.

**CXC chemokine receptor 2 antagonist AZD5069:** An orally bioavailable, selective and reversible antagonist of CXC chemokine receptor 2 (CXCR2), with potential anti-inflammatory and antineoplastic activities. Upon administration, CXC chemokine receptor 2 antagonist AZD5069 directly binds to CXCR2 and inhibits its activation. This inhibits CXCR2-mediated signaling and may inhibit tumor cell proliferation in CXCR2-overexpressing tumor cells. In addition, AZD5069 reduces both neutrophil recruitment and migration from the systemic circulation into sites of inflammation, including the lung mucosa; it may also prevent neutrophil migration from the bone marrow. This results in the reduction of inflammation, mucus production, and neutrophil proteinase-mediated tissue destruction in the lung. CXCR2, a G protein-coupled receptor protein also known as IL-8 receptor B (IL-8RB), is upregulated in a variety of tumor cell types and plays a key role in tumor cell proliferation and progression; it

is known to be elevated in several inflammatory diseases, such as chronic obstructive pulmonary disease (COPD), asthma and fibrotic pulmonary disorders.

**CXCR4 antagonist BL-8040:** An orally bioavailable inhibitor of CXC Chemokine Receptor 4 (CXCR4) with potential antineoplastic activity. CXCR4 antagonist BL-8040 selectively binds to the chemokine receptor CXCR4, preventing the binding of stromal derived factor-1 (SDF-1 or CXCL12) to the CXCR4 receptor and subsequent receptor activation, which may result in decreased tumor cell proliferation and migration. In addition, inhibition of CXCR4 may induce mobilization of hematopoietic cells from the bone marrow into blood. The G protein-coupled receptor CXCR4 plays an important role in chemotaxis and angiogenesis and is upregulated in several tumor cell types; SDF-1/CXCR4 interaction induces retention of hematopoietic cells in the bone marrow.

**CXCR4 inhibitor MSX-122:** An orally bioavailable inhibitor of CXCR4 with potential antineoplastic and antiviral activities. CXCR4 inhibitor MSX-122 binds to the chemokine receptor CXCR4, preventing the binding of stromal derived factor-1 (SDF-1) to the CXCR4 receptor and receptor activation, which may result in decreased tumor cell proliferation and migration. CXCR4, a chemokine receptor belonging to the GPCR (G protein-coupled receptor) gene family, plays an important role in chemotaxis and angiogenesis and is upregulated in several tumor cell types; it is also a co-receptor for HIV entry into T cells.

**CXCR4 inhibitor POL6326:** An orally bioavailable inhibitor of CXC chemokine receptor 4 (CXCR4) with receptor binding and hematopoietic stem cell-mobilization activities. CXCR4 inhibitor POL6326 binds to the chemokine receptor CXCR4, thereby preventing the binding of stromal derived factor-1 (SDF-1 or CXCL12) to the CXCR4 receptor and subsequent receptor activation. This may induce the mobilization of hematopoietic stem and progenitor cells from the bone marrow into blood. CXCR4, a chemokine receptor belonging to the G protein-coupled receptor (GPCR) gene family, plays an important role in chemotaxis and angiogenesis and is upregulated in several tumor cell types; CXCL12/CXCR4 interaction induces retention of hematopoietic cells in the bone marrow.

**CXCR4 inhibitor X4P-001:** An orally bioavailable inhibitor of C-X-C chemokine receptor type 4 (CXCR4), with potential antineoplastic and immune checkpoint inhibitory activities. Upon administration, the CXCR4 inhibitor X4P-001 selectively binds to CXCR4 and prevents the binding of CXCR4 to its ligand, stromal cell-derived factor 1 (SDF-1 or CXCL12). This inhibits receptor activation and results in decreased proliferation and migration of CXCR4-overexpressing tumor cells. In addition, inhibition of CXCR4 prevents the recruitment of regulatory T-cells and myeloid-derived suppressor cells (MDSCs) to the tumor microenvironment, thereby abrogating CXCR4-mediated immunosuppression and enabling the activation of a cytotoxic T-lymphocyte-mediated immune response against cancer cells. The G protein-coupled receptor CXCR4, which is upregulated in several tumor cell types, induces the recruitment of immunosuppressive cells in the tumor microenvironment, suppresses immune surveillance, and promotes tumor angiogenesis and tumor cell proliferation. It is also a co-receptor for HIV entry into T cells.

**CXCR4 peptide antagonist LY2510924:** An inhibitor of CXC chemokine receptor 4 (CXCR4), with potential antineoplastic activity. Upon subcutaneous administration, CXCR4 inhibitor LY2510924 binds to the chemokine receptor CXCR4, thereby preventing CXCR4 binding to its ligand, stromal derived factor-1 (SDF-1), and subsequent receptor activation. This may result in decreased tumor cell proliferation and migration. CXCR4, a chemokine receptor belonging to the G protein-coupled receptor (GPCR) gene family, plays an important role in chemotaxis and angiogenesis and is upregulated in several tumor cell types. Check for active clinical trials using this agent.

**cyanide:** 1. An ion with a -1 charge containing one atom of carbon bound to one atom of nitrogen. 2. A compound that contains CN<sup>-</sup> ions.

**cyanide :** A plant compound that contains sugar and produces cyanide.

**cyanide process:** A method for separating a metal from an ore. Crushed ore is treated with cyanide ion to produce a soluble metal cyanide complex. The complex is washed out of the ore and reduced to metallic form using an active metal (usually zinc).

**cyano group:** —C≡N the group.

**cyanocobalamin:** An essential nutrient and natural water-soluble vitamin of the B-complex family that must combine with an intrinsic factor for

absorption by the intestine. Cyanocobalamin is necessary for hematopoiesis, neural metabolism, DNA and RNA production, and carbohydrate, fat, and protein metabolism. B12 improves iron functions in the metabolic cycle and assists folic acid in choline synthesis. B12 metabolism is interconnected with that of folic acid. Vitamin B12 deficiency causes pernicious anemia, megaloblastic anemia, and neurologic lesions.

**cyanocobalamin** : Blue-colored skin caused by too little oxygen in the blood.

**cyanocobalamin/dexamethasone/gentamicin/procaine formulation:** A quadruple mixture composed of the corticosteroid dexamethasone, the aminoglycoside antibiotic gentamicin, the vitamin cyanocobalamin (vitamin B12), and the local anesthetic agent procaine, with antimucositis activity. Upon oral administration of the cyanocobalamin/dexamethasone/gentamicin/procaine formulation, the active ingredients prevent or inhibit inflammation and infection of the oral mucosa and reduce the associated pain. This may prevent or treat radiation-induced oral mucositis (OM).

**cyanogenic glucoside** : A substance being studied in the treatment of some types of cancer. It blocks certain enzymes involved in cell division and may kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of protein kinase inhibitor and a type of antiangiogenesis agent.

**cyanohydrin:** a compound with the general formula

**cyanosis:** The pathological condition where there is an excessive concentration of reduced haemoglobin in the blood. This results in blue appearance of the skin, especially on the face and extremities, indicating the lack of sufficient oxygen in arterial blood.

**cyanosis** : A chronic condition that affects neutrophils (a type of white blood cell). In cyclic neutropenia, the number of neutrophils in the blood goes in cycles from normal to low and back to normal again. Symptoms include fever, inflamed mucous membranes in the mouth, and infections. Also called periodic neutropenia.

**CYC116:** A protein that helps control cell division. It is found in higher than normal amounts in several types of cancer cells. Measuring the amount

of cyclin-D1 in blood cells may help to diagnose cancer or plan cancer treatment. Cyclin-D1 is a cell cycle protein and a type of tumor marker.

**Cycle:** complete, repeating sequence of operations for injection molding a part. Or The complete repeating sequence of operations in a process or part of a process. In molding, the cycle time is the period or elapsed time between a certain point in one cycle and the same point in the next. Or The overall time it takes for the plastic injection process to complete a finished part.

**Cycle Time:** The time required by an injection molding system to mold a part and return to its original position. Or The time it takes to make one part including the closing of the mold, the injection of the resin, the solidification of the part, the opening of the mold and the ejection of the part. Or In a molding operation, cycle time is the time elapsing between a particular point in one cycle and the same point in the next cycle. Or The time required by an injection molding system to mold a part and return to its original position/state.

**Cyclic AMP (cyclic 3', 5'-adenosine monophosphate):** A cyclic nucleotide formed from ATP and an important second messenger in a variety of signaling systems.

**cyclic AMP icAMP):** A second messenger within cells; its formation by adenylate cyclase is stimulated by certain hormones or other molecular signals.

**Cyclic AMP-response element binding protein (CREB):** A transcription factor that binds to the cyclic AMP-response element in DNA and, when phosphorylated by protein kinase A, recruits coactivators that result in the stimulation of transcription of specific genes.

**cyclic electron flow:** In chloroplasts, the light-induced flow of electrons originating from and returning to photosystem I.

**Cyclic GMP (cyclic 3', 5'-guanosine monophosphate):** A cyclic nucleotide formed from GTP and an important second messenger in vision.

**cyclic neutropenia :** COX inhibitor. A type of drug that is used to treat inflammation and pain, and is being studied in the prevention and treatment of cancer. Cyclo-oxygenase inhibitors belong to the family of drugs called nonsteroidal anti-inflammatory drugs (NSAIDs). Also called COX inhibitor.

**Cyclic photophosphorylation:** In photosynthesis, the generation of ATP without the concomitant formation of NADPH; electron cycling from the reaction center of photosystem I to ferredoxin and then back to the reaction center through cytochrome b<sub>6</sub> and plastoquinone generates a proton gradient that is used to drive ATP formation.

**cyclic photophosphorylation:** ATP synthesis driven by cyclic electron flow through photosystem I.

**cyclin B1 peptide-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine comprised of autologous dendritic cells (DCs) pulsed with cyclin B1 peptide, with potential immunostimulatory and antineoplastic activities. Upon administration, cyclin B1 peptide-pulsed autologous dendritic cell vaccine may stimulate anti-tumoral cytotoxic T lymphocyte (CTL) and anti-cyclin B1 antibody responses against cyclin B1-expressing cancer cells, resulting in tumor cell lysis. Cyclin B1, a key regulator of the cell cycle and cell division, is overexpressed in a variety of cancer cells.

**cyclooxygenase-2 (COX-2):** An enzyme that speeds up the formation of substances that cause inflammation and pain. It may also cause tumor cells to grow. Some tumors have high levels of cyclooxygenase-2 and blocking its activity may reduce tumor growth. Also called COX-2 and prostaglandin-endoperoxide synthase 2.

**cyclization:** the formation of ring structures.

**cycloaddition:** a reaction that forms a ring.

**cycloaddition:** a reaction that forms a ring.

**Cycloaddition reaction:** A chemical reaction that involves the addition of two substrates to form a ring system (e.g., the solid-state photodimerization of cinnamic acids). Cycloaddition reactions are controlled by the Woodward–Hoffmann rules.

**cycloalkane:** a ring hydrocarbon made up of carbon and hydrogen atoms joined by single bonds.

**cycloalkyl alkane:** an alkane to which a cyclical structure is bonded.

**cycloalkyl alkane:** an alkane to which a ring structure is bonded.

**cyclobenzaprine hydrochloride:** A centrally acting muscle relaxant, chemically similar to amitriptyline hydrochloride with antidepressant activity. The exact mechanism of action of cyclobenzaprine hydrochloride has not been fully determined. However, it primarily acts at the brain stem

to reduce tonic somatic motor activity, influencing both gamma and alpha motor neurons. This leads to a reduction in muscle spasms. Check for active clinical trials using this agent.

**cyclodextrin-based polymer-camptothecin CRLX101:** A formulation of camptothecin, an alkaloid isolated from the Chinese tree *Camptotheca acuminata*, conjugated with to a hydrophilic, cyclodextrin-based linear polymer with potential antineoplastic activity. Upon intravenous administration, camptothecin is slowly released from the formulation at the tumor site and taken up by tumor cells. During the S phase of the cell cycle, camptothecin selectively stabilizes topoisomerase I-DNA covalent complexes, thereby inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when encountered by the DNA replication machinery. Compared to camptothecin alone, the cyclodextrin-based polymer formulation has a prolonged half life and greatly improves the biodistribution of camptothecin resulting in an accumulation of camptothecin at the tumor site, which enhances tumor exposure while greatly reducing toxic side effects. In addition, cyclodextrin-based polymer-camptothecin may be able to overcome certain kinds of multidrug resistance.

**Cycloflex:** (Other name for: cyclobenzaprine hydrochloride)

**cyclogenesis:** the process of forming storm systems.

**Cyclohexane:** Cyclohexane is a six-carbon saturated ring and is an intermediate in the production of nylon. In nylon production, it is used to produce KA oil, which is oxidized with nitric acid to produce adipic acid, which is then reacted with HMDA to produce nylon 6,6. It is also used as a solvent in many chemical processes.

**Cycloheximide:** An antibiotic that inhibits the peptidyl transferase activity of the 60S ribosomal subunit in eukaryotes.

**cyclohydrocarbon:** an alkane, alkene, or alkyne formed in a ring structure rather than a straight or branched chain. The cyclohydrocarbon general formula is  $C_nH_{2n}$  (n must be a whole number of 3 or greater). OR an alkane, alkene, or alkyne formed in a ring structure rather than a straight or branched chain.

**cycloleucine:** A non-metabolizable synthetic amino acid, formed through the cyclization of the amino acid leucine, with immunosuppressive,

antineoplastic, and cytostatic activities. Cycloleucine competitively inhibits the enzyme methionine adenosyltransferase, resulting in the inhibition of S-adenosylmethionine (SAM) synthesis from methionine and ATP, and subsequent nucleic acid methylation and polyamine production; RNA, and perhaps to a lesser extent, DNA biosyntheses and cell cycle progression are finally disrupted. This agent is also a competitive inhibitor at the glycine modulatory site of the N-methyl-D-aspartate (NMDA) receptor.

**cyclooxygenase inhibitor :** A nonsteroidal anti-inflammatory drug used to relieve pain and inflammation. Cyclooxygenase-2 inhibitors are being studied in the prevention of colon polyps, and as anticancer drugs. Also called COX-2 inhibitor.

**cyclooxygenase-2 :** A drug that is used to treat many types of cancer and is being studied in the treatment of other types of cancer. It is also used to treat some types of kidney disease in children. Cyclophosphamide attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called CTX and Cytosan.

**cyclooxygenase-2 inhibitor :** A drug used to help reduce the risk of rejection of organ and bone marrow transplants by the body. It is also used in clinical trials to make cancer cells more sensitive to anticancer drugs.

**cyclopentenyl cytosine:** A pro-drug carbocyclic analogue of cytidine with antineoplastic and antiviral activities. Cyclopentenyl cytosine (CPEC) is converted to the active metabolite cyclopentenyl cytosine 5'-triphosphate (CPEC-TP); CPEC-TP competitively inhibits cytidine triphosphate (CTP) synthase, thereby depleting intracellular cytidine pools and inhibiting DNA and RNA synthesis. This agent may also induce differentiation of some tumor cell types. The antiviral activity of this agent is broad-spectrum.

**cyclophosphamide:** A synthetic alkylating agent chemically related to the nitrogen mustards with antineoplastic and immunosuppressive activities. In the liver, cyclophosphamide is converted to the active metabolites aldophosphamide and phosphoramidate mustard, which bind to DNA, thereby inhibiting DNA replication and initiating cell death. OR A drug used to treat depression and peripheral neuropathy (pain, numbness, tingling, burning, or weakness in the hands or feet) that can occur with diabetes. It is also being studied in the treatment of peripheral neuropathy caused by certain anticancer drugs. Cymbalta increases the amount of certain chemicals in the brain that help relieve depression and pain. It is a

type of serotonin and norepinephrine reuptake inhibitor. Also called duloxetine and duloxetine hydrochloride.

**Cyclosporin:** A drug that is a potent suppressor of the immune system and is used to prevent rejection in organ transplants.

**cyclosporine:** A natural cyclic polypeptide immunosuppressant isolated from the fungus *Beauveria nivea*. The exact mechanism of action of cyclosporine is not known but may involve binding to the cellular protein cytophilin, resulting in inhibition of the enzyme calcineurin. This agent appears to specifically and reversibly inhibit immunocompetent lymphocytes in the G<sub>0</sub>-or G<sub>1</sub>-phase of the cell cycle. T-lymphocytes are preferentially inhibited with T-helper cells as the primary target. Cyclosporine also inhibits lymphokine production and release. or A drug that is used to treat asthma, allergies, and colds, and to relieve itching caused by certain skin disorders. It has also been used to stimulate appetite and weight gain, and is being studied in the treatment of weight loss caused by cancer and its treatment. Cyproheptadine belongs to the family of drugs called antihistamines.

**cyclosporine ophthalmic emulsion:** An topical ophthalmic formulation containing cyclosporine, an undecapeptide produced by the fungus *Beauveria nivea*, with immunosuppressant and anti-inflammatory activities. The exact therapeutic mechanism of action of cyclosporine is not known but may involve binding to the cellular protein cytophilin, resulting in inhibition of the enzyme calcineurin. This agent appears to specifically and reversibly inhibit immunocompetent lymphocytes in the G<sub>0</sub>-or G<sub>1</sub>-phase of the cell cycle. T-lymphocytes are preferentially inhibited with T-helper cells as the primary target. Cyclosporine also inhibits lymphokine production and release.

**Cyfos:** (Other name for: ifosfamide)

**Cyklokapron:** (Other name for: tranexamic acid)

**CYL-02 plasmid DNA:** A gene transfer preparation of a plasmid DNA encoding mouse somatostatin receptor subtype 2 (sst2) and a fusion protein of human deoxycytidine kinase (DCK) and uridine monophosphate kinase (UMK), complexed to a synthetic polycationic carrier, polyethylenimine, with antineoplastic adjuvant application. Upon administration, CYL-02 plasmid DNA expresses DCK::UMK fusion protein that converts gemcitabine into its toxic phosphorylated metabolite. Expression of sst2

protein by this agent could induce both antioncogenic and local antitumor bystander effects. A loss of sst2 gene expression often is found in pancreatic and colorectal cancers, and is the receptor for somatostatin which negatively regulates a number of processes such as epithelial cell proliferation. Combination effects of these gene products allows for less chemotherapy to cause tumor cell lysis in not only the original tumor, but in distant tumors as well.

**Cylasm:** Cylasm. The contents enclosed by the plasma (or cylasmic) membrane, excluding the nucleus.

**Cylindrical:** Refers to the shape of a container which has a circular cross section parallel to the minor axis and a rectangular cross section parallel to the major axis.

**Cymbalta :** A synthetic hormone being studied for treatment of hot flashes in men with prostate cancer who have had both testicles removed by surgery.

**Cynviloq™:** (Other name for: paclitaxel-loaded polymeric micelle)

**CYP17 inhibitor CFG920:** An orally available inhibitor of the steroid 17-alpha-hydroxylase/C17,20 lyase (CYP17A1 or CYP17), with potential antiandrogen and antineoplastic activities. Upon oral administration, CYP17 inhibitor CFG920 inhibits the enzymatic activity of CYP17A1 in both the testes and adrenal glands, thereby inhibiting androgen production. This may decrease androgen-dependent growth signaling and may inhibit cell proliferation of androgen-dependent tumor cells. The cytochrome P450 enzyme CYP17A1, localized to the endoplasmic reticulum, exhibits both 17alpha-hydroxylase and 17,20-lyase activities, and plays a key role in the steroidogenic pathway that produces steroidal hormones.

**CYP17 inhibitor VT-464:** An orally available non-steroidal, lyase-selective inhibitor of the steroid 17-alpha-hydroxylase/C17,20 lyase (CYP17A1 or CYP17), with potential anti-androgenic and antineoplastic activities. Upon oral administration, CYP17 inhibitor VT-464 selectively inhibits the enzymatic activity of the cytochrome P450 C17,20 lyase in both the testes and adrenal glands, thereby inhibiting androgen production. This may decrease androgen-dependent growth signaling and may inhibit cell proliferation of androgen-dependent tumor cells. The cytochrome P450 enzyme CYP17A1, localized to the endoplasmic reticulum, exhibits both 17alpha-hydroxylase and 17,20-lyase activities; it plays a key role in the

steroidogenic pathway. The lyase-selective activity of VT-464 prevents the increased synthesis of mineralocorticoids that is normally seen with non-selective CYP17 inhibitors, which also inhibit the 17-alpha-hydroxylase activity of CYP17A1.

**CYP17 lyase inhibitor ASN001:** An orally available non-steroidal, lyase-selective inhibitor of the steroid 17-alpha-hydroxylase/C17,20 lyase (CYP17A1 or CYP17), with potential anti-androgenic and antineoplastic activities. Upon oral administration, CYP17 lyase inhibitor ASN001 selectively binds to and inhibits the lyase activity of CYP17A1 in both the testes and adrenal glands, resulting in a significant reduction in androgen production to castrate-range levels. This may both decrease androgen-dependent growth signaling and inhibit the proliferation of androgen-dependent tumor cells. The cytochrome P450 enzyme CYP17A1, which is localized to the endoplasmic reticulum, exhibits both 17alpha-hydroxylase and 17,20-lyase activities; it plays a key role in the steroidogenic pathway. The selective inhibition of CYP17A1 lyase activity by ASN001 prevents the increased synthesis of mineralocorticoids that is normally seen with non-selective CYP17 inhibitors, which also inhibit the 17-alpha-hydroxylase activity of CYP17A1.

**CYP17/androgen receptor inhibitor ODM 204:** An orally available inhibitor of both the steroid 17-alpha-hydroxylase/C17,20 lyase (CYP17A1 or CYP17) and androgen receptor (AR), with potential anti-androgen and antineoplastic activities. Upon oral administration, CYP17/AR inhibitor ODM 204 selectively inhibits the enzymatic activity of CYP17A1 in both the testes and adrenal glands, thereby inhibiting androgen production. This may both decrease androgen-dependent growth signaling and inhibit the proliferation of androgen-dependent tumor cells. In addition, ODM 204 binds to ARs in target tissues and inhibits androgen-induced receptor activation and AR nuclear translocation, which prevents the binding to and transcription of AR-responsive genes. This leads to an inhibition of growth in AR-expressing prostate cancer cells. The cytochrome P450 enzyme CYP17A1, which is localized to the endoplasmic reticulum, exhibits both 17alpha-hydroxylase and 17,20-lyase activities.

**cyproheptadine :** A drug used with other drugs to treat colorectal cancer and non-small cell lung cancer that have spread to other parts of the body. It is used alone or with another drug to treat cancer of the stomach or

gastroesophageal junction (area where the esophagus connects to the stomach) that is advanced or has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Cyramza binds to receptors for a protein called vascular endothelial growth factor (VEGF), which may be found on some types of cancer cells. This may prevent the growth of new blood vessels that tumors need to grow. Cyramza is a type of antiangiogenesis agent and a type of monoclonal antibody. Also called anti-VEGFR-2 fully human monoclonal antibody IMC-1121B, IMC-1121B, and ramucirumab.

**cyproheptadine hydrochloride:** The hydrochloride salt of a synthetic methyl-piperidine derivative with antihistaminic and anti-serotonergic properties. Cyproheptadine competes with free histamine (HA) for binding at HA-receptor sites, thereby competitively antagonizing histamine stimulation of HA-receptors in the gastrointestinal tract, large blood vessels, and bronchial smooth muscle. This agent also competes with free serotonin for binding at serotonin receptor sites. Cyproheptadine exhibits anticholinergic and sedative properties and has been shown to stimulate appetite and weight gain.

**cyproterone acetate:** The acetate salt of a synthetic steroidal antiandrogen with weak progestational and antineoplastic activities. Cyproterone binds the androgen receptor (AR), thereby preventing androgen-induced receptor activation in target tissues and inhibiting the growth of testosterone-sensitive tumor cells. This agent also exerts progestational agonist properties at the level of the pituitary that reduce luteinizing hormone (LH), resulting in reductions in testicular androgen secretion and serum testosterone levels. Treatment with cyproterone alone results in incomplete suppression of serum testosterone levels.

**cyproterone acetate :** A closed, sac-like pocket of tissue that can form anywhere in the body. It may be filled with fluid, air, pus, or other material. Most cysts are benign (not cancer).

**Cyramza:** (Other name for: ramucirumab) or Surgery to remove all or part of the bladder (the organ that holds urine) or to remove a cyst (a sac or capsule in the body).

**Cyren A:** (Other name for: diethylstilbestrol)

**cyst :** A tube that carries bile from the gall bladder. It joins the common hepatic duct to form the common bile duct. It is part of the biliary duct

system.

**cystectomy** : A common hereditary disease in which exocrine (secretory) glands produce abnormally thick mucus. This mucus can cause problems in digestion, breathing, and body cooling.

**cysteine-rich non-denatured whey protein isolate IMN1207**: A biologically active, cysteine-rich, undenatured, bovine whey-based protein isolate with potential anti-cachexia and glutathione-enhancing properties. Upon administration of cysteine-rich whey protein isolate, cystine and glutamylcystine are taken up by cells and release free cysteine. The available cysteine allows cells to synthesize glutathione (GSH), a tripeptide made from amino acids glycine, glutamate and cysteine, thereby maintaining and increasing intracellular GSH concentrations. GSH plays a major role as an antioxidant, thereby protecting cells from oxidative damage due to harmful substances such as free radicals and reactive oxygen compounds. As IMN 1207 is rich in protein, this agent may prevent weight loss and increase body weight and strength. Check for active clinical trials using this agent.

**cystic duct** : Surgery to remove the bladder (the organ that holds urine) and the prostate. In a radical cystoprostatectomy, the seminal vesicles are also removed. The prostate and seminal vesicles are glands in the male reproductive system that help make semen. Also called prostatocystectomy.

**cystic fibrosis** : A type of tumor found in breast or prostate tissue. It is often large and bulky and grows quickly. It may be benign (not cancer) or malignant (cancer) and may spread to other parts of the body. Also called CSP and phyllodes tumor.

**cystoprostatectomy** : A thin, tube-like instrument used to look inside the bladder and urethra. A cystoscope has a light and a lens for viewing and may have a tool to remove tissue.

**cystosarcoma phyllodes** : Examination of the bladder and urethra using a cystoscope, inserted into the urethra. A cystoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**cystoscope** : Surgery to remove the bladder (the organ that holds urine) and urethra (the tube through which urine leaves the body).

**cystoscopy** : A drug used to treat certain types of leukemia and prevent the spread of leukemia to the meninges (three thin layers of tissue that cover and protect the brain and spinal cord). It is also being studied in the treatment of other types of cancer. Cytarabine blocks tumor growth by stopping DNA synthesis. It is a type of antimetabolite.

**cystourethrectomy** : A form of the anticancer drug cytarabine that is contained inside very tiny, fat-like particles. It may have fewer side effects and work better than cytarabine. It is used to treat lymphoma that has spread to the meninges (three thin layers of tissue that cover and protect the brain and spinal cord). It is also being studied in the treatment of other types of cancer. It is a type of antimetabolite. Also called Depo-Cyt and liposomal cytarabine.

**Cysview**: (Other name for: hexaminolevulinate hydrochloride)

**cytadine analogue RX-3117**: An orally available small molecule and nucleoside antimetabolite with potential antineoplastic activity. Upon administration, the cytidine analogue RX-3117 is taken up by cells through a carrier-mediated transporter, phosphorylated by uridine cytidine kinase (UCK) and then further phosphorylated to its diphosphate (RX-DP) and triphosphate forms (RX-TP). The triphosphate form is incorporated into RNA and inhibits RNA synthesis. The diphosphate RX-DP is reduced by ribonucleotide reductase (RR) to dRX-DP; its triphosphate form (dRX-TP) is incorporated into DNA. In addition, RX-3117 also inhibits DNA methyltransferase 1 (DNMT1). This eventually leads to cell cycle arrest and the induction of apoptosis. UCK is the rate-limiting enzyme in the pyrimidine-nucleotide salvage pathway.

**cytarabine**: A substance being studied in the treatment of cancer that has spread to the brain. It has also been studied in the treatment of other types of cancer. Cytochlor damages the DNA in cancer cells, which may make them easier to kill with radiation therapy. It is a type of radiosensitizing agent. OR An antimetabolite analogue of cytidine with a modified sugar moiety (arabinose instead of ribose). Cytarabine is converted to the triphosphate form within the cell and then competes with cytidine for incorporation into DNA. Because the arabinose sugar sterically hinders the rotation of the molecule within DNA, DNA replication ceases, specifically during the S phase of the cell cycle. This agent also inhibits DNA polymerase, resulting in a decrease in DNA replication and repair.

**cytarabine liposome:** A liposomal intrathecal formulation of the antimetabolite cytarabine. As an S-phase-specific antimetabolite, cytarabine is phosphorylated by deoxycytidine kinase to a triphosphate form which competes with thymidine for incorporation into DNA; the incorporation of cytarabine triphosphate into DNA appears to inhibit DNA polymerase and so DNA synthesis, resulting in cell death. A group of enzymes involved in drug metabolism and found in high levels in the liver. These enzymes change many drugs, including anticancer drugs, into less toxic forms that are easier for the body to excrete. OR

**cytarabine monophosphate prodrug MB07133:** A prodrug of the monophosphate (MP) form of the antimetabolite cytarabine (araCMP), an analogue of cytidine with a modified sugar moiety (arabinose instead of ribose), with potential antineoplastic activity. Upon administration of the cytarabine MP prodrug MB07133, the targeting moiety of this agent specifically delivers the cytarabine moiety to the liver. In turn, araCMP is selectively converted to araC triphosphate (araCTP) by a liver kinase, where it binds to and competes with cytidine for incorporation into DNA, thereby inhibiting DNA polymerase, and DNA synthesis. This leads to the inhibition of tumor cell proliferation and destruction of liver cancer cells. The liver is not able to convert araC into araCMP; araCMP is not converted into araCTP in tissues other than the liver. This enhances efficacy and minimizes systemic toxicity. Check for active clinical trials using this agent.

**Cytidine:** A pyrimidine nucleoside found in DNA and RNA.

**Cytidine diphosphodiacylglycerol (CDP-diacylglycerol):** An activated precursor for the synthesis of many phospholipids formed by the reaction of phosphatidate with CTP.

**cytochlor:** A radio-sensitizing pyrimidine nucleoside with potential antineoplastic activity. Cytochlor is metabolized first to a phosphate derivative, CldCMP, by the enzyme deoxycytidine kinase and then to the active uracyl derivative, CldUMP, by the enzyme dCMP deaminase; deoxycytidine kinase and dCMP deaminase have been found in abnormally high concentrations in most cancers. CldUMP, the active metabolite, incorporates into DNA and, upon exposure to radiation, induces the formation of uracil radicals and double-strand DNA breaks. or The study of chromosomes, which are long strands of DNA and protein that contain most of the genetic information in a cell. Cytogenetics involves testing samples

of tissue, blood, or bone marrow in a laboratory to look for changes in chromosomes, including broken, missing, or extra chromosomes. Changes in certain chromosomes may be a sign of a genetic disease or condition or some types of cancer. Cytogenetics may be used to help diagnose a disease or condition, plan treatment, or find out how well treatment is working.

**Cytochrome:** An electron-transferring protein that contains a heme prosthetic group whose iron component shuttles between the ferrous (+2) and ferric (+3) state during electron transfer. OR bf A cytochrome complex that links photosystem II and photosystem I in green plants; cytochrome bf contributes to the proton gradient by oxidizing plastoquinol to plastoquinone. OR c A water-soluble, highly conserved cytochrome component of the respiratory chain that accepts electrons from cytochrome reductase and is in turn oxidized by cytochrome oxidase.

**Cytochrome oxidase:** c The final complex of the respiratory chain, cytochrome oxidase transfers electrons from cytochrome c to molecular oxygen and concomitantly pumps protons across the inner mitochondrial membrane to generate the proton-motive force. Also called Complex IV.

**cytochrome P450 enzyme system :** A type of protein found on epithelial cells, which line the inside and outside surfaces of the body. Cytokeratins help form the tissues of the hair, nails, and the outer layer of the skin. They are also found on cells in the lining of organs, glands, and other parts of the body. Certain cytokeratins may be found in higher than normal amounts in patients with different types of epithelial cell cancers, including lung, breast, colorectal, bladder, and head and neck cancers. Measuring the amount of specific cytokeratins in the blood may help to plan cancer treatment or find out how well treatment is working or if cancer has come back. A cytokeratin is a type of tumor marker. Also called keratin.

**Cytochrome P450 system:** Found in adrenal mitochondria and liver microsomes, an electron-transport chain in which the terminal component is cytochrome P450; this system plays a role in the detoxification of foreign substances by altering them to increase their solubility and facilitate excretion.

**cytochromes:** molecules that accept and release electrons in an electron transport system. OR Heme-containing proteins that function as electron carriers in oxidative phosphorylation and photosynthesis.

**cytogenetics** : A type of protein that is made by certain immune and non-immune cells and has an effect on the immune system. Some cytokines stimulate the immune system and others slow it down. They can also be made in the laboratory and used to help the body fight cancer, infections, and other diseases. Examples of cytokines are interleukins, interferons, and colony-stimulating factors (filgrastim, sargramostim). OR The study of the structure, function, and abnormalities of human chromosomes.

**cytokeratin** : The study of cells using a microscope.

**cytokine** : A virus that may be carried in an inactive state for life by healthy individuals. It is a cause of severe pneumonia in people with a suppressed immune system, such as those undergoing bone marrow transplantation or those with leukemia or lymphoma. Also called CMV.

**cytokine-induced killer cells**: A preparation of autologous lymphocytes with potential immunopotentiating and antineoplastic activities. Cytokine-induced killer (CIK) cells are CD3- and CD56-positive, non-major histocompatibility complex (MHC)-restricted, natural killer (NK)-like T lymphocytes, generated ex-vivo by incubation of peripheral blood lymphocytes (PBLs) with anti-CD3 monoclonal antibody, interleukin (IL)-2, IL-1, and interferon gamma (IFN-gamma) and then expanded. When reintroduced back to patients after autologous stem cell transplantation, CIK cells may recognize and kill tumor cells associated with minimal residual disease (MRD). CIK cells may have enhanced cytotoxic activity compared to lymphokine-activated killer (LAK) cells.

**cytokinesis**: the process during mitosis in which the cytoplasm divides into two separate cells; also called cytoplasmic division. OR The final separation of daughter cells following mitosis.

**Cytokinin**: A plant hormone produced in root tissue.

**cytology** : A drug that is used to treat certain thyroid (a gland located near the voice box) conditions. It is also being studied in the treatment of thyroid cancer. Cytomel is made in the laboratory and is a form of the thyroid hormone triiodothyronine (T3). Also called liothyronine sodium and Triostat.

**cytomegalovirus** : A condition in which there is a lower-than-normal number of blood cells.

**cytomegalovirus IE-1-specific cytotoxic T lymphocytes**: Cytotoxic T-lymphocytes (CTLs), specifically reactive to the cytomegalovirus (CMV)

immediate early-1 (IE-1) protein, with immunomodulating activity. Adoptive immunotherapy with cytomegalovirus IE-1-specific cytotoxic T lymphocytes may help reconstitute CD8<sup>+</sup> cytomegalovirus-specific CTL responses in CMV-infected immunocompromised hosts. IE-1 is one of the first CMV antigens expressed by CMV-infected cells, predominantly inducing a CD8<sup>+</sup> CTL response. Check for active clinical trials using this agent.

**cytomegalovirus pp65-specific cytotoxic T lymphocytes:** Cytotoxic T lymphocytes (CTLs) specifically reactive to the cytomegalovirus (CMV) phosphoprotein pp65 with potential antiviral activity. To prepare CMV pp65-specific cytotoxic T lymphocytes in vitro, dendritic cells (DCs) are pulsed with CMV pp65 epitopes and then used to stimulate and propagate CMV pp65-specific cytotoxic T lymphocytes from peripheral blood mononuclear cells (PBMNCs); the CMV pp65-specific cytotoxic T lymphocyte population is then expanded so as to be sufficient for use in adoptive T lymphocyte therapy. When administered into a patient post-allogeneic hematopoietic stem cell transplantation, this agent may elicit a specific CTL response against CMV-infected host cells, which may result in the resolution of CMV infection. The CMV pp65 protein (65 kDa lower matrix phosphoprotein), the primary component of the enveloped subviral particle, is an immunodominant target for helper and cytotoxic T lymphocyte responses to CMV.

**Cytomel :** The fluid inside a cell but outside the cell's nucleus. Most chemical reactions in a cell take place in the cytoplasm.

**cytopenia :** A chemical compound that is used to make one of the building blocks of DNA and RNA. It is a type of pyrimidine.

**cytoplasm:** semiliquid substance that composes the foundation of the cell and contains the organelles. OR The contents enclosed by the plasma (or cytoplasmic) membrane, excluding the nucleus. OR The portion of a cell's contents outside the nucleus but within the plasma membrane; includes organelles such as mitochondria.

**cytoplasm :** A substance that slows or stops the growth of cells, including cancer cells, without killing them. These agents may cause tumors to stop growing and spreading without causing them to shrink in size.

**Cytosar-U:** (Other name for: cytarabine)

**Cytosine:** A pyrimidine base found in DNA and RNA.

**cytosine** : A substance that kills cells, including cancer cells. These agents may stop cancer cells from dividing and growing and may cause tumors to shrink in size.

**cytoskeleton**: an organelle within cells consisting of an interconnected system of fibers, threads, and interwoven molecules that give structure to the cell. OR The filamentous skeleton, formed in the eukaryotic cytoplasm, that is largely responsible for controlling cell shape. OR Internal scaffolding of cells, made up of microfilaments, intermediate filaments, and microtubules, which enables cells to transport vesicles, change shape, and migrate. OR Cytoskeleton. The filamentous skeleton, formed in the eukaryotic cytoplasm, that is largely responsible for controlling cell shape. OR The filamentous network providing structure and organization to the cytoplasm; includes actin filaments, microtubules, and intermediate filaments.

**Cytosol**: Cytosol. The liquid portion of the cytoplasm, including the macromolecules but not including the larger structures like subcellular organelles or cytoskeleton. OR The continuous aqueous phase of the cytoplasm, with its dissolved solutes; excludes the organelles such as mitochondria.

**cytostatic agent** : Anticancer drugs that kill cells, especially cancer cells.

**cytotoxic**: The adjective applied to anything that is harmful to the cell structure and function and ultimately causing cell death.

**cytotoxic agent** : A type of immune cell that can kill certain cells, including foreign cells, cancer cells, and cells infected with a virus. Cytotoxic T cells can be separated from other blood cells, grown in the laboratory, and then given to a patient to kill cancer cells. A cytotoxic T cell is a type of white blood cell and a type of lymphocyte. Also called cytotoxic T lymphocyte and killer T cell.

**cytotoxic chemotherapy** : A type of immune cell that can kill certain cells, including foreign cells, cancer cells, and cells infected with a virus. Cytotoxic T lymphocytes can be separated from other blood cells, grown in the laboratory, and then given to a patient to kill cancer cells. A cytotoxic T lymphocyte is a type of white blood cell and a type of lymphocyte. Also called cytotoxic T cell and killer T cell.

**cytotoxic T cell** : A substance that can kill cells.

**cytotoxic T lymphocyte** : A drug that is used to treat many types of cancer and is being studied in the treatment of other types of cancer. It is also used to treat some types of kidney disease in children. Cytosan attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called CTX and cyclophosphamide.

**Cytotoxic T lymphocytes**: T cells that trigger cell death by apoptosis in cells that display foreign antigens on class I MHC proteins. Also called killer T cells.

**cytotoxin** : A procedure to scrape and remove tissue from the inner lining of the uterus. The cervix is dilated (made larger) and a curette (spoon-shaped instrument) is inserted into the uterus to remove tissue. A tissue sample may then be checked under a microscope for signs of disease, such as infection or cancer. A D&C may also be done after a miscarriage or to treat certain conditions, such as abnormal bleeding. Also called dilatation and curettage and dilation and curettage.

**Cytosan** : A substance being studied in the treatment of melanoma and many other types of cancer. D-1MT blocks the breakdown of the amino acid tryptophan, which is needed for T cells (a type of immune system cell) to kill tumor cells. Giving D-1MT to patients who have received chemotherapy for cancer may help kill more tumor cells. It is a type of enzyme inhibitor and immunosuppressant. Also called 1-methyl-d-tryptophan.

**D loop**: An extended loop of single-stranded DNA displaced from a duplex structure by an oligonucleotide.

**D-1MT**: A drug used alone or with trametinib to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is used in patients with a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. Dabrafenib blocks this mutated protein, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor and a type of targeted therapy. Also called Tafinlar.

**D-20761**: A rare, slow-growing tumor of blood vessels that forms in or under the skin anywhere on the body. Dabska tumors may appear as firm, raised, purplish bumps, which may be small or large. They usually do not spread to other parts of the body. Dabska tumors can occur in children and

adults. They are a type of vascular tumor. Also called papillary intralymphatic angioendothelioma.

**D-cycloserine:** An analogue of the amino acid D-alanine with broad-spectrum antibiotic and glycinergic activities. D-cycloserine interferes with bacterial cell wall synthesis by competitively inhibiting two enzymes, L-alanine racemase and D-alanine:D-alanine ligase, thereby impairing peptidoglycan formation necessary for bacterial cell wall synthesis. This agent may be bactericidal or bacteriostatic, depending on its concentration at the infection site and the susceptibility of the organism. In addition, D-cycloserine is an excitatory amino acid and partial agonist at the glycine binding site of the NMDA receptor in the central nervous system (CNS); binding to the central NMDA receptor may result in amelioration of neuropathic pain. or A chemotherapy combination used to treat colorectal cancer. It is also used with radiation therapy to treat esophageal cancer and stomach cancer. It includes the drugs fluorouracil and leucovorin calcium.

**D-methionine formulation MRX-1024:** A proprietary oral formulation of D-methionine with antioxidant and antimucositis activities. D-methionine formulation MRX-1024 may selectively protect the oral mucosa from the toxic effects of chemotherapy and radiation therapy without compromising antitumor activity. D-methionine may be converted into the L- isomer in vivo, particularly in instances of L-methionine deprivation; both isomers have antioxidant activity which may be due, in part, to their sulfur moieties and chelating properties. L-methionine, an essential amino acid, also may help to maintain the ratio of reduced glutathione to oxidized glutathione in cells undergoing oxidative stress and may provide a source of L-cysteine for glutathione synthesis.

**D'Amico criteria :** A set of clinical criteria that is used to stratify prostate cancers into three risk categories to estimate cancer growth and spread. The criteria include Gleason score, prostate-specific antigen level, and clinical stage at diagnosis.

**D/I unit:** Deionizing unit, frequently used to maintain water quality in aquariums. Advantages: does not waste water like the R/O unit, is designed to be hooked up to either a faucet or household piping system, the anion & cation resins can be regenerated (with another expensive unit) indefinitely, and these systems allow a larger water flow (up to 2,000 gallons a day), than an R/O system, but cost dramatically more too.

**D&C:** A synthetic luteinizing hormone-releasing hormone (LH-RH) antagonist that suppresses LH and sex steroid levels.

**D1/3-MAGE-3-His fusion protein:** A recombinant fusion protein derived from the melanoma antigen MAGE-3 with potential immunostimulating and antineoplastic activities. Recognized by specific cytotoxic T lymphocytes, D1/3-MAGE-3-His fusion protein may boost antitumoral immune responses when used in a vaccine formulation. This recombinant chimeric protein is produced by fusing MAGE-3 with a lipidated protein D derived from H. influenzae at its N-terminus and a sequence of several histidine residues at its C-terminus.

**da-huang :** A drug used to prevent blood clots from forming or to treat blood clots that have formed in patients with cancer or other conditions. Dalteparin is a type of anticoagulant. Also called dalteparin sodium and Fragmin.

**DAB389 epidermal growth factor:** A recombinant fusion protein composed of the diphtheria toxin with the receptor-binding domain replaced by human epidermal growth factor (EGF). When administered, EGF binds to the endothelial cell growth factor receptor, EGFR, which is upregulated in many solid tumors. After binding to the EGF receptor, the agent is internalized by the cell, where the diphtheria toxin moiety exerts its cytotoxic effect, inhibiting protein synthesis through ADP-ribosylation of elongation factor 2.

**dabigatran etexilate mesylate:** An orally available mesylate salt form of the etexilate prodrug of dabigatran, a benzimidazole and direct thrombin inhibitor with anticoagulant activity. Upon administration, dabigatran etexilate is hydrolyzed by esterases and is converted into dabigatran. Dabigatran reversibly binds to and inhibits the activity of thrombin, a serine protease that converts fibrinogen into fibrin. This disrupts the coagulation cascade and inhibits the formation of blood clots.

**dabrafenib:** An orally bioavailable inhibitor of B-raf (BRAF) protein with potential antineoplastic activity. Dabrafenib selectively binds to and inhibits the activity of B-raf, which may inhibit the proliferation of tumor cells which contain a mutated BRAF gene. B-raf belongs to the the raf/mil family of serine/threonine protein kinases and plays a role in regulating the MAP kinase/ERKs signaling pathway, which may be constitutively activated due to BRAF gene mutations. or A substance being studied in the

treatment of cancer. It is a type of topoisomerase inhibitor. Also called acridine carboxamide.

**Dabska tumor :** A drug used to treat Hodgkin lymphoma and malignant melanoma. It is also being studied in the treatment of other types of cancer. Dacarbazine attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called DTIC-Dome.

**DACA:** A drug used to keep the body from rejecting kidney transplants. It is also being studied in the treatment of some types of cancer and other conditions. Dacliximab binds to receptors for a protein called interleukin-2 (IL-2), which are found on some types of immune cells and cancer cells. This may help suppress the body's immune response and it may help kill cancer cells. Dacliximab is a type of monoclonal antibody. Also called daclizumab and Zenapax.

**dacarbazine:** A triazine derivative with antineoplastic activity. Dacarbazine alkylates and cross-links DNA during all phases of the cell cycle, resulting in disruption of DNA function, cell cycle arrest, and apoptosis. OR A drug used to keep the body from rejecting kidney transplants. It is also being studied in the treatment of some types of cancer and other conditions. Daclizumab binds to receptors for a protein called interleukin-2 (IL-2), which are found on some types of immune cells and cancer cells. This may help suppress the body's immune response and it may help kill cancer cells. Daclizumab is a type of monoclonal antibody. Also called dacliximab and Zenapax.

**dacetuzumab:** A humanized monoclonal antibody directed against the CD40 receptor with potential antineoplastic activity. Dacetuzumab specifically binds to and inhibits the CD40 receptor, thereby inducing apoptosis and inhibiting cellular proliferation via antibody-dependent cellular cytotoxicity (ADCC) in cells that overexpress this receptor. The CD40 receptor, a member of the tumor necrosis factor (TNF) receptor super-family, is highly expressed on most B lineage hematologic malignancies including multiple myeloma, non-Hodgkin's lymphoma, chronic lymphocytic leukemia, Hodgkin's disease and acute lymphoblastic leukemia.

**DACH polymer platinate AP5346:** A low molecular weight polymer-conjugated platinum complex with potential antineoplastic activity. This polymer drug delivery system consists of cytotoxic diaminocyclohexane

(DACH)-platinum (Pt) coupled to a water-soluble biocompatible hydroxypropylmethacrylamide (HPMA) copolymer via a pH sensitive linker. Due to decreased pH in tumor sites, the linker is cleaved and the chelated active moiety DACH-Pt is released in tumor cells. DACH-Pt alkylates macromolecules and causes both inter- and intra-strand platinum-DNA crosslinks, which impede DNA replication and transcription, resulting in cell-cycle independent cytotoxicity. The HPMA-based drug delivery system increases the concentration and prolongs the half-life of DACH-Pt in tumor sites, while minimizing adverse effects on normal tissues.

**DACH-platin micelle NC-4016:** Polymeric micellar nanoparticles containing diaminocyclohexane platinum (DACH-platin or DACH-Pt) with potential antineoplastic activity. DACH-platin micelle NC-4016 is prepared through the formation of a polymer-metal complex between DACH-platin and the polyethylene glycol-poly (glutamic acid) block copolymer, PEG-P(Glu). DACH-platin, an active metabolite of the platinum-based antineoplastic agent oxaliplatin, is highly hydrophobic and toxic when administered systemically. The use of polymeric micelles incorporating DACH-platin may both increase cell permeability and enhance the retention of the agent. This allows an extended half-life in the blood circulation and a selective and high accumulation of DACH-platin at tumor sites. This results in increased anticancer efficacy while reducing side effects due to DACH-platin toxicity. Upon intravenous administration and internalization by tumor cells, DACH-platin binds to and causes both inter- and intra-strand cross-links in DNA, forming platinum adducts and triggering tumor cell apoptosis.

**daclatasvir:** An orally available inhibitor of the hepatitis C virus (HCV) non-structural protein 5A (NS5A) replication complex, with potential activity against HCV. Although the exact mechanism of action of daclatasvir has yet to be fully determined, this agent, upon oral administration and after intracellular uptake, appears to bind to domain I of the NS5A protein. This inhibits the activity of the NS5A protein and results in the disruption of the viral RNA replication complex, blockage of viral HCV RNA production, and inhibition of viral replication. NS5A, a zinc-binding and proline-rich hydrophilic phosphoprotein, plays a crucial role in HCV RNA replication. HCV is a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family.

**daclizumab:** A recombinant monoclonal antibody interleukin-2 receptor antagonist. Daclizumab binds specifically to the alpha subunit of the human interleukin-2 (IL-2) receptor expressed on the surface of activated lymphocytes in vivo, thereby inhibiting IL-2 binding and IL-2-mediated lymphocyte activation, a critical cellular immune response pathway. Check for active clinical trials using this agent. OR A drug that is used to treat myelodysplastic syndromes and is being studied in the treatment of other types of cancer. It is a type of antimetabolite. Also called decitabine.

**daclizumab :** A drug used to treat Ewing sarcoma, gestational trophoblastic tumor, Wilms tumor, and certain types of testicular cancer. It is also used to treat rhabdomyosarcoma in children. It is being studied in the treatment of other types of cancer. Dactinomycin comes from the bacterium *Streptomyces parvulus*. It damages the cell's DNA and may kill cancer cells. It is a type of anticancer antibiotic. Also called actinomycin D and Cosmegen.

**Dacogen:** (Other name for: decitabine) The root of this plant has been used in some cultures to treat certain medical problems. It may have anti-inflammatory and anticancer effects. The scientific name is *Rheum palmatum* or *Rheum officinale*. Also called Chinese rhubarb, Indian rhubarb, rhubarb, and Turkish rhubarb.

**dacomitinib:** An orally bioavailable, highly selective, second-generation small-molecule inhibitor of the pan-epidermal growth factor receptor (EGFR) family of tyrosine kinases (ErbB family) with potential antineoplastic activity. Dacomitinib specifically and irreversibly binds to and inhibits human EGFR subtypes, resulting in inhibition of proliferation and induction of apoptosis in EGFR-expressing tumor cells. EGFRs play major roles in tumor cell proliferation and tumor vascularization, and are often overexpressed or mutated in various tumor cell types.

**dactinomycin:** A chromopeptide antineoplastic antibiotic isolated from the bacterium *Streptomyces parvulus*. Dactinomycin intercalates between adjacent guanine-cytosine base pairs, blocking the transcription of DNA by RNA polymerase; it also causes single-strand DNA breaks, possibly via a free-radical intermediate or an interaction with topoisomerase II.

**dactinomycin :** An isoflavone found in soy products. Soy isoflavones are being studied in the prevention of cancer.

**Dado:** The plain face of the body of a pedestal hence the deep border or band around the lower part of a room wall.

**DAF:** Dissolved air flotation - one of many designs for waste treatment

**daidzein :** A drug used to prevent blood clots from forming or to treat blood clots that have formed in patients with cancer or other conditions. Dalteparin sodium is a type of anticoagulant. Also called dalteparin and Fragmin.

**Dakin's solution:** A highly diluted solution of sodium hypochlorite (0.5% w/v) with topical anti-infective activity. Dakin's solution is used as an antiseptic to clean infected topical wounds.

**dalantercept:** A soluble fusion protein containing the extracellular domain of activin receptor-like kinase-1 (ALK1) fused to a human Fc domain (ALK1-Fc fusion protein), with potential antiangiogenic and antineoplastic activities. Upon administration, dalantercept binds to various ALK1 ligands, preventing activation of tumor cell ALK1 receptors and so inhibiting the ALK1 signaling pathway; growth factor-induced angiogenesis is thus inhibited, which may result in the inhibition of tumor cell proliferation and tumor cell death. ALK1 is a type I cell surface receptor with serine/threonine kinase activity that mediates signaling by members of the transforming growth factor-beta (TGFbeta) superfamily and plays a key role in angiogenesis; ligands for this receptor include TGFbeta1 and TGFbeta2. The Fc moiety of this fusion protein mediates clearance of ligand-fusion protein complexes by the reticuloendothelial system (RES).

**Daliresp:** (Other name for: roflumilast)

**dalotuzumab:** A recombinant monoclonal antibody directed against the insulin-like growth factor 1 receptor (IGF1R) with potential antineoplastic activity. Dalotuzumab binds to membrane-bound IGF1R, preventing binding of the ligand IGF1 and the subsequent triggering of the PI3K/Akt signaling pathway; inhibition of this survival signaling pathway may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. The activation of IGF1R, a tyrosine kinase and a member of the insulin receptor family, stimulates cell proliferation, enables oncogenic transformation, and suppresses apoptosis; IGF1R signaling has been highly implicated in tumorigenesis and metastasis. Check for active clinical trials using this agent.

**dalteparin:** A low molecular weight, synthetic heparin. As an anticoagulant/antithrombotic agent, dalteparin binds to antithrombin and enhances the inhibition of Factor Xa. Compared to unfractionated heparins, the use of dalteparin is associated with lower incidences of osteoporosis and heparin-induced thrombocytopenia. A synthetic hormone that is a type of androgen and is used to treat endometriosis. It is being evaluated in the treatment of endometrial cancer.

**dalteparin sodium :** A drug used to treat acne. It is also used to treat other types of skin diseases and certain bacterial infections, such as leprosy. It blocks bacteria from making a substance that they need to grow. Dapsone is a type of antibacterial agent and a type of anti-inflammatory agent.

**Dalton:** Atomic mass is not measured in pounds or grams. Scientists used something called Daltons. One Dalton is equal to one-twelfth the mass of a carbon atom. Scientists also call a Dalton an Atomic Mass Unit. OR A unit of mass equivalent to the mass of a hydrogen atom ( $1.66 \times 10^{-24}$  g) OR A unit of mass very nearly equal to that of a hydrogen ion and precisely equal to 1.000 on the atomic mass scale. OR The weight of a single hydrogen atom ( $1.66 \times 10^{-24}$ g).

**Dalton's law:** The total pressure exerted by a mixture of gases is the sum of the pressures that each gas would exert if it were alone. For example, if dry oxygen gas at 713 torr is saturated with water vapor at 25 torr, the pressure of the wet gas is 738 torr.

**DALTON'S LAW of DEFINITE PROPORTIONS:** states that every compound has a definite composition by weight. Ah, the formulas.

**Damp course:** A layer of slate lead or bituminous composition built into a wall to prevent damp rising from the ground or soaking in from a ledge or parapet.

**Damping:** The ability of a silicone elastomer to absorb forced vibrational energy or The effect on a mass that causes decreasing amplitude.

**Dampness in walls:** Dampness can be caused by any number of problems, from broken rainwater pipes to defective pointing in brickwork. Whatever the source, it needs to be identified and cured. Before painting, the surface must be completely dry. If a water stain remains on a dry surface that is to be painted, first touch in locally with Dulux Alkali Resisting Primer. Areas that are to remain unpainted, such as brick or stonework, can be protected with Dulux Weathershield Waterseal.

**danazol:** A synthetic androgen derived from ethinyl testosterone. Danazol indirectly reduces estrogen production by decreasing pituitary secretion of follicle-stimulating hormone and luteinizing hormone, and binds to sex hormone receptors in target tissues, thereby exhibiting antiestrogenic, anabolic and weakly androgenic effects. OR A drug used to treat certain bacterial skin and bloodstream infections in adults. Daptomycin is also being studied in the treatment of fever and neutropenia (an abnormal decrease in the number of neutrophils, a type of white blood cell) in patients with cancer. It is a type of antibiotic. Also called Cubicin.

**Dancer Roll :** Weighted roll at the bottom of a take-up loop.

**dangling modifiers:** are similar to misplaced modifiers except that the modifier is not just separated from the word it modifies; it is missing the word it modifies

**daniquidone:** A water-insoluble heterocyclic amide with potential antineoplastic activity. Daniquidone inhibits topoisomerases I and II, thereby inhibiting DNA replication and repair, and RNA and protein synthesis. The acetylated form of daniquidone is highly toxic and is capable of inducing unscheduled DNA synthesis; rapid acetylators are more likely to experience toxicity with this agent.

**Danocrine:** (Other name for: danazol)

**danusertib:** A small-molecule 3-aminopyrazole derivative with potential antineoplastic activity. Dalotuzumab binds to and inhibits the Aurora kinases, which may result in cell growth arrest and apoptosis in tumor cells in which Aurora kinases are overexpressed. This agent may preferentially bind to and inhibit Aurora B kinase. Aurora kinases, a family of serine-threonine kinases, are important regulators of cellular proliferation and division. Check for active clinical trials using this agent.

**daporinad:** A small molecule with potential antineoplastic and antiangiogenic activities. Daporinad binds to and inhibits nicotinamide phosphoribosyltransferase (NMPRTase), inhibiting the biosynthesis of nicotinamide adenine dinucleotide (NAD<sup>+</sup>) from niacinamide (vitamin B3), which may deplete energy reserves in metabolically active tumor cells and induce tumor cell apoptosis. In addition, this agent may inhibit tumor cell production of vascular endothelial growth factor (VEGF), resulting in the inhibition of tumor angiogenesis. The coenzyme NAD<sup>+</sup> plays an essential

role in cellular redox reactions, including the redox reaction linking the citric acid cycle and oxidative phosphorylation.

**dapsone** : A log of study drugs kept by an investigator running a clinical trial. It lists many things about each drug, including the drug name, lot number, expiration date, the amount of drug received, used, returned, or thrown away, and the amount left. DARs help make sure that a clinical trial is done safely and correctly. DARs are required by the U.S. Food and Drug Administration (FDA). Also called Drug Accountability Record.

**dapsone gel, 5%**: A gel containing 5% (w/w) dapsone, a synthetic derivative of diamino-sulfone with anti-infective properties. A structural analog of p-aminobenzoic acid (PABA), dapsone inhibits dihydropteroate synthase (DHPS), an enzyme important in folate synthesis, resulting in a depletion of the folate pool and a reduction in the amount of thymidylate available for DNA synthesis.

**Daptacel**: (Other name for: diphtheria toxoid/tetanus toxoid/acellular pertussis vaccine adsorbed)

**daptomycin**: A semi-synthetic cyclic lipopeptide antibiotic isolated from the bacterium *Streptomyces roseosporus* with broad-spectrum antibiotic activity against Gram-positive bacteria. Daptomycin has a distinct mechanism of action, in which it binds to bacterial membrane and causes rapid depolarization of the cell membrane due to calcium-dependant potassium efflux; the loss of membrane potential leads to inhibition of DNA, RNA and protein synthesis, resulting in bacterial cell death. This agent does not penetrate the outer membrane of gram-negative bacteria.

**daptomycin** : A drug used to treat multiple myeloma. It is used in patients whose cancer was treated with at least three anticancer therapies, including a proteasome inhibitor and an immunomodulating agent. It is also being studied in the treatment of other types of cancer. Daratumumab binds to a protein called CD38, which is found on some types of immune cells and cancer cells, including myeloma cells. Daratumumab may block CD38 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called Darzalex.

**DAR**: A substance made in the laboratory that stimulates the bone marrow to produce red blood cells. It belongs to the family of drugs called antianemics.

**Daraprim**: (Other name for: pyrimethamine)

**daratumumab:** A fully human monoclonal antibody directed against the cell surface glycoprotein CD-38 with potential antineoplastic activity. The binding of daratumumab to natural killer (NK) cells mimics the normal CD38-CD31 interaction on the NK cell surface. CD38 is also present on multiple myeloma (MM) cells and plasma leukemia cells; this agent may preferentially bind these cells, triggering antitumoral antibody-dependent cellular cytotoxicity (ADCC) and complement-dependent cytotoxicity (CDC). CD38, a cell surface glycoprotein, is present on various immune cells and has been shown to regulate the cytotoxic response of activated NK cells.

**daratumumab :** A microscope (device used to magnify small objects) in which objects are lit at a very low angle from the side so that the background appears dark and the objects show up against this dark background.

**darbepoetin alfa:** A recombinant analog of the endogenous cytokine erythropoietin, an erythropoiesis-stimulating protein. Due to the addition of two carbohydrate chains, darbepoetin alfa exhibits a three-fold greater half-life than does erythropoietin. Similar to erythropoietin, darbepoetin alfa binds to and activates epoetin receptors, thereby inducing the differentiation and maturation of erythrocyte progenitors, stimulating endothelial cell proliferation, and stimulating B-cell proliferation and immunoglobulin production. OR A drug used to treat multiple myeloma. It is used in patients whose cancer was treated with at least three anticancer therapies, including a proteasome inhibitor and an immunomodulating agent. It is also being studied in the treatment of other types of cancer. Darzalex binds to a protein called CD38, which is found on some types of immune cells and cancer cells, including myeloma cells. Darzalex may block CD38 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called daratumumab.

**darinaparsin:** A small-molecule organic arsenical with potential antineoplastic activity. Although the exact mechanism of action is unclear, darinaparsin, a highly toxic metabolic intermediate of inorganic arsenicals (iAs) that occurs in vivo, appears to generate volatile cytotoxic arsenic compounds when glutathione (GSH) concentrations are low. The arsenic compounds generated from darinaparsin disrupt mitochondrial bioenergetics, producing reactive oxygen species (ROS) and inducing ROS-

mediated tumor cell apoptosis; in addition, this agent or its byproducts may initiate cell death by interrupting the G2/M phase of the cell cycle and may exhibit antiangiogenic effects. Compared to inorganic arsenic compounds such as arsenic trioxide (As<sub>2</sub>O<sub>3</sub>), darinaparsin appears to exhibit a wide therapeutic window.

**Dark reactions:** Reactions that can occur in the dark, in a process that is usually associated with light, such as the dark reactions of photosynthesis. OR In chloroplasts, the reactions in which carbon dioxide is fixed into organic compounds, driven by ATP and NADPH.

**dark-field microscope :** A drug used to treat certain types of chronic myeloid leukemia and acute lymphoblastic leukemia. Dasatinib is also being studied in the treatment of certain other blood diseases and types of cancer. Dasatinib binds to and blocks BCR-ABL and other proteins that help cancer cells grow. It is a type of tyrosine kinase inhibitor. Also called BMS-354825 and Sprycel.

**DART DROP:** Measurement of the puncture resistance/impact strength of film and its ability to withstand the shock of a falling "dart" without breaking. Expressed as gram weight of the heaviest dart which doesn't break the film when dropped from a specified height.

**Dart Drop Test:** Determines resistance to puncturing of the film. Measured in grams.

**Darzalex:** (Other name for: daratumumab)

**Darzalex :** An impartial group that oversees a clinical trial and reviews the results to see if they are acceptable. This group determines if the trial should be changed or closed. Also called DSMB.

**dasabuvir:** A non-nucleoside inhibitor of the hepatitis C virus (HCV) non-structural protein 5B (NS5B), an RNA-dependent RNA polymerase, with potential activity against HCV. Upon administration and after intracellular uptake, dasabuvir binds HCV NS5B and blocks viral RNA synthesis and replication. The HCV NS5B protein is essential for the replication of the HCV RNA genome. HCV is a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family; HCV infection is associated with the development of hepatocellular carcinoma (HCC).

**dasatinib:** An orally bioavailable synthetic small molecule-inhibitor of SRC-family protein-tyrosine kinases. Dasatinib binds to and inhibits the

growth-promoting activities of these kinases. Apparently because of its less stringent binding affinity for the BCR-ABL kinase, dasatinib has been shown to overcome the resistance to imatinib of chronic myeloid leukemia (CML) cells harboring BCR-ABL kinase domain point mutations. SRC-family protein-tyrosine kinases interact with a variety of cell-surface receptors and participate in intracellular signal transduction pathways; tumorigenic forms can occur through altered regulation or expression of the endogenous protein and by way of virally-encoded kinase genes. OR The active ingredient in a drug used to treat acute leukemias and some other types of cancer. It blocks a certain enzyme needed for cell division and DNA repair, and it may kill cancer cells. It is a type of anthracycline antibiotic and a type of topoisomerase inhibitor. Also called daunorubicin.

**dash:** a punctuation device used to interrupt a sentence, or introduce a restatement or explanation.

**Dash-pot:** A device used in hydraulic systems for damping down vibration. It consists of a piston attached to the part to be damped and fitted into a vessel containing fluid or air. It absorbs shocks by reducing the rate of change in the momentum of moving parts of machinery.

**Data** : The results and information that has been collected form an experiment

**Data acquisition (DAQ):** process of acquiring data, typically from A/D or digital input plugin devices.

**Data and Safety Monitoring Board** : A drug used to treat acute leukemias and some other types of cancer. It blocks a certain enzyme needed for cell division and DNA repair, and it may kill cancer cells. Daunomycin hydrochloride is a type of anthracycline antibiotic and a type of topoisomerase inhibitor. Also called Cerubidine and daunorubicin hydrochloride.

**Datalogger** : A device that can be linked to a computer to record the results from an experiment automatically.

**daughter isotope:** In a nuclear equation the compound remaining after the parent isotope (the original isotope) has undergone decay. A compound undergoing decay, such as alpha decay, will break into an alpha particle and a daughter isotope.

**daughter products:** products created as an element undergoes radioactive decay. OR Isotopes that are formed by the radioactive decay of some other isotope. In the case of radium-226, for example, there are 10 successive daughter products, ending in the stable isotope lead-206.

**daunomycin :** The active ingredient in a drug used to treat acute leukemias and some other types of cancer. It blocks a certain enzyme needed for cell division and DNA repair, and it may kill cancer cells. It is a type of anthracycline antibiotic and a type of topoisomerase inhibitor. Also called daunomycin.

**daunomycin hydrochloride :** A drug used to treat acute leukemias and some other types of cancer. It blocks a certain enzyme needed for cell division and DNA repair, and it may kill cancer cells. Daunorubicin hydrochloride is a type of anthracycline antibiotic and a type of topoisomerase inhibitor. Also called Cerubidine and daunomycin hydrochloride.

**daunorubicin :** A very rare disorder in which the bone marrow doesn't make enough red blood cells. It is usually seen in the first year of life. Patients may have deformed thumbs and other physical problems. They also have an increased risk of leukemia and sarcoma, especially osteosarcoma (bone cancer). Patients with DBA may have a mutation (change) in one of the genes that make proteins found in the cell's ribosomes. Also called Blackfan–Diamond anemia, congenital hypoplastic anemia, congenital pure red cell aplasia, Diamond-Blackfan anemia, erythrocytopenia, and inherited erythroblastopenia.

**daunorubicin hydrochloride:** The hydrochloride salt of an anthracycline antineoplastic antibiotic with therapeutic effects similar to those of doxorubicin. Daunorubicin exhibits cytotoxic activity through topoisomerase-mediated interaction with DNA, thereby inhibiting DNA replication and repair and RNA and protein synthesis. OR A procedure used to look at the inside of the small intestine. A special instrument made up of two tubes (one inside the other) is inserted through the mouth or rectum and into the small intestine. The inside tube, which is an endoscope with a light and lens for viewing, is moved through part of the small intestine, and a balloon at the end of it is inflated to keep the endoscope in place. Next, the outer tube is moved through the small intestine to reach the end of the endoscope, and a balloon at the end of the outer tube is inflated to keep it in

place. Then, the balloon at the end of the endoscope is deflated, and the endoscope is moved through the next part of the small intestine. These steps are repeated many times as the tubes move through the whole small intestine. This allows the doctor to see all of the small intestine. Tissue samples may be removed so they can be checked under a microscope for signs of disease. Also called double balloon endoscopy and double balloon enteroscopy.

**DaunoXome:** (Other name for: liposomal daunorubicin citrate)

**DAVANAT:** (Other name for: galactomannan derivative)

**Davidson correction:** A correction sometimes made to some types of correlated calculations (esp. CISD and MR-CISD) to estimate higher-order contributions to the energy and correct approximately for size-inconsistency.

**Daylight Opening:** Clearance between two platens of a press in the open position. Or Clearance between two platens of a press in the open position. Or The clearance between two platens of a silicone injection molding machine in the open position

**DBA:** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vincristine sulfate, and etoposide. Also called ABVE, ABVE regimen, and DBVE regimen.

**DBE:** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vincristine sulfate, and etoposide. Also called ABVE, ABVE regimen, and DBVE.

**DBVE:** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate, vincristine sulfate, etoposide, prednisone, and cyclophosphamide. Also called ABVE-PC, ABVE-PC regimen, and DBVE-PC regimen.

**DBVE regimen :** An abbreviation for a chemotherapy combination used with radiation therapy to treat childhood Hodgkin lymphoma. It includes the drugs doxorubicin hydrochloride (Adriamycin), bleomycin sulfate,

vincristine sulfate, etoposide, prednisone, and cyclophosphamide. Also called ABVE-PC, ABVE-PC regimen, and DBVE-PC.

**DBVE-PC:** An abbreviation for a chemotherapy combination used to treat certain types of head and neck cancer and stomach cancer. It includes the drugs docetaxel (Taxotere), cisplatin (Platinol), and fluorouracil. Also called docetaxel-cisplatin-fluorouracil, Taxotere-Platinol-fluorouracil, TPF, and TPF regimen.

**DBVE-PC regimen :** A noninvasive condition in which abnormal cells are found in the lining of a breast duct. The abnormal cells have not spread outside the duct to other tissues in the breast. In some cases, DCIS may become invasive cancer and spread to other tissues. At this time, there is no way to know which lesions could become invasive. Also called ductal carcinoma in situ and intraductal carcinoma.

**DC-cholesterol liposome:** A cationic cholesterol derivative mixed with dimethylaminoethane-carbamoyl and sonicated to form small unilamellar vesicles that can complex with DNA, DNA/protein complexes and other drug complexes and mediates the delivery into the cytosol from the endosome compartment.

**DC-OVA vaccine:** An autologous, multivalent dendritic cell vaccine targeting ovarian cancer with potential immunostimulating and antineoplastic activities. DC-OVA vaccine is produced in vitro by pulsing autologous dendritic cells with killed autologous primary ovarian tumors as a source of tumor-associated antigens (TAAs); the pulsed DCs are then matured using various cytokines. Upon administration, DC-OVA vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against ovarian cancer TAA-expressing ovarian cancer cells.

**DCF:** A drug used to treat tuberculosis. It is also being studied in the treatment of pain and nerve problems (numbness, tingling) caused by chemotherapy and in the treatment of low back pain, autism, certain anxiety disorders, and schizophrenia. D-cycloserine is a type of antibiotic. Also called Seromycin.

**DCI:** See CID. In very recent papers, "DCI" may mean "direct" (see) CI .

**DCIS:** A rare disorder that causes kidney failure before age 3, abnormal development of the sexual organs, and, in most cases, Wilms tumor (a type of kidney cancer). Children with Denys-Drash syndrome are also at high risk of some other types of cancer. Also called Denys-Drash syndrome.

### **DCR ligand-bearing liposome-encapsulated melanoma antigens**

**vaccine:** A cancer cell-based vaccine containing liposome encapsulated melanoma antigens and an immunomodulatory factor, attached, via a metal chelator, to a dendritic cell receptor (DCR) ligand-containing a metal-affinity tag, with potential immunomodulating and antineoplastic activity. Upon intravenous administration of DCR ligand-bearing liposome-encapsulated melanoma antigens vaccine, the DCR ligand moiety of this vaccine targets receptors on dendritic cells (DCs), thereby presenting the antigens to DCs which may, in turn, stimulate the DCs and may activate the immune system to mount a cytotoxic T lymphocyte (CTL) response against melanoma cancer cell associated antigens. Check for active clinical trials using this agent.

**DDAVP:** (Other name for: desmopressin acetate)

**DDE:** Dynamic Data Exchange.

**DDS:** In cancer, the first occurrence of cancer in the body.

**De BROGLIE'S HYPOTHESIS:** states that electrons around atoms are in wave formation.

**de Gramont regimen :** Tingling, numbness, heaviness, and other feelings that occur after an acupuncture needle has been properly placed in the body. The needle may be twirled, moved up and down at different speeds and depths, heated, or charged with a small electric current until the de qi sensation occurs.

**de novo :** A type of poisonous mushroom that has harmful effects on the kidneys and liver. It is responsible for most fatal cases of mushroom poisoning. Also called *Amanita phalloides*.

**de novo mutation :** An alteration in a gene that is present for the first time in one family member as a result of a mutation in a germ cell (egg or sperm) of one of the parents, or a mutation that arises in the fertilized egg itself during early embryogenesis. Also called new mutation.

**De novo pathway:** A biochemical pathway that starts from elementary substrates and ends in the synthesis of a biochemical. OR A biosynthetic pathway that builds the final product from simple precursors. See also . OR Pathway for synthesis of a biomolecule, such as a nucleotide, from simple precursors; as distinct from a salvage pathway.

**De Novo Drug Design:** The use of molecular modelling software packages to design new drugs or lead compounds for binding sites.

**de qi sensation :** A gurgling sound that comes from the back of the throat of a dying person. It is caused by the build-up of saliva and mucus in the throat and upper airways when the person is too weak to cough.

**De-oiling :** Any process in which oil is removed from a material or surface such as water.

**deactivating group:** a group that causes an aromatic ring to become less reactive toward electrophilic aromatic substitution.

**Dead Flat:** No gloss or sheen.

**Deamination:** The enzymatic removal of an amine group, as in the deamination of an amino acid to an alpha keto acid. OR The enzymatic removal of amino groups from biomolecules such as amino acids or nucleotides.

**death cap :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of death receptor 4 on cancer cells may kill more cells. Also called DR4, TRAIL receptor 1, TRAIL-R1, and tumor necrosis factor receptor superfamily member 10A.

**death rate:** An estimate of the proportion of a population that dies during a specified period. The numerator is the number of persons dying during the period; the denominator is the size of the population, usually estimated as the mid-year population. The death rate in a population is generally calculated by the formula

**death rattle :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of death receptor 5 on cancer cells may kill more cells. Also called DR5, TRAIL receptor 2, TRAIL-R2, and tumor necrosis factor receptor superfamily member 10B.

**death receptor 4 :** Surgical removal of as much of a tumor as possible. Debulking may increase the chance that chemotherapy or radiation therapy will kill all the tumor cells. It may also be done to relieve symptoms or help the patient live longer. Also called tumor debulking.

**death receptor 5 :** Dead.

**DEBORAH NUMBER (De):** The ratio of a characteristic material time to a characteristic process time. As the characteristic material time we can use the relaxation time and as a characteristic process time the inverse of the shear rate. Under usual extrusion conditions the relaxation might be 0.1 and the shear rate 100 s<sup>-1</sup> and thus  $De = 10$  (0.1 divided by 1/100). When  $De \ll 1$ , the polymer behaves as a purely viscous fluid while for  $De \gg 1$  as an elastic solid. The phenomena of extrudate swell and melt flow instability are evidence of polymer elasticity.

**debris avalanche:** a rapidly churning mass of rock debris, soil, water, and air that races down very steep slopes.

**debris flow:** a mass-wasting event in which movement and turbulence occur throughout the mass.

**debris slide:** the rapid movement of a mass of debris as a single unit.

**debulking :** A drug that is used to treat myelodysplastic syndromes and is being studied in the treatment of other types of cancer. It is a type of antimetabolite. Also called Dacogen.

**Deburr:** Removal of material from a drilled or punched hole, waste from saw cuts of material or sharp or rough edges

**Debye:** A common non-SI unit of dipole moment, named for Dutch physical chemist Peter Debye. A charge separation equal to one electron charge placed one Ångstrom unit apart has a dipole moment of 4.8 D. In SI units,  $1 D = 3.338 \times 10^{-30}$  coulomb meters.

**DEC-205/NY-ESO-1 fusion protein CDX-1401:** A fusion protein consisting of a fully human monoclonal antibody directed against the endocytic dendritic cell (DC) receptor, DEC-205, linked to the tumor-associated antigen (TAA) NY-ESO-1 with potential immunostimulating and antineoplastic activities. The monoclonal antibody moiety of DEC-205/NY-ESO-1 fusion protein CDX-1401 binds to the endocytic DC receptor, which may result in DC endocytic internalization of this agent, specifically delivering the NY-ESO-1 moiety. DC processing of NY-ESO-1 may boost the immune system to mount a cytotoxic T-lymphocyte response (CTL) against cancer cells expressing NY-ESO-1. NY-ESO-1, a cell surface protein expressed in normal fetal and adult testes, is upregulated in a variety of tumor cell types.

**decagon:** a plane closed figure with ten sides and ten angles.

**decant:** to remove the liquid portion of a settled mixture without disturbing the sediment.

**Decanter:** A device in which two liquid phases or liquid and solid phases separate by gravity.

**Decarboxylase:** An enzyme that removes a carbon atom from a substrate in the form of carbon dioxide.

**decarboxylation:** a reaction in which carbon dioxide is expelled from a carboxylic acid.

**Decarboxylation reaction:** A chemical reaction that involves the loss of CO<sub>2</sub> from a solid (e.g., the decarboxylation of 4-aminosalicylic acid).

**Decavac:** (Other name for: diphtheria toxoid/tetanus toxoid vaccine adsorbed)

**decay:** Change of an element into a different element, usually with some other particle(s) and energy emitted.

**Decay heat:** The heat produced by the decay of radioactive fission products after a reactor has been shut down.

**Decay, radioactive:** The spontaneous transformation of one radioisotope into one or more different isotopes (known as “decay products” or “daughter products”), accompanied by a decrease in radioactivity (compared to the parent material). This transformation takes place over a defined period of time (known as a “half-life”), as a result of electron capture; fission; or the emission of alpha particles, beta particles, or photons (gamma radiation or x-rays) from the nucleus of an unstable atom. Each isotope in the sequence (known as a “decay chain”) decays to the next until it forms a stable, less energetic end product. In addition, radioactive decay may refer to gamma-ray and conversion electron emission, which only reduces the excitation energy of the nucleus.

**deceased :** A substance being studied as a way to detect bone growth in patients receiving bisphosphonates (a type of drug used to treat bone pain caused by some types of cancer) for breast cancer. It binds to newly formed bone. A biopsy is done and bone growth is measured using a special microscope. Declomycin is a type of tetracycline antibiotic and a type of bone-labeling agent. Also called demeclocycline hydrochloride.

**decerebrate posturing:** an abnormal body posture that involves the arms and legs being held straight out, the toes being pointed downward, and the

head and neck being arched backwards

**dechlorination process:** a process by which excess chlorine is removed from water to a desired level. Usually accomplished by chemical reduction, by passage through carbon beds or by aeration at a suitable pH.

**decimal:** The number of digits to the right of the decimal point in a number.

**decitabine:** Removal of part or all of the external surface of an organ. OR A cytidine antimetabolite analogue with potential antineoplastic activity. Decitabine incorporates into DNA and inhibits DNA methyltransferase, resulting in hypomethylation of DNA and intra-S-phase arrest of DNA replication.

**Deckle Rod:** A small rod, or similar device, inserted at each end of the extrusion coating die which is used to adjust the length of the die opening.

**Declared pregnant woman:** A woman who is an occupational radiation worker and has voluntarily informed her employer, in writing, of her pregnancy and the estimated date of conception (see 10 CFR 20.1003 and 20.1208).

**Declining growth:** A growth phase in which the availability of food begins to limit cell growth.

**Declomycin:** (Other name for: demeclocycline hydrochloride)

**Declomycin :** A level of sedation in which a person is in a deep sleep, loses feeling, and is hard to wake up. Deep sedation is caused by special drugs and is used to help relieve anxiety during certain medical or surgical procedures. Oxygen may also be given to help the patient breathe and drugs that relieve pain may be given at the same time. The patient usually does not remember the procedure.

**Decommissioning:** The process of safely closing a nuclear power plant (or other facility where nuclear materials are handled) to retire it from service after its useful life has ended. This process primarily involves decontaminating the facility to reduce residual radioactivity and then releasing the property for unrestricted or (under certain conditions) restricted use. This often includes dismantling the facility or dedicating it to other purposes. Decommissioning begins after the nuclear fuel, coolant, and radioactive waste are removed. For additional information,

see Decommissioning of Nuclear Facilities and Find Sites Undergoing Decommissioning.

**decomposers:** the organisms of decay; usually bacteria and fungi.

**decomposers:** Heterotrophic organisms that break down dead protoplasm and use some of the products and release others for use by consumer organisms.

**decomposition:** a chemical reaction in which a compound is broken down into simpler compounds or elements. OR The breakdown of matter by bacteria and fungi. It changes the chemical makeup and physical appearance of materials. OR A reaction in which a compound is broken down into simpler compounds or elements. Compounds sometimes decompose if heated strongly or if subjected to a strong electric current (electrolysis). OR A reaction where one substance breaks down into two or more new substances. An example of a decomposition is heating calcium carbonate to produce calcium oxide and carbon dioxide

**Decomposition Product:** The constituent elements or simpler compounds formed when a substance decays or decomposes.

**Decompression:** A method of relieving pressure on the melt after preparing it for injection during the upcoming cycle This minimizes the drooling that occurs when a shutoff nozzle is not utilized.

**Decompression Section –:** The section of a two-stage extruder in which an increase in screw channel volume occurs.

**Decompression zone:** Zone in a double screw extruder, about two-thirds down the screw, the channel suddenly gets deeper, which relieves the pressure and allows any trapped gases (usually moisture or air) to be drawn out by vacuum.

**DECON:** A method of decommissioning, in which structures, systems, and components that contain radioactive contamination are removed from a site and safely disposed at a commercially operated low-level waste disposal facility, or decontaminated to a level that permits the site to be released for unrestricted use shortly after it ceases operation. For further information, see the Fact Sheet on Decommissioning Nuclear Power Plants.

**Decontamination:** A process used to reduce, remove, or neutralize radiological, chemical, or biological contamination to reduce the risk of exposure. Decontamination may be accomplished by cleaning or treating

surfaces to reduce or remove the contamination; filtering contaminated air or water; subjecting contamination to evaporation and precipitation; or covering the contamination to shield or absorb the radiation. The process can also simply allow adequate time for natural radioactive decay to decrease the radioactivity.

**Decorated filaments:** A structure resulting when S1 heads are mixed with actin filaments. Each S1 head binds to an actin filament with its long axis oriented at 45 degrees to the filament. With all S1 units similarly oriented, a structure looking like a set of arrowheads pointing in the same direction results.

**Decorative Sheet:** A laminated plastics sheet used for decorative purposes in which the color and/or surface pattern is an integral part of the sheet.

**decortication :** The formation of a blood clot in a deep vein of the leg or lower pelvis. Symptoms may include pain, swelling, warmth, and redness in the affected area. Also called DVT.

**Deep Injection:** A common molding defect identified by the deep depression in the rubber part at the point of injection

**deep sedation :** Movement of feces (undigested food, bacteria, mucus, and cells from the lining of the intestines) through the bowel and out the anus. Also called bowel movement.

**deep vein thrombosis :** A drug used to treat too much iron in the blood caused by blood transfusions. It is being studied in the treatment of myelodysplastic syndromes (a group of diseases in which the bone marrow does not make enough healthy blood cells) and other conditions.

Deferasirox binds to extra iron in the blood. The drug and the iron are passed from the body in urine. It is a type of chelating agent. Also called Exjade.

**deep water:** That part of the ocean below the main thermocline.

**Deep-Dose Equivalent (DDE):** The external whole-body exposure dose equivalent at a tissue depth of 1 cm (1000 mg/cm<sup>2</sup>). For further information, see Measuring Radiation.

**defactinib:** An orally bioavailable, small-molecule focal adhesion kinase (FAK) inhibitor with potential antiangiogenic and antineoplastic activities. Defactinib inhibits FAK, which may prevent the integrin-mediated activation of several downstream signal transduction pathways, including

those involving RAS/MEK/ERK and PI3K/Akt, thus inhibiting tumor cell migration, proliferation, survival, and tumor angiogenesis. The tyrosine kinase FAK, a signal transducer for integrins, is normally activated by binding to integrins in the extracellular matrix (ECM) but may be upregulated and constitutively activated in various tumor cell types.

**defecation :** An iron-chelating agent that removes iron from tumors by inhibiting DNA synthesis and causing cancer cell death. It is used in conjunction with other anticancer agents in pediatric neuroblastoma therapy.

**Defect:** An imperfection in a molded part that results in the product not meeting original design specifications. These defects can be visual, physical, and/or hidden.

**Defects:** Sites of imperfection in the crystal packing of solids. The most common defects are screw dislocations, slip dislocations, and orientational defects.

**Defense in depth:** An approach to designing and operating nuclear facilities that prevents and mitigates accidents that release radiation or hazardous materials. The key is creating multiple independent and redundant layers of defense to compensate for potential human and mechanical failures so that no single layer, no matter how robust, is exclusively relied upon. Defense in depth includes the use of access controls, physical barriers, redundant and diverse key safety functions, and emergency response measures.

**deferasirox:** A synthetic, orally bioavailable, achiral, tridentate triazole derived from salicylic acid with iron-chelating activity. Deferasirox chelates iron at a 2:1 (ligand:iron) ratio. Because of its oral availability, and long plasma half-life, this agent may be superior to desferrioxamine (desferal, DFO), which is orally inactive and has a short plasma half-life. OR Closely watching a patient's condition but not giving treatment unless symptoms appear or change, or there are changes in test results. Deferred therapy avoids problems that may be caused by treatments such as radiation or surgery. It is used to find early signs that the condition is getting worse. During deferred therapy, patients may be given certain exams and tests. It is sometimes used in prostate cancer. Also called expectant management.

**deferiprone:** An orally bioavailable bidentate ligand with iron chelating activity. Deferiprone binds to iron in a 3:1 (ligand:iron) molar ratio. By

binding to iron, deferiprone is able to remove excess iron from the body.

**deferoxamine :** A drug used to treat hepatic veno-occlusive disease (a condition in which small veins in the liver are blocked) in patients who have kidney or lung problems after a stem cell transplant. Defibrotide sodium may affect the cells that line the inside of blood vessels and may help improve blood flow inside the liver. Also called Defitelio.

**deferoxamine mesylate:** The mesylate salt of an iron-chelating agent that binds free iron in a stable complex, preventing it from engaging in chemical reactions. Deferoxamine chelates iron from intra-lysosomal ferritin and ferrioxamine, a water-soluble complex excreted by the kidneys and in the feces via the bile. This agent does not readily chelate iron bound to transferrin, hemoglobin, myoglobin or cytochrome.

**deferred therapy :** In medicine, a shortage of a substance (such as a vitamin or mineral) needed by the body.

**defibrotide sodium:** A polydeoxyribonucleotide with antithrombotic, thrombolytic, and fibrinolytic properties. Defibrotide sodium induces the release of prostaglandin 12 and reduces the expression of adhesion molecules on endothelial cells, thereby interfering with platelet and leukocyte adhesion to the endothelium. OR A final diagnosis that is made after getting the results of tests, such as blood tests and biopsies, that are done to find out if a certain disease or condition is present.

**deficiency :** The treatment plan for a disease or disorder that has been chosen as the best one for a patient after all other choices have been considered.

**deficit:** time during the water budget when drought conditions occur; there is not enough water to supply the needs of an area.

**defined green tea catechin extract:** A defined, decaffeinated green tea extract, containing polyphenolic flavonol catechins, isolated from the plant *Camellia sinensis* with antiviral, antioxidant, and potential chemopreventive activities. The primary catechins found in green tea are epicatechin (EC), epigallocatechin (EGC), epicatechin-3 gallate (ECG), and epigallocatechin-3-gallate (EGCG), the most potent. As potential chemopreventive agents, catechins scavenge free radicals; inhibit enzymes involved in cell replication and DNA synthesis; interfere with cell-to-cell contact adhesion; and inhibit various intracellular communication pathways required for cell division. In addition, it has been postulated that EGCG may "trap" growth

factors such platelet-derived growth factor (PDGF) on cell membranes, immobilizing growth factors on cell membranes and preventing ligand-receptor crosslinking and growth factor receptor activation.

**Definite Proportions:** This is a concept that explains how formulas of similar compounds are identical no matter where you are in the universe. Sodium chloride will always be made of one sodium and one chloride atom. Water will always be made of one oxygen and two hydrogen atoms.

**definitive diagnosis :** A drug used to treat hepatic veno-occlusive disease (a condition in which small veins in the liver are blocked) in patients who have kidney or lung problems after a stem cell transplant. Defitelio may affect the cells that line the inside of blood vessels and may help improve blood flow inside the liver. Also called defibrotide sodium.

**definitive treatment :** A drug that is used to treat advanced prostate cancer and is also being studied in the treatment of benign prostatic hyperplasia. Degarelix binds to gonadotropin-releasing hormone (GnRH) receptors in the pituitary gland. This causes the body to stop making testosterone, which prostate cancer needs to grow. Degarelix is a type of GnRH antagonist. Also called Firmagon.

**Definity:** (Other name for: perflutren) or (Other name for: perflutren lipid microspheres)

**Defitelio :** (Other name for: defibrotide sodium) OR A disease in which the function or structure of the affected tissues or organs changes for the worse over time. Osteoarthritis, osteoporosis, and Alzheimer disease are examples.

**DEFLASHING:** Covers the range of finishing techniques used to remove the flash (excess, unwanted material) on a plastic molding such as filing, sanding, milling, tumbling, etc. or Any of various processes used to remove extraneous silicone rubber from a silicone injection molded rubber part. Generally the sign of poor mold design or maintenance. Or Covers the range of finishing techniques used to remove the flash (excess, unwanted material) on a plastic molding such as filing, sanding, milling, tumbling, etc. or Any technique or method removing excess unwanted material from a molded article. Specifically, the excess material is removed from places on the article where parting lines of the mold that formed the article may have caused the excess material to be formed. or any technique or method of removing excess unwanted from a molded article. Specifically, the excess

material is removed from places on the article where parting lines of the mold that formed the article may have caused the excess material to be formed. or Covers the range of finishing techniques used to remove the flash (excess, unwanted material) on a plastic molding.

**deflation:** the removal of sediment from a land surface by wind.

**Deflection Temperature:** The measure of temperature at which a specimen deflects 0.01 inches under a load of 264 lb/in<sup>2</sup>. or the temperature at which a plastic structure will deflect a specific distance for a given loading. Or The measurement of temperature at which a specimen deflects to a set point under a defined load.

**Defoamer :** A chemical additive that reduces and hinders the formation of foam in industrial process liquids. A defoamer is normally used in industrial processes to increase production speed and reduce other problems. It addresses both problems with surface foam and entrained or entrapped air. The chemicals used as defoamers are typically surface active agents.

**Deforestation:** The practice of removing forestry and other associated vegetation from an area to make way for other use of the land, such as agriculture or commercial development. OR The removal of forest stands by cutting and burning to provide land for agricultural purposes, residential or industrial building sites, roads, etc. or by harvesting the trees for building materials or fuel. Oxidation of organic matter releases CO<sub>2</sub> to the atmosphere, and regional and global impacts may result.

**degarelix:** A long-acting, synthetic peptide with gonadotrophin-releasing hormone (GnRH) antagonistic properties. Degarelix targets and blocks GnRH receptors located on the surfaces of gonadotroph cells in the anterior pituitary, thereby reducing secretion of luteinizing hormone (LH) by pituitary gonadotroph cells and so decreasing testosterone production by interstitial (Leydig) cells in the testes. or A condition caused by the loss of too much water from the body. Severe diarrhea or vomiting can cause dehydration.

**Degassing:** Opening and closing of a mold to allow gas to escape. Trapped gas and/or air can cause parts defects such as blistering and bubbles. Or The momentary opening and closing of a mold during the early stages of the cycle to permit the escape of air or gas from the heated compound.

**degenerate:** A set of orbitals are said to be degenerate if they all have the same energy. This degeneracy can sometimes be "lifted" by external electric or magnetic fields.

**degenerate code:** A code in which a single element in one language is specified by more than one element in a second language.

**degenerative disease :** A substance being studied in the prevention of cancer. It is a type of steroid. Also called DHEA.

**deglycosylated ricin A chain-conjugated anti-CD19/anti-CD22**

**immunotoxins:** A combination preparation of 1:1 mixture of the immunotoxins HD37-dgA and RFB4-dgA with potential antineoplastic activity. Anti-CD19 IgG monoclonal antibody HD37 and anti-CD22 IgG monoclonal antibody RFB4 are attached individually to a deglycosylated ricin A chain (dgA) via N-succinimidyl-oxycarbonyl-alpha-methyl-alpha-(2-pyridyldithio) toluene (SMPT) linker. Deglycosylated ricin A chain-conjugated anti-CD19/anti-CD22 immunotoxins bind to CD19- and CD22-expressing tumor cells, specifically delivering cytotoxic ricin A chain to leukemia cells expressing these antigens. Ricin A chain is toxic to ribosomal activity and protein synthesis, and inhibits cell growth. CD19 and CD22 molecules are cell surface antigens present on the majority of B acute lymphoblastic leukemia (ALL) cells.

**degradable:** that which can be reduced, broken down or chemically separated. OR Degradable materials break down, by bacterial (biodegradable), thermal (oxidative) or ultraviolet (photodegradable) action. When degradation is caused by biological activity, especially by the enzymatic action of microorganisms, it is called 'biodegradation'.

**Degradation:** A growth phase in which the availability of food begins to limit cell growth. OR a deleterious change in the chemical composition, appearance, physical or mechanical properties of a plastic. Or A deleterious change in the chemical structure, physical properties, or appearance of a plastic caused by exposure to heat, light, oxygen, or weathering. Or A deleterious change in the chemical structure of a plastic. See DETERIORATION. or Caused by exposure to heat, light, oxygen, or weathering, degradation is a destructive change in the chemical structure, physical properties, or appearance of plastic materials. Or A deleterious change in the chemical structure, physical properties or appearance of

aplastic caused by exposure to heat, light, oxygen, weathering or other external influence.

**degreasing:** the process of removing greases and oils from sewage, waste, and sludge.

**degree:** a unit of measurement of an angle.

**Degree of Polymerization:** The number of structural units or mers in the “average” polymer molecule in a particle sample. In most plastics the DP must reach several thousand if worthwhile physical properties are to be had.

**Degrees of freedom:** When applied to a general process, the difference between the number of unknown process variables and the number of equations relating those variables; the number of unknown variables for which values must be specified before the remaining values can be calculated. When applied to a system at equilibrium, the number of intensive system variables for which values must be specified before the remaining values can be calculated. The degrees of freedom in the second sense is determined using the Gibbs Phase Rule.

**dehalogenation:** the elimination reaction in which two halogen atoms are removed from adjacent carbon atoms to form a double bond.

**dehydrated human amnion/chorion membrane:** Tissue derived from portions of the placenta donated by the patient during a C-section, with potential regenerative activity. Upon placement of the tissue around or on the affected area, dehydrated human amnion/chorion membrane (dHCAM), which contains regenerative cytokines, promotes wound angiogenesis and may help heal the wound, restore tissue function and reduce risk of inflammation.

**dehydration:** A reaction in which the elements that make up water (twice as many hydrogen as oxygen atoms) are removed from an organic compound. OR Dehydration is the removal of H<sub>2</sub>O in a chemical reaction. OR the elimination reaction in which a molecule of water is removed from a molecule. OR the elimination reaction in which water is removed from a molecule.

**dehydration :** An inflammatory response that develops 24 to 72 hours after exposure to an antigen that the immune system recognizes as foreign. This type of immune response involves mainly T cells rather than antibodies (which are made by B cells). Also called DTH.

**Dehydration reaction:** A reaction that involves loss of water from the crystal. The loss may be due to the physical loss of water from the crystal lattice or through a chemical reaction.

**dehydroepiandrosterone :** A mental state in which a person is confused, disoriented, and not able to think or remember clearly. The person may also be agitated and have hallucinations, and extreme excitement.

**Dehydrogenase:** An enzyme that catalyzes the removal of a pair of electrons (and usually one or two protons) from a substrate molecule. OR Enzymes catalyzing the removal of pairs of hydrogen atoms from their substrates.

**Dehydrogenation reaction:** A reaction that involves loss of hydrogen gas.

**dehydrohalogenation:** the elimination reaction in which a hydrogen atom and a halogen atom are removed from a molecule to form a double bond.

**Del-Vi-A:** (Other name for: retinol)

**Deladumone:** (Other name for: diethylstilbestrol)

**Delamination:** When the surface of a finished part separates. Strata or fish-scale-type appearance may be visible where the layers may be separated. Or the separation of a laminate along the planes of its layers. Also, the separation of banded insulation within the adhesive layer or at the adhesive interface. Or The separation of one or more layers in a laminate caused by the failing of the adhesive bond. Or Splitting, physical separation or loss of bond along the plane of layers of a laminated material. Or This defect appears as a flaky surface layer on the part and is often caused by contamination or moisture in the resin pellets. or the separation of a laminate along the plane of its layers. Also the separation of bonded insulation within the adhesive layer or at the adhesive interface. Or When the surface of a finished part separates. Strata or fish-scale-type appearance maybe visible where the layers may be separated.

**delanzomib:** An orally bioavailable synthetic P2 threonine boronic acid inhibitor of the chymotrypsin-like activity of the proteasome, with potential antineoplastic activity. Delanzomib represses the proteasomal degradation of a variety of proteins, including inhibitory kappaBalpha (IkappaBalpha), resulting in the cytoplasmic sequestration of the transcription factor NF-kappaB; inhibition of NF-kappaB nuclear translocation and transcriptional up-regulation of a variety of cell growth-promoting factors; and apoptotic

cell death in susceptible tumor cell populations. In vitro studies indicate that this agent exhibits a favorable cytotoxicity profile toward normal human epithelial cells, bone marrow progenitors, and bone marrow-derived stromal cells relative to the proteasome inhibitor bortezomib. The intracellular protein I $\kappa$ B $\alpha$  functions as a primary inhibitor of the proinflammatory transcription factor NF- $\kappa$ B.

**Delatestryl:** (Other name for: therapeutic testosterone)

**delayed-type hypersensitivity response :** A substance being studied as a way to detect bone growth in patients receiving bisphosphonates (a type of drug used to treat bone pain caused by some types of cancer) for breast cancer. It binds to newly formed bone. A biopsy is done and bone growth is measured using a special microscope. Demeclocycline hydrochloride is a type of tetracycline antibiotic and a type of bone-labeling agent. Also called Declomycin.

**deleterious mutation :** A mutation that is documented to be associated with risk of disease.

**Deletion:** A type of mutation in which one or more base pairs are left out in DNA replication; also, the absence of one or more bases from a nucleotide sequence in a gene.

**deletion :** A type of genetic change that involves the absence of a segment of DNA. It may be as small as a single base but can vary significantly in size.

**deletion mutation:** A mutation resulting from the deletion of one or more nucleotides from a gene or chromosome.

**Deliquescence:** The uptake of atmospheric moisture by a solid, sometimes ending in spontaneous liquefaction of the solid.

**Deliquescence:** This term describes the characteristic of some solids to absorb water and eventually dissolve. Sodium hydroxide is deliquescent. You may be familiar with little packets of powder used in packing materials. The chemicals inside those packs absorb any moisture from the air in the box and keep the contents dry.

**deliquescent:** Deliquescent compounds absorb so much moisture from the air that they dissolve. Examples are calcium chloride and sodium hydroxide.

**delirium** : A condition in which a person loses the ability to think, remember, learn, make decisions, and solve problems. Symptoms may also include personality changes and emotional problems. There are many causes of dementia, including Alzheimer disease, brain cancer, and brain injury. Dementia usually gets worse over time.

**delocalization**: the spreading of electron density or electrostatic charge across a molecule.

**delocalized**: Electrons are said to be delocalized if they are not associated with one particular atom.

**delta**: a thick, roughly wedge-shaped accumulation of sediment deposited at the mouth of a stream. OR a triangle-shaped area of deposition located at the mouth of an older river.

**delta-8-tetrahydrocannabinol**: An analogue of tetrahydrocannabinol (THC) with antiemetic, anxiolytic, appetite-stimulating, analgesic, and neuroprotective properties. Delta-8-tetrahydrocannabinol (delta-8-THC) binds to the cannabinoid G-protein coupled receptor CB1, located in the central nervous system; CB1 receptor activation inhibits adenylyl cyclase, increases mitogen-activated protein kinase activities, modulates several potassium channel conductances and inhibits N- and P/Q-type Ca<sup>2+</sup> channels. This agent exhibits a lower psychotropic potency than delta-9-tetrahydrocannabinol (delta-9-THC), the primary form of THC found in cannabis.

**Delta-Cortef**: (Other name for: prednisolone)

**delta-tocopherol**: The orally bioavailable delta form of the naturally-occurring fat-soluble vitamin E, mostly found in soybean and corn oils, with potential antioxidant activity. Although the exact mechanism of action of this tocopherol has yet to be fully identified, delta-tocopherol appears to have the ability to scavenge free radicals, thereby protecting cells against oxidative damage.

**demiczumab**: A humanized monoclonal antibody directed against the N-terminal epitope of Notch ligand DLL4 (delta-like 4) with potential antineoplastic activity. Demiczumab binds to the membrane-binding portion of DLL4 and prevents its interaction with Notch-1 and Notch-4 receptors, thereby inhibiting Notch-mediated signaling and gene transcription, which may impede tumor angiogenesis. Activation of Notch receptors by DLL4 stimulates proteolytic cleavage of the Notch intracellular domain (NICD);

after cleavage, NICD is translocated into the nucleus and mediates the transcriptional regulation of a variety of genes involved in vascular development. The expression of DLL4 is highly restricted to the vascular endothelium.

**demeclocycline hydrochloride:** The hydrochloride salt of demeclocycline, a broad-spectrum, tetracycline derivative exhibiting antimicrobial, aquaretic and chelating activities. In bacteria, demeclocycline binds reversibly to the 30S ribosomal subunit and blocks the binding of aminoacyl-tRNA to the A-site of the mRNA-ribosome complex, resulting in the inhibition of protein synthesis and bacterial cell death. In mammals, this agent interferes with the action of antidiuretic hormone (ADH) at the level of the renal collecting tubule, resulting in aquaresis. In addition, demeclocycline, which like other tetracyclines chelates calcium in bone and exhibits a yellow fluorescence under ultraviolet (UV) light, may be used as a fluorescent bone-labeling agent in bone histomorphometry. or A drug used to treat moderate to severe pain. It binds to opioid receptors in the central nervous system. Demerol is a type of analgesic agent and a type of opioid. Also called meperidine hydrochloride.

**dementia :** A special type of immune cell that is found in tissues, such as the skin, and boosts immune responses by showing antigens on its surface to other cells of the immune system. A dendritic cell is a type of phagocyte and a type of antigen-presenting cell (APC).

**Demerol :** (Other name for: meperidine hydrochloride) OR A vaccine made of antigens and dendritic antigen-presenting cells (APCs).

**demineralization:** removal from water of mineral contaminants. Methods include ion exchange, flash distillation, electrodialysis, or reverse osmosis.

**demineralized bone matrix:** Demineralized allograft bone with osteoinductive activity. Demineralized bone matrices are prepared by acid extraction of allograft bone, resulting in loss of most of the mineralized component but retention of collagen and noncollagenous proteins, including growth factors. The efficacy of a demineralized bone matrix (DBM) as a bone-graft substitute or extender may be related to the total amount of bone morphogenetic protein (BMP) present, and the ratios of the different BMPs present. BMPs belong to the transforming growth factor (TGF) superfamily of proteins.

**demonstrative pronoun:** (this, that, these, those) single out what you are talking about.

**DEMSEER:** (Other name for: metyrosine)

**DEMULSIBILITY:** A measure of a fluid's ability to separate from water.

**Demulsifier :** Is a class of specialty chemicals used to separate components in emulsions from each other (water in oil). It is commonly used in the processing of crude oil, which is typically produced along with significant quantities of saline water. This water (and salt) must be removed from the crude oil prior to refining. If the majority of the water and salt are not removed, significant corrosion problems can occur in the refining process. Demulsifiers are typically based on highly charged cationic polymers, but also other chemistries are used.

**Denaturation:** The disruption of the native folded structure of a nucleic acid or protein molecule; may be due to heat, chemical treatment, or change in pH. OR A disruption in the native conformation of a macromolecule that causes a loss of normal function. OR Partial or complete unfolding of the specific native conformation of a polypeptide chain, protein, or nucleic acid.

**denature:** 1. A loss of chemical function, usually due to some heat or chemically-induced structural change. For example, heating a protein causes it to lose its three dimensional form and it no longer functions correctly.

**denatured:** An enzyme is said to be denatured when its shape is disrupted (e.g. by the effect of heat or pH changes), resulting in its lack of activity.

**Denatured (grey) wood:** No. Failing to completely remove wood that has been exposed to weather and sunlight is a common cause of paint failure. Use a sander to remove the top surface layer of the grey wood, making sure that the surface is cleaned back to new sound wood. Prime all bare wood with Dulux Primer or Basecoat before re-painting.

**denatured protein:** A protein that has lost its native conformation by exposure to a destabilizing agent such as heat or detergent.

**Dendrid:** (Other name for: idoxuridine)

**dendrites:** the short extensions of the neuron.

**dendritic cell :** In psychiatry, a state in which a person is unable or unwilling to see the truth or reality about an issue or situation.

**dendritic cell vaccine :** A drug used to treat cutaneous T-cell lymphoma that can bind the cytokine IL-2 and that has not responded to other treatment. It is also being studied in the treatment of other types of cancer. Denileukin diftitox is made by combining a part of IL-2 with a bacterial toxin. The IL-2 part of the drug attaches to the cancer cells and then the toxin kills the cells. Denileukin diftitox is a type of immunotoxin and a type of fusion toxin. Also called Ontak.

**dendritic cell-autologous lung tumor vaccine:** A cancer vaccine consisting of lymphocytes harvested from a patient with lung cancer and induced to become antigen-presenting cells (APCs) known as dendritic cells. The dendritic cells are transduced with the gene encoding an antigen specific to the patient's cancer and then returned to the patient. In the host, the altered cells stimulate the immune system to mount a primary T cell response against lung tumor cells expressing the target antigen. Dendritic cell-autologous lung tumor vaccines have been investigated for use in cancer immunotherapy.

**dendritic cell-CEA peptide vaccine:** A cancer vaccine consisting of dendritic cells harvested from a patient with cancer and pulsed or transduced with a peptide fragment of carcinoembryonic antigen (CEA), a tumor-associated antigen expressed by a wide range of cancers. When the altered dendritic cells are returned to the patient, they may stimulate the host immune system to mount a cytotoxic T-lymphocyte immune response against tumor cells expressing CEA. Check for active clinical trials using this agent.

**dendritic cell-gp100-MART-1 antigen vaccine:** An autologous dendritic cell vaccine with antineoplastic property. Dendritic cells harvested from cancer patients are pulsed with human gp100 melanoma antigen and MART-1 antigen (a melanoma antigen recognized by T-cells); both antigens are up-regulated in melanomas. Vaccination with this vaccine may elicit the host immune response against MART-1 or gp100 expressing cells.

**dendritic cell-idiotype-keyhole limpet hemocyanin vaccine:** A cell-based vaccine composed of allogeneic dendritic cells (DC), pulsed with patient-specific non-Hodgkin's lymphoma idiotype (Id) determinants conjugated to keyhole limpet hemocyanin (KLH), with potential antitumor activity. Upon administration, this vaccine may stimulate the host immune system to mount a specific cytotoxic T-lymphocyte (CTL) response against

Id-expressing lymphoma cells, resulting in tumor cell lysis. Check for active clinical trials using this agent.

**dendritic cell-MART-1 peptide vaccine:** A cancer vaccine consisting of dendritic cells harvested from a patient with cancer and pulsed or transduced with a peptide fragment of MART-1 (melanoma antigen recognized by T-cells), an antigen expressed by melanoma cells. When the altered dendritic cells are returned to the patient, they stimulate the host immune system to mount a cytotoxic T-lymphocyte immune response against tumor cells expressing MART-1.

**dendritic cell-precision multiple antigen T lymphocytes:** A preparation of dendritic cell-precision multiple antigen T-cells (DC-PMAT) that have been induced to specifically target multiple undisclosed tumor-associated antigens (TAAs), with potential antitumor activity. Although the exact mechanism(s) of action through which DC-PMAT cells exert their effects has yet to be elucidated, upon infusion, these cells may stimulate the host immune system to mount a highly-specific cytotoxic T-lymphocyte (CTL) response against tumors expressing common TAAs, which leads to tumor cell lysis.

**dendritic cell-targeting lentiviral vector ID-LV305:** An engineered lentiviral vector targeting dendritic cells (DCs) and containing nucleic acids encoding for the human tumor-associated cancer-testis antigen NY-ESO-1, with potential immunostimulatory and antineoplastic activities. Upon intradermal administration, the DC-targeting lentiviral vector ID-LV305 targets and binds to dermal DCs via the DC-specific intercellular adhesion molecule-3-grabbing non-integrin (DC-SIGN) receptor. Upon internalization of the vector, the NY-ESO-1 protein is expressed, stimulates DC maturation and activates the immune system to mount a cytotoxic T-lymphocyte (CTL) response against NY-ESO-1-expressing cells, which may result in tumor cell lysis. NY-ESO-1 is expressed in normal testes and on the surfaces of various tumor cells, and plays a key role in tumor cell proliferation and survival.

**dendritic drainage pattern:** a veinlike drainage pattern that develops in a rock type that erodes uniformly, such as granite.

**Dendritic Habit:** A dendritic habit describes the shape of a large group of crystals that looks like the branching of veins or a plant.

**dendrochronology:** The dating of past events and variations in the environment and the climate by studying the annual growth rings of trees. The approximate age of a temperate forest tree can be determined by counting the annual growth rings in the lower part of the trunk. The width of these annual rings is indicative of the climatic conditions during the period of growth; wide annual rings signify favorable growing conditions, absence of diseases and pests, and favorable climatic conditions, while narrow rings indicate unfavorable growing conditions or climate. OR The use of tree growth rings as proxy climate indicators. Tree rings record responses to a wider range of climatic variables over a larger part of the Earth than any other type of annually dated proxy record.

**denenicokin:** A recombinant peptide similar to or identical to endogenous human cytokine interleukin-21 (IL-21) with potential antineoplastic activity. Denenicokin binds to and activates IL-21 receptors, expressed on T-cells, B-cells, dendritic cells (DC), and natural killer (NK) cells, modulating the proliferation and/or differentiation of T and B cells, promoting T cell survival, and increasing the cytolytic activity of cytotoxic T lymphocytes (CTLs) and NK cells.

**denial :** In religion, describes a group whose members are organized under a common name and set of rules and have common beliefs and practices.

**denibulin hydrochloride:** The hydrochloride salt of denibulin, a small molecular vascular disrupting agent, with potential antimetabolic and antineoplastic activities. Denibulin selectively targets and reversibly binds to the colchicine-binding site on tubulin and inhibits microtubule assembly. This results in the disruption of the cytoskeleton of tumor endothelial cells, ultimately leading to cell cycle arrest, blockage of cell division and apoptosis. This causes inadequate blood flow to the tumor and eventually leads to a decrease in tumor cell proliferation., a small molecule vascular disrupting agent (VDA), with potential antimetabolic and antineoplastic activity. Denibulin selectively targets and reversibly binds to the colchicine-binding site on tubulin and inhibits microtubule assembly. This results in the disruption of the cytoskeleton of tumor endothelial cells (EC), ultimately leading to cell cycle arrest, blockage of cell division and apoptosis. This causes inadequate blood flow to the tumor and eventually leads to a decrease in tumor cell proliferation. Check for active clinical trials using this agent.

**denileukin diftotox:** A cytotoxic recombinant protein consisting of interleukin-2 (IL-2) protein sequences fused to diphtheria toxin. The IL-2 protein sequence moiety of denileukin diftotox directs the cytotoxic action of diphtheria toxin to cells that express IL-2 receptors. After the toxin moiety is internalized into target IL-2 receptor-expressing cells, its catalytic domain catalyzes the transfer of the ADP-ribose moiety of NAD to a posttranslationally modified histidine residue of elongation factor 2 (EF-2), called diphthamine. This covalent modification inactivates EF-2 and disrupts polypeptide chain elongation, resulting in cell death.

**denileukin diftotox :** A drug used to prevent or treat certain bone problems. Under the brand name Xgeva, it is used to prevent broken bones and other bone problems caused by solid tumors that have spread to bone. It is also used in certain patients to treat giant cell tumor of the bone that cannot be removed by surgery. Under the brand name Prolia, it is used to treat osteoporosis (a decrease in bone mass and density) in postmenopausal women who have a high risk of breaking bones. Denosumab is also being studied in the treatment of other conditions and types of cancer. It binds to a protein called RANKL, which keeps RANKL from binding to another protein called RANK on the surface of certain bone cells, including bone cancer cells. This may help keep bone from breaking down and cancer cells from growing. Denosumab is a type of monoclonal antibody. Also called AMG 162, Prolia, and Xgeva.

**denintuzumab mafodotin:** An immunoconjugate consisting of an anti-CD19 monoclonal antibody conjugated to the auristatin derivative monomethyl auristatin F (MMAF), with potential antineoplastic activity. Upon administration of denintuzumab mafodotin, the antibody moiety targets the cell surface antigen CD19, found on a number of B-cell-derived cancers. Upon antibody/antigen binding and internalization, the immunoconjugate releases MMAF, which binds to tubulin and inhibits its polymerization. Inhibition of tubulin polymerization may result in G2/M phase arrest and tumor cell apoptosis. This causes inhibition of cell growth of CD19-expressing tumor cells. CD19, a B-cell antigen, is overexpressed by a variety of different cancer cell types.

**Denitrification:** An anaerobic biological reduction of nitrate nitrogen to nitrogen gas, the removal of total nitrogen from a system, and/or an anaerobic process that occurs when nitrite ions are reduced to nitrogen gas

and bubbles are formed as a result of this process. The bubbles attach to the biological floc in the activated sludge process and float the floc to the surface of the secondary clarifiers. This condition is often the cause of rising sludge observed in secondary clarifiers or gravity thickeners. (See Nitrification)

**denomination :** A metal device that is surgically placed in the jawbone. It acts as an anchor for an artificial tooth or teeth.

**denosumab:** A health professional who has special training in caring for the teeth, gums, and other tissues in the mouth. OR A humanized monoclonal antibody directed against the receptor activator of nuclear factor kappa beta ligand (RANKL) with antiosteoclast activity. Denosumab specifically binds to RANKL and blocks the interaction of RANKL with RANK, a receptor located on osteoclast cell surfaces, resulting in inhibition of osteoclast activity, a decrease in bone resorption, and a potential increase in bone mineral density. RANKL, a protein expressed by osteoblastic cells, plays an important role in osteoclastic differentiation and activation.

**dense:** A compact substance or a substance with a high density. OR is equal to mass/volume. OR the amount of matter in a given space. OR thickness of a substance OR Mass of a substance per unit volume. Saying "the density of mercury is  $13.55 \text{ g/cm}^3$  " is the same as saying "the mass of exactly  $1 \text{ cm}^3$  of mercury is  $13.55 \text{ g}$ ".

**Density:** To find the density of an object, you measure its mass and its volume, then divide the mass by the volume, giving a density measured in  $\text{g/cm}^3$  or  $\text{kg/dm}^3$ . Since all atoms are about the same size, the densest materials are metals like osmium and gold, which are elements with heavy nuclei, and the least dense are the very first elements in the periodic table, the gases hydrogen and helium. OR The mass per unit volume of a substance. For solids and liquids, typically, temperature would also be provided with density. For gasses, both temperature and pressure should be given with the density. Or Weight per unit volume of a substance expressed in grams per cubic centimeter, pounds per cubic foot, etc. OR The mass of a body divided by its volume. Something has a high density if it is heavy but only small. Diagonal relationship The properties of lithium and magnesium are similar in many ways. The same goes for aluminium and beryllium.

**density functional:** A model that describes the electronic structure of an atom or molecule by approximating the total energy as a function of

electron density.

**Density Functional Theory (DFT):** DFT computational approaches consider that the energy and other properties of a system can be computed from the electron density.

**Density rule:** The rule states that if a polymorph has a lower density than another polymorph at room temperature, then it may be assumed that at absolute zero the form with the lower density is metastable.

**Density-gradient centrifugation:** The separation, by centrifugation, of molecules according to their density, in a gradient varying in solute concentration.

**Density-gradient equilibrium sedimentation:** A centrifugal technique for separating biological molecules according to their densities in an aqueous solution of a salt such as cesium chloride. When such solutions are centrifuged at high speeds, opposing forces of sedimentation and diffusion create a concentration gradient of the salt; molecules in that gradient are driven by centrifugal force into the region where the solution density is equal to their own.

**Density/Specific Gravity :** Density and specific gravity are used interchangeably, which is formally incorrect. The difference is the following: density is mass per unit volume of a material at 73½°F (23½°C); specific gravity is the mass of a given volume of material at 73½°F (23½°C) divided by an equal volume of water at the same temperature. The conversion is: density = specific gravity X 0.99756. The often used English term "relative density" has the same meaning as "specific gravity.

**dental implant :** A rare disorder that causes kidney failure before age 3, abnormal development of the sexual organs, and, in most cases, Wilms tumor (a type of kidney cancer). Children with Denys-Drash syndrome are also at high risk of some other types of cancer. Also called DDS.

**dentigerous cysts:** an odontogenic cyst associated with the crown of an unerupted, or partially erupted, tooth

**dentist :** A drug that protects healthy tissues from the toxic effects of anticancer drugs.

**Denys-Drash syndrome :** The molecules inside cells that carry genetic information and pass it from one generation to the next. Also called DNA.

**deoxycytidine** : A drug used to treat epileptic seizures and bipolar disorder and to prevent migraine headaches. It is also being studied in the treatment of several types of cancer. It blocks an enzyme that cells need to grow and may cause cancer cells to die. It also blocks the growth of new blood vessels that tumors need to grow. It is a type of anticonvulsant, histone deacetylase (HDAC) inhibitor, antimaniacal, migraine headache prophylactic, and antiangiogenesis agent. Also called Stavzor and valproic acid.

**deoxycytidine analogue TAS-109**: An analogue of the nucleoside deoxycytidine with potential antineoplastic activity. Nucleoside analogue TAS-109 is incorporated into DNA and directly inhibits the activity of DNA polymerase, which may result in inhibition of DNA replication and cell cycle arrest in the S and G2/M phases, DNA fragmentation, and tumor cell apoptosis.

**Deoxyhemoglobin**: A conformation of hemoglobin that is unable to bind oxygen. Also called the T or tense form.

**Deoxynucleotide**: A nucleotide containing a purine or pyrimidine base covalently linked to 2- deoxyribose, which is in turn linked to one or more phosphate groups.

**deoxyribonucleic acid**: See DNA.

**deoxyribonucleic acid** : The molecular basis of heredity; encodes the genetic information responsible for the development and function of an organism and allows for transmission of that genetic information from one generation to the next. The DNA molecule is structured as a double-stranded helix held together by weak hydrogen bonds between purine-pyrimidine nucleotide base pairs: adenine (A) paired with thymine (T), and guanine (G) paired with cytosine (C). Also called DNA. OR The U.S. federal government agency responsible for protecting the public's health and providing important services, especially for people in need. The Department of Health and Human Services works with state and local governments throughout the country to do research and provide public health services, food and drug safety programs, health insurance programs, and many other services. There are several federal agencies that are a part of the Department of Health and Human Services. They include the Food and Drug Administration (FDA), the Centers for Disease Control and

Prevention (CDC), the National Institutes of Health (NIH), and the Centers for Medicare and Medicaid Services (CMMS). Also called DHHS.

**deoxyribonucleic acid (DNA):** is the constituent of the chromosomes which stores the hereditary information in the form of a sequence nitrogenous bases. Much of this information is related to the synthesis of proteins.

**deoxyribonucleotides:** Nucleotides containing 2-deoxy-n-ribose as the pentose component.

**Deoxyribose:** A five-carbon monosaccharide (C<sub>5</sub>H<sub>9</sub>O<sub>5</sub>) that constitutes the carbohydrate moiety of a deoxynucleotide; the deoxyribose commonly found in deoxynucleotides is 2-deoxyribose.

**deoxyribose:** the five-carbon carbohydrate attached to purine or pyrimidine bases within DNA molecules.

**Depacon:** (Other name for: divalproex sodium) OR (Other name for: valproic acid)

**Depade:** (Other name for: naltrexone hydrochloride)

**Depakene:** (Other name for: valproic acid) or A form of the anticancer drug cytarabine that is contained inside very tiny, fat-like particles. It may have fewer side effects and work better than cytarabine. It is used to treat lymphoma that has spread to the meninges (three thin layers of tissue that cover and protect the brain and spinal cord). It is also being studied in the treatment of other types of cancer. It is a type of antimetabolite. Also called cytarabine liposome and liposomal cytarabine.

**Depakote:** (Other name for: divalproex sodium)

**Depakote ER:** (Other name for: divalproex sodium)

**depAndro:** (Other name for: testosterone cypionate)

**Department of Health and Human Services :** A mental condition marked by ongoing feelings of sadness, despair, loss of energy, and difficulty dealing with normal daily life. Other symptoms of depression include feelings of worthlessness and hopelessness, loss of pleasure in activities, changes in eating or sleeping habits, and thoughts of death or suicide. Depression can affect anyone, and can be successfully treated. Depression affects 15-25% of cancer patients.

**Departure from nuclear boiling ratio (DNBR):** The ratio of the heat flux needed to cause departure from nucleate boiling to the actual local heat

flux of a fuel rod.

**Departure from nucleate boiling (DNB):** The point at which the heat transfer from a fuel rod rapidly decreases due to the insulating effect of a steam blanket that forms on the rod surface when the temperature continues to increase.

**DEPDC1/MPHOSH1 peptide vaccine:** A cancer vaccine containing HLA-A\*2402-restricted epitopes derived from DEP domain containing 1 (DEPDC1) and M phase phosphoprotein 1 (MPHOSPH1) with potential immunostimulatory and antineoplastic activities. Upon administration, DEPDC1/MPHOSH1 peptide vaccine may elicit a specific cytotoxic T lymphocyte (CTL) response against tumor cells expressing DEPDC1 and MPHOSPH1, tumor antigens that are overexpressed in bladder cancer cells. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity. Check for active clinical trials using this agent.

**Depen:** (Other name for: penicillamine)

**dependent variable:** A dependent variable changes in response to changes in independent variables. For example, in an experiment where the vapor pressure of a liquid is measured at several different temperatures, temperature is the independent variable and vapor pressure is the dependent variable.

**Depleted uranium:** Uranium with a percentage of uranium-235 lower than the 0.7 percent (by mass) contained in natural uranium. (The normal residual U-235 content in depleted uranium is 0.2–0.3 percent, with U-238 comprising the remaining 98.7–98.8 percent.) Depleted uranium is produced during uranium isotope separation and is typically found in cylinders of depleted uranium hexafluoride, drums of depleted uranium oxide that was deconverted from depleted uranium hexafluoride, or spent fuel elements. Depleted uranium can be blended with highly-enriched uranium, such as that from weapons, to make reactor fuel. For further detail, see Background Information on Depleted Uranium and Fact Sheet on Updating Disposal Rules for New Types of Low-Level Waste.

**Deplin:** (Other name for: L-methylfolate)

**Depo-Cyt :** A substance that is made naturally by some bacteria, fungi, and other organisms, and can also be made in the laboratory. Depsipeptides are

being studied in the treatment of cancer.

**Depo-Medrol:** (Other name for: methylprednisolone)

**Depo-Provera:** (Other name for: medroxyprogesterone)

**Depo-Testosterone:** (Other name for: testosterone cypionate)

**DepoCyt:** (Other name for: cytarabine liposome)

**Depolymerisation:** The chemical reaction which results in a polymer chain being broken up into monomer units. For most polymers made by addition polymerisation, this is done by heating the polymer above its ceiling temperature in the absence of oxygen. Some polymers, like styrene and vinyl chloride, will be difficult to depolymerise because the bonds between the side-groups (the phenyl ring and chlorine in these examples) are weaker than the C-C bonds between ex-monomers, and the polymer will degrade into different species than the starting materials. Other polymers, such as those made by step growth polymerisation may be more easily depolymerised by undoing the condensation or elimination reaction that caused the monomer units to join. In the lab, this can often be done using a strong acid in harsh conditions, although industrially, there are other tricks that polymer scientists can play.

**Deposit control :** A system of chemical treatment to avoid unwanted deposition of materials in the circulation of a paper machine or tissue machine or on heated cylinders or calendar reels.

**deposition:** the rare process of a substance changing states from gas directly to a solid. OR The process by which a certain amount of a substance arrives at a particular site (e.g., the deposition of particles on the ciliated epithelium of the bronchial airways) (WHO, 1979).

**depositional coast:** a gently sloped coast that has been built up by sediments deposited from longshore drift.

**Depotest:** (Other name for: testosterone cypionate)

**depression :** In chemistry, a compound produced from or related to another.

**Depropagation:** The reaction in which small alkenes are generated from the decomposition of a large alkane radical. This reaction is important in Thermal Cracking, and is responsible for the ceiling temperature, which prohibits chain polymerisation above a certain temperature. OR the loss of a proton (hydrogen ion) from a molecule.

**depsipeptide :** A type of surgery used to make the skin smooth and to improve the way deep scars, pits, and wrinkles look. After numbing the skin, a doctor removes the top layer of skin using sandpaper or a brush or burr (small file) that spins at a high speed.

**depth of coverage :** Refers to the number of times a nucleotide is read during sequencing. A greater depth of coverage can increase confidence in the final results. Deep coverage aids in differentiating sequencing errors from single nucleotide polymorphisms. This can be specifically useful when a patient has a mosaicism or when a tumor is heterogeneous for a mutation.

**depth of focus:** of an earthquake, the distance between the epicenter and the focus.

**derivative :** Inflammation of the skin.

**Derived air concentration (DAC):** The concentration of a given radionuclide in air which, if breathed by the reference man for a working year of 2,000 hours under conditions of light work (with an inhalation rate of 1.2 cubic meters of air per hour), results in an intake of one annual limit on intake (ALI). Established DAC values are given in Table 1, Column 3, of Appendix B to Title 10, Part 20, of the Code of Federal Regulations (10 CFR Part 20), "Standards for Protection Against Radiation."

**Derived Air Concentration-Hour (DAC-hour):** The product of the concentration of radioactive material in air (expressed as a fraction or multiple of the derived air concentration for each radionuclide) and the time of exposure to that radionuclide, in hours. A licensee may take 2,000 DAC-hours to represent one annual limit on intake (ALI), equivalent to a committed effective dose equivalent of 5 rems (0.05 Sv).

**derived unit:** unit that is a combination of basic units. OR Derived units are units constructed from the SI system's base units. For example, the SI unit for density is kg/m<sup>3</sup>, derived from the base units kg and m.

**derma-membrane-structure topical cream:** A topical cream formulation containing physiological lipids with potential anti-xerotic activity. Derma-membrane-structure topical cream contains ingredients that mirror the lipid component of the the skin, including hydrated phosphatidyl choline, but does not contain conventional emulsifiers that may disrupt the skin-lipid

barrier. This cream can also be used as a vehicle or base for topically applied medications. Check for active clinical trials using this agent.

**dermabrasion :** A type of tumor that begins as a hard nodule and grows slowly. These tumors are usually found in the dermis (the inner layer of the two main layers of tissue that make up the skin) of the limbs or trunk of the body. They can grow into surrounding tissue but do not spread to other parts of the body. These tumors are related to giant cell fibroblastomas.

**Dermacort:** (Other name for: therapeutic hydrocortisone)

**dermal tissue:** the tissue that functions to protect the plant from injury and water loss and covers the outside of the plant.

**DermaMatrix:** (Other name for: acellular cadaveric dermal matrix)

**dermatitis:** Inflammation of the skin.

**dermatitis :** A doctor who has special training to diagnose and treat skin problems.

**dermatofibrosarcoma protuberans :** The inner layer of the two main layers of the skin. The dermis has connective tissue, blood vessels, oil and sweat glands, nerves, hair follicles, and other structures. It is made up of a thin upper layer called the papillary dermis, and a thick lower layer called the reticular dermis.

**dermatologist :** A type of benign (not cancer) germ cell tumor (type of tumor that begins in the cells that give rise to sperm or eggs) that often contains several different types of tissue such as hair, muscle, and bone. Also called mature teratoma.

**dermis :** A synthetic form of the hormone estrogen that was prescribed to pregnant women between about 1940 and 1971 because it was thought to prevent miscarriages. DES may increase the risk of uterine, ovarian, or breast cancer in women who took it. It also has been linked to an increased risk of clear cell carcinoma of the vagina or cervix in daughters exposed to DES before birth. Also called diethylstilbestrol.

**dermoid cyst :** A substance being studied in the treatment of cancer as a way to block sex hormones made by the ovaries or testicles. It is a type of gonadotropin-releasing hormone analog.

**DES:** A tumor of the tissue that surrounds muscles, usually in the abdomen. A desmoid tumor rarely metastasizes (spreads to other parts of

the body). It may be called aggressive fibromatosis when the tumor is outside of the abdomen.

**desalination:** Removal of dissolved salts from seawater.

**desaturases:** Enzymes that catalyze the introduction of double bonds into the hydrocarbon portion of fatty acids.

**Desensitization:** The resetting of the sensitivity level of receptors due to the continued presence of ligands. Also called adaptation.

**desert:** an area that receives less than 25 centimeters (10 inches) of rain annually.

**desert pavement:** a large surface of the desert floor that is covered by pebbles and stones that resemble rounded paving stones; caused by deflation or temperature changes.

**desertification:** The progressive destruction or degradation of vegetative cover especially in arid or semiarid regions bordering existing deserts. Overgrazing of rangelands, large-scale cutting of forests and woodlands, drought, and burning of extensive areas all serve to destroy or degrade the land cover. The climatic impacts of this destruction include increased albedo leading to decreased precipitation, which in turn leads to less vegetative cover; increased atmospheric dust loading could lead to decreased monsoon rainfall and greater wind erosion and/or atmospheric pollution.

**Desferal:** (Other name for: deferoxamine mesylate)

**desflurane:** A fluorinated ether with general anesthetic and muscle relaxant activities. Although the exact mechanism of action has not been established, desflurane, administered by inhalation, appears to act on the lipid matrix of the neuronal membrane, resulting in disruption of neuronal transmission in the brain. This agent may also enhance the synaptic activity of the inhibitory neurotransmitter gamma-aminobutyric acid (GABA). Check for active clinical trials using this agent.

**deshielding:** an effect in NMR spectroscopy that the movement of  $\sigma$  and  $\pi$  electrons within the molecule causes. Deshielding causes chemical shifts to appear at lower magnetic fields (downfield).

**Desiccant:** A desiccant goes through a process of deliquescence to dry an area or volume of air. Desiccants are often found in small packs when

humidity needs to be decreased. OR Substance which can be used for drying purposes because of its affinity for water

**desiccation crack:** a crack that develops when a muddy sediment is exposed to air and begins to dry out; these cracks combine to form a polygonal pattern.

**Design certification:** Certification and approval by the NRC of a standard nuclear power plant design independent of a specific site or an application to construct or operate a plant. A design certification is valid for 15 years from the date of issuance but can be renewed for an additional 10 to 15 years. For additional information, see the Backgrounder on New Nuclear Plant Designs and Design Certification Applications for New Reactors.

**DESIGN OF EXPERIMENTS (DOE):** A methodology for planning experiments where purposeful changes to the inputs (factors) to a process (or activity) are made in order to observe corresponding changes in the outputs (responses). A means of gaining knowledge about a process or activity with minimal effort.

**Design Review:** A review of a blueprint, of an application, to be molded in a plastic material, with recommendations given for design, material, processing and tooling.

**Design-basis accident:** A postulated accident that a nuclear facility must be designed and built to withstand without loss to the systems, structures, and components necessary to ensure public health and safety.

**Design-basis phenomena:** Earthquakes, tornadoes, hurricanes, floods, etc., that a nuclear facility must be designed and built to withstand without loss of systems, structures, and components necessary to ensure public health and safety.

**Design-basis threat (DBT):** A profile of the type, composition, and capabilities of an adversary. The NRC and its licensees use the DBT as a basis for designing safeguards systems to protect against acts of radiological sabotage and to prevent the theft of special nuclear material. The DBT is described in detail in Title 10, Section 73.1(a), of the Code of Federal Regulations [10 CFR 73.1(a)]. Nuclear facility licensees are expected to demonstrate they can defend against the DBT. For further detail, see Protecting Our Nation.

**desipramine hydrochloride:** The hydrochloride salt form of desipramine, a secondary amine tricyclic antidepressant (TCA). In the central nervous system (CNS), desipramine hydrochloride blocks the re-uptake of neurotransmitters, including norepinephrine and serotonin. This leads to an increase in the amount of these neurotransmitters in the synaptic cleft and prolongs their activities postsynaptically.

**deslorelin:** Causing or forming adhesions or fibrous connective tissue within a tumor. OR A synthetic nonapeptide analogue of the natural gonadotrophin releasing hormone (GnRH) with potential antineoplastic activity. Deslorelin binds to and activates pituitary gonadotropin releasing hormone (GnRH) receptors. Continuous, prolonged administration of goserelin in males results in pituitary GnRH receptor desensitization and inhibition of pituitary secretion of follicle stimulating hormone (FSH) and luteinizing hormone (LH), leading to a significant decline in testosterone production; in females, prolonged administration results in a decrease in estradiol production. Check for active clinical trials using this agent.

**desmoid tumor :** A rare form of malignant melanoma marked by nonpigmented lesions on sun-exposed areas of the body, most commonly on the head and neck.

**desmoplastic :** A rare, aggressive cancer that usually affects young males and usually is located in the abdomen.

**desmoplastic melanoma :** To make something less poisonous or harmful. It may refer to the process of removing toxins, poisons, or other harmful substances from the body.

**desmoplastic small round cell tumor :** The physical, mental, and emotional stages a child goes through as he or she grows and matures.

**desmopressin acetate:** An analogue of the hormone vasopressin with antidiuretic and antihemorrhagic properties. Desmopressin acetate has selective affinity for the V2 receptor and acts on the distal kidney tubule by increasing the cellular permeability thereby stimulating water reabsorption. This antidiuretic agent is used in the treatment of central diabetes insipidus. An unrelated action of desmopressin acetate is to increase circulating factor VIII and is used in patients with haemophilia and von Willebrand's disease.

**desogestral:** A synthetic progestogen structurally related to levonorgestrel, with progesterone hormone receptor agonistic activity, used as a

contraceptive and hormone replacement agent. Upon administration, desogestrel binds intracellular progesterone receptors in progesterone responsive tissue and the resultant complex interacts with DNA causing either gene transcription or gene repression. This eventually leads to an inhibition of gonadotropin releasing hormone (GnRH) secretion from the hypothalamus and a subsequent inhibition of luteinizing hormone (LH) and follicle-stimulating hormone (FSH) release. This prevents ovulation and alters the cervical mucus.

**Desolvated solvate:** A crystalline solvate that has lost the solvent of crystallization but has largely retained the original crystalline lattice.

**Desolvation:** The process by which solvent molecules disassociate from a species in solution. In medicinal chemistry, this usually refers to the removal of water molecules surrounding a biological target before the binding of a drug. OR A reaction in which the solvent of crystallization is lost from a crystal. Desolvation can be accompanied by a polymorphic transformation, or the original crystal structure can be maintained to produce a desolvated crystal. OR In aqueous solution, the release of bound water surrounding a solute.

**DESSICANT:** Substance which can be used for drying purposes because of its affinity for water. Or Treating plastics materials to minimize their accumulation of static electricity, and subsequently, the amount of dust picked up by the plastics because of such charges. See ANTISTATIC AGENTS. Or A permanent change in the physical properties of a plastic evidenced by impairment of these properties.

**destructive interference:** When the peaks of one wave match the troughs of another, the waves interfere destructively. The amplitudes of the interfering waves cancel to give the resultant wave a lower amplitude.

**desvenlafaxine succinate:** The succinate salt form of desvenlafaxine, a synthetic phenethylamine bicyclic derivative with antidepressant activity. Desvenlafaxine is a selective reuptake inhibitor of serotonin and norepinephrine due to its high binding affinities to the pre-synaptic serotonin and norepinephrine transporters. By blocking both transporters, this agent prolongs neurotransmitter activities of both serotonin and norepinephrine, thereby alleviating depressive state.

**detachment fault:** a low-angle fault above which is often a series of thrust faults and below which is undeformed bedrock.

**Detection limit :** the concentration at which the mean value of the output sensor signal is equal to two standard deviations. In practice, the lowest concentration of the analyte that can be detected and/or measured by a sensor. In other words, the concentration (or activity) of the measured ion at the point of intersection between the extrapolated linear segment of the calibration curve (representing the normal slope of the electrode) and a horizontal line (representing the voltage when the concentration is so low, that small changes in concentration do not produce any detectable change in the electrode response). The portion of the calibration curve between this point and the beginning of the truly linear section is known as the nonlinear range of the electrode. Samples are still measurable within this range provided that several standards are used to define the changing slope of the curve accurately, but the error in concentration (per millivolt error in measurement) will be progressively greater as the slope reduces.

**Detector:** A material or device that is sensitive to ionizing radiation and can display its characteristics and/or produce a signal suitable for measurement or analysis. See also radiation detection instrument. OR a device, which indicates the presence of the chemical species above a predetermined, threshold value. There is not explicit qualitative relationship between the output and stimulant.

**detention time:** the time allowed for solids to collect in a settling tank. Theoretically detention time is equal to the volume of the tank divided by the flow rate.

**Detergency:** Detergency is the property of surfactants that allows them to clean things for us. The surfactants accumulate on the oil/water interface so that when we scrub the oily stain to break it up, the oil drops do not coalesce.

**detergent:** A substance used for removing dirt. Detergents differ from soaps in that detergents are compounds that are derived from sulfur-containing organic acids. OR A detergent is a type of surfactant. Essentially, a detergent is any surfactant that is not a soap. OR A synthetic cleansing agent resembling soap in its ability to remove a soil from a surface. OR A washing powder or liquid used to clean and remove stains in garments and other fabrics in the home or in commercial applications, often based on soap and other surfactant chemistry.

**Deterministic (probabilistic):** Consistent with the principles of "determinism," which hold that specific causes completely and certainly determine effects of all sorts. As applied in nuclear technology, it generally deals with evaluating the safety of a nuclear power plant in terms of the consequences of a predetermined bounding subset of accident sequences. The term "probabilistic" is associated with an evaluation that explicitly accounts for the likelihood and consequences of possible accident sequences in an integrated fashion. See also Probabilistic risk assessment (PRA).

**Deterministic effect:** The health effects of radiation, the severity of which varies with the dose and for which a threshold is believed to exist. Radiation-induced cataract formation is an example of a deterministic effect (also called a non-stochastic effect) (see 10 CFR 20.1003).

**detorubicin:** A semi-synthetic derivative of the anthracycline antineoplastic antibiotic daunorubicin. Detorubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. This agent also produces toxic free-radical intermediates and interacts with cell membrane lipids causing lipid peroxidation. Detorubicin is less toxic than daunorubicin. Check for active clinical trials using this agent.

**Detox-B adjuvant:** A cancer vaccine adjuvant that consists of an oil droplet emulsion of monophosphoryl lipid A and mycobacterial cell wall skeleton. Detox-B adjuvant is a non-specific immunostimulant that may enhance the host immune response to certain cancer vaccines. Detox-B differs from Detox adjuvant in that Detox-B contains lecithin.

**detoxify:** Reduce the toxicity of a substance either (1) by making it less harmful or (2) by treating patients suffering from poisoning in such away as to reduce the probability and/or severity of harmful effects. OR Different from what is normal or standard, especially in terms of behavior.

**DetoxPC:** A detoxified, nonspecific immunostimulant consisting of a combination of the active monophosphoryl lipid A component of lipopolysaccharide (LPS) isolated from the bacterium *Salmonella minnesota* combined with a residue of the cell wall of the bacterium *Mycobacterium phlei*. Detox-PC differs from Detox adjuvant and Detox-B in that Detox-PC contains egg phosphatidylcholine and alpha-tocopherol. Check for active clinical trials using this agent.

**Detritus:** Dead plant and animal matter, usually consumed by bacteria, but some remains.

**deuterated 3-methylhistidine:** A derivative of the amino acid histidine labeled with heavy hydrogen (D) used in diagnostic procedures. Upon intake of deuterated 3-methylhistidine (3-MH), this agent is incorporated into muscle protein and then is subsequently excreted unchanged in the urine. By measuring the amount of 3-MH in the urine, via analysis of deuterium, the rate of protein muscle catabolism can be determined and the risk of skeletal muscle atrophy or cachexia can be assessed. 3-methylhistidine is a myofibrillar-specific amino acid and is mainly found in muscle myosin and actin; proteolysis of myofibrils releases 3-MH that is excreted unchanged in the urine.

**deuterated phenanthrene:** A noncarcinogenic and structural analogue of polycyclic aromatic hydrocarbon (PAH), phenanthrene labeled with deuterium ([D10]Phe) with potential use in assessing an individual's capacity for PAH metabolism by the diol epoxide pathway. Upon oral or inhalation administration, [D10]Phe is metabolized into the tetraol end product ([D10]PheT) via the diol epoxide pathway, and can be quantified in urine. [D10]PheT can be used as a biomarker to assess PAHs metabolic activation and may therefore determine an individual's susceptibility to carcinogenicity upon PAH exposure.

**deuterium:** The isotope of hydrogen that has one neutron. OR An isotope of hydrogen with one proton and one neutron in the nucleus.

**deuterium oxide:** A stable, non-radioactive isotopic form of water, containing 2 atoms of deuterium (D) and one atom of oxygen (2D<sub>2</sub>O), with DNA-labeling activity. Upon ingestion of deuterium oxide, 2H is incorporated into the deoxyribose moiety of DNA of newly divided cells. Rapidly dividing cells, as in the case of B-cell chronic lymphocytic leukemia (B-CLL), can be labeled with deuterium oxide and measured using gas chromatography and/or mass spectrometry.

**deuterium<sup>2</sup>:** An isotope of hydrogen that contains one neutron and one proton in its nucleus.

**Deuteron:** The nucleus of deuterium. It contains one proton and one neutron. See also Heavy water (D<sub>2</sub>O).

**developmental stage :** An object that has a specific use. In medicine, wheelchairs, pumps, and artificial limbs are examples of devices.

**deviant :** An imaging test that measures bone density (the amount of bone mineral contained in a certain volume of bone) by passing x-rays with two different energy levels through the bone. It is used to diagnose osteoporosis (decrease in bone mass and density). Also called BMD scan, bone mineral density scan, DEXA scan, dual energy x-ray absorptiometric scan, dual x-ray absorptiometry, and DXA.

**device :** An imaging test that measures bone density (the amount of bone mineral contained in a certain volume of bone) by passing x-rays with two different energy levels through the bone. It is used to diagnose osteoporosis (decrease in bone mass and density). Also called BMD scan, bone mineral density scan, DEXA, dual energy x-ray absorptiometric scan, dual x-ray absorptiometry, and DXA.

**Dew Point:** The temperature to which air with a given quantity of water vapor must be cooled to cause condensation of the vapor in the air. OR the temperature at which the condensation of a vapor begins; the term is usually applied to condensation of moisture from the water vapor in the atmosphere. OR ) temperature at which water vapor condenses into liquid water.

**Dew point (of a gas mixture):** the temperature at which the first liquid droplet appears when the mixture is cooled at constant pressure.

**dewatering:** the step in lithification in which increasing pressure squeezes out some of the water between sediment particles.

**DEXA :** A drug used to reduce inflammation and lower the body's immune response. It is used with other drugs to treat leukemia, lymphoma, mycosis fungoides, and other types of cancer. Dexamethasone is also used to prevent or treat many other diseases and conditions. These include conditions related to cancer and its treatment, such as anemia, allergic reactions, swelling in the brain, and high levels of calcium in the blood. Dexamethasone is a type of corticosteroid.

**DEXA scan :** A substance being studied in the treatment of fatigue and nervous system side effects caused by chemotherapy. It is a type of central nervous system stimulant.

**dexamethasone:** A synthetic adrenal corticosteroid with potent anti-inflammatory properties. In addition to binding to specific nuclear steroid receptors, dexamethasone also interferes with NF-kB activation and apoptotic pathways. This agent lacks the salt-retaining properties of other

related adrenal hormones. OR The active ingredient in a drug used to treat severe side effects caused by certain anticancer drugs. Under the brand name Totect it is used to treat the toxic effects of an anticancer drug that leaks from a vein into surrounding tissue and causes tissue damage. Under the brand name Zinecard it is used to reduce heart damage in women given doxorubicin for breast cancer that has spread. Dexrazoxane is also being studied in the treatment of cancer. It is a type of cardioprotective agent, a type of chemoprotective agent, and a type of topoisomerase inhibitor.

**dexamethasone intravitreal implant:** An intravitreal implant containing the corticosteroid dexamethasone embedded in a biodegradable polymer matrix, with anti-inflammatory and macular edema-relieving activity. Upon insertion into the vitreous cavity, dexamethasone intravitreal implant is dissolved slowly and dexamethasone is released over an extended period of time. Dexamethasone inhibits inflammation thereby preventing leakage from the capillaries and a reduction of retinal edema. This may ultimately prevent vision impairment. Check for active clinical trials using this agent.

**Dexampex:** (Other name for: dextroamphetamine sulfate)

**dexanabinol:** A synthetic, terpene-based cannabinoid derivative devoid of cannabinoid receptors 1 and 2 agonist activity and with potential neuroprotective, antiinflammatory and antineoplastic activities. Functioning as an N-Methyl-D-aspartate (NMDA) receptor antagonist, dexanabinol protects neuronal cells against NMDA and glutamate neurotoxicity. This agent also scavenges peroxy radicals and protects neurons from the damages of reactive oxygen species. Furthermore, dexanabinol inhibits the activity of nuclear factor kappa B (NF-kB), thereby preventing the expression of NF-kB target genes, such as tumor necrosis factor alpha, cytokines and inducible nitric oxide synthase. As a result, this agent may restore apoptotic processes in cancerous cells. NF-kB is activated in a variety of cancer cells and plays a key role in the regulation of apoptosis and cellular proliferation. Check for active clinical trials using this agent.

**Dexedrine:** (Other name for: dextroamphetamine sulfate)

**dexmedetomidine hydrochloride:** The hydrochloride salt form of dexmedetomidine, an imidazole derivate and active d-isomer of medetomidine with analgesic, anxiolytic and sedative activities. Dexmedetomidine selectively binds to and activates presynaptic alpha-2 adrenoceptors located in the brain, thereby inhibiting the release of

norepinephrine from synaptic vesicles. This leads to an inhibition of postsynaptic activation of adrenoceptors, which inhibits sympathetic activity, thereby leading to analgesia, sedation and anxiolysis.

**dexmethylphenidate** : A drug used to treat severe side effects caused by certain anticancer drugs. It is used under the brand name Totect to treat the toxic effects of an anticancer drug that leaks from a vein into surrounding tissue and causes tissue damage. It is also used under the brand name Zinecard to reduce heart damage in women given doxorubicin for breast cancer that has spread. Dexrazoxane hydrochloride is also being studied in the treatment of cancer. It is a type of cardioprotective agent, a type of chemoprotective agent, and a type of topoisomerase inhibitor.

**dexpanthenol cream**: An alcoholic analogue of D-pantothenic acid and cholinergic agent. Dexpanthenol acts as a precursor of coenzyme A necessary for acetylation reactions and is involved in the synthesis of acetylcholine. Although the exact mechanism of the actions of dexpanthenol is unclear, it may enhance the effect of acetylcholine. Dexpanthenol acts on the gastrointestinal tract and increases lower intestinal motility. It is also applied topically to the skin to relieve itching and to promote healing.

**dexpanthenol mouthwash**: A mouthwash containing 5% dexpanthenol, the alcoholic analogue of the dextrorotatory isomer of pantothenic acid with potential antimucositis activity. Although the exact mechanism remains to be elucidated, upon rinsing with this solution dexpanthenol is converted to pantothenic acid (vitamin B5) which is required for coenzyme A synthesis as well as for the metabolism of proteins, carbohydrates, and fats. Coenzyme A is involved in fatty acids and sphingolipids synthesis crucial for cell membrane integrity. This mouthwash may have a protective and healing effect on the oral mucosa, may improve hydration and may potentially prevent or reduce radiation/chemotherapy-induced mucositis. Check for active clinical trials using this agent.

**dexrazoxane** : A combination of drugs used as a treatment for attention deficit hyperactivity disorder (ADHD) and narcolepsy (a sleep disorder). It is a type of stimulant. Also called Adderall.

**dexrazoxane hydrochloride**: The hydrochloride salt of a bisdioxopiperazine with iron-chelating, chemoprotective, cardioprotective, and antineoplastic activities. After hydrolysis to an active form that is

similar to ethylenediaminetetraacetic acid (EDTA), dexrazoxane chelates iron, limiting the formation of free radical-generating anthracycline-iron complexes, which may minimize anthracycline-iron complex-mediated oxidative damage to cardiac and soft tissues. This agent also inhibits the catalytic activity of topoisomerase II, which may result in tumor cell growth inhibition.

**dexrazoxane hydrochloride :** An anticancer drug that is a type of angiogenesis inhibitor.

**Dextri-Maltose:** (Other name for: maltodextrin)

**dextroamphetamine sulfate:** The salt of the dextro-isomer of amphetamine and sympathomimetic amine with CNS stimulating properties. Dextroamphetamine sulphate acts by facilitating the release of catecholamines, particularly noradrenaline and dopamine, from nerve terminals in the brain and inhibits their uptake. This leads to an increase in motor activity, causes euphoria, mental alertness and excitement and suppresses appetite. This drug causes dependence and may cause an increase in heart rate and blood pressure. It is used in the treatment of narcolepsy and attention deficit hyperactivity disorder.

**dextroamphetamine-amphetamine:** A combination of two synthetic agents with central nervous system stimulant activity. Both agents are non-catecholamine, sympathomimetic agents that elevate blood pressure and cause bronchodilation. These agents are commonly abused psychostimulant drugs that induce psychologic dependence manifested by elevated mood, increased wakefulness, concentration, physical performance and a feeling of well-being. Tolerance to various effects develops unequally, so that tachycardia and enhanced alertness diminish while psychotoxic effects (hallucinations and delusions) may occur. Check for active clinical trials using this agent.

**dextroamphetamine-amphetamine :** A substance being studied in the treatment of cancer. Also called difluoromethylornithine.

**dextromethorphan acetic acid :** In cancer, the length of time after primary treatment for a cancer ends that the patient survives without any signs or symptoms of that cancer. In a clinical trial, measuring the DFS is one way to see how well a new treatment works. Also called disease-free survival, relapse-free survival, and RFS.

**dextromethorphan hydrobromide:** The hydrobromide salt form of dextromethorphan, a synthetic, methylated dextrorotary analogue of levorphanol, a substance related to codeine and a non-opioid derivate of morphine. Dextromethorphan exhibits antitussive activity and is devoid of analgesic or addictive property. This agent crosses the blood-brain-barrier and activates sigma opioid receptors on the cough center in the central nervous system, thereby suppressing the cough reflex. orThe hydrochloride salt of the d-isomer of the synthetic opiate propoxyphene with weak narcotic analgesic activity. Dextropropoxyphene mimics the effects of endogenous opiates by binding to mu receptors located throughout the central nervous system. The binding results in GTP to GDP exchanges on the mu-G-protein complex, by which the effector adenylate cyclase is inactivated, decreasing intracellular cAMP. This, in turn, inhibits the release of various nociceptive neurotransmitters, such as substance P, gamma-aminobutyric acid (GABA), dopamine, acetylcholine, noradrenaline, vasopressin, and somatostatin. In addition, dextropropoxyphene closes N-type voltage-gated calcium channels and opens calcium-dependent inwardly rectifying potassium channels, which results in neuronal hyperpolarization, a reduction in neuronal excitability, and a further decrease in the perception of pain.

**dextrorotatory:** Able to rotate plane-polarized light in a clockwise fashion. OR describes the clockwise rotation of plane-polarized light (from Latin dextro, "to the right"). A lowercase "d" or a "+" is the notation used before an isomer's name to indicate that it is dextrorotatory; for example, d-2-butanol. (Compare with "levorotatory.") OR Having the property of rotating plane-polarized light clockwise. OR A stereoisomer that rotates the plane of plane-polarized light clockwise.

**Dextrostat:** (Other name for: dextroamphetamine sulfate)

**dexverapamil:** The R-enantiomer of the calcium channel blocker verapamil. Dexverapamil competitively inhibits the multidrug resistance efflux pump P-glycoprotein (MDR-1), thereby potentially increasing the effectiveness of a wide range of antineoplastic drugs which are inactivated by MDR-1 mechanisms. This agent exhibits decreased calcium antagonistic activity and toxicity compared to racemic verapamil.

**DFMO:** A combination of DHA (a natural fatty acid) and paclitaxel (an anticancer drug) being studied in the treatment of cancer. It is a type of

mitotic inhibitor.

**DFS:** A substance being studied in the prevention of cancer. It is a type of steroid. Also called dehydroepiandrosterone.

**DFT:** Density-functional theory. Ab initio method not based upon a wavefunction. Instead, the energy is computed as a functional of the electron density. Sometimes called Kohn-Sham theory. The correct functional has not yet been found, but many approximations are in use.

**DHA-paclitaxel:** A prodrug comprised of the naturally occurring omega-3 fatty acid docosahexaenoic acid (DHA) covalently conjugated to the anti-microtubule agent paclitaxel. Because tumor cells take up DHA, DHA-paclitaxel is delivered directly to tumor tissue, where the paclitaxel moiety binds to tubulin and inhibits the disassembly of microtubules, thereby resulting in the inhibition of cell division. Paclitaxel also induces apoptosis by binding to and blocking the function of the apoptosis inhibitor protein Bcl-2 (B-cell Leukemia 2). DHA-paclitaxel exhibits improved pharmacokinetic and toxicity profiles when compared to conventional paclitaxel and has demonstrated antineoplastic activity in animal models of cancer. or A substance that can build up in cancer cells and block them from using folate. Folate is a nutrient that rapidly dividing cells need to make DNA. Blocking folate use helps keep cancer cells from growing and may kill them. Some DHFR inhibitors are used to treat cancer. A DHFR inhibitor is a type of antifolate. Also called dihydrofolate reductase inhibitor.

**DHAP regimen:** A chemotherapy regimen consisting of dexamethasone, high-dose cytarabine (ARA-C) and cisplatin (Platinol), used for the treatment of relapsed and refractory Hodgkin and non-Hodgkin lymphomas.

**DHEA:** The U.S. federal government agency responsible for protecting the public's health and providing important services, especially for people in need. The DHHS works with state and local governments throughout the country to do research and provide public health services, food and drug safety programs, health insurance programs, and many other services. There are several federal agencies that are a part of the DHHS. They include the Food and Drug Administration (FDA), the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), and the Centers for Medicare and Medicaid Services (CMMS). Also called Department of Health and Human Services.

**DHEA mustard:** A steroidal alkylating agent with potential antineoplastic activity. Alkylating agents exert cytotoxic and, in some cases, chemotherapeutic effects by transferring alkyl groups to DNA, thereby damaging DNA and interfering with DNA replication and cell division.

**dHER2+AS15 vaccine:** A cancer vaccine consisting of a truncated recombinant HER2/neu peptide (dHER2) combined with the immunoadjuvant AS15 with potential immunostimulatory and antineoplastic activities. Upon administration, dHER2+AS15 vaccine may stimulate the host immune response to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells that overexpress the HER2/neu protein, resulting in tumor cell lysis. The tumor-associated antigen (TAA) HER2/neu is often overexpressed by a variety of tumor cell types; dHER2 includes amino acids 1-645 or 1-653 of the extracellular domain (ECD) and an immunogenic carboxyl terminal autophosphorylation portion of the intracellular domain (ICD). AS15 is an adjuvant formulation that contains the adjuvant systems AS01B and AS07A; AS01 B is composed of liposomes containing 3D-MPL and QS21 and AS07A is composed of the synthetic oligodeoxynucleotide (ODN) Toll-like receptor-9 (TLR9) agonist CpG 7909.

**DHFR inhibitor :** A rare, aggressive (fast-growing) type of B-cell non-Hodgkin lymphoma caused by changes in the DNA that affect a gene called the MYC gene and either the BCL2 gene or the BCL6 gene. DHL may be hard to treat and has a poor prognosis. It is a type of diffuse large B-cell lymphoma. Also called double-hit lymphoma.

**DHHS:** A childhood condition in which abnormal tissue grows on the outer part of one or both kidneys. DHPLN usually develops into Wilms tumor (a type of childhood kidney cancer) if not treated. Also called diffuse hyperplastic perilobar nephroblastomatosis.

**DHL:** A hormone made from testosterone in the prostate, testes, and certain other tissues. It is needed to develop and maintain male sex characteristics, such as facial hair, deep voice, and muscle growth. High amounts of DHT may increase the growth of prostate cancer and make it harder to treat. Also called androstanolone and dihydrotestosterone.

**DHPLN:** Any of several diseases in which the kidneys make a large amount of urine. Diabetes usually refers to diabetes mellitus in which there

is also a high level of glucose (a type of sugar) in the blood because the body does not make enough insulin or use it the way it should.

**DHT:** A condition in which a person is very thirsty and makes large amounts of urine. The most common types of diabetes insipidus are central diabetes insipidus (a pituitary disorder) and nephrogenic diabetes insipidus (kidney failure). Diabetes insipidus is not related to diabetes mellitus, which is more common.

**DI water:** deionized water, having had all the ions removed.

**Di-:** A prefix meaning two

**di-dgA-RFB4:** An anticancer drug that is a combination of a monoclonal antibody (RFB4) and an immunotoxin (dgA).

**DI-Leu16-IL2 immunocytokine:** A recombinant fusion protein consisting of de-immunized and humanized anti-CD20 monoclonal antibody Leu16 fused to human cytokine interleukin-2 (IL2) with potential antineoplastic activity. The antibody moiety of DI-Leu16-IL2 immunocytokine binds to tumor cells expressing the CD20 antigen, which may result in an antibody-dependent cell-mediated cytotoxicity (ADCC) towards CD20-expressing tumor cells; the localized IL2 moiety of this fusion protein may stimulate natural killer (NK) and T-lymphocyte mediated immune responses, enhancing the ADCC response. De-immunization involves the modification of potential helper T cell epitopes that bind to MHC class II molecules; humanization involves combining recombinant murine variable (V) regions with human immunoglobulin light and heavy chain constant regions. CD20 antigen, a hydrophobic transmembrane protein located on normal pre-B and mature B lymphocytes, is overexpressed by various cancer cell types.

**Diabeta:** (Other name for: glyburide)

**Diabetes:** A disease characterized by the overproduction of glucose by the liver and its underutilization by other organs. Type I diabetes is due to an insufficiency of insulin production, whereas type II is due to the inability of insulin receptors to respond to the hormone.

**diabetes :** A disease in which the body does not control the amount of glucose (a type of sugar) in the blood and the kidneys make a large amount of urine. This disease occurs when the body does not make enough insulin or does not use it the way it should.

**diabetes insipidus :** (dy-A-seh-til-MOR-feen HY-droh-KLOR-ide)

**diabetes mellitus:** A metabolic disease resulting from insulin deficiency; characterized by a failure in glucose transport from the blood into cells at normal glucose concentrations.

**diabetes mellitus :** A substance made from morphine. Diacetylmorphine hydrochloride is very addictive, and it is illegal to use or sell it in the United States. It may be used outside the United States to treat severe pain. Diacetylmorphine hydrochloride binds to opioid receptors in the central nervous system. It is a type of analgesic agent and a type of opiate. Also called diamorphine hydrochloride and heroin.

**Diabinese:** (Other name for: chlorpropamide)

**diacetylmorphine hydrochloride:** The hydrochloride salt of a diacetyl derivative of the opiate morphine, a naturally occurring alkaloid extracted from the seedpod of the Asian poppy (*Papaver* sp.). Once administered, diamorphine (or diacetylmorphine) is rapidly hydrolyzed to 6-monoacetylmorphine (6-MAM) and then to the end-product morphine which binds to opiate receptors located throughout the mammalian nervous and gastrointestinal systems. Inducing a potent analgesia, the use of diamorphine is often escalated due to a tolerance effect, resulting in abuse that is associated with fatal overdose, abortion, venous sclerosis, and opportunistic infections, among other adverse effects.

**diacetylmorphine hydrochloride :** The process of identifying a disease, condition, or injury from its signs and symptoms. A health history, physical exam, and tests, such as blood tests, imaging tests, and biopsies, may be used to help make a diagnosis.

**Diacylglycerol:** A second messenger in the phosphoinositide cascade, which leads to the activation of protein kinase C.

**diagnosis :** X-ray of the breasts used to check for breast cancer after a lump or other sign or symptom of breast cancer has been found.

**diagnostic mammogram :** A type of test used to help diagnose a disease or condition. Mammograms and colonoscopies are examples of diagnostic procedures. Also called diagnostic test.

**diagnostic procedure :** A type of method or test used to help diagnose a disease or condition. Imaging tests and tests to measure blood pressure, pulse, and temperature are examples of diagnostic techniques.

**diagnostic technique :** A type of test used to help diagnose a disease or condition. Mammograms and colonoscopies are examples of diagnostic tests. Also called diagnostic procedure.

**diagnostic test :** A research study that evaluates methods of detecting disease.

**diagnostic trial :** The process of filtering the blood when the kidneys are not able to cleanse it.

**Diagonal electrophoresis:** A means of determining the location of disulfide bonds in proteins. A mixture of proteins undergoes electrophoresis in a single lane in one direction, disulfide bonds are irreversibly reduced, and the sample is electrophoresed perpendicularly to the original direction. Peptides migrating as a single band in the first direction will migrate as two bands in the second direction if they contained a disulfide bond.

**diagonal of a polygon:** a line segment connecting one vertex to another vertex, and not a side of the polygon.

**dialysis:** the separation of a colloid from a substance in solution by allowing the solution to diffuse through a semipermeable membrane. OR Removal of small molecules from a macromolecule preparation by allowing them to pass across a semipermeable membrane. OR Dialysis is the separation of components in a mixture by passing them across a semipermeable membrane. OR Removal of small molecules from a solution of a macromolecule, by allowing them to diffuse through a semipermeable membrane into water.

**dialysis :** The length of a straight line that extends from one edge of a tumor or other object, through its center and to the opposite edge. It is usually used to measure the size of round or spherical shapes.

**diamagnetism:** Diamagnetic materials are very weakly repelled by magnetic fields. The atoms or molecules of diamagnetic materials contain no unpaired spins.

**diameter:** a line segment that contains the center and has its endpoints on the circle. Also, the length of this segment. (A chord through the center of the circle.) OR Diameter of the barrel described in inches. Term used to characterize the extruder.

**diameter :** A very rare disorder in which the bone marrow doesn't make enough red blood cells. It is usually seen in the first year of life. Patients

may have deformed thumbs and other physical problems. They also have an increased risk of leukemia and sarcoma, especially osteosarcoma (bone cancer). Patients with Diamond-Blackfan anemia may have a mutation (change) in one of the genes that make proteins found in the cell's ribosomes. Also called Blackfan–Diamond anemia, congenital hypoplastic anemia, congenital pure red cell aplasia, DBA, erythropoiesis imperfecta, and inherited erythroblastopenia.

**Diametrical Clearance:** The gap between the two mating metal surfaces forming a gland's internal cavity. Through slight oversizing and accompanying compression of the O-Ring seals this gap to prevent system leakage

**diammonium glycyrrhizinate:** The diammonium salt of glycyrrhizin and the active constituent in the traditional Chinese medicinal herb *Glycyrrhiza uralensis* (Chinese liquorice or Gan-Cao) with anti-inflammatory, antioxidant and hepatoprotective properties. Diammonium glycyrrhizinate (DG) is slowly metabolized within the cells into glycyrrhetic acid, which inhibits enzymes that control cortisol metabolism and contributes to this agent's anti-inflammatory effect. Although the exact mechanism of action remains to be fully elucidated, DG may prevent or reduce hepatotoxicity via the scavenging of free radicals. This agent also upregulates the expression of transcription coactivator PGC-1alpha and modulates hepatic enzymes such as alanine aminotransferase (ALT), aspartate aminotransferase (AST), superoxide dismutase and glutathion peroxidase.

**Diamond:** One of the allotropes of carbon. Allotropes have the atoms of the same element but arranged in a different way. OR A crystalline form of carbon, made of a network of covalent, tetrahedrally bound carbon atoms.

**Diamond-Blackfan anemia :** (dy-uh-MOR-feen HY-droh-KLOR-ide)

**diamorphine hydrochloride :** A substance made from morphine. Diamorphine hydrochloride is very addictive, and it is illegal to use or sell it in the United States. It may be used outside the United States to treat severe pain. Diamorphine hydrochloride binds to opioid receptors in the central nervous system. It is a type of analgesic agent and a type of opiate. Also called diacetylmorphine hydrochloride and heroin.

**dianhydrogalactitol:** A bifunctional hexitol derivative with potential antineoplastic activity. Dianhydrogalactitol alkylates and cross-links DNA

via an epoxide group during all phases of the cell cycle, resulting in disruption of DNA function and cell cycle arrest. Check for active clinical trials using this agent.

**diaphragm :** The thin muscle below the lungs and heart that separates the chest from the abdomen.

**DIAPHRAGM GATE:** Gate used in molding annular or tubular articles. Gate forms a solid web across the opening of the part. Or Used in symmetrical cavity filling to reduce weld-line formations and improve filling rates.

**diaphyses:** the main or mid section (shaft) of the long bones

**diapir:** a small magma blob resulting from localized melting of the crust; a component of batholiths.

**diarrhea :** Frequent and watery bowel movements.

**Diastereoisomers:** A pair of molecules, each with more than one asymmetric center, that have opposite configurations at one such center but are not mirror images of each other; in the aldotetrose series, Derythrose and D-threose are diastereoisomers.

**diastereomer:** a stereoisomer of an optical isomer that has more than one stereogenic center and is not a mirror image of one of the other enantiomers of the molecule. Diastereomers have the same configuration at one or more stereogenic centers but opposite configurations at others. OR Stereoisomers which are not mirror images of each other. Diastereomers are chemically similar but distinguishable; they have different melting points and boiling points and they react at different rates.

**Diastyl:** (Other name for: diethylstilbestrol)

**diathermy :** A procedure in which tissue is heated to destroy abnormal cells. The heat may come from electric currents, microwaves, radio waves, or ultrasound. Diathermy is a type of hyperthermia therapy. Also called electrodiathermy.

**Diatomaceous earth:** A fine, siliceous (made of silica) "earth" composed mainly of the skeletal remains of diatoms (single cell microscopic algae with rigid internal structure consisting mainly of silica). Tests prove that DE leaches unacceptable amounts of silicate into the water for fish health. If used as a filter substance, a silicone removing resin should be employed afterwards. OR a filter medium used for filtration of effluents from

secondary and tertiary treatments, particularly when a very high grade of water for reuse in certain industrial purposes is required; used as an absorbant for oils and oily emulsions in some wastewater treatment designs; also used historically in preparing standard suspensions for turbidity measurements.

**diatomic:** A diatomic molecule is made of two atoms bonded together, e.g. Cl<sub>2</sub>.

**diatomic molecule:** A molecule that contains only two atoms. All of the noninert gases occur as diatomic molecules; e. g. hydrogen, oxygen, nitrogen, fluorine, and chlorine are H<sub>2</sub>, O<sub>2</sub>, N<sub>2</sub>, F<sub>2</sub>, and Cl<sub>2</sub>, respectively.

**Diauxic growth:** Biphasic growth on a mixture of two carbon sources in which one carbon source is used up before the other one. For example, in the presence of glucose and lactose, E. coli will utilize the glucose before the lactose.

**diazepam :** A drug used to treat mild to moderate anxiety and tension and to relax muscles. It is a type of benzodiazepine. Also called Valium.

**diazepinomicin:** A small-molecule inhibitor of the RAS/RAF/MAPK signaling pathway with potential antineoplastic activity. Diazepinomicin binds to and inhibits Ras kinase, thereby preventing the phosphorylation and activation of proteins downstream of the Ras signal transduction pathway, including serine/threonine kinase RAF (BRAF) and extracellular signal-regulated kinases 1 and 2 (ERK1 and ERK-2). This agent also selectively binds to the peripheral benzodiazepine receptor (PBR), a receptor highly expressed in certain tumor cell types cells, inducing cell cycle arrest and apoptosis in PBR-expressing cells. Diazepinomicin can cross the blood-brain barrier (BBB).

**diaziquone:** A synthetic bifunctional quinone derivative with potential antineoplastic activity. Diaziquone alkylates and cross-links DNA during all phases of the cell cycle, resulting in disruption of DNA function, cell cycle arrest, and apoptosis. This agent can also form free radicals, thereby initiating DNA damage via DNA strand breaks. Due to its lipophilicity, diaziquone readily crosses the blood brain barrier.

**diazonium salt:** A diazonium salt is a compound with general form Ar-NN<sup>+</sup>X<sup>-</sup>, where Ar represents a substituted benzene ring and X<sup>-</sup> is a halide ion such as chloride. Diazonium salts are unstable and explosive in dry

form. They are used to manufacture many different organic compounds, including azo dyes. See also diazotization.

**diazooxonorleucine:** An anticancer drug that is able to cross the blood-brain barrier and kill cancer cells in the central nervous system. Also called AZQ. OR An L-glutamine diazo analogue amino acid antibiotic isolated from a species of the bacterial genus *Streptomyces* with potential antineoplastic activity. Diazooxonorleucine inhibits several glutamine-dependent biosynthetic pathways involved in the the syntheses of D-glucosamine phosphate, purines and pyrimidines. This agent inhibits phosphate-activated glutaminase, a key enzyme for the synthesis of releasable glutamine, depleting cells of this essential amino acid and reducing their capacity to proliferate.

**diazotization:** Diazotization is a reaction that converts an  $-NH_2$  group connected to a phenyl ring to a diazonium salt. For example, Diazotization reactions are extremely useful in organic synthesis. The nitrous acid provides  $NO^+$  which replaces a hydrogen on the  $-NH_3^+$  group to produce  $-NH_2NO^+$  and water; a second water is eliminated to produce the  $-N_2^+$  group.

**diazoxide:** A benzothiadiazine derivate with antihypertensive and hyperglycemic activities. Diazoxide increases membrane permeability to potassium ions in vascular smooth muscle, thereby stabilizing the membrane action potential and preventing vascular smooth muscle contraction; this results in peripheral vasodilatation and decreases in peripheral vascular resistance. This agent also inhibits insulin release by interacting with ATP-sensitive potassium channels of pancreatic islet beta-cells.

**Dibasic:** An acid that has two acidic hydrogen atoms that can react with a base is dibasic. An example is the amino acid aspartic acid, which contains two carboxylic acid groups with different reactivities.

**Dibenzylamine:** (Other name for: phenoxybenzamine hydrochloride)

**dichloromethane<sup>22</sup>:** Dichloromethane ( $CH_2Cl_2$ ) is an organic solvent often use to extract organic substances from samples. It is toxic but much less so than chloroform or carbon tetrachloride, which were previously used for this purpose.

**dichloromethotrexate:** A chlorinated methotrexate derivative. Dichloromethotrexate inhibits the enzyme dihydrofolate reductase, thereby

preventing the synthesis of purine nucleotides and thymidylates and inhibiting DNA and RNA synthesis. This agent is metabolized and excreted by the liver.

**diclofenac :** The active ingredient in a drug that is used to treat the symptoms of rheumatoid arthritis and is being studied in the prevention and treatment of some types of skin cancer. It blocks substances that cause inflammation and pain. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of cyclooxygenase inhibitor, a type of nonsteroidal anti-inflammatory drug (NSAID), and a type of antiangiogenesis agent.

**diclofenac epolamine patch:** A topical patch containing the epolamine salt form of the nonsteroid anti-inflammatory drug (NSAID) diclofenac, with anti-inflammatory, anti-pyretic and analgesic activities. Upon topical application of the diclofenac epolamine patch to a specific area, the patch releases diclofenac epolamine into the skin. Diclofenac locally binds to cyclooxygenase isoforms 1 and 2 (COX-1 and -2). The inhibition of COX-2 by diclofenac prevents the COX-2-mediated synthesis of proprostaglandins (PGs) and thereby locally relieves PG-mediated pain, fever and inflammation.

**diclofenac sodium :** A drug that is used to treat the symptoms of rheumatoid arthritis and is being studied in the prevention and treatment of some types of skin cancer. It blocks substances that cause inflammation and pain. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of cyclooxygenase inhibitor, a type of nonsteroidal anti-inflammatory drug (NSAID), and a type of antiangiogenesis agent. Also called Voltaren.

**diclofenac sodium gel:** A gel formulation of the sodium salt of diclofenac, a nonsteroidal benzeneacetic acid derivative with analgesic, antipyretic and anti-inflammatory activities. Diclofenac binds to and chelates both isoforms of cyclooxygenase (COX-1 and-2), thereby blocking the conversion of arachidonic acid (AA) to pro-inflammatory prostaglandins. This agent may also inhibit lipoxygenases, resulting in the inhibition of pro-inflammatory leukotriene synthesis from AA. or The gel form of a drug that is used to treat the symptoms of rheumatoid arthritis and is being studied in the prevention and treatment of some types of skin cancer. It blocks substances that cause inflammation and pain. It may also prevent the growth of new

blood vessels that tumors need to grow. It is a type of cyclooxygenase inhibitor, a type of nonsteroidal anti-inflammatory drug (NSAID), and a type of antiangiogenesis agent. Also called Voltaren gel.

**Dicoumarol:** An antagonist of vitamin K, which is a crucial factor in the carboxylation of  $\alpha$  carbon atoms in glutamate residues in the amino-terminal region of prothrombin; prothrombin synthesized in the presence of dicoumarol cannot bind calcium ion and therefore cannot promote the blood-clotting cascade.

**didanosine :** A drug used in the treatment of infections caused by viruses. Or A synthetic nucleoside analogue of deoxyadenosine in which the 3' hydroxyl on the ribose moiety is replaced by a hydrogen atom. In vivo, didanosine is converted to the active triphosphate form, which is incorporated into DNA. The absence of the 3' hydroxyl inhibits DNA elongation because phosphodiester bonds cannot be made with the substituted hydrogen.

**didemnin B:** A cyclic depsipeptide extracted from the Caribbean tunicate *Trididemnum cyanophorum*. Didemnin B activates caspase, thereby inducing apoptosis, and prevents eukaryotic elongation factor 2 (eEF-2)-dependent translocation, thereby inhibiting protein synthesis. This agent also has immunosuppressive and antiviral properties.

**dideoxyadenosine:** A synthetic nucleoside analogue of deoxyadenosine and a prodrug of didanosine in which the 3' hydroxyl group on the ribose moiety is replaced by a hydrogen atom. Dideoxyadenosine competitively inhibits adenylyl cyclase, thereby reducing levels of cyclic adenosine monophosphate (cAMP). By inhibiting cAMP-mediated gene activation in tumor cells, this agent may retard tumor cell proliferation.

**Die:** A steel block/tool containing an opening through which plastic is extruded, shaping the plastic extrusions to the desired form. Or The metal nozzle that the polymer is pressed through to create the tubing. The characteristics of size, wall thickness and shape are dictated by the die that is used. Or Metal attachment to the end of the extruder that gives the polymer melt its particular shape. Or The component on a plastics extruder affixed to the extruder head through which the melt is pushed to form the desired profile. or A circular steel block made up of an inner and outer ring through which plastic is extruded and inflated into a large tube. Or A steel block containing an orifice through which plastic is extruded, shaping the

extrudate to the desired form. OR Metal attachment to the end of the extruder that gives the polymer melt its particular shape.

**DIE ADAPTOR:** The part of an extrusion die which holds the die block.

**Die Cut:** The process of stamping out the ID or OD by placing the part on a mechanical fixture to perform this function

**Die Cutting:** The process of using a die to shear webs of low strength materials, such as plastics. Die cutting can be done on either flatbed or rotary presses. Rotary die cutting is often done inline with printing.

**Die Gap:** Distance between the metal surfaces which form the die opening. Or Distance between the metal faces forming the die opening within the material.

**Die Lines:** Vertical marks on the parison caused by damage of die parts or contamination. or Lines in the machine direction of film caused by buildup of oxidized materials on the die. Or Vertical or horizontal marks on the extrudate and in the finished product caused by damaged die elements or by contamination held-up in the die land. Or Vertical or horizontal marks on the extruded plastic and in the finished plastic products caused by contamination held up in the die area.

**DIE LIP BUILDUP (also known as DIE DROOL):** The gradual formation of an initially liquid deposit at the edge of the die exit which solidifies and may partially obstruct the flow of the extruded product and/or cause defective extrudate surface. Depending on the severity of the problem, continuous extrusion must be interrupted every few hours or few days and the solid deposit must be removed from the die lips.

**Die Plate:** The main support for the punch or mold cavity.

**DIE SWELL:** see EXTRUDATE SWELL

**Die Swell Ratio:** The ratio of the outer parison diameter (or parison thickness) to the outer diameter of the die (or die gap). Die swell ratio is influenced by polymer type, head construction, land length, extrusion speed, and temperature.

**Dieckmann condensation:** a condensation is a reaction in which two molecules join to form a new product, eliminating water or some other small molecule in the process. A Dieckmann condensation takes place within one molecule, resulting in a new cyclical molecule and the elimination of a small molecule.

**Diehead Pressure :** Pressure required to force the melt through the die.

**Dielectric:** 1) any insulating medium which intervenes between two conduits and permits electrostatic attraction or repulsion to take place across it 2) a material having the property that energy required to establish an electric field is recoverable in whole or in part, as electric energy. or Insulating material. In radio frequency preheating, dielectric may refer specifically to the material which is being heated. Or 1) any insulating medium which intervenes between two conduits and permits electrostatic attraction or repulsion to take place across is. 2) a material having the property that energy required to establish an electric field is recoverable in whole or in part, as electric energy (see insulation for clarification). or Insulating material. In radio frequency preheating, dielectric may refer specifically to the material which is being heated.

**Dielectric Constant:** The ratio of the capacity of a condenser made with a particular dielectric material to the capacity of the same condenser with air as the dielectric. Measured at a frequency of 106 cycles per second.

**Dielectric Constant (Permittivity or Specific Inductive Capacity):** the specific inductive capacity of a dielectric. That property of a dielectric which determines the electrostatic energy stored per unit volume for unit potential gradient.

**Dielectric Constant(permittivity of specific Inductive Capacity):** The specific conductive capacity of a dielectric. That property of a dielectric which determines the electrostatic energy stored per unit volume for unit potential gradient.

**Dielectric Heating (Electronic Heating):** The plastic to be heated forms the dielectric of a condenser to which is applied a high-frequency (20 to 80 mc.) voltage. Dielectric loss in the material is the basis. Process used for sealing vinyl films and preheating thermoset molding compounds.

**Dielectric Strength:** Ability to retain precise shape and size. Or the voltage which an insulating material can withstand before breakdown occurs, usually expressed as a voltage gradient (such as volts per mil). Or The voltage that an insulating material can withstand before dielectric breakdown occurs. Or ability to retain precise shape and size.

**Diels-Alder reaction:** a cycloaddition reaction between a conjugated diene and an alkene that produces a 1,4-addition product.

**diene:** an organic compound that contains two double bonds.

**dienogest:** An orally-active, semisynthetic, fourth generation, nonethinylated progestogen with potential antiproliferative, antiandrogenic, anti-inflammatory and antiangiogenic activities that is used in hormone therapy and as a female contraceptive. Upon oral administration, dienogest binds intracellular progesterone receptors which then translocate to the nucleus where the drug-receptor complex interacts with progesterone response elements, thus altering the expression of target genes. Dienogest reduces the production of estradiol, prevents ovulation and alters the cervical mucus and endometrium. In addition, dienogest appears to suppress the expression of cell cycle regulator cyclin D1. Altogether, this may prevent the growth of endometrial epithelial cells and may reduce symptoms associated with leiomyoma.

**dienophile:** the alkene that adds to the diene in a Diels-Alder reaction.

**DIEP flap :** A type of breast reconstruction in which blood vessels called deep inferior epigastric perforators (DIEP), and the skin and fat connected to them are removed from the lower abdomen and used for reconstruction. Muscle is left in place.

**Diesel:** Diesel is a middle distillate product obtained from the processing of crude oil in an oil refinery. Diesel is closely related in composition to Heating Oil, with the former differing by its lower sulphur content. The boiling point and density of diesel is higher than that for gasoline.

**diet :** The things a person eats and drinks.

**dietary counseling :** A process by which a health professional with special training in nutrition helps people make healthy food choices and form healthy eating habits. In cancer treatment, the goal of dietary counseling is to help patients stay healthy during and after treatment and to stay strong enough to fight infections and the recurrence of disease. Also called nutritional counseling.

**dietary protocol :** A detailed diet plan that states what, how, and when a person will eat and drink. It may be used to test how a specific diet affects a health outcome, such as lower cholesterol.

**Dietary Reference Intakes :** A set of guidelines developed by U.S. and Canadian scientists to give information about the role of nutrients in human health. These guidelines include the Reference Daily Intakes (RDI), which

are the recommended amounts of nutrients to be eaten each day to meet the needs of most healthy people. This system replaced the Recommended Dietary Allowances (RDA). Also called DRI.

**dietary supplement :** A product that is added to the diet. A dietary supplement is taken by mouth, and usually contains one or more dietary ingredient (such as vitamin, mineral, herb, amino acid, and enzyme). Also called nutritional supplement.

**diethyldithiocarbamate:** A sulfhydryl-containing carbamate that is the primary in vivo metabolite of disulfiram. Diethyldithiocarbamate chelates zinc, thereby inhibiting metalloproteinases, thereby preventing the degradation of the extracellular matrix and inhibiting an initial step in cancer metastasis and angiogenesis. A known inhibitor of superoxide dismutase, this agent can either potentiate or protect against cell oxidative damage caused by ionizing radiation, depending on the time of administration.

**diethylstilbestrol:** DES; the acronym for diethylstilbestrol, a synthetic, nonsteroidal form of estrogen. A well-known teratogen and carcinogen, DES inhibits the hypothalamic-pituitary-gonadal axis, thereby blocking the testicular synthesis of testosterone, lowering plasma testosterone, and inducing a chemical castration. OR A synthetic form of the hormone estrogen that was prescribed to pregnant women between about 1940 and 1971 because it was thought to prevent miscarriages. Diethylstilbestrol may increase the risk of uterine, ovarian, or breast cancer in women who took it. It also has been linked to an increased risk of clear cell carcinoma of the vagina or cervix in daughters exposed to diethylstilbestrol before birth. Also called DES.

**dietitian :** A health professional with special training in nutrition who can help with dietary choices. Also called nutritionist.

**Difference spectra:** Plots comparing the absorption spectra of a molecule or an assembly of molecules in different states, for example, those of mitochondria under oxidizing or reducing conditions.

**differential centrifugation:** Separation of cell organelles or other particles of different size by their different rates of sedimentation in a centrifugal field.

**Differential centrifugation:** Separation of molecules and/or organelles by sedimentation rate. OR A means of fractionating cell components by step-

by-step centrifugation of increasing centrifugal force. The supernatant of each step is centrifuged again at greater force to produce a pellet and another supernatant, which is subsequently centrifuged at yet greater force. The starting material consists of cells with disrupted plasma membranes.

**Differential Cooling:** Occurs when one area of the part cools at a different rate or when the mold surfaces are at different temperatures. Warping can result from differential cooling.

**Differential pressure (dp or dP):** The difference in pressure between two points of a system, such as between the inlet and outlet of a pump.

**Differential Scanning Calorimetry:** Used to measure the melting point of plastics. Different test method than vicat softening point, so different values result.

**DIFFERENTIAL SCANNING CALORIMETRY (DSC):** A thermal analysis technique, which measures the difference between a reference and a sample during a controlled temperature change. Changes in the heating rate can be converted into heat capacity and enthalpy changes. It is used to measure the Specific Heat (Heat Capacity  $C_p$ ), Glass Transition Temperature ( $T_g$ ), and Melting Temperature ( $T_m$ ), and to probe the structure of polymer blends.

**Differential scanning calorimetry (DSC):** An analytical technique measuring the heat flux (the quantity of heat transmitted per unit time) of the sample during a controlled heating process.

**differential stress:** stress usually caused by tectonic forces applied to a body of rock from different, but not opposite, directions, stretching the rock mass into an elongate shape.

**differential thermal analysis:** A technique that is often used to analyze materials that react or decompose at higher temperatures. The difference in temperature between the sample and an inert reference material is monitored as both are heated in a furnace. Phase transitions and chemical reactions taking place in the sample on heating cause the temperature difference to become larger, at temperatures that are characteristic of the sample.

**Differential thermal analysis (DTA):** An analytical technique in which the difference in temperature between the sample and an inert reference is detected during a controlled heating process.

**differential weathering:** the result of the resistance of some rocks more than other rocks to weathering, creating uneven rates of erosion and sometimes spectacular formations.

**differentiating agent :** A substance that causes a cell to change from an immature form to a mature form. In cancer, a differentiating agent may help cancer cells to become more like normal cells and to grow and spread more slowly. Some differentiating agents are being studied in the prevention and treatment of cancer.

**differentiation:** the process by which a magma forms different minerals according to changes in temperature and pressure. OR The process by which single cells grow into particular forms of specialized tissue (e.g., root, stem, or leaf). OR A change in the form and pattern of a cell and the genes it expresses as a result of growth and replication, usually during development of a multicellular organism Also occurs in microorganisms (e.g. in sporulation). OR Specialization of cell structure and function during embryonic growth and development.

**differentiation :** In biology, describes the processes by which immature cells become mature cells with specific functions. In cancer, this describes how much or how little tumor tissue looks like the normal tissue it came from. Well-differentiated cancer cells look more like normal cells and tend to grow and spread more slowly than poorly differentiated or undifferentiated cancer cells. Differentiation is used in tumor grading systems, which are different for each type of cancer.

**Diffiam:** (Other name for: benzydamine hydrochloride)

**diffraction:** The ability of a wave to bend around the edges of obstacles or holes. The effect is most noticeable when the obstacle or hole is comparable to the size of the wavelength.

**Diffraction pattern:** The recorded form of diffraction peaks and their relative intensities obtained when a material is subjected to X-ray diffraction analysis. The pattern may be in the form of a chart tracing or as bands on photographic film.

**Diffractionmeter:** A device used to accurately measure the intensities of diffracted X-rays as a function of the incident angle of the X-ray beam. This unit is usually computer-controlled and measures the intensities using a counter.

**diffuse:** Diffuse basis functions are typically of low angular momentum (unlike polarization functions) but with much smaller exponents, so that they spread more thinly over space. Usually essential for calculations involving negative ions or Rydberg states.

**diffuse :** Widely spread; not localized or confined.

**diffuse hyperplastic perilobar nephroblastomatosis :** A childhood condition in which abnormal tissue grows on the outer part of one or both kidneys. Diffuse hyperplastic perilobar nephroblastomatosis usually develops into Wilms tumor (a type of childhood kidney cancer) if not treated. Also called DHPLN.

**diffuse intrinsic pontine glioma :** A type of central nervous system tumor that forms from glial (supportive) tissue of the brain and spinal cord. Diffuse intrinsic pontine glioma usually occurs in children. It forms in the brain stem.

**diffuse large B-cell lymphoma :** A type of B-cell non-Hodgkin lymphoma (cancer of the immune system) that is usually aggressive (fast-growing). It is the most common type of non-Hodgkin lymphoma, and is marked by rapidly growing tumors in the lymph nodes, spleen, liver, bone marrow, or other organs. Other symptoms include fever, night sweats, and weight loss. There are several subtypes of diffuse large B-cell lymphoma.

**Diffused Air Aeration:** A diffused air activated sludge plant takes air, compresses it, and then discharges the air below the water surface of the aerator through some type of air diffusion device.

**diffusion:** The gradual mixing of the molecules of 2 or more substances by random molecular motion. OR Diffusion is a process that happens when a substance moves from an area of higher concentration to an area of lower concentration. OR Diffusion is the process whereby one substance moves through another. The substances become mixed without us needing to stir them together. OR the movement of molecules through a membrane from a region of high concentration to low concentration. OR when a substance spreads out within another substance as when a solute spreads out within a solvent in a solution, sometimes unevenly. OR The mixing of two substances caused by random molecular motions. Gases diffuse very quickly; liquids diffuse much more slowly, and solids diffuse at very slow (but often measurable) rates. Molecular collisions make diffusion slower in liquids and solids. OR The net movement of molecules in the direction of

lower concentration. OR Particles spread out and mix. This occurs in both gases and liquids but goes faster in gases.

**Diffusion coefficient:** In the context of membranes, a means of expressing the lateral mobility of membrane constituents; for lipids, the diffusion coefficient is  $2 \mu\text{m}^2 \text{ s}^{-1}$ .

**diffusion rate:** The number of randomly moving molecules that pass through a unit area per second. Diffusion rates are fastest when a large concentration difference exists on either side of the unit area. Diffusion rates increase with temperature, and decrease with increasing pressure, molecular weight, and molecular size.

**Difinsa53:** (Other name for: dimethicone-containing botanicals-based lotion)

**Diflucan:** (Other name for: fluconazole)

**diflunisal:** A difluorophenyl derivate of salicylic acid and a nonsteroidal anti-inflammatory drug (NSAID) with antipyretic, analgesic and anti-inflammatory properties. Diflunisal competitively inhibits both cyclooxygenase (COX) -1 and -2, with higher affinity for COX-1, and subsequently blocks the conversion of arachidonic acid to prostaglandin precursors. This leads to an inhibition of the formation of prostaglandins that are involved in pain, inflammation and fever. Diflunisal differs from other salicylates, in that it is not metabolized to salicylic acid, hence it has a longer half-life. Check for active clinical trials using this agent.

**difluoromethylornithine :** A substance being studied in the treatment of cancer. Also called DFMO.

**Digester:** A tank in which sludge is placed to allow decomposition by microorganisms. Digestion may occur under anaerobic (most common) or aerobic conditions.

**digestion:** the biochemical decomposition of organic matter which results in the formation of mineral compounds and simple organic compounds. OR Enzymatic hydrolysis of major nutrients in the gastrointestinal system to yield their simpler components. OR The process of breaking down food into substances the body can use for energy, tissue growth, and repair.

**digestive system :** The organs that take in food and turn it into products that the body can use to stay healthy. Waste products the body cannot use leave the body through bowel movements. The digestive system includes

the salivary glands, mouth, esophagus, stomach, liver, pancreas, gallbladder, small and large intestines, and rectum.

**digestive tract :** The organs through which food and liquids pass when they are swallowed, digested, and eliminated. These organs are the mouth, esophagus, stomach, small and large intestines, and rectum and anus.

**digital image analysis :** A method in which an image or other type of data is changed into a series of dots or numbers so that it can be viewed and studied on a computer. In medicine, this type of image analysis is being used to study organs or tissues, and in the diagnosis and treatment of disease.

**digital mammography :** The use of a computer, rather than x-ray film, to create a picture of the breast.

**digital photography :** A type of photography in which images can be viewed on a computer screen.

**digital rectal examination :** An examination in which a doctor inserts a lubricated, gloved finger into the rectum to feel for abnormalities. Also called DRE.

**Digitalis:** A mixture of cardiotonic steroids derived from the dried leaf of the foxglove plant; such steroids inhibit the sodium-potassium pump. OR A substance used to make drugs that are used to treat several heart conditions, including congestive heart failure. Digitalis is made from the dried leaves of *Digitalis purpurea* (common foxglove) plants. It is a type of cardiac glycoside.

**digoxin:** A cardiac glycoside. Digoxin inhibits the sodium potassium adenosine triphosphatase (ATPase) pump, thereby increasing intracellular calcium and enhancing cardiac contractility. This agent also acts directly on the atrioventricular node to suppress conduction, thereby slowing conduction velocity. Apparently due to its effects on intracellular calcium concentrations, digoxin induces apoptosis of tumor cells via a pathway involving mitochondrial cytochrome c and caspases 8 and 3. OR A drug used to treat irregular heartbeat and some types of heart failure. It is also being studied in the treatment of some types of cancer. Digoxin helps the heart work normally by controlling the amount of calcium that goes into the heart muscle. It also may kill cancer cells and make them more sensitive to anticancer drugs. It is a type of cardiac glycoside. Also called Lanoxin.

**dihalide:** a compound that contains two halogen atoms; also called a "dihaloalkane."

**dihedral angle:** The angle between two intersecting planes. In a molecule with atoms A-B-C-D, the dihedral angle (A-B-C-D) is the angle between the planes defined by (A, B, C) and by (B, C, D). By convention, the angle is positive for a right-handed rotation from the first plane to the second, i.e., for a right-handed twist along the sequence A-B-C-D. OR A measure of the rotation about a bond, usually taken to lie between -180 and +180 degrees. Also called torsion angles.

**dihematoporphyrin ether :** Used in photodynamic therapy, a drug that is absorbed by tumor cells; when exposed to light, it becomes active and kills the cancer cells.

**dihydro-5-azacytidine:** A synthetic nucleoside analogue of deoxycytidine. Dihydro-5-azacytidine inhibits DNA methyltransferase, thereby interfering with abnormal DNA methylation patterns that are associated with genetic instability in some tumor cells. Inhibition of this enzyme may restore expression of tumor-suppressor genes and result in antitumor activity. Check for active clinical trials using this agent.

**Dihydrofolate reductase:** An enzyme that catalyzes the regeneration of tetrahydrofolate from dihydrofolate formed in the synthesis of thymidylate.

**dihydrofolate reductase inhibitor :** A substance that can build up in cancer cells and block them from using folate. Folate is a nutrient that rapidly dividing cells need to make DNA. Blocking folate use helps keep cancer cells from growing and may kill them. Some dihydrofolate reductase inhibitors are used to treat cancer. A dihydrofolate reductase inhibitor is a type of antifolate. Also called DHFR inhibitor.

**dihydroclenperone:** A butyrophenone that has been investigated for antineoplastic activity.

**dihydrotestosterone:** The most potent androgen, required for sex development. Dihydrotestosterone is synthesized from testosterone in the prostate gland, testes, hair follicles and adrenal glands by 5-alpha reductase. Dihydrotestosterone exerts its action similar to testosterone, which binds to and activates specific nuclear androgen receptors. After translocation into the nucleus, the activated hormone-receptor complex binds to the androgen response elements on the DNA and activates gene expressions that are required for sex development. Dihydrotestosterone is responsible for the

formation of male primary sex characteristics and most male secondary sex characteristics during puberty, such as muscular growth, facial and body hair growth, and deepening of the voice. OR A hormone made from testosterone in the prostate, testes, and certain other tissues. It is needed to develop and maintain male sex characteristics, such as facial hair, deep voice, and muscle growth. High amounts of dihydrotestosterone may increase the growth of prostate cancer and make it harder to treat. Also called androstanolone and DHT.

**diindolylmethane:** A phytonutrient and plant indole found in cruciferous vegetables including broccoli, brussels sprouts, cabbage, cauliflower and kale, with potential antiandrogenic and antineoplastic activities. As a dimer of indole-3-carbinol, diindolylmethane (DIM) promotes beneficial estrogen metabolism in both sexes by reducing the levels of 16-hydroxy estrogen metabolites and increasing the formation of 2-hydroxy estrogen metabolites, resulting in increased antioxidant activity. Although this agent induces apoptosis in tumor cells in vitro, the exact mechanism by which DIM exhibits its antineoplastic activity in vivo is unknown. OR A substance being studied in the treatment of prostate cancer and in the prevention of cervical cancer. Diindolylmethane is found in cruciferous vegetables like broccoli, brussels sprouts, cauliflower, cabbage, and kale. It is a type of plant indole. Also called DIM.

**DIIS:** Direct inversion in the iterative subspace. An extrapolation procedure used to accelerate the convergence of SCF calculations.

**dike:** an intrusive rock that generally occupies a discordant, or cross-cutting, crack or fracture that crosses the trend of layering in the country rock.

**Dilantin :** A drug used to treat or prevent seizures or convulsions that may be caused by epilepsy, brain surgery, or treatment for brain cancer. It is a type of anticonvulsant agent. Also called phenytoin sodium.

**dilatation and curettage :** A procedure to scrape and remove tissue from the inner lining of the uterus. The cervix is dilated (made larger) and a curette (spoon-shaped instrument) is inserted into the uterus to remove tissue. A tissue sample may then be checked under a microscope for signs of disease, such as infection or cancer. A dilatation and curettage may also be done after a miscarriage or to treat certain conditions, such as abnormal bleeding. Also called D&C and dilation and curettage.

**dilate :** To widen or enlarge an opening or hollow structure beyond its usual size, such as the pupil of the eye or a blood vessel.

**dilation and curettage :** A procedure to scrape and remove tissue from the inner lining of the uterus. The cervix is dilated (made larger) and a curette (spoon-shaped instrument) is inserted into the uterus to remove tissue. A tissue sample may then be checked under a microscope for signs of disease, such as infection or cancer. A dilation and curettage may also be done after a miscarriage or to treat certain conditions, such as abnormal bleeding. Also called D&C and dilatation and curettage.

**dilatometer:** A device for measuring volume changes.

**dilator :** A device used to stretch or enlarge an opening.

**Dilaudid :** (Other name for: hydromorphone hydrochloride) OR A drug used to treat moderate to severe pain. It may also be used to treat certain types of cough. Dilaudid is made from morphine and binds to opioid receptors in the central nervous system. It is a type of opioid and a type of analgesic agent. Also called Exalgo, hydromorphone hydrochloride, and Hydrostat IR.

**Dilaudid HP:** (Other name for: hydromorphone hydrochloride)

**diltiazem hydrochloride:** A benzothiazepine calcium channel blocking agent. Diltiazem hydrochloride inhibits the transmembrane influx of extracellular calcium ions into select myocardial and vascular smooth muscle cells, causing dilatation of coronary and systemic arteries and decreasing myocardial contractility. Because of its vasodilatory activity, this agent has been shown to improve the microcirculation in some tumors, thereby potentially improving the delivery of antineoplastic agents to tumor cells.

**Diluent:** A liquid used in coatings to reduce the consistency and make a coating flow more easily. The water in latex coatings is a diluent. A diluent may also be called a "Reducer," "Thinner," "Reducing Agent" or "Reducing Solvent." OR the thinning agent used to dilute a fluid, usually water.

**dilute:** to thin out, or having been thinned out; less than full strength. OR A solution that contains a relatively small amount of solute dissolved in a fixed amount of solvent. OR Having a relatively low concentration.

**dilute :** To make something thinner, weaker, less concentrated, or less pure by adding something to it.

**Dilute Solution:** A solution (liquid mixture) that has a small amount of solute dissolved. As you add more water to a sugar solution the solution, becomes more and more dilute.

**Dilution:** Dilution occurs when a solution with a known concentration (standard solution) has more solvent added. As the solvent is added, the molarity may change, but the number of equivalents will not. OR Adding solvent to a solution to lower its concentration.

**DIM:** A substance being studied in the treatment of prostate cancer and in the prevention of cervical cancer. DIM is found in cruciferous vegetables like broccoli, brussels sprouts, cauliflower, cabbage, and kale. It is a type of plant indole. Also called diindolylmethane.

**Dimensional Stability:** Retention of the precise shape of the part. Or Ability of a plastic part to retain the precise shape in which it was molded, fabricated, or cast. Or The ability of a material to maintain its shape under given processing or use conditions. Or the ability of a part to retain its size and proportion over time. Or ability to retain precise shape and size. Or Ability of a plastic part to retain the precise shape in which it was molded, fabricated. or cast.

**dimer:** A molecule or compound formed by the combination of two identical simple molecules. OR A dimer is two molecules (of the same type) bonded together. (just as monomer is one (mono) unit (mer) a dimer is two units). OR Structure resulting from the association of two subunits.

**Dimericine:** (Other name for: liposomal T4N5 lotion) OR A lotion being studied in the treatment of skin cancer and a skin condition called xeroderma pigmentosum. It has an enzyme contained in very tiny, fat-like particles. The enzyme repairs damage caused by ultraviolet radiation. Dimericine is a type of DNA repair enzyme topical agent. Also called T4N5 liposomal lotion.

**Dimerization:** A chemical reaction in which two monomers combine to form a single molecule.

**dimesna:** A drug that belongs to the family of drugs called chemoprotective agents. OR A synthetic derivative of dithio-ethane sulfonate with uroprotective properties. In the kidney, dimesna undergoes reduction to the free thiol compound, mesna, which reacts chemically with the urotoxic ifosfamide metabolites acrolein and 4-hydroxy-ifosfamide,

resulting in their detoxification. This agent also inhibits cyclophosphamide-induced hemorrhagic cystitis.

**dimethicone-containing botanicals-based lotion:** A skin lotion containing various proprietary botanical ingredients and the skin protectant dimethicone, a silicon-based polymer, with potential to prevent radiation dermatitis (RD). Upon topical application to the affected area before and after radiation therapy, the phytochemicals in the dimethicone-containing botanicals-based lotion may act as free radical scavengers and exert an antioxidant effect. The dimethicone component of the skin lotion protects against damage, and moisturizes and soothes the skin.

**dimethyl fumarate:** An orally bioavailable methyl ester of fumaric acid and activator of nuclear factor erythroid 2 [NF-E2]-related factor 2 (Nrf2, Nfe2l2), with potential neuroprotective, immunomodulating and radiosensitizing activities. Although the exact mechanism of action through which dimethyl fumarate exerts its neuroprotective and immunomodulatory effects have yet to be fully understood, upon oral administration, dimethyl fumarate is converted into its active metabolite monomethyl fumarate (MMF) and MMF binds to Nrf2. Subsequently, Nrf2 translocates to the nucleus and binds to the antioxidant response element (ARE). This induces the expression of a number of cytoprotective genes, including NAD(P)H quinone oxidoreductase 1 (NQO1), sulfiredoxin 1 (Srxn1), heme oxygenase-1 (HO1, HMOX1), superoxide dismutase 1 (SOD1), gamma-glutamylcysteine synthetase (gamma-GCS), thioredoxin reductase-1 (TXNRD1), glutathione S-transferase (GST), glutamate-cysteine ligase catalytic subunit (Gclc) and glutamate-cysteine ligase regulatory subunit (Gclm); this also increases the synthesis of the antioxidant glutathione (GSH). The intraneuronal synthesis of GSH may protect neuronal cells from damage due to oxidative stress. Dimethyl fumarate also appears to inhibit the nuclear factor-kappa B (NF-kB)-mediated pathway, modulates the production of certain cytokines and induces apoptosis in certain T-cell subsets. Its radiosensitizing activity is due to this agent's ability to bind to and sequester intracellular GSH, thereby depleting intracellular GSH and preventing its anti-oxidative effects. This enhances the cytotoxicity of ionizing radiation in hypoxic cancer cells. Nrf2, a leucine zipper transcription factor, plays a key role in redox homeostasis and cytoprotection against oxidative stress.

**dimethyl sulfoxide:** A polar organic solvent. DMSO is a free radical scavenger that has been used to treat extravasation damage caused by anthracycline-based chemotherapy. OR A colorless liquid that readily dissolves many chemicals and penetrates animal and plant tissues. It is used in human medicine, veterinary medicine, and pharmaceuticals.

**Dimethyl Terephthalate (DMT):** Dimethyl terephthalate (DMT) is an intermediate in the production of PET. DMT, an ester of terephthalic acid and methanol, was the main route for the terephthalic acid required for polyester production, but has now been largely superseded by PTA (purified terephthalic acid). DMT is classed as a polyester intermediate, as its main application is PET production. DMT production is now restricted to Europe, North America, East Asia and India. All plants oxidise para-xylene into crude terephthalic acid, which is then esterified with methanol.

**dimethylbusulfan:** An aliphatic analogue of busulfan with potential antineoplastic activity. As an alkylating agent, dimethylbusulfan induces neutropenia and has been shown to exhibit antitumor effects in some animal models. Alkylating agents exert cytotoxic and chemotherapeutic effects by transferring alkyl groups to DNA, thereby damaging DNA and interfering with DNA synthesis and cell division.

**dimethylxanthenone acetic acid :** An anticancer drug that is a type of angiogenesis inhibitor.

**Dimorphone:** (Other name for: hydromorphone hydrochloride)

**DIN:** A condition in which abnormal cells are found in the lining of a breast duct (milk duct). Having DIN may increase the risk of breast cancer in which these abnormal cells become cancer and spread outside the duct to other tissues in the breast. Types of DIN include atypical ductal hyperplasia and ductal carcinoma in situ (DCIS). Also called ductal intraepithelial neoplasia.

**dinaciclib:** A pyrazolo[1,5-a]pyrimidine with potential antineoplastic activity. Dinaciclib selectively inhibits cyclin dependent kinases CDK1, CDK2, CDK5, and CDK9; inhibition of CDK1 and CDK2 may result in cell cycle repression and tumor cell apoptosis. OR A substance being studied in the treatment of advanced melanoma (a type of skin cancer) and other types of cancer. It blocks cell division and may cause cancer cells to die. It is a type of cyclin-dependent kinase inhibitor. Also called CDK inhibitor SCH 727965.

**dinitrophenyl:** A small molecule containing 2 phenol rings, characterized as a hapten for use in vaccine preparation. Dinitrophenyl by itself will not elicit any immune response nor bind to antigen. Dinitrophenyl compound is commonly used to couple with peptides in vaccine preparation to enhance the immunogenicity of otherwise weak immunogenic antigens.

**dinoprost tromethamine:** A synthetic analogue of the naturally occurring prostaglandin F2 alpha. Prostaglandin F2 alpha stimulates myometrial activity, relaxes the cervix, inhibits corpus luteal steroidogenesis, and induces luteolysis by direct action on the corpus luteum. Check for active clinical trials using this agent.

**dinutuximab:** A chimeric mouse/human monoclonal antibody with potential antineoplastic activity. Dinutuximab binds to the ganglioside GD2 and induces antibody-dependent cell-mediated cytotoxicity and complement-dependent cytotoxicity against GD2-expressing tumor cells. GD2 is overexpressed in malignant melanoma, neuroblastoma, osteosarcoma, and small cell carcinoma of the lung. or A drug used with granulocyte-macrophage colony-stimulating factor (GM-CSF), aldesleukin (IL-2), and 13-cis-retinoic acid to treat high-risk neuroblastoma. It is used in children whose disease has improved with other anticancer treatment. Dinutuximab binds to a substance called GD2, which is found on some types of cancer cells. Dinutuximab may block GD2 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called Ch14.18, MOAB Ch14.18, monoclonal antibody Ch14.18, and Unituxin.

**diode:** a component that readily passes current in one direction but opposes current flow in the opposite direction.

**diol:** a compound that contains two hydroxyl (— OH) groups; also called a "dihydroxy alkane."

**Dioscorea nipponica Makino extract DNE3:** An extract of the plant *Dioscorea nipponica* Makino and inhibitor of both the serine/threonine protein kinase Akt (protein kinase B) and members of the phosphatidylinositol 3-kinase (PI3K) family of lipid kinases, with potential antineoplastic and anti-metastatic activities. *Dioscorea nipponica* Makino extracted with ethyl acetate (DNE3) binds to and inhibits PI3K and Akt. This inhibits PI3K/Akt-mediated signaling and prevents both growth and survival of PI3K/Akt-overexpressing tumor cells. In addition, DNE3 increases the expression of tissue inhibitor of metalloproteinase-2 (TIMP-

2), inhibits the secretion of matrix metalloproteinases (MMPs), primarily MMP-2 and MMP-9, and inhibits the serine protease urokinase (urokinase-type plasminogen activator; u-PA). This inhibits tumor cell invasion, migration, motility, and adhesion. This agent also inhibits the activation of both cAMP response element-binding (CREB) and activating protein-1 (AP-1), and increases the expression of I $\kappa$ B (IkB), which inhibits the activation of nuclear factor-kappa B (NF- $\kappa$ B). These processes further contribute to this agent's anti-tumor potential in susceptible tumor cells.

**Diovan:** (Other name for: valsartan)

**dip angle:** the angle between the horizontal plane and a tilted bedding plane.

**Dip Coating:** Applying a plastic coating by dipping the article to be coated into a tank of melted resin or plastisol, then chilling the adhering melt.

**dip-slip fault:** a fault in which movement is parallel to the dip of the fault plane in an up or down direction between the two blocks.

**Dip/spin:** Coating application technique in which small parts are placed in a basket that is lowered into a coating bath, then raised and spun to remove excess coating. An economical system for coating high volumes of small parts.

**diphencyprone:** A synthetic, potent allergic contact sensitizer with potential immunostimulatory activity. After sensitization process by repeated topical application of diphencyprone to a specific area, further application of this agent to the affected area may stimulate an immune response and may potentially be useful to clear the affected area from infection or cancer.

**diphenhydramine :** A drug used to treat allergies and relieve cough and itching caused by insect bites, sunburn, and poison oak or ivy. It is also used to treat mild Parkinson disease, to prevent and treat motion sickness, to relieve cough and cold symptoms, and as a sleep aid. It is a type of antihistamine.

**diphenhydramine hydrochloride:** The hydrochloride salt form of diphenhydramine, an ethanolamine and first-generation histamine antagonist with anti-allergic activity. Diphenhydramine hydrochloride competitively blocks H<sub>1</sub> receptors, thereby preventing the actions of histamine on bronchial smooth muscle, capillaries, and gastrointestinal (GI)

smooth muscle. This prevents histamine-induced bronchoconstriction, vasodilation, increased capillary permeability, and GI smooth muscle spasms.

**diphenhydramine hydrochloride/dexamethasone/nystatin magic mouthwash:** An oral suspension containing diphenhydramine hydrochloride, dexamethasone and nystatin, with antihistaminic, antiinflammatory, and antifungal activities. Diphenhydramine hydrochloride/dexamethasone/nystatin magic mouthwash inhibits the cytokine-mediated inflammation and yeast colonization of the oral mucosa associated with chemotherapy and radiation therapy.

**diphosphonate :** A drug or substance used to treat hypercalcemia (abnormally high blood calcium) and bone pain caused by some types of cancer. Forms of diphosphonates are also used to treat osteoporosis and for bone imaging. Diphosphonates inhibit a type of bone cell that breaks down bone. Also called bisphosphonate.

**Diphtheria toxin:** A toxin, produced by *Corynebacterium diphtheriae*, that gains entrance to the cell by receptor-mediated endocytosis and kills the cell by ADP-ribosylation of protein synthesis elongation factor 2, thus inhibiting all protein synthesis.

**diphtheria toxin fragment-interleukin-2 fusion protein E7777:** A cytotoxic recombinant fusion protein consisting of the human cytokine interleukin-2 (IL-2) fused to diphtheria toxin fragments A and B, containing both the catalytic and translocation domains, with potential antineoplastic activity. Upon administration, the IL-2 moiety of diphtheria toxin fragment-IL-2 fusion protein E7777 binds to IL-2 receptors. After internalization by IL-2 receptor-expressing cells via endocytosis, the agent is proteolytically cleaved. This releases the catalytic domain of the toxin moiety, which catalyzes the transfer of the ADP-ribose moiety of NAD to a diphthamide residue of elongation factor 2 (EF-2). This covalent modification inactivates EF-2 and disrupts polypeptide chain elongation, resulting in an inhibition of translation and cell death. E7777 has the same amino acid sequence as denileukin diftotox (DD), but has an increased purity profile and an increased percentage of monomeric, active protein, which improves its efficacy.

**diphtheria toxoid/tetanus toxoid vaccine adsorbed:** A vaccine containing detoxified tetanus toxoid and detoxified diphtheria toxoid

adsorbed on aluminum phosphate with active immunizing activity against diphtheria and tetanus. Intramuscular injection with this vaccine activates the immune system to develop antibodies against tetanus toxin and diphtheria toxin.

**diphtheria toxoid/tetanus toxoid/acellular pertussis adsorbed, recombinant hepatitis B/inactivated poliovirus vaccine combined:** A vaccine consisting of detoxified tetanus toxoid, detoxified diphtheria toxoid, acellular pertussis antigens, inactivated poliovirus (IPV) types 1,2 and 3 and hepatitis B (HBV) surface antigen, with active immunizing activities against diphtheria, tetanus, pertussis, hepatitis B, and poliomyelitis. The acellular pertussis components in this vaccine, produced by *Bordetella pertussis*, are detoxified pertussis toxin (PT), filamentous hemagglutinin (FHA) and pertactin (PRN). Upon intramuscular injection, this vaccine activates the immune system to develop antibodies against tetanus toxin, diphtheria toxin, *B. pertussis* antigens, polioviruses and HBV. The diphtheria and tetanus toxoids and pertussis antigens (inactivated PT, FHA, and pertactin) are adsorbed onto aluminum hydroxide; the hepatitis B antigen is adsorbed onto aluminum phosphate.

**diphtheria toxoid/tetanus toxoid/acellular pertussis vaccine adsorbed:** A vaccine containing detoxified tetanus toxoid, detoxified diphtheria toxoid and acellular pertussis antigens, adsorbed on aluminum phosphate, with active immunizing activity against diphtheria, tetanus and pertussis. The acellular pertussis vaccine components, produced by *Bordetella pertussis*, are detoxified pertussis toxin (PT), filamentous hemagglutinin (FHA), pertactin (PRN) and fimbriae types 2 and 3 (FIM). Intramuscular injection with this vaccine activates the immune system to develop antibodies against tetanus toxin, diphtheria toxin and *B. pertussis* antigens. Check for active clinical trials using this agent.

**diphtheria-tetanus-acellular pertussis-inactivated poliomyelitis-Haemophilus influenzae type b vaccine:** A vaccine consisting of detoxified diphtheria toxoid (D), detoxified tetanus toxoid (T), acellular pertussis (aP) antigens, inactivated poliovirus (IPV) types 1, 2 and 3, and *Haemophilus influenzae* type b (Hib) capsular polysaccharide (polyribosylribitol phosphate; PRP) covalently bound to tetanus protein, suspended in water for injection and with active immunizing activity against diphtheria, tetanus, pertussis, poliomyelitis and *H. influenzae* type

b. The five purified pertussis antigens in this vaccine are pertussis toxin (PT), filamentous hemagglutinin (FHA), pertactin (PRN) and fimbriae types 2 and 3 (FIM). Upon intramuscular injection of the diphtheria-tetanus-acellular pertussis-inactivated poliomyelitis-Haemophilus influenzae type b vaccine (DTaP-IPV-Hib), this vaccine activates the immune system to develop antibodies against diphtheria toxin, tetanus toxin, B. pertussis antigens, polioviruses and Hib, thereby providing active immunization against these diseases. The diphtheria and tetanus toxoids and pertussis antigens (inactivated PT, FHA, PRN and FIM) are adsorbed separately onto aluminum phosphate and then combined with IPV and PRP.

**diploid:** cells having two sets of chromosomes. OR Having two sets of genetic information; describing a cell with two chromosomes of each type.

**Diploid cell:** A cell that contains two chromosomes (2N) of each type.

**diploid nuclei:** contained within a mass of cytoplasm within cellular slime molds.

**dipole:** Produced from an unequal sharing of electrons in a molecule in which there will be a region of partial positive charge and a separate region of partial negative charge. OR If one part of a molecule is more attractive to electrons than another part, it will have a permanent uneven distribution of charge - i.e., one end will be slightly positive and one will be slightly negative. There will be an attraction between two molecules of this substance, since they will turn so that the positive end of one is facing the negative end of the other. OR A separation of charge within a single molecule. OR A molecule having both positive and negative charges.

**Dipole moment:** A vector indicating the magnitude and direction of the uneven charge distribution in a covalent bond or molecule. The vector is represented by the symbol  $\mu$  with units of Debyes, abbreviated D. OR a measure of the polarity of a molecule; it is the mathematical product of the charge in electrostatic units (esu) and the distance that separates the two charges in centimeters (cm). For example, substituted alkynes have dipole moments caused by differences in electronegativity between the triple-bonded and single-bonded carbon atoms.

**dipole-dipole forces:** Intermolecular forces that exist between polar molecules. Active only when the molecules are close together. The strengths of intermolecular attractions increase when polarity increases.

**dipole-dipole interaction:** Electrostatic attraction between oppositely charged poles of two or more dipoles.

**Dipole-dipole interactions:** Intermolecular interactions between two separate dipoles.

**Diprivan:** (Other name for: propofol)

**diprotic acid:** An acid having two dissociable protons.

**dipyridamole:** A synthetic agent derivative of pyrimido-pyrimidine, with antiplatelet properties. Dipyridamole inhibits adenosine uptake by platelets and endothelial cells, triggering an accumulation of cyclic adenosine monophosphate (cAMP), and inhibiting the stimulation of platelet aggregation by agents such as platelet activating factor and collagen. Check for active clinical trials using this agent. or A drug that prevents blood cell clumping and enhances the effectiveness of fluorouracil and other chemotherapeutic agents.

**direct:** Indicates that integrals are not pre-computed and then written to disk, but instead are computed as needed. Done to save I/O time during a calculation.

**direct bilirubin:** when bilirubin is conjugated to glucuronate the measurement of this form of bilirubin does not require addition of alcohol to promote the azotization reaction used for determining bilirubin concentration

**direct current (dc):** a non-oscillating current that flows continually in one direction through a circuit

**Direct Gate:** A sprue that feeds directly into the mold cavity.

**Direct metal laser sintering (DMLS):** DMLS employs a fiber laser system that draws onto a surface of atomized metal powder, welding the powder into a solid. After each layer, a blade adds a fresh layer of powder and repeats the process until a final metal part is formed.

**Direct method:** The specific rates in a study population are averaged, using as weights the distribution of a specified standard population. The directly standardized rate represents what the crude rate would have been in the study population if that population had the same distribution as the standard population with respect to the variable(s) for which the adjustment or standardization was carried out. OR A group of statistical methods used to determine a crystal structure based on analysis of diffracted intensities.

**direct object:** a noun that receives the action of the sentence but that is not the subject.

**direct ophthalmoscopy :** An exam of the inside of the back of the eye using an ophthalmoscope (a flashlight-sized instrument with a light source and a set of rotating lenses).

**Direct potentiometry:** the simplest method of making ionselective electrode measurements. The electrodes are immersed in a test solution and the electrode potential is measured directly with a millivolt meter. The concentration is then related directly to this measurement by reading the answer from a calibration graph of concentration versus milivolts.

**Direct repair:** A means of repairing damaged DNA in which the damaged region is corrected in place. For example, pyrimidine dimers are simply cleaved to restore the original nucleotides.

**Direct roving:** Roving produced by winding a large and determined number of filaments direct from a bushing.

**direct translation strategy:** This strategy is used when you can translate each word, one at a time in the same order as written, into its corresponding algebraic symbol.

**Directed mutagenesis:** In a DNA sequence, an intentional alteration that can be genetically inherited.

**Direction of pull:** The direction the mold surfaces move when they are moving away from the part surfaces, either when the mold opens or when the part ejects

**dirty necrosis :** Presence of necrotic cellular debris within the lumen of the neoplastic glands in the colorectal mucosa.

**Dirty Systems:** Process dirt and belt wear debris may contaminate product, increase system friction and accelerate belt wear, thus reducing the useful life of the belt if the user does not practice proper cleaning. Cleaning practices and schedules are application specific.

**Disaccharide:** Just as there are monomers, dimers, trimers, oligomers, and polymers, indicating one, two, three, several, and many identical units joined together in a molecule, the combinations of saccharides (aka sugars) are known as mono-, di-, tri-, oligo- and polysaccharides. An example of a disaccharide is sucrose, composed of the simple sugars glucose and fructose joined by an ether linkage. An example of a polysaccharide is

chitin, a nitrogen-containing polymer of modified glucose units that makes up the exoskeleton of insects. OR A carbohydrate that is made up of two mono-saccharides. OR A carbohydrate consisting of two covalently joined monosaccharide units.

**disaccharide tripeptide glycerol dipalmitoyl:** A lipophilic disaccharide tripeptide derivative of muramyl dipeptide (MDP) with immunomodulatory activity. Disaccharide tripeptide glycerol dipalmitoyl (DTP-GDP) stimulates macrophage activity and increases serum levels of tumor necrosis factor alpha (TNF alpha), neopterin, interleukin (IL)-1 alpha, IL-1 beta, IL-6, IL-8, and IL-12, which may activate host immune system antitumor functions. DTP-GDP may be packaged in liposomes for improved delivery. The immunomodulatory effects of this agent may be superior to those of MDP.

**disaccharides:** sugars composed of two molecules.

**Disalcid:** (Other name for: sodium salicylate)

**discharge:** the amount of water in a river or stream that passes a certain point in a given amount of time.

**discharge :** In medicine, a fluid that comes out of the body. Discharge can be normal or a sign of disease. Discharge also means release of a patient from care.

**discharge (or effluent or emission) standard or release limit:** The maximum acceptable release of a pollutant from a given source to a specified medium under specified circumstances (WHO, 1979).

**Discoloration:** Any change from the designated color of the material or component. Or Any change from the original color, often caused by overheating, light exposure irradiation or chemical attack. Or Any change from an initial color possessed by a plastic; a lack of uniformity in color where color should be uniform over the whole area of a plastic object.

**Discolouration:** Any change from the original colour can be caused by a variety of factors e.g. atmospheric pollution ageing of oil based paints.

**disconformity:** an erosional contact usually parallel to the bedding planes of the upper and lower rock units.

**discontinuous branch:** the type of magmatic differentiation in which minerals form at discrete temperatures and not continuously during cooling.

**disease progression :** Cancer that continues to grow or spread.

**disease-causing mutation :** A gene alteration that causes or predisposes an individual to a specific disease.

**disease-free survival :** In cancer, the length of time after primary treatment for a cancer ends that the patient survives without any signs or symptoms of that cancer. In a clinical trial, measuring the disease-free survival is one way to see how well a new treatment works. Also called DFS, relapse-free survival, and RFS.

**disease-specific survival rate :** The percentage of people in a study or treatment group who have not died from a specific disease in a defined period of time. The time period usually begins at the time of diagnosis or at the start of treatment and ends at the time of death. Patients who died from causes other than the disease being studied are not counted in this measurement.

**DISHED:** Showing a symmetrical distortion of a flat or curved section of a plastic object, so that, as normally viewed, it appears concave, or more concave than intended. See—WARP.

**disinfectant :** Any substance or process that is used primarily on non-living objects to kill germs, such as viruses, bacteria, and other microorganisms that can cause infection and disease. Most disinfectants are harsh chemicals but sometimes heat or radiation may be used.

**Disinfection:** The process designed to kill most microorganisms in wastewater, including essentially all pathogenic (disease-causing) bacteria. There are several ways to disinfect, with chlorine being the most frequently used in water and wastewater treatment plants. OR effective killing by chemical or physical processes of all organisms capable of causing infectious disease. Chlorination is the disinfection method commonly employed in sewage-treatment processes. OR Disinfection means treatment process in which certain or all pathogenic organisms which may cause infection are destroyed from the water. Disinfection can take place by several means: chlorine gas is the most commonly used chemical, ozone and UV-light are competing technologies to chemicals.

**Dismutase:** An enzyme that catalyzes a dismutation reaction in which a single reactant is converted into two different products.

**disorder :** In medicine, a disturbance of normal functioning of the mind or body. Disorders may be caused by genetic factors, disease, or trauma.

**disorientation** : A mental state marked by confusion about time, place, or who one is.

**Dispensing closure:** A closure designed to be used to apply the contents of a container.

**DISPERSION:** A stable distribution of fine solid particles in a liquid. OR Two substances mixed together such that one is not dissolved in the other. For example, milk, a dispersion of globules of fat in water; latex paint, a dispersion of polymer particles in water; smoke, a dispersion of carbon particles in air. OR The suspension of very fine particles of solid pigment in oil varnish or other medium. OR Finely divided particles of a material in suspension in another substance. Or uniform distribution of an additive through the material. Since color is highly visible, it often is used to describe distribution of a colorant. Or Fine division of particles of a resin or solid in suspension in another material. Or Finely divided particles of a material in suspension in another substance.

**Dispersion Aids** : Flow alteration components placed at the entry point of an additive to aid in mixing or dispersing actions of a compounding process.

**Dispersion Forces:** Since electrons move around, even a molecule with no permanent separation of charge will have negative and positively charged bits from one instant to another. These imperfections generate an overall attractive force even between molecules as unreactive as N<sub>2</sub>. Since this explanation is already too complicated for anyone to understand, I may as well go on to say that they are called Dispersion Forces because they are related to a quantity called the dispersion of a substance, which is the rate of change in refractive index with frequency of transmitted radiation. You can also call them London Forces, after Fritz London (1900-1954).

**dispersion forces (also called London dispersion forces):** Dispersion is an intermolecular attraction force that exists between all molecules. These forces are the result of the movement of electrons which cause slight polar moments. Dispersion forces are generally very weak but as the molecular mass increases so does their strength.

**DISPERSIVE MIXING (also called INTENSIVE MIXING):** An operation that reduces the size of agglomerates or liquid drops of a minor component within a major fluid matrix.

**displacement:** A reaction in which a fragment of one reactant is replaced by another reactant (or by a fragment of another reactant). Displacement

reactions have the same number of products as reactants, and are described by equations of the form  $A + BC \rightarrow AB + C$  (single displacement) or  $AB + CD \rightarrow AC + BD$  (double displacement).

**displacement reaction:** A displacement reaction is one in which a more reactive element takes the place of a less reactive element in one of its compounds. OR Sometimes called a “reactivity series reaction” this is where a reactive metal takes the place of an unreactive one in a compound. Look at this example (zinc is more reactive than copper or you could say that zinc is higher in the reactivity series than copper):

**disproportionation:** A reaction involving a substance that produces two different forms of the substance, one more oxidized and the other more reduced than the original.

**disseminate :** Scatter or distribute over a large area or range.

**disseminated deposit:** a hydrothermal deposit in which the metal ore is evenly distributed in generally low concentrations throughout large masses of rock.

**Dissipation Factor:** The ratio of the power dissipated in watts in an insulating material to the product of the effective voltage and the current. Measured at a frequency of 106 cycles per second. Or (loss tangent,  $\tan\delta$ , approximate power factor) the tangent of the loss angle of the insulating material).

**dissociation:** Breaking down of a compound into its components to form ions from an ionic substance. OR In an aqueous solution, the separation of a compound into ions. OR Dissociation is the breaking of chemical bonds. For example, acidic molecules dissociate in water to form aqueous ions (one of which will be  $H^+(aq)$ ) OR the separation of a solute into constituent ions. OR separation of a substance into atoms or ions.

**dissociation constant:** (1) An equilibrium constant ( $K_d$ ) for the dissociation of a complex of two or more biomolecules into its components; for example, dissociation of a substrate from an enzyme. (2) The dissociation constant ( $K_a$ ) of an acid, describing its dissociation into its conjugate base and a proton.

**Dissociation constant:** An equilibrium constant for the dissociation of a molecule into two parts (e.g., dissociation of acetic acid into acetate anion and a proton);  $K_d$ .

**Dissociation constant (K):** number indicating the extent to which a molecule dissociates in solution to form free ions. For a simple twocomponent system (e.g.:  $\text{CH}_3\text{COOH} \rightleftharpoons \text{CH}_3\text{COO}^- + \text{H}^+$ ) it is the product of the molar concentration of the two ions divided by the molar concentration of the undissociated molecule:  $K = \frac{[\text{CH}_3\text{COO}^-] \times [\text{H}^+]}{[\text{CH}_3\text{COOH}]}$ . The smaller the value of K, the less dissociation is present. K varies with temperature, ionic strength, and the nature of the solvent.

**Dissolution profile:** A multi-time point description of the dissolution of a dose under standardized conditions.

**Dissolution rate:** The rate of dissolution of a solid, usually measured in water at physiological pH and temperature. An important physicochemical quantity used to predict the bioavailability of drugs.

**dissolved load:** earth material in a stream that has been dissolved into ions and carried in solution.

**dissolved oxygen (DO):** the oxygen dissolved in sewage, water, or other liquid, usually expressed in milligrams per liter or percent of saturation. It is the test used in BOD determination. dissolved solids: the total amount of dissolved material, organic and inorganic, contained in water or wastewater. Excessive dissolved solids make water unpalatable for drinking and unsuitable for industrial use. Measurements are expressed as ppm or mg/L. OR The amount of oxygen dissolved in a solvent (usually water). Dissolved oxygen levels are used as a general indicator of water quality.

**Dissolved solids:** Chemical substances either organic or inorganic that are dissolved in a waste stream and constitute the residue when a sample is evaporated to dryness.

**Dissolving** : A solid breaks down and spreads out through a liquid. The solute (the one that gets dissolved) particles are so small that they can pass through filter paper.

**distal** : In medicine, refers to a part of the body that is farther away from the center of the body than another part. For example, the fingers are distal to the shoulder. The opposite is proximal.

**distal colon** : The last part of the colon. The distal colon includes the descending colon (the left side of the colon) and the sigmoid colon (the S-shaped section of the colon that connects to the rectum).

**distal pancreatectomy** : Removal of the body and tail of the pancreas.

**distal urethra :** The part of the urethra closest to the outside of the body. The urethra is the tube through which urine leaves the body. In women, the distal urethra is approximately the last  $\frac{1}{2}$  inch, and in men it is the part of the urethra in the penis.

**distal urethral cancer :** A rare cancer that forms in the part of the urethra that is closest to the outside of the body. The cancer often has not spread deeply into the tissue.

**distance problems:** Word problems that involve traveling a distance. The formula  $d = rt$  is used for these problems.

**distant cancer :** Refers to cancer that has spread from the original (primary) tumor to distant organs or distant lymph nodes. Also known as distant metastasis.

**distant metastasis :** Refers to cancer that has spread from the original (primary) tumor to distant organs or distant lymph nodes. Also known as distant cancer.

**Distemper:** A term used for the broad classification of water thinned coatings which were generally used for walls and ceilings before the advent of modern emulsion paints.

**distillate:** The vapor collected and condensed from a distillation.

**distillation:** the process of heating a liquid to its boiling point, removing the vapors through a cooling and condensing apparatus, and finally collecting the condensed liquid in a separate receiver. It is commonly used for the separation of two or more liquids in a mixture, or for the separation of the solvent from dissolved substances. OR The process used to separate two or more liquids that have different boiling points. OR Distillation is a process in which one substance is boiled away from another and then collected. It is a process that purifies mixtures and solutions. Scientists often use lab equipment such as a distillation flask and a condenser. The boiled off vapor is cooled and "condensed". OR A method of physically separating liquid raw materials based on their different chemical properties. As an example, water can be distilled to remove impurities. OR A process in which a mixture of two or more species is fed to a vertical column that contains either a series of vertically spaced horizontal plates, or solid packing through which fluid can flow. Liquid mixtures of the feed components flow down the column and vapor mixtures flow up. Inter phase contact partial condensation of the vapor, and partial vaporization of the

liquid all take place t/o the column. The vapor flowing up the column becomes progressively richer in the more volatile components of the feed, and the liquid flowing down becomes richer in the less volatile components. OR Distillation is the process of separating a liquid from a mixture by evaporation followed by condensation. OR Separation of two liquid compounds by boiling point. For example, a mixture of two hydrocarbons can be heated so that the lower molecular weight hydrocarbon evaporates - if the vapour is not allowed to escape, but taken around the corner and cooled down, it can be extracted as a pure liquid. OR the separation of components of a liquid mixture based on differences in boiling points. OR A liquid is separated from its solution by heating it so that the liquid evaporates and then cooling the vapour so that it condenses somewhere else. OR Distillation is a technique for separating components of a mixture on the basis of differing boiling points. The mixture is heated, vaporizing some of the components. The vapor is collected and condensed to isolate the components with the lowest boiling points.

**Distillation Continued:** The vapor leaving the top of the column is condensed: part of the condensate is taken off as the overhead product and the rest is recycled to the reactor as reflux, becoming the liquid stream that flows down the column. The liquid leaving the bottom of the column is partially vaporized: the vapor is recycled to the reactor as boil-up, becoming the vapor stream that flows up the column, and the residual liquid is taken off as the bottoms product.

**distilled water:** An ultra-pure form of water with potential antineoplastic activity. Derived by boiling impure water and condensing the resultant steam in a sterile container, distilled water has been shown to kill bladder cancer cells in vitro through osmotic lysis (cytolysis). Check for active clinical trials using this agent.

**distilled water:** water that has been purified by distillation (boiling the water off as steam and condensing it back to a liquid, leaving the impurities behind). Having been boiled, it is also sterile. OR Distilled water is pure water. Tap water contains all sorts of impurities. When all of those impurities are removed, you have distilled water. You can get it by boiling water and collecting the steam. OR Distilled water is pure water. Tap water contains all sorts of impurities. When all of those impurities are removed,

you have distilled water. You can get it by boiling water and collecting the steam.

**Distortion Printing:** Unique process where artwork is modified to anticipate distortion produced by thermoforming. Once the distortions are predetermined, calculated and implemented into the art, the printing process begins, followed by the thermoforming process.

**distraction :** In medicine, a pain relief method that takes the patient's attention away from the pain.

**distress :** Emotional, social, spiritual, or physical pain or suffering that may cause a person to feel sad, afraid, depressed, anxious, or lonely. People in distress may also feel that they are not able to manage or cope with changes caused by normal life activities or by having a disease, such as cancer. Cancer patients may have trouble coping with their diagnosis, physical symptoms, or treatment.

**distributary:** a small, shifting channel that spreads out across a delta from the main river channel and disperses the sediment load.

**distribution:** This is a general term for the dispersal of a applied substance and its derivatives throughout an organism or environmental system.

**Distribution box:** Serves to distribute the flow from the septic tank evenly to the absorption field or seepage pits. It is important that each trench or pit receive an equal amount of flow. This prevents overloading of one part of the system.

**Distributive enzyme:** An enzyme that catalyzes the elongation or degradation of a polymer but dissociates from the polymer after each catalytic step.

**DISTRIBUTIVE MIXING (also called LAMINAR or EXTENSIVE mixing):** An operation that increases the randomness of the spatial distribution of the minor component within the major fluid matrix.

**distributive property of multiplication over addition:** The property that allows a number or term to be distributed (by multiplication) to the sum of two terms in parentheses, for example,  $a(b + c) = ab + ac$ .

**distributivity:** A math property which states:  $A*(B+C)=(A*B)+(A*C)$ .

**Distributor:** The rotating mechanism that distributes the wastewater evenly over the surface of a trickling filter or other process unit.

**Disulfide Bond:** Covalent disulfide bonds form during the tertiary structure of protein synthesis. It involves two sulfur atoms bonded to cysteine amino acids in the polypeptide chains. OR A covalent bond formed by the oxidation of two sulfhydryl groups; the oxidation of cysteine residues in a polypeptide yields a disulfide bond linking the two residues.

**Disulfide bridge:** A covalent linkage formed by oxidation between two cysteine SH groups either in the same polypeptide chain or in different polypeptide chains. Reversible by adding reducing agents. OR A covalent cross link between two polypeptide chains formed by a cysteine residue (two Cys residues).

**disulfiram:** A carbamoyl derivative used in the treatment of alcoholism. Disulfiram irreversibly inhibits acetaldehyde dehydrogenase that oxidizes the ethanol metabolite acetaldehyde into acetic acid. This leads to an accumulation of acetaldehyde that produces a variety of very unpleasant symptoms referred to as the disulfiram-alcohol reaction. This reaction includes, but is not limited to, flushing, headache, respiratory difficulty, nausea, vomiting, sweating, thirst, chest pain, tachycardia, blurred vision and hypotension. OR A drug that slows the metabolism of retinoids, allowing them to act over a longer period of time.

**diuresis :** An increase in the amount of urine made by the kidney and passed from the body.

**diuretic :** A type of drug that causes the kidneys to make more urine. Diuretics help the body get rid of extra fluid and salt. They are used to treat high blood pressure, edema (extra fluid in the tissues), and other conditions. There are many different types of diuretics. They are sometimes called water pills.

**divalent:** Binds to two other things (which may be other atoms, molecules, ions, or electrons). See also divalent anion and divalent cation.

**divalent anion:** An ion with a charge of -2.

**divalent cation:** An ion with a charge of +2.

**divalproex sodium:** A stable coordination compound comprised of sodium valproate and valproic acid with anticonvulsant and antiepileptic activities. Divalproex dissociates to the valproate ion in the gastrointestinal tract. This agent binds to and inhibits gamma-aminobutyric acid (GABA) transaminase and its anticonvulsant activity may be exerted by increasing

brain concentration of GABA and by inhibiting enzymes that catabolize GABA or block the reuptake of GABA into glia and nerve endings. Divalproex may also work by suppressing repetitive neuronal firing through inhibition of voltage-sensitive sodium channels.

**divergence:** A horizontal flow of water, in different directions, from a common center or zone; it is often associated with upwelling. Also see convergence.

**divergent boundary:** a fault boundary marked by plates that move away from one another.

**Divergent Die:** A die in which the internal channels leading to the orifice are diverging (applicable only to dies for hollow bodies).

**Divergent evolution:** The evolutionary process by which proteins with different properties are derived from a common ancestor.

**diverging plate boundary:** region where plates move apart.

**diverticulitis :** Inflammation of one or more pouches or sacs that bulge out from the wall of a hollow organ, such as the colon. Symptoms include muscle spasms and cramps in the abdomen.

**diverticulosis :** A condition marked by small sacs or pouches in the walls of a hollow organ, such as the colon. These sacs can become inflamed and cause a condition called diverticulitis.

**diverticulum :** A small pouch or sac that bulges out from the wall of a hollow organ, such as the colon.

**Dividers:** Devices used to separate a belt into longitudinal product lanes. These can be created with woven wire designs or plate attachments.

**Divine 9 with Carrageel:** (Other name for: carrageenan-containing gel)

**division keywords:** Words that indicate division.

**DJ-927:** A substance being studied in the treatment of cancer. It is a type of taxane derivative. OR A semi-synthetic, orally bioavailable taxane derivative with potential antineoplastic properties. Oral taxane derivative DJ-927 binds to tubulin, promoting microtubule assembly and stabilization and preventing microtubule depolymerization, thereby inhibiting cell proliferation. As it represents poor substrate for P-glycoprotein-related drug resistance mechanisms, this agent may be useful for treating multi-drug resistant tumors. As the first oral taxane derivative, oral taxane derivative DJ-927 is more potent than paclitaxel and docetaxel.

**DKK1-neutralizing monoclonal antibody DKN-01:** A humanized monoclonal antibody directed against Wnt antagonist Dickkopf-1 (DKK1) with potential anti-osteolytic activity. DKK1-neutralizing monoclonal antibody DKN-01 binds to and inhibits DKK1, which restores Wnt pathway signaling. Reactivation of the Wnt signaling pathway may result in the differentiation and activation of osteoblasts within the bone matrix and the reversal of tumor-induced osteolytic disease. Elevated levels of circulating DKK1, a potent Wnt signaling pathway antagonist, is associated with a number of neoplastic diseases.

**DLK1/ EPHA2/HBB/NRP1/RGS5/TEM1 peptide-pulsed alpha-type-1 polarized dendritic cell vaccine:** A cell-based cancer vaccine composed of mature polarized dendritic cells (alphaDC1) pulsed with six human leukocyte antigen (HLA)-A2-presented tumor blood vessel antigen (TBVA)-derived peptides, with potential immunostimulatory and antineoplastic activities. Dendritic cells (DCs) were treated with a “type-1 polarizing cytokine cocktail”, including interleukin-1beta, tumor necrosis factor alpha (TNF-a), interferon-alpha (IFN-a), IFN-gamma and polyinosinic:polycytidylic acid (pI:C) to produce mature alpha type-1 polarized DCs (alphaDC1) that are capable of producing high levels of interleukin-12p70 (IL-12p70). The alphaDC1 are subsequently pulsed with TBVA-derived peptides, including delta-like homologue 1 (DLK1) 310-318, EPH receptor A2 (EPHA2) 883-891, beta-globin (HBB) 31-39, neuropilin-1 (NRP1) 433-441, regulator of G-protein signaling 5 (RGS5) 5-13 and tumor endothelial marker 1 (TEM1) 691-700. Upon administration, these DCs are able to induce a potent cytotoxic T-lymphocyte (CTL) response against the TBVAs expressed on tumor-associated stromal cells, which results in stromal cell lysis and inhibition of angiogenesis. Disrupting the surrounding tumor vasculature inhibits tumor cell growth and survival. alphaDC1 are able to induce a potent tumor antigen-specific CTL response due to their high co-stimulatory activity and the secretion of anti-cancer cytokines, such as IL-12p70.

**DLL :** Dynamic Link Library.

**DM-CHOC-PEN:** A cholesterol carbonate derivative of 4-demethylpenclomedine (DM-PEN) with potential antineoplastic alkylating activity. Upon intravenous administration of 4-demethylcholesteryloxycarbonylpenclomedine, the carbonium moiety binds

to and alkylates DNA at the N7 guanine position, thereby causing DNA crosslinks. This prevents DNA replication, inhibits cellular proliferation and triggers apoptosis. In addition, due to its lipophilic cholesteryl moiety this agent is able to cross the blood brain barrier (BBB) and therefore can be given intravenously compared to other alkylating agents that need to be given intra-cranially.

**DM4-conjugated anti-Cripto monoclonal antibody BIIB015:** A humanized IgG1 monoclonal antibody directed against the cell surface-associated protein Cripto and conjugated to the maytansinoid DM4 with potential antineoplastic activity. The monoclonal antibody moiety of DM4-conjugated anti-Cripto monoclonal antibody BIIB015 binds to the tumor associated antigen (TAA) Cripto; upon internalization, the DM4 moiety binds to tubulin and disrupts microtubule assembly/disassembly dynamics, resulting in inhibition of cell division and cell growth of Cripto-expressing tumor cells. Constitutively expressed during embryogenesis, Cripto belongs to the EGF-CFC family of growth factor-like molecules and plays a key role in signaling pathways of certain transforming growth factor-beta superfamily members; as a TAA, Cripto is overexpressed in carcinomas such as those of the breast, ovary, stomach, lung, and pancreas while its expression is absent in normal tissues.

**DMA:** Direct Memory Access.

**DMC / Dough moulding compound:** See bulk moulding compound.

**DNA:** The molecules inside cells that carry genetic information and pass it from one generation to the next. Also called deoxyribonucleic acid. OR The molecular basis of heredity; encodes the genetic information responsible for the development and function of an organism and allows for transmission of that genetic information from one generation to the next. The DNA molecule is structured as a double-stranded helix held together by weak hydrogen bonds between purine-pyrimidine nucleotide base pairs: adenine (A) paired with thymine (T), and guanine (G) paired with cytosine (C). Also called deoxyribonucleic acid.

**DNA (deoxyribonucleic acid):** A polynucleotide having a specific sequence of deoxyribonucleotide units covalently joined through 3',5'-phosphodiester bonds; serves as the carrier of genetic information. OR A double-stranded molecule that encodes genetic information; composed of four nucleotides containing the bases adenine (A), cytosine (C), guanine

(G), and thymine (T) OR deoxyribonucleic acid; a double helix nucleotide molecule containing deoxyribose, nitrogenous base, and a phosphate group; contains the genetic information from which amino acids are determined. OR Deoxyribonucleic acid A polydeoxyribonucleotide in which the sugar is deoxyribose; the main repository of genetic information in all cells and most viruses. OR A nucleic acid with 2-deoxy-D-ribose as the sugar in its nucleotides. DNA contains encoded genetic information, specifically templates for the synthesis of all of an organism's proteins and enzymes.

**DNA chimera:** A DNA containing genetic information derived from two different species.

**DNA cloning:** See cloning. OR The propagation of individual segments of DNA as clones.

**DNA cross-linking agent :** A substance that binds DNA nucleotides together and blocks DNA synthesis. In cancer treatment, DNA cross-linking agents may kill cancer cells by damaging their DNA and stopping them from dividing.

**DNA fingerprinting:** a technique that uses electrophoresis to match DNA molecules to one another for identification purposes.

**DNA gene-expression microarray :** A process that allows thousands of pieces of DNA that are fixed to a glass slide to be analyzed at one time. It is used to identify the genes (pieces of DNA) in specific cells or tissue that are actively used to make RNA, which then may be used to make proteins.

**DNA gyrase:** A topoisomerase that catalyzes the ATP-driven introduction of negative supercoils into DNA. Also called topoisomerase II.

**DNA intercalating agent :** A substance that inserts itself into the DNA structure of a cell and binds to the DNA. This causes DNA damage. In cancer treatment, DNA intercalating agents may kill cancer cells by damaging their DNA and stopping them from dividing.

**DNA interference oligonucleotide PNT2258:** A liposomal formulation of the 24-mer oligonucleotide PNT100, with potential antineoplastic activity. PNT2258 targets and complements to untranscribed DNA sequence upstream of BCL2 promoters, thereby interfering with DNA replication and transcription of the BCL2 gene. This may promote and restore the apoptotic pathway in BCL2-overexpressing tumor cells. BCL2, an anti-apoptotic protein, is overexpressed in a wide variety of tumors.

**DNA library:** A mixture of clones, each containing a cloning vector and a segment of DNA from a source of interest. OR A random collection of cloned DNA fragments that includes all or most of the genome of a given organism; also called a genomic library.

**DNA ligase:** An enzyme that catalyzes the formation of a phosphodiester bond between the 3'-OH group at the end of one DNA chain and the 5'-phosphate group at the end of the other chain; it takes part in the synthesis, repair, and splicing of DNA. OR An enzyme that creates a phosphodiester bond between the 3' end of one DNA segment and the 5' end of another. OR An enzyme that creates a phosphodiester bond between the 3' end of one DNA segment and the 5' end of another.

**DNA looping:** The interaction of proteins bound at distant sites on a DNA molecule so that the intervening DNA forms a loop.

**DNA methylase :** An enzyme (a protein that speeds up chemical reactions in the body) that attaches methyl groups to DNA. A methyl group is a chemical group containing one carbon and three hydrogen atoms. Also called DNA methyltransferase.

**DNA methyltransferase :** An enzyme (a protein that speeds up chemical reactions in the body) that attaches methyl groups to DNA. A methyl group is a chemical group containing one carbon and three hydrogen atoms. Also called DNA methylase.

**DNA minor groove binding agent PM060184:** A marine-derived, synthetically produced compound with potential antineoplastic activity. DNA minor groove-binding agent PM060184 covalently binds to residues lying in the minor groove of DNA, which may result in delayed progression through S phase, cell cycle arrest in the G2/M phase and cell death.

**DNA minor groove binding agent SG2000:** A sequence-selective pyrrolbenzodiazepine (PBD) dimer with potential antineoplastic activity. Following intravenous administration, DNA minor groove binding agent SG2000 preferentially and covalently binds to purine-GATC-pyrimidine sequences, with the imine/carbinolamine moieties of SG2000 binding to the N2 positions of guanines on opposite strands of DNA. This induces interstrand cross-links and inhibits both DNA replication and gene transcription, which leads to the inhibition of cell growth. With a preference for binding to purine-GATC-pyrimidine sequences, SG2000 adducts do not appear to be susceptible to p53-mediated DNA excision repair.

**DNA plasmid encoding interleukin-12 INO-9012:** A plasmid DNA vaccine encoding the human pro-inflammatory cytokine interleukin-12 (IL-12) with potential immunoactivating activity. Upon intramuscular delivery by electroporation of DNA plasmid encoding interleukin-12 INO-9012, IL-12 is translated in cells and activates the immune system by promoting the activation of natural killer cells (NK cells), inducing secretion of interferon-gamma and promoting cytotoxic T-cell responses against tumor cells. This may result in both immune-mediated tumor cell death and the inhibition of tumor cell proliferation.

**DNA plasmid vector pPRA-PSM vaccine:** A cancer vaccine consisting of a DNA plasmid encoding epitopes of the human preferential antigen of melanoma (PRAME) and the prostate specific membrane antigen (PSMA) with potential immunostimulating activity. Upon direct administration of this vaccine into lymph nodes, peptides expressed by DNA plasmid vector pPRA-PSM may activate the immune system, resulting in a cytotoxic T-lymphocyte (CTL) response against PRAME- and PSMA-expressing cells. PRAME and PSMA are tumor associated antigens upregulated in a number of cancer cell types. As part of the MKC1106-PP regimen exploiting the 'prime-boost strategy', this plasmid is responsible for priming the immune response and is used in conjunction with a peptide vaccine consisting of PRAME and PSMA that boosts the immune system against PRAME- and PSMA-expressing tumor cells.

**DNA plasmid-encoding interleukin-12/HPV DNA plasmids therapeutic vaccine INO-3112:** A DNA-based combination immunotherapeutic, INO-3112, composed of VGX-3100, a preparation of DNA plasmids encoding the E6 and E7 genes of human papillomavirus (HPV) subtypes 16 and 18, combined with INO-9012, a DNA plasmid encoding the immune activator and pro-inflammatory cytokine human interleukin-12 (IL-12) with potential immunoactivating and antineoplastic activities. Upon intramuscular delivery by electroporation of VGX-3100, the HPV E6 and E7 proteins are translated in cells and elicit a cytotoxic T-lymphocyte (CTL) response against cancer cells expressing the E6 and E7 antigens, resulting in tumor cell lysis. HPV type 16 and HPV type 18 are associated with the development of certain types of cancer. Upon intramuscular delivery by electroporation of INO-9012, IL-12 is expressed and activates the immune system by promoting the activation of natural killer cells (NK cells), inducing secretion of interferon-gamma (IFN-g) and promoting CTL

responses against tumor cells. This boosts the immune response and results in increased CTL-mediated tumor cell death as compared with the administration of VGX-3100 alone.

**DNA polymerase:** An enzyme that catalyzes the formation of 3'-5' phosphodiester bonds from deoxyribonucleotide triphosphates. OR An enzyme that catalyzes template-dependent synthesis of DNA from its deoxyribonucleoside 5'-triphosphate precursors. OR Enzymes that catalyze the template-directed, primer-dependent addition of deoxynucleotide units, using deoxynucleotide triphosphates as substrates, to the 3' end of a DNA chain; chain growth is in the 5'-to 3'-direction; such enzymes replicate and repair DNA.

**DNA probe:** A radioactively labeled, single-stranded specific base sequence used to locate a complementary sequence among DNA fragments displayed on an electrophoretic gel.

**DNA replicase system:** The entire complex of enzymes and specialized proteins required in biological DNA replication. **DNA supercoiling:** The coiling of DNA upon itself, generally as a result of bending, underwinding, or overwinding of the DNA helix.

**DNA replication:** the process by which cells replicate or synthesize their DNA; takes place during S phase of the cell division cycle.

**DNA replication :** The process by which a copy of the DNA in a cell is made before the cell divides.

**DNA sequencing :** A laboratory process used to learn the exact sequence (order) of the four building blocks, or bases, that make up DNA. Information is stored in DNA in a code made by arranging the four bases (identified by the letters A, C, G, and T) in different orders. DNA sequencing can be used to find DNA mutations (changes) that may cause diseases, such as cancer.

**DNA transposition:** See transposition.

**DNA vaccine VB10.16:** A therapeutic DNA vaccine composed of three parts, one encodes the E6/E7 fusion protein of human papillomavirus (HPV) type 16 (HPV16), the second is a dimerization entity and the third part encodes a protein that specifically binds to antigen presenting cells (APCs), with potential immunostimulating and antineoplastic activities. Upon intramuscular administration, the DNA vaccine VB10.16 expresses

HPV16 E6/7 and a protein that targets receptors on APCs. Upon binding to APCs and subsequent internalization, the APCs mature and the HPV16 E6/7 antigenic protein is presented by the APCs. This attracts and stimulates B-lymphocytes, CD4-positive T-lymphocytes and elicits a cytotoxic T-lymphocyte (CTL) response against cancer cells expressing HPV16-associated E6 and E7 oncoproteins, which result in tumor cell lysis. HPV16 E6/7, a viral antigen, plays a key role in the development of certain types of cancer.

**DNA-binding domain:** The structural region of a transcription factor that recognizes and binds to a particular DNA sequence. See also .

**DNA-dependent protein kinase-targeting siDNA DT01:** A proprietary preparation of small interfering DNA (siDNA) molecules with potential chemo/radiosensitizing activity. By mimicking DNA double strand breaks (DSBs), DNA-dependent protein kinase-targeting siDNA DT01 inhibits the non-homologous end joining (NHEJ) process, one of the main DNA repair mechanisms, via binding to and activating DNA-dependent protein kinase (DNA-PK), a core component of the NHEJ complex. DNA-PK activation causes hyper-phosphorylation of histone variant H2AX on DNA and results in a different phosphorylated pattern of H2AX upon ionizing radiation treatment. This ultimately interferes with the repair of DNA DSBs during chemo- or radiotherapy, thereby increasing tumor cell death. The enhanced ability of tumor cells to repair DSBs plays a major role in the resistance of tumor cells to chemo- and radiotherapy.

**DNA-PK inhibitor MSC2490484A:** An orally available inhibitor of DNA-dependent protein kinase (DNA-PK), with potential antineoplastic and chemo/radiosensitizing activities. Upon oral administration, the DNA-PK inhibitor MSC2490484A binds to and inhibits the activity of DNA-PK. This inhibits the ability of tumor cells to repair damaged DNA, which may lead to a reduction in cellular proliferation of cancer cells expressing DNA-PK. DNA-PK, a serine/threonine kinase and a member of the PI3K-related kinase subfamily of protein kinases, is activated upon DNA damage and plays a key role in repairing DNA double-strand breaks (DSBs) via the DNA nonhomologous end joining (NHEJ) pathway. The enhanced ability of tumor cells to repair DSBs plays a major role in the resistance of tumor cells to chemo- and radiotherapy.

**DNA-PK/TOR kinase inhibitor CC-115:** A dual inhibitor of DNA-dependent protein kinase (DNA-PK) and mammalian target of rapamycin (mTOR), with potential antineoplastic activity. CC-115 binds to and inhibits the activity of DNA-PK and both raptor-mTOR (TOR complex 1 or TORC1) and rictor-mTOR (TOR complex 2 or TORC2), which may lead to a reduction in cellular proliferation of cancer cells expressing DNA-PK and TOR. DNA-PK, a serine/threonine kinase and a member of the PI3K-related kinase subfamily of protein kinases, is activated upon DNA damage and plays a key role in repairing double-stranded DNA breaks via the DNA nonhomologous end joining (NHEJ) pathway; mTOR, a serine/threonine kinase that is upregulated in a variety of tumors, plays an important role downstream in the PI3K/Akt/mTOR signaling pathway. Check for active clinical trials using this agent.

**DN Ai® drug PNT2258:** (Other name for: DNA interference oligonucleotide PNT2258)

**DNP-modified autologous renal cell carcinoma tumor cell vaccine:** A cancer vaccine consisting of autologous renal cell carcinoma (RCC) tumor cells modified with the hapten 2,4-dinitrophenol (DNP) with potential immunostimulating and antineoplastic activities. Administration of DNP-modified autologous renal cell carcinoma tumor cell vaccine may induce a cytotoxic T-lymphocyte (CTL) response against renal cell carcinoma tumor cells. DNP conjugation may enhance the immunogenicity of weakly immunogenic antigens.

**DNR order :** A type of advance directive in which a person states that healthcare providers should not perform cardiopulmonary resuscitation (restarting the heart) if his or her heart or breathing stops. Also called do not resuscitate order.

**DNR-expressing nasopharyngeal carcinoma-specific cytotoxic T lymphocytes:** A preparation of autologous, dominant-negative receptor (DNR)-expressing nasopharyngeal carcinoma (NPC)-specific cytotoxic T-lymphocytes (CTLs), with potential antineoplastic activity. The DNR-expressing NPC-specific CTLs specifically target Epstein-Barr virus (EBV) nuclear antigen 1 (EBNA1), latent membrane proteins (LMP) and BamHIA rightward frame 1 (BARF1), and are transduced with a retroviral vector expressing DNR, a dominant-negative form of the transforming growth factor beta (TGFβ) receptor, which blocks TGF-beta-mediated signaling.

Upon administration, the CTLs recognize and target NPC cells, which may result in both CTL-mediated cell lysis and the inhibition of tumor cell proliferation. Tumor-expressed TGF-beta inhibits T-lymphocyte activation and expansion; resistance to TGF-beta allows for optimal CTL activity. EBV infection plays a key role in NPC tumorigenesis.

**DO:** Dissolved Oxygen - a measure of the oxygen dissolved in water expressed in milligrams per liter.

**do not resuscitate order :** A type of advance directive in which a person states that healthcare providers should not perform cardiopulmonary resuscitation (restarting the heart) if his or her heart or breathing stops. Also called DNR order.

**dobutamine:** A synthetic catecholamine with sympathomimetic activity. Dobutamine is a direct-acting inotropic agent and an adrenergic agonist that stimulates primarily the beta-1 adrenoceptor, with lesser effect on beta-2 or alpha receptors. Via beta-1 adrenoceptor of the heart, this agent induces positive inotropic effect with minimal changes in chronotropic activities or systemic vascular resistance. Dobutamine also causes vasodilation by stimulating beta-2 adrenergic receptors in blood vessels, augmented by reflex vasoconstriction resulting in increased cardiac output.

**docetaxel:** A semi-synthetic, second-generation taxane derived from a compound found in the European yew tree *Taxus baccata*. Docetaxel displays potent and broad antineoplastic properties; it binds to and stabilizes tubulin, thereby inhibiting microtubule disassembly which results in cell-cycle arrest at the G2/M phase and cell death. This agent also inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and displays immunomodulatory and pro-inflammatory properties by inducing various mediators of the inflammatory response. Docetaxel has been studied for use as a radiation-sensitizing agent. or A drug used to treat certain types of cancers of the breast, stomach, lung, prostate, and head and neck. It is being studied in the treatment of other types of cancer. Docetaxel kills cancer cells by stopping them from dividing. It is a type of taxane. Also called Taxotere.

**docetaxel emulsion ANX-514:** An injectable emulsion formulation containing the taxane docetaxel, a semisynthetic analogue of paclitaxel, with antineoplastic activity. Docetaxel binds specifically to the beta-tubulin subunit of the microtubule, stabilizing tubulin and inhibiting microtubule

disassembly, which results in cell-cycle arrest at the G2/M phase and cell death. This agent also inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and induces various mediators of the inflammatory response. Docetaxel emulsion ANX-514 is formulated without polysorbate 80 or other detergents in order to reduce the incidence and severity of hypersensitivity reactions. In addition, the exclusion of polysorbate 80 in this formulation precludes foaming during the preparation process, thus facilitating preparation and administration.

**docetaxel formulation CKD-810:** An injectable formulation containing the taxane docetaxel, a semisynthetic analogue of paclitaxel, with antineoplastic activity. Docetaxel binds specifically to the beta-tubulin subunit of the microtubule, stabilizing tubulin and inhibiting microtubule disassembly, which results in cell-cycle arrest at the G2/M phase and cell death. This agent also inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and induces various mediators of the inflammatory response.

**docetaxel lipid microspheres:** A lipid microsphere (LM)-based formulation containing the poorly water soluble taxane docetaxel, a semi-synthetic analogue of paclitaxel, with antineoplastic activity. Docetaxel binds specifically to the beta-tubulin subunit of the microtubule, stabilizing tubulin and inhibiting microtubule disassembly, which causes cell cycle arrest at the G2/M phase and leads to cell death. This agent also inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and induces various mediators of the inflammatory response. Compared to docetaxel alone, the LM formulation may enhance stability, improve efficacy and may reduce toxicity; this formulation does not contain toxic detergents needed to solubilize docetaxel which further improves its side effect profile.

**docetaxel-cisplatin-fluorouracil :** A chemotherapy combination used to treat certain types of head and neck cancer and stomach cancer. It includes the drugs docetaxel (Taxotere), cisplatin (Platinol), and fluorouracil. Also called DCF, Taxotere-Platinol-fluorouracil, TPF, and TPF regimen.

**docetaxel-loaded nanopharmaceutical CRLX301:** A nanoparticle-based formulation containing the poorly water-soluble, second-generation taxane analog docetaxel, with antineoplastic activity. Upon intravenous administration of the docetaxel-loaded nanopharmaceutical CRLX301, the

nanoparticles are able to accumulate at the tumor site due to the unique characteristics of the tumor's vasculature, while avoiding normal, healthy tissue. In turn, CRLX301 is taken up by the tumor cell via macropinocytosis. Subsequently, docetaxel is slowly released into the cytoplasm where it binds to and stabilizes the beta-subunit of tubulin, thereby stabilizing microtubules and inhibiting microtubule disassembly. This prevents mitosis and results in cell death. Compared to the administration of docetaxel alone, this formulation is able to increase docetaxel's efficacy while avoiding systemic exposure, which minimizes its toxicity.

**docetaxel-PNP:** A polymeric nanoparticle (PNP) formulation containing the taxane docetaxel, a semi-synthetic analogue of paclitaxel, with antineoplastic activity. Docetaxel binds specifically to the beta-tubulin subunit of the microtubule, stabilizing tubulin and inhibiting microtubule disassembly, which results in cell-cycle arrest at the G2/M phase, preventing cell proliferation. This agent also inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and induces various mediators of the inflammatory response. Compared to docetaxel alone, the PNP formulation may enhance stability and improve delivery.

**dock :** A plant that has been used in some cultures to treat certain medical problems. It may have anticancer effects. The scientific name is *Rumex acetosella*. Also called sheep sorrel and sorrel.

**Docking:** In molecular modelling, docking refers to the process by which molecules fit into a binding site.

**doconexent:** A polyunsaturated very long-chain fatty acid with a 22-carbon backbone and 6 double bonds, originating from the 3rd, 6th, 9th, 12th, 15th and 18th positions from the methyl end.

**docosaheanoic acid:** A polyunsaturated very long-chain fatty acid with a 22-carbon backbone and 6 double bonds. Four separate isomers can be called by this name. Check for active clinical trials using this agent.

**Dodecahedral Crystal:** A crystal that has twelve sides. A twelve-sided object is called a dodecahedron.

**Dodgy example:** Imagine you have a certain number of Queenslanders, each representing molecules of the same reactant in a chemical reaction. You apply metaphorical kinetic energy (give them car keys) and tell them that they can have \$10000 dollars if they meet you at a certain address in

North Sydney. There is a strong incentive for them to meet you there (the reaction Queensland --> North Sydney) is thermodynamically favoured) - but, chances are they will get sucked through the Harbour Tunnel and Eastern Distributor to Botany instead (the reaction Queensland --> Botany is kinetically favoured). If you stop the reaction while they are all in Botany, you will obtain the kinetic product, but if you let them keep the car keys you should end up with the thermodynamic product eventually. At a certain stage in the reaction, you will have a mixture of the kinetic and thermodynamic products.

**dolasetron mesylate:** An indole derivative with antiemetic activity. As a selective serotonin receptor antagonist, dolasetron mesylate competitively blocks the action of serotonin at 5HT<sub>3</sub> receptors, resulting in suppression of chemotherapy- and radiotherapy-induced nausea and vomiting.

**dolasetron mesylate :** A drug used to prevent nausea and vomiting caused by chemotherapy. It is also used to prevent nausea and vomiting after surgery. Dolasetron mesylate blocks the action of the chemical serotonin, which binds to certain nerves and may trigger nausea and vomiting. Blocking serotonin may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called Anzemet.

**dolastatin 10:** A substance being studied in the treatment of cancer. It binds to a protein that cells need to divide and it may kill cancer cells. Dolastatin 10 comes from a marine organism. It is a type of mitotic inhibitor. OR A pentapeptide originally isolated from the marine mollusk *Dolabella auricularia* with potential antineoplastic activity. Binding to tubulin, dolastatin 10 inhibits microtubule assembly, resulting in the formation of tubulin aggregates and inhibition of mitosis. This agent also induces tumor cell apoptosis through a mechanism involving bcl-2, an oncoprotein that is overexpressed in some cancers.

**doldrums:** region along the Equator where the weather conditions are fairly consistent.

**dolichocephaly:** elongated skull

**Dolichol phosphate:** A lipid, residing in the ER membrane, containing approximately 20 isoprene units that serves as a carrier of oligosaccharides destined to be attached to a protein.

**dolichostenomelia:** condition of unusually long and thin extremities

**Dolobid:** (Other name for: diflunisal)

**Dolophine:** (Other name for: methadone hydrochloride)

**dolutegravir:** An orally bioavailable integrase strand transfer inhibitor (INSTI), with activity against human immunodeficiency virus type 1 (HIV-1) infection. Upon oral administration, dolutegravir binds to the active site of integrase, an HIV enzyme that catalyzes the transfer of viral genetic material into human chromosomes. This prevents integrase from binding to retroviral deoxyribonucleic acid (DNA), and blocks the strand transfer step, which is essential for the HIV replication cycle. This prevents HIV-1 replication.

**Domain:** A specific physical region or amino acid sequence in a protein which is associated with a particular function or corresponding segment of DNA. OR A segment of a folded protein structure showing conformational integrity. A domain could include the entire protein or just a fraction of the protein. Some proteins, such as antibodies, contain many structural domains. OR An independently folded unit in the tertiary structure of a polypeptide chain; may contain a number of supersecondary structures. In multienzyme complexes, each domain may carry out one or more catalytic reactions. In proteins, a compact globular unit of 100 to 400 residues, possibly joined to other domains by a flexible polypeptide segment; often encoded by a specific exon in the gene encoding the protein. OR A distinct structural unit of a polypeptide; domains may have separate functions and may fold as independent, compact units.

**Dome:** In reinforced plastics, an end of a filament wound cylindrical container. Or A closure that has a rounded surface. or Showing a symmetrical distortion of a flat or curved section of a plastic object, so that, as normally viewed, it appears convex, or more convex than intended. See —WARP.

**domestic breeding:** a process of directed evolution that brings about new forms that differ from ancestral stock.

**Domestrol:** (Other name for: diethylstilbestrol)

**Dominant:** Describing an allele whose phenotype is expressed regardless of whether the organism is homozygous or heterozygous for that allele.

**Dominant Flow Path :** At the juncture of two confronting flows the dominant flow will reverse the direction of the other.

**domoic acid:** Domoic acid is a toxic amino acid produced by certain species of algae. Domoic acid binds to a receptor that helps nerve cells control the flow of ions across their cell membranes. The receptor no longer works correctly, and the uncontrolled flux of ions damages and eventually kills the nerve cell.

**Domolene-HC:** (Other name for: therapeutic hydrocortisone)

**donepezil :** A drug that is used to treat Alzheimer disease and is being studied in the treatment of side effects caused by radiation therapy to the brain. It is a type of cholinesterase inhibitor.

**donepezil hydrochloride:** The hydrochloride salt of a piperidine derivative with neurocognitive-enhancing activity. Donepezil reversibly inhibits acetylcholinesterase, thereby blocking the hydrolysis of the neurotransmitter acetylcholine and, consequently, increasing its activity. This agent may improve neurocognitive function in Alzheimer's disease, reduce sedation associated with opioid treatment of cancer pain, and improve neurocognitive function in patients who have received radiation therapy for primary brain tumors or brain metastases.

**dong quai :** An herb native to China. A substance taken from the roots has been used in traditional Chinese medicine to treat menstrual and menopausal problems. Dong quai may increase the effect of the drug warfarin (a blood-thinner). The scientific name is *Angelica sinensis*.

**donor :** In medicine, a person who gives blood, cells, tissue, or an organ for use in another person, such as in a blood transfusion or an organ transplant.

**donor lymphocyte infusion :** A type of therapy in which lymphocytes from the blood of a donor are given to a patient who has already received a stem cell transplant from the same donor. The donor lymphocytes may kill remaining cancer cells. Donor lymphocyte infusion is used to treat chronic myelogenous leukemia (CML) that has come back and myeloma. It is being studied in the treatment of other types of cancer.

**donor lymphocytes:** A population of lymphocytes from the blood of a donor and administered to a patient who has already received a stem cell transplant from the same donor (allogeneic hematopoietic stem cell transplantation). The donor lymphocytes may be able to boost the patient's immune system and kill remaining cancer cells.

**donor regulatory T lymphocytes:** Donor-derived regulatory T-cells (Tregs), with potential immunomodulating activity. Tregs are a subset of CD4<sup>+</sup> T cells that express high levels of CD25 (interleukin 2 receptor) and the transcription factor Foxp3. The donor CD4<sup>+</sup>CD25<sup>+</sup> Tregs modulate immune responses and may induce tolerance to allogeneic organ transplants, such as hematopoietic stem cell transplants (HSCTs), thereby preventing graft-versus-host disease (GVHD).

**donor-derived WT1/PRAME/NY-ESO-1/survivin-specific T-lymphocytes:** Allogeneic T-lymphocytes specifically reactive to the tumor-associated antigens (TAAs) human Wilms tumor protein-1 (WT1), Preferentially Expressed Antigen in Melanoma (PRAME), the cancer-testis antigen NY-ESO-1, and survivin, with potential antineoplastic activity. Donor derived T-cells are mixed, *ex vivo*, with protein fragments derived from the TAAs WT1, PRAME, NY-ESO-1, and survivin. Upon intravenous administration, the donor-derived WT1/PRAME/NY-ESO-1/Survivin-specific T-lymphocytes recognize and kill cancer cells expressing these TAAs. WT1, NY-ESO-1, PRAME, and survivin, are expressed on certain tumor cell types and play key role in tumor cell proliferation and survival.

**Door furniture:** Term covering the fittings to a door viz. Handles finger-plates etc.

**dopamine:** One of many neurotransmitters that is essential in the functioning of the central nervous system and is often considered to be the primary reward neurotransmitter in the brain. It is the precursor to norepinephrine.

**dopamine–somatostatin chimeric molecule BIM-23A760:** A chimeric molecule directed against dopamine and somatostatin receptors with potential antineoplastic activity. Combining two pharmacological moieties, a somatostatin analogue and a dopamine agonist, dopamine–somatostatin chimeric molecule BIM-23A760 binds with high affinity to dopamine D2 receptor (D2R) and somatostatin receptor subtype 2 (SSTR2), and to a lesser extent to somatostatin receptor subtype 5 (SSTR5). This agent appears to exert its effect mainly by binding to D2R to activate the ERK1/2 and p38 MAPK pathways, thus inducing apoptosis and inhibiting cellular proliferation in non-functioning pituitary adenoma (NFPA) and neuroendocrine tumors. By binding to SSTR2, this agent may inhibit the secretion of growth hormone (GH) by the pituitary gland.

**Dopar:** (Other name for: levodopa)

**doping:** Using banned or illegal natural or synthetic chemicals to enhance athletic performance.

**Doppler coefficient:** Another name used for the "fuel temperature coefficient of reactivity," or the change in reactivity per degree of change in the temperature of nuclear fuel. The physical property of fuel pellet material (uranium-238) that causes the uranium to absorb more neutrons away from the fission process as fuel pellet temperature increases. This acts to stabilize power reactor operations.

**dormant volcano:** volcano that has not erupted during recorded history.

**dornase alfa:** A recombinant human deoxyribonuclease I (rhDNase) with selective DNA cleaving activity. Upon intrapleural administration, dornase alfa catalyzes the degradation of extracellular DNA in airway secretions, which can reduce their viscosity. Thus, dornase alfa may both promote the clearing of airway mucus and improve pulmonary function.

**dornase alfa inhalation solution:** A highly purified solution of recombinant human deoxyribonuclease I (rhDNase) with selective DNA cleaving activity. Administered through inhalation of the nebulized solution, dornase alpha catalyzes DNA degradation in viscous airway secretions, which may render airway secretions less viscous, thus promoting the clearing of airway mucous plugging and improvement in pulmonary function. or A drug given in an aerosol mist to decrease the thickness of mucus in the lungs of patients with cystic fibrosis. It is also being studied as a treatment to reduce the thickness of saliva in patients being treated for head and neck cancer. Dornase alfa inhalation solution contains an enzyme that breaks the DNA in mucus into small pieces and makes the mucus thinner. Also called Pulmozyme.

**Dose:** A general term, which may be used to refer to the amount of energy absorbed by an object or person per unit mass. Known as the "absorbed dose," this reflects the amount of energy that ionizing radiation sources deposit in materials through which they pass, and is measured in units of radiation-absorbed dose (rad). The related international system unit is the gray (Gy), where 1 Gy is equivalent to 100 rad. By contrast, the biological dose or dose equivalent, given in rems or sieverts (Sv), is a measure of the biological damage to living tissue as a result of radiation exposure. For additional information, see Doses in Our Daily

Lives and Measuring Radiation. OR The measured quantity of a substance, such as a drug, taken at one time. Or The amount of a chemical administered to an organism (WHO, 1978).

**dose :** The amount of medicine taken, or radiation given, at one time.

**Dose equivalent:** A measure of the biological damage to living tissue as a result of radiation exposure. Also known as the "biological dose," the dose equivalent is calculated as the product of absorbed dose in tissue multiplied by a quality factor and then sometimes multiplied by other necessary modifying factors at the location of interest. The dose equivalent is expressed numerically in rems or sieverts (Sv) (see 10 CFR 20.1003). For additional information, see Doses in Our Daily Lives and Measuring Radiation.

**dose exposure-response relationship:** The relationship between administered dose or exposure and the biological change in organisms. It may be expressed as the severity of an effect in one organism (or part of an organism) or as the proportion of a population exposed to a chemical that shows a specific reaction (WHO, 1979).

**dose rate:** (in radiation protection) The quantity of energy absorbed per unit of time (WHO, 1979). OR The dose of ionizing radiation delivered per unit time. For example, rems or sieverts (Sv) per hour.

**dose-dense chemotherapy :** A chemotherapy treatment plan in which drugs are given with less time between treatments than in a standard chemotherapy treatment plan.

**dose-dependent :** Refers to the effects of treatment with a drug. If the effects change when the dose of the drug is changed, the effects are said to be dose-dependent.

**dose-limiting :** Describes side effects of a drug or other treatment that are serious enough to prevent an increase in dose or level of that treatment.

**dose-rate :** The strength of a treatment given over a period of time.

**Dose, absorbed:** The amount of energy absorbed by an object or person per unit mass. Known as the "absorbed dose," this reflects the amount of energy that ionizing radiation sources deposit in materials through which they pass, and is measured in units of radiation-absorbed dose (rad). The related international system unit is the gray (Gy), where 1 Gy is equivalent

to 100 rad. For additional information, see Doses in Our Daily Lives and Measuring Radiation.

**Dosimeter:** A small portable instrument (such as a film badge, thermoluminescent dosimeter, or pocket dosimeter) used to measure and record the total accumulated personal dose of ionizing radiation. For additional information, see Detecting Radiation.

**dosimetrist :** A person who determines the proper radiation dose for treatment.

**Dosimetry:** The theory and application of the principles and techniques involved in measuring and recording doses of ionizing radiation.

**dosimetry :** Measurement of radiation exposure from x-rays, gamma rays, or other types of radiation used in the treatment or detection of diseases, including cancer.

**Dosing Stroke Metering stroke:** It is stroke of screw that determines the quantity of melt to be injected to the mould.

**Dostinex:** (Other name for: cabergoline)

**DOT1L inhibitor EPZ-5676:** A small molecule inhibitor of histone methyltransferase with potential antineoplastic activity. Upon intravenous administration, EPZ-5676 specifically blocks the activity of the histone lysine-methyltransferase DOT1L, thereby inhibiting the methylation of nucleosomal histone H3 on lysine 79 (H3K79) that is bound to the mixed lineage leukemia (MLL) fusion protein which targets genes and blocks the expression of leukemogenic genes. This eventually leads to an induction of apoptosis in the leukemic cells bearing the MLL gene translocations. DOT1L, a non-SET domain-containing histone methyltransferase, specifically methylates H3K79 and plays a key role in normal cell differentiation and in the development of leukemia with MLL gene rearrangement on chromosome 11 and promotes the expression of leukemia-causing genes.

**DOTAREM:** (Other name for: gadoterate meglumine)

**Double Balanced Weave:** A fabric consisting of pairs of interlaced right and left-hand spirals joined by crimped or straight rod connectors in a manner so that the pairs of spirals are inter-spaced by the adjacent spirals.

**double balloon endoscopy :** A procedure used to look at the inside of the small intestine. A special instrument made up of two tubes (one inside the

other) is inserted through the mouth or rectum and into the small intestine. The inside tube, which is an endoscope with a light and lens for viewing, is moved through part of the small intestine, and a balloon at the end of it is inflated to keep the endoscope in place. Next, the outer tube is moved through the small intestine to reach the end of the endoscope, and a balloon at the end of the outer tube is inflated to keep it in place. Then, the balloon at the end of the endoscope is deflated, and the endoscope is moved through the next part of the small intestine. These steps are repeated many times as the tubes move through the whole small intestine. This allows the doctor to see all of the small intestine. Tissue samples may be removed so they can be checked under a microscope for signs of disease. Also called DBE and double balloon enteroscopy.

**double bond:** When an atom is bonded to another atom by two sets of electron pairs. OR A double bond is a type of covalent bond formed between atoms by sharing two pairs of electrons, e.g. O<sub>2</sub>. OR a multiple bond composed of one  $\sigma$  bond and one  $\pi$  bond. Rotation is not possible around a double bond. Hydrocarbons containing one double bond are called alkenes, and hydrocarbons with two double bonds are called dienes. OR a multiple bond composed of one  $\sigma$  bond and one  $\pi$  bond. Rotation is not possible around a double bond. Hydrocarbons that contain one double bond are alkenes, and hydrocarbons with two double bonds are dienes. OR A type of covalent bond in which a pair of atoms shares two pairs of electrons

**double displacement:** double displacement reaction; double replacement; double replacement reaction; double exchange; exchange; metathesis. A double displacement or metathesis is a reaction in which two reactants trade fragments:  $AB + CD = AC + BD$

**Double helix:** A structure in which two helically-twisted polynucleotide strands are held together by hydrogen bonding and base stacking. OR The natural coiled conformation of two complementary, antiparallel DNA chains.

**double heterozygosity :** The presence of two different mutated alleles at two separate genetic loci.

**Double Replacement:** A chemical reaction where two compounds are mixed and they exchange parts of their compounds with each other. Think

about the mixing of an acid and a base. You start with an acid and base and finish with water and a salt.

**Double Rod Reinforced Weave (Dual or Duplex Weave):** A fabric consisting of pairs of either all right hand or left hand spirals, each pair being turned into the preceding pair, and reinforced with a rod through the hinging point of the spirals.

**Double Weave (Duplex) Edges:** Edge construction of double weave design extending in from both edges to a specific distance.

**Double Wound Sheeting:** Two plies of sheeting wound together.

**double-blinded :** A clinical trial in which the medical staff, the patient, and the people who analyze the results do not know the specific type of treatment the patient receives until after the clinical trial is over.

**double-contrast barium enema :** A procedure in which x-rays of the colon and rectum are taken after a liquid containing barium is put into the rectum. Barium is a silver-white metallic compound that outlines the colon and rectum on an x-ray and helps show abnormalities. Air is put into the rectum and colon to further enhance the x-ray.

**Double-displacement reaction:** A reaction having multiple substrates in which one or more products are released before all substrates bind the enzyme. The defining feature of these reactions is the formation of a substituted-enzyme intermediate. Also called ping-pong reaction.

**double-hit lymphoma :** A rare, aggressive (fast-growing) type of B-cell non-Hodgkin lymphoma caused by changes in the DNA that affect a gene called the MYC gene and either the BCL2 gene or the BCL6 gene. Double-hit lymphoma may be hard to treat and has a poor prognosis. It is a type of diffuse large B-cell lymphoma. Also called DHL.

**double-reciprocal plot:** A plot of  $1/V_0$  versus  $1/[S]$ , which allows a more accurate determination of  $V_{max}$  and  $K_m$ , than a plot of  $V_0$  versus  $[S]$ ; also called the Lineweaver-Burk plot.

**Double-shot molding:** A means of turning out two-color parts in thermoplastics materials by successive molding operations.

**doubling time :** In biology, the amount of time it takes for one cell to divide or for a group of cells (such as a tumor) to double in size. The doubling time is different for different kinds of cancer cells or tumors.

**douche :** A procedure in which the vagina is washed with water or a cleansing solution. Most cleansing solutions contain water mixed with vinegar, baking soda, or iodine. Regular douching can wash away some of the bacteria that normally live in the vagina. This may allow yeast or harmful types of bacteria to grow and cause infection. Douching may also cause other health problems, such as pelvic inflammatory disease (PID) and problems during pregnancy. Most doctors do not recommend douching.

**DOUR:** Dissolved Oxygen Uptake Ratio, reported as mg DO/L/hour, a test that is used to measure how much oxygen is being consumed by the microbes in a wastewater treatment plant, to assure that the biomass is receiving sufficient dissolved oxygen.

**dovitinib lactate:** The orally bioavailable lactate salt of a benzimidazole-quinolinone compound with potential antineoplastic activity. Dovitinib strongly binds to fibroblast growth factor receptor 3 (FGFR3) and inhibits its phosphorylation, which may result in the inhibition of tumor cell proliferation and the induction of tumor cell death. In addition, this agent may inhibit other members of the RTK superfamily, including the vascular endothelial growth factor receptor; fibroblast growth factor receptor 1; platelet-derived growth factor receptor type 3; FMS-like tyrosine kinase 3; stem cell factor receptor (c-KIT); and colony-stimulating factor receptor 1; this may result in an additional reduction in cellular proliferation and angiogenesis, and the induction of tumor cell apoptosis. The activation of FGFR3 is associated with cell proliferation and survival in certain cancer cell types.

**Dovonex:** (Other name for: calcipotriene)

**DOWEL:** Pin used to maintain alignment between two or more parts of a mold.

**Down Cage:** A spiral system where the belt's travel is from top to bottom.

**Down syndrome :** A disorder caused by the presence of an extra chromosome 21 and characterized by mental retardation and distinguishing physical features.

**Down's cell:** A Down's cell is an electrolytic cell in which sodium is extracted from molten sodium chloride (mixed with calcium chloride to lower its melting point).

**downcutting:** the erosion directly downward by a stream channel.

**Downstream Equipment:** Equipment in the process following the extruder. Generally consists of a sizing fixture, used for sizing and cooling of the extrudate; a puller, used to remove the extrudate from the extruder at a continuous rate; and a cutter.

**downwelling:** The process of accumulation and sinking of warm surface waters along a coastline. A change of air flow of the atmosphere can result in the sinking or downwelling of warm surface water. The resulting reduced nutrient supply near the surface affects the ocean productivity and meteorological conditions of the coastal regions in the downwelling area.

**Dox-SL:** (Other name for: pegylated liposomal doxorubicin hydrochloride) OR A form of the anticancer drug doxorubicin that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than doxorubicin. Dox-SL is used to treat ovarian cancer, AIDS-related Kaposi sarcoma, and multiple myeloma in patients whose disease has not gotten better after treatment with other anticancer drugs. It may be used together with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Dox-SL is a type of anthracycline antitumor antibiotic. Also called Doxil, doxorubicin hydrochloride liposome, Evacet, LipoDox, and liposomal doxorubicin hydrochloride.

**doxazosin :** A drug used to treat high blood pressure and urinary problems caused by an enlarged prostate. It relaxes muscle tissue in blood vessels and in the prostate. Doxazosin is a type of alpha blocker. Also called Cardura and doxazosin mesylate.

**doxazosin mesylate:** A drug used to treat high blood pressure and urinary problems caused by an enlarged prostate. It relaxes muscle tissue in blood vessels and in the prostate. Doxazosin mesylate is a type of alpha blocker. Also called Cardura and doxazosin. OR The mesylate salt form of doxazosin, a quinazoline compound with smooth muscle relaxing activity. Doxazosin mesylate selectively antagonizes alpha-1-adrenergic receptors in smooth muscle of the bladder neck and prostate, thereby relaxing the smooth muscle and decreasing the obstruction and urethral resistance seen with benign prostate hyperplasia (BPH). This may improve BPH symptoms. This agent also blocks alpha-1-adrenergic receptors in peripheral vascular smooth muscle, which leads to vasodilatation and a subsequent decrease in peripheral vascular resistance. Check for active clinical trials using this agent.

**doxepin hydrochloride:** A dibenzoxepin derivative and tricyclic antidepressant with antipruritic and sedative activities. Doxepin blocks the reuptake of norepinephrine and serotonin into presynaptic terminals thereby prolonging the availability of the monoaminergic neurotransmitters within the synaptic cleft and enhancing their action leading to sedative effects. Doxepin also has antagonistic effects on histamine (H1 and H2), 5-HT<sub>2</sub>, alpha-1 adrenergic, and muscarinic receptors. The antipruritic effect of this agent is the result mediated through inhibition of histamine receptors.

**doxercalciferol:** A synthetic analog of vitamin D with potential antineoplastic activity. In the liver, doxercalciferol is converted to its biologically active vitamin D metabolites, which control the intestinal absorption of dietary calcium, the tubular reabsorption of calcium by the kidney and, in conjunction with parathyroid hormone (PTH), the mobilization of calcium from the skeleton. Through interaction with specific receptor proteins in target tissues, these vitamin D metabolites act directly on osteoblasts to stimulate skeletal growth, and on the parathyroid glands to suppress PTH synthesis and secretion. This agent has also been shown to inhibit the growth of retinoblastomas, and may exhibit some antiproliferative activity against prostate cancer cells. or A substance being studied in the prevention of recurrent prostate cancer. It is a type of vitamin D analog.

**doxifluridine:** A fluoropyrimidine derivative and oral prodrug of the antineoplastic agent 5-fluorouracil (5-FU) with antitumor activity. Doxifluridine, designed to circumvent the rapid degradation of 5-FU by dihydropyrimidine dehydrogenase in the gut wall, is converted into 5-FU in the presence of pyrimidine nucleoside phosphorylase. 5-FU interferes with DNA synthesis and subsequent cell division by reducing normal thymidine production and interferes with RNA transcription by competing with uridine triphosphate for incorporation into the RNA strand.

**DOXIL:** (Other name for: pegylated liposomal doxorubicin hydrochloride)

**Doxil :** A form of the anticancer drug doxorubicin that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than doxorubicin. Doxil is used to treat ovarian cancer, AIDS-related Kaposi sarcoma, and multiple myeloma in patients whose disease has not gotten better after treatment with other anticancer drugs. It may be used together with other anticancer drugs. It is also being studied in the treatment of other

types of cancer. Doxil is a type of anthracycline antitumor antibiotic. Also called Dox-SL, doxorubicin hydrochloride liposome, Evacet, LipoDox, and liposomal doxorubicin hydrochloride.

**doxorubicin** : A drug used to treat many types of cancer, including leukemia, lymphoma, neuroblastoma, sarcoma, Wilms tumor, and cancers of the lung, breast, stomach, ovary, thyroid, and bladder. It is also being studied in the treatment of other types of cancer. Doxorubicin comes from the bacterium *Streptomyces peucetius*. It damages DNA and may kill cancer cells. It is a type of anthracycline antitumor antibiotic. The brand names Adriamycin PFS, Adriamycin RDF, and Rubex have been taken off the market and are no longer available. Also called doxorubicin hydrochloride and hydroxydaunorubicin.

**doxorubicin hydrochloride:** The hydrochloride salt of doxorubicin, an anthracycline antibiotic with antineoplastic activity. Doxorubicin, isolated from the bacterium *Streptomyces peucetius* var. *caesius*, is the hydroxylated congener of daunorubicin. Doxorubicin intercalates between base pairs in the DNA helix, thereby preventing DNA replication and ultimately inhibiting protein synthesis. Additionally, doxorubicin inhibits topoisomerase II which results in an increased and stabilized cleavable enzyme-DNA linked complex during DNA replication and subsequently prevents the ligation of the nucleotide strand after double-strand breakage. Doxorubicin also forms oxygen free radicals resulting in cytotoxicity secondary to lipid peroxidation of cell membrane lipids; the formation of oxygen free radicals also contributes to the toxicity of the anthracycline antibiotics, namely the cardiac and cutaneous vascular effects. or A drug used to treat many types of cancer, including leukemia, lymphoma, neuroblastoma, sarcoma, Wilms tumor, and cancers of the lung, breast, stomach, ovary, thyroid, and bladder. It is also being studied in the treatment of other types of cancer. Doxorubicin hydrochloride comes from the bacterium *Streptomyces peucetius*. It damages DNA and may kill cancer cells. It is a type of anthracycline antitumor antibiotic. The brand names Adriamycin PFS, Adriamycin RDF, and Rubex have been taken off the market and are no longer available. Also called doxorubicin and hydroxydaunorubicin.

**doxorubicin hydrochloride liposome** : A form of the anticancer drug doxorubicin that is contained in very tiny, fat-like particles. It may have

fewer side effects and work better than doxorubicin. Doxorubicin hydrochloride liposome is used to treat ovarian cancer, AIDS-related Kaposi sarcoma, and multiple myeloma in patients whose disease has not gotten better after treatment with other anticancer drugs. It may be used together with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Doxorubicin hydrochloride liposome is a type of anthracycline antitumor antibiotic. Also called Dox-SL, Doxil, Evacet, LipoDox, and liposomal doxorubicin hydrochloride.

**doxorubicin-eluting beads:** A drug-device combination product consisting of small polymeric beads impregnated with the anthracycline antibiotic doxorubicin with potential antineoplastic activity. The beads consist of polyvinyl alcohol (PVA) microspheres modified with sulfonic acid groups and loaded with doxorubicin. During transarterial chemoembolization (TACE), doxorubicin-eluting beads embolize to the tumor vasculature and release cytotoxic doxorubicin, which may result in both ischemic necrosis of tumor tissue due to mechanical blockage of the tumor vasculature and doxorubicin-mediated inhibition of tumor cell proliferation.

**doxorubicin-HPMA conjugate:** A copolymer conjugate of the antineoplastic anthracycline doxorubicin and the water-soluble polymer N-(2-hydroxypropyl) methacrylamide (HPMA). Doxorubicin, an intercalator and a topoisomerase II inhibitor, prevents DNA replication and ultimately inhibits protein synthesis. This agent also generates oxygen free radicals, resulting in cytotoxic lipid peroxidation of cell membrane lipid. HPMA conjugation enhances the permeability and retention of this agent within the tumor vasculature. Poorly cleared by the lymphatic system, this formulation undergoes increased cleavage by tumor cell lysosomal proteinases, resulting in increased, sustained intracellular concentrations of free doxorubicin. Compared to other doxorubicin-containing formulations, this formulation may exhibit an improved toxicity profile due to the lower concentrations of free doxorubicin to which non-malignant tissues are exposed. Check for active clinical trials using this agent.

**doxorubicin-loaded EGFR-targeting nanocells:** A nanocell formulation targeting the epidermal growth factor receptor (EGFR) using bispecific antibodies (bsAb) against EGFR and containing the antineoplastic anthracycline antibiotic doxorubicin, with potential antineoplastic activity. Upon administration of doxorubicin-loaded EGFR-targeting nanocells, the

nanocells are stable in the bloodstream and the anti-EGFR bsAb moiety targets and binds to EGFR-expressing tumor cells. Upon binding, the nanocell allows for specific delivery of doxorubicin to tumor cells overexpressing EGFR. Upon endocytosis by the tumor cells, the nanocell is broken down and releases doxorubicin, which intercalates into DNA and interferes with topoisomerase II activity, thereby inhibiting DNA replication and RNA synthesis. Compared to doxorubicin alone or liposomal doxorubicin, targeted delivery of doxorubicin improves efficacy while lowering the toxicity profile. EGFR, a tyrosine kinase receptor, is overexpressed in many cancer cell types. The nanocell is a bacterially derived nanosphere; the bacterial components are unlikely to induce an immune response in the immunosuppressed tumor microenvironment. Check for active clinical trials using this agent.

**doxorubicin-magnetic targeted carrier complex:** A formulation of the anthracycline antibiotic doxorubicin in which doxorubicin is bound to microscopic beads of activated carbon and iron as a magnetic-targeted carrier (MTC). Doxorubicin, an intercalator and a topoisomerase II inhibitor, prevents DNA replication and ultimately inhibits protein synthesis. This agent also generates oxygen free radicals, resulting in cytotoxic lipid peroxidation of cell membrane lipids. Guided by the placement of a magnet on the body surface overlying a tumor site, the doxorubicin-MTC complex delivers doxorubicin directly to the tumor site, thereby targeting and prolonging the duration of doxorubicin-mediated cytotoxicity to the tumor bed while minimizing systemic toxicity.

**doxycycline:** A drug used to treat many types of bacterial infections. It stops the growth of bacteria by keeping them from making proteins. It is a type of antibiotic. Also called doxycycline hyclate. OR A synthetic, broad-spectrum tetracycline with antimicrobial activity. Doxycycline binds reversibly to the 30S ribosomal subunit and possibly to the 50S ribosomal subunit, blocking the binding of aminoacyl-tRNA to the mRNA-ribosome complex, which results in an inhibition of bacterial protein synthesis. In addition, this agent may inhibit collagenase activity.

**doxycycline hyclate :** A drug used to treat many types of bacterial infections. It stops the growth of bacteria by keeping them from making proteins. It is a type of antibiotic. Also called doxycycline.

**doxycycline hyclate injection:** The hyclate salt form of doxycycline, a synthetic, broad-spectrum tetracycline antibiotic exhibiting antimicrobial activity. Doxycycline hyclate binds reversibly to the 30S ribosomal subunit, possibly to the 50S ribosomal subunit as well, thereby blocking the binding of aminoacyl-tRNA to the mRNA-ribosome complex. This leads to an inhibition of protein synthesis. In addition, this agent has exhibited inhibition of collagenase activity. Check for active clinical trials using this agent.

**DPA:** A type of power of attorney. A power of attorney is a legal document that gives one person (such as a relative, lawyer, or friend) the authority to make legal, medical, or financial decisions for another person. It may go into effect right away, or when that person is no longer able to make decisions for himself or herself. A DPA remains in effect until the person who grants it dies or cancels it. It does not need to be renewed over time. Also called durable power of attorney.

**DPPE:** Belongs to a group of antihormone drugs.

**DPT/BCG/measles/Serratia/pneumococcus vaccine:** A proprietary lipid emulsion containing five vaccines: diphtheria, pertussis, tetanus (DPT), Bacille Calmette-Guerin (BCG), measles, *Serratia marcescens* and pneumococcal, with potential immunostimulating activity. Subcutaneous administration of the DPT/BCG/measles/*Serratia/pneumococcus* vaccine activates the immune system and may both abrogate tumor-induced immune tolerance and induce an antitumor immune response, which may eradicate the tumor.

**DPT/typhoid/Staphylococcus aureus/paratyphoid A/paratyphoid B vaccine:** A proprietary lipid emulsion containing five vaccines: diphtheria, pertussis, tetanus (DPT), typhoid, *Staphylococcus aureus*, paratyphoid A and paratyphoid B, with potential immunostimulating activity. Subcutaneous administration of the DPT/typhoid/*Staphylococcus aureus/paratyphoid A/paratyphoid B* vaccine activates the immune system and may both abrogate tumor-induced immune tolerance and induce an antitumor immune response, which may eradicate the tumor. Check for active clinical trials using this agent.

**DR4:** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of DR4 on cancer cells may kill more cells. Also called death

receptor 4, TRAIL receptor 1, TRAIL-R1, and tumor necrosis factor receptor superfamily member 10A.

**DR5:** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of DR5 on cancer cells may kill more cells. Also called death receptor 5, TRAIL receptor 2, TRAIL-R2, and tumor necrosis factor receptor superfamily member 10B.

**draft:** a written version of an essay; most writers create multiple drafts in the process of writing. OR A Slight taper in a mold wall designed to facilitate removal of the molded object from the mold. Or The degree of taper of a mold-cavity sidewall or the angle of clearance designed to facilitate removal of parts from a mold. Generally all plastic components should be designed with draft where possible. Or An angle (or taper) provided on the mold to facilitate ejection of the molded part. Or A taper applied to the faces of the part that prevent them from being parallel to the motion of the mold opening. This keeps the part from being damaged due to the scraping as the part is ejected out of the mold. Or The angle or degree of taper in a side wall to help facilitate removal of the parts from the mold. Or The degree of taper of a side wall or the angle of clearance designed to facilitate removal of parts from a mold.

**Drag Marks :** A form of deep scratch or scratches on the surface of the component usually caused by the ejection of the part.

**drain :** In medicine, to remove fluid as it collects; or, a tube or wick-like device used to remove fluid from a body cavity, wound, or infected area.

**drainage basin:** the area around a stream that could drain into the stream. OR a ridge that separates one drainage basin from another. OR the outer edge between drainage basins.

**Drape Assist Frame:** In sheet thermoforming, a frame (made up of anything from thin wires to thick bars) shaped to the peripheries of the depressed areas of the mold and suspended above the sheet to be formed. During forming, the assist frame drops down, drawing the sheet tightly into the mold and thereby preventing webbing between high areas of the mold and permitting closer spacing in multiple molds.

**Drape Forming:** Method of forming thermoplastic sheet in which the sheet is clamped into a movable frame, heated, and draped over high points of a male mold. Vacuum is then pulled to complete the forming operation.

**draw a picture:** Create a drawing that helps visualize the word problem.

**Draw down:** Reduction in thickness of plastics emerging from the die by controlling the haul off speed

**Draw Down Ratio:** The ratio of the thickness of the die opening to the final thickness of the product.

**Draw Ratio:** The ratio of the (drawn) area of the formed part and that of the unformed sheet of material required to form the part.

**DRAW RESONANCE:** A phenomenon by which a continuous drawing process becomes unsteady, alternating between thick and thin sections. It is often encountered in fiber spinning and cast film production.

**DRAWDOWN:** In extrusion, the process of pulling the extrudate away from the die at a linear speed higher than that at which the melt is emerging from the die, thus reducing the cross-sectional dimensions of the extrudate. Or Typically used by most plastic manufacturers, the drawdown process is pulling the plastic extrusions away from the die at a linear speed higher than that at which the melt is emerging from the die. Or The process of stretching a thermoplastic sheet or rod to reduce its cross-sectional area. OR The the act, process, or result of depleting, as in the drawdown of oil reserves. OR a local lowering of the water table around a well.

**drawing:** Ortep A structural representation of a set of atoms in which the atoms are portrayed as ellipsoids that depicts the atomic displacement parameters for those atoms. These representations were originally drawn using the ORTEP program.

**DRE:** An examination in which a doctor inserts a lubricated, gloved finger into the rectum to feel for abnormalities. Also called digital rectal examination.

**DRI:** A set of guidelines developed by U.S. and Canadian scientists to give information about the role of nutrients in human health. These guidelines include the Reference Daily Intakes (RDI), which are the recommended amounts of nutrients to be eaten each day to meet the needs of most healthy people. This system replaced the Recommended Dietary Allowances (RDA). Also called Dietary Reference Intakes.

**Driers:** Various compounds added to coatings to speed the drying.

**drift:** small particles carried away from larger rocks by glacial meltwater. OR slow changes in the signal of a sensor maintained in a solution of

constant composition and temperature.

**drizzle:** liquid precipitation that is less than .02 cm in diameter.

**dronabinol:** A synthetic pill form of delta-9-tetrahydrocannabinol (THC), an active ingredient in marijuana that is used to treat nausea and vomiting associated with cancer chemotherapy. OR An isomer of tetrahydrocannabinol (THC) that is the main and most active isomer found in the cannabis sativa L. plant, with potential anti-emetic, analgesic and appetite stimulating activities. Upon administration, dronabinol, also called delta-9-THC, targets and binds to cannabinoid receptors (CBRs) located in the central nervous system (CNS). Dronabinol acts directly on the appetite and vomiting control centers in the brain to stimulate appetite and prevent emesis. In addition, this agent induces analgesia. Urine levels may be used as a marker to determine the exposure to certain preparations containing parts of the cannabis plant, such as marijuana.

**Drooling:** The extrusion or leakage of molten liquid silicone rubber from a nozzle or nozzle sprue bushing area while or prior to shooting or The extrudation or leakage of molten resin from nozzle or nozzle sprue bushing area whilefilling or shooting the mold.

**Drop Test:** Any test method in which the article being tested is dropped in a specified manner for a specified number of times or until the article fails from impact.

**droperidol:** A butyrophenone with anti-emetic, sedative and anti-anxiety properties. Although the exact mechanism through which droperidol exerts its effects is unknown, droperidol may block dopamine receptors in the chemoreceptor trigger zone (CTZ), which may lead to its anti-emetic effect. This agent may also bind to postsynaptic gamma-aminobutyric acid (GABA) receptors in the central nervous system (CNS), which increases the inhibitory effect of GABA and leads to sedative and anti-anxiety activities. Check for active clinical trials using this agent. OR A drug used to prevent nausea and vomiting in patients who receive anesthesia before surgery. It is also used to treat anxiety. Droperidol is a type of antiemetic, adjunct anesthesia, and antipsychotic.

**Dropper cap:** A bottle closure that features a dropper and rubber bulb, designed to dispense liquids in small drops.

**Dropping a Parison:** Extruding a parison of sufficient length to position it between the two mold halves to produce a part.

**Droxia :** (Other name for: hydroxyurea) OR A drug used to treat certain patients with sickle cell anemia. It is also being studied in the treatment of other conditions and some types of cancer. Droxia may help keep abnormal red blood cells from forming. Droxia contains the active ingredient hydroxyurea. It is a type of antimetabolite.

**drug:** A biologically active compound or mixture used to cure, prevent, or detect disease, to control biological processes, or to alter mental state.

**drug :** Any substance, other than food, that is used to prevent, diagnose, treat or relieve symptoms of a disease or abnormal condition. Also refers to a substance that alters mood or body function, or that can be habit-forming or addictive, especially a narcotic.

**drug abuse :** The use of illegal drugs or the use of prescription or over-the-counter drugs for purposes other than those for which they are meant to be used, or in large amounts. Drug abuse may lead to social, physical, emotional, and job-related problems.

**Drug Accountability Record :** A log of study drugs kept by an investigator running a clinical trial. It lists many things about each drug, including the drug name, lot number, expiration date, the amount of drug received, used, returned, or thrown away, and the amount left. Drug Accountability Records help make sure that a clinical trial is done safely and correctly. Drug Accountability Records are required by the U.S. Food and Drug Administration (FDA). Also called DAR.

**Drug delivery:** The field of developing formulation modifications to enhance the efficiency and timing of delivering a drug to the biologically active site. Also, the total sequence of events leading to that delivery. OR Giving a medicine to achieve a therapeutic effect in humans or animals. The most common methods include: oral (through the mouth), topical (skin), transmucosal (nasal, buccal/sublingual, vaginal, ocular and rectal) and inhalation (through the lungs)

**drug interaction :** A change in the way a drug acts in the body when taken with certain other drugs, herbals, or foods, or when taken with certain medical conditions. Drug interactions may cause the drug to be more or less effective, or cause effects on the body that are not expected.

**Drug Master File:** A Drug Master File (DMF) is a submission to the Food and Drug Administration (FDA) that may be used to provide confidential detailed information about facilities, processes, or articles used in the

manufacturing, processing, packaging, and storing of one or more human drugs.

**drug resistance :** The failure of cancer cells, viruses, or bacteria to respond to a drug used to kill or weaken them. The cells, viruses, or bacteria may be resistant to the drug at the beginning of treatment, or may become resistant after being exposed to the drug.

**Drug Target:** In the simplest sense, drug targets are macromolecular biomolecules such as proteins whose activity can be altered by a pharmacologically active compound.

**drug therapy :** Treatment with any substance, other than food, that is used to prevent, diagnose, treat, or relieve symptoms of a disease or abnormal condition.

**drug tolerance :** A condition that occurs when the body gets used to a medicine so that either more medicine is needed or different medicine is needed.

**Drum :** Large cylindrical shaped core of a spiral system. The system's main driving component. (Also see Cage.)

**Drum Diameter:** Diameter of the drum or cage.

**drumlin:** a long, narrow, rounded ridge of till whose long axes parallel the direction a glacier traveled.

**dry adiabatic lapse rate:** rate at which dry air cools as it rises upward.

**Dry Blend –:** A free flowing blend of compound or resin and other ingredients as prepared for an additional manufacturing operation specifically for extrusion or molding.

**Dry cask storage:** A method for storing spent nuclear fuel in special containers known as casks. After fuel has been cooled in a spent fuel pool for at least 1 year, dry cask storage allows spent fuel assemblies to be sealed in casks or canisters and surrounded by inert gas. They are welded or bolted closed, and each is surrounded by steel, concrete, lead, or other material to provide leak-tight containment and radiation shielding. The casks may store the fuel horizontally or vertically in concrete vaults or on concrete pads.

**dry cell:** A electrolytic cell that uses a moist paste rather than a liquid as an electrolyte. Flashlight batteries are dry cells with a zinc cup for an anode,

a carbon rod for a cathode, and a paste made of powdered carbon,  $\text{NH}_4\text{Cl}$ ,  $\text{ZnCl}_2$ , and  $\text{MnO}_2$  for an electrolyte.

**DRY COLORING:** Method commonly used by fabricators for coloring plastic by tumble blending uncolored particles of the plastic material with selected dyes and pigments.

**Dry Coloring:** Method commonly used by fabricators for coloring plastics by tumble blending uncolored particles of the plastic material with selected dyes and pigments.

**dry orgasm :** Sexual climax without the release of semen from the penis.

**Dry Strength:** The strength of an adhesive joint determined immediately after drying under specified conditions or after a period of conditioning in the standard laboratory atmosphere. See Wet Strength.

**DRY TACK FREE:** That stage of drying when the paint no longer feels sticky or tacky when lightly touched.

**DRY TO HANDLE:** That stage of drying when a paint film has hardened sufficiently so the object or surface painted may be used without marring.

**DRY TO RECOAT:** That stage of drying when the next coat can be applied.

**DRY TO SAND:** That stage of drying when a paint film can be sanded without the sandpaper sticking or clogging.

**Dry-blend:** A free-flowing dry compound prepared without fluxing or addition of solvent. Also called powder blend.

**dry-bulb temperature:** temperature of the air.

**Drying:** A process in which a wet solid is heated or contacted with a hot gas stream, causing some or all of the liquid wetting the solid to evaporate. The vapor and the gas it evaporates into emerge as one outlet stream, and the solid and remaining residual liquid emerge as a second outlet stream.

OR The solidification of an applied paint film. Emulsions dry by evaporation of water oil based paints dry by evaporation of solvent followed by oxidation of the oil content. OR The removal of moisture from the resin pellets by exposure to certain time and temperature. All Hydroscopic Material must be dried prior to molding. OR The removal of moisture from the resin pellets by exposure to certain time and temperature.

**Drying of plastics:** Many plastics absorb water and must be dried prior to injection molding to ensure good cosmetics and material characteristics.

**Drying time:** The time required for an applied paint film to reach its full degree of hardness.

**Drywell:** The containment structure enclosing the vessel and recirculation system of a boiling-water reactor. The drywell provides both a pressure suppression system and a fission product barrier under accident conditions. For related information, see Boiling-Water Reactors.

**DSC:** See Differential scanning calorimetry.

**DSMB:** Data and Safety Monitoring Board. An impartial group that oversees a clinical trial and reviews the results to see if they are acceptable. This group determines if the trial should be changed or closed. Also called Data and Safety Monitoring Board.

**DSP :** Digital Sound Processing.

**DT(388)IL3 fusion protein:** A recombinant protein consisting of human interleukin 3 (IL3) fused to the first 388 amino acids of diphtheria toxin [DT(388)] (DT388IL3) with potential antineoplastic activity. Upon intravenous administration, the IL3 moiety of the DT(388)IL3 fusion protein SL-401 binds to IL3 receptors on cells expressing the receptor. Subsequently, the DT(388) toxin moiety, which contains both translocation and catalytic domains, is transported across the cell membrane via endocytosis. Within the cytosol, the catalytic domain of the toxin both catalyzes the ADP-ribosylation of, and inactivates, translation elongation factor 2 (EF-2), which results in the inhibition of translation during protein synthesis. IL3 may be overexpressed by a variety of cancers, including blastic plasmacytoid dendritic cell neoplasm and acute myeloid leukemia (AML).

**DT2219ARL immunotoxin :** A substance being studied in the treatment of some types of B-cell cancer. It contains an antibody linked to a toxic substance. The antibody binds to proteins called CD19 and CD22 on the surface of B cells, and the toxic substance kills the cells. It is a type of bispecific ligand-directed toxin.

**DT388IL3 fusion protein :** A substance being studied in the treatment of myeloid leukemia (a disease in which too many immature non-lymphocyte white blood cells are found in the blood and bone marrow). DT388IL3 fusion protein is made by combining IL-3 with a toxic substance. The IL-3 attaches to the cancer cells and the toxic substance kills them.

**DTA:** See Differential thermal analysis. OR Dental Trade Association. Freelin-Wade is a member.

**DTA-H19 plasmid:** A plasmid DNA encoding the A chain of the diphtheria toxin (DT-A) driven by the transcriptional regulatory sequences of human H19, with potential antineoplastic activity. Because the expression of DT-A is under the control of H19 promoter elements, DT-A is selectively expressed in tumor cells capable of turning on H-19. DT-A catalyzes ADP-ribosylation of translation elongation factor 2 (EF-2), resulting in the inhibition of protein synthesis and apoptosis. In addition, DT-A protein released from lysed cells cannot enter and kill neighboring cells because of the absence of the DT-B chain, further enhancing the selective cytotoxicity of this agent. Human H19 is a paternally-imprinted, oncofetal gene encoding an RNA product; it acts as a "riboregulator" in gene expression and is found at substantial levels in different human tumor cell types while its expression in normal adult tissue is limited.

**DTGM fusion protein :** An anticancer drug formed by the combination of diphtheria toxin and a colony-stimulating factor (GM-CSF). The colony-stimulating factor is attracted to cancer cells, and the diphtheria toxin kills the cells.

**DTH:** An inflammatory response that develops 24 to 72 hours after exposure to an antigen that the immune system recognizes as foreign. This type of immune response involves mainly T cells rather than antibodies (which are made by B cells). Also called delayed-type hypersensitivity response.

**DTIC-Dome:** (Other name for: dacarbazine)

**DTIC-Dome :** A drug used to treat Hodgkin lymphoma and malignant melanoma. It is also being studied in the treatment of other types of cancer. DTIC-Dome attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called dacarbazine.

**DU 145:** A cell line made from human prostate cancer cells that is used in the laboratory to study the way prostate cancer cells grow.

**dual energy x-ray absorptiometric scan :** An imaging test that measures bone density (the amount of bone mineral contained in a certain volume of bone) by passing x-rays with two different energy levels through the bone. It is used to diagnose osteoporosis (decrease in bone mass and density).

Also called BMD scan, bone mineral density scan, DEXA, DEXA scan, dual x-ray absorptiometry, and DXA.

**dual PI3 kinase/mTOR inhibitor GDC-0980:** An orally available agent targeting phosphatidylinositol 3 kinase (PI3K) and mammalian target of rapamycin (mTOR) kinase in the PI3K/mTOR signaling pathway, with potential antineoplastic activity. PI3K/mTOR kinase inhibitor GDC-0980 inhibits both PI3K kinase and mTOR kinase, which may result in tumor cell apoptosis and growth inhibition of cancer cells overexpressing PI3K/mTOR. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated in a PI3K-independent fashion.

**dual variable domain immunoglobulin ABT-165:** A dual-specific, tetravalent immunoglobulin (Ig)G-like molecule targeting two as of yet not publicly known targets, with potential antineoplastic activity. The target-binding variable domains of two monoclonal antibodies, which are not publicly known, are combined, via linkers, to create the tetravalent, dual-targeting single agent ABT-165. Upon administration of dual variable domain immunoglobulin (DVD-Ig) ABT-165, the target-binding variable domains specifically recognize and simultaneously bind to their two antigens expressed on tumor cells. This may both prevent antigen-mediated signaling and lead to an inhibition of cellular proliferation in susceptible tumor cells. The antigen targets are overexpressed on certain tumor cell types. The DVD-Ig may have enhanced physicochemical and pharmacokinetic properties as compared to their antibody counterparts.

**dual x-ray absorptiometry :** An imaging test that measures bone density (the amount of bone mineral contained in a certain volume of bone) by passing x-rays with two different energy levels through the bone. It is used to diagnose osteoporosis (decrease in bone mass and density). Also called BMD scan, bone mineral density scan, DEXA, DEXA scan, dual energy x-ray absorptiometric scan, and DXA.

**Duavee:** (Other name for: conjugated estrogens/bazedoxifene)

**Dubnium:** Symbol:"Db" Atomic Number:"105" Atomic Mass: (262)amu  
Dubnium is one of several postactinide elements. Scientists have created these in labs and may have only found a few atoms of the element. You will not find these in use anywhere.

**duborimycin:** An anthracycline antineoplastic antibiotic with therapeutic effects similar to those of doxorubicin. Duborimycin exhibits cytotoxic activity through topoisomerase-mediated interaction with DNA, thereby inhibiting DNA replication and repair and RNA and protein synthesis.

**duct :** In medicine, a tube or vessel of the body through which fluids pass.

**ductal carcinoma :** The most common type of breast cancer. It begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple). Ductal carcinoma may be either ductal carcinoma in situ (DCIS) or invasive ductal carcinoma. DCIS is a noninvasive condition in which abnormal cells are found in the lining of a breast duct and have not spread outside the duct to other tissues in the breast. In some cases, DCIS may become invasive cancer. In invasive ductal carcinoma, cancer has spread outside the breast duct to surrounding normal tissue. It can also spread through the blood and lymph systems to other parts of the body.

**ductal carcinoma in situ :** A noninvasive condition in which abnormal cells are found in the lining of a breast duct. The abnormal cells have not spread outside the duct to other tissues in the breast. In some cases, ductal carcinoma in situ may become invasive cancer and spread to other tissues. At this time, there is no way to know which lesions could become invasive. Also called DCIS and intraductal carcinoma.

**ductal intraepithelial neoplasia :** A condition in which abnormal cells are found in the lining of a breast duct (milk duct). Having ductal intraepithelial neoplasia may increase the risk of breast cancer in which these abnormal cells become cancer and spread outside the duct to other tissues in the breast. Types of ductal intraepithelial neoplasia include atypical ductal hyperplasia and ductal carcinoma in situ (DCIS). Also called DIN.

**ductal lavage :** A method used to collect cells from milk ducts in the breast. A hair-size catheter (tube) is inserted into the nipple, and a small amount of salt water is released into the duct. The water picks up breast cells, and is removed. The cells are checked under a microscope. Ductal lavage may be used in addition to clinical breast examination and mammography to detect breast cancer.

**ductile:** The ability of a substance to be drawn out to form a thin wire. OR A ductile material can be drawn out into wire. OR of a rock, flowing plastically in response to stress. OR Capable of being drawn into wire.

Metals are typically ductile materials. OR property of a metal in which it can be stretched without breaking. OR The extent to which a solid material can be drawn into a thinner cross section.

**ductless glands:** glands that have no ducts, such as the endocrine glands.

**duet:** two electrons. Helium, the simplest noble gas, has a duet of electrons. The gaining of an electron by a hydrogen atom adds stability because it achieves the helium duet. (Compare with "octet.")

**Dukes A colorectal cancer :** Cancer has spread from the mucosa (innermost layer) of the colon and/or rectal wall to the submucosa (layer of tissue under the mucosa) of the colon and/or rectal wall. Cancer may have spread to the muscle layer of the colon and/or rectal wall. Also called stage I colorectal cancer.

**Dukes B colorectal cancer :** Cancer has spread (1) through the muscle layer of the colon and/or rectal wall to the serosa (outermost layer) of the colon and/or rectal wall; or (2) through the serosa of the colon and/or rectal wall but has not spread to nearby organs; or (3) through the serosa of the colon and/or rectal wall to nearby organs. Also called stage II colorectal cancer.

**Dukes C colorectal cancer :** Cancer (1) has spread through the mucosa (innermost layer) of the colon and/or rectal wall to the submucosa (layer of tissue under the mucosa) and may have spread to the muscle layer of the colon and/or rectal wall. Cancer has spread to at least one but not more than 3 nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes; or cancer has spread through the mucosa of the colon and/or rectal wall to the submucosa. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes. OR, (2) cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa (outermost layer) of the colon and/or rectal wall or has spread through the serosa but not to nearby organs. Cancer has spread to at least one but not more than 3 nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes; or cancer has spread to the muscle layer of the colon and/or rectal wall or to the serosa of the colon and/or rectal wall. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes; or cancer has spread through the mucosa of the colon and/or rectal wall to the submucosa and may have spread to the muscle layer of the colon and/or rectal wall. Cancer has spread to 7 or more nearby lymph nodes. OR, (3) cancer has spread through the

serosa of the colon and/or rectal wall but has not spread to nearby organs. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes; or cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa of the colon and/or rectal wall or has spread through the serosa but has not spread to nearby organs. Cancer has spread to 7 or more nearby lymph nodes; or cancer has spread through the serosa of the colon and/or rectal wall and has spread to nearby organs. Cancer has spread to one or more nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes. Also called stage III colorectal cancer.

**Dukes classification :** A staging system used to describe the extent of colorectal cancer. Stages range from A (early stage) to D (advanced stage).

**dulanermin:** A recombinant human soluble protein corresponding to amino acids 114-281 of the Apo2 ligand/tumor necrosis factor-related apoptosis-inducing ligand (RhApo2L/TRAIL) with potential antineoplastic activity. Dulanermin binds to and activates TRAIL receptors 1 and 2 (TRAIL-R1/R2), which may activate caspases and induce p53-independent apoptosis in TRAIL-R1/R2-expressing tumor cells. The pro-apoptotic cell surface receptors TRAIL-R1 and -R2, also known as DR4 (death receptor 4) and DR5 (death receptor 5), are members of the TNF receptor family and are overexpressed by a variety of cancer cell types. Check for active clinical trials using this agent.

**duloxetine :** A drug used to treat depression and peripheral neuropathy (pain, numbness, tingling, burning, or weakness in the hands or feet) that can occur with diabetes. It is also being studied in the treatment of peripheral neuropathy caused by certain anticancer drugs. Duloxetine increases the amount of certain chemicals in the brain that help relieve depression and pain. It is a type of serotonin and norepinephrine reuptake inhibitor. Also called Cymbalta and duloxetine hydrochloride.

**duloxetine hydrochloride:** The hydrochloride salt of duloxetine, a fluoxetine derivative belonging to the class of selective serotonin (5-HT) and norepinephrine (NE) reuptake inhibitors (SSNRIs) and exhibiting antidepressant activity. Duloxetine selectively prevents the reuptake of 5-HT and NE via transporter complexes on the pre-synaptic membrane, thereby increasing the level of these neurotransmitters within the synaptic cleft. As a result, this agent potentiates serotonergic and noradrenergic activities in the central nervous system, and alleviates depression and

neuropathy sensations, such as pain and tingling. Furthermore, duloxetine does not show significant affinity for dopaminergic, adrenergic, cholinergic, histaminergic, opioid, glutamate, and gamma-aminobutyric acid (GABA) receptors.

**duloxetine hydrochloride** : A drug used to treat depression and peripheral neuropathy (pain, numbness, tingling, burning, or weakness in the hands or feet) that can occur with diabetes. It is also being studied in the treatment of peripheral neuropathy caused by certain anticancer drugs. Duloxetine hydrochloride increases the amount of certain chemicals in the brain that help relieve depression and pain. It is a type of serotonin and norepinephrine reuptake inhibitor. Also called Cymbalta and duloxetine.

**dumping syndrome** : A condition that occurs when food or liquid moves too fast into the small intestine. Symptoms include cramps, nausea, diarrhea, sweating, weakness, and dizziness. Dumping syndrome sometimes occurs in people who have had part or all of their stomach removed.

**DuNOUY RING TENSIO METER:** A piece of equipment which measures the force required to remove a ring of precisely known dimensions from a liquid surface. This force is directly related to the surface tension of that liquid. (see RFF 705.10.03 - SURFACE TENSION).

**duodenitis** : Inflammation of the duodenum (the first part of the small intestine that connects to the stomach).

**duodenum:** the first 10 to 12 inches of the small intestine in which most of the chemical digestion takes place. OR The first part of the small intestine. It connects to the stomach. The duodenum helps to further digest food coming from the stomach. It absorbs nutrients (vitamins, minerals, carbohydrates, fats, proteins) and water from food so they can be used by the body.

**Duplex:** Same as double helix.

**duplicate portion sampling method (duplicate diet study):** This method is frequently used for the same purposes as the total diet study technique. It implies that test persons consume their ordinary diet, but that, for each meal, they prepare a duplicate portion of all food as prepared, served, and consumed (WHO, 1979).

**dura mater** : The tough outer layer of tissue that covers and protects the brain and spinal cord and is closest to the skull. The dura mater is one of the

three layers that form the meninges.

**DURABILITY:** The ability of paint to last or hold up well against the destructive agents such as weather, sunlight, detergents, air pollution, abrasion or marring. OR The degree to which paint withstands the destructive effects on the environment to which it is exposed especially harsh weather conditions. Durability has two aspects. Its protective properties safeguard the substrate from degradation. Its decorative properties allow the paint to retain its attractive appearance.

**durable power of attorney :** A type of power of attorney. A power of attorney is a legal document that gives one person (such as a relative, lawyer, or friend) the authority to make legal, medical, or financial decisions for another person. It may go into effect right away, or when that person is no longer able to make decisions for himself or herself. A durable power of attorney remains in effect until the person who grants it dies or cancels it. It does not need to be renewed over time. Also called DPA.

**Durometer:** An instrument used for measuring the hardness of a material. Or The hardness of a material as measured by the Shore Durometer. Or a numerical scale for measuring the hardness of rubber or plastic based on the depth of penetration of an indenter point on the surface of a test specimen. Or A measure of a material's hardness. It is measured on a numeric scale ranging from lower (softer) to higher (harder). Or Standard rubber industry hardness test for liquid silicone rubber molded or extruded parts. The hardness scale most commonly used for silicone rubber durometer is the Shore A scale or The hardness of a polymer. There are three scales in use for measuring durometer and they are, Shore A, Shore D and Rockwell.or Instrument for measuring the hardness of a material. Plastic materials can have different shore hardnesses depending on the requirements of the plastic extrusion's final applications. The durometer measures the depth of an indentation in the material created by a given force on a standardized presser foot. OR One of several measures of the hardness of a material as well as the instrument used to measure hardness. Hardness may be defined as a material's resistance to permanent indentation. Durometer is often used to refer to the measurement as well as the instrument used.

**DUROMETER HARDNESS:** The hardness of a material as measured by the Shore Durometer.

**durvalumab:** A Fc optimized monoclonal antibody directed against programmed cell death-1 ligand 1 (PD-L1; B7 homolog 1; B7H1), with potential immune checkpoint inhibitory and antineoplastic activities. Upon intravenous administration, durvalumab binds to PD-L1, thereby blocking its binding to and activation of its receptor programmed death 1 (PD-1) expressed on activated T-cells. This may reverse T-cell inactivation and activate the immune system to exert a cytotoxic T-lymphocyte (CTL) response against PD-L1-expressing tumor cells. PD-L1, a member of the B7 protein superfamily, is overexpressed on certain tumor cell types and on various tumor-infiltrating immune cells. PD-L1 binding to PD-1 on T-cells suppresses the immune system and results in increased immune evasion. The Fc region of durvalumab is modified in such a way that it does not induce either antibody-dependent cytotoxicity (ADCC) or complement-dependent cytotoxicity (CDC). Check for active clinical trials using this agent.

**dust storm:** a windstorm that carries large amounts of sand or sediment through the air.

**dust veil index:** A quantitative method developed by H. H. Lamb for comparing the magnitude of volcanic eruptions. The formulae use observations either of the depletion of the solar beam, temperature lowering in middle latitudes, or the quantity of solid matter dispersed as dust. The reference dust veil index is 1000, assigned to the Krakatoa 1883 eruption, and the index is calculated using all three methods, where the information is available, for statistical comparison purposes. Abbreviated D.V.I.

**Dust/bittiness on new paintwork:** This can be caused by dust and dirt in the air settling on the paint surface; by using a dirty paint brush, or by stirring skin into the paint. In either case, let the paint dry and harden, then rub down using wet and dry abrasive paper and warm water with a bit of detergent. Rinse thoroughly with clean water and allow to dry before repainting. Use only good quality paint brushes and wash out with a little white spirit, making sure the brush is completely dry before starting work. Avoid stirring skin into the paint by straining into a clean kettle before use.

**dutasteride:** A drug used to treat symptoms of an enlarged prostate gland. It is being studied in the treatment of male hair loss and prostate cancer. Dutasteride blocks enzymes the body needs to make male sex hormones. It is a type of 5-alpha reductase inhibitor. Also called Avodart and GG745.

OR A synthetic 4-azasteroid compound with antiandrogenic activity. Dutasteride competitively and specifically binds to isoenzymes 1 and 2 of 5-alpha-reductase, forming stable enzyme complexes and inhibiting the conversion of testosterone to 5 $\alpha$ -dihydrotestosterone (DHT); the reduction in DHT activity may mitigate or prevent enlargement of the prostate gland. The type 2 5-alpha-reductase isoenzyme is primarily active in the reproductive tissues while the type 1 isoenzyme is also active in skin and the liver.

**Dutch metal:** A cheaper alternative to gold leaf consisting basically of copper.

**dUTPase inhibitor TAS-114:** An orally bioavailable inhibitor of both deoxyuridine triphosphatase (dUTPase) and dihydropyrimidine dehydrogenase (DPD), with potential antineoplastic adjuvant activity. Upon oral administration in combination with a prodrug of the pyrimidine antagonist 5-fluorouracil (5-FU), TAS-114 inhibits (DPD), the liver enzyme responsible for rapid catabolism of 5-FU into inactive metabolites. This prevents first-pass metabolism of 5-FU, allowing oral administration of the 5-FU prodrug and increasing the efficacy of 5-FU. In addition, as a dUTPase inhibitor, TAS-114 enhances the antitumor activity of 5-FU by preventing the hydrolysis and breakdown of 5-fluoro-deoxyuridine triphosphate (FdUTP) and deoxyuridine triphosphate (dUTP), which are active metabolites of 5-FU. This promotes DNA polymerase-dependent incorporation of these antimetabolites into DNA and leads to DNA damage and tumor cell death. Co-administration with TAS-114 allows lower dosing of 5-FU prodrugs, which decreases 5-FU-related toxicity, while maintaining therapeutic levels of 5-FU at the tumor site.

**duvelisib:** An orally bioavailable, highly selective and potent small molecule inhibitor of the delta and gamma isoforms of phosphoinositide-3 kinase (PI3K) with potential immunomodulating and antineoplastic activities. Upon administration, duvelisib prevents the activation of the PI3K delta/gamma-mediated signaling pathways which may lead to a reduction in cellular proliferation in PI3K delta/gamma-expressing tumor cells. Unlike other isoforms of PI3K, the delta and gamma isoforms are overexpressed primarily in hematologic malignancies and inflammatory and autoimmune diseases. By selectively targeting these PI3K isoforms, PI3K

signaling in normal, non-neoplastic cells is minimally or not affected which would result in a more favorable side effect profile.

**DVT:** The formation of a blood clot in a deep vein of the leg or lower pelvis. Symptoms may include pain, swelling, warmth, and redness in the affected area. Also called deep vein thrombosis.

**DWELL:** A pause in the application of pressure to a mold made just before the mold is completely closed, to allow the escape of gas from the molding material. Or A pause in the applied pressure to a mold during the injection cycle just before the mold is completely closed. This dwell allows any gases formed or present to escape from the molding material.

**DWJ1319:** An orally available agent that may prevent the formation of gallstones. Check for active clinical trials using this agent.

**DX-52-1:** An anticancer drug that is a type of antitumor antibiotic. It is an anthracycline.

**DX-8951f:** An anticancer drug that is a type of topoisomerase inhibitor. Also called exatecan mesylate.

**DXA:** An imaging test that measures bone density (the amount of bone mineral contained in a certain volume of bone) by passing x-rays with two different energy levels through the bone. It is used to diagnose osteoporosis (decrease in bone mass and density). Also called BMD scan, bone mineral density scan, DEXA, DEXA scan, dual energy x-ray absorptiometric scan, and dual x-ray absorptiometry.

**Dyad symmetry:** Property of a structure that can be rotated by  $180^\circ$  to produce the same structure.

**dye:** A substance used to give color to cloth, plastics, paper, or other materials. Dye may be made from plants or by synthetic chemical reactions.

**Dyes:** Synthetic or natural organic chemicals that are soluble in most common solvents. Characterized by good transparency, high tinctorial strength, and low specific gravity.

**Dymelor:** (Other name for: acetohexamide)

**Dynacin:** (Other name for: minocycline hydrochloride)

**dynamic equilibrium:** a system that fluctuates, but overall is in balance. OR Dynamic equilibrium is established when two opposing processes are occurring at precisely the same rate, so that there is no apparent change in the system over long periods of time. OR Dynamic equilibrium is the

position reached by a reversible reaction in a closed system when the rate of the forward reaction is the same as the rate of the reverse reaction. OR The condition in which the rate of a forward process is exactly the same as the rate of a reverse process.

**Dynamic instability:** A property of microtubules such that some microtubules in a population lengthen while other simultaneously shorten; a result of the random fluctuations in the number of GTP- tubulin subunits or GDP-tubulin subunits at the ends of the microtubule. GTP-tubulin polymerizes more readily.

**DYNAMIC MECHANICAL ANALYSIS (DMA):** In this technique the response of a material to an oscillatory load is measured during a temperature cycle. It provides information on material modulus of elasticity, which in turn can be related to impact strength, tensile strength, toughness and creep rate.

**Dynamic mode:** A common thermogravimetric analysis technique in which the temperature is raised at a known rate, typically linear.

**Dynamic range :** the range of concentrations in which the sensor sensitivity is greater than zero. The dynamic range can be also expressed as the difference between minimum and maximum signal values of the sensor in steadystates.

**Dynamic Seal:** A seal used in an environment that subjects it or a mating surface to movement

**dynamiccorrelation:** All the correlation energy or correlation effect that is not considered "nondynamic" or "static."

**dyne:** The unit of force in the obsolete cgs system of units. A dyne is the force required to accelerate a 1 g mass by 1 cm/s per second. OR Unit of measure for surface tension (treat level).

**Dyne Level:** Measure of surface tension.

**Dynein:** A large protein with atpase activity that is a component of microtubules; the atpase activity provides the power for the movement of cilia and flagella. In cytoplasm, a motor protein that is related to the dynein in flagella and cilia and powers retrograde transport

**dysarthria:** difficulty in articulating words caused by impairment of the muscles used in speech OR lack of coordination of movements characterized by under- or over-shooting intended position

**dyscrasia** : Disease. Usually refers to diseases of the blood.

**dysesthesia** : A condition in which a sense, especially touch, is distorted. Dysesthesia can cause an ordinary stimulus to be unpleasant or painful. It can also cause insensitivity to a stimulus.

**dysfunction** : A state of not functioning normally.

**dysgerminoma** : A type of tumor that begins in the type of cells that give rise to egg cells and is most often found in the ovaries. Dysgerminomas may also occur in other places in the body, including the central nervous system. They are the most common type of ovarian germ cell tumor and can spread to other parts of the body. They are most common in females who are younger than 20 years old.

**dysgeusia** : A bad taste in the mouth. Also called parageusia.

**dysmorphic**: relating to a body characteristic that is abnormally formed

**dysostosis multiplex**: characterized by an enlarged skull, thickened calvarium, premature closure of lamboid and sagittal sutures, shallow orbits, enlarged J-shaped sella and abnormal spacing of the teeth with dentigerous cysts

**dyspepsia** : Upset stomach.

**dysphagia** : Difficulty swallowing.

**dysphonia** : Trouble with the voice when trying to talk, including hoarseness and change in pitch or quality or voice.

**dysplasia**: abnormal development or growth of tissues, organs, or cells OR disordered eating OR Cells that look abnormal under a microscope but are not cancer.

**dysplastic nevus** : A specific type of nevus (mole) that looks different from a common mole. Dysplastic nevi are mostly flat and often larger than common moles and have borders that are irregular. A dysplastic nevus can contain different colors, which can range from pink to dark brown. Parts of the mole may be raised above the skin surface. A dysplastic nevus may develop into melanoma (a type of skin cancer), and the more dysplastic nevi a person has, the higher the risk of melanoma. A dysplastic nevus is sometimes called an atypical mole.

**dyspnea** : Difficult, painful breathing or shortness of breath.

**Dysport**: (Other name for: botulinum toxin type A)

**Dysprosium:** Symbol:"Dy" Atomic Number:"66" Atomic Mass: 162.50amu. Dysprosium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. You may find this element in lasers, many alloys, and even nuclear reactors.

**dystonia:** abnormal tonicity of muscle characterized by prolonged, repetitive muscle contractions that may cause twisting or jerking movements

**DZ:** Double-zeta. A basis set for which there are twice as many basis functions as are minimally necessary (see "MBS"). "Zeta" (Greek letter ) is the usual name for the exponent that characterizes a Gaussian function.

**DZP:** Double-zeta with polarization. DZ with polarization basis functions added. A polarization set generally has an angular momentum one unit higher than the highest valence function. So a polarization set on carbon is a set of d-functions.

**E (entgegen):** E the notation for the stereochemical arrangement in which the higher-ranked substituent groups are on opposite sides of the double bond.

**E coli (Escherzchia coli):** A common bacterium found in the small intestine of vertebrates; the most well-studied organism.

**E number:** E numbers are a way of classifying chemicals added to food (for example, colourings, preservatives, emulsifiers).

**E Ray:** See Extraordinary ray.

**E-101 solution:** An oxidant-generating coupled-enzyme system-based, topical solution comprised of two enzymes, *Aspergillus niger*-derived glucose oxidase (GO) and porcine myeloperoxidase (p-MPO), as well as glucose, sodium chloride and stabilizing amino acids, with potential broad-spectrum microbicidal activity. Following direct administration of E-101 solution into the surgical incisional wound via microspray, the enzyme GO converts oxygen into hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>). In turn, p-MPO catalyzes the reaction of H<sub>2</sub>O<sub>2</sub> with hypochlorous acid (HOCl), which is formed through oxidation of the chloride ion, to generate singlet oxygen (O<sub>2</sub>\*). As p-MPO binds to microorganisms, O<sub>2</sub>\* is able to exert direct oxidative damage to microorganisms, resulting in potent antimicrobial activity. E-101 may act as an anti-bactericidal agent against a variety of microorganisms,

including multidrug-resistant strains. This may prevent infection at the surgical site.

**e-cigarette :** A device that has the shape of a cigarette, cigar, or pen and does not contain tobacco. It uses a battery and contains a solution of nicotine, flavorings, and other chemicals, some of which may be harmful. When e-cigarettes are used, the nicotine solution turns into a mist that can be inhaled into the lungs. The amount of nicotine in individual e-cigarettes can vary. It is not yet known whether e-cigarettes are safe or if they can be used to help smokers quit smoking. Also called electronic cigarette.

**E-coli:** Escherichia coli - one of the non-pathogenic coliform organisms used to indicate the presence of pathogenic bacteria in water.

**E-Mycin:** (Other name for: erythromycin)

**E-selectin antagonist GMI-1271:** A synthetic, glycomimetic molecule and E-selectin (CD62E) antagonist, with potential anti-thrombotic, antineoplastic and chemopotentiating activities. Upon administration, GMI-1271 binds to E-selectin expressed on endothelial cells and prevents their interaction with selectin-E ligand-expressing cancer cells. This may prevent tumor cell activation, migration and metastasis. GMI-1271 also interferes with the binding of selectin E-expressing vascular endothelial cells to selectin-E ligand-expressing monocytes and neutrophils, thereby disrupting their activation. Consequently, this inhibits both the activation of the coagulation cascade and thrombus formation. This agent also prevents both leukocyte activation and inflammation. E-selectin is a cell adhesion molecule involved in cell rolling, signaling and chemotaxis; it also plays a crucial role in inflammatory processes and cancer.

**E-Z notation:** E-Z a notation, somewhat like the cis and trans system, that is used for alkenes with more than two substituents. The atoms or groups on either side of the double bond are ranked by atomic weight. If the heavier atoms are on the same side of the molecule, it is labeled Z, and if the heavier atoms are on opposite sides of the molecule, it is labeled E.

**E-Z Prep:** (Other name for: povidone-iodine solution)

**E-Z Scrub:** (Other name for: povidone-iodine solution)

**E. coli CD-expressing genetically modified neural stem cells:**

Genetically-modified neural stem cells (NSCs) transfected with the Escherichia coli (E. coli) suicidal gene cytosine deaminase (CD), with

potential antineoplastic adjuvant activity. Upon intracerebral injection, *E. coli* CD-expressing genetically modified NSCs express the *E. coli* cytosine deaminase, an enzyme that catalyzes the intracellular conversion of the nontoxic prodrug 5-fluorocytosine (5-FC) into the cytotoxic 5-fluorouracil (5-FU). Co-administration of this agent with 5-FC and upon local activation of 5-FU in the brain tumor, 5-FU disrupts DNA synthesis in tumor cells thereby impeding cellular proliferation with minimal systemic exposure and toxicity.

**E1:** an elimination reaction mechanism in which the slow step is a self-ionization of the molecule to form a carbocation. Thus, the rate-controlling step is unimolecular.

**E2:** an elimination reaction mechanism in which the rate-controlling step is the simultaneous removal of a proton from the molecule by a base, resulting in the creation of a double bond. The rate controlling step is bimolecular.

**E2F1 pathway activator ARQ 171:** A second-generation E2F1 pathway activator with potential antineoplastic activity. ARQ 171 induces the expression of E2F transcription factor 1, thereby activating the E2F1-mediated checkpoint process. As a result, this agent exerts anti-tumor activity through checkpoint activation independent of p53 mediated tumor suppression. E2F1, down-regulated in cancer cells, regulates expression of genes involved in the cell cycle progression from G1 into S phase. The G1/S checkpoint process selectively induces cell cycle arrest in cancer cells with irreparable DNA damages and triggers subsequent apoptosis, while allowing cell division to proceed in cells without or with minor reparable DNA damage.

**E7070:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called sulfonamides.

**E7389:** A drug used to treat metastatic breast cancer in patients who have already been treated with other chemotherapy. It is also being studied in the treatment of other types of cancer. E7389 may block cancer cell growth by stopping cell division. It belongs to the family of drugs called antitubulin agents. Also called eribulin mesylate and Halaven.

**E7820:** A small molecule and aromatic sulfonamide derivative with potential antiangiogenic and antitumor activities. E7820 inhibits angiogenesis by suppressing integrin alpha 2, a cell adhesion molecule

expressed on endothelial cells. Inhibition of integrin alpha 2 leads to an inhibition of cell-cell interactions, endothelial cell-matrix interactions, vascular endothelial cell proliferation and angiogenesis.

**eardrum:** the tympanic membrane that receives vibrations from the outer ear.

**early menopause :** A condition in which the ovaries stop working and menstrual periods stop before age 40. Natural menopause usually occurs around age 50. A woman is said to be in menopause when she hasn't had a period for 12 months in a row. Symptoms of menopause include hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility. Early menopause can be caused by some cancer treatments, surgery to remove the ovaries, and certain diseases or genetic conditions. Also called premature menopause, premature ovarian failure, and primary ovarian insufficiency.

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**Early site permit (ESP):** A permit through which the NRC resolves site safety, environmental protection, and emergency preparedness issues, in order to approve one or more proposed sites for a nuclear power facility, independent of a specific nuclear plant design or an application for a construction permit or combined license. An ESP is valid for 10 to 20 years, but can be renewed for an additional 10 to 20 years. For further detail, see Early Site Permit Applications for New Reactors.

**early-stage breast cancer :** Breast cancer that has not spread beyond the breast or the axillary lymph nodes. This includes ductal carcinoma in situ and stage I, stage IIA, stage IIB, and stage IIIA breast cancers.

**early-stage cancer :** A term used to describe cancer that is early in its growth, and may not have spread to other parts of the body. What is called early stage may differ between cancer types.

**Ears:** Parts soldered, bumped or riveted to the side of a can or pail to which a bail (or handle) is inserted for easier carrying.

**Earth pigments:** A class of pigments usually mined direct from the earth. Also known as natural or mineral pigments e.g. red and yellow iron oxides yellow ochre, raw sienna, raw umber.

**earthflow:** the movement of earth material down a hillside as a viscous fluid; earthflows typically occur on steep slopes with thick soil cover that becomes saturated by heavy rains.

**earthquake:** the ground shaking caused by rocks that suddenly move or jolt in response to tectonic stress.

**Earthquake, operating basis:** An earthquake that could be expected to affect the site of a nuclear reactor, but for which the plant's power production equipment is designed to remain functional without undue risk to public health and safety.

**East Indian sandalwood oil mouth rinse:** A mouth rinse containing 0.25% East Indian sandalwood oil, which is derived from the heartwood of *Santalum album*, a tree native to southern Asia, with potential anti-inflammatory, anti-infective and anti-mucositis activities. East Indian sandalwood oil (EISO) is primarily comprised of the sesquiterpene alcohols alpha- and beta-santalol. Although the exact mechanisms of action through which EISO exerts its effects have yet to be fully elucidated, upon rinsing the oral cavity with the EISO mouth rinse, the active ingredients in the oil may inhibit the production of pro-inflammatory cytokines and chemokines, most likely through the inhibition of the activity of key inflammatory enzymes, including the cyclooxygenases. This prevents inflammation of the mucosal membranes and may prevent or decrease chemotherapy- and/or radiation-induced oral mucositis.

**Eastern red cedar :** A type of evergreen tree with hard fragrant wood that is a member of the cypress family. The oil from the wood is used in soaps, shampoos, bath salts, perfumes, aromatherapy, and to keep insects away. The scientific name is *Juniperus virginiana*. Also called cedarwood and red cedar.

**Eaves:** The lower edge of a roof where it projects beyond the face of a wall.

**ebb currents:** tidal currents preceding low tide.

**ebesen-containing oral capsule SPI-1005:** An oral capsule containing a proprietary formulation of the organoselenium compound ebesen, with potential anti-oxidant, anti-inflammatory and cytoprotective activity. Upon oral administration of SPI-1005, this agent mimics the activity of glutathione peroxidase (GPx) and can utilize glutathione to reduce other unstable molecules, thus preventing the formation of reactive oxygen species (ROS) and reducing oxidative stress on the cell. In the cochlea, this agent may prevent drug-induced injury to the auditory hair cells thereby preventing hearing loss. GPx is the main antioxidant enzyme in the cochlea and protects the inner ear from loud sounds and biochemical damage. In addition, ebesen is able to inhibit the activity of many enzymes involved in inflammation. Check for active clinical trials using this agent.

**ebulliometry:** Determination of average molecular weight of a dissolved substance from the boiling point elevation of the solution.

**EBV:** A common virus that remains dormant in most people. It causes infectious mononucleosis and has been associated with certain cancers, including Burkitt lymphoma, immunoblastic lymphoma, and nasopharyngeal carcinoma. Also called Epstein-Barr virus.

**EC:** Ethyl cellulose

**ecchymosis :** A small bruise caused by blood leaking from broken blood vessels into the tissues of the skin or mucous membranes.

**eccrine gland :** A type of simple sweat gland that is found in almost all regions of the skin. These glands produce sweat that reaches the surface of the skin by way of coiled ducts (tubes). The body is cooled as sweat evaporates from the skin.

**Ecdysone:** A hormone that stimulates the molting process in insects.

**ECG:** A line graph that shows changes in the electrical activity of the heart over time. It is made by an instrument called an electrocardiograph. The graph can show that there are abnormal conditions, such as blocked arteries, changes in electrolytes (particles with electrical charges), and changes in the way electrical currents pass through the heart tissue. Also called EKG and electrocardiogram.

**echinacea :** An herb native to North America that has been used to prevent and treat the common cold and other respiratory infections. Echinacea may interfere with treatment that uses the immune system to fight cancer. The

scientific names are *Echinacea purpurea* and *Echinacea angustifolia*. Also called purple coneflower.

**echinomycin:** A polypeptide quinoxaline antineoplastic antibiotic isolated from the bacterium *Streptomyces echinatus*. Echinomycin intercalates into DNA at two locations simultaneously in a sequence-specific fashion, thereby inhibiting DNA replication and RNA synthesis.

**echocardiogram :** A computer picture of the heart created by bouncing high-energy sound waves (ultrasound) off internal tissues or organs of the chest. Echocardiograms show the size, shape, and position of the heart. They also show the parts inside the heart, such as the valves, and the motion of the heart while it is beating. An echocardiogram may be used to help diagnose heart problems, such as abnormal heart valves and heart rhythms, damage to the heart muscle from a heart attack, and heart murmurs. Echocardiograms can also show an infection on or around the heart valves, blood clots or tumors inside the heart, and fluid buildup in the sac around the heart.

**echocardiography :** A procedure that uses ultrasonic waves directed over the chest wall to obtain a graphic record of the heart's position, motion of the walls, or internal parts such as the valves.

**ecia lentis:** displacement of the crystalline lens of the eye

**eclipsed conformation:** one of the possible orientations of atoms or groups around two carbon atoms joined by a single bond. Atoms and groups bonded to an eclipsed conformer are positioned in line with one another, creating repulsive forces that give the molecule a high energy state. (Compare with "staggered conformation.")

**ecologic study :** A study that compares large groups of people instead of individuals for differences in things such as cancer rates. The groups can differ by location (for example, city, county, or country). They can also differ by time (a few days, years, or decades). Groups can be immigrants (compared with people who are native to the country) or people with different types of jobs. The Surveillance, Epidemiology, and End Results (SEER) Program conducts ecologic studies to collect information on cancer rates over time in certain parts of the United States. Also called ecological study.

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**Ecology:** The study of all aspects of how organisms interact with each other and/or their environment

**Economic Simplified Boiling-Water Reactor (ESBWR):** A 4,500-MWt nuclear reactor design, which has passive safety features and uses natural circulation (with no recirculation pumps or associated piping) for normal operation. GE-Hitachi Nuclear Energy (GEH) submitted an application for final design approval and standard design certification for the ESBWR on August 24, 2005. For detail, see Design Certification Application Review: Economic Simplified Boiling-Water Reactor (ESBWR).

**Ecosystem:** Groupings of various organisms interacting with each other and their environment. OR The interacting system of a biological community and its nonliving environmental surroundings. OR systems formed from the interactions between communities and their physical environments.

**ecotoxicology:** The effects of chemical agents on the environment, including, in addition to effects on man, adverse events that take place in the general ecosystem. It is not necessarily related primarily to human health (WHO, 1979).

**Ecotrin:** (Other name for: acetylsalicylic acid)

**ECP:** Effective core potential. The core electrons have been replaced by an effective potential. Saves computational expense. May sacrifice some accuracy, but can include some relativistic effects for heavy elements (see RECP).

**ecromeximab:** A low-fucose, human-mouse chimeric IgG1 monoclonal antibody directed against the ganglioside GD3, a surface antigen expressed on many malignant melanoma cells, with potential antineoplastic activity. Ecomeximab binds to GD3-positive cells, thereby initiating antibody-dependent cytotoxicity against GD3-positive cells. This agent is prepared

by fusing murine immunoglobulin (Ig) light and heavy variable regions derived from the murine IgG3 antibody KM-641 to a human constant (Fc) region. The low fucose content of the oligosaccharide side chains of this antibody may enhance binding of the antibody Fc region to lymphocyte Fc receptors.

**ECT:** A treatment for severe depression and certain mental disorders. A brief seizure is induced by giving electrical stimulation to the brain through electrodes placed on the scalp. Also called electroconvulsive therapy and electroshock therapy.

**ecteinascidin 743 :** A drug used to treat liposarcoma and leiomyosarcoma (types of soft tissue sarcoma) that cannot be removed by surgery or have spread to other parts of the body. It is used in patients who were treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Ecteinascidin 743 may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called ET-743, trabectedin, and Yondelis.

**ectocervical :** Having to do with the part of the cervix that protrudes into the vagina and is lined with epithelial cells.

**ectoderm:** one of three germ layers that develops into the skin and nervous system.

**ectomesenchymoma :** A rare, fast-growing tumor of the nervous system or soft tissue that occurs in children and young adults. Ectomesenchymomas may form in the head and neck, abdomen, perineum, scrotum, or limbs. Also called malignant ectomesenchymoma.

**ectopic pregnancy :** A condition in which a fertilized egg grows outside of the uterus, usually in one of the fallopian tubes. Symptoms include sharp pain on one side of the abdomen and bleeding from the vagina. Also called extrauterine pregnancy.

**eculizumab :** A human monoclonal antibody directed against terminal complement protein C5. Eculizumab binds to terminal complement protein C5, thereby blocking C5 cleavage into pro-inflammatory components and blocking the complement-mediated destruction of paroxysmal nocturnal hemoglobinuria (PNH) red blood cells. Check for active clinical trials using this agent. OR A drug used to prevent red blood cells from being destroyed in patients with a rare red blood cell disorder called paroxysmal nocturnal hemoglobinuria (PNH). It is also used to treat another rare disorder called

atypical hemolytic urea syndrome (aHUS), in which blood clots form in small blood vessels. Eculizumab binds to an immune system protein called C5. This helps keep red blood cells from breaking down and helps keep blood clots from forming. Eculizumab is a type of monoclonal antibody. Also called Soliris. OR A drug used to prevent red blood cells from being destroyed in patients with a rare red blood cell disorder called paroxysmal nocturnal hemoglobinuria (PNH). It is also used to treat another rare disorder called atypical hemolytic urea syndrome (aHUS), in which blood clots form in small blood vessels. Eculizumab binds to an immune system protein called C5. This helps keep red blood cells from breaking down and helps keep blood clots from forming. Eculizumab is a type of monoclonal antibody. Also called Soliris.

**eczema :** A group of conditions in which the skin becomes inflamed, forms blisters, and becomes crusty, thick, and scaly. Eczema causes burning and itching, and may occur over a long period of time. Atopic dermatitis is the most common type of eczema.

**edatrexate :** An anticancer drug that belongs to a family of drugs called antimetabolites. Or A polyglutamatable folate antagonist analogue of methotrexate with antineoplastic activity. Edatrexate inhibits dihydrofolate reductase, thereby increasing cellular levels of polyglutamates, inhibiting thymidylate synthase and glycinamide ribonucleotide formyl transferase, impairing synthesis of purine nucleotides and amino acids, and resulting in tumor cell death. Edatrexate may overcome tumor resistance to methotrexate, which loses its activity after it is polyglutamated.

**eddy:** A circular movement of water or air that is formed where currents pass obstructions or between two adjacent currents that are flowing counter to each other.

**Edecrin:** (Other name for: ethacrynic acid)

**edema :** Swelling caused by excess fluid in body tissues.

**edetic acid :** A chemical that binds certain metal ions, such as calcium, magnesium, lead, and iron. It is used in medicine to prevent blood samples from clotting and to remove calcium and lead from the body. It is also used to keep bacteria from forming a biofilm (thin layer stuck to a surface). It is a type of chelating agent. Also called EDTA and ethylenediaminetetraacetic acid.

**Edge coverage:** A coating's ability to flow over, build and adhere to sharp corners, angles and edges.

**Edge Drives:** Edge drive units are designed to reduce tension to acceptable levels in applications where long belts pass through a series of turns and straight runs often resulting in tension levels which exceed recommended limits.

**Edge Gate:** Entrance to the part from the runner located on the parting line. Or An opening aligned with the parting line of the mold where resin flows into the cavity. Edge gates are typically placed on an outside edge of the part. Or A method of injecting liquid silicone rubber into the mold cavity

**Edge Wrinkles:** Rough cut, or jagged edge followed by a wrinkle extending into the roll.

**EDM:** Electric Discharge Machining. Sometimes colloquially also referred to as spark machining, spark eroding, burning, die sinking or wire erosion, is a manufacturing process whereby a desired shape is obtained using electrical discharges. Material is removed from the workpiece by a series of rapidly recurring current discharges between two electrodes, separated by a dielectric liquid and subject to an electric voltage. or Electric Discharge Machining. A moldmaking method which can create taller, thinner ribs than milling, text on top of ribs and square outside edges on parts.

**EDM or electric discharge machining:** A manufacturing process used to create molds, where the shape of the mold cavity is obtained by removing metal material using electrical discharges.

**Edman degradation:** The sequential removal of the N-terminal amino acid from a protein as a phenylthiohydantoin derivative; used in sequencing proteins.

**Edman degradation:** A systematic method of sequencing proteins, proceeding by stepwise removal of single amino acids from the amino terminus of a polypeptide chain.

**edotecarin:** A synthetic indolocarbazole with antineoplastic activity. Edotecarin inhibits the enzyme topoisomerase I through stabilization of the DNA-enzyme complex and enhanced single-strand DNA cleavage, resulting in inhibition of DNA replication and decreased tumor cell

proliferation. or A substance being studied in the treatment of cancer. It is a type of topoisomerase I inhibitor. Also called J-107088.

**edoxaban tosylate:** The tosylate salt form of edoxaban, an orally active inhibitor of coagulation factor Xa (activated factor X) with anticoagulant activity. Edoxaban is administered as edoxaban tosylate. This agent has an elimination half-life of 9-11 hours and undergoes renal excretion.

**edrecolomab:** A type of monoclonal antibody used in cancer detection or therapy. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells. OR A murine monoclonal IgG2a antibody to tumor-associated epithelial cell adhesion molecule (EpCAM, or 17-1A) antigen. Edrecolomab attaches to EpCAM, a human cell surface glycoprotein that is found on normal epithelial cells and some tumor cells, such as those of colon and breast carcinomas. Upon binding, this agent recruits the body's immune effector cells, which may exhibit antitumor cytotoxicity.

**EDTA:** A polydentate ligand that tightly complexes certain metal ions. EDTA is used as a blood preservative by complexing free calcium ion (which promotes blood clotting). EDTA's ability to bind to lead ions makes it useful as an antidote for lead poisoning. OR A chemical that binds certain metal ions, such as calcium, magnesium, lead, and iron. It is used in medicine to prevent blood samples from clotting and to remove calcium and lead from the body. It is also used to keep bacteria from forming a biofilm (thin layer stuck to a surface). It is a type of chelating agent. Also called edetic acid and ethylenediaminetetraacetic acid.

**edta titration (edta):** ethylenediaminetetraacetic acid (or its salts). A standard method of measuring the hardness of a solution

**Edwards syndrome :** A genetic disorder caused by having an extra chromosome 18 in some or all of the body's cells. Edwards syndrome is marked by a low birth weight and certain abnormal features. These include a small, abnormally shaped head; a small jaw and mouth; clenched fists with overlapping fingers; and heart, lung, kidney, intestine, and stomach defects. Many babies with Edwards syndrome die before birth or within the first month of life, but some children live for several years. Having Edwards syndrome increases the risk of certain types of cancer, such as hepatoblastoma (a type of liver cancer) and Wilms tumor (a type of kidney cancer). Also called trisomy 18.

**EEG:** A recording of electrical activity in the brain. It is made by placing electrodes on the scalp (the skin covering the top of the head), and impulses are sent to a special machine. An EEG may be used to diagnose brain and sleep disorders. Also called electroencephalogram.

**EEG biofeedback :** A treatment being studied to improve brain function in certain brain disorders and in patients treated with chemotherapy for breast cancer. Sensors are placed on a person's head, which allows brain activity to be shown as patterns on a computer screen. A beep or a tone may be used as a reward to a person for changing certain brain activities. EEG biofeedback may help cancer patients deal with the stress and mental side effects of chemotherapy. Also called neurofeedback.

**EF hand:** A helix-loop-helix motif that forms a binding site for calcium; found in many calcium-sensitive proteins.

**EF5:** A drug that is used to plan cancer treatment by measuring oxygen levels in tumor cells. OR A fluorinated derivative of the 2-nitroimidazole etanidazole. EF5 is effective in accessing oxygen levels in tumor tissue through its adduct formation to intracellular macromolecules in the absence of oxygen. Reduction of this agent is carried out by a diverse group of enzymes in the cytoplasm, microsomes and mitochondria. Tissue hypoxia detection via EF5 has been reported in several cancers, including squamous cell carcinoma of the cervix and the head and neck, and in sarcoma.

**efalizumab:** A humanized IgG1 monoclonal antibody directed against CD11a, the alpha subunit of human leukocyte-function-associated antigen type 1 (LFA-1), with immunosuppressant activity. Efalizumab binds to CD11a, which is expressed on all leukocytes, resulting in a reduction in the cell surface expression of CD11a. In addition, this agent inhibits the binding of LFA-1 to intercellular adhesion molecule-1 (ICAM-1), resulting in the inhibition of leukocyte adherence and the suppression of cell-mediated immunity. LFA-1 binding to ICAM-1 is involved in the activation of T lymphocytes, adhesion of T lymphocytes to endothelial cells, and migration of T lymphocytes to sites of inflammation.

**efaproxiral:** A synthetic small molecule with radiosensitizing activity. Efaproxiral increases oxygen levels in hypoxic tumor tissues by binding non-covalently to the hemoglobin tetramer and decreasing hemoglobin-oxygen binding affinity. Increasing tumor oxygenation reduces tumor radioresistance. OR A substance being studied in the treatment of brain

tumors and some other types of cancer. It increases the amount of oxygen in tumor tissues, which may make the tumor cells easier to kill with radiation therapy. Efavirenz is a type of radiosensitizing agent. Also called RSR13.

**efatutazone dihydrochloride:** The dihydrochloride salt of efatutazone, an orally bioavailable agonist of peroxisome proliferator-activated receptor gamma (PPAR-gamma) with potential antineoplastic activity. Efatutazone binds to and activates PPAR-gamma, a nuclear hormone receptor and a ligand-activated transcription factor controlling gene expression involved in macromolecule metabolism and cell differentiation, specifically adipocyte differentiation. Mediated through activation of PPAR-gamma, this agent is capable of inducing cell differentiation and apoptosis, thereby leading to a reduction in cellular proliferation.

**efavirenz:** A synthetic non-nucleoside reverse transcriptase (RT) inhibitor with antiviral activity. Efavirenz binds directly to the human immunodeficiency virus type 1 (HIV-1) RT, an RNA-dependent DNA polymerase, blocking its function in viral DNA replication. In combination with other antiretroviral drugs, this agent has been shown to significantly reduce HIV viral load, retarding or preventing damage to the immune system and reducing the risk of developing AIDS. Efavirenz induces activity of the cytochrome P450 system, accelerating its own metabolism. or A drug used with other drugs to treat infection with the human immunodeficiency virus (HIV). It blocks HIV from making copies of itself. It is a type of non-nucleoside reverse transcriptase inhibitor and a type of antiviral agent. Also called Sustiva.

**effect:** A biological change in an organism, organ, or tissue (WHO, 1979).

**Effect of Strong Acids:** A descriptive notation to indicate the material's performance.

**Effective Dose Equivalent:** The sum of the products of the dose equivalent to the organ or tissue (HT) and the weighting factors (WT) applicable to each of the body organs or tissues that are irradiated ( $HE = \Sigma WTHT$ ).

**Effective half-life:** The time required for the activity of a particular radioisotope deposited in a living organism, such as a human or an animal, to be reduced by 50 percent as a result of the combined action of radioactive decay and biological elimination. Effective half-life is related to, but different from, the radiological half-life and the biological half-life.

**effective nuclear chargeeff:** The nuclear charge experienced by an electron when other electrons are shielding the nucleus.

**Effective Thread Turns:** The number of full 360 degree turns on a threaded closure that are actually in contact with the neck thread.

**effector cell :** A cell that performs a specific function in response to a stimulus; usually used to describe cells in the immune system.

**efferent neurons:** neurons that project out of the cortex of the brain; motor neurons are efferents

**Effexor :** A drug used to treat depression and certain anxiety disorders. It may also be used to treat hot flashes in women who are in menopause or are being treated for breast cancer. Effexor increases the levels of the chemicals serotonin and norepinephrine in the brain, which helps improve mood. It is a type of antidepressant and a type of serotonin-norepinephrine reuptake inhibitor. Also called venlafaxine.

**efficacy :** Effectiveness. In medicine, the ability of an intervention (for example, a drug or surgery) to produce the desired beneficial effect.

**efficiency:** The ratio of work done or energy developed by a machine or engine, to the energy supplied to it.

**Efficiency, plant:** The percentage of the total energy content of a power plant's fuel that is converted into electricity. The remaining energy is lost to the environment as heat.

**Efflorescence:** The loss of gas from a solid or liquid. OR Known as 'efflorescence', these effects appear as a result of salts crystallising in materials such as bricks. The fluffy deposits can be removed with coarse Hessian sacking or by dry brushing, repeated every few days until the deposits disappear. Hard, shiny efflorescence can be sanded to roughen the surface, then painted over. Conventional solvent-based paints should not be applied on new buildings where efflorescence occurs for at least 12 months, to allow the surface time to dry out thoroughly. Use Dulux Alkali Resisting Primer prior to applying any solvent-based finishes. Alternatively, specify a Dulux Quick Drying water-based paint. OR These salts originate from the bricks concrete blocks concrete etc. and brought to the surface by water drying out. These salts will go through plaster but will not normally originate from modern type plasters. Generally efflorescence is likely to

persist until such time as the substrate has fully dried out. Active efflorescence is likely to push off any type of sealer or paint coating.

**efflorescent:** Efflorescent substances lose water of crystallization to the air. The loss of water changes the crystal structure, often producing a powdery crust.

**Effluent:** Wastewater or other liquid - raw (untreated), partially or completely treated - flowing from a reservoir, basin, treatment process, or treatment plant. OR a liquid that has passed through a processing operation.

**effluent limitation:** any restriction (including schedules of compliance) established by a state or EPA on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources into navigable water, the waters of the contiguous zone, or the ocean.

**effusion:** Movement of gas molecules through a small opening. OR Gas molecules in a container escape from tiny pinholes into a vacuum with the same average velocity they have inside the container. They also move in straight-line trajectories through the pinhole.

**effusion :** An abnormal collection of fluid in hollow spaces or between tissues of the body. For example, a pleural effusion is a collection of fluid between the two layers of membrane covering the lungs.

**eflornithine:** A difluoromethylated ornithine compound with antineoplastic activity. Eflornithine irreversibly inhibits ornithine decarboxylase, an enzyme required for polyamine biosynthesis, thereby inhibiting the formation and proliferation of tumor cells. Polyamines are involved in nucleosome oligomerization and DNA conformation, creating a chromatin environment that stimulates neoplastic transformation of cells. This agent has been shown to induce apoptosis in leiomyoma cells.

**eflornithine :** A substance that is being studied in the prevention of cancer. It belongs to the family of drugs called antiprotozoals.

**eflornithine hydrochloride ointment:** An ointment formulation of the hydrochloride salt of an ornithine decarboxylase (ODC) inhibitor with hair-growth inhibitory and potential chemopreventive activities. When administered topically, eflornithine irreversibly inhibits skin ODC activity, thereby inhibiting the synthesis of polyamines; inhibition of polyamine synthesis may result in diminished hair growth and epidermal cell turnover.

**EFS:** In cancer, the length of time after primary treatment for a cancer ends that the patient remains free of certain complications or events that the treatment was intended to prevent or delay. These events may include the return of the cancer or the onset of certain symptoms, such as bone pain from cancer that has spread to the bone. In a clinical trial, measuring the EFS is one way to see how well a new treatment works. Also called event-free survival.

**EFS-ADA lentiviral vector-transduced CD34-positive autologous lymphocytes:** A preparation of autologous, CD34-positive stem/progenitor cells transduced with a lentiviral vector encoding the human adenosine deaminase (ADA) gene under the control of the human elongation factor alpha short promoter (EFS), with potential to restore ADA expression and function. Autologous hematopoietic CD34+ cells are isolated from the patient's own bone marrow, peripheral blood or cord blood, and transduced with the EFS-ADA lentiviral vector ex vivo. Upon re-infusion of the EFS-ADA vector-transduced lymphocytes back into the patient, these cells may both restore ADA activity and prevent severe combined immunodeficiency (SCID) due to ADA deficiency. ADA, an enzyme that catalyzes the deamination of adenosine to inosine, plays a key role in the development and functioning of the immune system.

**EFTs:** A group of cancers that includes Ewing tumor of bone (ETB or Ewing sarcoma of bone), extraosseous Ewing (EOE) tumors, primitive neuroectodermal tumors (PNET or peripheral neuroepithelioma), and Askin tumors (PNET of the chest wall). These tumors all come from the same type of stem cell. Also called Ewing sarcoma family of tumors.

**Efudex :** A drug used to treat cancers of the breast, colon, rectum, stomach, and pancreas. Under the brand names Carac, Tolak, Efudex, and Fluoroplex, it is used as a cream to treat actinic keratosis (a skin condition that may become cancer). It is also used under the brand name Efudex as a cream to treat basal cell skin cancer that is superficial (not invasive) and cannot be removed by surgery. Efudex is being studied in the treatment of other conditions and types of cancer. It stops cells from making DNA and may kill cancer cells. Efudex is a type of antimetabolite. Also called 5-fluorouracil, 5-FU, Carac, Fluoroplex, fluorouracil, and Tolak.

**Eg5 kinesin-related motor protein inhibitor 4SC-205:** A small-molecule inhibitor of the human kinesin-related motor protein Eg5 with potential

antineoplastic activity. Eg5 kinesin-related motor protein inhibitor 4SC-205 selectively inhibits the activity of Eg5, which may result in mitotic disruption, apoptosis and cell death. The ATP-dependent Eg5 kinesin-related motor protein (also known as KIF11 or kinesin spindle protein-5) is a plus-end directed kinesin motor protein essential for the regulation of spindle dynamics, including assembly and maintenance, during mitosis.

**Eg5 kinesin-related motor protein inhibitor ARQ 621:** A small-molecule inhibitor of the kinesin-related motor protein Eg5 with potential antineoplastic activity. Eg5 kinesin-related motor protein inhibitor ARQ 621 selectively inhibits the activity of Eg5, which may result in mitotic disruption, apoptosis and cell death. The ATP-dependent Eg5 kinesin-related motor protein (also known as KIF11 or kinesin spindle protein-5) is a plus-end directed kinesin motor protein involved in the regulation of spindle dynamics, including assembly and maintenance, during mitosis.

**EGb761:** A standardized ginkgo biloba extract with antioxidant and neuroprotective activities. EGb761 has been shown to inhibit the proliferation of certain tumor cells in vitro. Check for active clinical trials using this agent. Or A substance that is being studied in the prevention of cognitive dysfunction (slowed ability to think, reason, concentrate, or remember) in patients receiving chemotherapy. It comes from ginkgo biloba leaves.

**EGCG:** A substance found in green tea. It is being studied in the prevention of cancer and some other diseases. It is a type of antioxidant. Also called epigallocatechin-3-gallate.

**EGF:** A protein made by many cells in the body and by some types of tumors. It causes cells to grow and differentiate (become more specialized). It is a type of growth factor and a type of cytokine. Also called epidermal growth factor.

**EGFR:** The protein found on the surface of some cells and to which epidermal growth factor binds, causing the cells to divide. It is found at abnormally high levels on the surface of many types of cancer cells, so these cells may divide excessively in the presence of epidermal growth factor. Also called epidermal growth factor receptor, ErbB1, and HER1.

**EGFR antagonist Hemay022:** An orally available, irreversible inhibitor of epidermal growth factor receptor (EGFR), with potential antineoplastic activity. Upon oral administration, Hemay022 covalently binds to and

inhibits the activity of EGFR, thereby preventing EGFR-mediated signaling. This may both induce cell death and inhibit tumor growth in EGFR-overexpressing tumor cells. EGFR, a receptor tyrosine kinase mutated in many tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization.

**EGFR antisense DNA:** A synthetic sequence of DNA constructed in the antisense orientation to a sequence of DNA in epidermal growth factor receptor (EGFR), a member of the erbB gene family. EGFR antisense DNA suppresses the expression of EGFR by tumor cells, thereby inhibiting tumor cell proliferation and decreasing tumor growth. This agent also appears to reduce the invasiveness of certain breast cancer cells. Members of the erbB gene family are overexpressed in many cancers and play roles in carcinogenesis and the regulation of cell proliferation.

**EGFR CAR-CD3zeta-4-1BB-expressing autologous T-lymphocytes:** Autologous human T-lymphocytes transduced with a retroviral vector encoding an anti-epidermal growth factor receptor (EGFR) chimeric T cell receptor (chimeric antigen receptor or CAR) gene coupled to the signaling domains from both CD3 zeta and CD137 (4-1BB), with potential immunostimulatory and antineoplastic activities. Upon administration, the chimeric EGFR antigen receptor-modified autologous T lymphocytes bind to the EGFR antigen on tumor cell surfaces; subsequently, EGFR-expressing tumor cells may be lysed. Following binding to EGFR, the 4-1BB co-stimulatory molecule signaling domain enhances both activation and signaling. Inclusion of the 4-1BB signaling domain may also increase the antitumor activity when compared to the inclusion of the CD3-zeta chain alone. EGFR, a receptor tyrosine kinase (RTK) overexpressed by a variety of cancer cell types, plays key roles in tumor cell proliferation and tumor angiogenesis. Check for active clinical trials using this agent.

**EGFR inhibitor :** A substance that blocks the activity of a protein called epidermal growth factor receptor (EGFR). EGFR is found on the surface of some normal cells and is involved in cell growth. It may also be found at high levels on some types of cancer cells, which causes these cells to grow and divide. Blocking EGFR may keep cancer cells from growing. Some EGFR inhibitors are used to treat cancer. Also called EGFR tyrosine kinase inhibitor, epidermal growth factor receptor inhibitor, and epidermal growth factor receptor tyrosine kinase inhibitor.

**EGFR inhibitor ABT-414:** An epidermal growth factor receptor (EGFR) inhibitor, with potential antineoplastic activity. Upon intravenous infusion, ABT-414 inhibits the activity of EGFR, thereby preventing EGFR-mediated signaling. This may inhibit tumor growth in EGFR-overexpressing tumor cells. EGFR, a receptor tyrosine kinase overexpressed in certain tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization.

**EGFR inhibitor ASP8273:** An orally available, irreversible, third-generation, mutant-selective, epidermal growth factor receptor (EGFR) inhibitor, with potential antineoplastic activity. Upon oral administration, ASP8273 covalently binds to and inhibits the activity of mutant forms of EGFR, including the T790M EGFR mutant, thereby preventing EGFR-mediated signaling. This may both induce cell death and inhibit tumor growth in EGFR-overexpressing tumor cells. EGFR, a receptor tyrosine kinase mutated in many tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization. ASP8273 preferentially inhibits mutated forms of EGFR including T790M, a secondarily acquired resistance mutation, and may have therapeutic benefits in tumors with T790M-mediated resistance when compared to other EGFR tyrosine kinase inhibitors. As this agent is selective towards mutant forms of EGFR, its toxicity profile may be reduced as compared to non-selective EGFR inhibitors which also inhibit wild-type EGFR.

**EGFR inhibitor AZD3759:** An orally available inhibitor of the epidermal growth factor receptor (EGFR), with potential antineoplastic activity. Upon oral administration, AZD3759 binds to and inhibits the activity of EGFR as well as certain mutant forms of EGFR. This prevents EGFR-mediated signaling, and may lead to both induction of cell death and inhibition of tumor growth in EGFR-overexpressing cells. EGFR, a receptor tyrosine kinase mutated in many tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization.

**EGFR inhibitor EGF816:** An orally available, irreversible, third-generation, mutant-selective epidermal growth factor receptor (EGFR) inhibitor, with potential antineoplastic activity. Upon oral administration, EGF816 covalently binds to and inhibits the activity of mutant forms of EGFR, including the T790M EGFR mutant, thereby preventing EGFR-mediated signaling. This may both induce cell death and inhibit tumor growth in EGFR-overexpressing tumor cells. EGFR, a receptor tyrosine

kinase mutated in many tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization. EGF816 preferentially inhibits mutated forms of EGFR including T790M, a secondarily acquired resistance mutation, and may have therapeutic benefits in tumors with T790M-mediated resistance when compared to other EGFR tyrosine kinase inhibitors. As this agent is selective towards mutant forms of EGFR, its toxicity profile may be reduced as compared to non-selective EGFR inhibitors which also inhibit wild-type EGFR.

**EGFR inhibitor HM61713:** An orally available small molecule, mutant-selective inhibitor of epidermal growth factor receptor (EGFR) with potential antineoplastic activity. EGFR inhibitor HM61713 binds to and inhibits mutant forms of EGFR, thereby leading to cell death of EGFR-expressing tumor cells. As this agent is selective towards mutant forms of EGFR, its toxicity profile may be reduced as compared to non-selective EGFR inhibitors, which also inhibit the EGFR wild type form.

**EGFR mutation-selective inhibitor AC0010MA:** An orally available, third generation, selective inhibitor of mutant forms of the epidermal growth factor receptor (EGFR), including the second-site resistance mutation T790M, with potential antineoplastic activity. EGFR mutant-selective inhibitor AC0010MA specifically and irreversibly binds to and inhibits the activity of mutant forms of EGFR, which prevents EGFR mutant-mediated signaling and leads to cell death in EGFR mutant-expressing tumor cells. Compared to some other EGFR inhibitors, AC0010MA may have therapeutic benefits in tumors with T790M-mediated drug resistance. This agent does not inhibit wild-type EGFR (EGFRwt), and does not cause dose-limiting toxicities that occur during the use of non-selective EGFR inhibitors, which also inhibit EGFRwt. EGFR, a receptor tyrosine kinase mutated in many tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization.

**EGFR T790M inhibitor PF-06747775:** An orally available inhibitor of the epidermal growth factor receptor (EGFR) mutant form T790M, with potential antineoplastic activity. EGFR T790M inhibitor PF-06747775 specifically binds to and inhibits EGFR T790M, a secondarily acquired resistance mutation, which prevents EGFR-mediated signaling and leads to cell death in EGFR T790M-expressing tumor cells. Compared to some other EGFR inhibitors, PF-06747775 may have therapeutic benefits in

tumors with T790M-mediated drug resistance. This agent shows minimal activity against wild-type EGFR (WT EGFR), and does not cause dose-limiting toxicities that occur during the use of non-selective EGFR inhibitors, which can inhibit WT EGFR. EGFR, a receptor tyrosine kinase mutated in many tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization.

**EGFR tyrosine kinase inhibitor :** A substance that blocks the activity of a protein called epidermal growth factor receptor (EGFR). EGFR is found on the surface of some normal cells and is involved in cell growth. It may also be found at high levels on some types of cancer cells, which causes these cells to grow and divide. Blocking EGFR may keep cancer cells from growing. Some EGFR tyrosine kinase inhibitors are used to treat cancer. Also called EGFR inhibitor, epidermal growth factor receptor inhibitor, and epidermal growth factor receptor tyrosine kinase inhibitor.

**EGFR/HER2 inhibitor AP32788:** An orally available inhibitor of specific mutant forms of both human epidermal growth factor receptor (EGFR) and human epidermal growth factor receptor 2 (HER2; ERBB2), with potential antineoplastic activity. Upon oral administration, EGFR/HER2 inhibitor AP32788 specifically and irreversibly binds to and inhibits certain mutant forms of EGFR and HER2. This prevents EGFR- and HER2-mediated signaling and leads to cell death in EGFR mutant- and HER2 mutant-expressing tumor cells. EGFR and HER2, receptor tyrosine kinases mutated in many tumor cell types, play key roles in tumor cell proliferation and tumor vascularization.

**EGFR/HER2 inhibitor AV-412:** A second-generation, orally bioavailable dual kinase inhibitor with potential antineoplastic activity. EGFR/HER2 inhibitor AV-412 binds to and inhibits the epidermal growth factor receptor (EGFR) and the human epidermal growth factor receptor 2 (HER2), which may result in the inhibition of tumor growth and angiogenesis, and tumor regression in EGFR/HER2-expressing tumors. This agent may be active against EGFR/HER2-expressing tumor cells that are resistant to first-generation kinase inhibitors. EGFR and HER2 are receptor tyrosine kinases that play major roles in tumor cell proliferation and tumor vascularization.

**EGFRBi-armed autologous activated T cells:** Autologous activated T cells, loaded with a bispecific antibody produced by heteroconjugation of anti-CD3 and anti-epidermal growth factor receptor (EGFR) monoclonal

antibodies, with potential antineoplastic activity. Binding of EGFRBi-armed autologous activated T cells to EGFR-positive tumor cells may result in increased T cell-mediated cytotoxicity towards tumor cells expressing EGFR. Arming activated T cells with this bispecific antibody may significantly increase T cell secretion of anti-tumor associated cytokines such as IL2, RANTES, IFN-gamma, and TNF-alpha. Check for active clinical trials using this agent.

**egg:** the haploid cell within the female ovary.

**egg banking :** The process of freezing one or more unfertilized eggs (eggs that have not been combined with sperm) to save them for future use. The eggs are thawed and fertilized in the laboratory to make embryos that can be placed in a woman's uterus. Egg banking is being studied as a type of fertility preservation. It may be useful for women with cancer who want to have children after having radiation therapy, chemotherapy, or certain types of surgery, which can cause infertility. Also called egg cryopreservation, egg freezing, and oocyte cryopreservation.

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for women with cancer who want to have children after having radiation therapy, chemotherapy, or certain types of surgery, which can cause infertility. Also called egg banking, egg cryopreservation, and oocyte cryopreservation.

**Eggshell:** Gloss lying between semi-gloss and flat. OR A degree of glossiness broadly midway between matt and high gloss.

**EGGSHELL FINISH:** The degree of gloss between a flat and gloss finish.

**EGL:** Energy grade line - a line that represents the elevation of energy head in feet of water flowing in a pipe, conduit, or channel.

**EHR:** An electronic (digital) collection of medical information about a person that is stored on a computer. An EHR includes information about a patient's health history, such as diagnoses, medicines, tests, allergies, immunizations, and treatment plans. EHRs can be seen by all healthcare providers who are taking care of a patient and can be used by them to help make recommendations about the patient's care. Also called electronic health record and electronic medical record.

**Eicosanoid:** A carbon compound containing 20 carbon atoms; prostaglandins are examples. Eicosanoids often act as local hormones. OR Any fatty acid with 20 carbons.

**eicosapentaenoic acid:** An essential, polyunsaturated, 20-carbon omega-3 fatty acid with anti-inflammatory and potential antineoplastic and chemopreventive activities. Eicosapentaenoic acid (EPA) may activate caspase 3, resulting in apoptosis in susceptible tumor cell populations. In addition, this agent may inhibit cyclooxygenase-2 (COX-2), resulting in inhibition of prostaglandin synthesis and prostaglandin-mediated inflammatory processes.

**eicosapentaenoic acid-enriched nutritional supplement:** A nutritional supplement enriched with eicosapentaenoic acid (EPA), which is an essential, polyunsaturated, 20-carbon omega-3 fatty acid found in fish oil, with potential anti-inflammatory and anti-cachectic activities. Upon oral intake of the EPA-enriched nutritional supplement, EPA is incorporated in cell membrane phospholipids and replaces arachidonic acid. This affects the production of pro-inflammatory mediators, such as tumor necrosis factor-alpha (TNF-a), interleukin-1 (IL-1) and IL-6, through the inhibition of nuclear factor kappa B (NF-kB) activity. This inhibits inflammation and

may abrogate the cachexia-mediated decrease of lean body mass (LBM), which may lead to increased body weight. Pro-inflammatory mediators, such as TNF- $\alpha$ , interferon- $\gamma$ , and certain interleukins, such as IL-6 and IL-1 $\beta$ , play a key role in cachexia.

**eIF4E antisense oligonucleotide ISIS 183750:** A second-generation antisense oligonucleotide targeting the eukaryotic translation initiation factor 4E (eIF4E) with potential antitumor activity. Antisense oligonucleotide ISIS EIF4ERx suppresses the expression of eIF4E in fast dividing tumor cells. Blocking the expression of eIF4E results in inhibition of the synthesis of tumor angiogenic factors, thereby leading to the inhibition of cellular proliferation and apoptosis in tumor cells. eIF4E is overexpressed in a variety of cancers, is involved in the mRNA-ribosome binding step of eukaryotic protein synthesis and is the rate-limiting component of the eukaryotic translation apparatus.

**Einsteinium:** Symbol:"Es" Atomic Number:"99" Atomic Mass: (252)amu. Einsteinium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. It is a radioactive and unstable element and you will not find it in use anywhere. It was named after the physicist Albert Einstein.

**ejaculation :** The release of semen through the penis during orgasm.

**Ejection:** The final stage of the injection-molding process where the completed part is pushed from the mold using pins or other mechanisms.

**Ejection Pin:** A rod, pin or sleeve that pushes a molded part off of a core or out of a cavity of a mold. Or Metal rods in the mold which push the parts from the mold.

**Ejection Pin Marks:** A residual mark on the part caused by the profile of the ejection pin.

**Ejector half:** The half of the mold that is mounted to the moving platen of the injection machine Sometimes called the ``live" half or the ``moveable" half because it moves This half of the mold usually contains the ejection system.

**Ejector Housing:** U shaped frame which is an integral part of the tool containing the ejector retainer plate and ejector plate

**EJECTOR PIN:** Or ejector sleeve. A rod, pin or sleeve which pushes a molding off of a core or out of a cavity of a mold. It is attached to an ejector

bar or plate which can be actuated by the ejector rod(s) of the press or by auxiliary hydraulic or air cylinders. Or A pin, normally circular, placed in either half of the mold (usually the ejector half), which pushes the finished molded product, or runner system, out of a mold. Also referred to as a knockout pin. Or A rod, pin or sleeve which pushes a molding off of a core or out of a cavity of a mold. or (knockout Pin) A pin or plate that is driven into a mold cavity from the rear as the mold opens to force out the finished part

**Ejector Pin (on Sleeve):** A pin or thin plate that is driven into a mold cavity from the rear as the mold opens, forcing out the finished pieces. Also Knockout Pin.

**EJECTOR PIN RETAINER PLATE:** Retainer into which ejector pins are assembled.

**Ejector Pin/Sleeve:** A rod, pin or sleeve which pushes a molding off a core or out of a cavity of a mold. This is attached to an ejector bar or plate which can be actuated by the ejector rod(s) of the press or by auxiliary hydraulic or air cylinders.

**Ejector Pins:** Pins that are pushed into a mold cavity from the rear as the mold opens to force the finished part out of the mold. Also called knockout pins. Or Pins installed in the B-side of the mold that push the part out of the mold when the part has cooled sufficiently. Or A rod, pin or sleeve which pushes a molding off of a core or out of a cavity of a mold.

**Ejector Plate:** A bar that actuates the ejector assembly when the mold opens

**Ejector return pins:** Pins that push the ejectors back into position once the parts have been released. OR Projections that push the ejector assembly back as the mold closes: also called Safety Pin, and Position Pushbacks. OR Projections that push the ejector assembly back as the mold closes. Also called surface pins or return pins.

**Ejector rod:** A bar that engages the ejector assembly and pins when the mold opens. OR Bar that actuates the ejector assembly when mold is opened.

**EKB-569:** A substance being studied in the treatment of some types of cancer. It blocks the action of certain proteins that are part of the epidermal growth factor receptor (EGFR) family of proteins. These proteins may be

found in increased amounts on the surface of some types of cancer cells. Blocking the action of these proteins may stop cancer cells from growing and may kill cancer cells. EKB-569 is a type of EGFR inhibitor. Also called pelitinib.

**EKG:** A line graph that shows changes in the electrical activity of the heart over time. It is made by an instrument called an electrocardiograph. The graph can show that there are abnormal conditions, such as blocked arteries, changes in electrolytes (particles with electrical charges), and changes in the way electrical currents pass through the heart tissue. Also called ECG and electrocardiogram.

**Eklund displacement views :** A procedure used to do a mammogram (x-ray of the breasts) in women with breast implants. The implant is pushed back against the chest wall and the breast tissue is pulled forward and around it so the tissue can be seen in the mammogram. Also called Eklund views and implant displacement views.

**Eklund views :** A procedure used to do a mammogram (x-ray of the breasts) in women with breast implants. The implant is pushed back against the chest wall and the breast tissue is pulled forward and around it so the tissue can be seen in the mammogram. Also called Eklund displacement views and implant displacement views.

**El Chicon:** Active volcano 7300 ft (2225 m) high in Mexico. The last eruption was in 1983.

**El Nino:** An irregular variation of ocean current that from January to March flows off the west coast of South America, carrying warm, low-salinity, nutrient-poor water to the south. It does not usually extend farther than a few degrees south of the equator, but occasionally it does penetrate beyond 12 degrees S, displacing the relatively cold Peru Current. The effects of this phenomenon are generally short-lived, and fishing is only slightly disrupted. Occasionally (in 1891, 1925, 1941, 1957 - 58, 1965, 1972 - 73, 1976, and 1982 - 83), the effects are major and prolonged. Under these conditions, sea surface temperatures rise along the coast of Peru and in the equatorial eastern Pacific Ocean and may remain high for more than a year, having disastrous effects on marine life and fishing. Excessive rainfall and flooding occur in the normally dry coastal area of western tropical South America during these events. Some oceanographers and meteorologists consider only the major, prolonged events as El Nino

phenomena rather than the annually occurring weaker and short-lived ones. The name was originally applied to the latter events because of their occurrence at Christmas time.

**El Niño, La Niña:** long-term weather patterns associated with changing global winds and ocean temperatures in the Pacific Ocean.

**Elacyt :** A drug used to treat advanced acute myeloid leukemia (AML). It is a form of the anticancer drug cytarabine that may work in patients with leukemia that is resistant to cytarabine. Elacyt blocks cell division and may kill cancer cells. It is a type of antimetabolite. Also called CP-4055 and elacytarabine.

**elacytarabine:** The lipophilic 5'-elaidic acid ester of the deoxycytidine analog cytosine arabinoside (cytarabine; Ara-C) with potential antineoplastic activity. As a prodrug, CP-4055 is converted intracellularly into cytarabine triphosphate by deoxycytidine kinase and subsequently competes with cytidine for incorporation into DNA, thereby inhibiting DNA synthesis. Compared to cytarabine, CP-4055 shows increased cellular uptake and retention, resulting in increased activation by deoxycytidine kinase to cytarabine triphosphate, decreased deamination and deactivation by deoxycytidine deaminase, and increased inhibition of DNA synthesis. This agent also inhibits RNA synthesis, an effect not seen with cytarabine.  
OR A drug used to treat advanced acute myeloid leukemia (AML). It is a form of the anticancer drug cytarabine that may work in patients with leukemia that is resistant to cytarabine. Elacytarabine blocks cell division and may kill cancer cells. It is a type of antimetabolite. Also called CP-4055 and Elacyt.

**Elastic:** Elastic describes a property of rebound. You may have heard of the elasticity of a rubber band. Rubber bands can stretch and return to their original shape. Elasticity of a collision describes how much energy is lost when an object hits. A very elastic surface absorbs little energy and the object will bounce off. A non-elastic surface absorbs a lot of energy and the objects involved in the collision lose energy.

**Elastic Deformation:** The part of the deformation of an object under load which is recoverable when the load is removed.

**Elastic Limit:** Maximum stress that a material will stand before permanent deformation occurs

**Elastic Memory:** A characteristic of certain plastics evidenced by their tendency to revert to a previously existing shape or dimension.

**elastic rebound theory:** the theory that suggests that in some cases energy is stored in rock that is being bent (deformed) by tectonic forces until the energy in the rock exceeds the rock's chemical bonds and it breaks, releasing the energy and causing motion.

**elastic strain:** strain after which the body of a rock returns to its previous shape when stress has been removed.

**Elasticity:** The ability of paint to expand and contract with the substrate without suffering damage or changes in its appearance. Expansion and contraction are usually caused by some temperature fluctuations. Some substrates such as yellow pine expand at different rates depending on the type of their grain. Elasticity is a key to durability. OR the ability of a substance to be stretched and then to return to its original shape. OR That property of a material of which it tends to recover its original size and shape after deformation. OR The ability of a material to quickly recover its original dimensions after removal of a load that has caused deformation.

**Elasticity/Plasticity:** The ability of a material to return to its original state after deformation: the yield point is not exceeded: elastic behavior. Plastics in general respond elastically. If a material's yield point is exceeded when stressed, it does not return to its original state after removal of the stress: permanent deformation by plastic behavior. Plasticity is the inverse of elasticity. Another way of explaining this is the following. During the first part of the pulling process in the tensile test, both tensile stress and tensile strain continue to increase, and in proportion. When this takes place, the material acts like a spring, and is said to have elastic behavior. Some materials – such as methacrylates – will be broken when they have been strained only a small amount, and while still showing essentially elastic behavior. Other materials – such as polycarbonates – can be stretched many times their original length before they break. The latter have a yield point, and a corresponding yield stress.

**Elastomer:** A polymer that, when deformed (stretched, twisted, spindled, mutilated, etc.) springs back into its original shape. The elastomer par excellence is lightly-crosslinked natural rubber. OR A material which at room temperature stretches under low stress to at least twice its length and snaps back to the original length upon release of stress. See also Rubber.

OR a material that exhibits almost complete recovery to its original size after undergoing dramatic strain levels (as high as 100% and sometimes more). OR A material which at room temperature can be stretched under low stress to at least twice its original length and, upon immediate release of the stress, will return with force to its approximate original length. OR A material which at room temperature stretches under low stress to at least twice its length and snaps back to the original length upon release of stress.

**Eldecort:** (Other name for: therapeutic hydrocortisone)

**Eldisine:** (Other name for: vindesine)

**Eldopar:** (Other name for: levodopa)

**electric charge:** A property used to explain attractions and repulsions between certain objects. Two types of charge are possible: negative and positive. Objects with different charge attract; objects with the same charge repel each other.

**electric current:** A flow of electric charges. The SI unit of electric current is the ampere.

**electric dipole:** An object whose centers of positive and negative charge do not coincide. For example, a hydrogen chloride (HCl) molecule is an electric dipole because bonding electrons are on average closer to the chlorine atom than the hydrogen, producing a partial positive charge on the H end and a partial negative charge on the Cl end.

**electric dipole moment:** A measure of the degree of polarity of a polar molecule. Dipole moment is a vector with magnitude equal to charge separation times the distance between the centers of positive and negative charges. Chemists point the vector from the positive to the negative pole; physicists point it the opposite way. Dipole moments are often expressed in units called Debyes.

**ELECTRIC DISCHARGE MACHINING (EDM):** A metal working process applicable to mold construction in which controlled sparking is used to erode away the work piece. OR A metalworking process in which controlled sparking is used to erode the workpiece.

**electric field:** A field of forces that act on any electric charge placed within it. The stronger the field, the stronger the force that acts on the charge. For example, the positive charge on an atomic nucleus creates an electric field that traps electrons.

**Electric power grid:** A system of synchronized power providers and consumers, connected by transmission and distribution lines and operated by one or more control centers. In the continental United States, the electric power grid consists of three systems—the Eastern Interconnect, the Western Interconnect, and the Texas Interconnect. In Alaska and Hawaii, several systems encompass areas smaller than the State.

**Electric utility:** A corporation, agency, authority, person, or other legal entity that owns and/or operates facilities within the United States, its territories, or Puerto Rico for the generation, transmission, distribution, or sale of electric power (primarily for use by the public). Facilities that qualify as cogenerators or small power producers under the Public Utility Regulatory Policies Act (PURPA) are not considered electric utilities.

**electrical conductivity:** A measure of how easily an electric current can pass through a material. The conductivity is the reciprocal of the resistance. The SI unit of conductance is the siemens.

**Electrical conductor:** A substance that allows electricity to flow through it without any chemical change taking place.

**Electrical generator:** An electromagnetic device that converts mechanical (rotational) energy into electrical energy. Most large electrical generators are driven by steam or water turbine systems.

**Electrical properties:** primarily the resistance of a plastic to the passage of electricity e.g. dielectric strength.

**electrical resistance:** The ability of a material to oppose the flow of an electric current, converting electrical energy into heat. The SI unit of resistance is the ohm.

**electricity:** a form of energy coming from charges.

**electroacupuncture :** A procedure in which pulses of weak electrical current are sent through acupuncture needles into acupuncture points in the skin. This procedure is being studied in the prevention of nausea and vomiting in patients undergoing chemotherapy.

**electrocardiogram :** A line graph that shows changes in the electrical activity of the heart over time. It is made by an instrument called an electrocardiograph. The graph can show that there are abnormal conditions, such as blocked arteries, changes in electrolytes (particles with electrical

charges), and changes in the way electrical currents pass through the heart tissue. Also called ECG and EKG.

**electrocautery :** A procedure that uses heat from an electric current to destroy abnormal tissue, such as a tumor or other lesion. It may also be used to control bleeding during surgery or after an injury. The electric current passes through an electrode that is placed on or near the tissue. The tip of the electrode is heated by the electric current to burn or destroy the tissue. Electrocautery is a type of electrosurgery. Also called electrocoagulation, electrofulguration, and fulguration.

**electrochemical:** Describes any effect concerned with the electrical properties of solutions and the ions in solutions. OR cell a device that uses a chemical reaction to produce an electric current.

**electrochemical cell:** Gives an electric current with a steady voltage as a result of an electron transfer reaction. OR A device that uses a redox reaction to produce electricity, or a device that uses electricity to drive a redox reaction in the desired direction.

**electrochemical gradient:** The sum of the gradients of concentration and of electric charge of an ion across a membrane; the driving force for oxidative phosphorylation and photophosphorylation.

**electrochemical potential:** The energy required to maintain a separation of charge and of concentration across a membrane.

**electrocoagulation :** A procedure that uses heat from an electric current to destroy abnormal tissue, such as a tumor or other lesion. It may also be used to control bleeding during surgery or after an injury. The electric current passes through an electrode that is placed on or near the tissue. The tip of the electrode is heated by the electric current to burn or destroy the tissue. Electrocoagulation is a type of electrosurgery. Also called electrocautery, electrofulguration, and fulguration.

**electroconvulsive therapy :** A treatment for severe depression and certain mental disorders. A brief seizure is induced by giving electrical stimulation to the brain through electrodes placed on the scalp. Also called ECT and electroshock therapy.

**electrode:** A metal plate or wire for conducting electrons into or out of solutions. OR the point in an electrochemical cell at which reduction or

oxidation occurs. OR An electrically conducting surface that allows electrons to be transferred between reactants in an electrochemical cell.

**electrode :** In medicine, a device such as a small metal plate or needle that carries electricity from an instrument to a patient for treatment or surgery. Electrodes can also carry electrical signals from muscles, brain, heart, skin, or other body parts to recording devices to help diagnose certain conditions.

**Electrode head:** a molded plastic assembly containing one or more sockets for the insertion of appropriate electrodes fitted with plug-in connectors. The electrode head carries the expensive screened cable and plug for connecting to the measuring instruments. Various models are available for use with one electrode (mono head) or an ISE/reference combination (dual head), or a combination of different ISEs and/or pH, redox, or dissolved oxygen electrodes used with a common reference electrode for multicomponent analysis (multiple head).

**electrodermal response :** A change in the heat and electricity passed through the skin by nerves and sweat. Electrodermal response increases in certain emotional states and during hot flashes that happen with menopause. Also called galvanic skin response and skin conduction.

**electrodes:** Device that moves electrons into or out of a solution by conduction.

**electrodesiccation :** The drying of tissue by a high-frequency electric current applied with a needle-shaped electrode.

**electrodiathermy :** A procedure in which tissue is heated to destroy abnormal cells. The heat may come from electric currents, microwaves, radio waves, or ultrasound. Electrodiathermy is a type of hyperthermia therapy. Also called diathermy.

**electroencephalogram :** A recording of electrical activity in the brain. It is made by placing electrodes on the scalp (the skin covering the top of the head), and impulses are sent to a special machine. An EEG may be used to diagnose brain and sleep disorders. Also called EEG.

**Electroformed Molds:** A mold made by electroplating metal in the reverse pattern on the cavity. Molten steel may be then sprayed on the back of the mold to increase its strength.

**electrofulguration :** A procedure that uses heat from an electric current to destroy abnormal tissue, such as a tumor or other lesion. It may also be used

to control bleeding during surgery or after an injury. The electric current passes through an electrode that is placed on or near the tissue. The tip of the electrode is heated by the electric current to burn or destroy the tissue. Electrofulguration is a type of electrosurgery. Also called electrocautery, electrocoagulation, and fulguration.

**electrogenic:** Contributing to an electrical potential across a membrane.

**electrokinetically modified water:** Orally available, nanobubble-based, electrokinetically modified water (EMW) composed of reverse osmosis water where the minerals calcium chloride, magnesium chloride, and potassium bicarbonate have been added and with an increased oxygen concentration compared to normal water. Upon consumption, the EMW may have a beneficial effect on fatigue. This water may protect muscle cells against damage and may improve skeletal muscle function. The water is pretreated with strong, controlled turbulence to create charge-stabilized nanostructures.

**electrolarynx :** A battery-operated device that makes a humming sound. It is used to help a person talk after removal of the larynx (voice box).

**electrolysis:** Changing the chemical structure of a compound using electrical energy. OR The use of electrical energy to carry out a chemical reaction. OR Electrolysis is the breakdown of a substance by electricity. OR the decomposition of a substance by an electric current. OR The chemical change that is brought about by passing electricity through a substance. The substance must be ionic and either molten or in aqueous solution. OR The process of driving a redox reaction in the reverse direction by passage of an electric current through the reaction mixture.

**electrolyte:** A substance that, when dissolved in water produces a solution that conducts electricity. OR An electrolyte is a liquid that conducts electricity and is decomposed in the process, i.e. a liquid that undergoes electrolysis. OR a substance which ionizes in aqueous solution. Weak electrolytes are only slightly dissociated into ions in solution (acetic acid), and strong electrolytes are highly dissociated (HCl, NaCl). Strong electrolytes are good conductors of electricity, and conductance measurements are well correlated with electrolyte strength. OR a substance that forms ions when dissolved in water. OR A charged molecule (such as a sodium or potassium ion) that is present in body fluids OR A substance that dissociates fully or partially into ions when dissolved in a solvent,

producing a solution that conducts electricity. See strong electrolyte, weak electrolyte. OR A substance that breaks up into ions (particles with electrical charges) when it is dissolved in water or body fluids. Some examples of ions are sodium, potassium, calcium, chloride, and phosphate. These ions help move nutrients into cells, help move waste out of cells, and help nerves, muscles, the heart, and the brain work the way they should.

**electrolyte-free parenteral nutrition emulsion:** An electrolyte-free emulsion for infusion consisting of a three chamber bag system containing glucose, amino acids and lipids that can be used to provide parenteral nutritional supplementation. The lipid emulsion portion contains soybean oil, medium-chain triglycerides, olive oil and fish oil; the amino acid solution contains alanine, arginine, glycine, histidine, leucine, isoleucine, lysine, methionine, phenylalanine, proline, serine, taurine, threonine, tryptophan, tyrosine, and valine. The electrolyte-free parenteral nutrition emulsion contains no electrolytes, trace elements and vitamins. The three separate bags containing glucose, amino acids and lipids are mixed together before infusion.

**electrolytic cell:** A device that uses electricity from an external source to drive a redox reaction.

**Electrolytic process:** A process that causes the decomposition of a chemical compound by the use of electricity.

**electromagnetic field :** An area of electric and magnetic forces caused by electromagnetic radiation. Researchers are studying whether the electromagnetic fields from power lines, electrical appliances, and wireless and cellular telephones can cause cancer or other harmful health effects. Also called EMF.

**Electromagnetic radiation:** A traveling wave motion resulting from changing electric or magnetic fields. Familiar electromagnetic radiation range from x-rays (and gamma rays) of short wavelength, through the ultraviolet, visible, and infrared regions, to radar and radio waves of relatively long wavelength. OR A wave that involves perpendicular oscillations in the electric and magnetic fields, moving at a speed of  $2.99792458 \times 10^8$  m/s in a vacuum away from the source. gamma rays, x-rays, ultraviolet light, visible light, infrared radiation, and radio waves are all electromagnetic waves. OR Complete range of wavelengths which light can have. These include infrared, ultraviolet, and all other types of

electromagnetic radiation, as well as visible light. OR diagram that breaks down energy by wavelength.

**electromagnetic radiation :** Radiation that has both electric and magnetic fields and travels in waves. It comes from natural and man-made sources. Electromagnetic radiation can vary in strength from low energy to high energy. It includes radio waves, microwaves, infrared light, visible light, ultraviolet light, x-rays, and gamma rays. Also called EMR.

**electromagnetic wave:** the type of wave found in visible, infrared, and ultraviolet light as well as radio signals and X-rays.

**electromotive force:** the electrical potential produced by a chemical reaction voltage.

**electron :** A small particle with a negative charge that is found in all atoms. Streams of electrons made by special equipment can be used for radiation treatment.

**Electron :** An atomic particle of very small mass ( $1/1840$  of the mass of a proton) and a charge of one minus. It is found in an atom in shells or orbits surrounding the nucleus but not part of the nucleus. OR An elementary particle with a negative charge and a mass  $1/1837$  that of a proton. Electrons surround the positively charged nucleus of an atom, and determine its chemical properties. OR a particle of the atom that has a negative charge. The electron is not a part of the nucleus, but moves around in an orbit around the nucleus. OR negatively charged particles of little weight that exist in quantized probability areas around the atomic nucleus. OR a light subatomic particle with negative charge; found in orbitals surrounding an atomic nucleus. OR A tiny speck of electric charge, so far impossible to break into smaller pieces, weighing in at  $9.109 \times 10^{-31}$  kg and a charge of  $1.602 \times 10^{-19}$  Coulombs. An electron is so small that its 'size' is a nebulous concept; if it were a little round ball, it would be about 10-15 m across. OR Electrons are tiny, negatively charged particles that orbit the nucleus of an atom in energy levels (or shells). OR is a basic particle whose charge is -1 and whose mass is  $1/1837$  g/mol (amu). OR An electron is a very small particle that spins around the center of an atom. An electron has a negative (-) charge and is found in one of seven shells. OR A negatively charged subatomic particle, of extremely low mass found in the space outside the nucleus of an atom. OR One of the parts of the atom having a negative charge. Indivisible particle with a charge of -1. OR the

sub-atomic particle, with a negative charge, that orbits the nucleus of an atom.

**electron acceptor:** A substance that receives electrons in an oxidation-reduction reaction.

**electron affinity:** the amount of energy liberated when an electron is added to an atom in the gaseous state. OR The enthalpy change for the addition of one electron to an atom or ion in the gaseous state. For example, the electron affinity of hydrogen is H in the reaction  $\text{H}(\text{g}) + \text{e}^- \rightarrow \text{H}^-(\text{g})$   $\Delta H = -73 \text{ kJ/mol}$ .

**electron beam :** A stream of electrons (small negatively charged particles found in atoms) that can be used for radiation therapy.

**electron carrier:** A protein, such as a flavoprotein or a cytochrome, that can reversibly gain and lose electrons; functions in the transfer of electrons from organic nutrients to oxygen or some other terminal acceptor.

**electron configuration:** A list showing how many electrons are in each orbital or subshell. There are several notations. The subshell notation lists subshells in order of increasing energy, with the number of electrons in each subshell indicated as a superscript. For example,  $1s^2 2s^2 2p^3$  means "2 electrons in the 1s subshell, 2 electrons in the 2s subshell, and 3 electrons in the 2p subshell."

**electron donor:** A substance that donates electrons in an oxidation-reduction reaction.

**electron dot structure:** a system in which the entire structure of the atom, except its valence electrons, is represented by the symbol for the element. The valence electrons are represented by dots

**electron geometry:** Structure of a compound based on the arrangement of its electrons.

**electron microscope :** A microscope (device used to magnify small objects) that uses electrons (instead of light) to produce an enlarged image. An electron microscope shows tiny details better than any other type of microscope.

**Electron Redistribution:** Redistribution occurs when electrons in a chemical bond are given up, received, or shared by two or more atoms. The concept accepts that electrons will move around the nuclei of several atoms in a chemical bond.

**electron transfer:** Movement of electrons from substrates to oxygen via the carriers of the respiratory (electron transfer) chain.

**electron volt:** Energy required to move an electron through a potential difference of 1 volt. An electron volt is equivalent to  $1.6 \times 10^{-19}$  J.

**electron-:** A fundamental constituent of matter, having a negative charge of  $1.602\,176\,462 \times 10^{-19}$  coulombs  $\pm 0.000\,000\,063 \times 10^{-19}$  coulombs and a mass of  $9.109\,381\,88 \times 10^{-31}$  kg  $\pm 0.000\,000\,72 \times 10^{-31}$  kg [1998 CODATA values].

**Electron-density map:** A plot of electron density versus location in a unit cell. Electron-density maps are used early in a crystal structure solution to solve the structure.

**Electron-spin resonance (ESR) spectroscopy:** A method involving measuring the resonance of free electrons in material. This method can provide structural and dynamic information about a solid.

**electronegative:** Referring to the property of electronegativity. The most electronegative element is fluorine, having an electronegativity of 4.0 on the Pauling scale. Non-metals are more electronegative than metals. OR The ability of an atom to attract electrons is its electronegativity. Elements that easily form negatively charged ions, such as fluorine and oxygen, have a high electronegativity. Generally speaking, the top right corner of the periodic table is home to the most electronegative elements, while the bottom left is the least electronegative.

**electronegativity:** Measure of a substance's ability to attract electrons. OR The ability of an atom in a molecule to attract electrons toward itself. OR a number describing the attraction of an element for electrons in a chemical bond. OR the measure of an atom's ability to attract electrons toward itself in a covalent bond. The halogen fluorine is the most electronegative element. OR Electronegativity is a measure of the attraction an atom has for bonding electrons. Bonds between atoms with different electronegativities are polar, with the bonding electrons spending more time on average around the atom with higher electronegativity.

**electronegativity scale:** an arbitrary scale by which the electronegativity of individual atoms can be compared.

**electronic cigarette :** A device that has the shape of a cigarette, cigar, or pen and does not contain tobacco. It uses a battery and contains a solution

of nicotine, flavorings, and other chemicals, some of which may be harmful. When electronic cigarettes are used, the nicotine solution turns into a mist that can be inhaled into the lungs. The amount of nicotine in individual e-cigarettes can vary. It is not yet known whether electronic cigarettes are safe or if they can be used to help smokers quit smoking. Also called e-cigarette.

**electronic configuration:** The electronic configuration is a description of the arrangement of the electrons in an atom, starting from the lowest energy level (shell). For example, the electronic structure of sodium is 2, 8, 1. (Also known as an electronic structure.)

**electronic health record :** An electronic (digital) collection of medical information about a person that is stored on a computer. An electronic health record includes information about a patient's health history, such as diagnoses, medicines, tests, allergies, immunizations, and treatment plans. Electronic health records can be seen by all healthcare providers who are taking care of a patient and can be used by them to help make recommendations about the patient's care. Also called EHR and electronic medical record.

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**electronic structure:** The electronic structure is a description of the arrangement of the electrons in an atom, starting from the lowest energy level (shell). For example, the electronic structure of sodium is 2, 8, 1. (Also known as an electronic configuration.)

**ELECTRONIC TREATING:** A method of oxidizing a film of polyethylene to render it printable by passing the film between electrodes and subjecting it to a high voltage corona discharge.

**ELECTRONS:** have both wave and particle properties.

**electrophile:** an "electron seeker;" an atom that seeks an electron to stabilize itself.

**electrophile:** An electron-deficient group with a strong tendency to accept electrons from an electron-rich group (nucleophile).

**electrophilic addition:** a reaction in which the addition of an electrophile to an unsaturated molecule results in the formation of a saturated molecule.

**Electrophilic aromatic substitution reaction:** A common chemical reaction that involves the attack of the pi electrons of an aromatic ring on an electrophile to form a resonance-stabilized carbocation intermediate that then loses a proton to form a substituted aromatic compound.

**electrophoresis:** A method of separating large molecules (such as DNA fragments or proteins) from a mixture of similar molecules. An electric current is passed through a medium containing the mixture, and each kind of molecule travels through the medium at a different rate, depending on its electrical charge and size. Separation is based on these differences.

**Electrophoresis:** The movement of particles in an electrical field. A commonly-used technique for analysis of mixtures of molecules in solution according to their electrophoretic mobilities. OR A technique used to separate charged molecules, such as proteins and nucleic acids, that is based on the fact that such molecules will move at differing rates in an electric field, depending on factors such as net charge, size, and shape of the molecules.

**electrophoresis :** A laboratory technique that uses an electric current to separate substances, such as proteins or nucleic acids. The size and electrical charge (either positive or negative) of a substance determines how far it moves with the current. Electrophoresis may be used to help diagnosis certain diseases. There are many different types of electrophoresis.

**electroplating:** Electroplating is the coating of a metal object by a thin layer of another metal(s) during electrolysis. OR The deposition of a layer of metal on a base of metal or conducting surface by electrolysis. OR Deposition of metals on certain plastics and molds for finish.

**electroporation therapy :** Treatment that generates electrical pulses through an electrode placed in a tumor to enhance the ability of anticancer drugs to enter tumor cells. Also called EPT.

**electrorefining:** Electrorefining is a method for purifying a metal using electrolysis. An electric current is passed between a sample of the impure metal and a cathode when both are immersed in a solution that

contains cations of the metal. Metal is stripped off the impure sample and deposited in pure form on the cathode.

**electroshock therapy :** A treatment for severe depression and certain mental disorders. A brief seizure is induced by giving electrical stimulation to the brain through electrodes placed on the scalp. Also called ECT and electroconvulsive therapy.

**Electrospray ionization mass spectrometry:** A means of determining the mass of a protein. A protein sample is sprayed into a mass spectrometer, and the mass of the protein is determined by the mass-to-charge ratio of proteins differing in the number of bound protons.

**electrostatic:** Having to do with the positive and negative charges on species such as electrons or ions. The important principle is that like charges repel and opposite charges attract.

**electrostatic attraction:** the attraction of a positive ion for a negative ion.

**electrostatic forces:** Forces between charged objects.

**electrosurgery :** A procedure that uses an electric current to cut, remove, or destroy tissue and control bleeding. The current is carried through an electrode that is placed on or near the tissue. Electrosurgery may be used to treat basal cell skin cancer or other types of skin problems, such as actinic keratoses, warts, and moles. It may also be used to remove abnormal cells from the cervix and to treat abnormal tissue of the vagina, vulva, penis, and anus that might become cancer. Examples of electrosurgery are electrodesiccation and fulguration.

**Electrovalence:** Electrovalence is the ability of an element to bond with other elements by giving or receiving an electron. This state of valence can be positive (positive ions) or negative (negative ions). The created bonds are called electrovalent or ionic bonds. Many salts (NaCl) have electrovalent bonds.

**Electrovalent Bond:** A chemical bond that occurs between two atoms when one or more electrons are passed from one atom to another. When they exchange electrons, each of the atoms should have a filled shell. A good example of an ionic bond is the sodium chloride bond. You may also hear the term ionic bond.

**Element:** a triangle defined by at least three nodes, creating the basis for the finite element analysis. OR One of the 103 known chemical substances

that cannot be broken down further without changing its chemical properties. Some examples include hydrogen, nitrogen, gold, lead, and uranium. See the periodic table of elements. OR This is a substance that is composed of only one kind of atom. All the atoms in an element are the same. A chemical reaction cannot break an element into anything simpler. OR a substance made of one kind of atom that cannot be broken down chemically. OR A component of the periodic table; a pure substance that cannot be separated into simpler substances by chemical means OR An element is a substance composed of atoms with identical atomic number. The older definition of element (an element is a pure substance that can't be decomposed chemically) was made obsolete by the discovery of isotopes. OR a substance that cannot be decomposed; each chemical element is characterized by the number of protons in the nucleus. OR An element is a substance made from only one type of atom. An element cannot be broken down into any simpler substances. OR is the simplest form of matter. OR A basic building block of matter that cannot be broken down into a simpler substance by ordinary means. OR Substance consisting of only one type of atom. OR a substance that cannot be resolved into two or more other substances; a substance made up of atoms with the same atomic number.

**element** : A basic part of a whole. In chemistry, refers to a simple substance that cannot be broken down into smaller parts or changed into another substance. The basic part of an element is an atom, which contains protons, neutrons, and electrons. All atoms of an element have the same number of protons. Examples of elements are hydrogen, carbon, oxygen, nitrogen, and calcium.

**element of unsaturation**: a  $\pi$  bond; a multiple bond or ring in a molecule.

**element symbol**: An international abbreviation for element names, usually consisting of the first one or two distinctive letters in element name. Some symbols are abbreviations for ancient names.

**elementary reaction**: A reaction that occurs in a single step. Equations for elementary reactions show the actual molecules, atoms, and ions that react on a molecular level.

**elesclomol**: A small-molecule bis(thio-hydrazide amide) with oxidative stress induction, pro-apoptotic, and potential antineoplastic activities. Elesclomol induces oxidative stress, creating high levels of reactive oxygen species (ROS), such as hydrogen peroxide, in both cancer cells and normal

cells. Because tumor cells have elevated levels of ROS compared to normal cells, the increase in oxidative stress beyond baseline levels elevates ROS beyond sustainable levels, exhausting tumor cell antioxidant capacity, which may result in the induction of the mitochondrial apoptosis pathway. Normal cells are spared because the increase in the level of oxidative stress induced by this agent is below the threshold at which apoptosis is induced.

**elesclomol sodium:** The water soluble sodium salt of a small-molecule bis(thio-hydrazide amide) with oxidative stress induction, pro-apoptotic, and potential antineoplastic activities. Elesclomol induces oxidative stress, creating high levels of reactive oxygen species (ROS), such as hydrogen peroxide, in both cancer cells and normal cells. Because tumor cells have elevated levels of ROS compared to normal cells, the increase in oxidative stress beyond baseline levels elevates ROS beyond sustainable levels, exhausting tumor cell antioxidant capacity, which may result in the induction of the mitochondrial apoptosis pathway. Normal cells are spared because the increase in the level of oxidative stress induced by this agent is below the threshold at which apoptosis is induced. OR A drug used in the treatment of skin cancer that has spread. It is also being studied in the treatment of other types of cancer. It increases the amount of harmful oxygen molecules in cells and may kill cancer cells. It may also help other drugs kill cancer cells. It is a type of oxidative stress inducer.

**Elevated Temperatures:** Thermal expansion of the belt width may adversely affect sprocket engagement with the belt openings.

**Elevation:** The facade of a building; the external elevation.

**Elidel:** (Other name for: pimecrolimus cream)

**Eligard :** A drug used to treat advanced prostate cancer. Under the brand name Lupron, it is also used to treat early puberty in children and certain gynecologic conditions. Eligard is also being studied in the treatment of other types of cancer. It blocks the testicles from making testosterone (a male hormone) and the ovaries from making estrogen and progesterone (female hormones). It may stop the growth of prostate cancer cells that need testosterone to grow. Eligard is a type of gonadotropin-releasing hormone (GnRH) agonist. Also called leuprolide acetate, Lupron, and Viadur.

**eligibility criteria :** In clinical trials, requirements that must be met for an individual to be included in a study. These requirements help make sure that patients in a trial are similar to each other in terms of specific factors such

as age, type and stage of cancer, general health, and previous treatment. When all participants meet the same eligibility criteria, it gives researchers greater confidence that results of the study are caused by the intervention being tested and not by other factors.

**elimination (in metabolism):** The expelling of a substance or other material from the body (or a defined part thereof), usually by a process of extrusion or exclusion but sometimes through metabolic transformation (WHO, 1979).

**elimination method:** Sometimes called the addition method, it is a method for solving a system of two equations. One or both of the equations needs to be modified so that when the two equations are added, one of the variables is eliminated.

**Eliquis:** (Other name for: apixaban)

**ELISA:** Short for enzyme-linked immunosorbent assay, an immunochemical test often employed in the biochemical sciences.

**ELISA :** A laboratory technique that uses antibodies linked to enzymes to detect and measure the amount of a substance in a solution, such as serum. The test is done using a solid surface to which the antibodies and other molecules stick. In the final step, an enzyme reaction takes place that causes a color change that can be read using a special machine. There are many different ways that an ELISA can be done. ELISAs may be used to help diagnose certain diseases. Also called enzyme-linked immunosorbent assay.

**ELISA (enzyme-linked immunoabsorbant assay):** An assay for quantifying the presence of an antigen by using an enzyme linked to an antibody to the antigen.

**elisodepsin:** A marine-derived, synthetic cyclic depsipeptide with potential antineoplastic activity. Elisodepsin is a derivative of a natural marine compound that belongs to a family of dehydro aminobutyric acid-containing peptides (kahalalides) isolated from the herbivorous marine mollusk *Elysia rufescens*. Although the primary mechanism of action has yet to be elucidated, this agent exhibits anti-proliferative activity in a wide variety of cancer cell types, including breast, colon, pancreas, lung, and prostate; it appears to induce oncolytic rather than apoptotic cell death.

**Elitek :** A drug used to treat high blood levels of uric acid in patients with leukemia, lymphoma, and other types of cancer who are receiving certain

types of cancer treatment. It is also being studied in the treatment of other medical conditions. Elitek is a type of recombinant enzyme and a type of urate-lowering drug. Also called rasburicase and recombinant urate oxidase.

**Elixophyllin:** (Other name for: theophylline)

**ellagic acid/Annona muricata supplement:** A nutritional supplement containing the phytochemical polyphenol, ellagic acid, and an extract of *Annona muricata*, with potential chemopreventive activity. Although the exact mechanism of action for ellagic acid has yet to be fully elucidated, this agent acts as an anti-oxidant and reduces oxidative stress. This agent also appears to protect the body against certain carcinogens, either through preventing DNA binding or by increasing the rate of their metabolism and deactivation. Certain extracts of *Annona muricata*, a member of the custard apple plants and belonging to the Annonaceae family, may have antiviral activity, potential targets include human papilloma virus (HPV), and may be cytotoxic against various types of cancer cells.

**Ellence :** A drug used together with other drugs to treat early breast cancer that has spread to lymph nodes. It is also being studied in the treatment of other types of cancer. Ellence is a type of anthracycline antibiotic. Also called epirubicin and epirubicin hydrochloride.

**ellipsis:** indicates an omission from a quotation.

**elliptical clause:** a clause in which a word or words have been omitted.

**elliptinium acetate:** Acetate salt of elliptinium, a derivative of the alkaloid ellipticine isolated from species of the plant family Apocynaceae, including *Bleekeria vitensis*, a plant with anti-cancer properties. As a topoisomerase II inhibitor and intercalating agent, elliptinium stabilizes the cleavable complex of topoisomerase II and induces DNA breakages, thereby inhibiting DNA replication and RNA and protein synthesis.

**Elmendorf Tear Test:** Test to measures the resistance to tearing.

**Elmiron:** (Other name for: pentosan polysulfate sodium)

**Elocon :** A drug that is used in a cream to treat certain skin conditions and in a nasal spray to treat sinus problems caused by allergies. It is being studied as a way to treat inflammation of the skin caused by radiation therapy. Elocon is a type of corticosteroid. Also called mometasone, mometasone furoate, and Nasonex.

**Elongated Spiral Edge:** A retaining edge fabricated by adding elongated spirals to the turned-up connectors or rod reinforcements.

**Elongation:** Usually expressed as a percentage, it is the increase in length of a test specimen when a tensile load is placed on the sample. Such test data is often obtained by equipment such as an Instron during tensile testing. OR The second of the three stages of all biological polymerization reactions. In this stage, polymerization is due to the repetition of a basic process characteristic of the specific molecule being synthesized. OR Deformation caused by stretching; the fractional increase in length of a material stressed in tension. OR the fractional increase in length of a material stressed in tension. OR Deformation caused by stretching; the fractional increase in length of a material stressed in tension. OR the fractional increase in length of a material stressed in tension.

**Elongation at break:** How much the material can stretch or deform before breaking. This property of LSR allows for some difficult parts to be surprisingly removed from molds. For example, LR 3003/50 has an elongation at break of 480 percent.

**Elongation factor:** One of a set of proteins that facilitate the elongation phase of protein synthesis.

**Elongation factor G (EF-G):** A member of the G-protein family that closely resembles the complex between EF-Tu and trna. Hydrolysis of GTP by EF-G causes the trnas and mrna to move through the ribosome a distance corresponding to one codon.

**Elongation factor Ts (EF-Ts):** A protein that binds to the GDP-bound form of EF-Tu and induces the release of GDP, thereby enabling EF-Tu to participate in another elongation step. OR A member of the G-protein family that delivers aminoacyl-trnas to the A site of the ribosome with the concomitant hydrolysis of GTP to GDP.

**Elongation factors:** Protein factors uniquely required during the elongation phase of protein synthesis. Elongation factor G (EF-G) brings about the movement of the peptidyl tRNA from the A site to the P site of the ribosome. OR Specific proteins required in the elongation of polypeptide chains by ribosomes.

**Elongation, Break:** The increase in distance between two gauge marks at the break point divided by the original distance between the marks. A zero value in the field indicates that it measured less than one.

**Elongation, Yield :** The increase in distance between two gauge marks at a yield point divided by the original distance between the marks. A zero value indicates that it measured less than one.

**ELONGATIONAL VISCOSITY (also called EXTENSIONAL VISCOSITY):** The resistance to extension (while the (common) viscosity term describes the resistance to shearing). For Newtonian fluids the elongational viscosity is equal to 3 times the (common) viscosity (3 is known as the Trouton Ratio). Polymer melts are non-Newtonian and the elongational viscosity is usually between 3 and 100 times the viscosity. Melt strength is just a rough engineering measure of the elongational viscosity, determined from the force required to break an extruded strand of polymer by a pair of rollers (see MELT STRENGTH).

**elotuzumab:** A drug used with lenalidomide and dexamethasone to treat multiple myeloma. It is used in patients whose cancer was treated with one to three anticancer therapies. Elotuzumab binds to a protein called CS1, which is found on myeloma cells and some types of immune cells.

Elotuzumab may block CS1 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called Empliciti and HuLuc63.

OR A humanized monoclonal antibody directed against the human CS1 (CD2 subset 1, CRACC, SLAMF7) antigen with potential antineoplastic activity. Elotuzumab binds to the CS1 antigen, which may trigger antibody-dependent cellular cytotoxicity (ADCC) in cells expressing CS1. CS1 is a cell surface glycoprotein belonging to the CD2 subset of the immunoglobulin superfamily (IgSF) and is highly expressed by multiple myeloma cells, but minimally expressed by normal cells.

**Eloxatin:** (Other name for: oxaliplatin)

**Eloxatin :** A drug used with other drugs to treat colorectal cancer that is advanced or has come back. It is also being studied in the treatment of other types of cancer. Eloxatin attaches to DNA in cells and may kill cancer cells. It is a type of platinum compound. Also called oxaliplatin.

**elsamitrucin:** A heterocyclic antineoplastic antibiotic isolated from the bacterium Actinomycete strain J907-21. Elsamitrucin intercalates into DNA at guanine-cytosine (G-C)-rich sequences and inhibits topoisomerase I and II, resulting in single-strand breaks and inhibition of DNA replication.

**elsiglutide:** A synthetic glucagon-like peptide-2 (GLP-2) analogue with potential antidiarrheal and intestinotrophic activities. Upon subcutaneous

administration, elsiglutide, a 39 amino acid polypeptide, binds to GLP-2 receptors and thereby promotes proliferation of epithelial cells.

Regeneration of endothelial cells damaged during chemotherapy may prevent or decrease chemotherapy-induced diarrhea. In addition, elsiglutide may prevent chemotherapy-induced intestinal injury. GLP-2, a peptide hormone primarily produced in the small intestines in response to food, plays a key role in intestinal epithelial growth, metabolism and regeneration of epithelial cells. Check for active clinical trials using this agent.

**Elspar :** A drug that is used to treat acute lymphoblastic leukemia (ALL) and is being studied in the treatment of some other types of cancer. It is an enzyme taken from the bacterium *Escherichia coli* (*E. coli*). It breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. Also called asparaginase and L-asparaginase.

**eltrombopag olamine:** The orally active ethanolamine salt of eltrombopag, a small-molecule, nonpeptide thrombopoietin receptor agonist with megakaryopoiesis-stimulating activity. Eltrombopag binds to and stimulates the transmembrane domain of the platelet thrombopoietin receptor (TPO-R or CD110), a member of the hematopoietin receptor superfamily. Activation of TPO-R leads to the proliferation and differentiation of cells in the megakaryocytic lineage and an increase in platelet production.

**eltrombopag olamine :** A drug used to treat thrombocytopenia (a lower-than-normal number of platelets in the blood) in patients with chronic immune thrombocytopenic purpura (a condition in which platelets are destroyed by the immune system). It is used in patients who did not get better with corticosteroids, immunoglobulins, or surgery to remove the spleen. It is also being studied in the treatment of other conditions and types of cancer. Eltrombopag olamine causes more platelets to be made in the bone marrow. It is a type of thrombopoietin receptor agonist. Also called Promacta.

**Eluate:** The fluid that has passed through (eluted from) a chromatographic column. OR The effluent from a chromatographic column.

**EM-1421:** A substance being studied in the treatment of cancer. It blocks proteins needed for cancer growth. It is a type of transcriptional inhibitor. Also called tetra-O-methyl NDGA and tetra-O-methyl nordihydroguaiaretic acid.

**embalmer** : A person who treats dead bodies with embalming fluid (a chemical like formaldehyde) to keep them from decaying.

**Embden-Meyerhof pathway:** Glycolysis.

**embolism** : A block in an artery caused by blood clots or other substances, such as fat globules, infected tissue, or cancer cells.

**embolization** : A procedure that uses particles, such as tiny gelatin sponges or beads, to block a blood vessel. Embolization may be used to stop bleeding or to block the flow of blood to a tumor or abnormal area of tissue. It may be used to treat some types of liver cancer, kidney cancer, and neuroendocrine tumors. It may also be used to treat uterine fibroids, aneurysms, and other conditions. Types of embolization are arterial embolization, chemoembolization, and radioembolization.

**Embossing:** Process for producing raised or sunken designs, or relief in custom plastic packaging. Aesthetic and functional. OR techniques used to create depressions of a specific pattern in plastic film and sheeting. OR Techniques used to create depressions of a specific pattern in plastics film and sheeting. Such embossing in the form of surface patterns on molded part by the treatment of the mold surface by photoengraving or other process. OR Pressing a raised pattern into a bag to increase the ease of opening and handling.

**EMBOSSING:** Techniques used to create depressions of a specific pattern in plastics film and sheeting. Such embossing in the form of surface patterns on molded part by the treatment of the mold surface by photoengraving or other process.

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**Embossing roll:** A roll having a patterned surface used to produce embossed sheeting.

**embryo:** This term is applied to the earliest stages of development of a plant or an animal. The embryo is generally contained in another structure the seed, egg or uterus. OR forms when all the organs of the body have taken shape. OR Plant or animal at an early stage of development.

**embryo :** Early stage in the development of a plant or an animal. In animals that have a backbone or spinal column, this stage lasts from shortly after fertilization until all major body parts appear. In particular, in humans, this stage lasts from about 2 weeks after fertilization until the end of the seventh or eighth week of pregnancy.

**embryo banking :** The process of freezing one or more embryos to save them for future use. Embryo banking involves in vitro fertilization, a procedure in which eggs are removed from a woman's ovary and combined with sperm in the laboratory to form embryos. The embryos are frozen and can later be thawed and placed in a woman's uterus. Embryo banking is a type of fertility preservation. It may be useful for women with cancer who want to have children after having radiation therapy, chemotherapy, or certain types of surgery, which can cause infertility. Also called embryo cryopreservation and embryo freezing.

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**embryo freezing :** The process of freezing one or more embryos to save them for future use. Embryo freezing involves in vitro fertilization, a procedure in which eggs are removed from a woman's ovary and combined with sperm in the laboratory to form embryos. The embryos are frozen and can later be thawed and placed in a woman's uterus. Embryo freezing is a type of fertility preservation. It may be useful for women with cancer who want to have children after having radiation therapy, chemotherapy, or certain types of surgery, which can cause infertility. Also called embryo banking and embryo cryopreservation.

**embryology:** the study of embryonic development.

**embryoma :** A mass of rapidly growing cells that begins in embryonic (fetal) tissue. Embryomas may be benign or malignant, and include neuroblastomas and Wilms tumors. Also called embryonal tumor.

**embryonal rhabdomyosarcoma** : A soft tissue tumor that is most common in infants and young children. It begins in muscles, usually in the head, neck, or genitourinary tract. Also called ERMS.

**embryonal tumor** : A mass of rapidly growing cells that begins in embryonic (fetal) tissue. Embryonal tumors may be benign or malignant, and include neuroblastomas and Wilms tumors. Also called embryoma.

**embryonic** : Having to do with an embryo, which is an early stage in the development of a plant or animal.

**embryotoxicity**: The potential of a substance to induce adverse effects in progeny in the first period of pregnancy between conception and the fetal stage (UNEP/IRPTC, 1982).

**Emcyt**: (Other name for: estramustine phosphate sodium)

**EMD 121974**: A substance that is being studied as an anticancer and antiangiogenesis drug. Also called cilengitide.

**Emend**: (Other name for: aprepitant)

**Emend** : A drug used together with other drugs to prevent and control the nausea and vomiting caused by cancer treatment. It is also used to treat nausea and vomiting after surgery. It is a type of antiemetic and a type of substance P/neurokinin 1 receptor antagonist. Also called aprepitant.

**Emend for Injection** : A drug used together with other drugs to prevent and control nausea and vomiting caused by cancer treatment. It is given in a vein. It is a type of antiemetic and a type of substance P/neurokinin 1 receptor antagonist. Also called fosaprepitant dimeglumine.

**emepepimut-S**: A liposome-encapsulated peptide vaccine consisting of a synthetic peptide derived from the mucin 1 (MUC-1) antigen with potential antineoplastic activity. Upon vaccination, emepepimut-S may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against MUC-1-expressing tumor cells, resulting in growth inhibition. MUC-1 antigen is a high-molecular-weight transmembrane glycoprotein that is overexpressed on the cell surfaces of many epithelial tumor cells as well as on the cell surfaces of some B-cell lymphoma cells and multiple myeloma cells.

**Emergency core cooling systems (ECCS)**: Reactor system components (pumps, valves, heat exchangers, tanks, and piping) that are specifically

designed to remove residual heat from the reactor fuel rods in the event of a failure of the normal core cooling system (reactor coolant system).

**Emergency feedwater:** Another name for auxiliary feedwater.

**Emergency preparedness (EP):** The programs, plans, training, exercises, and resources necessary to prepare emergency personnel to rapidly identify, evaluate, and react to emergencies, including those arising from terrorism or natural events such as hurricanes. EP strives to ensure that nuclear power plant operators can implement measures to protect public health and safety in the event of a radiological emergency. Plant operators, as a condition of their licenses, must develop and maintain EP plans that meet NRC requirements. For further detail, see Emergency Preparedness and Response and Backgrounder on Emergency Preparedness at Nuclear Power Plants.

**Emergent-EZ:** (Other name for: hydrocortisone sodium succinate)

**emesis :** Vomiting.

**emetic :** Describes a substance that causes vomiting. Also called emetogenic.

**emetogenic :** Describes a substance that causes vomiting. Also called emetic.

**EMF:** An area of electric and magnetic forces caused by electromagnetic radiation. Researchers are studying whether the EMFs from power lines, electrical appliances, and wireless and cellular telephones can cause cancer or other harmful health effects. Also called electromagnetic field.

**EMI:** Electromagnetic interference

**emission:** The giving off of environmental pollutants from various sources (WHO, 1979). OR the release of light from a chromogenic or fluorescent molecule, when an electron falls from an excited state to a lower energy state of the molecule.

**emission or exposure control:** The technical and administrative procedures applied for the reduction or elimination of emissions from the source or of exposure to the target (WHO, 1988).

**Emission spectrum:** a plot of emitted light wavelength versus the relative intensity of emitted light. Essentially a plot of wavelength versus the probability that the emitted light will have the energy of that wavelength.

OR A plot of relative intensity of emitted radiation as a function of wavelength or frequency.

**emission standard:** This regulatory value is a quantitative limit on the emission or discharge of a potentially toxic substance from a source. See limit values.

**emissions:** Materials (gases, particles, vapors, chemical compounds, etc.) that come out of smokestacks, chimneys, and tailpipes.

**emissivity:** The ratio of the radiation emitted by a surface to that emitted by a black body at the same temperature.

**emitefur :** An anticancer drug that belongs to the family of drugs called antimetabolites.

**emodin :** A substance found in certain plants, including rhubarb. It belongs to a family of compounds called anthraquinones, which have shown anti-inflammatory and anticancer effects.

**EMOLLIENT:** A softening agent, such as lanolin and its derivatives, for use on the skin. OR A substance added to a formulation that gives it softening ability. For example, oils that can soften skin are added as emollients in some skin creams.

**emollient:** A substance that softens or smoothes.

**emollient :** A substance that helps soothe, soften, and increase moisture levels, especially in the skin. Emollients may be used in a lotion, cream, ointment, or gel to prevent or treat dry, rough, scaly, itchy skin and other skin problems, such as rashes or burns. They may also be used to help protect the skin against irritation. Emollients may also be given by mouth to prevent or treat constipation by moistening and softening the stool.

**emphysema :** A disorder affecting the alveoli (tiny air sacs) of the lungs. The transfer of oxygen and carbon dioxide in the lungs takes place in the walls of the alveoli. In emphysema, the alveoli become abnormally inflated, damaging their walls and making it harder to breathe. People who smoke or have chronic bronchitis have an increased risk of emphysema. Emphysema is a type of chronic obstructive pulmonary disease (COPD).

**empirical formula:** Formula showing the simplest ratio of elements in a compound. OR is the simplest whole number ratio of elements in a compound, ie CH<sub>2</sub>. OR The empirical formula gives the simplest ratio of the number of moles of each element present in a compound. OR Empirical

formulas show which elements are present in a compound, with their mole ratios indicated as subscripts. For example, the empirical formula of glucose is  $\text{CH}_2\text{O}$ , which means that for every mole of carbon in the compound, there are 2 moles of hydrogen and one mole of oxygen.

**empirical temperature:** A property that is the same for any two systems that are in thermodynamic equilibrium with each other.

**Empirin:** (Other name for: acetylsalicylic acid)

**Empliciti :** A drug used with lenalidomide and dexamethasone to treat multiple myeloma. It is used in patients whose cancer was treated with one to three anticancer therapies. Empliciti binds to a protein called CS1, which is found on myeloma cells and some types of immune cells. Empliciti may block CS1 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called elotuzumab and HuLuc63.

**EMR:** Radiation that has both electric and magnetic fields and travels in waves. It comes from natural and man-made sources. EMR can vary in strength from low energy to high energy. It includes radio waves, microwaves, infrared light, visible light, ultraviolet light, x-rays, and gamma rays. Also called electromagnetic radiation.

**emtricitabine:** A synthetic fluoro derivative of thiacytidine with potent antiviral activity. Emtricitabine is phosphorylated to form emtricitabine 5'-triphosphate within the cell. This metabolite inhibits the activity of human immunodeficiency virus (HIV) reverse transcriptase both by competing with the natural substrate deoxycytidine 5'-triphosphate and by incorporation into viral DNA causing a termination of DNA chain elongation (due to the lack of the essential 3'-OH group).

**Emtriva:** (Other name for: emtricitabine)

**Emulsifier:** A compound added to a mixture of two immiscible liquids in order to make it an emulsion, and not just two layers of liquid lying on top of each other. An emulsifier will usually be a molecule where one end is highly soluble in water and the other is highly soluble in oil. Sodium dodecyl sulfate, the active ingredient in bubble-blowing mixture, is a surfactant. So is lecithin, found in egg yolk: OR A substance that promotes the dispersion of small globules of one liquid in another liquid when the two liquids will not mix. OR An additive or system which promotes a stable mixture of oils/fats in water.

**Emulsion:** a dispersion of one liquid in another possible only when they are mutually insoluble. OR A suspension of fine droplets of one liquid in another. OR A colloid formed from tiny liquid droplets suspended in another, immiscible liquid. Milk is an example of an emulsion. OR A dispersion where a liquid is dispersed in another liquid - for example, mayonnaise is an emulsion of water in oil and milk is an emulsion of oil in water. Strictly speaking, a dispersion is only an emulsion if the dispersed blobs of liquid are of colloidal dimensions. OR A mixture of solids suspended in a liquid. OR A dispersion of one liquid in a second, immiscible liquid. (see RFF 705.10.07 - EMULSIONS). OR a liquid system in which one liquid is finely dispersed in another liquid in such a manner that the two will not separate through the action of gravity alone. OR A liquid mixture of two or more liquid substances not normally dissolved in one another, one liquid held in suspension in the other. OR A system in which one liquid is dispersed as droplets into another liquid (e.g., oil in water or water in oil).

**Emulsion Paint:** Coating in which resins are suspended in water, then flow together with the aid of an emulsifier. Example: latex paint. OR Paint in which particles are suspended in water or oil with the aid of an emulsifier as in latex paint. OR Water thinned paints based on a variety of synthetic resins including acrylics vinyl acetate and vinyl versatate. These generally have fair to good resistance to alkali and are permeable to water vapour which enables them to be used for early decoration by direct application to new plaster cement rendering and similar surfaces.

**EMULSION POLYMERIZATION:** Emulsion polymerization is a heterogeneous, free-radical polymerization process in which the bulk of the polymeric product is formed inside micelles.

**Enacard:** (Other name for: enalapril maleate)

**enadenotucirev:** A complex, replication-selective, E1B and partial E3 gene deleted, adenovirus type 11p (Ad11p)/Ad3 chimeric oncolytic virus with potential antineoplastic activity. Upon intralesional injection of enadenotucirev, the adenovirus selectively and rapidly replicates in cancer cells; however, it is unable to replicate in normal, healthy cells. This induces a selective adenovirus-mediated cytotoxicity in cancer cells, which leads to cancer cell lysis. Following the lysis of infected cells, the replicated virus is released and can infect adjacent cells, which both induces further

tumor cell oncolysis and may activate the immune system to kill the infected tumor cells. The E1B protein causes p53 inactivation in host cells, which promotes viral replication. Deletion of E1B prevents replication in normal, healthy cells that express wild-type p53. The mutation and subsequent inactivation of p53 in cancer cells enables the E1B-deleted adenovirus to selectively replicate in cancer cells. Partial deletion of the E3 gene, which encodes the adenovirus death protein, enhances the safety profile of the administered adenovirus.

**enalapril :** An antihypertensive agent that can also be used to slow or prevent the progression of heart disease in people with childhood cancer treated with drugs that may be harmful to the heart.

**enalapril maleate:** The maleate salt form of enalapril, a dicarbocyl-containing peptide and angiotensin-converting enzyme (ACE) inhibitor with antihypertensive activity. As a prodrug, enalapril is converted by de-esterification into its active form enalaprilat. Enalaprilat competitively binds to and inhibits ACE, thereby blocking the conversion of angiotensin I to angiotensin II. This prevents the potent vasoconstrictive actions of angiotensin II and results in vasodilation. Enalapril also decreases angiotensin II-induced aldosterone secretion by the adrenal cortex, which leads to an increase in sodium excretion and subsequently increases water outflow.

**Enamel:** Broad classification of paints that dry to a hard, usually glossy finish. Most equipment-coating enamels require baking. Enamels for walls do not. OR Traditionally a slow-drying highly glossy paint having very good flowing properties but low opacity. Recently has been used more widely to describe any type of high-gloss finish. OR Broad classification paints that dry to a hard finish. They may be flat, gloss or semi-gloss.

**enantiomer:** One of a pair of non-superimposable, mirror-image stereoisomers. OR An enantiomer is either of a pair of molecules that are non-superposable mirror images of each other. OR In a chiral compound, either of the two molecular species, R and S, having equal optical rotation but of opposite sign and in which the mirror image is not superimposable with the original structure. OR a stereoisomer that cannot be superimposed on its mirror image. OR One of two "mirror images" of a chiral molecule OR Two molecules that are nonsuperimposable mirror images of each other. One enantiomer rotates plane-polarized light to the

left; the other rotates it to the right. OR A pair of molecules, each with one or more chiral centers, that are mirror images of each other. OR Stereoisomers that are nonsuperimposable mirror images of each other.

**enantiomeric pair:** in optically active molecules with more than one stereogenic center, the two structures that are mirror images of each other are enantiomeric pairs.

**Enantiomers:** Isomers that are mirror images of one another.

**Enantiotropy:** Referring to a situation in which the rank order of stability of the various solid forms changes at different temperatures (in contrast to monotropic).

**enavatumab:** A humanized monoclonal antibody directed against the tumor necrosis factor-like weak inducer of apoptosis receptor (TWEAKR) with potential antineoplastic, immunomodulating and antiangiogenic activities. Enavatumab binds to TWEAKR and inhibits TWEAK ligand binding and activation of NF-kappaB-mediated cytokine release, which may result in tumor cell apoptosis. TWEAKR is a cell-surface receptor with homology to tumor necrosis factor receptors. Upon binding with its ligand, TWEAKR has been shown to stimulate cytokine release and cell proliferation, migration, and survival; it may also promote apoptosis under some conditions. This receptor may be overexpressed in a variety of tumors including those of the pancreas, colon, lung, kidney, and breast.

**Enbrel:** (Other name for: etanercept)

**encapsulated :** Confined to a specific, localized area and surrounded by a thin layer of tissue.

**Encapsulating:** Enclosing an article (usually an electronic component or the like) in a closed envelope of plastic, by immersing the object in a casting resin and allowing the resin to polymerize or, if hot, to cool. OR Enclosing an article in a closed envelope of liquid silicone rubber or plastic, by immersing or over molding the object in a silicone rubber or plastic

**ENCAPSULATING:** Enclosing an article (usually an electronic component or the like) in a closed envelope of plastic, by immersing the object in a casting resin and allowing the resin to polymerize or, if hot, to cool. See POTTING.

**encephalopathy :** A disorder of the brain that can be caused by disease, injury, drugs, or chemicals.

**enchondroma :** A benign (not cancer) growth of cartilage in bones or in other areas where cartilage is not normally found.

**enclomiphene citrate:** The orally bioavailable citrate salt of enclomiphene, the trans-isomer of the nonsteroidal triphenylethylene compound clomiphene, with tissue-selective estrogenic and antiestrogenic activities. As a selective estrogen receptor modulator (SERM), enclomiphene binds to hypothalamic estrogen receptors, blocking the negative feedback of endogenous estrogens and stimulating the release of gonadotropin-releasing hormone (GnRH) from the hypothalamus; released GnRH subsequently stimulates the release of follicle-stimulating hormone (FSH) and luteinizing hormone (LH) from the anterior pituitary, resulting in ovulation. In addition, this agent may bind to estrogen receptors on breast cancer cells, resulting in the inhibition of estrogen-stimulated proliferation in susceptible cell populations.

**End Lock:** Rod cap with locking lip inserted into the module along both edges of the belt to secure rod position.

**End mill:** A cutting tool that is used to machine a mold.

**end moraine:** an extensive and typically crescent shaped pile of till built up at the front of a glacier.

**End Of Flow :** The melt is just touching the last part of the mold to be filled and the pressure at that point is zero.

**end point:** that stage in the titration at which an effect, such as a color change, occurs, indicating that a desired point in the titration has been reached.

**end-of-life care :** Care given to people who are near the end of life and have stopped treatment to cure or control their disease. End-of-life care includes physical, emotional, social, and spiritual support for patients and their families. The goal of end-of-life care is to control pain and other symptoms so the patient can be as comfortable as possible. End-of-life care may include palliative care, supportive care, and hospice care.

**End-product (feedback) inhibition:** The inhibition of the first enzyme in a pathway by the end product of that pathway.

**end-product inhibition:** See feedback inhibition.

**end-stage cancer :** Cancer that cannot be cured and leads to death. Also called terminal cancer.

**endemic :** In medicine, describes a disease that is constantly present in a certain geographic area or in a certain group of people. For example, endemic Burkitt lymphoma (a type of non-Hodgkin lymphoma) is seen at constant levels in certain parts of Africa.

**endergonic reaction:** chemical reactions in which energy is obtained and trapped from the environment. OR A reaction with a positive standard free energy change. OR A chemical reaction that consumes energy (that is, for which  $\Delta G$  is positive).

**Endo-Pat 2000 :** A medical device that tests to see if endothelial cells are damaged. Endothelial cells line the inner walls of blood vessels, lymph vessels, and the heart, and damage to them may be an early sign of heart disease. Endo-Pat 2000 looks for heart disease by using sensors that measure blood flow through a patient's fingers. It is also being used to check blood vessels in patients treated for breast cancer. Also called EndoPat.

**endocarditis :** A condition in which the tissues lining the inside of the heart and the heart valves become inflamed (red and swollen). Endocarditis may be caused by infection with microorganisms, such as bacteria or fungi.

**endocervical curettage :** A procedure in which a sample of abnormal tissue is removed from the cervix using a small, spoon-shaped instrument called a curette. The tissue is then checked under a microscope for signs of cervical cancer. This procedure may be done if abnormal cells are found during a Pap test.

**endocervix :** The inner part of the cervix that forms a canal that connects the vagina to the uterus. The endocervix is lined with cells that make mucus. During a pelvic exam, cells may be scraped from the endocervix. The cells are checked under a microscope for infection, inflammation, and cancer or changes that may become cancer.

**EndoClot:** (Other name for: absorbable modified polymer hemostatic powder)

**endocrine :** Refers to tissue that makes and releases hormones that travel in the bloodstream and control the actions of other cells or organs. Some examples of endocrine tissues are the pituitary, thyroid, and adrenal glands.

**endocrine cancer :** Cancer that occurs in endocrine tissue, the tissue in the body that secretes hormones.

**Endocrine disruptor:** A synthetic chemical that blocks, mimics, or otherwise interferes with naturally produced hormones

**endocrine glands:** glands throughout the animal body that secrete hormones, which help coordinate body systems.

**Endocrine glands:** Specialized tissues whose function is to synthesize and secrete hormones. OR Groups of cells specialized to synthesize hormones and secrete them into the blood to regulate other types of cells.

**endocrine pancreas cell :** A pancreatic cell that produces hormones (e.g., insulin and glucagon) that are secreted into the bloodstream. These hormones help control the level of glucose (sugar) in the blood. Also called islet cell and islet of Langerhans cell.

**endocrine system :** A system of glands and cells that make hormones that are released directly into the blood and travel to tissues and organs all over the body. The endocrine system controls growth, sexual development, sleep, hunger, and the way the body uses food.

**endocrine therapy :** Treatment that adds, blocks, or removes hormones. For certain conditions (such as diabetes or menopause), hormones are given to adjust low hormone levels. To slow or stop the growth of certain cancers (such as prostate and breast cancer), synthetic hormones or other drugs may be given to block the body's natural hormones. Sometimes surgery is needed to remove the gland that makes a certain hormone. Also called hormonal therapy, hormone therapy, and hormone treatment.

**endocrine-inactive tumor :** A tumor that is found in endocrine tissue but does not make extra hormones. Endocrine-inactive tumors usually do not cause symptoms until they grow large or spread to other parts of the body. Also called nonfunctioning tumor.

**endocrinologist :** A doctor who has special training in diagnosing and treating disorders of the endocrine system (the glands and organs that make hormones). These disorders include diabetes, infertility, and thyroid, adrenal, and pituitary gland problems.

**endocrinology :** A branch of medicine that specializes in diagnosing and treating disorders of the endocrine system, which includes the glands and organs that make hormones. These disorders include diabetes, infertility, and thyroid, adrenal, and pituitary gland problems.

**endocytosis:** the process in which a small patch of plasma membrane encloses particles that are near the cell surface. OR The process of internalization of extracellular material by invagination and budding of the cell membrane. OR The uptake of extracellular material by its inclusion within a vesicle (endosome) formed by an invagination of the plasma membrane.

**endoderm:** one of three germ layers that develops into the gastrointestinal tract.

**endogenous :** Produced inside an organism or cell. The opposite is external (exogenous) production.

**Endogenous respiration:** A reduced level of respiration (breathing) in which organisms break down compounds within their own cells to produce the oxygen they need.

**endometrial :** Having to do with the endometrium (the layer of tissue that lines the uterus).

**endometrial biopsy :** A procedure in which a sample of tissue is taken from the endometrium (inner lining of the uterus) for examination under a microscope. A thin tube is inserted through the cervix into the uterus, and gentle scraping and suction are used to remove the sample.

**endometrial cancer :** Cancer that forms in the tissue lining the uterus (the small, hollow, pear-shaped organ in a woman's pelvis in which a fetus develops). Most endometrial cancers are adenocarcinomas (cancers that begin in cells that make and release mucus and other fluids).

**endometrial disorder :** Abnormal cell growth in the endometrium (the lining of the uterus).

**endometrial hyperplasia :** An abnormal overgrowth of the endometrium (the layer of cells that lines the uterus). There are four types of endometrial hyperplasia: simple endometrial hyperplasia, complex endometrial hyperplasia, simple endometrial hyperplasia with atypia, and complex endometrial hyperplasia with atypia. These differ in terms of how abnormal the cells are and how likely it is that the condition will become cancer.

**Endometrin:** (Other name for: progesterone vaginal insert)

**endometriosis :** A benign condition in which tissue that looks like endometrial tissue grows in abnormal places in the abdomen.

**endometrium :** The layer of tissue that lines the uterus.

**EndoPat :** A medical device that tests to see if endothelial cells are damaged. Endothelial cells line the inner walls of blood vessels, lymph vessels, and the heart, and damage to them may be an early sign of heart disease. EndoPat looks for heart disease by using sensors that measure blood flow through a patient's fingers. It is also being used to check blood vessels in patients treated for breast cancer. Also called Endo-Pat 2000.

**Endopeptidase:** An enzyme that breaks a polypeptide chain at an internal peptide linkage. OR An enzyme that breaks a phosphodiester linkage at some point within a polynucleotide chain. OR An enzyme that hydrolyzes the interior phosphodiester bonds of a nucleic acid; that is, it acts at points other than the terminal bonds.

**endoplasmic reticulum :** A network of sac-like structures and tubes in the cytoplasm (gel-like fluid) of a cell. Proteins and other molecules move through the endoplasmic reticulum. The outer surface of the endoplasmic reticulum can be smooth or rough. The rough endoplasmic reticulum has many ribosomes on its outer surface and makes proteins the cell needs. The smooth endoplasmic reticulum makes other substances that the cell needs, such as lipids (fats) and carbohydrates (sugars). The endoplasmic reticulum is a cell organelle.

**Endoplasmic reticulum (ER):** An extensive system of double membranes in the cytoplasm of eukaryotic cells; it encloses secretory channels and is often studded with ribosomes (rough endoplasmic reticulum). OR an organelle comprised of a series of membranes extending throughout the cytoplasm; two types exist, rough and smooth ER. OR An extensive system of cytoplasmic membranes that comprises about half the total cell membrane. The region of the ER that binds ribosomes is called the rough ER, and the region that is devoid of ribosomes is called the smooth ER. OR A system of double membranes in the cytoplasm that is involved in the synthesis of transported proteins. The rough endoplasmic reticulum has ribosomes associated with it. The smooth endoplasmic reticulum does not. OR Endoplasmic reticulum. A system of double membranes in the cytoplasm that is involved in the synthesis of transported proteins. The rough endoplasmic reticulum has ribosomes associated with it. The smooth endoplasmic reticulum does not.

**endorphin :** One of several substances made in the body that can relieve pain and give a feeling of well-being. Endorphins are peptides (small

proteins) that bind to opioid receptors in the central nervous system. An endorphin is a type of neurotransmitter.

**endoscope :** A thin, tube-like instrument used to look at tissues inside the body. An endoscope has a light and a lens for viewing and may have a tool to remove tissue.

**endoscopic retrograde cholangiopancreatography :** A procedure that uses an endoscope to examine and x-ray the pancreatic duct, hepatic duct, common bile duct, duodenal papilla, and gallbladder. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. The endoscope is passed through the mouth and down into the first part of the small intestine (duodenum). A smaller tube (catheter) is then inserted through the endoscope into the bile and pancreatic ducts. A dye is injected through the catheter into the ducts, and an x-ray is taken. Also called ERCP.

**endoscopic ultrasound :** A procedure in which an endoscope is inserted into the body. An endoscope is a thin, tube-like instrument that has a light and a lens for viewing. A probe at the end of the endoscope is used to bounce high-energy sound waves (ultrasound) off internal organs to make a picture (sonogram). Also called endosonography and EUS.

**endoscopic ultrasound-guided fine needle aspiration :** A procedure to take a sample of tissue for examination under a microscope. An endoscope with an ultrasound probe and a biopsy needle at the end is inserted through the mouth into the esophagus. An endoscope is a thin, tube-like instrument that has a light and a lens for viewing. The ultrasound probe is used to bounce high-energy sound waves off internal organs and tissues to make a picture on a monitor. This picture helps the doctor see where to place the biopsy needle. Also called EUS-FNA.

**endoscopy :** A procedure that uses an endoscope to examine the inside of the body. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**endoskeleton:** an internal support system in the echinoderms and most vertebrates that may include a framework of bones and cartilage that serves as a point of attachment for muscle.

**Endosome:** A component of the receptor-mediated endocytotic pathway in which sorting decisions about the endocytosized material are made; endosomes are derived from coated vesicles that lose the clathrin coat.

**endosonography** : A procedure in which an endoscope is inserted into the body. An endoscope is a thin, tube-like instrument that has a light and a lens for viewing. A probe at the end of the endoscope is used to bounce high-energy sound waves (ultrasound) off internal organs to make a picture (sonogram). Also called endoscopic ultrasound and EUS.

**endosperm**: the female tissue that encloses the seed within the angiosperms.

**endostatin** : A substance being studied in the treatment of cancer. Endostatin is made from a type of collagen (a protein found in cartilage and other connective tissue). It may prevent the growth of new blood vessels that tumors need to grow. Endostatin is a type of antiangiogenesis agent. Also called COL18A1.

**endothelial cell** : The main type of cell found in the inside lining of blood vessels, lymph vessels, and the heart.

**endothelin B receptor agonist SPI-1620**: A highly selective peptide agonist of the endothelin-B receptor. Endothelin B receptor agonist SPI-1620 binds to endothelin-B receptors on endothelial cells in tumor blood vessels, which, unlike the angioarchitecture of normal blood vessels, are relatively devoid of smooth muscle. This agent may induce a transient, selective increase in blood flow to a tumor, which may result in an increase in the delivery of anticancer agents to the tumor and, so, an increase in anticancer agent efficacy.

**endothelin receptor antagonist** : A drug that blocks the hormone endothelin and may prevent prostate cancer from spreading to the bones. It may also prevent the growth and spread of other types of cancer, including colorectal cancer.

**endothelin-1 protein receptor antagonist** : A substance that blocks the binding of the endothelin-1 protein to its receptor. Endothelin-1 is a small molecule that causes changes in blood vessels and helps regulate blood pressure. It can also stimulate the growth of some types of cells.

**endothermic**: Process that absorbs heat from its surroundings as the reaction proceeds. OR A endothermic reaction absorbs energy from its surroundings, resulting in a fall in temperature. OR refers to a reaction that requires heat. OR A process that absorbs heat. The enthalpy change for an endothermic process has a positive sign.

**ENDOTHERMIC REACTION:** takes more energy to start it than it gives back. It has a positive  $\Delta H$ . It needs energy to keep it going. An example is cooking. (Chippers a baking!) OR When heat is given off curing a chemical reaction. OR A chemical reaction that takes up heat (that is, for which  $\Delta H$  is positive). OR A chemical reaction in which heat is absorbed.

**endpoint:** The experimental estimate of the equivalence point in a titration.

**endpoint :** In clinical trials, an event or outcome that can be measured objectively to determine whether the intervention being studied is beneficial. The endpoints of a clinical trial are usually included in the study objectives. Some examples of endpoints are survival, improvements in quality of life, relief of symptoms, and disappearance of the tumor.

**enema :** The injection of a liquid through the anus into the large bowel.

**energy:** Ability to do work. OR The ability to do work and transfer heat. OR the concept of motion or heat required to do work. OR the ability to do work or make change. OR Energy is an abstract property associated with the capacity to do work.

**energy balance :** In biology, the state at which the number of calories eaten equals the number of calories used. Energy balance is affected by physical activity, body size, amount of body fat and muscle, and genetics.

**energy balance models:** An analytical technique to study the solar radiation incident on the Earth in which explicit calculations of atmospheric motions are omitted. In the zero- dimensional models, only the incoming and outgoing radiation is considered. The outgoing infrared radiation is a linear function of global mean surface air temperature, and the reflected solar radiation is dependent on the surface albedo. The albedo is a step function of the global meansurface air temperatures, and equilibrium temperatures are computed for a range of values of the solar constant. The one-dimensional models have surface air temperature as a function of latitude. At each latitude, a balance between incoming and outgoing radiation and horizontal transport of heat is computed. (Abbreviated as EBM.)

**Energy charge:** The fractional degree to which the AMP-ADP-ATP system is filled with high-energy phosphates (phosphoryl groups). OR A means of determining the energy status of the cell, equal to the concentration of ATP plus one-half the concentration of ADP, all divided by the total adenine nucleotide concentration. OR The fractional degree to

which the ATP/ADP system is filled with high-energy phosphate groups.

**energy coupling:** The transfer of energy from one process to another.

**energy healing :** A form of complementary and alternative medicine based on the belief that a vital energy flows through the human body. The goal of energy healing is to balance the energy flow in the patient. It is used to reduce stress and anxiety and promote well-being. Energy healing is being studied in patients receiving cancer therapy, to find out if it can improve quality of life, boost the immune system, or reduce side effects. Also called energy therapy.

**Energy Information Administration (EIA):** The agency, within the U.S. Department of Energy, that provides policy-neutral statistical data, forecasts, and analyses to promote sound policymaking, efficient markets, and public understanding regarding energy and its interaction with the economy and the environment.

**Energy Minimisation:** In molecular modelling, energy minimisations refer to operations carried out to detect a stable conformation for a molecule

**energy of reaction:** the difference between the total energy content of the reactants and the total energy content of the products. The greater the energy of reaction, the more stable the products.

**energy therapy :** A form of complementary and alternative medicine based on the belief that a vital energy flows through the human body. The goal of energy therapy is to balance the energy flow in the patient. It is used to reduce stress and anxiety and promote well-being. Energy therapy is being studied in patients receiving cancer therapy, to find out if it can improve quality of life, boost the immune system, or reduce side effects. Also called energy healing.

**Engerix-B:** (Other name for: hepatitis B vaccine (recombinant))

**Engineering Plastics :** A broad term covering plastics, with or without fillers or reinforcements, which have improved mechanical, chemical and thermal properties over commodity grades of resins. OR A broad term covering all plastics, with or without fillers or reinforcements, which have mechanical, chemical and thermal properties suitable for use, in construction, machine components and chemical processing equipment. OR Plastic resins that have high-performance properties such as high

temperature stability, hot hardness, abrasion resistance and corrosion resistance.

**Engineering Polymers:** The Engineering Polymers are a grouping of specialised polymer materials that have been "engineered" to have specific materials properties. These generally relate to high strength as well as temperature and chemical resistance. These materials are costly to make and rely on their high performance characteristics as cost reduction programs provide OEM producers with a strong incentive to replace them with lower cost commodity polymers

**ENGINEERING RESINS:** Resins for high-performance applications. This category includes polycarbonates (PC) and polyamides (PA) like nylon.

**English chamomile :** A type of chamomile plant with daisy-like white flowers that is found in Europe, North America, and Argentina. The dried flowers are used in teas to calm and relax, to improve sleep, and to help with stomach problems. Its essential oil (scented liquid taken from plants) is used in perfumes, shampoos, face creams, lotions, and aromatherapy. The scientific names are *Chamaemelum nobile* and *Anthemis nobilis*. Also called Roman chamomile.

**English lavender :** A plant with aromatic leaves and flowers that is a member of the mint family. Oil from the flowers has been used in some cultures to treat certain medical problems, to keep insects away, and to wash in. It is also used in aromatherapy. Perillyl alcohol, a substance found in English lavender, is being studied in cancer prevention and treatment. The scientific name is *Lavandula angustifolia*. Also called lavender and true lavender.

**Enhancer:** A DNA sequence that can stimulate transcription at an appreciable distance from the site where it is located. It acts in either orientation and either upstream or downstream from the promoter. OR DNA sequences that have no promoter activity themselves but that can greatly enhance the activity of other promoters; enhancers can exert their stimulatory effect over a distance of several thousand nucleotides. OR DNA sequences that facilitate the expression of a given gene; may be located a few hundred, or even thousand, base pairs away from the gene.

**Enhanzyn:** (Other name for: Detox-B adjuvant)

**eniluracil:** An anticancer drug that increases the effectiveness of fluorouracil. Also called ethynyluracil. OR An orally-active fluoropyrimidine analogue. Eniluracil inhibits dihydropyrimidine dehydrogenase, the rate-limiting enzyme that catabolizes and inactivates 5-fluorouracil (5-FU) in the liver. Co-administration of ethynyluracil permits the oral administration of 5-FU.

**enkephalin:** Enkephalins are molecules produced naturally by the central nervous system to numb pain. Enkephalins lock into receptors on the surface of a nerve cell and open ion channels. Ions flow into the cell and the distribution of charge on either side of the cell membrane becomes such that the nerve cell cannot fire.

**enobosarm:** A non-steroidal agent with anabolic activity. Enobosarm is designed to work like testosterone, thus promoting and/or maintaining libido, fertility, prostate growth, and muscle growth and strength. Mimicking testosterone's action, this agent may increase lean body mass, thereby ameliorating muscle wasting in the hypermetabolic state of cancer cachexia.

**enol:** an unstable compound (for example, vinyl alcohol) in which a hydroxide group is attached to a carbon bearing a carbon-carbon double bond. These compounds tautomerize to form ketones, which are more stable.

**Enol phosphate:** A compound with a high phosphoryl transfer potential because the phosphoryl group traps the molecule in an unstable enol form. On transfer of the phosphate, the molecule converts into the more stable ketone form.

**enolate ion:** the resonance stabilized ion formed when an aldehyde or ketone loses an  $\alpha$  hydrogen.

**enoxaparin:** A drug used to prevent blood clots. It belongs to the family of drugs called anticoagulants. OR A low molecular weight, synthetic heparin. As an anticoagulant/antithrombotic agent, enoxaparin's mechanism of action is similar to that of heparin, although it exhibits a higher ratio of anti-Factor Xa to anti-Factor IIa activity. This agent also has anti-inflammatory properties, inhibiting monocyte adhesion to tumor necrosis factor alpha- or lipopolysaccharide-activated endothelial cells. Compared to unfractionated heparins, the use of enoxaparin is associated with lower incidences of osteoporosis and heparin-induced thrombocytopenia.

**enriched food :** A food that has nutrients added back that were lost during processing. Examples are bread, pasta, and other products made from white flour that have B vitamins added back.

**enrichment:** the addition of nitrogen, phosphorous, and carbonaceous compounds, or other nutrients into a lake or other waterway that greatly increases the growth potential for algae and other aquatic plants. Most frequently, enrichment results from the inflow of sewage effluents or from agricultural runoff. OR Ornament particularly carved or modelled decoration to a building.

**ensituximab:** A chimeric monoclonal antibody against human colorectal and pancreatic carcinoma-associated antigens (CPAAs) with potential immunomodulating and anti-tumor activities. Ensituximab binds to CPAAs, which may activate the immune system to exert a cytotoxic T-lymphocyte (CTL) response and an antibody-dependent cellular cytotoxicity (ADCC) response against CPAA-expressing tumor cells. CPAAs, cell surface proteins, are upregulated on colon and pancreatic tumor cells. Ensituximab contains the variable region of the heavy and light chain of murine NPC-1 and linked in-frame to constant regions of a human IgG1 isotype.

**Ensure :** A type of nutrition drink that may help people who cannot get all the nutrients they need from foods and other drinks. Ensure has vitamins, minerals, protein, and fats. It may be added to a person's diet to help build strong bones, rebuild muscle and strength, and help the body heal after injury or surgery. Ensure may be taken by mouth or given through tube feeding. Ensure is a type of polymeric enteral nutrition formula and a type of dietary supplement.

**ENT doctor :** A doctor who has special training in diagnosing and treating diseases of the ear, nose, and throat. Also called otolaryngologist.

**entecavir:** A synthetic analog of 2-deoxyguanosine with antiviral activity against hepatitis B virus (HBV). Entecavir is activated in vivo to a 5-triphosphate metabolite. In turn, the triphosphate form competes with the natural substrate deoxyguanosine triphosphate (dGTP) for incorporation into viral DNA. The incorporation of the activated triphosphate metabolite of entecavir inhibits the reverse transcriptase (RT) viral RNA-dependent HBV DNA polymerase and, so, the replication of viral DNA and transcription.

**EnteraGam:** (Other name for: serum-derived bovine immunoglobulin protein isolate)

**enteral nutrition :** A form of nutrition that is delivered into the digestive system as a liquid. Drinking nutrition beverages or formulas and tube-feeding are forms of enteral nutrition. People who are unable to meet their needs with food and beverages alone, and who do not have vomiting or uncontrollable diarrhea may be given tube-feedings. Tube-feeding can be used to add to what a person is able to eat or can be the only source of nutrition. A small feeding tube may be placed through the nose into the stomach or the small intestine, or it may be surgically placed into the stomach or the intestinal tract through an opening made on the outside of the abdomen, depending on how long it will be used.

**Entereg:** (Other name for: alvimopan)

**Enterex Glutapak-10:** (Other name for: glutamine)

**Enteric:** Of intestinal origin, especially applied to wastes or bacteria.

**enteric-coated TRPM8 agonist D-3263 hydrochloride:** An enteric-coated orally bioavailable formulation of the hydrochloride salt of a small-molecule agonist for transient receptor potential melastatin member 8 (TRPM8 or Trp-p8) with potential antineoplastic activity. The active ingredient in enteric-coated TRPM8 agonist D-3263 hydrochloride binds to and activates TRPM8, which may result in an increase in calcium and sodium entry; the disruption of calcium and sodium homeostasis; and the induction of cell death in TRPM8-expressing tumor cells. This agent may decrease dihydrotestosterone (DHT) levels, which may contribute to its inhibitory effects on prostate cancer and BPH. TRPM8 is a transmembrane calcium channel protein that is normally expressed in prostate cells and appears to be overexpressed in benign prostatic hyperplasia (BPH) and in prostate cancer.

**enteric-coated zoledronic acid tablet MER-101:** An oral tablet formulation containing zoledronic acid combined with a proprietary absorption enhancer for improved zoledronic acid gastrointestinal absorption with anti-bone-resorption activity. The third-generation bisphosphonate zoledronic acid binds to hydroxyapatite crystals in the bone matrix, slowing their dissolution and inhibiting the formation and aggregation of these crystals. This agent also inhibits farnesyl pyrophosphate synthase, an enzyme involved in terpenoid biosynthesis.

Inhibition of this enzyme prevents the biosynthesis of isoprenoid lipids, donor substrates of farnesylation and geranylgeranylation during the post-translational modification of small GTPase signalling proteins, which are important in the process of osteoclast turnover. The proprietary absorption enhancer is a GRAS (generally-recognized-as-safe) food additive.

**Entericin:** (Other name for: acetylsalicylic acid)

**enterohepatic circulation:** Intestinal reabsorption of material that has been excreted through the bile and transferred back to the liver, making it available for biliary excretion again (WHO, 1979).

**enterostomal therapist :** A health professional trained in the care of persons with stomas, such as colostomies or urostomies.

**Enthalpic change:** A change in the heat ( $\Delta H$ ) of the compound. For example, a change in the crystal form or structure is an enthalpic change.

**enthalpy:** Enthalpy (H) is defined so that changes in enthalpy (H) are equal to the heat absorbed or released by a process running at constant pressure. While changes in enthalpy can be measured using calorimetry, absolute values of enthalpy usually cannot be determined. Enthalpy is formally defined as  $H = U + PV$ , where U is the internal energy, P is the pressure, and V is the volume. OR Change in heat at constant pressure. OR is the heat of reaction, either exo- or endothermic. It is measured either in kilocalories/mole or kilojoules/mole. OR the thermodynamic quantity measuring the heat of a substance. OR The heat content of a system.

**enthalpy change ( $\Delta H$ ):** For a reaction, is approximately equal to the difference between the energy used to break bonds and the energy gained by the formation of new ones.

**enthalpy of atomization:** The change in enthalpy that occurs when one mole of a compound is converted into gaseous atoms. All bonds in the compound are broken in atomization and none are formed, so enthalpies of atomization are always positive.

**enthalpy of combustion:** The change in enthalpy when one mole of compound is completely combusted. All carbon in the compound is converted to  $\text{CO}_2(\text{g})$ , all hydrogen to  $\text{H}_2\text{O}(\text{l})$ , all sulfur to  $\text{SO}_2(\text{g})$ , and all nitrogen to  $\text{N}_2(\text{g})$ .

**Enthalpy of fusion rule:** If the higher melting form has the lower enthalpy (heat) of fusion the two modifications are enantiotropic. If the lower

melting form has the lower entropy (heat) of fusion the two modifications are monotropic.

**enthalpy of fusionfus:** The change in enthalpy when one mole of solid melts to form one mole of liquid. Enthalpies of fusion are always positive because melting involves overcoming some of the intermolecular attractions in the solid.

**enthalpy of hydrationhyd:** The change in enthalpy for the process  $A(g) \rightarrow A(aq)$  where the concentration of A in the aqueous solution approaches zero. Enthalpies of hydration for ions are always negative because strong ion-water attractions are formed when the gas-phase ion is surrounded by water.

**enthalpy of neutralization:** The heat released by an acid-base neutralization reaction running at constant pressure.

**enthalpy of reactionrxn:** The heat absorbed or released by a chemical reaction running at constant pressure.

**enthalpy of solutionsoln:** The heat absorbed or released when a solute is dissolved in a solvent. The heat of solution depends on the nature of the solute and on its concentration in the final solution.

**enthalpy of sublimationsub:** The change in enthalpy when one mole of solid vaporizes to form one mole of gas. Enthalpies of sublimation are always positive because vaporization involves overcoming most of the intermolecular attractions in the sublimation.

**Enthalpy of transition rule:** This rule states that if an endothermic transition is observed at some temperature it may be assumed that there is a transition point below it and that the two forms are related enantiotropically. If an exothermic transition is observed at some temperature it may be assumed that there is no transition point below it and that the two forms are either related monotropically or the transition temperature is higher.

**enthalpy of vaporizationvap:** The change in enthalpy when one mole of liquid evaporates to form one mole of gas. Enthalpies of vaporization are always positive because vaporization involves overcoming most of the intermolecular attractions in the liquid.

**Enthalpy(kJ):** property of a system defined as  $H=U+PV$ , where U=internal energy, P=absolute pressure, and V= volume of the system

**entinostat:** A synthetic benzamide derivative with potential antineoplastic activity. Entinostat binds to and inhibits histone deacetylase, an enzyme that regulates chromatin structure and gene transcription. This agent appears to exert dose-dependent effects in human leukemia cells including cyclin-dependent kinase inhibitor 1A (p21/CIP1/WAF1)-dependent growth arrest and differentiation at low drug concentrations; a marked induction of reactive oxygen species (ROS); mitochondrial damage; caspase activation; and, at higher concentrations, apoptosis. In normal cells, cyclin-dependent kinase inhibitor 1A expression has been associated with cell-cycle exit and differentiation. or A substance being studied in the treatment of several types of cancer. It blocks enzymes needed for cell division and may kill cancer cells. It is a type of histone deacetylase (HDAC) inhibitor. Also called HDAC inhibitor SNDX-275 and SNDX-275.

**entolimod:** A polypeptide derived from the Salmonella filament protein flagellin with potential radioprotective and anticancer activities. As a toll-like receptor 5 (TLR5) agonist, entolimod binds to and activates TLR5 thereby stimulating tumor necrosis factor production and activating nuclear factor kappa B (NF-kB). This induces NF-kB-mediated signaling pathways and inhibits the induction of apoptosis. This may prevent apoptosis in normal, healthy cells during radiotherapy of cancerous cells and may allow for increased doses of ionizing radiation. In addition, entolimod may inhibit radiation-independent proliferation in TLR5-expressing tumor cells.

**ENTOMB:** A method of decommissioning, in which radioactive contaminants are encased in a structurally long-lived material, such as concrete. The entombed structure is maintained and surveillance is continued until the entombed radioactive waste decays to a level permitting termination of the license and unrestricted release of the property. During the entombment period, the licensee maintains the license previously issued by the NRC. For further information, see the Fact Sheet on Decommissioning Nuclear Power Plants.

**entospletinib:** An orally available inhibitor of spleen tyrosine kinase (Syk), with potential antineoplastic activity. Upon oral administration of entospletinib, this agent may inhibit the activity of Syk, which inhibits B-cell receptor (BCR) signaling and leads to an inhibition of tumor cell activation, migration, adhesion and proliferation. Syk, a non-receptor cytoplasmic, BCR-associated tyrosine kinase, is expressed in hematopoietic

tissues and is often overexpressed in hematopoietic malignancies. Check for active clinical trials using this agent.

**Entrance Angle:** Maximum angle at which the molten material enters the land area of the die, measured from the center line of the mandrel.

**entrectinib:** An orally bioavailable inhibitor of the tyrosine kinases tropomyosin receptor kinases (Trk) A, B and C, C-ros oncogene 1 (ROS1) and anaplastic lymphoma kinase (ALK), with potential antineoplastic activity. Upon administration, entrectinib binds to and inhibits TrkA, TrkB, TrkC, ROS1 and ALK. Inhibition of these kinases may result in a disruption of TrkA-, TrkB-, TrkC-, ROS1-, and ALK-mediated signaling. This leads to an induction of apoptosis and an inhibition of tumor cell proliferation in tumor cells that express these kinases. TrkA, TrkB, TrkC, ROS1 and ALK are overexpressed in a variety of cancer cell types.

**entropy:** The extent of randomness or disorder in a system. OR Entropy is a measure of energy dispersal. Any spontaneous change disperses energy and increases entropy overall. For example, when water evaporates, the internal energy of the water is dispersed with the water vapor produced, corresponding to an increase in entropy. OR A measure of the degree of randomness or disorder in a system; denoted by the symbol  $S$  in thermodynamics, the change in entropy ( $\Delta S$ ) increases when a system becomes more disordered and decreases when the system becomes more ordered, or less random. OR The randomness of a system. OR the degree of disorder or randomness of a system. OR the thermodynamic quantity measuring the disorder of a substance. OR A measure of the number of possible states a group of 'somethings can occupy' - the more possible ways the group can be arranged, the higher the entropy. For example, there are fewer possible configurations of students in chairs in a room where the chairs are bolted to the floor than where the chairs can be moved around - the room with fewer possibilities will have less entropy, and more order... It's also interesting that the entropy of the universe is always increasing, so any process that gives one part of the universe (e.g. your bedroom) more order is increasing the disorder in other places (e.g. the air due to the hard work of cleaning your room). On balance, then, it is better for the universe if you don't clean your room... try convincing your parents though... OR A measure of the disorder of a system. OR Measure of the disorder of a system.

**Entyvio:** (Other name for: vedolizumab)

**enucleation :** In medicine, the removal of an organ or tumor in such a way that it comes out clean and whole, like a nut from its shell.

**enveloped virus :** A virus that has an outer wrapping or envelope. This envelope comes from the infected cell, or host, in a process called "budding off." During the budding process, newly formed virus particles become "enveloped" or wrapped in an outer coat that is made from a small piece of the cell's plasma membrane. The envelope may play a role in helping a virus survive and infect other cells.

**environment:** The aggregate, at a given moment, of all external conditions and influences to which a system is subjected (ISO, 1975). The term ``system" covers all living organisms, including human beings. OR The sum of all external conditions affecting the life, development, and survival of an organism.

**environmental chemistry:** The study of natural and man-made substances in the environment, including the detection, monitoring, transport, and chemical transformation of chemical substances in air, water, and soil.

**environmental fitness:** an individual's ability to adapt to an environment and reproduce.

**Environmental Footprint:** The measure of the impact on an ecosystem or our overall environment from a manufacturing facility, operation or process.

**environmental health :** The health aspects of the human environment, including technical and administrative measures for improving the human environment from a health point of view (WHO, 1979).

**Environmental qualification:** A process for ensuring that equipment will be capable of withstanding the ambient conditions that could exist when the specific function to be performed by the equipment is actually called upon to be performed under accident conditions.

**environmental quality standard (EQS):** This regulatory value defines the maximum concentration of a potentially toxic substance which can be allowed in an environmental compartment, usually air or water, over a defined period. Synonym ambient standard. See limit values.

**Environmental resistance:** All biotic and abiotic factors combining to limit explosion.

**environmental sanitation:** Traditionally used to indicate activities concerned with the improvement of the basic environmental conditions affecting health, i.e., water supply, human and animal waste disposal, protection of food from biological contamination, and housing conditions, all of which are concerned with the quality of the human environment (WHO, 1979).

**Environmental Stress Cracking:** The susceptibility of a thermoplastic article to crack or craze formation under the influence of certain chemicals and stress. OR The susceptibility of a plastic part to crack or craze under the influence of certain chemicals, stress or other agents. OR the tendency of a material to craze or crack due to the combination of residual or applied stress in the material, and chemical, thermal, or electromagnetic environments.

**ENVIRONMENTAL STRESS CRACKING (ESC):** The susceptibility of a thermoplastic article to crack, or craze formation under the influence of certain chemicals or aging, or weather, and stress.

**environmental tobacco smoke :** Smoke that comes from the burning of a tobacco product and smoke that is exhaled by smokers. Inhaling environmental tobacco smoke is called involuntary or passive smoking. Also called ETS and secondhand smoke.

**environmental transformation:** Once emitted into the environment, a chemical substance may be transported in the biosphere and undergo various types of chemical changes (WHO, 1979).

**enzalutamide:** An orally bioavailable, organic, non-steroidal small molecule targeting the androgen receptor (AR) with potential antineoplastic activity. Through a mechanism that is reported to be different from other approved AR antagonists, enzalutamide inhibits the activity of prostate cancer cell ARs, which may result in a reduction in prostate cancer cell proliferation and, correspondingly, a reduction in the serum prostate specific antigen (PSA) level. AR over-expression in prostate cancer represents a key mechanism associated with prostate cancer hormone resistance.

**enzalutamide :** A drug used to treat prostate cancer that has spread to other parts of the body and did not get better with other treatment, including docetaxel. Enzalutamide binds to proteins called androgen receptors, which are found in some prostate cancer cells. These proteins bind to androgens

(male hormones) and may cause cancer cells to grow. Blocking these proteins may keep cancer cells from growing. Enzalutamide is a type of antiandrogen. Also called Xtandi.

**enzastaurin** : A substance being studied in the treatment of certain types of cancer, including non-Hodgkin lymphoma, breast, colon, lung, ovarian, and prostate. Enzastaurin blocks certain cell signaling pathways, and may prevent the growth of new blood vessels that tumors need to grow. It is a type of serine threonine kinase inhibitor and a type of antiangiogenesis agent. Also called enzastaurin hydrochloride and LY317615.

**enzastaurin hydrochloride:** The hydrochloride salt of enzastaurin, a synthetic macrocyclic bisindolemaleimide with potential antineoplastic activity. Binding to the ATP-binding site, enzastaurin selectively inhibits protein kinase C beta, an enzyme involved in the induction of vascular endothelial growth factor (VEGF)-stimulated neo-angiogenesis. This agent may decrease tumor blood supply and so tumor burden. or A substance being studied in the treatment of certain types of cancer, including non-Hodgkin lymphoma, breast, colon, lung, ovarian, and prostate. Enzastaurin hydrochloride blocks certain cell signaling pathways, and may prevent the growth of new blood vessels that tumors need to grow. It is a type of serine threonine kinase inhibitor and a type of antiangiogenesis agent. Also called enzastaurin and LY317615.

**enzymatic:** Relating to the activity of enzymes, which are biological catalysts that play crucial roles in most biological processes, including metabolism and gene expression.

**Enzymatic cascade:** A sequence of reactions in which, at each step, a product stimulates an ensuing reaction, generating an amplification of a relatively small stimulus or signal.

**enzymatically hydrolyzed whey protein-based nutritional supplement:**

An orally available, gluten-free, enzymatically hydrolyzed cysteine-rich whey-protein based nutritional supplement containing essential vitamins, minerals, and trace elements, as well as fat and carbohydrates. Upon oral intake of the nutritional supplement, the whey protein may improve gastric functioning and gastrointestinal health, thereby reducing vomiting and diarrhea. The whey-based hydrolyzed protein helps to alleviate the digestive burden for the pancreas and may be beneficial for patients with a pancreas-associated disease, such as pancreatitis or pancreatic cancer. Due

to the high levels of cysteine in the whey protein, this supplement increases levels of the antioxidant glutathione (GSH). The polyunsaturated fatty acids in this supplement are incorporated in cell membranes and affect the production of pro-inflammatory mediators, eliciting an anti-inflammatory effect. Medium chain triglycerides (MCT) in this supplement enhance fat absorption and may aid in the prevention of fat malabsorption. Altogether, this supplement may prevent both malnutrition and weight loss.

**Enzyme:** Organic substances (proteins) produced by living organisms and act as catalysts to speed up chemical changes. OR A biological catalyst that will increase the rate of a chemical reaction, but is not consumed in the course of a reaction. These catalysts are at least hundreds of times more efficient than any man-made catalyst used in industrial processes. OR An enzyme is a biological catalyst which speeds up reactions in living things. An enzyme is a protein molecule with a specific shape to accommodate reactant molecules. OR Large biological molecules (mostly proteins) that act as catalysts for a reaction. OR A protein that catalyses a biochemical reaction. For example, chemical engineers make nitrogen ( $N_2$ ) into ammonia ( $NH_3$ ) using high temperatures and pressures - generating the power to make fertiliser by this process accounts for about 2% of all anthropogenic greenhouse gas emissions. Bacteria do the same thing at soil temperature and pressure using enzymes to catalyse the reaction. OR a stereospecific chiral protein that acts as a biological catalyst. OR A molecule that acts as a catalyst, speeding up biochemical reactions OR A molecule, most often a protein, that contains a catalytic site for a biochemical reaction. OR Protein or protein-based molecules that speed up chemical reactions occurring in living things. Enzymes act as catalysts for a single reaction, converting a specific set of reactants (called substrates) into specific products. Without enzymes life as we know it would be impossible. OR A biomolecule, either protein or RNA, that catalyzes a specific chemical reaction. It does not affect the equilibrium of the catalyzed reaction; it enhances the rate of a reaction by providing a reaction path with a lower activation energy. OR Proteins which act as highly selective catalyst. This permits reactions in living cells to take place rapidly under physiological conditions. Enzymes are also used in the industry, for example as additives in the detergents. OR proteins that catalyze the chemical reactions within cells. OR Biological macromolecules that act as

catalysts for biochemical reactions; although almost all are composed of protein, catalytically active RNA molecules have been recently discovered.

**enzyme** : A protein that speeds up chemical reactions in the body.

**enzyme inhibitor** : A substance that blocks the action of an enzyme.

Enzymes help speed up chemical reactions in the body and take part in many cell functions, including cell signaling, growth, and division. In cancer treatment, enzyme inhibitors may be used to block certain enzymes that cancer cells need to grow.

**Enzyme multiplicity**: A regulatory strategy in which the committed step common to several pathways is catalyzed by different enzymes with the same catalytic properties but different regulatory properties. Each enzyme thus responds to the final product of one of the pathways having the committed step in common.

**enzyme-linked immunosorbent assay** : A laboratory technique that uses antibodies linked to enzymes to detect and measure the amount of a substance in a solution, such as serum. The test is done using a solid surface to which the antibodies and other molecules stick. In the final step, an enzyme reaction takes place that causes a color change that can be read using a special machine. There are many different ways that an enzyme-linked immunosorbent assay can be done. Enzyme-linked immunosorbent assays may be used to help diagnose certain diseases. Also called ELISA.

**Enzyme-substrate complex**: The product of specific binding between the active site of an enzyme and the substrate.

**Eoquin**: (Other name for: apaziquone)

**eosinophil** : A type of immune cell that has granules (small particles) with enzymes that are released during infections, allergic reactions, and asthma. An eosinophil is a type of white blood cell and a type of granulocyte.

**eosinophilia** : A condition in which the number of eosinophils (a type of white blood cell) in the blood is greatly increased. Eosinophilia is often a response to infection or allergens (substances that cause an allergic response).

**eosinophils**: white blood cells whose functions are uncertain.

**eotransport**: The simultaneous transport, by a single transporter, of two solutes across a membrane. See antiport, symport.

**Eovist**: (Other name for: gadoxetate disodium)

**EP ADDITIVE:** A lubricant additive or system which prevents sliding metal surfaces from seizing under conditions of extreme pressure and force.

**EP-2101:** A substance that is being studied as a treatment for cancer. It belongs to the family of drugs called cancer vaccines.

**EP4 receptor antagonist AAT-007:** An orally bioavailable antagonist of the prostaglandin E receptor subtype 4 (EP4), with potential analgesic, immunomodulating and antineoplastic activities. Upon administration of the EP4 receptor antagonist AAT-007, this agent selectively binds to and inhibits the binding of prostaglandin E2 (PGE2) and prevents the activation of the EP4 receptor. This inhibits PGE2-EP4 receptor-mediated signaling and prevents proliferation in tumor cells in which the PGE2-EP4 signaling pathway is over-activated. In addition, EP4 receptor inhibition modulates the immune system by preventing both interleukin-23 (IL-23) production and the IL-23-mediated expansion of Th17 cells. As EP4 is expressed by peripheral sensory neurons, blockade of EP4-mediated signaling may induce an analgesic effect. EP4, a prostanoid receptor subtype, is a G protein-coupled receptor that is expressed in certain types of cancers; it promotes tumor cell proliferation and invasion.

**epacadostat:** An orally available hydroxyamidine and inhibitor of indoleamine 2,3-dioxygenase (IDO1), with potential immunomodulating and antineoplastic activities. epacadostat targets and binds to IDO1, an enzyme responsible for the oxidation of tryptophan into kynurenine. By inhibiting IDO1 and decreasing kynurenine in tumor cells, epacadostat increases and restores the proliferation and activation of various immune cells, including dendritic cells (DCs), NK cells, and T-lymphocytes, as well as interferon (IFN) production, and a reduction in tumor-associated regulatory T cells (Tregs). Activation of the immune system, which is suppressed in many cancers, may inhibit the growth of IDO1-expressing tumor cells. IDO1 is overexpressed by a variety of tumor cell types and DCs. Check for active clinical trials using this agent.

**EpCAM-specific CAR-expressing autologous T lymphocytes:** A preparation of autologous T lymphocytes that have been genetically modified to express a chimeric antigen receptor (CAR) specific for the antigen epithelial cell adhesion molecule (EpCAM), with potential immunostimulating and antineoplastic activities. Upon administration, the EpCAM-specific CAR-expressing autologous T lymphocytes specifically

recognize and bind to EpCAM-expressing tumor cells, resulting in tumor cell lysis. EpCAM, a cell surface protein, is expressed by a variety of tumor cells. Check for active clinical trials using this agent.

**EPD:** What is an EPD? An environmental product declaration (EPD) is a document that transparently communicates the environmental impacts of a product across its lifecycle. Like material safety data sheets EPD's describe a product's attributes in a consistent and comparable way.

**EPDM:** Ethylene propylene diene monomer rubber

**ependyma :** A thin membrane that lines the fluid-filled spaces in the brain and spinal cord. It is made up of a type of glial cell called an ependymal cell.

**ependymal cell :** A cell that forms the lining of the fluid-filled spaces in the brain and spinal cord. It is a type of glial cell.

**ependymal tumor :** A type of brain tumor that begins in cells lining the spinal cord central canal (fluid-filled space down the center) or the ventricles (fluid-filled spaces of the brain). Ependymal tumors may also form in the choroid plexus (tissue in the ventricles that makes cerebrospinal fluid). Also called ependymoma.

**ependymoma :** A type of brain tumor that begins in cells lining the spinal cord central canal (fluid-filled space down the center) or the ventricles (fluid-filled spaces of the brain). Ependymomas may also form in the choroid plexus (tissue in the ventricles that makes cerebrospinal fluid). Also called ependymal tumor.

**EphA2-targeting DOPC-encapsulated siRNA:** A liposomal formulation consisting of short-interfering RNAs (siRNAs) directed against ephrin type-A receptor 2 (EphA2) and encapsulated into 1,2-dioleoyl-sn-glycero-3-phosphatidylcholine (DOPC) neutral liposomes, with potential antineoplastic activity. Upon internalization, EphA2-targeting DOPC-encapsulated siRNA can hybridize to EphA2 DNA and mRNA, thereby interfering with both the transcription and translation of EphA2, and thus inhibiting tumor cell growth. The cell-surface receptor EphA2, a member of the ephrin family of receptor tyrosine kinases (RTKs) involved in mammalian development, is overexpressed by a variety of different cancer cell types and plays an important role in tumor growth.

**ephedra** : A shrub native to China and India. The stems and roots are used in traditional medicine as a diuretic and for asthma, bronchitis, and cough. It has also been promoted as a decongestant, a weight loss aid, and as a supplement to increase energy. Ephedra may cause high blood pressure, increased heart rate, or death if used with certain drugs, and may reduce the effects of certain drugs used to treat cancer and other diseases. The U.S. Food and Drug Administration has banned the sale of dietary supplements that contain ephedra. The scientific name is *Ephedra sinica*. Also called ma huang.

**ephemeral stream**: a stream that flows intermittently as a result of periods of sudden rainfall.

**epicenter**: location on the Earth's surface directly above the focus of an earthquake. OR the point on the surface directly above the focus of an earthquake.

**EpiCept NP-1**: (Other name for: ketamine/amitriptyline NP-H cream)

**epicycle**: small circle made by a planet's orbit in the geocentric model.

**epidemiologist** : A scientist who studies the patterns, causes, and control of disease in groups of people.

**epidemiology**: The study of the patterns, causes, and control of disease in groups of people. OR The study of the patterns, causes, and control of disease in groups of people. The study of the distribution and determinants of health-related states or events in populations, and the application of this study to control of health problems (from Last, 1988). OR The study of diseases as they affect populations, including the distribution of disease or other health-related states and events in human populations, the factors (e.g., age, sex, occupation, and economic status) that influence this distribution, and the application of this study to control health problems.

**epidermal growth factor** : A protein made by many cells in the body and by some types of tumors. It causes cells to grow and differentiate (become more specialized). It is a type of growth factor and a type of cytokine. Also called EGF. OR A topical ointment containing a recombinant form of human epidermal growth factor (EGF) with potential protective activity against EGF receptor (EGFR/HER1) inhibitor-induced cutaneous toxicities. Upon topical application of the EGF ointment, EGF locally activates EGFR, thereby abrogating EGFR inhibition in the skin caused by systemic EGFR inhibiting agents. This may help inhibit the skin rash induced by

EGFR antagonists. EGFR, a tyrosine kinase, plays a key role in maintaining epidermal integrity. Check for active clinical trials using this agent.

**epidermal growth factor receptor :** The protein found on the surface of some cells and to which epidermal growth factor binds, causing the cells to divide. It is found at abnormally high levels on the surface of many types of cancer cells, so these cells may divide excessively in the presence of epidermal growth factor. Also called EGFR, ErbB1, and HER1.

**epidermal growth factor receptor inhibitor :** A substance that blocks the activity of a protein called epidermal growth factor receptor (EGFR). EGFR is found on the surface of some normal cells and is involved in cell growth. It may also be found at high levels on some types of cancer cells, which causes these cells to grow and divide. Blocking EGFR may keep cancer cells from growing. Some epidermal growth factor receptor inhibitors are used to treat cancer. Also called EGFR inhibitor, EGFR tyrosine kinase inhibitor, and epidermal growth factor receptor tyrosine kinase inhibitor.

**epidermal growth factor receptor tyrosine kinase inhibitor :** A substance that blocks the activity of a protein called epidermal growth factor receptor (EGFR). EGFR is found on the surface of some normal cells and is involved in cell growth. It may also be found at high levels on some types of cancer cells, which causes these cells to grow and divide. Blocking EGFR may keep cancer cells from growing. Some epidermal growth factor receptor tyrosine kinase inhibitors are used to treat cancer. Also called EGFR inhibitor, EGFR tyrosine kinase inhibitor, and epidermal growth factor receptor inhibitor.

**epidermis :** The outer layer of the two main layers of the skin.

**epidermoid carcinoma :** Cancer that begins in squamous cells. Squamous cells are thin, flat cells that look like fish scales, and are found in the tissue that forms the surface of the skin, the lining of the hollow organs of the body, and the lining of the respiratory and digestive tracts. Most cancers of the anus, cervix, head and neck, and vagina are epidermoid carcinomas. Also called squamous cell carcinoma.

**epidermolysis bullosa :** A group of chronic skin disorders in which fluid-filled blisters form on the skin and mucosa (the moist, inner lining of some organs and body cavities). Epidermolysis bullosa is inherited and usually starts at birth. Patients with epidermolysis bullosa may be at increased risk of squamous cell cancer of the skin.

**epididymis:** the tube in which sperm cells mature. OR A narrow, tightly-coiled tube that is attached to each of the testicles (the male sex glands that produce sperm). Sperm cells (male reproductive cells) move from the testicles into the epididymis, where they finish maturing and are stored.

**epidural :** Having to do with the space between the wall of the spinal canal and the covering of the spinal cord. An epidural injection is given into this space.

**epidural block :** An injection of an anesthetic drug into the space between the wall of the spinal canal and the covering of the spinal cord.

**epigallocatechin gallate:** A phenolic antioxidant found in a number of plants such as green and black tea. It inhibits cellular oxidation and prevents free radical damage to cells. It is under study as a potential cancer chemopreventive agent.

**epigallocatechin-3-gallate :** A substance found in green tea. It is being studied in the prevention of cancer and some other diseases. It is a type of antioxidant. Also called EGCG.

**epigastric :** Having to do with the upper middle area of the abdomen.

**epigenetic alteration :** A heritable change that does not affect the DNA sequence but results in a change in gene expression. Examples include promoter methylation and histone modifications. Also called epimutation.

**epigenetics:** refers to phenotype differences manifesting in the absence of genotype differences; acting the gene as opposed to the gene OR The study of heritable changes that do not affect the DNA sequence but influence gene expression. OR The study of how age and exposure to environmental factors, such as diet, exercise, drugs, and chemicals, may cause changes in the way genes are switched on and off without changing the actual DNA sequence. These changes can affect a person's risk of disease and may be passed from parents to their children.

**epiglottis:** a thin flap of tissue that folds over the opening to the mammalian trachea during swallowing and prevents food from entering the trachea. OR The flap that covers the trachea during swallowing so that food does not enter the lungs.

**epilepsy :** A group of disorders marked by problems in the normal functioning of the brain. These problems can produce seizures, unusual

body movements, a loss of consciousness or changes in consciousness, as well as mental problems or problems with the senses.

**Epilex:** (Other name for: divalproex sodium)

**epimer:** One of two stereoisomers with more than one chiral center that differ in stereochemical configuration at only one.

**Epimerases:** Enzymes that catalyze the interconversion of epimers of a compound. OR Enzymes that catalyze the reversible interconversion of two epimers.

**Epimers:** Two stereoisomers with more than one chiral center that differ in configuration at one of their chiral centers. OR Pairs of molecules, each with more than one asymmetric center, that differ in configuration at only one such center; glucose and galactose are epimers, differing only in the configuration at C-4. OR Two stereoisomers differing in configuration at one asymmetric center, in a compound having two or more asymmetric centers.

**epimutation :** A heritable change that does not affect the DNA sequence but results in a change in gene expression. Examples include promoter methylation and histone modifications. Also called epigenetic alteration.

**epinephrine:** A hormone and neurotransmitter. Also called adrenaline. OR a hormone produced in the adrenal medulla that increases heart rate, blood pressure, and the blood supply to skeletal muscle. OR A catecholamine released by the adrenal medulla in response to muscle activity or its anticipation that stimulates the breakdown of muscle glycogen. Also called adrenaline.

**epiphyseal:** relating to the growth area near the end of a bone

**epipodophyllotoxin :** A substance being studied in the treatment of some types of cancer. Epipodophyllotoxin is extracted from the mandrake root *Podophyllum peltatum*. It is a type of topoisomerase inhibitor.

**epirubicin :** A drug used together with other drugs to treat early breast cancer that has spread to lymph nodes. It is also being studied in the treatment of other types of cancer. Epirubicin is a type of anthracycline antibiotic. Also called Ellence and epirubicin hydrochloride.

**epirubicin :** A drug used together with other drugs to treat early breast cancer that has spread to lymph nodes. It is also being studied in the

treatment of other types of cancer. Epirubicin is a type of anthracycline antibiotic. Also called Ellence and epirubicin hydrochloride.

**epirubicin hydrochloride:** The hydrochloride salt of the 4'-epi-isomer of the anthracycline antineoplastic antibiotic doxorubicin. Epirubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. This agent also produces toxic free-radical intermediates and interacts with cell membrane lipids causing lipid peroxidation. or A drug used together with other drugs to treat early breast cancer that has spread to lymph nodes. It is also being studied in the treatment of other types of cancer. Epirubicin hydrochloride is a type of anthracycline antibiotic. Also called Ellence and epirubicin.

**episodic breathlessness :** A medical condition in which patients have periods of trouble breathing that are followed by periods with no trouble breathing. Episodic breathlessness is seen in patients with lung cancer or other lung diseases, and in some heart conditions.

**epistaxis:** relating to the nose

**epithelial :** Refers to the cells that line the internal and external surfaces of the body.

**epithelial carcinoma :** Cancer that begins in the cells that line an organ.

**epithelial cell:** Any cell that forms part of the outer covering of an organism or organ.

**epithelial ovarian cancer :** Cancer that forms in the tissue covering the ovary (one of a pair of female reproductive glands in which eggs are made). Most ovarian cancers are epithelial ovarian cancers. Fallopian tube cancer and primary peritoneal cancer are similar to epithelial ovarian cancer and are staged and treated the same way. Also called ovarian epithelial cancer.

**epithelioid hemangioendothelioma :** A rare blood vessel tumor that usually forms in the liver, lung, or bone, but it can also form on or in the skin. Epithelioid hemangioendotheliomas may be slow growing or fast growing and, in some people, may spread to other parts of the body very quickly. Signs and symptoms depend on where the tumor is in the body. On the skin, the tumor may be raised with round or flat, red-brown patches that feel warm. In the lung, the tumor can cause chest pain, trouble breathing, spitting up blood, and anemia. In the bone, the tumor can cause breaks.

Epithelioid hemangioendotheliomas usually occur in adults, but can sometimes occur in children. They are a type of vascular tumor and a type of soft tissue sarcoma.

**epithelioid hemangioma :** A rare benign (not cancer) tumor of small blood vessels surrounded by lymphocytes and eosinophils (types of white blood cells). Epithelioid hemangioma usually forms on or in the skin, especially the skin of the head, but can occur in other areas of the body, such as in bone. On the skin, it may appear as firm pink to red bumps that may be itchy or painful. If the tumor is in bone, it may cause swelling and pain. Epithelioid hemangioma is sometimes caused by injury and often comes back after treatment. Epithelioid hemangioma is most common in young and middle-aged adults. It is a type of vascular tumor. Also called angiolymphoid hyperplasia with eosinophilia and histiocytoid hemangioma.

**epithelium :** A thin layer of tissue that covers organs, glands, and other structures within the body.

**Epitol:** (Other name for: carbamazepine)

**Epitope:** The specific site on an antigen that is recognized by an antibody. Also known as the antigenic determinant. OR An antigenic determinant; the particular chemical group or groups within a macromolecule (antigen) to which a given antibody binds. OR a three-membered ring that contains oxygen. OR A part of a molecule that an antibody will recognize and bind to.

**Epival:** (Other name for: divalproex sodium)

**Epivir:** (Other name for: lamivudine)

**eplerenone:** A selective aldosterone receptor antagonist. Eplerenone binds to the mineralocorticoid receptor and blocks the binding of aldosterone, thereby decreasing sodium resorption and subsequently increasing water outflow. This leads to a decrease in blood pressure. Eplerenone is used in the treatment of hypertension and congestive heart failure.

**EPO906:** A substance that is being studied as a treatment for cancer. It belongs to the family of drugs called epothilones. Also called epothilone B.

**EPOCH :** An abbreviation for a chemotherapy combination used to treat aggressive forms of non-Hodgkin lymphoma, including mantle cell lymphoma. It includes the drugs etoposide phosphate, prednisone,

vincristine sulfate (Oncovin), cyclophosphamide, and doxorubicin hydrochloride (hydroxydaunorubicin). Also called EPOCH regimen.

**EPOCH regimen:** A chemotherapy regimen consisting of etoposide, prednisone, vincristine (Oncovin) and doxorubicin hydrochloride (hydroxydaunorubicin hydrochloride), which may be used in combination with rituximab (R-EPOCH) for the treatment of various aggressive B cell and T cell non-Hodgkin lymphomas. OR An abbreviation for a chemotherapy combination used to treat aggressive forms of non-Hodgkin lymphoma, including mantle cell lymphoma. It includes the drugs etoposide phosphate, prednisone, vincristine sulfate (Oncovin), cyclophosphamide, and doxorubicin hydrochloride (hydroxydaunorubicin). Also called EPOCH.

**epoetin alfa:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous cytokine human erythropoietin (EPO). Produced primarily by cells of the peritubular capillary endothelium of the kidney in response to hypoxia, circulating EPO binds to EPO receptors on the surface of committed erythroid progenitors in the bone marrow resulting in their replication and maturation into functional erythrocytes. Check for active clinical trials using this agent. OR A substance that is made in the laboratory and stimulates the bone marrow to make red blood cells. It is a type of antianemic and a type of recombinant human erythropoietin.

**epoetin beta:** A recombinant therapeutic agent that is chemically identical to or similar to the endogenous cytokine human erythropoietin (EPO). Produced primarily by cells of the peritubular capillary endothelium of the kidney in response to hypoxia, circulating EPO binds to EPO receptors on the surface of committed erythroid progenitors in the bone marrow resulting in their replication and maturation into functional erythrocytes. Check for active clinical trials using this agent. OR A substance that is made in the laboratory and stimulates the bone marrow to make red blood cells. It is a type of antianemic and a type of recombinant human erythropoietin.

**epoetin zeta:** A recombinant form of the endogenous human cytokine erythropoietin (EPO) with erythropoiesis-stimulating activity. Similar to EPO, epoetin zeta binds to and activates erythropoietin receptors on the surface of committed erythroid progenitors in the bone marrow resulting in their proliferation and differentiation into functional erythrocytes. This may

enhance red blood cell counts and hemoglobin levels. Epoetin zeta differs from other epoetins in its glycosylation profile. EPO is a glycosylated polypeptide primarily produced by renal peritubular cells and its synthesis is regulated by a serum oxygenation feedback mechanism. Check for active clinical trials using this agent.

**Epogen:** (Other name for: epoetin alfa)

**epothilone :** A substance obtained from bacteria that interferes with cell division. Some epothilones are being studied as treatments for cancer.

**epothilone analog UTD1:** A genetically engineered epothilone analog with potential antineoplastic activity. Upon administration, epothilone analog UTD1 binds to tubulin, induces microtubule polymerization and stabilizes microtubules against depolymerization, which may result in the inhibition of cell division, the induction of G2/M arrest, and apoptosis. Compared to first-generation epothilones, this agent exhibits greater safety and enhanced activity against certain multidrug-resistant (MDR) tumors.

**epothilone B :** A substance being studied in the treatment of cancer. It is a type of epothilone. Also called EPO906.

**epothilone D:** A substance being studied in the treatment of cancer. It is a type of mitotic inhibitor and epothilone. Also called KOS-862. OR A natural polyketide compound isolated from the myxobacterium *Sorangium cellulosum*. Also known as desoxyepothilone B, epothilone D binds to tubulin and inhibits the disassembly of microtubules, resulting in the inhibition of mitosis, cellular proliferation, and cell motility.

**epothilone KOS-1584:** A second-generation epothilone with potential antineoplastic activity. Epothilone KOS-1584 binds to tubulin and induces microtubule polymerization and stabilizes microtubules against depolymerization, which may result in the inhibition of cell division, the induction of G2/M arrest, and apoptosis. Compared to first-generation epothilones, this agent exhibits greater safety and efficacy with an enhanced pharmaceutical profile, including enhanced water solubility and tumor penetration, and reduced CNS exposure. In addition, epothilone KOS-1584 is a poor substrate for the P-glycoprotein (P-gp) drug efflux pump.

**epothilone ZK219477 :** A form of the substance epothilone that is made in the laboratory. It is being studied in the treatment of some types of cancer. Epothilone ZK2219477 stops the growth of tumor cells by blocking cell division. It is a type of antimetabolic agent.

**Epoxy:** A flexible resin, usually thermosetting, made by polymerization of an epoxide and used chiefly in coatings and adhesives. OR Clear finish having excellent adhesion qualities; extremely abrasion and chemical resistant. Epoxies are alcohol proof and very water-resistant.

**Epoxy resin:** straight-chain thermosetting resins containing at least one three-membered ring consisting of two carbon atoms and one oxygen atom. OR Synthetic resins which when used in a two-pack product have good resistance to chemicals hard wear and abrasion.

**epratuzumab:** A recombinant, humanized monoclonal antibody directed against CD22, a cell surface glycoprotein present on mature B-cells and on many types of malignant B-cells. After binding to CD22, epratuzumab's predominant antitumor activity appears to be mediated through antibody-dependent cellular cytotoxicity (ADCC). Check for active clinical trials using this agent. or A substance being studied in the treatment of certain types of non-Hodgkin lymphoma (NHL) and acute lymphoblastic leukemia (ALL). It is also being studied in the treatment of an autoimmune disease called systemic lupus erythematosus (SLE). Epratuzumab binds to a protein called CD22, which is found on B cells (a type of white blood cell) and some types of cancer cells. This may help suppress the body's immune response and it may help kill cancer cells. Epratuzumab is a type of monoclonal antibody.

**Eprex:** (Other name for: epoetin alfa)

**eprodisate disodium:** The orally available disodium salt form of eprodisate, a negatively charged sulfonated inhibitor of fibrillogenesis, that can be used in the treatment of amyloid A (AA) amyloidosis. Upon administration, eprodisate competitively binds to the glycosaminoglycan binding sites on serum amyloid A (SAA), which inhibits the formation of the glycosaminoglycan-amyloid fibril aggregate. This prevents the formation of amyloid deposits in certain organs, especially the kidneys, in AA amyloidosis. Check for active clinical trials using this agent.

**Epstein-Barr virus :** A common virus that remains dormant in most people. It causes infectious mononucleosis and has been associated with certain cancers, including Burkitt lymphoma, immunoblastic lymphoma, and nasopharyngeal carcinoma. Also called EBV.

**EPT:** Treatment that generates electrical pulses through an electrode placed in a tumor to enhance the ability of anticancer drugs to enter tumor cells.

Also called electroporation therapy.

**Equalizing basin:** A holding basin in which variations in flow and composition of liquid are averaged. Such basins are used to provide a flow of reasonably uniform volume and composition to a treatment unit. Also called a balancing reservoir.

**equation:** Two expressions set equal to each other. The easiest way to differentiate between an expression and an equation is that the equation has an equal sign.

**equatorial bond:** a bond attached to a ring structure that roughly parallels the equator of the ring.

**equatorial position:** the position a group occupies in an equatorial bond.

**equilateral triangle:** a triangle in which all three angles are equal in measure and all three sides have the same length. OR A triangle with all three sides of equal length.

**equilibrium:** When the reactants and products are in a constant ratio. The forward reaction and the reverse reactions occur at the same rate when a system is in equilibrium. OR A system in which the rates of the forward and the reverse reaction are equal. OR a balanced condition resulting from two opposing reactions. OR constant the ratio of concentrations of products to reactants for a reaction at chemical equilibrium. OR a system that is in balance. OR The point at which the concentrations of two compounds are such that the interconversion of one compound into the other compound does not result in any change in free energy. OR The state of a system in which no further net change is occurring; the free energy is at a minimum.

**equilibrium constant (K<sub>eq</sub>):** Value that expresses how far the reaction proceeds before reaching equilibrium. A small number means that the equilibrium is towards the reactants side while a large number means that the equilibrium is towards the products side. OR a measure of the degree of completion of an equilibrium reaction. OR A constant, characteristic for each chemical reaction; relates the specific concentrations of all reactants and products at equilibrium at a given temperature and pressure.

**equilibrium constant<sub>eq</sub>:** The product of the concentrations of the products, divided by the product of the concentrations of the reactants, for a chemical reaction at equilibrium. For example, the equilibrium constant for  $A + B = C + D$  is equal to  $[C][D] / ([A][B])$ , where the square

brackets indicate equilibrium concentrations. Each concentration is raised to a power equal to its stoichiometric coefficient in the expression. The equilibrium constant for  $A + 2B = 3C$  is equal to  $[C]^3/([A][B]^2)$ . For gas phase reactions, partial pressures can be used in the equilibrium constant expression in place of concentrations.

**equilibrium expressions:** The expression giving the ratio between the products and reactants. The equilibrium expression is equal to the concentration of each product raised to its coefficient in a balanced chemical equation and multiplied together, divided by the concentration of the product of reactants to the power of their coefficients.

**equilibrium line:** The level on a glacier where accumulation equals ablation and the net balance equals zero.

**equivalence point:** Occurs when the moles of acid equal the moles of base in a solution. OR The equivalence point is the point in a titration when enough titrant has been added to react completely with the analyte.

**Equivalent:** The equivalent is the mass of a compound that could replace the atomic mass of an element. An example would be the amount of substance to replace one gram of hydrogen or fourteen grams of nitrogen. OR 1. The amount of substance that gains or loses one mole of electrons in a redox reaction. 2. The amount of substances that releases or accepts one mole of hydrogen ions in a neutralization reaction. 3. The amount of electrolyte that carries one mole of positive or negative charge, for example, 1 mole of  $Ba^{2+}(aq)$  is 2 equivalents of  $Ba^{2+}(aq)$ .

**equivalent diameter (of a particle):** The diameter of a spherical particle of the same density that, relative to a given phenomenon or property, would behave as the particle under investigation (ISO, 1979).

**Equivalent Mass:** The equivalent mass is molecular mass of a substance divided by the valence of that compound. Valence is determined by multiplying the valence of the positive ion in a compound by the number of atoms of that ion. NaCl has one positive sodium atom with a valence of one.  $1 \times 1$  gives a positive valence of 1.

**equivalent orbitals:** orbitals of the same principal level and type, such as the three p orbitals.

**ER:** A protein found inside the cells of the female reproductive tissue, some other types of tissue, and some cancer cells. The hormone estrogen

will bind to the receptors inside the cells and may cause the cells to grow. Also called estrogen receptor. OR Describes cells that do not have a protein to which the hormone estrogen will bind. Cancer cells that are ER- do not need estrogen to grow, and usually do not stop growing when treated with hormones that block estrogen from binding. Also called estrogen receptor negative.

**ER-negative PR-negative HER2/neu-negative breast cancer :** Describes breast cancer cells that do not have estrogen receptors, progesterone receptors, or large amounts of HER2/neu protein. Also called triple-negative breast cancer.

**ER-negative PR-negative HER2/neu-negative breast cancer :** ER-negative PR-negative HER2/neu-negative breast cancer is defined by a lack of expression of estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2/neu). Also called triple-negative breast cancer.

**ER+ :** Describes cells that have a receptor protein that binds the hormone estrogen. Cancer cells that are ER+ may need estrogen to grow, and may stop growing or die when treated with substances that block the binding and actions of estrogen. Also called estrogen receptor positive.

**ERA-923:** A substance that is being studied as a treatment for cancer. It belongs to a family of drugs called antiestrogens.

**ERa36 modulator icaritin:** A metabolite of A metabolite of icariin, a principal flavonoid glycoside in Herba Epimedii (a traditional Chinese medicine herb used in treating osteoporosis) with potential antineoplastic activity. ERa36 modulator icaritin selectively binds to a novel variant of estrogen receptor alpha, a36, and mediates a membrane-initiated "nongenomic" signaling pathway, which is linked to activated signaling pathways like the MAPK/ERK and the PI3K/Akt pathways. This agent induces cell cycle arrest at G1, or G2/M arrest depending upon the dose. Consistently with G1 arrest, icaritin increases protein expressions of pRb, p27(Kip1) and p16(Ink4a), while decreasing phosphorylated pRb, Cyclin D1 and CDK4. Forty percent of ER-negative breast cancer tumors express high levels of ERa36, and this subset of patients is less likely to benefit from tamoxifen treatment compared with those with ERa66-positive/ERa36-negative tumors.

**erastin analogue PRLX 93936:** A structural analogue of erastin with potential antineoplastic activity. Erastin analogue PRLX 93936 appears to inhibit mitochondrial outer membrane protein VDACs (voltage-dependent anion channels) 2 and 3, resulting in an oxidative, non-apoptotic cell death. Erastin analogue PRLX 93936 exhibits greater lethality in cell lines harboring mutations in the GTPase protein oncogenes HRAS and KRAS or the serine-threonine protein kinase oncogene BRAF than in non-tumorigenic cell lines. VDACs 2 and 3 are up-regulated in a wide variety of tumor cell lines.

**Eraxis:** (Other name for: anidulafungin)

**erb-38 immunotoxin:** A bivalent fusion protein consisting of disulfide-stabilized Fv fragments of an anti-HER2 (erbB2) monoclonal antibody (e23) and a truncated version of the M(r) 38 fragment of Pseudomonas exotoxin that lacks the toxin's cell binding domain. ERB-38 immunotoxin binds specifically to cells that overexpress HER2, the antigenic target of the monoclonal antibody; the exotoxin portion of the immunotoxin then lyses the cells bound by the antibody portion. or A toxic substance linked to an antibody that attaches to tumor cells and kills them.

**ErbB-2 inhibitor ARRY-380:** An orally bioavailable inhibitor of the human epidermal growth factor receptor tyrosine kinase ErbB-2 (also called HER2) with potential antineoplastic activity. ErbB-2 inhibitor ARRY-380 selectively binds to and inhibits the phosphorylation of ErbB-2, which may prevent the activation of ErbB-2 signal transduction pathways, resulting in growth inhibition and death of ErbB-2-expressing tumor cells. ErbB-2 is overexpressed in a variety of cancers and plays an important role in cellular proliferation and differentiation.

**ErbB1:** The protein found on the surface of some cells and to which epidermal growth factor binds, causing the cells to divide. It is found at abnormally high levels on the surface of many types of cancer cells, so these cells may divide excessively in the presence of epidermal growth factor. Also called EGFR, epidermal growth factor receptor, and HER1.

**Erbix:** (Other name for: cetuximab) or A drug used to treat certain types of head and neck cancer, and a certain type of colorectal cancer that has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Erbitux binds to a protein called epidermal growth factor receptor (EGFR), which is on the surface of some types of cancer

cells. This may stop cancer cells from growing. Erbitux is a type of monoclonal antibody. Also called cetuximab.

**Erbium:** Symbol:"Er" Atomic Number:"68" Atomic Mass: 167.26amu. Erbium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element.

**ERCP:** A procedure that uses an endoscope to examine and x-ray the pancreatic duct, hepatic duct, common bile duct, duodenal papilla, and gallbladder. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. The endoscope is passed through the mouth and down into the first part of the small intestine (duodenum). A smaller tube (catheter) is then inserted through the endoscope into the bile and pancreatic ducts. A dye is injected through the catheter into the ducts, and an x-ray is taken. Also called endoscopic retrograde cholangiopancreatography.

**erectile dysfunction :** An inability to have an erection of the penis adequate for sexual intercourse. Also called impotence.

**erection :** In medicine, the swelling of the penis with blood, causing it to become firm.

**Ergamisol:** (Other name for: levamisole hydrochloride)

**ergocalciferol:** Vitamin D<sub>2</sub>, a fat-soluble vitamin important for many biochemical processes including the absorption and metabolism of calcium and phosphorus. In vivo, ergocalciferol is formed after sun (ultraviolet) irradiation of plant-derived ergosterol, another form of vitamin D. Ergocalciferol is the form of vitamin D usually found in vitamin supplements. Check for active clinical trials using this agent.

**ergocalciferol :** A form of vitamin D that helps the body use calcium and phosphorus to make strong bones and teeth. It is fat-soluble (can dissolve in fats and oils) and is found in plants and yeast. It can be made in the body from another form of vitamin D when the body is exposed to the sun. Ergocalciferol is also made in the laboratory. It is used to prevent and to treat vitamin D deficiency. It is a type of dietary supplement. Also called vitamin D<sub>2</sub>. or A form of vitamin D that helps the body use calcium and phosphorus to make strong bones and teeth. It is fat-soluble (can dissolve in fats and oils) and is found in plants and yeast. It can be made in the body from another form of vitamin D when the body is exposed to the sun. Ergocalciferol is also made in the laboratory. It is used to prevent and to

treat vitamin D deficiency. It is a type of dietary supplement. Also called vitamin D2.

**eribulin mesylate** : A drug used to treat metastatic breast cancer in patients who have already been treated with other chemotherapy. It is also being studied in the treatment of other types of cancer. Eribulin mesylate may block cancer cell growth by stopping cell division. It belongs to the family of drugs called antitubulin agents. Also called E7389 and Halaven. OR The mesylate salt of a synthetic analogue of halichondrin B, a substance derived from a marine sponge (*Lissodendoryx* sp.) with antineoplastic activity. Eribulin binds to the vinca domain of tubulin and inhibits the polymerization of tubulin and the assembly of microtubules, resulting in inhibition of mitotic spindle assembly, induction of cell cycle arrest at G2/M phase, and, potentially, tumor regression. Check for active clinical trials using this agent.

**erismodegib** : A drug used to treat locally advanced basal cell carcinoma (BCC) that has come back after surgery or radiation therapy. It is also used in patients who cannot be treated with surgery or radiation therapy. Erismodegib is also being studied in the treatment of other types of cancer. Erismodegib blocks a type of protein involved in tissue growth and repair and may block the growth of cancer cells. It is a type of hedgehog signaling pathway antagonist. Also called LDE225, Odomzo, and sonidegib.

**eritoran tetrasodium**: The tetrasodium salt of a synthetic analogue of the lipid A portion of the endotoxin lipopolysaccharide (LPS) with potential immunomodulating activity. Eritoran binds to the Toll-like receptor (TLR)/CD14/MD2 receptor complex present on most cells of the immune system, inhibiting the activation of the receptor complex by LPS, which may result in the inhibition of pro-inflammatory cytokine secretion and a potentially fatal systemic inflammatory response syndrome (SIRS). LPS is found in the outer membrane of Gram-negative bacteria and binds to the TLR/CD14/MD2 receptor complex of immune cells, especially macrophages, resulting in the release of pro-inflammatory cytokines. Check for active clinical trials using this agent.

**Erivedge** : A drug used to treat advanced basal cell carcinoma that has spread to other parts of the body or has come back after surgery. It is also used in patients who cannot be treated with surgery or radiation therapy. It is also being studied in the treatment of other types of cancer. Erivedge

blocks a type of protein involved in tissue growth and repair and may block the growth of cancer cells. It is a type of Hedgehog signaling pathway antagonist. Also called GDC-0449 and vismodegib.

**ERK inhibitor BVD-523:** An orally available inhibitor of extracellular signal-regulated kinase (ERK) 1 and 2, with potential antineoplastic activity. Upon oral administration, BVD-523 inhibits both ERK 1 and 2, thereby preventing the activation of ERK-mediated signal transduction pathways. This results in the inhibition of ERK-dependent tumor cell proliferation and survival. The mitogen-activated protein kinase (MAPK)/ERK pathway is often upregulated in a variety of tumor cell types and plays a key role in tumor cell proliferation, differentiation and survival.

**ERK inhibitor CC-90003:** An orally available inhibitor of extracellular signal-regulated kinase (ERK), with potential antineoplastic activity. Upon oral administration, CC-90003 inhibits ERK activity, and prevents the activation of ERK-mediated signal transduction pathways. This results in the inhibition of ERK-dependent tumor cell proliferation and survival. The mitogen-activated protein kinase (MAPK)/ERK pathway is often upregulated in a variety of tumor cell types and plays a key role in tumor cell proliferation, differentiation and survival.

**ERK inhibitor GDC-0994:** An orally available inhibitor of extracellular signal-regulated kinase (ERK), with potential antineoplastic activity. Upon oral administration, GDC-0994 inhibits both ERK phosphorylation and activation of ERK-mediated signal transduction pathways. This prevents ERK-dependent tumor cell proliferation and survival. The mitogen-activated protein kinase (MAPK)/ERK pathway is upregulated in a variety of tumor cell types and plays a key role in tumor cell proliferation, differentiation and survival.

**ERK inhibitor LTT462:** An orally available inhibitor of extracellular signal-regulated kinase (ERK), with potential antineoplastic activity. Upon oral administration, LTT462 binds to and inhibits ERK, thereby preventing the activation of ERK-mediated signal transduction pathways. This results in the inhibition of ERK-dependent tumor cell proliferation and survival. The mitogen-activated protein kinase (MAPK)/ERK pathway is upregulated in numerous tumor cell types and plays a key role in tumor cell proliferation, differentiation and survival.

**erlotinib hydrochloride:** The hydrochloride salt of a quinazoline derivative with antineoplastic properties. Competing with adenosine triphosphate, erlotinib reversibly binds to the intracellular catalytic domain of epidermal growth factor receptor (EGFR) tyrosine kinase, thereby reversibly inhibiting EGFR phosphorylation and blocking the signal transduction events and tumorigenic effects associated with EGFR activation. or A drug used to treat certain types of non-small cell lung cancer. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that cannot be removed by surgery or has spread to other parts of the body. It is being studied in the treatment of other types of cancer. Erlotinib hydrochloride blocks a protein called epidermal growth factor receptor (EGFR), which may help keep cancer cells from growing. It is a type of EGFR tyrosine kinase inhibitor. Also called CP-358,774, OSI-774, and Tarceva.

**ERMS:** A soft tissue tumor that is most common in infants and young children. It begins in muscles, usually in the head, neck, or genitourinary tract. Also called embryonal rhabdomyosarcoma.

**erosion:** Erosion is the wearing away of rock as a result of the movement of pieces of weathered rock. OR The wearing away of a paint film caused by exposure to the weather. OR the picking up of sediment and soil particles by an agent such as wind or water. OR the transportation of weathered materials. OR This is the transport (movement) of bits of rock after they have been broken down weathered). OR

**erratic:** a boulder that has been deposited by a glacier and is not derived from the local bedrock. OR a large rock that is deposited by a glacier.

**Error (of a measurement):** the result of a measurement minus a true value of the measurand.

**ERT:** Treatment with the hormone estrogen to increase the amount of estrogen in the body. It is given to women who have gone through menopause or to women who have early menopause caused by cancer treatment or by having their ovaries removed by surgery. ERT may help relieve symptoms of menopause, such as hot flashes, night sweats, vaginal dryness, and sleep problems. It may also help protect against osteoporosis (thinning of the bones) and lower the risk of breast cancer in postmenopausal women. Also called estrogen replacement therapy.

**ertapenem sodium:** The sodium salt of ertapenem, a 1-beta-methyl carbapenem and a broad-spectrum beta-lactam antibiotic with bactericidal activity. Ertapenem binds to penicillin binding proteins (PBPs) located on the bacterial cell wall, in particular PBPs 2 and 3, thereby inhibiting the final transpeptidation step in the synthesis of peptidoglycan, an essential component of the bacterial cell wall. Inhibition of peptidoglycan synthesis results in weakening and lysis of the cell wall and cell death. In vitro, this agent has shown activity against Gram-positive and Gram-negative aerobic and anaerobic bacteria. Ertapenem is resistant to hydrolysis by a variety of beta-lactamases, including penicillinases, cephalosporinases and extended-spectrum beta-lactamases.

**ertumaxomab:** A murine monoclonal antibody with two antigen-recognition sites: one for CD3, an antigen expressed on mature T cells, and one for HER-2-neu, a tumor-associated antigen that promotes tumor growth. Ertumaxomab attaches to CD3-expressing T cells and HER-2-neu-expressing tumor cells, selectively cross-linking tumor and immunologic cells which results in the recruitment of cytotoxic T cells to the T cell/tumor cell aggregate.

**ERUCAMIDE:** A fatty acid-based slip additive used in polyolefin resins.

**Erucamide Slip:** A fatty acid based additive commonly used in polyolefin resins to reduce coefficient of friction.

**ERUS:** A procedure in which a probe that sends out high-energy sound waves is inserted into the rectum. The sound waves are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissue called a sonogram. ERUS is used to look for abnormalities in the rectum and nearby structures, including the prostate. Also called endorectal ultrasound, transrectal ultrasound, and TRUS.

**Erwinaze :** A drug used with other anticancer drugs to treat acute lymphoblastic leukemia (ALL). It is an enzyme that comes from the *Erwinia chrysanthemi* bacterium. It is used in patients who cannot take a similar drug that comes from the *E. coli* bacterium. It is also being studied in the treatment of other types of cancer. It breaks down the amino acid asparagine and may block the growth of cancer cells that need asparagine to grow. It may also kill cancer cells. Also called asparaginase *Erwinia chrysanthemi*.

**Ery-Tab:** (Other name for: erythromycin)

**ERYC:** (Other name for: erythromycin)

**erythema:** In medicine, this term is applied to redness of the skin due to blood vessel distension. OR Redness of the skin.

**erythrocyte:** A cell containing large amounts of hemoglobin and specialized for oxygen transport; a red blood cell. OR the red blood cells; disk-shaped cells produced in the bone marrow that have no nucleus; their cytoplasm is filled with hemoglobin to transport oxygen.

**erythrocyte :** A type of blood cell that is made in the bone marrow and found in the blood. Erythrocytes contain a protein called hemoglobin, which carries oxygen from the lungs to all parts of the body. Checking the number of erythrocytes in the blood is usually part of a complete blood cell (CBC) test. It may be used to look for conditions such as anemia, dehydration, malnutrition, and leukemia. Also called RBC and red blood cell.

**erythrocyte sedimentation rate :** The distance red blood cells travel in one hour in a sample of blood as they settle to the bottom of a test tube. The sedimentation rate is increased in inflammation, infection, cancer, rheumatic diseases, and diseases of the blood and bone marrow. Also called ESR and sedimentation rate.

**erythrocyte-encapsulated L-asparaginase suspension:** A suspension of erythrocytes encapsulating L-asparaginase with potential antineoplastic activity. Upon administration of erythrocyte-encapsulated L-asparaginase suspension, L-asparagine is hydrolyzed to L-aspartic acid and ammonia in plasma, thereby depleting tumor cells of asparagine. Due to low asparagine synthetase activity in tumor cells, de novo synthesis of asparagine is suppressed within tumor cells. Shortage of asparagine prevents synthesis of important proteins necessary for tumor cell growth. Encapsulation of asparaginase in erythrocytes decreases the immunogenicity of exogenous protein, enhances its circulation time and may limit toxicity. Check for active clinical trials using this agent.

**erythrodysplasia :** A condition in which immature red blood cells (erythroid cells) in the bone marrow are abnormal in size, shape, organization, and/or number. Erythrodysplasia may be caused by vitamin deficiency or chemotherapy, or it may be a sign of refractory anemia, which is a myelodysplastic syndrome. Also called erythroid dysplasia.

**erythrogenesis imperfecta** : A very rare disorder in which the bone marrow doesn't make enough red blood cells. It is usually seen in the first year of life. Patients may have deformed thumbs and other physical problems. They also have an increased risk of leukemia and sarcoma, especially osteosarcoma (bone cancer). Patients with erythrogenesis imperfecta may have a mutation (change) in one of the genes that make proteins found in the cell's ribosomes. Also called Blackfan–Diamond anemia, congenital hypoplastic anemia, congenital pure red cell aplasia, DBA, Diamond-Blackfan anemia, and inherited erythroblastopenia.

**erythroid dysplasia** : A condition in which immature red blood cells (erythroid cells) in the bone marrow are abnormal in size, shape, organization, and/or number. Erythroid dysplasia may be caused by vitamin deficiency or chemotherapy, or it may be a sign of refractory anemia, which is a myelodysplastic syndrome. Also called erythrodysplasia.

**erythroleukemia** : Cancer of the blood-forming tissues in which large numbers of immature, abnormal red blood cells are found in the blood and bone marrow.

**erythroleukoplakia** : An abnormal patch of red and white tissue that forms on mucous membranes in the mouth and may become cancer. Tobacco (smoking and chewing) and alcohol may increase the risk of erythroleukoplakia.

**Erythromycin**: An antibiotic that binds to the 50S ribosomal subunit and inhibits peptide translocation in prokaryotes.

**erythromycin**: A broad-spectrum, topical macrolide antibiotic with antibacterial activity. Erythromycin diffuses through the bacterial cell membrane and reversibly binds to the 50S subunit of the bacterial ribosome. This prevents bacterial protein synthesis. Erythromycin may be bacteriostatic or bactericidal in action, depending on the concentration of the drug at the site of infection and the susceptibility of the organism involved.

**erythromycin topical cream**: A topical cream formulation containing the broad-spectrum macrolide antibiotic erythromycin with anti-bacterial activity. Erythromycin interacts with the 50S subunit of the bacterial 70S ribosomal RNA complex resulting in the inhibition of protein synthesis and bacterial cell death.

**erythroplakia** : An abnormal patch of red tissue that forms on mucous membranes in the mouth and may become cancer. Tobacco (smoking and chewing) and alcohol may increase the risk of erythroplakia.

**erythropoetin**: a hormone produced by the kidney cells that functions in the production of red blood cells.

**erythropoiesis** : The formation of red blood cells in blood-forming tissue. In the early development of a fetus, erythropoiesis takes place in the yolk sac, spleen, and liver. After birth, all erythropoiesis occurs in the bone marrow.

**erythropoiesis-stimulating agent** : A substance that stimulates the bone marrow to make more red blood cells. Erythropoiesis-stimulating agents are used to treat anemia caused by chronic kidney failure, some anticancer drugs, and certain treatments for HIV. They may also be used to lower the number of blood transfusions needed during and after certain major surgeries. Examples of erythropoiesis-stimulating agents are epoetin alfa (Epogen, Procrit) and darbepoetin alfa (Aranesp). Also called ESA.

**erythropoietin** : A substance that is naturally produced by the kidneys, and that stimulates the bone marrow to make red blood cells. When erythropoietin is made in the laboratory, it is called epoetin alfa or epoetin beta.

**ESA**: A substance that stimulates the bone marrow to make more red blood cells. ESAs are used to treat anemia caused by chronic kidney failure, some anticancer drugs, and certain treatments for HIV. They may also be used to lower the number of blood transfusions needed during and after certain major surgeries. Examples of ESAs are epoetin alfa (Epogen, Procrit) and darbepoetin alfa (Aranesp). Also called erythropoiesis-stimulating agent.

**Escherichia coli**: See E. coli.

**escitalopram** : A drug used to treat depression and certain anxiety disorders. It belongs to the family of drugs called selective serotonin reuptake inhibitors (SSRIs). Also called Lexapro.

**escitalopram oxalate**: The oxalate salt of escitalopram, a pure S-enantiomer of the racemic bicyclic phthalane derivative citalopram, with antidepressant activity. As a selective serotonin reuptake inhibitor (SSRI), escitalopram blocks the reuptake of serotonin by neurons in the central nervous system (CNS), thereby potentiating CNS serotonergic activity.

**ESCR:** Environmental stress crack resistance

**ESD:** Stands for “electro static discharge,” an electrical effect that may necessitate shielding in some applications. Some special grades of plastic are electrically conductive or dissipative and help prevent ESD.

**ESD (acronym):** Electro-static Discharge

**Eskalith:** (Other name for: lithium carbonate)

**esker:** a long, winding ridge of outwash deposited in streams flowing through ice caves and tunnels at the base of a glacier.

**esmolol:** The hydrochloride salt form of esmolol, a short, rapid-acting, selective beta-adrenergic receptor blocker, devoid of intrinsic sympathomimetic activity, and with anti-arrhythmic, antihypertensive and potential analgesic activities. Upon intravenous administration, esmolol binds to and blocks the beta-1 receptor in the myocardium thereby preventing the action of epinephrine and norepinephrine. This leads to a reduction in the force and rate of cardiac contractions and thereby preventing tachycardia, arrhythmias and/or hypertension. At higher doses, esmolol also blocks beta-2 receptors located in bronchial and vascular smooth muscle, thereby leading to smooth muscle relaxation. In addition, esmolol exerts a peripheral analgesic effect and intraoperative use of this agent may decrease the amount of opioid administration postoperatively. As the ester moiety in esmolol is rapidly hydrolyzed by plasma esterases, this agent has a very short half-life.

**esomeprazole :** A drug that blocks acid from being made in the stomach. It is used to treat acid reflux disease and to prevent certain types of gastrointestinal ulcers. Esomeprazole is being studied in the prevention of esophageal cancer and in the treatment of other conditions, including side effects of chemotherapy. It is a type of anti-ulcer agent. Also called esomeprazole magnesium and Nexium.

**esomeprazole magnesium:** The magnesium salt of esomeprazole, the S-isomer of omeprazole, with gastric proton pump inhibitor activity. In the acidic compartment of parietal cells, esomeprazole is protonated and converted into the active achiral sulphenamide; the active sulphenamide forms one or more covalent disulfide bonds with the proton pump hydrogen-potassium adenosine triphosphatase ( $H^+/K^+$  ATPase), thereby inhibiting its activity and the parietal cell secretion of  $H^+$  ions into the gastric lumen, the final step in gastric acid production.  $H^+/K^+$  ATPase is an

integral membrane protein of the gastric parietal cell. OR A drug that blocks acid from being made in the stomach. It is used to treat acid reflux disease and to prevent certain types of gastrointestinal ulcers. Esomeprazole magnesium is being studied in the prevention of esophageal cancer and in the treatment of other conditions, including side effects of chemotherapy. It is a type of anti-ulcer agent. Also called esomeprazole and Nexium.

**esophageal :** Having to do with the esophagus, the muscular tube through which food passes from the throat to the stomach.

**esophageal cancer :** Cancer that forms in tissues lining the esophagus (the muscular tube through which food passes from the throat to the stomach). Two types of esophageal cancer are squamous cell carcinoma (cancer that begins in flat cells lining the esophagus) and adenocarcinoma (cancer that begins in cells that make and release mucus and other fluids).

**esophageal reflux :** The backward flow of stomach acid contents into the esophagus (the tube that connects the mouth to the stomach). Also called gastric reflux and gastroesophageal reflux.

**esophageal speech :** Speech produced by trapping air in the esophagus and forcing it out again. It is used after removal of a person's larynx (voice box).

**esophageal stent :** A tube placed in the esophagus to keep a blocked area open so the patient can swallow soft food and liquids. Esophageal stents are made of metal mesh, plastic, or silicone, and may be used in the treatment of esophageal cancer.

**esophageal varices:** extremely dilated sub-mucosal veins in the esophagus

**esophagectomy :** An operation to remove a portion of the esophagus.

**esophagitis :** Inflammation of the esophagus (the tube that carries food from the mouth to the stomach).

**esophagoscopy :** Examination of the esophagus using an esophagoscope. An esophagoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**esophagram :** A series of x-ray pictures of the esophagus taken after a patient drinks a liquid containing barium sulfate (a form of the silver-white metallic element barium). The barium sulfate coats and outlines the inner wall of the esophagus so that it can be seen on the x-ray pictures. Also called contrast esophagram.

**esophagus:** a thick-walled muscular tube located behind the windpipe that extends through the neck and chest to the stomach.

**esophagus :** The muscular tube through which food passes from the throat to the stomach.

**esorubicin:** A synthetic derivative of the anthracycline antineoplastic antibiotic doxorubicin with potential antineoplastic activity. Esorubicin intercalates into DNA and inhibits topoisomerase II, thereby inhibiting DNA replication and ultimately, interfering with RNA and protein synthesis. This agent exhibits less cardiotoxicity than the parent antibiotic doxorubicin, but may cause more severe myelosuppression compared to other compounds within the anthracycline class.

**ESP:** Electrostatic potential. The electrical potential due to the nuclei and electrons in the molecule, as experienced by a test charge.

**ESR:** The distance red blood cells travel in one hour in a sample of blood as they settle to the bottom of a test tube. The sedimentation rate is increased in inflammation, infection, cancer, rheumatic diseases, and diseases of the blood and bone marrow. Also called erythrocyte sedimentation rate and sedimentation rate.

**Essential amino acids:** Amino acids that cannot be synthesized de novo and therefore must be acquired from the diet; in adult mammals, at least nine amino acids are considered essential.

**essential amino acids:** Amino acids that cannot be synthesized by humans (and other vertebrates) and must be obtained from the diet.

**essential fatty acids:** The group of polyunsaturated fatty acids produced by plants, but not by humans; required in the human diet.

**essential oil :** The scented liquid taken from certain plants using steam or pressure. Essential oils contain the natural chemicals that give the plant its “essence” (specific odor and flavor). Essential oils are used in perfumes, food flavorings, medicine, and aromatherapy.

**essential thrombocythemia :** An increased number of thrombocytes (platelets) in the blood, without a known cause. Also called essential thrombocytosis.

**essential thrombocytosis :** An increased number of thrombocytes (platelets) in the blood, without a known cause. Also called essential thrombocythemia.

**Essiac:** An herbal formula containing burdock root (*Arctium lappa*), Turkey rhubarb root (*Rheum palmatum*), sheep sorrel (*Rumex acetosella*), and slippery elm bark (*Ulmus fulva*) with potential immunostimulating, anti-inflammatory and anti-tumor activities. The exact chemical profile, their respective concentrations and the mechanism of action of Essiac are largely unknown due to the proprietary nature of the formula and product inconsistency. Several chemical classes in Essiac are consistently represented and may attribute to its therapeutic effect, including anthraquinone derivatives such as rhein and emodin, high molecular polysaccharides, and lignans such as arctigenin. However, all these chemicals are unlikely to occur in high concentrations in Essiac, and its potential therapeutic effect may be attributed to a potential synergistic effect of these various compounds. Check for active clinical trials using this agent. OR An herbal tea mixture that contains burdock root, Indian rhubarb root, sheep sorrel, and slippery elm bark. It has been claimed to remove toxins from the body, make the immune system stronger, relieve pain, control diabetes, treat AIDS, reduce tumor size, increase cancer survival, and improve quality of life. No clinical trial using Essiac in humans has been reported in a peer-reviewed, scientific journal, and the FDA has not approved the use of Essiac for the treatment of any medical conditions.

**Established cell line:** A group of cultured cells derived from a single origin and capable of stable growth for many generations.

**Ester:** Take a carboxylic acid and an alcohol and remove water, so that you are left with two bits linked by a C(O)-O- group - this is an ester. Many of the most important industrial polymers are esters. For example, ethyl acetate: OR An ester is a compound formed from an acid and an alcohol. In esters of carboxylic acids, the -COOH group and the -OH group lose a water and become a -COO- linkage:  $R-COOH + R'-OH = R-COO-R' + H_2O$  where R and R' represent organic groups. OR a compound formed by the elimination of water during the reaction between an alcohol and an acid; many esters are liquids. They are frequently used as plasticizer in rubber and plastic compounds.

**ester :** A chemical substance made when an acid and an alcohol combine and water is removed. Esters are found in essential oils (scented oils that come from plants).

**esterification:** Esterification is the reaction between an alcohol and a carboxylic acid (with a strong acid catalyst) which produces an ester plus water.

**esterified estrogen :** A form of estrogen that may have fewer side effects than other forms. Esterified estrogens are used to treat some types of cancer, including prostate cancer. They are also used to treat the symptoms of menopause, (such as hot flashes, vaginal dryness, or heavy and painful bleeding) and osteoporosis (loss of bone mass). It is a type of drug called hormone therapy.

**estimate:** An educated guess of the solution. This guess is made before setting up an equation and solving the problem.

**Estinyl:** (Other name for: ethinyl estradiol)

**Estrace:** (Other name for: therapeutic estradiol)

**estradiol :** A form of the hormone estrogen.

**estradiol vaginal ring:** A flexible elastomer ring containing 17 beta-estradiol used for estrogen replacement. Upon vaginal insertion, estradiol vaginal ring releases a consistent low-dose of estrogen which binds to and activates nuclear receptors in estrogen-responsive tissues. By increasing the amount of estradiol locally, symptoms of vaginal dryness or decreased sexual interest may improve. 17 beta-estradiol is the major naturally occurring estrogen produced in the ovaries of premenopausal women.

**estradiol valerate:** The parenterally-administered synthetic valerate ester of estradiol, a steroid sex hormone vital to the maintenance of fertility and secondary sexual characteristics in females. As the primary, most potent estrogen hormone produced by the ovaries, estradiol binds to and activates specific nuclear receptors. This agent exhibits mild anabolic and metabolic properties, and increases blood coagulability.

**estradiol/norethindrone acetate tablet:** An orally bioavailable tablet formulation containing the semisynthetic estrogen estradiol in combination with the acetate form of the synthetic progestin norethindrone, with estrogenic and progesteric activities. Estradiol binds to and activates intracellular estrogen receptors found in the reproductive tract and other estrogen-responsive tissues. The activated complex enters the nucleus, binds to the estrogen response elements on DNA, and activates the transcription of genes involved in the maintenance of the female

reproductive system and secondary sexual characteristics, the proliferation of the endometrium, and bone metabolism. Norethindrone binds to the intracellular progesterone receptors in the reproductive system and the activated ligand/receptor complex interacts with specific DNA response elements, resulting in an alteration in protein synthesis; inhibition of luteinizing hormone (LH) and follicle stimulating hormone (FSH) release; inhibition of ovulation; an increase in cervical mucus production; and induction of the secretory phase of the endometrial cycle. Administration of estradiol/norethindrone acetate may abrogate vasomotor symptoms associated with menopause and prevent bone loss associated with the postmenopause. Because chronic estrogen stimulation unopposed by progesterone may increase the risk of endometrial carcinoma, administration of a combination estrogen-progestin in postmenopause may reduce the risk for women who require estrogen replacement therapy.

**estramustine :** A combination of the hormone estradiol (an estrogen) and nitrogen mustard (an anticancer drug). Used in the palliative therapy of prostate cancer.

**estramustine phosphate sodium:** The orally available disodium salt, monohydrate, of estramustine phosphate, a synthetic molecule that combines estradiol and nornitrogen mustard through a carbamate link. Estramustine and its major metabolite estramustine bind to microtubule-associated proteins (MAPs) and tubulin, thereby inhibiting microtubule dynamics and leading to anaphase arrest in a dose-dependent fashion. This agent also exhibits anti-androgenic effects.

**ESTRING:** (Other name for: estradiol vaginal ring)

**estriol vaginal gel:** A vaginal gel formulation containing a very low concentration of the estrogen estriol, that can be used for hormone replacement. Upon topical application to the vagina, estriol maintains adequate levels of estrogen in the vagina, and decreases vaginal atrophy and its associated symptoms, such as vaginal dryness and itching. Check for active clinical trials using this agent.

**Estrobene:** (Other name for: diethylstilbestrol)

**EstroGel:** (Other name for: transdermal estrogen)

**estrogen:** a hormone produced by the ovaries that stimulates the development of secondary female characteristics.

**estrogen** : A type of hormone made by the body that helps develop and maintain female sex characteristics and the growth of long bones. Estrogens can also be made in the laboratory. They may be used as a type of birth control and to treat symptoms of menopause, menstrual disorders, osteoporosis, and other conditions.

**estrogen blocker** : A substance that keeps cells from making or using estrogen (a hormone that plays a role in female sex characteristics, the menstrual cycle, and pregnancy). Estrogen blockers may stop some cancer cells from growing and are used to prevent and treat breast cancer. They are also being studied in the treatment of other types of cancer. An estrogen blocker is a type of hormone antagonist. Also called antiestrogen.

**estrogen cream** : A cream that contains the hormone estrogen. It is used to treat some symptoms of menopause, such as vaginal dryness and painful intercourse. It may also be used to treat certain types of urinary incontinence (inability to control the flow of urine from the bladder). Estrogen cream is usually applied to the vagina, vulva, or opening of the urethra. It may also be applied to the cervix in some women who have certain abnormal cell changes caused by low hormone levels. Treatment with estrogen cream usually helps make these abnormal cells go away.

**estrogen receptor** : A protein found inside the cells of the female reproductive tissue, some other types of tissue, and some cancer cells. The hormone estrogen will bind to the receptors inside the cells and may cause the cells to grow. Also called ER.

**estrogen receptor agonist GTx-758**: An orally available, nonsteroidal selective estrogen receptor (ER) alpha agonist with potential antineoplastic activity. Upon administration of GTx-758, this agent suppresses the secretion of the gonadotropins follicle-stimulating hormone (FSH) and luteinizing hormone (LH) by the pituitary gland through feedback inhibition. In males, the inhibition of LH secretion prevents the synthesis of androgens, including testosterone, by the testes. This may result in suppressed total serum testosterone to the levels observed in castration.

**estrogen receptor negative** : Describes cells that do not have a protein to which the hormone estrogen will bind. Cancer cells that are estrogen receptor negative do not need estrogen to grow, and usually do not stop growing when treated with hormones that block estrogen from binding. Also called ER-.

**estrogen receptor positive :** Describes cells that have a receptor protein that binds the hormone estrogen. Cancer cells that are estrogen receptor positive may need estrogen to grow, and may stop growing or die when treated with substances that block the binding and actions of estrogen. Also called ER+.

**estrogen receptor test :** A lab test to find out if cancer cells have estrogen receptors (proteins to which estrogen will bind). If the cells have estrogen receptors, they may need estrogen to grow, and this may affect how the cancer is treated.

**estrogen replacement therapy :** Treatment with the hormone estrogen to increase the amount of estrogen in the body. It is given to women who have gone through menopause or to women who have early menopause caused by cancer treatment or by having their ovaries removed by surgery. Estrogen replacement therapy may help relieve symptoms of menopause, such as hot flashes, night sweats, vaginal dryness, and sleep problems. It may also help protect against osteoporosis (thinning of the bones) and lower the risk of breast cancer in postmenopausal women. Also called ERT.

**Estrosyn:** (Other name for: diethylstilbestrol)

**Estuaries:** Bodies of water which are located at the lower end of a river and are subject to tidal fluctuations.

**estuary:** a drowned river mouth from an older coastline; appears as a long arm of ocean water extending inland from the coast. OR Regions of interaction between rivers and near-shore ocean waters, where tidal action and river flow create a mixing of fresh and salt water.

**Estybon:** (Other name for: rigosertib sodium)

**eszopiclone:** A nonbenzodiazepine cyclopyrrolone and active dextrorotatory stereoisomer of zopiclone with hypnotic and sedative activities and without significant anxiolytic activity. Although the exact mechanism of action remains to be fully elucidated, eszopiclone binds to and activates the omega-1 subtype of the alpha subunit of the gamma-aminobutyric acid-benzodiazepine GABA receptor complex (GABA-A), a chloride ionophore complex in the central nervous system (CNS). This leads to the opening of chloride channels, causing hyperpolarization and inhibition of neuronal firing, which may result in a hypnotic effect and the induction of sleep.

**ET-743:** A drug used to treat liposarcoma and leiomyosarcoma (types of soft tissue sarcoma) that cannot be removed by surgery or have spread to other parts of the body. It is used in patients who were treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. ET-743 may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called ecteinascidin 743, trabectedin, and Yondelis.

**etanercept:** A recombinant soluble dimeric fusion protein consisting of the extracellular ligand-binding region of recombinant human tumor necrosis factor (rhTNF) receptor attached to the constant (Fc) region of human immunoglobulin G (FcIgG). The receptor moiety of etanercept binds to circulating TNF (2 molecules of TNF per receptor) and inhibits its attachment to endogenous TNF cell surface receptors, thereby rendering TNF inactive and inhibiting TNF-mediated mechanisms of inflammation. or A drug that is commonly used to treat arthritis. It is also being studied in the treatment of cancer, and as a treatment for loss of appetite and weight loss in cancer patients. It belongs to the family of drugs called tumor necrosis factor (TNF) antagonists.

**etanidazole:** A 2-nitroimidazole with radiosensitizing properties. Etanidazole depletes glutathione and inhibits glutathione transferase, thereby enhancing the cytotoxicity of ionizing radiation. This agent may also be useful as an imaging agent for identifying hypoxic, drug-resistant regions of primary tumors or metastases.

**etaracizumab :** A substance being studied in the treatment of some types of cancer and other conditions. Etaracizumab binds to a protein on the surface of blood vessels and may prevent the growth of new blood vessels that tumors need to grow. It may also prevent the spread of cancer. It is a type of antiangiogenesis agent, a type of metastasis inhibitor, and a type of monoclonal antibody. Also called Abegrin, humanized monoclonal antibody MEDI-522, and MEDI-522.

**ETCH:** Surface preparation by chemical means to improve the adhesion of coating.

**Etch primer:** A thin lightly pigmented primer designed to increase the adhesion of a paint process when applied to surfaces particularly of non-ferrous metal on which paint will not normally adhere well. Also called wash primer.

**ETFE:** Ethylene-tetrafluoroethylene

**ETFE (ethylene tetrafluoroethylene):** A thermoplastic member of the fluoropolymer family. ETFE is noted for exceptional chemical resistance, toughness and abrasion resistance.

**ethacrynic acid:** An aryloxy-acetic acid derivative belonging to the class of loop diuretics. Ethacrynic acid interferes with the chloride binding site of the Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup> cotransporter system in the thick ascending loop of Henle, thereby inhibiting the reabsorption of sodium, potassium, and chloride ions. This leads to an increase in the excretion of sodium, potassium, chloride, calcium, and water.

**ethambutol:** An antibiotic with bacteriostatic, antimicrobial and antitubercular properties. Ethambutol interferes with the biosynthesis of arabinogalactan, a major polysaccharide of the mycobacterial cell wall. It inhibits the polymerization of cell wall arabinan of arabinogalactan and lipoarabinomannan by blocking arabinosyl transferases and induces the accumulation of D-arabinofuranosyl-P-decaprenol, an intermediate in arabinan biosynthesis. This results in halting bacterial growth.

**Ethane:** Ethane is a two-carbon hydrocarbon. At standard temperature and pressure, ethane is a colourless, odourless gas. Ethane is produced on an industrial scale either by extraction from natural and associated gas, or as a byproduct of petroleum refining. Its chief use is as petrochemical feedstock in steam crackers for ethylene production.

**ethanol:** A colorless organic liquid also known as ethyl alcohol or grain alcohol. Ethanol's primary physiologic effects involve the central nervous system. Depending on the dose delivered, ethanol behaves as an anxiolytic, a depressant, or a general anesthetic. Ethanol-induced immunosuppression involves dysregulation of CD4<sup>+</sup> T cells. Check for active clinical trials using this agent.

**Ethanol:** Ethanol is a two-carbon alcohol which are mainly industrially produced in two ways: by fermentation processes (using starches, sugar crops or lignocellulose as feedstock) which produces fuel grade, or by the catalytic hydration of ethylene (industrial grade). Around 95 percent of globally manufacture ethanol is sourced from the fermentation process. Industrial ethanol is used in the manufacture of several chemicals, acting, in the main, as an intermediate. It is also used as a solvent. The main use for ethanol via fermentation is in fuel. Fuel grade ethanol is used as a substitute

for gasoline. OR What most people just call alcohol, ethanol is the alcohol with which most people are most familiar. It's a very useful solvent, antiseptic, cleaner and is also known as a "social lubricant" due to its physiological effects, which can include death. Most polymer scientists never ever touch the stuff. Honest.

**ethanol ablation :** An injection of ethanol (alcohol) through the skin directly into a tumor to kill cancer cells. Ultrasound or a CT scan is used to guide the needle into the tumor. Also called alcohol ablation, PEI, and percutaneous ethanol injection.

**ethanol fermentation:** See alcohol fermentation.

**ethanol<sup>32</sup>:** A colorless, flammable liquid produced by fermentation of sugars. Ethanol is the alcohol found in alcoholic beverages.

**ethaselen:** An orally bioavailable organoselenium inhibitor of thioredoxin reductase 1 (TrxR1), with potential antineoplastic activity. Upon oral administration, ethaselen specifically binds to the selenocysteine-cysteine redox pair in the C-terminal active site of TrxR1 and inhibits its activity, which may result in growth inhibition and the induction of apoptosis in TrxR1-overexpressing tumor cells. TrxR1, upregulated in many cancer cell types, plays a key role in various redox-dependent cellular pathways, regulates transcription factor activity, inhibits apoptosis, and promotes cell growth and survival. Check for active clinical trials using this agent.

**Ethene:** Also known as ethylene, ethene is the simplest monomer for use in addition polymerisation reactions. Poly(ethene) (or polyethylene) is well known to you in the form of cling wrap.

**Ether:** Any carbon compound containing the functional group C-O-C. A commonly used ether is diethyl ether, which used to be used as an anaesthetic. OR an organic compound in which an oxygen atom is bonded to carbon atoms. The general formula is R — O — R'. Epoxyethane, an epoxide, is a cyclic ether. OR A molecule containing two carbons linked by an oxygen atom.

**ethylenediaminetetraacetic acid :** A chemical that binds certain metal ions, such as calcium, magnesium, lead, and iron. It is used in medicine to prevent blood samples from clotting and to remove calcium and lead from the body. It is also used to keep bacteria from forming a biofilm (thin layer stuck to a surface). It is a type of chelating agent. Also called edetic acid and EDTA.

**ethical :** Having to do with beliefs about what is right and wrong in terms of how people behave. Also called moral.

**ethical will :** A final personal message or document in which a person shares his or her thoughts, values, memories, life lessons, advice, and hopes for the future. The person may also ask for forgiveness and forgive others. An ethical will is not a legal document.

**Ethinoral:** (Other name for: ethinyl estradiol)

**ethinyl estradiol:** A semisynthetic estrogen. Ethinyl estradiol binds to the estrogen receptor complex and enters the nucleus, activating DNA transcription of genes involved in estrogenic cellular responses. This agent also inhibits 5-alpha reductase in epididymal tissue, which lowers testosterone levels and may delay progression of prostatic cancer. In addition to its antineoplastic effects, ethinyl estradiol protects against osteoporosis. In animal models, short-term therapy with this agent has been shown to provide long-term protection against breast cancer, mimicking the antitumor effects of pregnancy.

**ethinyl estradiol/norethindrone:** An oral contraceptive formulation containing the semisynthetic estrogen, ethinyl estradiol, combined with the synthetic progestin, norethindrone, with estrogenic and progestogenic activities, respectively. Ethinyl estradiol binds to and activates intracellular estrogen receptors found in the reproductive tract and other estrogen-responsive tissues. The activated complex enters the nucleus, binds to the estrogen response elements on DNA, activates the transcription of genes involved in the maintenance of the female reproductive system, inhibits the release of follicle stimulating hormone (FSH) from the anterior pituitary, and suppresses the development of the ovarian follicle. Norethindrone binds to intracellular progesterone receptors in progesterone-responsive tissues, such as the pituitary and those found in the reproductive system, and the activated ligand/receptor complex interacts with specific progesterone response elements on DNA, which results in the alteration in protein synthesis, the inhibition of ovulation, an increase in cervical mucus production, the induction of the secretory phase of the endometrial cycle, and the inhibition of luteinizing hormone (LH) release. The combination of an estrogen with a progestin suppresses the hypothalamic-pituitary system and alters the structure of the endometrium to discourage implantation. Check for active clinical trials using this agent.

**ethiodized oil:** A synthetic iodine addition product of the ethyl ester of the fatty acids of poppyseed oil. Ethiodized oil contains 37% organically bound iodine and is used as a diagnostic radiopaque medium or, labeled with I-131, as an antineoplastic agent. Selectively retained in tumor vessels for long periods, ethiodized oil is used for imaging organs such as liver, lung, stomach, and thyroid. Labeled with I-131 or other beta emitters (Y-90 or P-32), ethiodol can deliver a high internal radiation dose to certain tumors with minimal effect on healthy tissues. OR A form of poppy seed oil that contains iodine. Ethiodized oil is given by injection and builds up in the blood and lymph vessels in tumors. It is used for imaging (taking pictures) of the salivary glands and the lymph system. It is also being studied in the imaging of other organs such as the liver, lung, stomach, and thyroid. It is a type of diagnostic imaging agent. Also called Ethiodol, iodized oil, and Lipiodol.

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**ethmoid sinus :** A type of paranasal sinus (a hollow space in the bones around the nose). Ethmoid sinuses are found in the spongy ethmoid bone in the upper part of the nose between the eyes. They are lined with cells that make mucus to keep the nose from drying out.

**ethosuximide:** A succinimide with anticonvulsant activity. The exact mechanism of action is not entirely understood, but most likely ethosuximide exerts its effects by partial antagonism of T-type calcium channels of the thalamic neurons. This leads to a decrease in burst firing of thalamocortical neurons, which stabilizes the nerve activity in the brain and prevents seizures.

**ETHOXYLATE:** Common name for a compound formed by the chemical addition of a number of molecules of ethylene oxide to an alcohol.

**ethyl acetate<sup>323</sup>:** A flammable liquid with a fruity odor, used in flavorings and as a solvent.

**ethyl alcohol mouthwash:** A mouthwash containing ethyl alcohol, with topical antibacterial activity. Upon rinsing the oral cavity with the ethyl

alcohol mouthwash, ethyl alcohol denatures bacterial proteins, and dissolves and disrupts the bacterial lipid membrane, thereby killing the bacteria. This reduces oral colonization with harmful bacteria and may prevent oral mucositis. Check for active clinical trials using this agent.

**Ethyl Chloride:** Ethyl Chloride (chloroethane) is produced by the addition of hydrogen chloride to ethylene over an aluminum chloride catalyst. It is also generated as a co-product of PVC. Ethyl chloride's major use was in the production of tetraethyl lead (TEL) used as an anti-knock additive in gasoline, but its use for this application has been phased-out by most countries since leaded gasoline has been prohibited. The main current application is in thickening of cellulose for making ethyl cellulose, a thickening agent for paints and cosmetics. It is also used as a solvent, refrigerant, aerosol propellant, anesthetic and blowing agent for foam packaging.

**ethyl<sup>23</sup>:** A molecular fragment produced by removing a hydrogen atom from ethane (CH<sub>3</sub>-CH<sub>3</sub>). For example, ethyl chloride is CH<sub>3</sub>-CH<sub>2</sub>-Cl.

**Ethylbenzene (EB):** Ethylbenzene (EB), an aromatic liquid hydrocarbon, is a chemical intermediate made from the reaction of benzene and ethylene. It is a precursor to styrene production.

**Ethylene:** Ethylene is the most basic member of the olefin chemical family, consisting of two carbon atoms joined by a double bond. The ready accessibility and high reactivity of this double bond lends the molecule to many synthesis reactions, including its most common use as a monomer for producing polyethylenes. Ethylene is industrially produced by the pyrolytic cracking in a steam cracker of a wide variety of hydrocarbons, ranging from ethane to gas oil. OR The basic monomer building block of polyethylene, extracted from either natural gas or naphtha. OR A colorless, flammable gas derived by cracking of petroleum and natural gas fractions. Also serves as a monomer for polyethylene. OR A colorless gaseous alkene obtained from petroleum and natural gas and used in manufacturing the most common plastic bags.

**Ethylene Dichloride (EDC):** Ethylene dichloride (EDC) is the first molecule produced in the vinyls chain and is a toxic, flammable, and corrosive liquid at room temperature. EDC is most commonly formed from ethylene and chlorine, both of which are costly and difficult to transport, and thus EDC production is normally located close to sources of such raw

materials. EDC is principally used for VCM production, with small amounts used for the manufacture of other organic compounds.

**ethylene oxide :** A chemical used to make antifreeze, to clean medical equipment, and as a pesticide. It is also found in tobacco smoke. Being exposed to ethylene oxide can cause lung damage, headache, nausea, vomiting, diarrhea, and shortness of breath. Being exposed over a long time may increase the risk of certain types of cancer.

**Ethylene Oxide (EO):** Ethylene oxide (EO) has widespread uses in the production of surfactants although its largest and fastest growing end-use is in the production of monoethylene glycol (MEG). EO is grouped with polyester intermediates, as the majority is eventually consumed in the production of PET. EO is produced by reacting ethylene and oxygen over mainly silver-based catalysts. Due to its hazardous nature, minimal volumes of EO are transported, and production tends to be from complexes including both ethylene feedstock and EO derivatives. Production is widespread globally, with development mainly in the Middle East and Asia.

**Ethylene Plastics:** Plastics based on polymers of ethylene or copolymers of ethylene with other monomers, the ethylene being in greatest amount by mass.

**Ethylene Vinyl Acetate (EVA):** Random copolymerization of vinyl acetate and ethylene. Usually low density polyethylene is copolymerized with various levels of vinyl acetate to achieve a lower melt temperature resin. OR Copolymer member of the polyolefin family, derived from random copolymerization of vinyl acetate and ethylene. OR Copolymeric member of the polyolefin family derived from random copolymerization of vinyl acetate and ethylene. They are mainly used for foaming, coating, extrusion, and injection moulding applications for many industrial market sectors such as shoe soles, sheets, wire and cable, hot melt adhesive, and solar cell encapsulation.

**Ethylene Vinyl Alcohol (EVOH):** Copolymer exhibiting outstanding barrier to many chemicals and gasses.

**Ethylene-vinyl Acetate:** Copolymers from these two monomers form a new class of plastic materials. They retain many of the properties of polyethylene, but have considerably increased flexibility for their density – elongation and impact resistance are also increased.

**ethylene-vinyl alcohol copolymer-based embolic agent:** A non-adhesive, non-absorbable, permanent liquid embolic agent comprised of ethylene vinyl alcohol (EVOH) copolymer dissolved in dimethyl sulfoxide (DMSO), and of micronized tantalum powder that can be used to occlude blood vessels. Upon administration of the EVOH-based embolic agent, contact with fluids, such as blood, induces the solidification of EVOH into a sponge-like material. This causes occlusion of blood vessels and prevents blood flow to the treated area.

**ethynyluracil :** An anticancer drug that increases the effectiveness of fluorouracil. Also called eniluracil.

**Ethyol:** (Other name for: amifostine trihydrate)

**etidronate :** A drug that belongs to the family of drugs called bisphosphonates. Bisphosphonates are used as treatment for hypercalcemia (abnormally high levels of calcium in the blood) and for cancer that has spread to the bone (bone metastases).

**etidronate-cytarabine conjugate MBC-11:** A synthetic conjugate composed of the bisphosphonate etidronate linked to the cytostatic agent and antimetabolite cytarabine, with potential antineoplastic and antiresorptive activities. Upon intravenous administration of the etidronate-cytarabine conjugate MBC-11, the etidronate moiety targets bone and the two moieties are released upon hydrolysis of the phospho-ester bond locally. Etidronate binds to hydroxyapatite crystals in bone tissues and prevents its resorption. This prevents bone destruction and induces bone cell mineralization. In addition, the bone-targeting nature of this agent allows for the accumulation of cytarabine in bone tissue, where it is able to exert its antitumor effect locally by competing with cytidine for incorporation into DNA, thereby inhibiting DNA synthesis, while reducing systemic exposure. This leads to a destruction of bone-associated tumor cells, an inhibition of tumor cell proliferation and bone metastasis, and prevents tumor-mediated bone destruction. Check for active clinical trials using this agent.

**Etilamide:** (Other name for: buserelin)

**etiology :** The cause or origin of disease.

**etodolac:** A pyranocarboxylic acid and non-steroidal anti-inflammatory drug (NSAID) with antipyretic and analgesic activities. Etodolac inhibits the activity of cyclooxygenase I and II, thereby preventing the formation of

prostaglandin which is involved in the induction of pain, fever, and inflammation. It also inhibits platelet aggregation by blocking platelet cyclooxygenase and the subsequent formation of thromboxane A<sub>2</sub>.

**Etopophos:** (Other name for: etoposide phosphate) or A drug used to treat testicular and small cell lung cancers. It is also being studied in the treatment of several other types of cancer. Etopophos blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of podophyllotoxin derivative and a type of topoisomerase inhibitor. Also called etoposide phosphate.

**etoposide:** A semisynthetic derivative of podophyllotoxin, a substance extracted from the mandrake root *Podophyllum peltatum*. Possessing potent antineoplastic properties, etoposide binds to and inhibits topoisomerase II and its function in ligating cleaved DNA molecules, resulting in the accumulation of single- or double-strand DNA breaks, the inhibition of DNA replication and transcription, and apoptotic cell death. Etoposide acts primarily in the G<sub>2</sub> and S phases of the cell cycle. or A drug used to treat testicular and small cell lung cancers. It is also being studied in the treatment of several other types of cancer. Etoposide blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of podophyllotoxin derivative and a type of topoisomerase inhibitor.

**etoposide phosphate:** A phosphate salt of a semisynthetic derivative of podophyllotoxin. Etoposide binds to the enzyme topoisomerase II, inducing double-strand DNA breaks, inhibiting DNA repair, and resulting in decreased DNA synthesis and tumor cell proliferation. Cells in the S and G<sub>2</sub> phases of the cell cycle are most sensitive to this agent. OR A drug used to treat testicular and small cell lung cancers. It is also being studied in the treatment of several other types of cancer. Etoposide phosphate blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of podophyllotoxin derivative and a type of topoisomerase inhibitor. Also called Etopophos.

**etoposide prodrug CAP7.1:** A prodrug of etoposide, a semisynthetic derivative of podophyllotoxin extracted from the mandrake root *Podophyllum peltatum*, with potential antineoplastic activity. Upon intravenous administration of the etoposide prodrug CAP7.1, etoposide is released after enzymatic cleavage of CAP7.1 by specific carboxylesterases

(CE) 1 and 2, which are upregulated in certain tumor cell types. Etoposide acts primarily in the G2 and S phases of the cell cycle. This drug binds to and inhibits topoisomerase II, an enzyme elevated in tumor cells. This results in the accumulation of double-strand DNA breaks, the inhibition of DNA replication and transcription and the induction of apoptotic cell death. The tumor-specific activation of etoposide increases its efficacy while lowering its systemic toxicity.

**etoricoxib:** A synthetic, nonsteroidal anti-inflammatory drug (NSAID) with antipyretic, analgesic, and potential antineoplastic properties. Etoricoxib specifically binds to and inhibits the enzyme cyclooxygenase-2 (COX-2), resulting in inhibition of the conversion of arachidonic acid into prostaglandins. Inhibition of COX-2 may induce apoptosis and inhibit tumor cell proliferation and angiogenesis.

**Etrenol:** (Other name for: hycanthone)

**Etretin:** (Other name for: acitretin)

**ETS:** Smoke that comes from the burning of a tobacco product and smoke that is exhaled by smokers. Inhaling ETS is called involuntary or passive smoking. Also called environmental tobacco smoke and secondhand smoke.

**Ets-family transcription factor inhibitor TK216:** A proprietary biologic that inhibits the transcriptional-promoting activity of E26 transformation-specific (Ets, E-twenty-six) family transcription factors, with potential antineoplastic activity. Although the exact mechanism(s) of action through which this agent exerts its effect has yet to be fully elucidated, upon administration, Ets-family transcription factor inhibitor TK216 inhibits transcriptional activation mediated by Ets family proteins, including the oncogenic Ewing sarcoma breakpoint region 1/Friend leukemia virus integration 1 (EWSR1/FLI1; EWS/FLI1) fusion protein. This agent may both inhibit the malignant downstream effects mediated by genomic rearrangements that result in the overexpression of Ets family transcription factors and decrease tumor cell growth and proliferation. A chromosomal translocation t(11;22)(q24;q12) fuses the EWSR1 gene and the FLI1 gene and encodes the EWSR1/FLI1 fusion protein, which is an oncoprotein expressed by peripheral primitive neuroectodermal (pPNET) tumors.

**Eubacteria:** The most common form of extant prokaryotes.

**eucalyptus :** A type of evergreen tree that is a member of the myrtle family. Oil from the leaves is used in very small amounts in mouthwash and

in medicines and candy used to treat and soothe sore throats and coughs. It has also been used in some cultures to treat many other medical problems. The scientific name is *Eucalyptus globulus*.

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**Eucerin:** (Other name for: therapeutic lotion)

**Eukaryote:** A cell or organism that has a membrane-bound nucleus. OR A unicellular or multicellular organism with cells having a membrane-bound nucleus, multiple chromosomes, and internal organelles. OR cells that contain a nucleus and internal cellular bodies called organelles.

**euphemism:** a mild or roundabout word or phrase used in place of one considered painful or offensive.

**euphoria :** A feeling of great happiness or well-being. Euphoria may be a side effect of certain drugs.

**euphotic zone:** The layer of a body of water that receives sufficient sunlight for photosynthesis. The depth of this layer, which is about 80 m, is determined by the water's extinction coefficient, the cloudiness, and the sunlight's angle of incidence.

**EUROMAP:** Euromap is the non profit organisation of the national association of machinery manufacturers for plastics and rubber industries in Austria, France, Germany, Italy, Luxembourg, Netherlands, Spain, Switzerland, and U.K. It represents 600 companies. It's Technical Commission deals with mechanical and electrical standardisation, the communication protocol, and interface for various types of processing machinery and safety standards. It's technical work started in early seventies describe recommendations for functional and specification, testing of machines etc.

**Europium:** Symbol:"Eu" Atomic Number:"63" Atomic Mass: 151.96amu. Europium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element.

**Eurythermal:** Bodies of water which are located at the lower end of a river and are subject to tidal fluctuations.

**EUS:** A procedure in which an endoscope is inserted into the body. An endoscope is a thin, tube-like instrument that has a light and a lens for viewing. A probe at the end of the endoscope is used to bounce high-energy sound waves (ultrasound) off internal organs to make a picture (sonogram). Also called endoscopic ultrasound and endosonography.

**EUS-FNA:** A procedure to take a sample of tissue for examination under a microscope. An endoscope with an ultrasound probe and a biopsy needle at the end is inserted through the mouth into the esophagus. An endoscope is a thin, tube-like instrument that has a light and a lens for viewing. The ultrasound probe is used to bounce high-energy sound waves off internal organs and tissues to make a picture on a monitor. This picture helps the doctor see where to place the biopsy needle. Also called endoscopic ultrasound-guided fine needle aspiration.

**eutectic mixture:** A mixture of two or more substances with melting point lower than that for any other mixture of the same substances.

**eutectic point:** The composition and the melting point of a eutectic mixture. For example, the eutectic point of a mixture of NaCl and water occurs at 23.3% NaCl (by mass) and  $-21.1^{\circ}\text{C}$ . That means that the lowest possible temperature at which a liquid NaCl solution can exist is  $-21.1^{\circ}\text{C}$ ; below the eutectic point the solution will freeze into a mixture of ice and salt crystals.

**euthanasia :** An easy or painless death, or the intentional ending of the life of a person suffering from an incurable or painful disease at his or her request. Also called mercy killing.

**eutrophication:** Eutrophication is the pollution of rivers and lakes caused by leaching of fertilizers, detergents, or sewage into the water. OR Usually, the limiting factor on how many living organisms can grow in a body of water is the supply of nutrient elements such as nitrogen and phosphorus. If these are supplied in overabundance (for example, by pouring fertilizer into the lake), plants and bacteria can multiply to such an extent that the oxygen consumed in their decomposition can exhaust the oxygen available in the

lake, causing a loss of species that like oxygen and the multiplication of anaerobic bacteria that generate nasty chemicals like hydrogen sulfide. This process, as well as the more stately natural accumulation of nutrients over time leading to a more complex and populous community of living things in the lake, is called eutrophication.

**EVA:** Ethylene-Vinyl Acetate copolymer is an additive. Much softer and clearer than LDPE or LLDPE and has lower melt temperature. Its melt temperature goes down, while its softness increases with increasing vinyl acetate (VA) content. EVA resins with 2-18% VA content are used for cast and blown packaging films.

**Evacet:** (Other name for: pegylated liposomal doxorubicin hydrochloride) or a form of the anticancer drug doxorubicin that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than doxorubicin. Evacet is used to treat ovarian cancer, AIDS-related Kaposi sarcoma, and multiple myeloma in patients whose disease has not gotten better after treatment with other anticancer drugs. It may be used together with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Evacet is a type of anthracycline antitumor antibiotic. Also called Dox-SL, Doxil, doxorubicin hydrochloride liposome, LipoDox, and liposomal doxorubicin hydrochloride.

**evaluable disease :** Disease that cannot be measured directly by the size of the tumor but can be evaluated by other methods specific to a particular clinical trial.

**evaluable patients :** Patients whose response to a treatment can be measured because enough information has been collected.

**evaluation:** To follow the order of operations and determine the value.

**evaporate:** To convert a liquid into a gas.

**Evaporation:** Evaporation is a molecular phase change of a liquid to gas or vapor. The overall temperature of the system is not near the boiling point. While the average temperature of a liquid may be low, some molecules have high temperatures and high energy. Those molecules with higher energies are able to escape the system and become a gas. The molecules evaporate one by one. OR changing of a liquid to a vapor at any temperature below its boiling point. OR Conversion of a liquid into a gas. OR A liquid turning into a gas. Although a liquid may evaporate (from its surface) at any temperature, it can only boil at its boiling point.

**Evaporation (vaporization):** A process in which a pure liquid, liquid mixture, or solvent in a solution is vaporized.

**evaporitic rock:** a rock formed from minerals that chemically precipitated from water.

**evapotranspiration:** Discharge of water from the Earth's surface to the atmosphere by evaporation from bodies of water, or other surfaces, and by transpiration from plants.

**Evaux spring water-based cream:** A cream containing Evaux thermal spring water, with potential moisturizing and skin protecting activities. Upon application to the skin, Evaux spring water-based cream forms a protective barrier, which prevents water loss, provides moisture to the skin, protects the skin from damage, and soothes irritated skin. The Evaux thermal spring water contains the trace elements lithium and manganese which may help heal the skin.

**Evaux spring water-based topical spray:** A skin spray composed of Evaux thermal spring water, the emulsifier polysorbate 20, the preservatives phenoxyethanol and chlorphenesin, zinc gluconate, and the moisturizer caprylyl glycol with prophylactic and calming activity. Evaux thermal spring water is rich in mineral elements particularly of lithium, strontium and manganese. When sprayed directly onto the skin or scalp, this topical spray may have a calming, moisturizing, healing and nurturing effect. This agent may prevent or decrease skin rashes associated with the administration of EGFR inhibitors or with radiochemotherapy-induced skin reactions. Check for active clinical trials using this agent.

**Evaux thermal spring water-based solution:** A topical solution containing Evaux thermal spring water, with potential moisturizing and skin protecting activities. Upon application to the nails and surrounding skin, Evaux spring water-based solution forms a film on the nails that serves as a protective barrier. This prevents water loss from, provides moisture to, and strengthens the nails, and protects them from damage. The solution also relieves pain caused by cracked, peeled, thinning or soft nails. Evaux thermal spring water contains the elements lithium, manganese and strontium which may help heal the nails and prevent onycholysis. It also contains chlorphenesin and piroctone olamine, both of which have antifungal activity. Some chemotherapy and/or radiation therapy can induce damage to the nails.

**even integers:** Integers that are even numbers.

**even number:** A number divisible by two.

**Event Notification System:** An automated event tracking system used internally by the NRC's Headquarters Operations Center to track incoming notifications of significant nuclear events with an actual or potential effect on the health and safety of the public and the environment. Significant events are reported to the Operations Center by the NRC's licensees, Agreement States, other Federal agencies, the public, and other stakeholders.

**Event tree:** An event tree graphically represents the various accident scenarios that can occur as a result of an initiating event (i.e., a challenge to plant operation). Toward that end, an event tree starts with an initiating event and develops scenarios, or sequences, based on whether a plant system succeeds or fails in performing its function. The event tree then considers all of the related systems that could respond to an initiating event, until the sequence ends in either a safe recovery or reactor core damage. For additional information, see Probabilistic Risk Assessment.

**event-free survival :** In cancer, the length of time after primary treatment for a cancer ends that the patient remains free of certain complications or events that the treatment was intended to prevent or delay. These events may include the return of the cancer or the onset of certain symptoms, such as bone pain from cancer that has spread to the bone. In a clinical trial, measuring the event-free survival is one way to see how well a new treatment works. Also called EFS.

**everolimus:** A derivative of the natural macrocyclic lactone sirolimus with immunosuppressant and anti-angiogenic properties. In cells, everolimus binds to the immunophilin FK Binding Protein-12 (FKBP-12) to generate an immunosuppressive complex that binds to and inhibits the activation of the mammalian Target of Rapamycin (mTOR), a key regulatory kinase. Inhibition of mTOR activation results in the inhibition of T lymphocyte activation and proliferation associated with antigen and cytokine (IL-2, IL-4, and IL-15) stimulation and the inhibition of antibody production. OR A drug used with exemestane to treat some postmenopausal women with advanced breast cancer that is hormone-receptor positive and HER2 negative. It is also used to treat certain types of pancreatic, lung, and gastrointestinal neuroendocrine tumors that cannot be removed by surgery,

are advanced, or have spread to other parts of the body. It is also used to treat advanced renal cell carcinoma (a type of kidney cancer) and subependymal giant cell astrocytoma in some patients, including children. Everolimus is being studied in the treatment of other types of cancer. It stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It also lowers the body's immune response. Everolimus is a type of kinase inhibitor, a type of angiogenesis inhibitor, and a type of immunosuppressant. Also called Afinitor, Afinitor Disperz, and RAD001.

**everolimus tablets for oral suspension:** Tablets for oral suspension containing everolimus, a derivative of the natural macrocyclic lactone sirolimus, with immunosuppressive and antineoplastic activities. After suspension of the everolimus tablets in water and oral administration, this agent inhibits the activation of the serine/threonine kinase mammalian target of rapamycin (mTOR) by binding to mTOR's cytosolic receptor immunophilin FK Binding Protein-12 (FKBP-12). Inhibition of the mTOR complex may result in the inhibition of the phosphatidylinositol 3 kinase/Akt/mTOR pathway and an inhibition in the expression of vascular endothelial cell growth factor (VEGF) and hypoxia-inducible factor. Ultimately, this may result in decreased tumor cell proliferation and tumor angiogenesis. This pediatric formulation can dissolve easily in a small volume of water making it easier to swallow and is available in smaller dose increments thereby allowing for greater dosing flexibility. Check for active clinical trials using this agent.

**Evista :** A drug used to reduce the risk of invasive breast cancer in postmenopausal women who are at high risk of the disease or who have osteoporosis. It is also used to prevent and treat osteoporosis in postmenopausal women. It is also being studied in the prevention of breast cancer in certain premenopausal women and in the prevention and treatment of other conditions. Evista blocks the effects of the hormone estrogen in the breast and increases the amount of calcium in bone. It is a type of selective estrogen receptor modulator (SERM). Also called raloxifene hydrochloride.

**evolution:** changes that occur within populations and organisms that make individuals able to adapt to their external environment.

**Evomela:** (Other name for: melphalan hydrochloride) or A drug used to treat multiple myeloma in patients who cannot take melphalan by mouth. It is also being studied in the treatment of other types of cancer. Evomela may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called Alkeran for Injection and melphalan hydrochloride.

**EvoNail:** (Other name for: Evaux thermal spring water-based solution)

**Evoskin cream:** (Other name for: Evaux spring water-based cream)

**Evoxac:** (Other name for: cevimeline hydrochloride) or A drug used to treat certain disorders of the salivary gland. It is also being studied as a treatment for dry mouth caused by radiation therapy to the head and neck. It increases the amount of saliva and sweat made by saliva and sweat glands. Evoxac is a type of cholinergic agonist. Also called cevimeline hydrochloride.

**Ewing sarcoma :** A type of cancer that forms in bone or soft tissue. Also called peripheral primitive neuroectodermal tumor and pPNET.

**Ewing sarcoma family of tumors :** A group of cancers that includes Ewing tumor of bone (ETB or Ewing sarcoma of bone), extraosseous Ewing (EOE) tumors, primitive neuroectodermal tumors (PNET or peripheral neuroepithelioma), and Askin tumors (PNET of the chest wall). These tumors all come from the same type of stem cell. Also called EFTs.

**ex vivo :** Outside of the living body. Refers to a medical procedure in which an organ, cells, or tissue are taken from a living body for a treatment or procedure, and then returned to the living body.

**ex vivo-activated autologous lymph node lymphocytes:** Autologous human lymph node T-lymphocytes, with potential immunostimulatory and antineoplastic activity. Upon collection of immune cells from the tumor-draining lymph node, the human lymph node lymphocytes are activated with anti-CD3/anti-CD28 microbeads, cultured with recombinant, human interleukin-2 (IL-2), expanded and isolated ex vivo. Upon reintroduction into the patient, the ex vivo-activated autologous lymph node lymphocytes recognize and lyse the tumor cells.

**ex vivo-expanded HER2-specific T cells:** T cells specific for the human epidermal growth factor receptor 2 (HER2) with potential immunopotentiating activity. T cells directed against HER2, overexpressed

on many tumor cells, are collected from HER2-expressing tumor tissue, expanded ex vivo and, then re-introduced in the patient. Re-introduction of ex vivo-expanded HER2-specific T cells may enhance the cytotoxic T cell response against tumor cells overexpressing HER2, resulting in inhibition of tumor growth.

**Exalgo :** A drug used to treat moderate to severe pain. It may also be used to treat certain types of cough. Exalgo is made from morphine and binds to opioid receptors in the central nervous system. It is a type of opioid and a type of analgesic agent. Also called Dilaudid, hydromorphone hydrochloride, and Hydrostat IR.

**exatecan mesylate:** A semisynthetic, water-soluble derivative of camptothecin with antineoplastic activity. Exatecan mesylate inhibits topoisomerase I activity by stabilizing the cleavable complex between topoisomerase I and DNA and inhibiting religation of DNA breaks, thereby inhibiting DNA replication and triggering apoptotic cell death. This agent does not require enzymatic activation and exhibits greater potency than camptothecin and other camptothecin analogues. or An anticancer drug that is a type of topoisomerase inhibitor. Also called DX-8951f.

**exchange energy:** Also called "exchange correlation energy." The energy associated with the correlation among the positions of electrons of like spin. This is included in Hartree-Fock calculations.

**Excimer:** An excited-state complex formed by two or more molecules.

**Excinuclease:** uvrabc enzyme that removes thymidine dimers by hydrolyzing the damaged DNA strand at sites on either side of the dimer site.

**Excipient:** Additives used in the preparation of the dosage form to either improve the handling and manufacturing of a product or to act as a filler (i.e., lactose, cellulose, starch, or dicalcium phosphate).

**excision :** Removal by surgery.

**Excision repair:** DNA repair in which a damaged region is replaced.

**excisional biopsy :** A surgical procedure in which an entire lump or suspicious area is removed for diagnosis. The tissue is then examined under a microscope.

**excisional skin surgery :** A surgical procedure used to remove moles, cysts, skin cancer, and other skin growths using local anesthesia. To treat

skin cancer, the doctor uses a scalpel to remove the entire tumor and some of the healthy tissue around it.

**Excitation :** the absorption of light energy by a fluorescent molecule, during which an electron in the molecule is boosted to a higher energy level.

**Excitation spectrum :** a plot of incident light wavelength versus the total fluorescence emitted.

**excited state:** a higher energy state than the ground state, achieved by adding energy to an atom or molecule in its ground state. OR An energy-rich state of an atom or a molecule, produced by the absorption of radiant energy. OR An atom or molecule which has absorbed energy is said to be in an excited state. Excited states tend to have short lifetimes; they lose energy either through collisions or by emitting photons to "relax" back down to their ground states. OR An energy-rich state of an atom or molecule; produced by the absorption of light energy.

**excitotoxin:** An excitotoxin is a toxic molecule that stimulates nerve cells so much that they are damaged or killed. Domoic acid and glutamate are examples of excitotoxins.

**exclamation point:** follow interjections and other expressions of strong feeling; they may also lend force to a command.

**Exclusion area:** The area surrounding the reactor where the reactor licensee has the authority to determine all activities, including exclusion or removal of personnel and property.

**excrete :** To get rid of waste material from the blood, tissues, or organs by a normal discharge (such as sweat, urine, or stool).

**excretion:** The discharge or elimination of an absorbed or endogenous substance, or of a waste product, via some tissue of the body and its appearance in urine, faeces, or other products normally leaving the body. Excretion of chemical compounds from the body occurs mainly through the kidney and the gut. For volatile compounds, however, elimination by exhalation may be important. Excretion via perspiration and through hair and nails may also be of importance under special circumstances. Excretion via the gastrointestinal tract may take place by various routes such as the bile, the shedding of intestinal cells, and transport through the intestinal mucosa (WHO, 1979).

**excretion:** The process of ridding the body of metabolic waste products.

**excretion rate:** The amount or proportion of a substance that is excreted per unit time. It should be noted that according to this definition excretion does not include the passing of a substance through the intestine without absorption. When discussing the total amount of a substance in faeces (including the unabsorbed part), it is preferable to speak about faecal content of substance (Task Group on Metal Accumulation, 1973).

**Excursion:** A sudden, very rapid rise in the power level of a reactor caused by supercriticality. Excursions are usually quickly suppressed by the moderator temperature coefficient, the fuel temperature coefficient, or the void coefficient of reactivity (depending upon reactor design), or by rapid insertion of control rods.

**Exelon:** (Other name for: rivastigmine tartrate)

**exemestane:** A synthetic androgen analogue. Exemestane binds irreversibly to and inhibits the enzyme aromatase, thereby blocking the conversion of cholesterol to pregnenolone and the peripheral aromatization of androgenic precursors into estrogens. Or A drug used to treat advanced breast cancer and to prevent recurrent breast cancer in postmenopausal women who have already been treated with tamoxifen. It is also being studied in the treatment of other types of cancer. Exemestane causes a decrease in the amount of estrogen made by the body. It is a type of aromatase inhibitor. Also called Aromasin.

**exenatide:** A 39 amino acid peptide and synthetic version of exendin-4, a hormone found in the saliva of the venomous lizard Gila monster, with insulin secretagogue and antihyperglycemic activity. Exenatide is administered subcutaneously and mimics human glucagon-like peptide-1 (GLP-1). Compared to GLP-1, exenatide has a longer half-life of 2.4 hours.

**exenteration :** Surgery to remove organs within a body cavity.

**exergonic process:** A process that liberates energy.

**Exergonic reaction:** A chemical reaction that takes place with a negative change in standard free energy. OR A chemical reaction that proceeds with the release of free energy (that is, for which  $\Delta G$  is negative). OR a chemical reaction in which energy is released.

**exfoliation:** the process by which curved sheets of rock loosen and fall from a weathered rock surface.

**exfoliation dome:** a large rounded landform (usually composed of intrusive rocks) that results from exfoliation.

**Exherin:** (Other name for: ADH-1)

**exisulind:** An inactive metabolite of the nonsteroidal, anti-inflammatory agent sulindac. After oral administration, sulindac undergoes extensive biotransformation including irreversible oxidation to sulindac sulfone. Approximately, one half of an administered dose of sulindac is eliminated through the urine, mostly as the conjugated sulfone metabolite. Check for active clinical trials using this agent. or A drug being studied in the treatment and prevention of cancer. It has been shown to cause apoptosis (cell death) in cells that are malignant (cancer) and in cells that may become cancer. It acts through a group of cellular enzymes called cGMP phosphodiesterases.

**Exjade:** (Other name for: deferasirox) or A drug used to treat too much iron in the blood caused by blood transfusions. It is being studied in the treatment of myelodysplastic syndromes (a group of diseases in which the bone marrow does not make enough healthy blood cells) and other conditions. Exjade binds to extra iron in the blood. The drug and the iron are passed from the body in urine. It is a type of chelating agent. Also called deferasirox.

**exocrine cancer :** A disease in which malignant (cancer) cells are found in the tissues of the pancreas. Also called pancreatic cancer.

**exocrine glands:** glands, such as the salivary glands, that deliver their enzymes via ducts.

**exocrine pancreas cell :** A pancreatic cell that produces enzymes that are secreted into the small intestine. These enzymes help digest food as it passes through the gastrointestinal tract.

**exocytosis:** The fusion of an intracellular vesicle with the plasma membrane, releasing the vesicle contents to the extracellular space.

**exomphalos:** an umbilical hernia at birth in which some abdominal organs push into the umbilical cord

**Exon:** A segment within a gene that carries part of the coding information for a protein.

**exon:** The segment of a eukaryotic gene that encodes a portion of the final product of the gene; a portion that remains after posttranscriptional

processing and is transcribed into a protein or incorporated into the structure of an RNA. See intron.

**exon :** Regions of pre-mrna that are retained in mature mrna. OR The sequence of DNA present in mature messenger RNA, some of which encodes the amino acids of a protein. Most genes have multiple exons with introns between them.

**Exon shuffling:** A hypothesis that suggests that new proteins arose in evolution by rearranging exons that encoded discrete structural elements.

**Exonuclease:** An enzyme that breaks a phosphodiester linkage at one or the other end of a polynucleotide chain so as to release single or small nucleotide residues. Or An enzyme that digests nucleic acids from the ends of the molecule, rather than at an internal site; exonucleases can be specific for digestion from the 3' or 5' ends of the nucleic acid. Or An enzyme that hydrolyzes only those phosphodiester bonds that are in the terminal positions of a nucleic acid.

**exoskeleton:** the hard, protective, outer covering of arthropods and mollusks.

**Exotherm:** The temperature/time curve of a chemical reaction giving off heat, particularly the polymerization of casting resins. (2) The amount of heat given off. The term has not been standardized with respect to sample size, ambient temperature, degree of mixing, etc

**exothermic:** Process that gives off heat to the environment. Or An exothermic reaction gives out energy to its surroundings, resulting in a rise in temperature. Or refers to a reaction that releases heat. Or describes the giving off of energy as heat. Or A process that releases heat. The enthalpy change for an exothermic process is negative. Examples of exothermic processes are combustion reactions and neutralization reactions.

**exothermic process:** A thermodynamic process in which heat flows from a system to the surroundings.

**EXOTHERMIC REACTION:** gives out more energy than was put in to start the reaction. It has a negative DH. It keeps going after it is started. An example is a fire. OR When heat is absorbed during a chemical reaction. OR A chemical reaction that releases heat (that is, for which  $\Delta H$  is negative). Or A chemical reaction in which heat is evolved.

**exotic terrane:** a terrane that did not form naturally through accretion and has likely collided with the continental margin.

**expanded access trial :** A way to provide an investigational therapy to a patient who is not eligible to receive that therapy in a clinical trial, but who has a serious or life-threatening illness for which other treatments are not available. Expanded access allows a patient to receive promising but not yet fully studied or approved cancer therapies when no other treatment option exists. Also called compassionate use trial.

**expanded umbilical cord blood product HSC835:** An umbilical cord blood product that has been expanded ex vivo and can be used during single umbilical cord blood transplantation.

**Expansion:** When a substance is heated, it expands or gets bigger. Some people think (incorrectly) that it is the particles themselves that are getting bigger but this is not true. Instead, the substance expands because the particles are moving more violently.

**Exparel:** (Other name for: bupivacaine hydrochloride liposome injectable suspension)

**expectant management :** Closely watching a patient's condition but not giving treatment unless symptoms appear or change, or there are changes in test results. Expectant management avoids problems that may be caused by treatments such as radiation or surgery. It is used to find early signs that the condition is getting worse. During expectant management, patients may be given certain exams and tests. It is sometimes used in prostate cancer. Also called deferred therapy.

**expensive:** Requiring large resources: cpu time, memory, and/or disk space.

**Experiment:** A controlled environment for the application of common sense. Having observed something interesting in the world of chemistry, we make an educated guess as to what is happening (a 'theory'), then say "if this explanation is true, we should see such-and-such an effect if we do such-and-such." Actually doing such-and-such and seeing what happens is called 'doing an experiment'. OR An experiment is direct observation under controlled conditions. Most experiments involve carefully changing one variable and observing the effect on another variable (for example, changing temperature of a water sample and recording the change volume that results).

**experimental :** In clinical trials, refers to a drug (including a new drug, dose, combination, or route of administration) or procedure that has undergone basic laboratory testing and received approval from the U.S. Food and Drug Administration (FDA) to be tested in human subjects. A drug or procedure may be approved by the FDA for use in one disease or condition, but be considered experimental in other diseases or conditions. Also called investigational.

**experimental drug :** A substance that has been tested in the laboratory and has been approved by the U.S. Food and Drug Administration (FDA) for testing in people. Clinical trials test how well experimental drugs work and whether they are safe to use. An experimental drug may be approved by the FDA for use in one disease or condition but still be considered investigational in other diseases or conditions. Also called IND, investigational agent, investigational drug, and investigational new drug.

**experimental group :** The group in a clinical research study that receives the drug, vaccine, or other intervention being tested. Interventions may also include medical procedures (such as radiation therapy and surgery), medical devices, behavior changes (such as diet and exercise), education programs, and counseling. Also called intervention group and investigational group.

**experimental yield:** The measured amount of product produced in a chemical reaction.

**Expiration date:** The date appearing on the label of a drug after which it should not be used or sold.

**exploratory surgery :** Surgery to look inside the body to help make a diagnosis.

**explosive eruption:** volcanic activity containing thick lava and more gases under pressure; creates steeper cones.

**exponentiation:** Raising something to a power.

**exposed group (in epidemiology):** A group whose members have been exposed to a supposed cause of a disease or health state of interest, or possess a characteristic that is a determinant of the health outcome of interest. The abbreviated term "the exposed" is sometimes used.

**exposed or non-exposed:** Qualitative terms defining the existence of or lack of a hazard in the environment of individuals (WHO, 1988).

**exposure:** The amount of an environmental agent that has reached the individual (external dose) or has been absorbed into the individual (internal dose, absorbed dose) (WHO, 1979). OR Absorption of ionizing radiation or ingestion of a radioisotope. Acute exposure is a large exposure received over a short period of time. Chronic exposure is exposure received over a long period of time, such as during a lifetime. The National Council on Radiation Protection and Measurements (NCRP) estimates that an average person in the United States receives a total annual dose of about 0.62 rem (620 millirem) from all radiations sources, a level that has not been shown to cause humans any harm. Of this total, natural background sources of radiation—including radon and thoron gas, natural radiation from soil and rocks, radiation from space and radiation sources that are found naturally within the human body—account for approximately 50 percent. Medical procedures such as computed tomography (CT scans) and nuclear medicine account approximately for another 48 percent. Other small contributors of exposure to the U.S. population includes consumer products and activities, industrial and research uses, and occupational tasks. The maximum permissible yearly dose for a person working with or around nuclear material is 5 rem. For additional detail, see Doses in Our Daily Lives and Measuring Radiation.

**exposure assessment:** The quantification of the amount of exposure to a hazard for an individual or group (WHO, 1979).

**exposure control:** see emission or exposure control.

**exposure limit:** A general term implying the level of exposure that should not be exceeded (WHO, 1979).

**exposure-odds ratio:** for a set of case control data is the ratio of the odds in favour of exposure among the cases ( $a/b$ ) to the odds in favour of exposure among non-cases ( $c/d$ ). This reduces to  $ad/bc$ . With incident cases, unbiased subject selection, and a "rare" disease (say, under 2% cumulative incidence rate over the study period),  $ad/bc$  is an approximate estimate of the risk ratio. With incident cases, unbiased subject selection, and density sampling of controls,  $ad/bc$  is an estimate of the ratio of the person-time incidence rates (forces of morbidity) in the exposed and unexposed (no rarity assumption is required for this).

**expression:** A collection of constants, variables, symbols of operations, and grouping symbols.

**expression vector:** See vector.

**extended release bupivacaine hydrochloride resorbable matrix**

**formulation:** An extended release (ER) injectable formulation composed of the hydrochloride salt form of bupivacaine, an amide-type, long-acting local anesthetic, in a resorbable sucrose acetate isobutyrate-based matrix, with analgesic activity. Following administration in or around a specific site, ER bupivacaine is released from the matrix over an extended period of time. Upon release, bupivacaine reversibly binds to specific voltage-gated sodium ion channels in the neuronal membrane, resulting in a decrease in the voltage-dependent membrane permeability to sodium ions, membrane destabilization, and depolarization inhibition thus disrupting nerve impulse conduction. This eventually leads to a reversible loss of sensation. This formulation may provide pain relief up to 72 hours.

**Extended Sidebar Chain :** A retaining edge provided by special attachments on the chain.

**extended-release flucytosine:** An extended release (ER) oral tablet that contains flucytosine (5-FC), a fluorinated cytosine analog, with antifungal activity and potential anti-cancer activity. Following oral administration of ER 5-FC, the 5-FC is deaminated to its active metabolite 5-fluorouracil (5-FU). 5-FU replaces uracil during RNA synthesis, which consequently inhibits downstream protein synthesis. In addition, 5-FU is metabolized further to 5-fluorodeoxyuridylic acid monophosphate, which inhibits thymidylate synthetase. Inhibition of this enzyme interrupts nucleotide synthesis, DNA replication and cell proliferation. Negative regulation of protein synthesis, DNA replication and cell proliferation can lead to cell death. Following ingestion of ER 5-FC, intravenous injection of a retroviral vector encoding cytosine deaminase (TC 511) at a tumor site may result in higher local concentrations of 5-FU and its metabolites, and increased tumor cell death than other 5-FU treatment regimens.

**extended-release onapristone:** An extended-release (ER) formulation of onapristone, an orally bioavailable progesterone receptor (PR) antagonist, with antineoplastic activity. Onapristone binds to the PR and inhibits both PR activation and the associated expression of PR-responsive genes. This may inhibit PR-mediated proliferative effects in cancer cells overexpressing PR. PR is expressed on certain cancer cell types and plays a key role in proliferation and survival. Check for active clinical trials using this agent.

**Extender:** Ingredients added to paint to increase coverage, reduce cost, achieve durability, alter appearance, control rheology and influence other desirable properties. Less expensive than prime hiding pigments such as titanium dioxide. Examples: barium sulfate, calcium carbonate, clay, gypsum, silica, talc. May also improve coating performance. OR A less expensive ingredient than pigment (titanium dioxide) it fills out and extends the pigment's capabilities. Extender cannot be used without pigment. Some common extenders are clays calcium carbonates and silicas. OR A material added to a polymer base that is designed to replace a portion of the polymer compound. Also known as "filler." Freelin-Wade does not use extenders. OR A filler material added to a plastic compound used to reduce the amount of resin required per unit value.

**Extending Flash:** Flash that is formed at the parting line of a liquid silicone mold, can be minimized by good silicone mold practices

**extensive property:** A property that depends on the amount of matter present. OR A property that changes when the amount of matter in a sample changes. Examples are mass, volume, length, and charge.

**extensive-stage small cell lung cancer :** Cancer has spread outside of the lung in which it began or to other parts of the body.

**extensor plantar response:** extension of the big toe and fanning of the other toes in response to stimulation of the bottom of the foot; more commonly known as the Babinski reflex

**EXTERIOR:** The outside surfaces of a structure.

**exterior angle:** an angle formed outside the polygon by extending one side. In a triangle, the measure of an exterior angle equals the sum of the measures of the two remote interior angles.

**External radiation:** Exposure to ionizing radiation when the radiation source is located outside the body.

**external radiation therapy :** A type of radiation therapy that uses a machine to aim high-energy rays at the cancer from outside of the body. Also called external-beam radiation therapy.

**external right atrial catheter :** A thin, flexible tube that is inserted into a vein in the neck or below the collar bone and guided (threaded) into the right atrium of the heart. It is used to give intravenous fluids, blood transfusions, and chemotherapy and other drugs, and for taking blood

samples. It avoids the need for repeated needle sticks. An external right atrial catheter is a type of central venous access device.

**external-beam radiation therapy :** A type of radiation therapy that uses a machine to aim high-energy rays at the cancer from outside of the body. Also called external radiation therapy.

**Extinction coefficient (å):** A measure of a compound's ability to absorb light, given in units that are the reciprocals of molarity and distance in centimeters ( $M^{-1} \text{ cm}^{-1}$ ).

**extracorporeal photopheresis :** A procedure in which blood is removed from the body and treated with ultraviolet light and drugs that become active when exposed to light. The blood is then returned to the body. It is being studied in the treatment of some blood and bone marrow diseases and graft-vs-host disease (GVHD). Also called photopheresis.

**extracranial :** Outside of the cranium (bones that surround the brain).

**extracranial germ cell tumor :** A rare cancer that forms in germ cells in the testicle or ovary, or in germ cells that have traveled to areas of the body other than the brain (such as the chest, abdomen, or tailbone). Germ cells are reproductive cells that develop into sperm in males and eggs in females.

**extract :** In medicine, a preparation of a substance obtained from plants, animals, or bacteria and used as a drug or in drugs.

**Extraction:** Extraction is the process of taking a solvent and using it to dissolve a compound from a mixture. If you want to remove salt from a mixture of salt and iron filings, you can pour water on the mixture. The salt will dissolve in the water (solvent). OR A technique for separating components in a mixture that have different solubilities. For example, caffeine can be separated from coffee beans by washing the beans with supercritical fluid carbon dioxide; the caffeine dissolves in the carbon dioxide but flavor compounds do not. Vanillin can be extracted from vanilla beans by shaking the beans with an organic solvent, like ethanol.

**Extraction (liquid extraction):** A process in which a liquid mixture of two species (the solute and the feed carrier) is contacted in a mixer with a third liquid (the solvent) that is immiscible or nearly immiscible with the feed carrier. When the liquids are contacted, solute transfers from the feed carrier to the solvent. The combined mixture is then allowed to settle into two phases that are then separated by gravity in a decanter.

**extragonadal :** An area of the body other than the ovaries or testes.

**extragonadal germ cell tumor :** A rare cancer that develops in germ cells that are found in areas of the body other than the ovary or testicle (such as the brain, chest, abdomen, or tailbone). Germ cells are reproductive cells that develop into sperm in males and eggs in females.

**extrahepatic :** Located or occurring outside the liver.

**extrahepatic bile duct :** The part of the common hepatic bile duct (tube that collects bile from the liver) that is outside the liver. This duct joins a duct from the gallbladder to form the common bile duct, which carries bile into the small intestine when food is being digested.

**extrahepatic bile duct cancer :** A rare cancer that forms in the bile ducts outside the liver. A bile duct is a tube that carries bile (fluid made by the liver) between the liver and gallbladder and the small intestine. Cancer that forms in the area where the right and left bile ducts meet outside the liver is called Klatskin tumor. It is the most common type of bile duct cancer.

**extraneous residue limit:** An extraneous residue limit is, for a particular commodity, the maximum toxicologically acceptable concentration of a residue unavoidably arising from sources other than the use of a pesticide directly or indirectly for the production of that commodity (WHO, 1976).

**extranodal :** Refers to an area or organ outside of the lymph nodes.

**extraocular :** Located outside the eye.

**Extraordinary ray:** The component of plane-polarized light that travels through a uniaxial crystal at a direction-dependent velocity.

**extraosseous :** Located or occurring outside of the bone. Also called extraskelatal.

**extrapleural pneumonectomy :** Surgery to remove a diseased lung, part of the pericardium (membrane covering the heart), part of the diaphragm (muscle between the lungs and the abdomen), and part of the parietal pleura (membrane lining the chest). This type of surgery is used most often to treat malignant mesothelioma.

**extrapolation:** The calculation, based on quantitative observations in exposed test species, of predicted dose-effect and dose-response relationships for a chemical in humans and other environmental biota (WHO, 1979).

**extraskkeletal :** Located or occurring outside of the bone. Also called extraosseous.

**extrauterine pregnancy :** A condition in which a fertilized egg grows outside of the uterus, usually in one of the fallopian tubes. Symptoms include sharp pain on one side of the abdomen and bleeding from the vagina. Also called ectopic pregnancy.

**extravasation :** The leakage of blood, lymph, or other fluid, such as an anticancer drug, from a blood vessel or tube into the tissue around it. It is also used to describe the movement of cells out of a blood vessel into tissue during inflammation or metastasis (the spread of cancer).

**extravasation injury :** Blistering and tissue damage caused by certain drugs when they leak out of a vein into the tissue around it. The damage is sometimes severe and can lead to tissue necrosis (tissue death).

**Extremities:** The hands, forearms, elbows, feet, knees, leg below the knees, and ankles. Permissible radiation exposures in these regions are generally greater than those for whole body exposure because the extremities contain fewer blood-forming organs and have smaller volumes for energy absorption. (See 10 CFR 20.1003.)

**extremity :** A limb of the body, such as the arm or leg.

**Extren:** (Other name for: acetylsalicylic acid)

**Extrinsic clotting pathway:** Blood-clotting cascade of enzyme activities that is initiated by the activation of factor VII and the release of the lipoprotein tissue factor, both of which are triggered by tissue trauma.

**Extrudate:** The product or result of an extrusion process. OR The product or material delivered from an extruder, for example, film, pipe profiles. OR The product or material delivered by an extruder, such as film, pipe, the coating on wire, etc. OR The product or material delivered from an extruder, for example, film, pipe profiles.

**EXTRUDATE SWELL (also called DIE SWELL):** Whenever a polymer melt emerges from a die the diameter or thickness is always larger than the diameter (or gap) of the die. At usual production throughputs, diameter or thickness ratios range from 1.20-1.40 for PVC to 1.50-2.00 for commercial grade Polyethylenes and much more for some polymers containing a high molecular weight tail. It is an indication of the elasticity of the polymer. The more elastic polymers give larger swell. Of course, by

pulling the extrudate the swell is reduced and of course extrudates can be drawn down to diameters (or thicknesses) much smaller than the die diameter or gap.

**EXTRUDER:** A machine for producing more or less continuous lengths of plastic sections such as rods, sheets, tubes, profiles, and cable coatings by melting and pumping resin through a forming die. OR A machine for producing more or less continuous lengths of plastics sections such as rods, sheets, tubes, and profiles.

**Extruder head:** A component which may be attached to the discharge end of the extruder barrel to house the die.

**Extruder Size:** The minimal inner diameter of the extruder barrel.

**EXTRUDER, TWIN SCREW:** Two screws, side by side, are placed within the extruder barrel, and they are either co-rotating or counter-rotating. Counter-rotating twin screw extruders are used primarily for processing PVC products such as pipe, siding, sheet, pellets, and film. The co-rotating units are used for compounding materials where thorough mixing and high output rates are important. The twin screw unit resembles a positive displacement screw pump. It conveys the material at low speeds with controlled shear. The positive action assures that all portions of the material experience a uniform residence time.

**Extrusion:** The method of processing plastic by forcing heat softened plastic through an opening of the desired shape of the cross-section of the finished product. OR Compacting and melting a plastic material and forcing it through an orifice in a continuous fashion. In the extrusion process, the material is conveyed through the heated machine barrel by a helical screw, where it is heated and mixed to a homogeneous state and then forced through a die of the shape required for the finished product. OR One of the most common plastics processing techniques covering a vast range of applications in which resins are melted, heated and pumped for processing. Extrusion machines accomplish these tasks by means of one or more internal screws. In extrusion, the material to be processed is sheared between the root of the screw and the wall of the barrel that surrounds it. This process produces frictional energy that heats and melts the substance as it is conveyed down the barrel. Melted extrudate from the machine is further processed after the extrusion phase, which typically produces

pellets, sheet, cast film, blown film, fibers, coatings, pipes, profiles or molded parts. (Modern Plastics Encyclopedia 1995).

**Extrusion Coating:** A coating technique in which molten plastic feeds directly from an extruder die into a nip-roll assembly combined with the substrate

**Extrusion Pressure -:** The pressure of the melt at the discharge end of the screw.

**extrusive:** rock that forms on the Earth's surface.

**extrusive igneous rock:** igneous rock that crystallized from liquid magmas that reached the surface and were generally vented as volcanic lavas.

**eye:** center of circulation in a hurricane, where the conditions are calm.

**eye cancer :** Cancer that forms in tissues of and around the eye. Some of the cancers that may affect the eye include melanoma (a rare cancer that begins in cells that make the pigment melanin in the eye), carcinoma (cancer that begins in tissues that cover structures in the eye), lymphoma (cancer that begins in immune system cells), and retinoblastoma (cancer that begins in the retina and usually occurs in children younger than 5 years).

**eye wall:** area surrounding the eye of a hurricane, where winds are most intense.

**EZ Transfer Finger Plate:** Eliminates the need for transfer dead plates at terminal discharges as the tines of the plates fill the space between the raised legs pickets or modules.

**ezatiostat hydrochloride:** The hydrochloride salt of a liposomal small-molecule glutathione analog inhibitor of glutathione S-transferase (GST) P1-1 with hematopoiesis-stimulating activity. After intracellular de-esterification, the active form of ezatiostat binds to and inhibits GST P1-1, thereby restoring Jun kinase and MAPK pathway activities and promoting MAPK-mediated cellular proliferation and differentiation pathways. This agent promotes the proliferation and maturation of hematopoietic precursor cells, granulocytes, monocytes, erythrocytes and platelets.

**ezetimibe:** An azetidinone derivative and a cholesterol absorption inhibitor with lipid-lowering activity. Ezetimibe appears to interact physically with cholesterol transporters at the brush border of the small intestine and

inhibits the intestinal absorption of cholesterol and related phytosterols. As a result, ezetimibe causes a decrease in the level of blood cholesterol or an increase in the clearance of cholesterol from the bloodstream. Overall, the following effects observed are a reduction of hepatic cholesterol stores and a reduction of total cholesterol, LDL cholesterol, and other triglycerides in the blood.

**ezetimibe/simvastatin:** An orally bioavailable combination agent containing the cholesterol absorption inhibitor ezetimibe and the hepatic hydroxymethyl-glutaryl coenzyme A (HMG-CoA) reductase inhibitor simvastatin, with lipid-lowering activity. Upon oral administration, ezetimibe binds to the sterol transporter Niemann-Pick C1-Like 1 (NPC1L1) at the brush border of the small intestine and inhibits the intestinal absorption of biliary and dietary cholesterol and related phytosterols. This decreases blood cholesterol levels, decreases the delivery of intestinal cholesterol to the liver, reduces hepatic cholesterol stores and enhances the clearance of cholesterol from the bloodstream. Upon administration of simvastatin and subsequent hydrolyzation to its active beta-hydroxyacid form, this statin competitively inhibits HMG-CoA reductase, the enzyme which catalyzes the conversion of HMG-CoA to mevalonate, which is an essential step in cholesterol synthesis. Ezetimibe and simvastatin together reduce blood levels of total cholesterol, low-density lipoprotein cholesterol (LDL-C), triglycerides (TGs), very-low-density lipoproteins (VLDL), and apolipoprotein B (Apo B), and increase the plasma concentration of high-density lipoprotein cholesterol (HDL-C). Higher cholesterol blood levels appear to be associated with an increased risk in the proliferation of certain cancer cells, such as prostate cancer cells.

**EZH1/2 inhibitor DS-3201:** An orally available selective inhibitor of the histone lysine methyltransferases enhancer of zeste homolog 1 (EZH1) and 2 (EZH2), with potential antineoplastic activity. Upon oral administration, DS-3201 selectively inhibits the activity of both wild-type and mutated forms of EZH1 and EZH2. Inhibition of EZH1/2 specifically prevents the methylation of lysine 27 on histone H3 (H3K27). This decrease in histone methylation alters gene expression patterns associated with cancer pathways, enhances transcription of certain target genes, and results in decreased proliferation of EZH1/2-expressing cancer cells. EZH1/2, histone lysine methyltransferase (HMT) class enzymes and catalytic subunits of the polycomb repressive complex 2 (PRC2), are overexpressed or mutated in a

variety of cancer cells and play key roles in tumor cell proliferation, progression, stem cell self-renewal and migration. Check for active clinical trials using this agent.

**EZH2 inhibitor CPI-1205:** An orally available selective inhibitor of the histone lysine methyltransferase EZH2, with potential antineoplastic activity. Upon oral administration, CPI-1205 selectively inhibits the activity of both wild-type and mutated forms of EZH2. Inhibition of EZH2 specifically prevents the methylation of histone H3 on lysine 27 (H3K27). This decrease in histone methylation alters gene expression patterns associated with cancer pathways and results in decreased proliferation of EZH2-expressing cancer cells. EZH2, a histone lysine methyltransferase (HMT) class enzyme and the catalytic subunit of the polycomb repressive complex 2 (PRC2), is overexpressed or mutated in a variety of cancer cells and plays a key role in tumor cell proliferation; its expression is correlated with tumor initiation, progression, stem cell self-renewal, migration and angiogenesis.

**EZN-2285:** A drug used to treat acute lymphoblastic leukemia (ALL). It is a form of the anticancer drug PEG-asparaginase that stays in the body longer. EZN-2285 is an enzyme that breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. It is a type of protein synthesis inhibitor. Also called Oncaspar-IV and SC-PEG *E. coli* L-asparaginase.

**F:** Food - represents BOD in the F/M ratio. Expressed in pounds.

**F 18 fluorodeoxygalactose:** A radioconjugate containing the D-galactose analogue 2-deoxy-2-fluoro-D-glucose (FDGal) labeled with the positron-emitting radioactive isotope fluorine F18, used for imaging upon positron emitting tomography (PET). With cell uptake much higher in tumor cells compared to normal cells, the F18 moiety of fluorodeoxygalactose F-18 can be visualized upon PET imaging and this agent can be used as a tracer for the evaluation of galactose tumor uptake and metabolism.

**F 18 sodium fluoride positron emission tomography :** A procedure used to find out if cancer has spread to the bone. A small amount of a radioactive substance called fluorine F 18 sodium fluoride is injected into a vein. A PET scan is then used to make detailed pictures of the bones. Bones with cancer in them take up more fluorine F18 sodium fluoride than normal

bones do. Also called F-18 NaF PET and fluorine F 18 sodium fluoride PET.

**F factor:** A large bacterial plasmid, known as the sex-factor plasmid because it permits mating between F<sup>+</sup> and F<sup>-</sup> bacteria.

**f orbital:** An orbital with angular momentum quantum number = 2. The f orbitals generally have 3 nuclear nodes and rather complex shapes.

**F-18 16 alpha-fluoroestradiol:** A radiopharmaceutical consisting of an estradiol analogue radiolabeled with the positron-emitting isotope fluorine F 18. F-18 16 alpha-fluoroestradiol is actively taken up in tumor cells expressing the estrogen receptor (ER), allowing visualization of ER-positive tumor cells with positron emission tomography (PET). Uptake of this agent depends upon the ER status of target tissues. or A radiolabeled substance being studied as an imaging agent in breast cancer. F-18 16 alpha-fluoroestradiol binds to estrogen receptors and gives off radiation that can be detected by a PET scan. The PET scan forms an image that shows where cancer cells with estrogen receptors can be found in the body. It is a type of radioimaging agent. Also called F-18 FES.

**F-18 FES:** A radiolabeled substance being studied as an imaging agent in breast cancer. F-18 FES binds to estrogen receptors and gives off radiation that can be detected by a PET scan. The PET scan forms an image that shows where cancer cells with estrogen receptors can be found in the body. It is a type of radioimaging agent. Also called F-18 16 alpha-fluoroestradiol.

**F-18 fluoroethyltyrosine:** An amino acid analog radiolabeled with fluorine F 18, a positron emitting isotope, used as a tracer in positron emission tomography (PET). Reflecting the increased amino acid transport capacity of tumor cells, F-18 fluoroethyltyrosine (F-18 FET) is actively taken up in tumor cells via amino acid transport system L, but is neither incorporated into proteins nor readily degraded, resulting in high intracellular concentrations of this imaging agent. Radiolabeled amino acid-based agents are useful in PET brain tumor imaging because F-18 fluoro-deoxyglucose (F-18 FDG), commonly used in PET tumor imaging, is relatively insensitive for detecting tumors in the brain due the high levels of glycolytic metabolism in the normal cortex and to a lesser extent in white matter. Check for active clinical trials using this agent.

**F-18 NaF PET:** A procedure used to find out if cancer has spread to the bone. A small amount of a radioactive substance called fluorine F 18 sodium fluoride is injected into a vein. A PET scan is then used to make detailed pictures of the bones. Bones with cancer in them take up more fluorine F18 sodium fluoride than normal bones do. Also called F 18 sodium fluoride positron emission tomography and fluorine F 18 sodium fluoride PET.

**F-actin:** A filament of G-actin monomers that is a polar, self-assembling, dynamic polymer.

**F/M:** A ratio of the amount of food to the amount of organisms. Used to control an activated sludge process.

**F16-IL2 fusion protein:** An immunocytokine of the human monoclonal antibody fragment F16 (scFv) against the extra-domain A1 of tenascin-C fused, via a short 5-amino acid linker, to a recombinant form of the human cytokine interleukin-2 (IL-2) with potential immunostimulating and antineoplastic activities. The monoclonal antibody portion of the F16-IL2 fusion protein binds to tumor cells expressing the tumor associated antigen (TAA) tenascin-C. In turn, the IL-2 moiety of the fusion protein stimulates natural killer (NK) cells, macrophages and neutrophils and induces T-cell antitumor cellular immune responses thereby selectively killing tenascin-C-expressing tumor cells. In addition, F16-IL2 may potentiate the cytotoxicity of other chemotherapeutic agents. Tenascin-C, a glycoprotein of the extracellular matrix, is expressed in many cancer cell types. Check for active clinical trials using this agent.

**F511 cream :** A substance being studied in the prevention of palmar-plantar erythrodysesthesia (pain, swelling, numbness, tingling, or redness of the palms of the hands or soles of the feet) in breast cancer patients treated with anticancer drugs. F511 cream contains a substance that is used in products to control excess sweating under the arms and on the palms of the hands and soles of the feet. It is a type of antiperspirant.

**Fabric :** That part of a complete belt consisting of connected spirals.

**Fabric-Base Laminate:** Laminated insulating material formed by bonding woven cloth (of fiberglass, cotton or synthetic fibers) with resin under heat and pressure.

**Fabricate:** Method of forming a plastic into a finished article by machining, drawing, and similar operations.

**FABRICATE:** To work a material into a finished form by machining, forming, or other operation.

**Fabricating:** The manufacture of plastic products by appropriate operations. This includes plastics formed into molded parts, rods, tubes, sheeting, extrusion and other forms by methods including punching, cutting, drilling, tapping, fastening or by using other mechanical devices.

**Facade:** The external surface of a building; the external elevation.

**Face:** Any one of the outer plane surfaces of a crystal or geometric solid.

**Face Seal:** A sealing system in which the sealing occurs in the axial direction of the seal. If the seal ring were to be placed flat upon a desktop, the seal compression would occur between the top and bottom of the seal

**Face-centered space group:** A crystallographic space group containing a pair of lattice points on opposite faces (symbolized by A, B, or C if the bc, ac, or ab faces are centered or F if all faces are centered).

**facies :** A distinctive facial feature or expression that is characteristic of a specific condition.

**facilitated diffusion:** the movement of molecules across a membrane from a region of high concentration to a region of low concentration that is assisted by proteins.

**Facing brick:** A type of brick of better quality and appearance than common brick.

**FACT complex-targeting curaxin CBL0137:** An orally available curaxin-based agent targeting the Facilitates Chromatin Transcription (FACT) complex, with potential antineoplastic activity. Upon administration, CBL0137 binds to FACT and sequesters the FACT complex on chromatin, which inhibits its activity. This prevents transcription of certain genes involved in cancer-associated signaling pathways; it specifically inhibits the transcription of both NF-kappa  $\beta$  and heat shock transcription factor 1 (HSF1) and simultaneously activates p53. This causes an increase in tumor cell apoptosis and a decrease in tumor cell proliferation, in FACT-positive cancers. In addition, this agent is able to sensitize FACT-positive tumor cells to the cytotoxic effects of other chemotherapeutic agents. FACT, a transcription and replication factor composed of the Structure Specific Recognition Protein (SSRP1) and suppressor of Ty 16 (Spt16) proteins, is expressed in a variety of tumor cells while almost absent in normal cells; its

expression is associated with increased tumor aggressiveness and poor prognosis. Check for active clinical trials using this agent.

**factor VIIa inhibitor PCI-27483:** A reversible small-molecule inhibitor of activated factor VII (factor VIIa) with potential antineoplastic and antithrombotic activities. FVII, a serine protease, becomes activated (FVIIa) upon binding with TF forming the FVIIa/TF complex, which induces intracellular signaling pathways by activating protease activated receptor 2 (PAR-2). Upon subcutaneous administration, factor VIIa inhibitor PCI-27483 selectively inhibits factor FVIIa in the VIIa/TF complex, which may prevent PAR-2 activation and PAR2-mediated signal transduction pathways, thereby inhibiting tumor cell proliferation, angiogenesis, and metastasis of TF-overexpressing tumor cells. In addition, this agent inhibits both the extrinsic and intrinsic coagulation cascades, preventing blood clot formation. TF, a blood protein overexpressed on the cell surface of a variety of tumor cell types, may correlate with poor prognosis; PAR-2 (also known as thrombin receptor-like 1) is a G protein-coupled receptor (GPCR) and a protease-activated receptor.

**facultative:** having the power to live under different conditions either with or without oxygen.

**Facultative aerobe:** An organism that can use molecular oxygen in its metabolism but that also can live anaerobically.

**Facultative anaerobe:** A bacterium capable of growing under aerobic conditions or anaerobic conditions in the presence of an inorganic ion ie. SO<sub>4</sub>, NO<sub>3</sub>.

**Facultative anaerobes:** Organisms that can function aerobically in the presence of oxygen or anaerobically, using fermentation as a source of cellular energy, in the absence of oxygen.

**facultative cells:** Cells that can live in the presence or absence of oxygen.

**Facultative pond:** The most common type of pond in current use. The upper portion (supernatant) is aerobic, while the bottom layer is anaerobic. Algae supply most of the oxygen to the supernatant.

**FAD (flavin adenine dinucleotide):** The coenzyme of some oxidation-reduction enzymes; it contains riboflavin.

**FAD and FADH (flavin adenine dinucleotide):** 2 An important electron carrier in the oxidation of fuel molecules; alternates between the oxidized

FAD form and the reduced FADH<sub>2</sub> form. It consists of a flavin moiety and an AMP unit; electrons are carried on the isoalloxazine moiety of the molecule.

**faddish words:** terms that appear suddenly and become very popular in language; some last, some fade, and some disappear altogether.

**Fading:** The change or loss of colour through exposure to the ultra violet content of sunlight etc. OR Surfaces where the colour has faded due to exposure to ultra violet sunlight should be thoroughly cleaned down to removed all dirt, grease and surface contaminants. Then rub down with a suitable abrasive, dust off and paint over.

**FADING:** The loss of color due to exposure to light, heat or weathering.

**fadrozole hydrochloride:** The hydrochloride salt of the nonsteroidal aromatase inhibitor fadrozole with potential antineoplastic activity.

Fadrozole specifically inhibits aromatase, blocking the aromatization of androstenedione and testosterone into estrone and estradiol, respectively, the final step in estrogen biosynthesis; the reduction in estrogen levels may inhibit growth in estrogen-dependent cancers. Aromatase, a member of the cytochrome P-450 superfamily, is found in many tissues; overexpression has been linked to the development of preneoplastic and neoplastic changes in breast tissue.

**Fahrenheit:** A temperature scale proposed by Daniel Gabriel Fahrenheit (1686-1736) which uses the melting point of ice (32°F) and the boiling point of water at one atmosphere (212°F) as calibration points. More... OR equals 1.8 multiplied to the sum of the temperature in Celsius and °F = 1.8 x (°C + 32).

**Faience:** Glazed pottery and hence glazed terracotta bricks used for facing work on buildings.

**failed rift:** rifting that ceases before the crustal mass has been separated into parts.

**Failure:** Breakdown of a paint film such as cracking, flaking, blistering etc.

**FAK inhibitor GSK2256098:** A focal adhesion kinase-1 (FAK) inhibitor with potential antiangiogenic and antineoplastic activities. FAK inhibitor GSK2256098 inhibits FAK, which may prevent the integrin-mediated activation of several downstream signal transduction pathways, including

ERK, JNK/MAPK and PI3K/Akt, thereby inhibiting tumor cell migration, proliferation and survival, and tumor angiogenesis. The tyrosine kinase FAK is normally activated by binding to integrins in the extracellular matrix (ECM) but may be upregulated and constitutively activated in various tumor cell types.

**FAK inhibitor PF-00562271:** An orally bioavailable small molecule and ATP-competitive focal adhesion kinase (FAK) inhibitor with potential antineoplastic and antiangiogenic activities. FAK inhibitor PF-00562271 inhibits the tyrosine kinase FAK, and to a lesser extent, proline-rich tyrosine kinase (PYK2), which may inhibit tumor cell migration, proliferation, and survival. As FAK is a signal transducer for integrins, inhibition of FAK by this agent may prevent integrin-mediated activation of several downstream signals including ERK, JNK/MAPK and PI3K/Akt. FAK and PYK2, upregulated in many tumor cell types, are involved in tumor cell invasion, migration and proliferation.

**FAK inhibitor VS-4718:** An orally bioavailable focal adhesion kinase (FAK) inhibitor with potential antineoplastic activity. Upon administration, VS-4718 inhibits FAK, blocks fibronectin-stimulated FAK autophosphorylation of Tyr397, and may prevent the integrin-mediated activation of several downstream signal transduction pathways, including ERK, JNK/MAPK and PI3K/Akt. This results in the reduction of the number of cancer stem cells (CSCs) and inhibits tumor cell migration, proliferation and survival. The cytoplasmic tyrosine kinase FAK is a signal transducer for integrins and is constitutively activated in various tumor cell types; it is involved in tumor cell invasion, migration and proliferation and plays a key role in the development, function and survival of CSCs.

**falimarev:** A cancer vaccine made with a form of a chicken virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins that may help immune cells in the body kill tumor cells. Also called recombinant fowlpox-CEA-MUC-1-TRICOM vaccine. OR A cancer vaccine comprised of a recombinant fowlpox viral vector encoding the carcinoembryonic antigen (CEA), MUC-1, a transmembrane glycoprotein secreted by glandular epithelial tissues, and TRICOM, comprised of three co-stimulatory molecule transgenes (B7-1, ICAM-1 and LFA-3). This agent may enhance CEA and MUC-1 presentation to antigen-presenting cells

(APC) and may activate a cytotoxic T-cell response against CEA- and MUC-1-expressing tumor cells.

**fall:** a mass-wasting movement in which earth material free-falls from a steep face or cliff and generally collects at the base as talus.

**fallopian tube :** A slender tube through which eggs pass from an ovary to the uterus. In the female reproductive tract, there is one ovary and one fallopian tube on each side of the uterus.

**fallopian tube cancer :** Cancer that forms in the tissue lining the fallopian tube (one of two long, slender tubes that connect the ovaries to the uterus). The cancer sometimes begins at the end of the fallopian tube near the ovary and spreads to the ovary. Fallopian tube cancer is similar to ovarian epithelial cancer and is staged and treated the same way.

**Fallopian tubes:** the passageways that egg cells enter after release from the ovaries; also called oviducts.

**False body:** Also known as 'Thixotropy'. Usually refers to gel type paints which in the tin appear to be very thick or even solid. When applied by brush or roller the gel structure breaks down and the paint becomes liquid thus allowing ease of application.

**False ceiling:** A lower dummy ceiling suspended below the main structure to improve appearance or proportions or to hide pipes structural steel etc.

**false-negative test result :** A test result that indicates that a person does not have a specific disease or condition when the person actually does have the disease or condition.

**false-positive result :** A test result that indicates an individual is affected and/or has a certain gene mutation when he or she is actually unaffected and/or does not have the mutation; i.e., a positive test result in a truly unaffected or mutation-negative individual.

**false-positive test result :** A test result that indicates that a person has a specific disease or condition when the person actually does not have the disease or condition.

**FAME:** Fatty Acid Methyl Ester, a means of identifying bacteria by analysis of the fatty acids in their cells. This is often done as an initial screening until a company, such as Alken-Murray Corporation, is sure that a bacterial strain is one they wish to use commercially, and then 16S rRNA

identification may be completed for a more definite identification and fingerprint of the strain, to keep competitors from copying that strain.

**familial** : A phenotype or trait that occurs with greater frequency in a given family than in the general population; familial traits may have a genetic and/or nongenetic etiology.

**familial adenomatous polyposis** : An inherited condition in which numerous polyps (growths that protrude from mucous membranes) form on the inside walls of the colon and rectum. It increases the risk of colorectal cancer. Also called familial polyposis and FAP.

**familial atypical multiple mole melanoma syndrome** : An inherited condition marked by the following: (1) one or more first- or second-degree relatives (parent, sibling, child, grandparent, grandchild, aunt, or uncle) with malignant melanoma; (2) many moles, some of which are atypical (asymmetrical, raised, and/or different shades of tan, brown, black, or red) and often of different sizes; and (3) moles that have specific features when examined under a microscope. Familial atypical multiple mole melanoma syndrome increases the risk of melanoma and may increase the risk of pancreatic cancer. Also called FAMMM syndrome.

**familial cancer** : Cancer that occurs in families more often than would be expected by chance. These cancers often occur at an early age, and may indicate the presence of a gene mutation that increases the risk of cancer. They may also be a sign of shared environmental or lifestyle factors.

**familial dysplastic nevi** : A condition that runs in certain families in which at least two members have dysplastic nevi (atypical moles) and have a tendency to develop melanoma.

**Familial hypercholesterolemia**: A disease that results from the dysfunctional receptor-mediated endocytosis of cholesterol-bearing lipoprotein particles. With this disease, patients have abnormally high blood levels of cholesterol, which can lead to arterial narrowing and heart attacks at an early age.

**familial isolated hyperparathyroidism** : A rare inherited condition in which one or more tumors form in the parathyroid glands (four pea-sized organs found on the thyroid) and cause them to make too much parathyroid hormone. The increased parathyroid hormone causes a loss of calcium from the bones and too much calcium in the blood. Also called FIHP.

**familial medullary thyroid cancer :** An inherited form of medullary thyroid cancer (cancer that forms in the cells of the thyroid that make the hormone calcitonin).

**familial polyposis :** An inherited condition in which numerous polyps (growths that protrude from mucous membranes) form on the inside walls of the colon and rectum. It increases the risk of colorectal cancer. Also called familial adenomatous polyposis and FAP.

**family:** similar genera classified together.

**family (of elements):** Elements found in the same column of the periodic table, also known as a group of elements. These elements will have similar properties.

**family history :** A record of the relationships among family members along with their medical histories. This includes current and past illnesses. A family history may show a pattern of certain diseases in a family. Also called family medical history.

**family medical history :** The genetic relationships within a family combined with the medical history of individual family members. When represented in diagram form using standardized symbols and terminology, it is usually referred to as a pedigree or family tree. Also called family history. OR A record of the relationships among family members along with their medical histories. This includes current and past illnesses. A family medical history may show a pattern of certain diseases in a family. Also called family history.

**FAMILY MOLD:** A multi-cavity mold wherein each of the cavities forms one of the component parts of the assembled finished object. The term often applied to molds wherein parts from different customers are grouped together in one mold for economy of production. Sometimes called “Combination Mold.” OR A multi-cavity mold wherein each of the cavities forms one of the component parts of the assembled finished object. The term often applied to molds wherein parts from different customers are grouped together in one mold for economy of production. This is sometimes referred to “Combination Mold.”

**family therapy :** A type of therapy in which the whole family talks with a professional counselor to solve family problems.

**famitinib:** An orally bioavailable receptor tyrosine kinase (RTK) inhibitor with potential antineoplastic activity. Famitinib binds to and inhibits several RTKs, dysregulated in a variety of tumors, including stem cell factor receptor (c-Kit; SCFR), vascular endothelial growth factor receptor (VEGFR) 2 and 3, platelet-derived growth factor receptor (PDGFR) and FMS-like tyrosine kinases Flt1 and Flt3. Inhibition of these RTKs may result in an inhibition of tumor growth and angiogenesis, and eventually tumor regression in tumor cells overexpressing these RTKs.

**FAMMM syndrome :** An inherited condition marked by the following: (1) one or more first- or second-degree relatives (parent, sibling, child, grandparent, grandchild, aunt, or uncle) with malignant melanoma; (2) many moles, some of which are atypical (asymmetrical, raised, and/or different shades of tan, brown, black, or red) and often of different sizes; and (3) moles that have specific features when examined under a microscope. FAMMM syndrome increases the risk of melanoma and may increase the risk of pancreatic cancer. Also called familial atypical multiple mole melanoma syndrome.

**famotidine:** A propanimidamide and histamine H<sub>2</sub>-receptor antagonist with antacid activity. As a competitive inhibitor of histamine H<sub>2</sub>-receptors located on the basolateral membrane of the parietal cell, famotidine reduces basal and nocturnal gastric acid secretion, resulting in a reduction in gastric volume, acidity, and amount of gastric acid released in response to various stimuli.

**Fan Gate:** A gate used to help reduce stress concentrations in the gate area by spreading the opening over a wider area. Less warping of parts can usually be expected by the use of this type of gate. OR This gate is used to help reduce stress concentrations in the gate area by spreading the opening over a wider area. Less warpage of parts can usually be expected by the use of this gate type. Frequently used in large silicone rubber parts

**Fanconi anemia :** A rare inherited disorder in which the bone marrow does not make blood cells. It is usually diagnosed in children between 2 and 15 years old. Symptoms include frequent infections, easy bleeding, and extreme tiredness. People with Fanconi anemia may have a small skeleton and brown spots on the skin. They also have an increased risk of developing certain types of cancer.

**Fanconi syndrome :** A group of kidney disorders that cause protein, sugar, minerals, and other nutrients to be lost in the urine. Symptoms include weakness, bone pain, and passing a greater than normal amount of urine. One form of Fanconi syndrome is inherited and is usually found in infants. Fanconi syndrome may also be caused by other diseases, a lack of vitamin D, or exposure to heavy metals or chemicals, including certain anticancer drugs.

**Fanlight:** Properly a window shaped like an open fan over a door or opening. From this it is often used to describe any shaped window in such a position.

**FAP:** An inherited condition in which numerous polyps (growths that protrude from mucous membranes) form on the inside walls of the colon and rectum. It increases the risk of colorectal cancer. Also called familial adenomatous polyposis and familial polyposis.

**FAP-specific CD8-positive T cells:** A preparation of CD8-positive T cells specific for human fibroblast activating protein (FAP) with potential immunopotentiating activity. T cells have been genetically modified to express a chimeric antigen receptor specific for FAP. Upon infusion, the FAP-specific CD8-positive T cells bind to FAP-expressing tumor cells and exhibit a selective toxicity to tumor cells. This may result in both tumor cell lysis and inhibition of tumor cell growth. FAP, a cell surface glycoprotein, is overexpressed on tumor-associated fibroblasts but minimally expressed on normal, healthy cells.

**FAQ:** Frequently Asked Questions.

**faraday:** a unit of electric charge equal to that on 1 mole of electrons.

**Faraday's laws:** two laws of electrolysis relating the amount of substance to the quantity of electric charge.

**Fareston:** (Other name for: toremifene)

**Farestone:** (Other name for: toremifene)

**farletuzumab:** A humanized, immunoglobulin G1 monoclonal antibody with potential antitumor activity. Farletuzumab specifically targets at glycoprotein 3 (GP-3), a cell surface antigen that is overexpressed on many epithelial-derived cancer cells. Upon binding to the GP-3 antigen, farletuzumab triggers a host immune response against GP-3 expressing cells resulting in cell lysis.

**Farydak:** (Other name for: panobinostat) or A drug used with bortezomib and dexamethasone to treat multiple myeloma. It is used in patients who have already been treated with bortezomib and an immunomodulating agent. It is also being studied in the treatment of other types of cancer. Farydak blocks certain enzymes needed for cells to grow and divide and may kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of histone deacetylase inhibitor and a type of antiangiogenesis agent. Also called LBH589 and panobinostat.

**Fas receptor agonist APO010:** A recombinant, soluble, hexameric fusion protein consisting of three human Fas ligand (FasL) extracellular domains fused to the dimer-forming collagen domain of human adiponectin with potential pro-apoptotic and antineoplastic activities. Assembled into a soluble hexameric structure mimicking the ligand clustering of endogenous active FasL, Fas receptor agonist APO010 activates the Fas receptor, resulting in caspase-dependent apoptosis in susceptible tumor cell populations. FasL is a transmembrane protein of the tumor necrosis factor (TNF) superfamily and a pro-apoptotic ligand for the death receptor Fas.

**Fascia:** A broad flat surface or member over a shop front or below a cornice; a board carrying a gutter around the eaves of a building.

**Fasigyn:** (Other name for: tinidazole)

**Faslodex:** (Other name for: fulvestrant) or A drug used to treat certain types of breast cancer in postmenopausal women. It is also being studied in the treatment of other types of cancer. Faslodex blocks estrogen activity in the body and is a type of antiestrogen. Also called fulvestrant and ICI 182780.

**FASN inhibitor TVB-2640:** An orally bioavailable fatty acid synthase (FASN) inhibitor, with potential antineoplastic activity. Upon administration, TVB-2640 binds to and blocks FASN, which prevents the synthesis of palmitate needed for tumor cell growth and survival. This leads to a reduction in cell signaling, an induction of tumor cell apoptosis and the inhibition of cell proliferation in susceptible tumor cells. FASN, an enzyme responsible for the de novo synthesis of palmitic acid, is overexpressed in tumor cells and plays a key role in tumor metabolism, lipid signaling, tumor cell survival and drug resistance; tumor cells are dependent on increased fatty acid production for their enhanced metabolic needs and rapid growth.

**Fast fission:** Fission of a "heavy" atom (such as uranium-238) when it absorbs a fast (high energy) neutron. All fissionable materials can fission with fast neutrons. However, some (such as uranium-235 and Plutonium-239) fission more readily with slow (thermal) neutrons.

**Fast neutron:** A neutron with kinetic energy greater than its surroundings when released during fission.

**fast-neutron beam radiation :** A type of radiation therapy that uses tiny particles called neutrons made by a machine called a cyclotron.

**fat:** A solid ester of a long-chain carboxylic acid with glycerol.

**Fat edge:** A heavy accumulation of paint at the edge of a painted surface.

**fat emulsion:** A liquid composed of two immiscible substances, typically some form of fat and water. In parenteral nutrition, a fat emulsion may contain phospholipids, triglycerides and essential fatty acids. Check for active clinical trials using this agent.

**fat necrosis :** A benign condition in which fat tissue in the breast or other organs is damaged by injury, surgery, or radiation therapy. The fat tissue in the breast may be replaced by a cyst or by scar tissue, which may feel like a round, firm lump. The skin around the lump may look red, bruised or dimpled.

**fat-soluble vitamin :** A vitamin that can dissolve in fats and oils. Fat-soluble vitamins are absorbed along with fats in the diet and can be stored in the body's fatty tissue. They come from plant and animal foods or dietary supplements. Vitamins A, D, E, and K are fat-soluble.

**fatigue :** A condition marked by extreme tiredness and inability to function due to lack of energy. Fatigue may be acute or chronic.

**Fatigue Resistant :** Field experience shows that the most common cause of failure in Omniflex belts is fatigue. The fatigue failure in Omniflex belts is typically a break in the corner of the pickets between the third and fourth openings from the outside edge. This break is the result of progressive wear on the bar links transferring the cyclic load to the pickets.

**Fatigue Strength:** The maximum cyclic stress a material can withstand for a given number of cycles before failure occurs.

**fats:** lipids composed of a glycerol and fatty acids.

**fats (wastes):** triglyceride-esters of fatty acids. Erroneously used as synonymous with grease.

**Fattening:** An increase in the viscosity of a paint on storage. Also called 'feeding'.

**Fatty Acid:** A fatty acid has a carboxylic acid on a long chain of carbon atoms. The carboxylic acid may also be called the carboxyl functional group. Fatty acids are a major source of energy for the cell. Compounds called phospholipids are created from fatty acids. OR A long-chain hydrocarbon containing a carboxyl group at one end Saturated fatty acids have completely saturated hydrocarbon chains Unsaturated fatty acids have one or more carbon-carbon double bonds in their hydrocarbon chains. OR Fatty acids are carboxylic acids with long hydrocarbon side chains. Most natural fatty acids have hydrocarbon chains that don't branch; any double bonds occurring in the chain are cisomers (side chains are attached on the same side of the double bond). OR A long-chain aliphatic carboxylic acid found in natural fats and oils; also a component of membrane phospholipids and glycolipids.

**fatty acid :** A major component of fats that is used by the body for energy and tissue development. OR An aliphatic, monocarboxylic acid derived from an animal or vegetable-based fat. OR long chains of carbon atoms with carboxyl groups at one end. OR Carboxylic acids containing long hydrocarbon chains that are an important fuel source as well as a key component of membrane lipids.

**Fatty acid synthase:** An enzyme system that catalyzes the synthesis of saturated long-chain fatty acids from acetyl coa, malonyl coa, and NADPH; in bacteria, the constituent enzymes of the synthase complex can be dissociated when cell extracts are prepared; in mammals, all constituent enzyme activities in fatty acid synthase are part of the same polypeptide.

**Fatty Alcohols:** An aliphatic alcohol derived from a natural fat or oil, which is often derived from a plant or other natural source. These materials have widespread application in cosmetics, foods and industrial solvents.

**fatty-replaced breast tissue :** A term used in mammography that refers to the replacement of breast tissue with fatty tissue. This commonly occurs as a woman ages.

**FAU:** A substance being studied in the treatment of advanced solid tumors and lymphomas. It blocks the growth of cells and may cause cancer cells to die. It is a type of uracil analog. Also called 1-(2'-deoxy-2'-fluoro-β-D-arabinofuranosyl) uracil.

**fault:** a crack or break in a rock. OR an area in which rock has been displaced along a fracture, such as having one side that is moved up or down.

**fault block mountain:** a mountain that is bordered on both sides by steeply dipping faults, such as a horst.

**fault gouge:** the broken material within a fault.

**fault plane:** a plane of fracture in a rock along which movement has occurred. OR the surface that rocks move along when plates shift.

**Fault tree:** A fault tree identifies all of the pathways that lead to a system failure. Toward that end, the fault tree starts with the top event, as defined by the event tree, and identifies (using the AND, OR, M out of N logic connectors) what equipment and operator actions, if failed, would prevent successful operation of the system. All components and operator actions that are necessary for system function are considered. Thus, the fault tree is developed to a point where data are available for the failure rate of the modeled component or operator action. For additional information, see Probabilistic Risk Assessment.

**fault zone:** a series of parallel fault planes that are close together and form a wider zone of structural weakness.

**fault-block mountains:** mountain range formed when sections of sedimentary rocks are tilted upward in sections.

**faulty parallelism:** a failure to create grammatically parallel structures when appropriate, is referred to as faulty parallelism.

**favism:** a condition characterized by hemolytic anemia (breakup of red blood cells) after eating fava beans (*Vicia fava*)

**fazarabine:** An orally-active pyrimidine analogue of an aza-substituted cytidine in which the ribose moiety is replaced by an arabinose sugar. Similar in action to cytarabine, fazarabine is phosphorylated by deoxycytidine kinase to a triphosphate form which competes with thymidine for incorporation into DNA; its incorporation into DNA inhibits DNA synthesis, resulting in tumor cell death and tumor necrosis. The presence of deoxycytidine kinase in a tumor is a determinant of tumor sensitivity to this drug. or An anticancer drug that is a type of antimetabolite.

**FCI:** Full configuration interaction. A CI that includes all possible determinants. FCI is the best wavefunction (and provides the lowest variational energy) obtainable using a given basis set. Almost never affordable.

**FDA:** An agency in the U.S. federal government whose mission is to protect public health by making sure that food, cosmetics, and nutritional supplements are safe to use and truthfully labeled. The FDA also makes sure that drugs, medical devices, and equipment are safe and effective, and that blood for transfusions and transplant tissue are safe. Also called Food and Drug Administration.

**FDA:** Short for Food and Drug Administration, an agency in the USA that is responsible for regulating vaccines, cosmetics, legal drugs, and food products.

**FDA (acronym):** Food and Drug Administration

**FdCyd:** A substance being studied in the treatment of some types of cancer. It may prevent the growth of tumors by stopping cancer cells from dividing and by killing them. It is a type of antimetabolite. Also called 5-fluoro-2-deoxycytidine.

**FDR:** The parents, siblings, or children of an individual. Also called first-degree relative. OR A parent, brother, sister, or child. Also called first-degree relative.

**FEA:** (Finite Element Analysis) A mathematical technique for analyzing stress, which breaks down a physical structure into substructures called "finite elements." The finite elements and their interrelationships are converted into equation form and solved mathematically.

**Feather edged:** Boards tapered to one thin edge to allow for neat overlapping when used for cladding a structure. OR The sharp, thin edge on parts such as wiper seals. Also called a knife edge

**FEATHER SANDING:** Tapering the edge of dried paint film with sandpaper.

**Feathering:** Tapering off the edges of a coat of paint when touching in by laying off with a comparatively dry brush. Where some paint has flaked off 'feathering' is the tapering of the edges of the remaining paint by rubbing down to provide a smooth surface for overpainting.

**febrile neutropenia :** A condition marked by fever and a lower-than-normal number of neutrophils in the blood. A neutrophil is a type of white blood cell that helps fight infection. Having too few neutrophils increases the risk of infection.

**febuxostat:** An orally available, non-purine inhibitor of xanthine oxidase with uric acid lowering activity. Upon oral administration, febuxostat selectively and noncompetitively inhibits the activity of xanthine oxidase, an enzyme that converts oxypurines, including hypoxanthine and xanthine, into uric acid. By inhibiting xanthine oxidase, uric acid production is reduced and serum uric acid levels are lowered. Febuxostat may provide protection against acute renal failure caused by the excessive release of uric acid that occurs upon massive tumor cell lysis resulting from the treatment of some malignancies. Check for active clinical trials using this agent.

**FEC:** An abbreviation for a chemotherapy combination used with other types of therapy to treat breast cancer, including breast cancer that has spread or come back. It includes the drugs fluorouracil, epirubicin hydrochloride, and cyclophosphamide. Also called FEC regimen.

**FEC Regimen:** A regimen consisting of fluorouracil, epirubicin and cyclophosphamide used in the adjuvant setting and also for the treatment of recurrent and metastatic breast cancer.

**FEC regimen :** An abbreviation for a chemotherapy combination used with other types of therapy to treat breast cancer, including breast cancer that has spread or come back. It includes the drugs fluorouracil, epirubicin hydrochloride, and cyclophosphamide. Also called FEC.

**FEC regimen :** An abbreviation for a chemotherapy combination used with other types of therapy to treat breast cancer, including breast cancer that has spread or come back. It includes the drugs fluorouracil, epirubicin hydrochloride, and cyclophosphamide. Also called FEC.

**fecal immunochemical test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. An antibody that binds to a blood protein called hemoglobin is used to detect any blood. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called FIT, iFOBT, immunoassay fecal occult blood test, immunochemical fecal occult blood test, and immunologic fecal occult blood test.

**fecal impaction :** A mass of dry, hard stool that cannot pass out of the colon or rectum. Fecal impaction may be caused by using laxatives too often, using certain types of pain medicines, little or no physical activity over a long period, diet changes, or constipation that is not treated. Signs and symptoms may include being unable to have a bowel movement, pain in the abdomen or back, problems urinating, and nausea and vomiting. Fecal impaction may also cause problems with circulation, the heart, or breathing.

**fecal incontinence :** Inability to hold stool in the rectum.

**fecal occult blood test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Guaiac fecal occult blood test and immunochemical fecal occult blood test are two types of fecal occult blood tests. Guaiac fecal occult blood test uses a chemical substance called guaiac to check for blood in the stool. Immunochemical fecal occult blood test uses an antibody to check for blood in the stool. Also called FOBT.

**feces :** The material in a bowel movement. Feces is made up of undigested food, bacteria, mucus, and cells from the lining of the intestines. Also called stool.

**Federal Emergency Management Agency (FEMA):** A component of U.S. Department of Homeland Security responsible for protecting the nation and reducing the loss of life and property from all hazards, such as natural disasters and acts of terrorism. FEMA leads and supports a risk-based, comprehensive emergency management system of preparedness, protection, response, recovery, and mitigation. FEMA also administers the National Flood Insurance Program.

**Federal Energy Regulatory Commission (FERC):** An independent agency that regulates the interstate transmission of electricity, natural gas, and oil. FERC also regulates and oversees hydropower projects, and the construction of liquefied natural gas terminals and interstate natural gas pipelines. FERC protects the economic, environmental, and safety interests of the American public, while working abundant, reliable energy in a fair, competitive market.

**Federal Land Development Authority (FELDA):** The Malaysian government agency that oversees the use and application of rural land in the country. FELDA is the world's largest plantation operator and owner, and is a 50:50 joint venture partner with P&G Chemicals in the FPG Oleochemicals operation located in Kuantan, Malaysia.

**FEED SECTION:** First section or zone of an extruder screw which is fed from the hopper and conveys solids to the melting zone. OR The section of the screw just under and slightly forward of the feed hopper.

**Feed System:** It is the main connecting channel between the machine nozzle and the part cavities of the mould.

**Feed throat:** The area at the rear end of the injection unit that allows fresh plastic to fall from the hopper into the heating barrel.

**Feed zone:** The area of the screw that is at the rear of the injection unit and receives fresh material from the feed throat. OR The first zone of an extruder screw. It receives material from the hopper and delivers it to the compression zone. OR Zone in the extruder's screw which feeds the resin into the plastic extrusion machine, and the channel depth is usually the same throughout the zone.

**Feedback:** Feedback in a closed loop system represents the return signal or response of the system to input instruction.

**Feedback inhibition:** A mode of enzyme regulation in which the end product of a biosynthetic pathway inhibits the enzyme that catalyzes the first step in that pathway.

**feedback inhibition:** Inhibition of an allosteric enzyme at the beginning of a metabolic sequence by the end product of the sequence; also known as end-product inhibition.

**feedback mechanisms:** A sequence of interactions in which the final interaction influences the original one. Also see positive feedback and negative feedback.

**Feedforward stimulation:** The activation of an allosteric enzyme in a later stage of a pathway by the product of a reaction that takes place earlier in the reaction pathway.

**feeding pattern:** the pattern in which animals obtain their nutrients.

**Feedstock:** A raw material or starting ingredient used as a "building block" for an intermediate or finished product. Used to describe a material that is

derived from nature, often remaining in an unprocessed or minimally processed state.

**Feedwater:** Water supplied to the reactor pressure vessel in a boiling-water reactor (BWR) or the steam generator in a pressurized-water reactor (PWR) that removes heat from the reactor fuel rods by boiling and becoming steam. The steam becomes the driving force for the plant's turbine generator.

**Feldene:** (Other name for: piroxicam)

**felsic:** magma that is aluminum or silica based, lighter in color, and less dense than mafic magma.

**felsic rock:** a rock that is rich in silica, potassium, sodium, and aluminum and that contains only small amounts of iron, magnesium, and calcium.

**Femara:** (Other name for: letrozole)

**Femara :** A drug used to treat certain types of breast cancer in postmenopausal women. It is also being studied in the treatment of other types of cancer. Femara lowers the amount of estrogen made by the body. This may stop the growth of cancer cells that need estrogen to grow. Femara is a type of aromatase inhibitor. Also called letrozole.

**Femest:** (Other name for: conjugated estrogens)

**Feminone:** (Other name for: ethinyl estradiol)

**femto-:** Prefix used in the SI system meaning "multiply by  $10^{-15}$ ". For example 22 fg means  $22 \times 10^{-15}$ g.

**fen:** A type of wetland that accumulates peat deposits; they are less acidic than bogs, deriving most of their water from groundwater rich in calcium and magnesium.

**fenfluramine:** Amphetamine-like component of fen-phen that suppresses appetite by increasing serotonin levels in the brain.

**fenofibrate:** A synthetic phenoxy-isobutyric acid derivative and prodrug with antihyperlipidemic activity. Fenofibrate is hydrolyzed in vivo to its active metabolite fenofibric acid that binds to and activates peroxisome proliferator activated receptor alpha (PPAR $\alpha$ ), resulting in the activation of lipoprotein lipase and reduction of the production of apoprotein C-III, an inhibitor of lipoprotein lipase activity. Increased lipolysis and a fall in plasma triglycerides, in turn, leads to the modification of the small, dense low density lipoprotein (LDL) particles into larger

particles that are catabolized more rapidly due to a greater affinity for cholesterol receptors. In addition, activation of PPARalpha also increases the synthesis of apoproteins A-I, A-II, and high density lipoprotein (HDL)-cholesterol. Overall, fenofibrate reduces total cholesterol, LDL cholesterol, apolipoprotein B, total triglycerides and triglyceride rich lipoprotein (VLDL) while increasing HDL cholesterol.

**fenofibrate :** A drug used to treat high levels of cholesterol and triglycerides in the blood. Fenofibrate is being studied in the treatment of advanced cancers in young patients and in the treatment of other conditions. It is a type of antilipidemic agent. Also called Lofibra and TriCor.

**fenretinide:** An orally-active synthetic phenylretinamide analogue of retinol (vitamin A) with potential antineoplastic and chemopreventive activities. Fenretinide binds to and activates retinoic acid receptors (RARs), thereby inducing cell differentiation and apoptosis in some tumor cell types. This agent also inhibits tumor growth by modulating angiogenesis-associated growth factors and their receptors and exhibits retinoid receptor-independent apoptotic properties. or A substance being studied in the treatment and prevention of some types of cancer. Fenretinide may cause ceramide (a wax-like substance) to build up in tumor cells and kill them. It is a type of retinoid, which are substances related to vitamin A.

**fenretinide lipid matrix:** An orally bioavailable powder formulation of a synthetic phenylretinamide analogue of retinol with potential chemopreventive and antineoplastic activities. Fenretinide binds to and activates retinoic acid receptors (RARs), thereby inducing cell differentiation and apoptosis in some tumor cell types, including those of the colon, breast, prostate, and neuroblastoma. Independent of RAR activation, this agent also modulates gene expression that leads to ceramide-induced, caspase-independent programmed cell death (PCD) via effectors such as ganglioside GD3 and reactive oxygen species (ROS). Compared to the capsule form, the powder contains a mixture of wheat flour, fats, and sugar that may contribute to the enhanced bioavailability of fenretinide. Check for active clinical trials using this agent.

**fenretinide LXS :** A powdered form of fenretinide that is being studied in the treatment of neuroblastoma. It may be used by the body more easily than the pill form. Fenretinide may cause ceramide (a wax-like substance)

to build up in tumor cells and kill them. It is a type of retinoid, which are substances related to vitamin A. Also called fenretinide Lym-X-Sorb.

**Fenretinide Lym-X-Sorb:** (Other name for: fenretinide lipid matrix) or A powdered form of fenretinide that is being studied in the treatment of neuroblastoma. It may be used by the body more easily than the pill form. Fenretinide may cause ceramide (a wax-like substance) to build up in tumor cells and kill them. It is a type of retinoid, which are substances related to vitamin A. Also called fenretinide LXS.

**fentanyl buccal soluble film:** A transmucosal formulation consisting of a small, mucoadhesive, bioerodible polymer disc formulated with the citrate salt of fentanyl, a synthetic anilidopiperidine opioid with analgesic activity. Upon application, fentanyl buccal soluble film rapidly releases fentanyl which is quickly absorbed into the systemic circulation. Fentanyl selectively binds to and activates mu-opioid receptors in the central nervous system (CNS), thereby mimicking the effects of endogenous opiates.

**fentanyl citrate:** The citrate salt of fentanyl, a synthetic opioid related to the phenylpiperidines with analgesic and anesthetic properties. Fentanyl exerts its analgesic effect by selectively binding to the mu-opioid receptor in the central nervous system (CNS), thereby mimicking the effects of endogenous opiates. Additional pharmacological effects of fentanyl include anxiolysis, euphoria, feelings of relaxation, respiratory depression, constipation, miosis, and cough suppression. or A drug used to treat severe cancer pain that occurs even though the patient is already taking opioids. It is also used during anesthesia for surgery. Fentanyl citrate binds to opioid receptors in the central nervous system. It is a type of analgesic agent and a type of opioid.

**fentanyl citrate buccal tablet:** A tablet formulation containing the citrate salt of the synthetic anilidopiperidine opiate fentanyl with analgesic activity. Upon contact with the buccal mucosa, fentanyl citrate buccal tablet rapidly releases fentanyl which is quickly absorbed into the systemic circulation. Fentanyl selectively binds to and activates mu-opioid receptors in the central nervous system (CNS), mimicking the effects of endogenous opioids.

**fentanyl citrate pectin-based nasal spray:** A pectin-based, aqueous nasal spray containing the citrate salt of fentanyl, a synthetic lipophilic phenylpiperidine opioid, with analgesic activity. Fentanyl binds to and

stimulates mu-opioid receptors in the central nervous system (CNS), mimicking the analgesic effect of endogenous opiates. Upon intranasal administration of this agent and contact with the nasal mucosa, pectin in low-viscosity aqueous solution gels in the presence of mucosal calcium ions; from this intranasal gel delivery platform, fentanyl is released into the systemic circulation in a relatively rapid but controlled and sustained manner. Check for active clinical trials using this agent.

**fentanyl citrate-containing nasal spray:** A nasal spray containing a phosphate-buffered solution of the citrate salt form of fentanyl, a short-acting, synthetic, lipophilic anilidopiperidine opioid, with analgesic activity. Upon applying one puff in the nostril, the fentanyl is rapidly absorbed through the nasal mucosa and selectively binds to and activates mu-opioid receptors in the central nervous system (CNS), mimicking the effects of endogenous opiates. Due to its quick onset and short duration of action, the administration of fentanyl nasal spray may relieve breakthrough pain in adults already receiving maintenance opioid therapy for chronic pain. Check for active clinical trials using this agent.

**fentanyl matrix transdermal patch:** A transdermal formulation containing the synthetic phenylpiperidine opioid agonist fentanyl, with analgesic activity. Upon topical administration, fentanyl diffuses from the transdermal patch through the skin, is transported via the systemic circulation, and selectively binds to the mu-receptor in the central nervous system (CNS), mimicking the effects of endogenous opiates. Stimulation of the mu-receptor inhibits adenylyl cyclase activity, induces opening of G-protein-coupled inwardly rectifying potassium (GIRK) channels, and blocks the opening of N-type voltage-gated calcium channels, resulting in hyperpolarization and reduced neuronal excitability; in addition, neuronal release of neurotransmitters such as substance P, GABA, dopamine, acetylcholine and noradrenaline may decrease.

**fentanyl sublingual spray:** A sublingual preparation of a short-acting, synthetic anilidopiperidine opioid with analgesic activity. After rapid sublingual transmucosal absorption, the active ingredient fentanyl selectively binds to and activates mu-opioid receptors in the central nervous system (CNS), mimicking the effects of endogenous opiates. or A form of the drug fentanyl that is sprayed under the tongue and then absorbed into the blood. It is being studied in the treatment of breakthrough pain (pain

that occurs even when pain-control medication is already being used) in cancer patients. Fentanyl is a type of opioid analgesic.

**Fentora:** (Other name for: fentanyl citrate buccal tablet)

**FEP:** FEP Fluorinated ethylene propylene, or FEP, is an alternative to Teflon® tubing. (Teflon® is a registered trademark of DuPont.) FEP tubing is known for chemical resistance and ability to withstand a large range of temperatures.

**FEP (fluorinated ethylene propylene):** A thermoplastic member of the fluoropolymer family. FEP has excellent nonstick and non-wetting properties.

**Feraheme:** (Other name for: ferumoxytol non-stoichiometric magnetite)

**Feridex:** (Other name for: ferumoxides injectable solution)

**Fermentation:** The energy-generating breakdown of glucose or related molecules by a process that does not require molecular oxygen. OR an anaerobic process in which energy can be released from glucose even though oxygen is not available; occurs in yeast cells. OR The process in which an organic substance is converted into another organic substance and carbon dioxide to generate energy by a (micro)organism in the absence of oxygen. "Fermentation" comes from the latin word for yeast, a kind of single-celled fungus. The most common fermentation reaction is the one by which glucose is converted into ethanol and carbon dioxide. This series of reactions is made use of humans when they use yeasts to make alcoholic drinks. It is easy to go wrong and make some different kind of alcohol (e.g., butanol), depending on the microorganisms involved, which is one reason you occasionally hear of deaths from drinking illicitly produced alcohol. OR Fermentation is the breakdown of glucose (and other sugars) into alcohol (ethanol) and carbon dioxide by enzymes in yeast (in the absence of oxygen). OR A chemical reaction whereby an enzyme helps convert one chemical substance into another. OR A type of heterotrophic metabolism in which an organic compound rather than oxygen is the terminal electron (or hydrogen) acceptor. Less energy is generated from this incomplete form of glucose oxidation than is generated by respiration, but the process supports anaerobic growth. OR An ATP-generating process in which organic compounds act as both donors and acceptors of electrons; fermentations can take place in the absence of oxygen. OR A class of biochemical reactions that break down complex organic molecules (such as carbohydrates) into

simpler materials (such as ethanol, carbon dioxide, and water).

Fermentation reactions are catalyzed by enzymes. OR Energy-yielding anaerobic breakdown of a nutrient molecule, such as glucose, without net oxidation; yields lactate, ethanol, or some other simple product.

**fermented soybean protein beverage:** A fermented soybean-derived phytochemical beverage with potential antineoplastic activity. Fermented soybean protein beverage is reported to exhibit immunostimulatory, anti-viral, pro-apoptotic, anti-angiogenic, anti-proliferative, and anti-inflammatory activities and to enhance the cytotoxic effects of natural killer (NK) cells. The fermentation process is reported to hydrolyze many soybean proteins into amino acids and nitrogen-rich compounds and to protect and enhance the activities of isoflavones such as genistein, protease inhibitors, saponins, phytosterols, inositol hexaphosphate, and other beneficial dietary nutrients and micronutrients found in soybeans. Check for active clinical trials using this agent.

**fermented wheat germ extract:** An extract of fermented wheat germ containing a concentrated, standardized amount of methoxy-substituted benzoquinones with immunomodulatory and potential antineoplastic activities. Fermented wheat germ extract (FWGE) inhibits the activities of several enzymes involved in de novo nucleic acid synthesis and in supplying the dNTP pool required for DNA replication. This agent also induces caspase-3-mediated inactivation of poly(ADP)ribose polymerase (PARP), a key enzyme in DNA repair that is overexpressed in many cancers; cleavage of PARP prevents DNA repair and induces apoptosis. The benzoquinones may contribute to the immunomodulatory effects of FWGE, down-regulating major histocompatibility complex class I (MHC-1) protein on the surface of cancer cells, allowing natural killer (NK) cell surveillance; and up-regulating the expression of intracellular adhesion molecule 1 (ICAM-1) on tumor endothelial cells. Check for active clinical trials using this agent.

**Fermium:** Symbol: "Fm" Atomic Number: "100" Atomic Mass: (257)amu. Fermium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. It is a radioactive and unstable element and you will not find it in use anywhere. The element was named after the physicist Enrico Fermi.

**Ferndex:** (Other name for: dextroamphetamine sulfate)

**ferric:** Deprecated. 1. the iron(III) ion,  $\text{Fe}^{3+}$ . 2. A compound that contains iron in the +3 oxidation state.

**ferric carboxymaltose solution:** A parenteral iron solution containing ferric iron complexed with carboxymaltose polymers, used in parenteral iron-replacement therapy. Upon administration, ferric carboxymaltose is removed from plasma by the reticuloendothelial system. Subsequently, ferric iron binds to transferrin or is stored as ferritin. Transferrin-bound iron is transported in the plasma to the liver, spleen and bone marrow, where it is incorporated into hemoglobin, and to muscle, where it is incorporated into myoglobin.

**Ferric sulfate :** Ferric sulfate (PIX) is  $\text{Fe}^{3+}$  -based inorganic coagulant, which is produced from iron raw material and sulphuric acid. The iron raw material is often copperas, which is a by-product from titanium dioxide - pigment manufacturing. The ferric sulfate is used both in drinking water and waste water treatment to remove impurities from the water.

**Ferrihemoglobin:** Hemoglobin in which the iron component of the heme prosthetic group is in the ferric (+3) state; ferrihemoglobin cannot bind oxygen. OR Hemoglobin in which the iron component of the heme prosthetic group is in the ferrous (+2) state; ferrohemoglobin is capable of binding oxygen.

**Ferriprox:** (Other name for: deferiprone)

**ferritin :** A protein that binds to iron and stores it for use by the body. Ferritin is found in cells in the liver, spleen, bone marrow, and other tissues.

**Ferrlecit:** (Other name for: sodium ferric gluconate complex in sucrose) or A form of the mineral iron that is used to treat anemia caused by low amounts of iron in the blood. Anemia is a condition in which the number of red blood cells is below normal. Ferrlecit is a type of hematinic and a dietary supplement. Also called sodium ferric gluconate.

**ferroin:** A blood-red complex of  $\text{Fe}^{2+}$  ion with 1,10-phenanthroline, used as a redox indicator. Ferroin changes from red to pale blue when oxidized.

**ferromagnetism:** Ferromagnetic materials exhibit magnetism even in the absence of an external magnetic field. Ferromagnetic materials contain regions where many paramagnetic atoms or ions have magnetic moments that are aligned in the same direction. Iron, cobalt, nickel, and gadolinium are elements that can exhibit ferromagnetic behavior.

**ferrous:** Deprecated. 1. the iron(II) ion,  $\text{Fe}^{2+}$ . 2. A compound that contains iron in the +2 oxidation state.

**ferrous fumarate:** The fumarate salt form of the mineral iron. Administration of ferrous fumarate results in elevation of serum iron concentration, which is then assimilated into hemoglobin, required for the transport of oxygen, or trapped in the reticuloendothelial cells for storage. This agent is used as a dietary supplement, and to prevent or treat iron deficiency related syndromes.

**ferrous sulfate:** A sulfate salt of mineral iron formulated for oral administration and used as a dietary supplement, ferrous sulfate is absorbed in the stomach and small intestine and combines with apoferritin to form ferritin, which is stored in the liver, spleen, red bone marrow, and intestinal mucosa. Important in transport of oxygen by hemoglobin to the tissues, iron is also found in myoglobin, transferrin, and ferritin, and is a component of many enzymes such as catalase, peroxidase, and cytochromes. or A form of the mineral iron that is used to treat anemia caused by low amounts of iron in the blood. Anemia is a condition in which the number of red blood cells is below normal. Ferrous sulfate is a type of hematinic and a type of dietary supplement.

**fertile :** Able to produce children.

**Fertile material:** A material, which is not itself fissile (fissionable by thermal neutrons), that can be converted into a fissile material by irradiation in a reactor. There are two basic fertile materials: uranium-238 and thorium-232. When these fertile materials capture neutrons, they are converted into fissile plutonium-239 and uranium-233, respectively.

**fertility :** The ability to produce children.

**Fertility factor:** A bacterial plasmid that contains genes required for conjugation.

**fertility preservation :** A type of procedure used to help keep a person's ability to have children. A fertility preservation procedure is done before a medical treatment that may cause infertility, such as radiation therapy or chemotherapy. Examples of fertility preservation procedures include sperm banking, egg freezing, in vitro fertilization with embryo freezing, and certain types of surgery for cervical and ovarian cancer.

**fertilized egg cell:** an egg cell that has been fertilized by a sperm cell.

**ferumoxides injectable solution:** An injectable, aqueous colloid solution containing a non-stoichiometric magnetite core of superparamagnetic iron oxide (SPIO) coated with dextran administered as a magnetic resonance imaging (MRI) contrast media. Upon intravenous administration, ferumoxides accumulates in phagocytic reticuloendothelial system (RES) cells of the liver (Kupffer cells). When exposed to a strong external magnetic field, ferumoxides exhibits enhanced T2 relaxation, resulting in signal loss in normal tissues (image darkening) on mid T1/T2 or strongly T2-weighted images. Tissues with decreased RES function such as metastases, primary liver cancer, cysts and various benign tumors, adenomas, and hyperplasia, retain their native signal intensity, consequently the contrast between normal tissue (with image darkening) and abnormal tissue is increased.

**ferumoxsil oral suspension:** An orally administered aqueous suspension of silicone-coated, superparamagnetic iron oxide used as a magnetic resonance imaging (MRI) contrast agent. After oral administration, ferumoxsil fills the stomach and intestines. Upon exposure to the strong external magnetic field during MRI, ferumoxsil exhibits strong T1 relaxation properties and a strongly varying local magnetic field; T2 relaxation is enhanced, thereby darkening the contrast agent-containing portion of the gastrointestinal tract. Delineation of the bowel is thus enhanced, distinguishing bowel from organs and tissues adjacent to the upper regions of the gastrointestinal tract.

**ferumoxtran-10:** A synthetic ultrasmall superparamagnetic iron oxide composed of dextran-coated iron oxide nanoparticles (also known as 'ultrasmall particulate iron oxides' or USPIO). Ferumoxtran-10, which accumulates in non-cancerous lymphatic tissue, is used as a molecular resonance imaging (MRI) contrast agent. or A substance being studied as a way of improving magnetic resonance imaging (MRI) in diagnosing cancer and finding lymph nodes to which cancer has spread. Ferumoxtran-10 is made of nanoparticles (ultrasmall pieces) of iron oxide coated with dextran (a type of sugar). It is injected into the blood of the patient and the particles collect in lymph nodes, liver, spleen, or brain tissue where they can be seen using MRI. Ferumoxtran-10 later breaks down and passes from the body in urine.

**ferumoxytol :** A nanoparticle form of iron made in the laboratory that is being studied for use in iron replacement therapy, and as a contrast agent for magnetic resonance imaging. Contrast agents are substances that are injected into the body and taken up by certain tissues, making the tissues easier to see in imaging scans.

**ferumoxytol non-stoichiometric magnetite:** A superparamagnetic iron oxide nanoparticle coated with a low molecular weight semi-synthetic carbohydrate, polyglucose sorbitol carboxymethyl ether, with potential anti-anemic and imaging properties. After intravenous administration, ferumoxytol replaces iron stores with fewer side effects compared to the use of oral iron. In addition, this agent generates T1 relaxation, producing a magnetic field and enhancing T2 relaxation, thereby darkening contrast media-containing structures in magnetic resonance imaging (MRI). Due to small particle size, ferumoxytol remains in the intravasculature for a prolonged period and so may be used as a blood pool agent.

**fesoterodine fumarate:** The fumarate salt form of fesoterodine, a competitive muscarinic receptor antagonist with muscle relaxant and urinary antispasmodic properties. Fesoterodine is rapidly hydrolyzed in vivo into its active metabolite 5-hydroxymethyltolterodine, which binds and inhibits muscarinic receptors on the bladder detrusor muscle, thereby preventing bladder contractions or spasms caused by acetylcholine. This results in the relaxation of bladder smooth muscle and greater bladder capacity, in addition to a reduction in involuntary muscle contractions and involuntary loss of urine. The active metabolite does not interact with alpha-adrenergic, serotonergic, histaminergic and excitatory amino acid receptors and is eliminated via renal excretion.

**fetal :** Having to do with a fetus. A fetus is an unborn baby that develops and grows inside the uterus. In humans, the fetal period begins 8 weeks after fertilization of an egg by a sperm and ends at birth.

**fetch:** length of open ocean for wind to create waves. OR the distance that wind travels over a surface of water.

**fetus:** (foetus)In medicine, this term is applied to the young of mammals when fully developed in the womb. In humans, this stage is reached after about 3 months of pregnancy. Prior to this, the developing mammal is in embryo stage. OR results from a developing embryo at about eight weeks when the embryo is somewhat human looking and the remaining

development consists chiefly of growth and maturation. OR In humans, an unborn baby that develops and grows inside the uterus (womb). The fetal period begins 8 weeks after fertilization of an egg by a sperm and ends at the time of birth.

**fever :** An increase in body temperature above normal (98.6 degrees F), usually caused by disease.

**fexofenadine :** A drug used to treat certain allergy symptoms. It blocks a chemical released during an allergic response that causes itching, sneezing, runny nose, wheezing, and watery eyes. It is a type of antihistamine. Also called Allegra.

**fexofenadine hydrochloride:** The hydrochloride salt form of fexofenadine, a carboxylated metabolic derivative of terfenadine and third generation selective histamine H1-receptor antagonist with antihistaminic and non-sedative effects. Fexofenadine competitively binds peripheral H1-receptors, thereby stabilizing an inactive conformation of the receptor. Consequently histamine binding and activity as a result of mast-cell degranulation followed by the release of multiple inflammatory mediators, such as interleukins, prostaglandin and leukotriene precursors, is blocked, thereby preventing the triggering of pro-inflammatory pathways.

**FFT:** Fast Fourier Transform.

**FGF/FGFR pathway inhibitor E7090:** An inhibitor of the fibroblast growth factor (FGF)/fibroblast growth factor receptor (FGFR) pathway, with potential antineoplastic activity. Upon administration, the FGF/FGFR pathway inhibitor E7090 selectively interferes with the binding of FGF to FGFR through an as of yet not fully elucidated mechanism. This inhibits FGFR-mediated signaling and leads to both cell proliferation inhibition and cell death in FGFR-overexpressing tumor cells. FGFR is a receptor tyrosine kinase essential to tumor cell proliferation, differentiation, and survival; its expression is upregulated in many tumor cell types.

**FGF401 inhibitor FGF401:** An inhibitor of human fibroblast growth factor receptor 4 (FGFR4), with potential antineoplastic activity. Upon administration, FGF401 binds to and inhibits the activity of FGFR4, which leads to an inhibition of tumor cell proliferation in FGFR4-overexpressing cells. FGFR4 is a receptor tyrosine kinase upregulated in certain tumor cells and involved in tumor cell proliferation, differentiation, angiogenesis, and survival.

**FGFR inhibitor ASP5878:** An orally bioavailable inhibitor of the fibroblast growth factor receptor (FGFR), with potential antineoplastic activity. Upon oral administration, FGFR inhibitor ASP5878 binds to and inhibits FGFR, which results in the inhibition of FGFR-mediated signal transduction pathways. This inhibits proliferation in FGFR-overexpressing tumor cells. FGFR, a family of receptor tyrosine kinases upregulated in many tumor cell types, plays a key role in cellular proliferation and survival.

**FGFR inhibitor AZD4547:** An orally bioavailable inhibitor of the fibroblast growth factor receptor (FGFR) with potential antineoplastic activity. FGFR inhibitor AZD4547 binds to and inhibits FGFR, which may result in the inhibition of FGFR-related signal transduction pathways, and, so, the inhibition of tumor cell proliferation and tumor cell death. FGFR, up-regulated in many tumor cell types, is a receptor tyrosine kinase essential to tumor cellular proliferation, differentiation and survival.

**FGFR inhibitor debio 1347:** An orally bioavailable inhibitor of the fibroblast growth factor receptor subtypes 1 (FGFR-1), 2 (FGFR-2) and 3 (FGFR-3), with potential antineoplastic activity. FGFR inhibitor debio 1347 binds to and inhibits FGFR-1, -2, and -3, which result in the inhibition of FGFR-mediated signal transduction pathways. This leads to the inhibition of both tumor cell proliferation and angiogenesis, and causes cell death in FGFR-overexpressing tumor cells. FGFR, a family of receptor tyrosine kinases upregulated in many tumor cell types, is essential for tumor cellular proliferation, differentiation and survival.

**FGFR inhibitor INCB054828:** An orally bioavailable inhibitor of the fibroblast growth factor receptor (FGFR) types 1, 2, and 3 (FGFR1/2/3), with potential antineoplastic activity. FGFR inhibitor INCB054828 binds to and inhibits FGFR1/2/3, which may result in the inhibition of FGFR1/2/3-related signal transduction pathways. This inhibits proliferation in FGFR1/2/3-overexpressing tumor cells. FGFR, a family of receptor tyrosine kinases upregulated in many tumor cell types, plays a key role in cellular proliferation, migration, and survival.

**FGFR inhibitor TAS-120:** An orally bioavailable inhibitor of the fibroblast growth factor receptor (FGFR) with potential antineoplastic activity. FGFR inhibitor TAS-120 selectively and irreversibly binds to and inhibits FGFR, which may result in the inhibition of both the FGFR-

mediated signal transduction pathway and tumor cell proliferation, and increased cell death in FGFR-overexpressing tumor cells. FGFR is a receptor tyrosine kinase essential to tumor cell proliferation, differentiation and survival and its expression is upregulated in many tumor cell types.

**FGFR1 receptor antagonist HGS1036:** A soluble fusion protein consisting of the extracellular domain of human fibroblast growth factor receptor 1 (FGFR1) fused to the Fc portion of human immunoglobulin G1 (IgG1) with potential antineoplastic and anti-angiogenic activities. FGFR1 receptor antagonist FP-1039 prevents FGFR ligands, such as FGF1, FGF2, FGF4, from binding to their cognate receptors, thereby inhibiting the activation of the related FGFR tyrosine kinases. Inhibition of FGFR1 by this agent may retard tumor cell proliferation and induce tumor cell death. FP-1039 may also inhibit vascular endothelial growth factor (VEGF)-induced angiogenesis. FGFR1 is a receptor tyrosine kinase upregulated in certain tumor cells and involved in tumor cellular proliferation, differentiation, angiogenesis, and survival; most ligands that bind to FGFR1 also bind to the related receptors FGFR3 and FGFR4.

**FGFR4 inhibitor BLU-554:** An orally bioavailable inhibitor of human fibroblast growth factor receptor 4 (FGFR4), with potential antineoplastic activity. Upon oral administration, BLU-554 specifically binds to and blocks the binding of the ligand FGF19 to FGFR4. This prevents the activation of FGFR4, inhibits FGFR4-mediated signaling and leads to an inhibition of tumor cell proliferation in FGFR4-overexpressing cells. FGFR4 is a receptor tyrosine kinase and is involved in tumor cell proliferation, differentiation, angiogenesis, and survival. FGF19 is overexpressed by certain tumor cell types.

**FIA (flow injection analysis) :** well-established technique of chemical analysis, which involves the injection of a sample plug into a flowing reagent stream with subsequent detection (electrochemical or spectroscopic) of the reaction zone further downstream.

**FIBER:** This term usually refers to thin fibers of glass which are used to reinforce both thermoplastic and thermosetting materials. One-inch long fibers are occasionally used, but the more commonly used fiber lengths are 1/2" and 1/4", or less. OR a thread or threadlike structure such as cellulose, wool, silk, or glass yarn.

**fiber :** In food, fiber is the part of fruits, vegetables, legumes, and whole grains that cannot be digested. The fiber in food may help prevent cancer. In the body, fiber refers to tissue made of long threadlike cells, such as muscle fiber or nerve fiber.

**Fiber Show:** Strands or bundles of fibers that are not covered by resin and that are at or above the surface of a reinforced plastic.

**fiberoptic :** Describes the use of a coated, thin, clear, glass or plastic fiber that can carry light and send information, including images. In medicine, flexible fiberoptic instruments are used to look inside the body. Fiberoptics are also used to deliver laser light to tumors injected with a type of drug that kills cancer cells when it is exposed to laser light.

**Fiberoptic chemical sensors :** optical sensors, which use fiber optics to guide light beam from a source of light to an optrode and from an optrode to a detector.

**Fibrous plaster:** Plaster slabs mouldings or ornament made up from wood laths course canvas and plaster and case in the desired form before fixing. Also called 'stick and rag work'.

**Fibre:** 1) a specific form of chemically jelled fibrous materials manufactured in sheets, rods and tubes. 2) commonly used interchangeably with fiber.

**Fibre board:** Building board made from fibrous material such as wood pulp or other vegetable fibre. The term is normally used for the hard-pressed board the soft board being termed 'insulation board'.

**Fibre brushes:** Brushes with a vegetable fibre filling and which are suitable for applying limewash because the fibres do not soften in contact with lime unlike bristles. Fibre is often used together with pure bristle and are often very effective for applying textured masonry paints.

**Fibre placement:** A hybrid between the filament winding and tape laying processes. A fibre placement machine or tow placement machine allows individual tows of prepreg to be placed.

**fibrin :** A protein involved in forming blood clots in the body. It is made from the protein fibrinogen and helps stop bleeding and heal wounds. Sometimes fibrin-like substances may be found in higher than normal amounts in the blood and urine of patients with some types of cancer or other conditions. Measuring the amount of these substances may help to

check how well cancer treatment is working or if the cancer has gotten worse. Fibrin is a type of tumor marker.

**fibrin sealant:** A plasma-derived fibrin biomatrix preparation consisting of two separate solutions that are combined on application. The sealer protein solution contains clottable human fibrinogen and bovine aprotinin, a fibrinolysis inhibitor; the thrombin solution contains human thrombin and calcium chloride. When the solutions are combined, a clot is formed, reproducing the final stages of the coagulation cascade. Check for active clinical trials using this agent. OR A substance used during surgery to help heal wounds. It contains proteins found in human blood that cause blood to clot. When fibrin sealant is placed on a wound, a clot forms. Fibrin sealant is being studied as a way to improve healing after lymph node removal in patients with cancer. It is a type of surgical glue.

**fibrinogen :** A protein involved in forming blood clots in the body. It is made in the liver and forms fibrin. Fibrin is the main protein in a blood clot that helps stop bleeding and heal wounds. Sometimes fibrin-like substances may be found in higher than normal amounts in the blood and urine of patients with some types of cancer or other conditions. Measuring the amount of these substances may help to check how well cancer treatment is working or if the cancer has gotten worse. Fibrinogen is a type of tumor marker.

**fibroadenoma :** A benign (not cancer) tumor that usually forms in the breast from both fibrous and glandular tissue. Fibroadenomas are the most common benign breast tumors.

**fibroblast:** A cell of the connective tissue that secretes connective tissue proteins such as collagen. OR A connective tissue cell that makes and secretes collagen proteins.

**Fibrocaps:** (Other name for: fibrin sealant)

**fibrocystic breast changes :** A common condition marked by benign (not cancer) changes in breast tissue. These changes may include irregular lumps or cysts, breast swelling or discomfort, sensitive nipples, and itching. These symptoms may change throughout the menstrual cycle and usually stop after menopause. Fibrocystic breast changes can occur at any age, but are most common in younger women. This condition does not increase the risk of breast cancer.

**fibrofolliculoma** : A benign tumor of the hair follicle that appears as a small, whitish papule. Fibrofolliculomas are typically found on the face, ears, neck, and upper torso. They are pathognomonic for Birt-Hogg-Dubé syndrome, a hereditary condition associated with the development of kidney cancer.

**fibroid** : A benign smooth-muscle tumor, usually in the uterus or gastrointestinal tract. Also called leiomyoma.

**fibromatosis** : A condition in which multiple fibromas develop. Fibromas are tumors (usually benign) that affect connective tissue.

**fibrosarcoma** : A type of soft tissue sarcoma that begins in fibrous tissue, which holds bones, muscles, and other organs in place.

**fibrosis** : The growth of fibrous tissue. Or Containing or resembling fibers.

**fibrous** : Containing or resembling fibers.

**fibrous proteins**: Insoluble proteins that serve in a protective or structural role; contain polypeptide chains that generally share a common secondary structure.

**ficlatuzumab**: A monoclonal antibody directed against human hepatocyte growth factor (HGF) with potential antineoplastic activity. Ficlatuzumab binds to the soluble ligand HGF, preventing the binding of HGF to its receptor c-Met and activation of the HGF/c-Met signaling pathway, which may result in cell death in c-Met-expressing tumor cells. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis.

**fidaxomicin**: A narrow-spectrum, 18-membered macrolide antibiotic isolated from the actinomycete *Dactylosporangium aurantiacum* subsp. *hamdenensis* with potential antibacterial activity. Although the exact mechanism of action has yet to be fully elucidated, fidaxomicin may bind to and inhibit bacterial DNA-dependent RNA polymerase, thereby inhibiting the initiation of bacterial RNA synthesis. When orally administered, this agent is minimally absorbed into the systemic circulation, acting locally in the gastrointestinal tract. Tiacumicin B appears to be active against pathogenic Gram-positive bacteria, such as clostridia, enterococci, and staphylococci, but does not appear to be active against other beneficial intestinal bacteria.

**Fidelin:** (Other name for: prasterone)

**fiducial marker :** A medical device or small object placed in or on the body to mark an area for radiation treatment or surgery. For example, tiny gold seeds may be put into the prostate to mark a tumor before radiation therapy. This allows the doctor to give higher doses of radiation to the tumor with less harm to nearby healthy tissue.

**field:** an area where there is a measurable amount of a specific value at every point.

**Field Specimen:** A field specimen is a sample taken from outside of the lab. This could refer to a piece of rock, plant life, or an organism.

**fifth cranial nerve :** The main sensory nerve of the head and face, and the motor nerve of the muscles used in chewing. Also called trigeminal nerve.

**fight-or-flight syndrome :** A group of changes that occur in the body to help a person fight or take flight in stressful or dangerous situations. This is the body's way of helping to protect itself from possible harm. During fight or flight, certain hormones, such as adrenaline and cortisol, are released into the blood. This causes an increase in blood pressure, heart rate, and breathing. Other changes include an increase in blood sugar, alertness, muscle tension, and sweating.

**figitumumab:** A human monoclonal antibody directed against the insulin-like growth factor type I receptor (IGF1R) with potential antineoplastic activity. Figitumumab selectively binds to IGF1R, preventing insulin-like growth factor type 1 (IGF1) from binding to the receptor and subsequent receptor autophosphorylation. Inhibition of IGF1R autophosphorylation may result in a reduction in receptor expression on tumor cells that express IGF1R, a reduction in the anti-apoptotic effect of IGF, and inhibition of tumor growth. IGF1R is a receptor tyrosine kinase expressed on most tumor cells and is involved in mitogenesis, angiogenesis, and tumor cell survival.

**figurative idiom:** expressions so common that they have become clichés.

**FIHP:** A rare inherited condition in which one or more tumors form in the parathyroid glands (four pea-sized organs found on the thyroid) and cause them to make too much parathyroid hormone. The increased parathyroid hormone causes a loss of calcium from the bones and too much calcium in the blood. Also called familial isolated hyperparathyroidism.

**Filament:** 1) Fiber characterized by extreme length. 2) The resistance wire through which filament current is sent in a thermionic tube to produce the heat required for electron emissions. OR A single textile element of small diameter and very long length, considered as continuous.

**Filament Winding:** Resin impregnated robbing or single strands of glass or other reinforcement wound in a pre-determined pattern onto a suitable form or mandrel and then cured. OR A process for manufacturing FRP parts in which dry fibre rovings are pulled through a resin bath prior to winding on a mandrel. Prepregged roving or tows can also be filament wound. Curing is usually carried out in an oven with or without a vacuum bag.

**Filamentous organisms:** Organisms that grow in a thread or filamentous form. Common types are Thiobacillus, Actinomyces, and Cyanobacteria (aka blue-green algae). This is a common cause of sludge bulking in the activated sludge process. Various known as "pond scum", "blue-green algae", or "moss", when it appears in a pond/lake, and confused with algae because it looks a lot like algae. Cyanobacteria forms a symbiotic relationship with some varieties of algae, making the combination very difficult to combat in lakes and ponds. Filamentous organisms and Actinomyces will naturally stick to solid surfaces. Common types of Cyanobacteria are: Oscillatoria, Anabaena, and Synechococcus. Other filament formers include: Spirogyra, Cladophora, Rhizoclonium, Mougeotia, Zygnema and Hydrodictyon. Nocardia is another filament former, which causes foaming and interferes with flocculation in a waste treatment plant.

**filgrastim:** A recombinant, non-glycosylated cytokine which is chemically identical to or similar to the endogenous cytokine human granulocyte colony-stimulating factor (G-CSF) isoform B, with immunomodulating activity. Filgrastim binds to and activates G-CSF receptors with the same biological activity and stability as the endogenous cytokine, thereby controlling the production, differentiation, and function of neutrophilic granulocyte progenitors. Check for active clinical trials using this agent. or A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. It is also used to treat chronic neutropenia and to prepare the blood for the collection of certain types of blood cells. Filgrastim is also

used to help prevent damage to the bone marrow in patients who were exposed to very high doses of certain types of radiation. Filgrastim helps the body make more white blood cells. It is a type of colony-stimulating factor. Also called G-CSF, granulocyte colony-stimulating factor, Neupogen, and Zarxio.

**filgrastim-primed peripheral blood progenitor cells:** Peripheral blood progenitor cells (PBPC) primed with a recombinant form of the human granulocyte colony-stimulating factor (filgrastim). As a hematopoietic growth factor, filgrastim is able to mobilize hematopoietic progenitor cells (HPCs) into the peripheral blood which allows for an increased number of HPCs upon collection by leukapheresis. Administration of filgrastim-primed PBPCs following hematopoietic stem cell transplantation provides increased numbers of progenitor cells which may prevent pancytopenia and relapse.

**filgrastim-SD/01 :** A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. Filgrastim-SD/01 is also used to help prevent damage to the bone marrow in patients who were exposed to high doses of certain types of radiation. Filgrastim-SD/01 helps the bone marrow make more white blood cells. It is a form of filgrastim and is able to stay in the body longer. Filgrastim-SD/01 is a type of colony-stimulating factor. Also called Neulasta and pegfilgrastim.

**Fill:** The packing of the cavity or cavities of the mold as required for parts that are free of flash and porosity. OR The packing of material into the mold

**Fill pattern:** the contours of the advance of the material as the cavity fills. (See flow pattern) OR The contour the melt takes sequentially as it fills the cavity. The mold should fill with a straight flow front with no changes in direction throughout filling. Mold-filling analysis software can be used to predict these filling patterns. OR It is a visual history of how a mould fills under a specific set of moulding conditions.

**Fill Point:** The level to which a container must be filled to furnish a designated quantity of the content. OR The level to which a container must be filled to furnish a designated quantity of the contents. OR the level to which a container must be filled to furnish a designated quantity of the contents.

**Fill Pressure:** The amount of pressure required to fill a cavity.

**Fill Time:** Fill time is the time in seconds that it takes to just fill the mould with melt during the filling phase (up to switchover point) of the moulding cycle.

**Fill-and-Wipe:** Parts are molded with depressed designs; after application of paint, surplus is wiped off, leaving paint remaining only in the depressed areas.

**Filled Edges :** Short lengths of wire (any shape) affixed between connectors.

**Filler:** A composition for levelling off the finer defects of a surface often after the coarser defects such as cracks have been made good with a hard stopper. A filler is applied with a filling knife or a broad knife. OR A product used to fill the pores of wood before applying a prime of finish coat. OR A material which is added to plastics to make it less costly. Filler can be inert or can alter various properties of the plastic. OR An additive to resins for the purpose of improving physical properties (impact resistance, hardness, dimensional stability, etc.), or to reduce cost of resin. OR A relatively inert substance added to a plastic compound to reduce its cost and/or to improve physical properties, particularly hardness, stiffness and impact strength. OR A relatively inert substance added to a plastic compound to reduce its cost and/or to improve physical properties, particularly hardness, stiffness and impact strength. OR A cheap, inert substance added to a plastic to make it less costly. Fillers may also improve physical properties, particularly hardness, stiffness, and impact strength. The particles are usually small, in contrast to those of reinforcements but there is some overlap between the function of the two. OR a substance added to a polymer that does not form a chemical bond with the base polymer. These may or may not enhance the performance properties of the final parts, but are usually added to alter density or reduce cost. Glass beads and talc are common fillers.

**Filler Rod :** A rod of any shape (usually round) inserted through a spiral or spirals to fill the mesh. These rods do not connect spirals or belt components. OR A relatively inert substance added to a plastic compound to reduce its cost and/or to improve physical properties, particularly hardness, stiffness and impact strength. OR Fillers are generally inert materials characterized by a low aspect ratio (4D). They are commonly

used as extenders; fillers do in fact improve certain material properties such as wear, resistance, electrical properties, modulus values, HDT and others.

**Fillers:** Pigments and other solids used to alter properties of coatings. OR An inactive substance used to make a product bigger or easier to handle. For example, fillers are often used to make pills or capsules because the amount of active drug is too small to be handled conveniently.

**Fillers & Reinforcements:** Fillers are used to make a resin less costly. They can be inert or they can alter some properties of the plastic. Reinforcements are substances used to strengthen or give dimensional stability to a material.

**Fillet:** A curved face where a rib meets a wall, intended to improve the flow of material and eliminate mechanical stress concentrations on the finished part. OR A rounded filling of the internal angle between two surfaces of a part OR A rounded filling of the internal angle between two surfaces.

**Filling solution :** the solution inside a sensing or reference electrode, that are permanently sealed within the electrode (like the buffer inside a pH electrode) are usually called internal reference solutions to differentiate them from filling solutions.

**Film :** Films are distinguished from sheets in the plastics industry only according to their thickness. In general, films have thicknesses no greater than .030". OR Films are flat materials that are extremely thin in comparison to its length and breadth. Typically, a film has a maximum nominal thickness of 0.25 millimeters. OR Sheet material having a nominal thickness not greater than 10 mil. OR Flat materials that are extremely thin in comparison to its length and breadth. Typically, a film has a maximum nominal thickness of 0.25 millimeters. OR Films are distinguished from sheets in the plastics industry only according to their thickness. In general, films have thicknesses no greater than .030". OR Layer or coat of paint or other finish.

**Film badge:** Photographic film used to measure exposure to ionizing radiation for purposes of personnel monitoring. The film badge may contain two or three films of differing sensitivities, and it may also contain a filter that shields part of the film from certain types of radiation.

**Film Build:** Amount of thickness produced in an application. Millimeters (mils) of dry film per mils of applied wet film.

**Film formation:** The paint's ability to form a continuous dry film. In a latex paint this process is the result of the water's evaporating and the coming together of the binder particles. A continuous dry film repels water.

**film mammography :** The use of x-rays to create a picture of the breast on a film.

**Film Strength:** This term refers to the physical strength of the can liner. Some resins have higher film strength than others. Our can liners are made from highest quality resins, giving them the highest quality film in the market place. Various types of strength testing are: Dart Drop Test - ASTM test used to determine the resistance of a bag to local failure or puncturing. Elmendorf Tear Test - ASTM test used to measure the resistance to tearing. Wet Load Capacity - Measurement of how much wet weight a can liner will hold. Dry Load Capacity - Measurement of how much dry weight a can liner will hold.

**Film Thickness:** Depth or thickness of the dry coating in millimeters.

**FILMS:** In the plastics and packaging industries, films are usually considered to be a web under 10 mils (0.010 inch or 250 microns) thick. Webs greater than 10 mils are considered sheet.

**filter:** To separate an insoluble solid from a liquid by pour it through a solid (usually paper) to trap the solid particles and separate them from the liquid.

**filter :** A material or device that allows certain substances to pass through it, while keeping other substances out. Filters may be used in cigarettes to help trap tar and other harmful substances found in tobacco smoke. In medicine, filter also means to remove toxins, poisons, or other harmful substances from the blood. For example, the kidneys remove waste and extra water from the blood (as urine). The liver also removes harmful substances from the blood.

**Filter aid:** A chemical (usually a polymer) added to water to help remove fine colloidal suspended solids.

**filter backwash:** the reversal of flow through a filter to wash clogged material out of the filter medium and reduce conditions causing loss in flow through the filter.

**Filterability:** Ability to filter a solid; related to particle size and morphology of the solid.

**Filtering (Filtration)** : A method of removing an insoluble solid from a liquid. The liquid particles and any dissolved particles are small enough to fit through the holes in a filter paper. An undissolved solid has particles that are too big to do so.

**Filtrate:** Filtrate is the solid substance remaining after you remove the liquid of a solution. If you mix water and chalk, you can remove the chalk by filtering it out. The chalk left in the filter paper is called the filtrate.

**filtration:** the process of separating solids from a liquid by means of a porous substance through which only the liquid can pass. OR A process in which a slurry of solid particles suspended in a liquid passes through a porous medium. Most of the liquid passes through the medium (e.g., a filter) to form the filtrate, and the solids and some entrained liquid are retained on the filter to form the filter cake. Filtration may also be used to separate solids or liquids from gases.

**Fin:** The web of material remaining in holes or openings in a molded part which must be removed in finishing. OR The web of material remaining in holes or openings in a molded part which must be removed for final assembly

**finasteride:** A synthetic 4-azasteroid compound. Finasteride competitively binds to and inhibits steroid type II 5-alpha-reductase in the prostate gland, liver, and skin, thereby interfering with the enzymatic conversion of testosterone to 5-dihydrotestosterone (DHT) and reducing serum DHT levels. The reduction in serum DHT levels results in diminished stimulation of androgen receptors in the nuclei of prostate cells and, so, diminished prostate cell proliferation. OR A drug used to reduce the amount of male hormone (testosterone) produced by the body.

**fine-needle aspiration biopsy :** The removal of tissue or fluid with a thin needle for examination under a microscope. Also called FNA biopsy.

**Fines:** In the classification of powdered or granular materials such as molding compounds according to particle size, fines are the portion of the material composed of particles which are smaller than a specified size.

**fingerprinting:** See peptide mapping.

**Fingerprinting:** The characteristic two-dimensional paper chromatogram obtained from the partial hydrolysis of a protein or a nucleic acid.

**Finish:** the plastic forming the opening of a container and shaped to accommodate a specific closure. OR A specific type of surface treatment applied to some or all faces of the part. This treatment can range from a smooth, polished finish to a highly contoured pattern that can obscure surface imperfections and create a better looking or better feeling part. OR To complete the secondary work on a molded part so that it is ready for use. Operations such as filing, deflashing, buffing, drilling, tapping, degating are commonly called finishing operations. See SURFACE FINISH.

**Finish coat:** The last coat applied in a multiple coat paint system e.g. primer undercoat with a gloss finishing coat. OR Last coat of paint or other finish.

**Finish Insert:** A removable part of a blow mold to form a specific neck of a plastic bottle. Sometimes called Neck Insert.

**Finite element analysis :** the solution of simultaneous equations for each element with resulting pressure, temperature and elapsed time at each node.

**fiord:** a steep-walled, fingerlike coastal inlet that was carved by glacial action and later flooded by the rising sea.

**Firdapse:** (Other name for: amifampridine)

**Fire Resistance:** The ability of a coating to withstand fire or to protect the substrate to which it is applied from fire damage. OR A coating which will (1) reduce flame spread, (2) resist ignition when exposed to high temperature or (3) insulate the substrate and delay damage to the substrate.

**Firmagon :** A drug that is used to treat advanced prostate cancer and is also being studied in the treatment of benign prostatic hyperplasia. Firmagon binds to gonadotropin-releasing hormone (GnRH) receptors in the pituitary gland. This causes the body to stop making testosterone, which prostate cancer needs to grow. Firmagon is a type of GnRH antagonist. Also called degarelix.

**firn:** rounded granules formed by the compaction of snow by pressure from overlying snow and cemented by ice. OR Material that is transitional between snow and glacier ice. It is formed from snow after passing through one summer melt season and becomes glacier ice after its permeability to liquid water falls to zero.

**first detection:** Identification of a precursor signal, detectable above the noise of natural climatic variability, of a significant change in a climate

parameter and attribution of this change to an increase in atmospheric carbon dioxide concentration. The signal may be estimated by numeric modeling of the climate, and the noise can be estimated using instrumental data. For any modeled signal that is estimated, the corresponding noise can be estimated from observational data, and a signal-to-noise ratio can be calculated to provide a quantitative measure of detectability.

**first ionization energy:** The energy needed to remove an electron from an isolated, neutral atom.

**first law:** The first law states that energy cannot be created or destroyed. Many equivalent statements are possible, including: Internal energy changes depend only on the initial and final states of the system, not on the path taken. The work done during an adiabatic process depends only on the initial and final states of the system, and not on the path taken. The internal energy change for any cyclic process is zero.

**first law of thermodynamics:** The law stating that in all processes, the total energy of the universe remains constant.

**First messengers:** Hormones; molecules that transduce signals from one tissue to another tissue (the target tissue) through the blood.

**first order reaction:** The sum of concentration exponents in the rate law for a first order reaction is one. Many radioactive decays are first order reactions.

**First Pass Effect:** Refers to the extent by which orally administered drugs undergo biotransformation during its first passage through the liver and the intestines, reducing the concentration of the drug that reaches general circulation.

**first-degree relative :** A parent, brother, sister, or child. Also called FDR.

**first-degree relative :** The parents, siblings, or children of an individual. Also called FDR.

**first-line therapy :** The first treatment given for a disease. It is often part of a standard set of treatments, such as surgery followed by chemotherapy and radiation. When used by itself, first-line therapy is the one accepted as the best treatment. If it doesn't cure the disease or it causes severe side effects, other treatment may be added or used instead. Also called induction therapy, primary therapy, and primary treatment.

**first-motion studies:** studies that indicate whether the first rock motion in an earthquake was a push (the rock moved toward the seismograph station) or a pull (the rock moved away from the station).

**Fiscal year (FY):** The 12-month period from October 1 through September 30 used by the Federal Government for budget formulation and execution. The fiscal year is designated by the calendar year in which it ends; for example, FY 2009 runs from October 1, 2008, through September 30, 2009.

**Fischer projection:** a projection that uses perpendicular lines to depict the absolute configuration of chiral molecules on a planar surface. OR A means of depicting the stereochemistry of a molecule. In a Fischer projection of a molecule, atoms joined to an asymmetric carbon atom by horizontal bonds are in front of the plane of the page, and those joined by vertical bonds are behind.

**Fischer projection formulas:** See projection formulas.

**FISH :** A technique used to identify the presence of specific chromosomes or chromosomal regions through hybridization (attachment) of fluorescently-labeled DNA probes to denatured chromosomal DNA. Examination through a microscope under fluorescent lighting detects the presence of the colored hybridized signal (and hence presence of the chromosome material) or absence of the hybridized signal (and hence absence of the chromosome material). Also called fluorescence in situ hybridization. or A laboratory technique used to look at genes or chromosomes in cells and tissues. Pieces of DNA that contain a fluorescent dye are made in the laboratory and added to cells or tissues on a glass slide. When these pieces of DNA bind to specific genes or areas of chromosomes on the slide, they light up when viewed under a microscope with a special light. Also called fluorescence in situ hybridization.

**Fish Eye:** A fault in transparent or translucent plastics materials, such as film or sheet, appearing as a small globular mass and caused by incomplete blending of the mass with surrounding materials.

**fish oil/glycerol/egg lecithin-based emulsion:** An injectable, nutritional lipid emulsion composed of 10% fish oil and high amounts of the fish oil-derived polyunsaturated omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Additionally, the fish oil/glycerol/egg lecithin-based emulsion contains myristic acid, palmitic acid, palmitoleic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, octadecatetraenoic

acid, eicosaenoic acid, arachidonic acid, docosaenoic acid, and docosapentaenoic acid. This agent supplies essential fatty acids that can be incorporated into cell membranes. The fatty acids may decrease the production of certain pro-inflammatory cytokines, including interleukin 1 (IL-1), IL-6 and tumor necrosis factor (TNF). In addition to fish oil, this lipid emulsion contains egg phospholipids to maintain membrane integrity; glycerol to provide energy through glycolysis; and the antioxidant alpha-tocopherol (vitamin E).

**FISHEYE:** Small globular mass which has not blended completely into the surrounding material, resulting as a fault in film or sheet.

**Fisheyes :** Describes a very small void which has not blended completely with the surrounding material. Usually caused by a minute quantity of silicone, oil or other surface contaminate on the surface of the substrate.

**FishPaper:** 1) A type of vulcanized fibre paper treated chemically for insulating purposes where high mechanical and electrical strength and flexibility are required. 2) A vulcanized fibre in thin cross-section.

**fissile:** splitting naturally along layers.

**Fissile material:** A nuclide that is capable of undergoing fission after capturing low-energy thermal (slow) neutrons. Although sometimes used as a synonym for fissionable material, this term has acquired its more-restrictive interpretation with the limitation that the nuclide must be fissionable by thermal neutrons. With that interpretation, the three primary fissile materials are uranium-233, uranium-235, and plutonium-239. This definition excludes natural uranium and depleted uranium that have not been irradiated, or have only been irradiated in thermal reactors.

**fission:** The process in which heavy nuclei split to form lighter nuclei. OR A nuclear reaction in which an atomic nucleus breaks into smaller nuclei of comparable mass, releasing a large amount of energy.

**Fission (fissioning):** The splitting of an atom, which releases a considerable amount of energy (usually in the form of heat) that can be used to produce electricity. Fission may be spontaneous, but is usually caused by the nucleus of an atom becoming unstable (or "heavy") after capturing or absorbing a neutron. During fission, the heavy nucleus splits into roughly equal parts, producing the nuclei of at least two lighter elements. In addition to energy, this reaction usually releases gamma radiation and two or more daughter neutrons.

**Fission gases:** Those fission products that exist in the gaseous state. In nuclear power reactors, this includes primarily the noble gases, such as krypton and xenon.

**Fission products:** The nuclei (fission fragments) formed by the fission of heavy elements, plus the nuclide formed by the fission fragments' radioactive decay.

**Fissionable material:** A nuclide that is capable of undergoing fission after capturing either high-energy (fast) neutrons or low-energy thermal (slow) neutrons. Although formerly used as a synonym for fissile material, fissionable materials also include those (such as uranium-238) that can be fissioned only with high-energy neutrons. As a result, fissile materials (such as uranium-235) are a subset of fissionable materials. Uranium-235 fissions with low-energy thermal neutrons because the binding energy resulting from the absorption of a neutron is greater than the critical energy required for fission; therefore uranium-235 is a fissile material. By contrast, the binding energy released by uranium-238 absorbing a thermal neutron is less than the critical energy, so the neutron must possess additional energy for fission to be possible. Consequently, uranium-238 is a fissionable material.

**fistula :** An abnormal opening or passage between two organs or between an organ and the surface of the body. Fistulas may be caused by injury, infection, or inflammation, or may be created during surgery.

**FIT:** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. An antibody that binds to a blood protein called hemoglobin is used to detect any blood. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called fecal immunochemical test, iFOBT, immunoassay fecal occult blood test, immunochemical fecal occult blood test, and immunologic fecal occult blood test.

**Fitch:** A small brush with a round oval or flat ferrule usually with a filling of white bristles. They are available in assorted sizes and among their uses are 'picking out' details of plaster ornament ruling painted lines and spot priming fine cracks and small areas.

**Fitment:** A device used as a part of a closure assembly designed to accomplish a specific purpose, such as a powder shaker, sprinkler or

dropper. OR a device used as part of a closure assembly to accomplish a certain purpose such as, dropper, sprinkler, powder shakers, etc.

**Fittings:** Any parts (other than ends) necessary to complete the closure of a can, including plugs, screw necks, spouts, bungs, caps and more.

**five element acupuncture :** An ancient form of acupuncture based on the principle that there are five universal elements (wood, fire, earth, metal, and water) that affect a person's emotions, personality, health, and response to treatment. Each person is affected by one element more than the others. Also called traditional acupuncture.

**five-year survival rate :** The percentage of people in a study or treatment group who are alive five years after they were diagnosed with or started treatment for a disease, such as cancer. The disease may or may not have come back.

**FIXTURE:** Means of holding a part during a machining or other operation. OR Block of metal or wood used to maintain the proper shape or to perform secondary operation.

**FK463:** An antibiotic/antifungal drug used to treat infection.

**Flagella, eukaryotic:** Hairlike organelles made up of microtubules that protrude from the cell surface; their movement propels the cell.

**Flagella, prokaryotic:** Extracellular appendages used to propel bacteria; the required energy is derived directly from a proton-motive force across the cell membrane.

**Flagellin:** The protein component of bacterial flagella.

**flagellum:** A cell appendage used in propulsion. Bacterial flagella have a much simpler structure than eukaryotic flagella, which are similar to cilia.

**Flagyl:** (Other name for: metronidazole hydrochloride) or A drug that is used to treat infection and is being studied in the treatment of cancer. It is type of antibacterial, antiprotozoal, and anthelmintic. Also called metronidazole.

**Flake:** Used to denote the dry, unplasticized base of cellulosic plastics.

**Flaking:** The detachment of pieces of paint from the substrate caused by a loss of adhesion and elasticity. Also known as scaling. OR A form of paint failure characterized by the detachment of small pieces of the film from the surface of previous coat of paint. Cracking or blistering usually precedes it.

**Flame Resistance:** The resistance to burning of material that will not withstand combustion under ordinary conditions

**Flame Retardant:** Used by recycled plastic and plastic compound manufacturers, flame retardants are reactive compounds and additive compounds to make the finished plastic extrusion products fire resistant. A flame retardant plastic is considered to be one that will not continue to burn or glow after the source of ignition has been removed. OR Having the ability to resist combustion (A flame retardant plastic is considered to be one that will not continue to burn or glow after the source of ignition has been removed.) Retardant, or retarder: a substance used in small proportion to reduce the reaction rate of a chemical system. Flame retardant: a substance added, or treatment applied, to a material in order to suppress, significantly reduce or delay the propagation of flame. Flame retardants may be added to plastics materials (external flame retardants) or incorporated as chemical groups in the base polymer during the polymerization process (internal flame retardants). Flame retardance is the property of a material, either inherent or by virtue of a substance added or a treatment applied, to suppress significantly, reduce or delay the propagation of flame. Flame retarded: treated with a flame retardant. fire retardant: a substance added, or treatment applied, to a material in order to suppress, significantly reduce or delay the combustion of the material. OR Having the ability to resist combustion (A flame retardant plastic is considered to be one that will not continue to burn or glow after the source of ignition has been removed.) OR Having the ability to resist combustion (A flame retardant plastic is considered to be one that will not continue to burn or glow after the source of ignition has been removed.) Retardant, or retarder: a substance used in small proportion to reduce the reaction rate of a chemical system. Flame retardant: a substance added, or treatment applied, to a material in order to suppress, significantly reduce or delay the propagation of flame. Flame retardants may be added to plastics materials (external flame retardants) or incorporated as chemical groups in the base polymer during the polymerization process (internal flame retardants). Flame retardance is the property of a material, either inherent or by virtue of a substance added or a treatment applied, to suppress significantly, reduce or delay the propagation of flame. Flame retarded: treated with a flame retardant. fire retardant: a substance added, or treatment applied, to a

material in order to suppress, significantly reduce or delay the combustion of the material.

**Flame Retardant Resin:** A resin which is compounded with certain chemicals to reduce or eliminate its tendency to burn. For polyethylene and similar resins, chemicals such as antimony trioxide and chlorinated paraffins are useful.

**Flame Spraying:** Method of applying a plastic coating in which finely powdered fragments of plastic, together with suitable fluxes, are projected through a cone of flame onto a surface. OR A method of rendering inert thermoplastic objects receptive to inks, lacquers, paints, adhesives, etc. The object is bathed in an open flame to promote oxidation of the surface of the article.

**Flame treating:** A method of bathing plastics in an open flame to promote oxidation of the surface, rendering it more receptive to inks, lacquers, paints, adhesives and more.

**Flame-cleaning:** The application of an intensely hot flame (usually oxy-acetylene) to a steel surface in order to remove heavy rust or scale.

**Flame, Fire & Smoke Retardants:** Are added to the resin to retard these undesirable effects.

**Flammability:** Measure of the extent to which a material will support combustion.

**FLAMMABLE LIQUID:** A liquid which has a flash point below 100F.

**Flange:** A rib or rim for strength, for guiding, or for attachment to a pipe.

**Flank:** The side of a building; the side surfaces of a building stone; any large internal wall area.

**flanvotumab:** A monoclonal antibody directed against the melanosomal membrane protein gp75 (or Tyrosinase-Related Protein 1 [TRP1]) with potential immunostimulatory and antineoplastic activities. Flanvotumab targets and binds to gp75. This may lead to the induction of cytotoxic T cell immune and antibody-mediated immune responses against melanoma cells expressing gp75. gp75, a pigmentation-associated antigen, is expressed in melanosomes of human melanocytes and melanomas.

**flaring:** The burning of waste gases through a flare stack or other device before releasing them to the air.

**Flash:** Any excess material that is formed with and attached to the component along a seam or mold parting line. OR Extra plastic attached to a molding along the parting line; it must be removed before the part can be considered finished. OR Excess material that is formed along a seam and attached to an otherwise completed item. OR A thin film of plastic that tends to form at parting line areas of a mold. May also be found in vent areas and around ejector pins. Flash is caused by too great a clearance between mating metal surfaces, which allows plastic material to enter. OR Resin that is forced out of the mold cavity area and onto the parting line or into the vents of the mold. A very thin film of cured resin attached to the molded part. OR Extra plastic attached to a mold along the parting line; under most conditions it would be objectionable and must be removed before the parts are acceptable.

**flash flood:** flood resulting from very heavy rainfall over short periods.

**Flash Gate:** Wide gate extending from a runner which runs parallel to an edge of a molded part along the parting line of a mold. OR Usually a long gate extending from a runner which runs parallel to an edge of a molded part along the flash or parting line of the mold.

**Flash Line:** A raised line appearing on the surface of a molding and formed at the junction of mold faces.

**Flash mold:** A mold designed to permit excess molding material to escape during closing.

**Flash or burrs:** A thin lip or protrusion beyond the body of the part that is generally caused by poor clamping force, improper mold design and/or mold damage.

**Flash Pockets:** Flash pockets provide relief areas outside the pinch-offs to limit the amount of compression for mold closing. The flash pockets are sometimes referred to as gutter or relief areas. Ideally, flash pockets will be deep enough to lessen the compression of the flash material, while providing enough surface contact to cool the flashed material.

**FLASH POINT:** The lowest temperature at which vapors from a volatile liquid will ignite on application of an ignition source under specified conditions. Flash point is a specification for some alkylates. OR The maximum temperature to which a product confined in a closed cup must be heated for the vapours emitted to ignite momentarily in the presence of a flame. OR The temperature at which a coating or solvent will ignite. OR

The temperature when vapor pressure of a substance becomes high enough to allow the air/vapor layer over the substance to be ignited. Ether and acetone have flash points below room temperature, which makes them very dangerous. OR The lowest temperature at which a flammable liquid will produce a combustible vapor that will burn in the presence of a flame, under certain prescribed conditions of test.

**Flash vaporization:** A process in which a liquid feed at a high pressure is suddenly exposed to a lower pressure, causing some vaporization to occur. The vapor product is rich in the more volatile components of the feed and the residual liquid is rich in the less volatile components.

**Flashing:** A brief sub-cure (at lower temperatures than the final cure) to drive off solvents or carriers prior to full cure. This helps prevent bubbling. See Partial cure.

**Flashing:** A fault usually in non-glossy finishes, in which patches of uneven gloss occur/appear especially at the joints or laps.

**Flashing:** This is known as 'flashing'. It's a fault in the paint which causes such patches to appear, especially at joints or laps. You'll need to repaint the surface, first cleaning it thoroughly to remove all dirt, grease and surface contaminants. Then rub down with a suitable abrasive and dust off before painting.

**Flashing off:** Terms used to describe the action of a period during which the major proportion of the volatile solvent evaporates from a paint film.

**Flashpoint:** The temperature at which solvents volatilize sufficiently to produce a flammable mixture.

**Flat:** A surface that scatters or absorbs the light falling on it so as to be substantially free from gloss or sheen (0-15 gloss on a 60-degree gloss meter). OR Another term for 'matt' and refers to paints which dry without a gloss although some low angle sheen may be apparent. OR A paint surface that scatters or absorbs the light falling on it so as to be substantially free from gloss or sheen.

**Flat Bar :** Any commercially available or manufacturable flat bar may be used as cross supports to connect chain. Occasionally, flat bar is inserted through mesh to act as a filler bar, or assembled under the mesh with the mesh welded to the flat bar.

**Flat Wire Belt :** A flat wire belt is a continuous assembly of flat wire pickets connected by a straight round connector inserted through positioned holes.

**flavin adenine dinucleotide (FAD):** a coenzyme that functions in the production of ATP.

**Flavin mononucleotide (FMN):** A coenzyme for oxidation-reduction reactions derived from the vitamin riboflavin. The electron acceptor of FMN, the isoalloxazine ring, is identical with that of FAD, but FMN lacks the adenylnucleotide component of FAD.

**flavin nucleotides:** Nucleotide coenzymes (FMN and FAD) containing riboflavin.

**flavin-linked dehydrogenases:** Dehydrogenases requiring one of the riboflavin coenzymes, FMN or FAD.

**Flavins:** Electron carriers that use riboflavin in electron-transfer reactions; FAD, FADH<sub>2</sub>, FMN, and FMNH<sub>2</sub> are flavins.

**flavone acetic acid:** A synthetic flavonoid with vascular targeting properties. Flavone acetic acid exhibits an antiproliferative effect on endothelial cells as a result of a superoxide-dependent mechanism, which induces changes in permeability of the vasculature of the tumor. This agent may stimulate tumor necrosis and promote shunting of blood flow to viable regions of the tumor, increasing their oxygenation and rendering them more susceptible to the antitumor effects of hyperthermia and ionizing radiation. Check for active clinical trials using this agent.

**flavonoid :** A member of a group of substances found in many plants and plant-based foods. Flavonoids have shown antioxidant effects.

**flavonoid tablet:** A tablet formulation of flavonoids with antioxidant and potential chemopreventive activities. Polyphenolic, soluble plant pigment flavonoids inactivate oxygen radicals, prevent lipid peroxidation, and inhibit DNA oxidation. In vitro, these agents have been shown to increase the rate of apoptosis, and inhibit cell proliferation and angiogenesis. Furthermore, flavonoids can induce conjugating enzymes, such as glutathione transferases and glucuronosyltransferases.

**flavopiridol :** A substance being studied in the treatment of several types of cancer. It stops cells from dividing and may kill cancer cells. It is a type

of cyclin-dependent kinase (CDK) inhibitor. Also called alvocidib and HMR 1275.

**flavoprotein:** An enzyme containing a flavin nucleotide as a tightly bound prosthetic group.

**Flavoproteins:** Proteins tightly associated with FAD or FMN; flavoproteins play important roles in many oxidation-reduction reactions.

**flecainide :** A drug used to treat abnormal heart rhythms. It may also relieve neuropathic pain, the burning, stabbing, or stinging pain that may arise from damage to nerves caused by some types of cancer or cancer treatment.

**Flector Patch:** (Other name for: diclofenac epolamine patch)

**Fleet Phospho-soda:** (Other name for: sodium biphosphate/sodium phosphate oral laxative)

**Fletton:** A common type of brick usually of pink and yellow colour having sharp edges and deep frog.

**Flexeril:** (Other name for: cyclobenzaprine hydrochloride)

**Flexiban:** (Other name for: cyclobenzaprine hydrochloride)

**FLEXIBILITY:** Ability of a coating to expand and contract during temperature changes. OR The property of a material that will permit its being bent or twisted without breaking.

**Flexible Molds:** Molds made of rubber or elastomeric plastics used for casting plastics. They can be stretched to remove cured pieces with undercuts.

**Flexural Modulus:** The ratio, within the elastic limit, of the applied stress on a test specimen in flexure to the corresponding strain in the outermost fibers of the specimen. Or a measure of the strain imposed in the outermost fibers of a bent specimen. Or Ratio of applied stress to strain in outer fibers of a plastic specimen during flexure. or The ratio, within the elastic limit, of the applied stress on a test specimen in flexure to the corresponding strain in the outermost elements of the specimen.

**Flexural Strength:** The strength of a material in bending, expressed as the tensile stress of the outermost fibers of a bent test specimen at the instant of failure. Or the strength of a material in bending, expressed as the tensile stress of the outermost fibers of a bent test specimen at the instant of failure. Or Ability of a material to flex without permanent distortion or breaking.

**Flexural Strength, Yield:** The measure of resistance of the material to fracture during bending.

**Flig:** A bacterial flagellar protein that is part of the MS (membrane and supramembrane) ring; flig, in combination with flagellar proteins motA/motB, forms a proton channel that drives the rotation of the flagellum.

**FLIGHT:** In an extruder, it is the helical metal left after machining the screw channels. The screw flight diameter is the barrel inside diameter minus a specified flight clearance to allow the screw to fit into the barrel. A rule of thumb is 0.001 inch (25 microns) of radial clearance for every inch (25 mm) of barrel diameter.

**Flights (Lifts, Cleats) :** Devices attached across the width of the belt at prescribed intervals to prevent the product from sliding on the inclines and declines. These may be fabricated from woven wire spirals and formed or unformed sheet metal.

**Flint:** A glass color which is transparent and clear.

**Flip Top:** A two-piece closure system where both pieces are typically attached by a living hinge. One half provides the threads for attachment to a bottle, tube or jar and an orifice for dispensing the product while the other half provides the closure mechanism, usually a pintel that snaps audibly into the orifice.

**Flip-up :** Conditions due to high tension. The outside edge of the belt raises up off of the belt supports. The belt may get caught between the drum and inside belt support.

**Flip-up Detection :** Electrical or mechanical/electrical device(s) that detect a Reverse Christmas Tree or edge flip-up condition.

**Float:** A plasterers trowel made of wood or metal and used to apply the second coat of plaster in a three coat system. Hence to apply this coat is called 'to float' see 'plastering'.

**floatation:** the process of removing finely divided particles from a liquid suspension by agitating the liquid with gas bubbles thus increasing the buoyancy of the particles, and concentrating them at the surface of the liquid medium.

**Floating:** A defect apparent in a dried paint coat in which streaks or patches of a different shade or colour can be seen especially along edges or

mouldings. OR Separation of pigment colors on the surface of applied paint.

**Floating matter:** Matter which passes through a 2000 micron sieve and separates by flotation for an hour.

**Floc:** Clumps of bacteria and particulate impurities or coagulants that have come together and formed a cluster. Found in aeration tanks and secondary clarifiers. OR a very fine, fluffy mass formed by the aggregation of fine suspended particles.

**Flocculant :** Flocculation is the second step in separation process, where impurities in the water are collected to larger flocculated particles with the aid of flocculant. The flocculant in the water treatment is usually a charged polymer with very high molecular weight. In the flocculation the coagulated particles are bound together and even larger flocculated particles are formed with the aid of polymers. The large particles are then separated from the water with suitable separation process like clarification, flotation or filtration. See also “Coagulant.”

**Flocculation:** The process of forming floc particles when a chemical coagulant or flocculent such as alum or ferric chloride is added to the wastewater. OR the process of separating suspended solids from wastewater by chemical creation of a coagulated, or flocculent masses. OR The process by which small particles in a dispersion slowly aggregate (or coalesce) to form flocs.

**Flocking:** A method of coating by spraying finely dispersed powders or fibers.

**Flomax:** (Other name for: tamsulosin hydrochloride) OR A drug used to treat urinary problems caused by an enlarged prostate. Flomax relaxes the muscles of the prostate and bladder, which helps the flow of urine. It is a type of alpha blocker. Also called tamsulosin and tamsulosin hydrochloride.

**Flonase:** (Other name for: fluticasone propionate)

**flood currents:** tidal currents preceding high tide.

**flood plain:** the area along the banks of a meandering river that are prone to flooding at various times.

**floodplain:** the area created on both sides of a stream when periodic flooding deposits mud and silt over extensive, low-lying areas.

**Florafur:** (Other name for: tegafur)

**Florinef:** (Other name for: fludrocortisone acetate)

**Flotation:** During drying one or more of the pigments in a paint separates or floats apart from the others and concentrates in streaks or patches producing a variegate effect.

**Flovent:** (Other name for: fluticasone propionate)

**Flow:** The extent to which a paint is able to level out after application. Gloss paints usually have good flow resulting in a smooth finish free from brushmarks. OR The ability of a coating to level out and spread into a smooth film, paints that have a good flow usually level out uniformly and exhibit few brush or roller marks. OR a mass-wasting movement in which the mass moves downslope like a viscous fluid. OR Another word for move. It is often used to describe the movement of lava. OR A qualitative description of the fluidity of a plastic material during the process of molding. Or The movement of a resinous material, thermosetting or thermoplastic, under pressure, to fill all parts of a closed mould. Or The ability of heated plastic or uncured rubber to travel in the mold and runner systems during the molding process or The ability of the molten resin to move or travel during injection. Flow can be influenced by temperature, part design, process conditions and tool design. Or A qualitative description of the fluidity of a plastic material during the process of molding. OR The ability of the molten resin to move or travel during injection. Flow can be influenced by temperature, part design, process conditions and tool design.

**Flow Balancing:** Flow balancing is the process of choosing a mould design strategy, which promotes even filling of mould. First, a gating strategy is selected which will promote ease of filling. Second, a runner layout is developed to feed material to the gates. Finally runner dimensions are identified which will cause all of the flow paths to fill at the same time. Even wall thickness can be manipulated by flow leader or flow deflectors. or Modifying flow paths, particularly runner sections, so that all flow paths within a mold fill in equal time with equal pressure.

**flow chart :** A diagram that shows the order of steps in a complex process. Also called flow sheet.

**flow cytometry :** A method of measuring the number of cells in a sample, the percentage of live cells in a sample, and certain characteristics of cells, such as size, shape, and the presence of tumor markers on the cell surface. The cells are stained with a light-sensitive dye, placed in a fluid, and passed

in a stream before a laser or other type of light. The measurements are based on how the light-sensitive dye reacts to the light.

**Flow equalization system:** A device or tank designed to hold back or store a portion of peak flows for release during low-flow periods.

**flow law:** In glaciology, a constitutive relation for the analysis of three-dimensional deformation states of ice subjected to stress.

**Flow Leader:** A small area in the mold (usually no more than 0.200" to 0.300" wide) which locally thickens the wall to allow material to flow into outer areas more smoothly. A molders "trick" to get a few more inches of flow from the material. Usually not designed in the initial stage of tool construction. Use should be based on experience or qualified molder inputs. Also known as a flow rib.

**Flow Line:** A mark on a molded piece made by the meeting of two flow fronts during molding. Also called weld line. Or Marks visible on the finished items that indicate the direction of the flow of the melt into the mold.

**FLOW LINES OR STREAKS:** Flow lines or streaks in the machine direction are visual defects in the form of continuous lines or streaks, which occur in the same axial location. They may appear and be very persistent after a change in material, screw or die.

**Flow marks:** Visible indications on the finished part that show the flow of plastic within the mold prior to solidification. Or Wavy surface appearance of an object silicone molded caused by improper flow of the liquid silicone rubber or plastic into the mold. A mark made by the freezing-in of a visible flow pattern or A wavy pattern or discoloration caused by a slow injection speed which allows the material to cool too quickly. Or Wavy surface appearance on a molded object caused by improper flow of the material into the mold. See SPLAY MARKS. Or Wavy surface appearances on a molded part caused by improper flow of the melt into the mold.

**Flow path:** A flow path describes the route that is traveled by a melt front as melt fills a section of a mould.

**Flow Pattern :** The contour the melt takes sequentially as it fills the cavity. or The contour the melt takes sequentially as it fills the cavity. The mold should fill with a straight flow front with no changes in direction

throughout filling. Mold-filling analysis software can be used to predict these flow patterns.

**Flow Rate:** The volume of plastic compound passing a fixed point per unit time. OR The ASTM condition of 190°C and a load of 21.6 Kg used for determining the rate of flow of molten HDPE resins through a standard orifice. Also known as High Load Melt Index. OR the volume of material passing a fixed point per unit time. OR Flow rate is a way of describing how much material goes through or past a specific point in a fixed period of time. If nozzle tip is used as reference, flow rate can be described how much melt is flowing out of the machine per second during injection.

**Flow Restrictor:** A small area in the mold which usually thins the wall to stall the flow of resin to select areas of the mold. Used to steer the material in another direction

**flow sheet :** A diagram that shows the order of steps in a complex process. Also called flow chart.

**Flowability:** A measure of the freedom with which a powder flows through tubes and orifices such as those encountered in unit operations.

**Flowed-in gasket:** A gasket formed by a liquid material (vinyl or latex) poured (or flowed) directly into a gasket groove and cured in place, usually by baking; i.e. plastisol.

**flowing artesian well:** a well that taps an aquifer under confining pressure that is sufficient to force the water to rise naturally to the surface through the well.

**flowrate:** usually expressed as liters/minute (gallons/minute) or liters/day. Design flowrate is that used to size the wastewater treatment process. Peak flowrate is 1.5 to 2.5 times design and relates to the hydraulic flow limit and is specified for each plant.

**floxuridine:** A fluorinated pyrimidine monophosphate analogue of 5-fluoro-2'-deoxyuridine-5'-phosphate (FUDR-MP) with antineoplastic activity. As an antimetabolite, floxuridine inhibits thymidylate synthetase, resulting in disruption of DNA synthesis and cytotoxicity. This agent is also metabolized to fluorouracil and other metabolites that can be incorporated into RNA and inhibit the utilization of preformed uracil in RNA synthesis. or A drug used in the treatment of cancer. It is a type of antimetabolite.

**FLT3/CDK4/6 inhibitor FLX925:** An orally available inhibitor of FMS-related tyrosine kinase 3 (FLT3, STK1, or FLK2) and the cyclin-dependent kinases 4 (CDK4) and 6 (CDK6), with potential antineoplastic activity. Upon administration, FLT3/CDK4/6 inhibitor FLX925 specifically binds to and inhibits FLT3, which interferes with the activation of FLT3-mediated signal transduction pathways and reduces cell proliferation in cancer cells that overexpress FLT3. In addition FLX925 inhibits CDK4 and 6 and prevents the phosphorylation of retinoblastoma (Rb) protein in early G1 phase. Inhibition of Rb phosphorylation prevents CDK-mediated G1-S phase transition, which causes G1 phase cell cycle arrest, suppresses DNA synthesis and inhibits cancer cell growth. FLT3, a class III tyrosine kinase receptor, is overexpressed in a variety of cancers. Overexpression of CDK4/6, which is seen in certain types of cancer, causes cell cycle deregulation.

**FLT3/KIT kinase inhibitor AKN-028:** An orally bioavailable protein tyrosine kinase inhibitor for FMS-related tyrosine kinase 3 (FLT3; STK1) and stem cell factor receptor (SCFR; KIT), with potential antineoplastic activity. FLT3/KIT kinase inhibitor AKN-028 binds to and inhibits both the wild-type and mutated forms of FLT3 and SCFR. This may result in an inhibition of tumor cell proliferation in cancer cell types that overexpress these receptor tyrosine kinases.

**flt3L:** A drug that increases the number of immune cells and may stimulate the immune system to kill cancer cells.

**flu matrix peptide p58-66:** A short chain synthetic antigenic peptide (GILGFVFTL) derived from the influenza virus A matrix protein and presented by HLA-A2 major histocompatibility complex (MHC) class I molecules. Flu matrix peptide p58-66 stimulates the lytic functions of cytotoxic T lymphocytes (CTLs), which may result in the eradication of virus-infected or malignant tumor cells.

**Fluarix:** (Other name for: trivalent influenza vaccine)

**Flublok:** (Other name for: trivalent influenza vaccine)

**fluciclatide F 18:** A radiopharmaceutical compound of a small synthetic cyclic peptide containing an RGD-sequence (Arg-Gly-Asp) labeled with the positron-emitting isotope fluorine F 18 that may be used to selectively image tumor cells and tumor vasculature by PET imaging. The RGD motif of fluciclatide F 18 selectively binds to the alphaVbeta3 integrin receptor,

commonly upregulated on the surfaces of tumor cells and endothelial cells of tumor vasculature. This agent may be of use in visualizing and quantifying the development of tumor vascularity in response to antiangiogenic agents.

**fluconazole:** A synthetic triazole with antifungal activity. Fluconazole preferentially inhibits fungal cytochrome P-450 sterol C-14 alpha-demethylation, resulting in the accumulation of fungal 14 alpha-methyl sterols, the loss of normal fungal sterols, and fungistatic activity. Mammalian cell demethylation is much less sensitive to fluconazole inhibition. Check for active clinical trials using this agent. or A drug that treats infections caused by fungi.

**flucytosine:** A pyrimidine compound and a fluorinated cytosine analog exhibiting antifungal activity. After penetration into the fungal cells, flucytosine is deaminated to its active metabolite 5-fluorouracil. 5-fluorouracil replaces uracil during fungal RNA synthesis, thereby inhibiting fungal protein synthesis. In addition, fluorouracil is further metabolized to 5-fluorodeoxyuridylic acid monophosphate, which inhibits thymidylate synthetase, thereby interrupting nucleotide metabolism, DNA synthesis and ultimately protein synthesis. or A drug that treats infections caused by fungi.

**Fludara :** A drug used to treat B-cell chronic lymphocytic leukemia (CLL) that has not responded to treatment with other anticancer drugs or that has gotten worse. It is also being studied in the treatment of other types of cancer. Fludara blocks cells from making DNA and may kill cancer cells. It is a type of purine antagonist and a type of ribonucleotide reductase inhibitor. Also called fludarabine phosphate.

**fludarabine :** The active ingredient in a drug used to treat B-cell chronic lymphocytic leukemia (CLL) that has not responded to treatment with other anticancer drugs or that has gotten worse. Fludarabine blocks cells from making DNA and may kill cancer cells. It is a type of purine antagonist and a type of ribonucleotide reductase inhibitor.

**fludarabine phosphate:** The phosphate salt of a fluorinated nucleotide antimetabolite analog of the antiviral agent vidarabine (ara-A) with antineoplastic activity. Fludarabine phosphate is rapidly dephosphorylated to 2-fluoro-ara-A and then phosphorylated intracellularly by deoxycytidine kinase to the active triphosphate, 2-fluoro-ara-ATP. This metabolite may

inhibit DNA polymerase alpha, ribonucleotide reductase and DNA primase, thereby interrupting DNA synthesis and inhibiting tumor cell growth. Check for active clinical trials using this agent. or A drug used to treat B-cell chronic lymphocytic leukemia (CLL) that has not responded to treatment with other anticancer drugs or that has gotten worse. It is also being studied in the treatment of other types of cancer. Fludarabine phosphate blocks cells from making DNA and may kill cancer cells. It is a type of purine antagonist and a type of ribonucleotide reductase inhibitor. Also called Fludara.

**Fludase:** (Other name for: recombinant cell-surface anchored sialidase DAS181)

**fludeoxyglucose F 18:** A positron-emitting radiopharmaceutical containing radioactive 2-deoxy-2-[18F] fluoro-D-glucose. With similar cell uptake as glucose (high in tumor cells), fludeoxyglucose F 18 is not dephosphorylated and further metabolized. Or The radioactive form of glucose used in positron emission tomography (PET), a diagnostic imaging procedure.

**fludrocortisone :** A synthetic corticosteroid. It is used to replace steroid hormones normally produced by the adrenal gland.

**fludrocortisone acetate:** The acetate salt of a synthetic fluorinated corticosteroid with antiinflammatory and antiallergic activities. As a glucocorticoid-receptor agonist, fludrocortisone binds to cytoplasmic receptors, translocates to the nucleus, and subsequently initiates the transcription of glucocorticoid-responsive genes such as lipocortins to inhibit phospholipase A2 (PLA2). Inhibition of PLA2 activity prevents the release of arachidonic acid, a precursor of eicosanoids such as prostaglandins and leukotrienes; eicosanoids are important mediators in the pro-inflammatory response mechanism. As a mineralocorticoid-receptor agonist, this agent stimulates Na<sup>+</sup> reabsorption and water retention and K<sup>+</sup> and H<sup>+</sup> secretion in the distal tubules and collecting ducts of the kidney.

**Flue gas:** see stack gas

**fluid:** a substance which yields readily to any force which tends to alter its shape; fluids possess no definite shape; the term includes both liquids and gases. OR A liquid or gas

**fluid :** A substance that flows smoothly and takes the shape of its container. Liquids and gases are fluids.

**fluid deprivation test :** A test to measure how much urine is made and how concentrated it becomes when no fluid is given to a patient for a certain amount of time. This test is used to see how well the kidneys work and to help diagnose diabetes insipidus (a condition in which a person is very thirsty and makes large amounts of urine). Also called water deprivation test.

**Fluid mosaic model:** The description of membranes as two-dimensional solutions of oriented lipids and globular proteins. OR A model describing biological membranes as a fluid lipid bilayer with embedded proteins; the bilayer exhibits both structural and functional asymmetry.

**fluid replacement therapy :** Treatment to replace fluids that are lost from the body because of surgery, injury, dehydration, disease, or other conditions.

**Fluidized Bed Coating:** A method of applying a coating of a thermoplastic resin to an article in which the heated article is immersed in a dense-phase fluidized bed of powdered resin and thereafter heated in an oven to provide a smooth, pin-hole-free coating.

**FluLaval:** (Other name for: trivalent influenza vaccine)

**flumatinib mesylate:** The orally bioavailable, mesylate salt form of the tyrosine kinase inhibitor flumatinib, with potential antineoplastic activity. Upon administration, flumatinib inhibits the wild-type forms of Bcr-Abl, platelet-derived growth factor receptor (PDGFR) and mast/stem cell growth factor receptor (SCFR; c-Kit) and forms of these proteins with certain point mutations. This results in the inhibition of both Bcr-Abl-, PDGFR- and c-Kit-mediated signal transduction pathways, and the proliferation of tumor cells in which these kinases are overexpressed. Bcr-Abl fusion protein is an abnormal, constitutively active enzyme expressed in Philadelphia chromosome positive chronic myeloid leukemia (CML), acute lymphoblastic leukemia (ALL) or acute myelogenous leukemia (AML). PDGFR, upregulated in many tumor cell types, is a receptor tyrosine kinase essential to cell migration and the development of the microvasculature. c-kit, a receptor tyrosine kinase mutated and constitutively activated in certain tumors, plays a key role in tumor cell survival, proliferation, and differentiation.

**FluMist:** (Other name for: trivalent live-attenuated influenza vaccine)

**fluocinonide cream:** A synthetic glucocorticoid and derivative of fluocinolone acetonide with anti-inflammatory and antipruritic activities. Fluocinonide binds the glucocorticoid receptor, followed by translocation of the ligand-receptor complex to the nucleus and transcription activation of genes containing glucocorticoid-responsive elements. Lipocortin-1 is one factor induced by fluocinonide that interacts and inhibits cytosolic phospholipase 2 alpha, thereby preventing phospholipase translocation to the perinuclear membrane and subsequent release and conversion of arachidonic acid to inflammatory prostaglandins. In addition, MAPK phosphatase 1 is induced, thereby preventing the triggering of the MAPK cascade resulting in pro-inflammatory effects via Jun N-terminal kinase and c-Jun. Finally, fluocinonide binds to and inhibits nuclear factor kappa-B directly, resulting in inhibition of cyclooxygenase 2 transcription and subsequent prostaglandin synthesis. Check for active clinical trials using this agent.

**fluorescein sodium injection:** An injectable form of the sodium salt of the fluorophore fluorescein. Fluorescein responds to electromagnetic radiation between the wavelengths of 465-490 nm and fluoresces, emitting light at wavelengths of 520-530 nm that can be detected visually.

**Fluorescence:** If a substance absorbs light at one wavelength and re-radiates it at another wavelength almost immediately, it is fluorescent; this is why many materials glow under ultraviolet light. If the substance keeps re-radiating light over a period of seconds, minutes, or hours, it is called phosphorescent. OR The property of giving off light at a particular wavelength (emission wavelength) when illuminated by light of a different wavelength (excitation wavelength) OR The emission of light by an excited molecule in the process of making the transition from the excited state to the ground state. OR A fluorescent substance absorbs short wavelength radiation and re-emits it as radiation with a longer wavelength in a very short time. OR Emission of light by excited molecules as they revert to the ground state. OR the emission of light (or other electromagnetic radiation of longer wavelength) by a substance as a result of absorption of other radiation. The emission continues only as long as the stimulus producing it continues and persists with a half-life of less than about 10<sup>8</sup> second.

**fluorescence imaging agent EMI-137:** A water-soluble compound composed of a 26-amino acid cyclic peptide targeting the human hepatocyte

growth factor receptor (c-MET) conjugated to a cyanine-based fluorescent dye, with potential fluorescent imaging activity. Upon administration of EMI-137, the peptide moiety specifically targets and binds to the human tyrosine kinase receptor c-Met, which is often overexpressed on cancer cells. Upon imaging, the cancer cells can be visualized.

**fluorescence in situ hybridization :** A laboratory technique used to look at genes or chromosomes in cells and tissues. Pieces of DNA that contain a fluorescent dye are made in the laboratory and added to cells or tissues on a glass slide. When these pieces of DNA bind to specific genes or areas of chromosomes on the slide, they light up when viewed under a microscope with a special light. Also called FISH.

**fluorescence in situ hybridization :** A technique used to identify the presence of specific chromosomes or chromosomal regions through hybridization (attachment) of fluorescently-labeled DNA probes to denatured chromosomal DNA. Examination through a microscope under fluorescent lighting detects the presence of the colored hybridized signal (and hence presence of the chromosome material) or absence of the hybridized signal (and hence absence of the chromosome material). Also called FISH.

**fluorescence microscopy :** The use of a special microscope to see objects that give off fluorescent light. For example, cells or tissue can be treated with a substance that contains a fluorescent dye. The dye lights up when viewed under a microscope with a special light.

**Fluorescence photobleaching recovery technique (FRAP):** A technique for measuring membrane fluidity in which a membrane component is labeled with a fluorescent molecule that is subsequently destroyed (or bleached) by an intense burst from a laser; fluidity is determined by the rate at which the bleached region fills with fluorescent molecules from adjoining regions of the membrane.

**fluorescence-guided surgery :** Surgery that uses a fluorescent substance and a special microscope to show tumor margins (edges) so that more of the tumor can be removed. The substance is given by mouth and is taken up by fast-growing cells. These cells light up when seen under a microscope with a special blue light. This may help doctors to remove as much tumor as possible without harming healthy tissue. Fluorescence-guided surgery is being studied in the treatment of certain types of brain tumors.

**fluorescent antibody SGM-101:** A near infrared-emitting fluorochrome-labeled anti-carcinoembryonic antigen (ACE; anti-CEA) monoclonal antibody, with potential diagnostic imaging activity. Upon administration, the fluorescent antibody SGM-101 binds CEA-overexpressing cancer cells. Upon fluorescence imaging, the fluorochrome can be visualized and CEA-overexpressing cancer cell can be imaged and detected. CEA, a tumor-associated antigen (TAA), is overexpressed on the surface of tumor cells. Check for active clinical trials using this agent.

**Fluorescent coating:** Paints which 'glow'™ or show greatly intensified brightness and colour when subjected to certain types of lighting usually ultra violet light. The phenomenon ceases immediately the light source is cut off.

**fluorescent cRGDY PEG-Cy5.5 C dots:** An imaging agent composed of silica-based nanoparticles labeled with a near-infrared (NIR) fluorophore, cyanine 5.5 (Cy5.5) and surrounded by polyethylene glycol (PEG) chains attached to cyclo-[Arg-Gly-Asp-Tyr] (cRGDY) peptides, with potential use as a tumor-selective fluorescent imaging agent. Upon intradermal administration of the fluorescent cRGDY PEG-Cy5.5 C dots, the cRGD moiety selectively binds to alphaVbeta3 integrin expressed on tumor cells. Upon intraoperative fluorescence imaging, alphaVbeta3-expressing tumor cells can be visualized and the degree of both tumor metastasis and sentinel lymph node (SLN) trafficking can be assessed. Integrins are transmembrane glycoproteins upregulated on proliferating tumor vessel endothelial cells and various cancer cells; their overexpression has been associated with neovascularization, differentiation, proliferation of tumor cells, metastasis and an overall poor prognosis.

**fluorescent imaging ligand OTL38:** A fluorescent imaging agent composed of a folate receptor-alpha (FRa)-targeting ligand conjugated to a fluorescent near infrared (NIR) dye, that can be used for imaging of FRa-expressing tumor cells. Upon administration, the FRa-targeting moiety of OTL38 specifically binds to FRa expressed on tumor cells thus selectively delivering the fluorescent dye to FRa-expressing tumor cells. Upon NIR imaging, tumor cells fluoresce, which allows for the visualization and identification of FRa-overexpressing tumor cells. FRa, a high-affinity folate-binding protein and a member of the folate receptor family, is overexpressed in various cancer cell types.

**Fluorescent Pigments:** By absorbing unwanted wavelengths of light and converting them into light of desired wavelengths, these colors seem to have an actual glow of their own.

**fluorescent protease-activated peptide AVB-620:** A protease-cleavable peptide linked to a fluorescent probe, with potential imaging activity. Upon intravenous infusion of the fluorescent protease-activated peptide AVB-620 before surgery, the peptide moiety of AVB-620 can be cleaved by proteases overexpressed by tumor cells. This activates the fluorescent probe and the tumor cells expressing the proteases can be detected using a fluorescence imaging system. This allows for the visualization and removal of the tumor during surgery.

**Fluorescite:** (Other name for: fluorescein sodium injection)

**fluoride :** A form of the element fluorine that helps prevent tooth decay. Fluoride may be naturally present in drinking water or may be added to it. Fluoride may also be put directly on the teeth, as a gel, toothpaste, or a rinse.

**Fluorination:** is an extra process in which a thermoplastic article (container or closure) is exposed to fluorine gas. The fluorine substitutes with some hydrogen atoms in the polymer chain creating a barrier and surface enhancement. Benefits include improved barrier properties and reduced solvent absorption and permeation.

**Fluorine:** Symbol:"F" Atomic Number:"9" Atomic Mass: 19.00amu. Fluorine is member of the halogen group. Fluorine is a very reactive, poisonous gas. It is reactive because it combines with most other elements. You can also find it in rocket fuel, uranium refining, Freon, toothpaste, and etched glass. OR The most reactive non-metallic element. A pale yellow gas which is both corrosive and poisonous, it reacts vigorously with most oxidizable substances at room temperature, and forms fluorides. It is used in the production of metallic and other fluorides, some of which are used to introduce fluorine into organic compounds, i.e., the fluorocarbons.

**fluorine 18 F fludarabine:** A radiopharmaceutical containing the purine analog fludarabine that is labeled with the radioisotope fluorine F18 with potential use as a tumor imaging agent upon positron emission tomography (PET). After intravenous administration, the fludarabine is selectively taken up by tumor cells. The radioisotope moiety is detected using PET, which allows imaging and quantification of both the biodistribution of fludarabine

and the presence of tumor cells. This could identify tumors and select patients that will likely respond to fludarabine treatment.

**fluorine F 18 4-L-fluoroglutamine (2S,4R):** A radioconjugate and glutamine analog consisting of the fluorine F 18 labeled 2S, 4R stereoisomer of 4-fluoroglutamine with potential use as a metabolic tracer for tumor imaging. Upon intravenous administration, fluorine F 18 4-L-fluoroglutamine (2S,4R) is preferentially taken up by cancer cells, possibly driven by c-Myc upregulation. Upon positron emission tomography (PET), cancer cells can be imaged. Tumor cells use the amino acid glutamine for nutritional purposes necessary for energy production and growth; as tumor cells proliferate more rapidly than normal healthy cells, glutamine uptake is higher in certain cancer cells.

**fluorine F 18 5-fluoro-2-deoxycytidine:** A radioconjugate composed of a fluorinated pyrimidine analog, linked to the radioisotope fluorine F 18 with potential imaging activity using positron emission tomography/computed tomography (PET/CT). Upon administration of fluorine F 18 5-fluoro-2-deoxycytidine ([F-18]-FdCyd), the FdCyd moiety is phosphorylated by deoxycytidine kinase to 5-fluoro-2'-deoxycytidylate (FdCMP) and deaminated by deoxycytidylate (dCMP) deaminase, an enzyme overexpressed by tumor cells, to 5-fluoro-2-deoxyuridine monophosphate (FdUMP). Eventually, FdUMP is metabolized to the triphosphate forms 5-fluoro-2'-deoxycytidine-triphosphate (FdCTP) and fluorodeoxyuridine triphosphate (FdUTP). FdCTP and FdUTP inhibit DNA methyltransferase (DNMT) and DNA methylation, and induce DNA strand breaks, respectively. FdCyd is coadministered with tetrahydrouridine (THU), an inhibitor of cytidine/deoxycytidine deaminase, which prevents FdCyd breakdown and increases its efficacy. The fluorine F 18 moiety can be imaged upon PET/CT, thereby allowing for the evaluation of the biodistribution of FdCyd and its uptake by tumor cells.

**fluorine F 18 6-fluorodopamine:** A radioconjugate consisting of 6-fluorodopamine labeled with fluorine F18 (6-[18F]FDA), with potential diagnostic activity. Upon administration, 6-[18F]FDA is taken up by presynaptic sympathetic nerve endings via the norepinephrine transporter (NET) uptake-1. Once inside, 6-[18F]FDA is rapidly converted by dopamine-beta-hydroxylase into 6-[18F]fluoronorepinephrine (6-[18F]FNE) and stored into neuronal storage vesicles. Upon positron

emission tomographic (PET) scanning of the F18, sympathetic innervated regions can be visualized, such as those in pheochromocytoma.

**fluorine F 18 alfatide II:** A radiotracer composed of a pegylated, dimeric arginine-glycine-aspartic acid (RGD) peptide (PRGD2), radiolabeled, via the chelating agent 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA), to a fluorine F 18-aluminum complex (AlF), with potential alphaVbeta3 integrin (vitronectin receptor) imaging activity using positron emission topography (PET). Upon administration, the RGD moiety of fluorine F 18 alfatide II selectively binds to alphaVbeta3 integrin. During PET, alphaVbeta3-expressing tumor cells can be visualized and the degree of tumor angiogenesis can be determined. AlphaVbeta3 integrin, a cell adhesion and signaling receptor, is upregulated in tumor vessel endothelial cells and has been associated with neovascularization, differentiation, proliferation of tumor cells, and metastasis. Pegylation provides improved drug penetration into tumors and decreases drug clearance, thereby increasing efficacy while lowering systemic toxicity.

**fluorine F 18 ara-G:** A radioconjugate composed of the guanosine analog arabinosyl guanine (Ara-G), a high-affinity substrate for both cytoplasmic deoxycytidine kinase (DCK) and mitochondrial deoxyguanosine kinase (dGK), labeled with fluorine F 18, that can potentially be used as a tracer for imaging of activated T-lymphocytes during positron emission tomography (PET). Upon administration, fluorine F 18 ara-G is taken up by and accumulates in activated T-lymphocytes with high levels of DCK and dGK. After phosphorylation by DCK and dGK, the 18F moiety can be visualized by PET imaging. Fluorine F 18 ara-G can potentially be used as an imaging agent to detect anti-tumor immune responses and to predict the therapeutic efficacy of immunotherapies. DCK and dGK, both nucleoside salvage pathway enzymes, are overexpressed in activated T-cells.

**fluorine F 18 choline:** A radioconjugate composed of choline labeled with the positron-emitting isotope fluorine F 18, with potential tumor tracer activity using positron emission tomography (PET). Fluorine F 18 fluorocholine incorporates into tumor cells through an active, carrier-mediated transport mechanism for choline and then is phosphorylated intracellularly by choline kinase, yielding a phosphoryl derivative, that is integrated into the cell membrane as part of phosphatidylcholine. Since the proliferation of cancer cells is much higher than normal cells, tumor cells

exhibit an increased rate of fluorine F 18 fluorocholine uptake and incorporation, facilitating imaging of the tumor using PET. Choline kinase, the enzyme responsible for the phosphorylation of choline, is frequently upregulated in human tumor cells. Choline is essential for the production of phosphatidylcholine, which is an important element of phospholipids in cell membranes. Check for active clinical trials using this agent.

**fluorine F 18 CP18 peptide:** A triazole containing pentapeptide labeled with the positron-emitting isotope fluorine F 18, used as a tracer for positron emitting tomography (PET) imaging. As a caspase-3 specific substrate, fluorine F 18 CP18 peptide is preferentially taken up by and accumulates in tumor cells with high caspase-3 activity. Upon PET imaging, apoptotic cells can be detected and apoptotic activity can be assessed. Caspase-3 is a cysteine protease that plays a key role in the induction of apoptosis.

**fluorine F 18 d-FMAU:** A radioconjugate comprised of the synthetic pyrimidine analogue 1-(2'-deoxy-2'-fluoro-beta-D-arabinofuranosyl)thymine (d-FMAU) labeled with the radioisotope fluorine F 18 (18F-d-FMAU), that can potentially be used as an imaging agent upon positron emission tomography (PET). Upon administration, fluorine F 18 d-FMAU is distributed and taken up by cells based on the rate of the cell's DNA synthesis. Upon PET imaging, cell proliferation in tumors can be assessed as tumor cells have a higher rate of DNA synthesis than normal, healthy cells. This agent is not catabolized and has a long half-life compared to the radioconjugate carbon C 11 thymidine.

**fluorine F 18 dabrafenib:** A radioconjugate containing dabrafenib, a tyrosine kinase inhibitor of the V600 mutated version of the B-raf (BRAF) protein and labeled with the positron-emitting isotope fluorine F 18 with potential prostate tumor imaging upon positron emission tomography (PET). Upon administration, the dabrafenib moiety of fluorine F 18 dabrafenib specifically targets and binds to the BRAF V600-mutated form, expressed on tumor cells, thereby allowing the visualization of tumor cells expressing BRAF V600 upon PET. BRAF is constitutively activated in a variety of cancers due to BRAF gene mutations. Check for active clinical trials using this agent.

**fluorine F 18 DCFBC:** A radioconjugate containing a low molecular weight tracer, DCFBC, specific for prostate-specific membrane antigen

(PSMA) and labeled with the positron-emitting isotope fluorine F 18 with potential prostate tumor imaging upon positron emission tomography (PET). Upon administration, the DCFBC moiety of fluorine F 18 DCFBC specifically targets and binds to the tumor associated antigen PSMA, thereby allowing the visualization of tumor cells expressing PSMA upon PET. PSMA is a transmembrane glycoprotein highly expressed on malignant prostate epithelial cells and vascular endothelial cells of various solid tumors. Check for active clinical trials using this agent.

**fluorine F 18 DCFPyL:** A urea-based radiotracer composed of the prostate specific membrane antigen (PSMA)-targeting agent DCFPyL and labeled with the positron-emitting isotope, fluorine F 18, that can potentially be used for positron emitting tomography (PET) imaging. Upon administration of fluorine F 18 DCFPyL, the DCFPyL moiety binds to PSMA expressed on tumor cells. The fluorine F 18 moiety facilitates PET imaging of PSMA-expressing tumor cells. PSMA, a cell-surface antigen, is abundantly present on the surface of prostate cancer cells and on the neovasculature of most solid tumors.

**fluorine F 18 EF5:** A radioconjugate consisting of EF5, a fluorinated derivative of etanidazole, conjugated to fluorine F 18, a positron emitting isotope. EF5 binds to hypoxic tissue; conjugation to Fluorine F 18 allows imaging of hypoxic regions within tumors. Or A substance being studied in positron emission tomography (PET) imaging to detect tumor hypoxia (a low level of oxygen in the tumor). This may help predict how the tumor will respond to treatment. It is a type of radiopharmaceutical. Also called 18F-EF5.

**fluorine F 18 FDHT:** A radioconjugate containing a derivative of the androgen testosterone, 16-beta-fluoro-5-alpha-dihydrotestosterone (FDHT), labeled with the radioisotope fluorine F18 (18F-FDHT), with potential use as an imaging agent for positron emission tomography (PET). Upon administration, 18F-FDHT binds to the androgen receptor (AR). Upon PET imaging, AR-expressing prostate tumor cells can be imaged and assessed. Check for active clinical trials using this agent.

**fluorine F 18 FEQA:** The anilinoquinazoline derivative FEQA radiolabeled with the positron-emitting radioisotope fluorine F 18 with epidermal growth factor receptor (EGFR) binding and radioisotopic activities. Fluorine F 18 FEQA irreversibly binds to (EGFR), allowing

imaging of EGFR-positive tumor cells with positron emission tomography (PET). or A radioactive substance being studied in positron emission tomography (PET) imaging to detect cancer and to monitor the response of some types of cancer to treatment. Fluorine F 18 FEQA attaches to the epidermal growth factor receptor (EGFR) found on the surface of some tumor cells. It is a type of radiopharmaceutical.

**fluorine F 18 fluciclovine:** A radiotracer containing a synthetic amino acid analogue of L-leucine radiolabeled with fluorine F 18 with potential diagnostic imaging use. Similar to most amino acids, fluorine F 18 fluciclovine ([18]FACBC) appears to enter cells through the energy-independent L-type amino acid transporter (LAT) system. As an amino acid analogue, this agent is preferentially accumulated by tumor cells due to their increased metabolic needs; however, unlike naturally occurring amino acids, this non-natural amino acid-analogue radiotracer is not metabolized. Accordingly, [18]FACBC accumulates in tumor cells and can potentially be used to image tumors using positron emission tomography (PET). Check for active clinical trials using this agent.

**fluorine F 18 fluoro furanyl norprogesterone:** The progesterone derivative fluoro furanyl norprogesterone (FFNP), radiolabeled with fluorine F 18, with positron-emitting radioligand activity. Upon injection, fluorine F 18 fluoro furanyl norprogesterone (F18-FFNP) binds to progesterone receptors (PgR) in progesterone-responsive tissues. In PgR-positive breast cancer, positron emission tomography (PET) may then be used to quantitate hormone receptor status. Check for active clinical trials using this agent.

**fluorine F 18 fluoro-PEG6-IPQA:** A radioconjugate containing the tracer PEG6-IPQA labeled with fluorine F 18 for potential tumor imaging using positron emission tomography (PET). Upon administration, the IPQA moiety of fluorine F 18 fluoro-PEG6-IPQA selectively targets and irreversibly binds to the constitutively active mutant L858R of epidermal growth factor receptor (EGFR) kinase, thereby allowing the visualization of tumor cells expressing the active mutant L858R EGFR using PET. This can be used to select EGFR kinase inhibitors that bind in a similar manner as this tracer and may allow individualized therapy for patients that respond well to these types of EGFR kinase inhibitors. The presence of the L858R EGFR mutation in non-small cell lung cancer (NSCLC) cells is correlated

with a better response to EGFR kinase inhibitors compared to wild-type (WT) or L858R/T790M EGFR dual-mutant. Check for active clinical trials using this agent.

**fluorine F 18 fluorobenzyl triphenyl phosphonium:** A radioconjugate and cationic lipophilic agent consisting of fluorobenzyl triphenyl phosphonium (FBnTP), labeled with the radioisotope fluorine F 18, with potential use as a tracer for both mitochondrial membrane potential (MMP) and apoptosis, and as a tumor imaging agent using positron emission tomography (PET). Upon administration, fluorine F 18 FBnTP is taken up by cells and its uptake and accumulation within mitochondria is directly correlated with MMP. Apoptosis causes a loss of membrane potential across the inner mitochondrial membrane which decreases FBnTP mitochondrial uptake. As apoptosis is suppressed in tumor cells, the FBnTP uptake is increased as compared to normal cells. This allows, upon PET, for the imaging of cancer cells. As apoptosis-inducing chemotherapeutic agents cause a collapse of MMP, this agent can also be used to assess the response of tumor cells to those chemotherapeutic agents. Check for active clinical trials using this agent.

**fluorine F 18 fluorodopa:** The amino acid analog fluorodopa (FDOPA) labeled with fluorine F 18, a positron-emitting isotope, with potential tumor tracer property. Fluorine F 18 fluorodopa is able to cross the blood-brain barrier and is taken up by brain tumor cells. As uptake is higher in tumor cells, tumors may then be imaged using positron emission tomography (PET). Assessing tumor uptake of FDOPA may be beneficial for diagnosis, localization and in determining further treatment.

**fluorine F 18 fluoroethylcholine:** Ethylcholine labeled with fluorine F 18, a positron-emitting isotope. Fluorine F 18 fluoroethylcholine incorporates into tumor cells through an active, carrier-mediated transport mechanism for choline and then is phosphorylated intracellularly by choline kinase, yielding a phosphoryl derivative, and finally is integrated into cellular phospholipids, probably primarily into a phosphatidyl derivative; concentration of this agent in tumor cells as various fluorine F 18 fluoroethylcholine derivatives enables tumor imaging using positron emission tomography (PET). Choline kinase, the enzyme responsible for the phosphorylation of choline, is frequently up-regulated in human tumor cell lines. or A radioactive substance being studied in PET imaging to

detect certain types of cancer. Fluorine F 18 fluoromethylcholine gets taken up by cells in the body and more of it is taken up by tumor cells than by normal cells. A PET scanner is used to detect which cells in the body have taken up fluorine F 18 fluoromethylcholine. It is a type of radioimaging agent. Also called 18F-choline, 18F-fluoromethylcholine, and 18F-FMCH.

**fluorine F 18 fluoropaclitaxel:** A radiotracer containing paclitaxel labeled with the radioisotope fluorine F 18 with potential use as an imaging agent. After cellular uptake, the paclitaxel moiety of fluorine F18 fluoropaclitaxel binds to tubulin. Upon uptake, the radioisotope moiety may be detected using positron emission tomography (PET), thereby allowing imaging and quantification of the biodistribution of paclitaxel. This could identify multidrug resistant (MDR) status of tumor cells and select patients that will likely respond to paclitaxel treatment. Check for active clinical trials using this agent.

**fluorine F 18 fluorothymidine:** A radioconjugate consisting of a thymidine analogue radiolabeled with fluorine F 18, a positron emitting isotope. Phosphorylated by S-phase-specific thymidine kinase 1, fluorine F 18 fluorothymidine is trapped intracellularly by entering the salvage pathway of DNA synthesis without incorporation into DNA. 18F-FLT serves a marker of tumor cell proliferation for imaging with positron emission tomography (PET); as a marker of proliferation rather than metabolism, it is more specific to tumor tissue than 2-deoxy-2-[18F] fluoro-D-glucose (18F-FDG). This agent is metabolically stable, accumulates in the normal bone marrow and the liver, and does not cross the blood-brain barrier. Check for active clinical trials using this agent.

**fluorine F 18 fluorthanatrace:** A radiotracer consisting of an analogue of the poly(ADP-ribose) polymerase 1 (PARP1) inhibitor rucaparib radiolabeled with the positron emitting isotope fluorine F 18, which can potentially be used for the imaging of PARP1 expression using positron emission tomography (PET). Upon administration, fluorine F 18 fluorthanatrace targets and binds to PARP1. Upon PET, PARP1-expressing tumor cells can be visualized. PARP1, which is overexpressed in many cancer cell types, catalyzes post-translational ADP-ribosylation of nuclear proteins and plays a key role in the repair of DNA strand breaks.

**fluorine F 18 FMDHT:** A radioconjugate containing a derivative of the androgen testosterone (FMDHT) and labeled with the radioisotope fluorine

F 18, with potential use as an imaging agent for positron emission tomography (PET). Upon administration, fluorine F 18 FMDHT binds to the androgen receptor (AR). Upon PET imaging, AR-expressing prostate tumor cells can be imaged and assessed.

**fluorine F 18 FP-R01-MG-F2:** A radiotracer composed of the integrin alphaVbeta6 (aVb6) ligand and cystine knot peptide R01 variant R01-MG-F2 radiolabeled with [18F]-fluoropropionate (F 18 FP), with potential integrin aVb6 imaging activity using positron emission tomography (PET). Upon administration, the R01-MG-F2 moiety of fluorine F 18 FP-R01-MG-F2 selectively binds to integrin aVb6-positive cancer cells. During PET, aVb6-expressing tumor cells can be visualized. Integrin aVb6, a cell adhesion and signaling receptor, is upregulated in certain cancer cell types and has been associated with increased proliferation of tumor cells. The cystine knot peptide shows high stability and allows for rapid and high uptake into aVb6-expressing tumor cells.

**fluorine F 18 galacto-RGD peptide:** A radiotracer composed of a cyclic Arg-Gly-Asp (RGD) peptide that is conjugated with galactose and radiolabeled with fluorine 18, for potential noninvasive positron emission tomography (PET) imaging of alphaVbeta3 integrin expression. Upon administration, the RGD moiety of the fluorine 18 galacto-RGD peptide selectively binds to alphaVbeta3 integrin. During PET imaging, alphaVbeta3-expressing tumor cells can be visualized and the degree of tumor angiogenesis can be determined. Use of a hydrophilic glycopeptide-based agent may increase retention in the blood and reduce clearance by the liver. This leads to both increased uptake of fluorine 18 galacto-RGD peptide by tumor cells and enhanced PET imaging efficiency, when compared to other agents that are constructed using lipophilic conjugates. AlphaVbeta3 integrin, a cell adhesion and signaling receptor, is upregulated in tumor vessel endothelial cells and has been associated with proliferation of tumor cells, tumor angiogenesis and metastasis.

**Fluorine F 18 ISO-1:** A radioconjugate consisting of the benzamide ligand ISO-1 labeled with the radioisotope fluorine F18 with positron-emitting radioisotope activity. Upon administration, fluorine [F18]ISO-1 binds to sigma-2 receptors, located on tumor cells, allowing visualization of sigma-2 receptor-expressing tumor cells with positron emission tomography (PET). Sigma-2 receptors, expressed in a variety of normal healthy tissues such as

liver, kidneys, endocrine glands, and in the central nervous system, may be overexpressed in tumor cells.

**fluorine F 18 L-glutamate derivative BAY94-9392:** A radioconjugate composed of the radionuclide fluorine F 18 conjugated to the L-glutamate derivative, (S)-4-(3-fluoropropyl)-L-glutamic acid (FSPG), targeting the cystine/glutamate transporter protein (xCT or SLC7A11), which is a subunit of the transport system xc(-), with potential imaging activity upon positron emission tomography (PET). Upon intravenous administration, the FSPG moiety of BAY94-9392 specifically binds to xCT and BAY94-9392 is subsequently taken up by the cell via xc(-). Upon uptake, xc(-) activity can be assessed and tumor cells can be detected and imaged by PET. System xc(-), a sodium-independent, heterodimeric transporter, mediates the cellular uptake of cystine in exchange for intracellular glutamate at the plasma membrane; although, it will take up glutamate as well. Xc(-) shows increased activity in certain tumor cells compared to normal, healthy cells due to increased metabolic activity in tumor cells; it plays a key role in tumor cell proliferation, progression and chemoresistance as well as in the management of oxidative stress.

**fluorine F 18 RGD-based integrin peptide-polymer AH111585:** A small synthetic peptide containing an RGD-sequence (Arg-Gly-Asp) attached to the positron-emitting isotope fluorine F 18 that may be used to selectively image tumor cells and tumor vasculature by PET imaging. The RGD motif of fluorine F 18 RGD-based integrin peptide-polymer AH111585 selectively binds to the  $\alpha$ V $\beta$ 3 integrin receptor, commonly upregulated on the surfaces of tumor cells and tumor vasculature endothelial cells. This agent may be of use in visualizing and quantifying a decrease in tumor vascularity in response to antiangiogenic agents.

**fluorine F 18 RGD-K5:** A radiotracer composed of a cyclic triazole-containing the Arg-Gly-Asp (RGD) peptide (RGD-K5) radiolabeled with fluorine F 18, with potential  $\alpha$ V $\beta$ 3 integrin imaging activity upon positron emission tomography (PET). Upon administration, the RGD moiety of fluorine F 18 RGD-K5 selectively binds to  $\alpha$ V $\beta$ 3 integrin. During PET,  $\alpha$ V $\beta$ 3-expressing tumor cells can be visualized and the degree of tumor angiogenesis can be determined.  $\alpha$ V $\beta$ 3 integrin, a cell adhesion and signaling receptor, is upregulated in tumor vessel endothelial cells and has been associated with neovascularization, differentiation,

proliferation of tumor cells, and metastasis. Check for active clinical trials using this agent.

**fluorine F 18 SKI-249380:** A radioconjugate composed of a derivative of the multi-targeted kinase inhibitor dasatinib conjugated to the radioisotope fluorine F 18, with potential imaging activity during positron emission tomography (PET). Upon administration of fluorine F 18 SKI-249380, the SKI-249380 moiety targets and binds to Bcr/Abl, SRC-family protein-tyrosine kinases, c-Kit and platelet-derived growth factor receptor (PDGFR). Upon binding, the fluorine F 18 moiety allows PET imaging of tumor cells and can be used as a tracer for the biodistribution of dasatinib. Check for active clinical trials using this agent.

**fluorine F 18 sodium fluoride:** A radiopharmaceutical consisting of the sodium salt of fluorine F 18 fluoride with radioisotopic and bone mineralizing activities. Fluoride binds to calcium ions in hydroxyapatite crystals in bone. The uptake and incorporation of positron-emitting fluorine F 18 fluoride into bone can be imaged using positron emission tomography (PET) or single-photon emission computed tomography (SPECT), allowing visualization of malignant bone lesions in which regional blood flow and bone turnover are increased.

**fluorine F 18 sodium fluoride PET :** A procedure used to find out if cancer has spread to the bone. A small amount of a radioactive substance called fluorine F 18 sodium fluoride is injected into a vein. A PET scan is then used to make detailed pictures of the bones. Bones with cancer in them take up more fluorine F18 sodium fluoride than normal bones do. Also called F 18 sodium fluoride positron emission tomography and F-18 NaF PET.

**fluorine F 18-AV-133:** A radioconjugate composed of the vesicular monoamine transporter 2 (VMAT2) targeting agent AV-133, a dihydrotetrabenazine analog, labeled with the positron-emitting isotope fluorine F 18, that can potentially be used as a tracer using positron emitting tomography (PET) imaging. Upon administration, the AV-133 moiety of fluorine F 18-AV-133 binds to VMATs expressed on monoamine neurons and pancreatic beta-cells within the islets of Langerhans. Upon PET imaging, VMAT2-expressing cells can be detected and the level of functional monoamine neurons can be assessed, which can be used in the diagnosis of neurodegenerative diseases. In addition, this radiotracer can be

used to assess the function of pancreatic beta-cells. VMAT2, a transporter that loads monoamine neurotransmitters into secretory vesicles, is expressed on biogenic amine-containing neurons in the central nervous system (CNS) and pancreatic beta cells.

**fluorine F 18-labeled S-(3-Fluoropropyl)homocysteine hydrochloride:**

The hydrochloride salt form of a radioconjugate composed of a synthetic derivative of the amino acid methionine radiolabeled with fluoride F 18, with potential use as a tumor imaging agent during positron emission tomography (PET). Upon administration, fluorine F 18-labeled S-(3-fluoropropyl) homocysteine is preferentially taken up by tumor cells through an amino acid transporter, which is overexpressed by cancer cells. Because tumor cells have a higher rate of proliferation than normal cells, these cancer cells have increased rates of protein synthesis and thus an increased demand for amino acids. This allows for visualization of tumors cells upon PET.

**Fluorocarbon:** Viton [® DuPont Dow Elastomers], Fluorel [TM, 3M Co.] Polymer designed to meet the most rigid requirements in oils, solvents, synthetic lubricants and corrosive chemicals, at elevated temperatures

**Fluorocarbon Plastics:** Plastics based on polymers made with monomers composed of fluorine and carbon only.

**Fluorofur:** (Other name for: tegafur)

**Fluoroplex:** (Other name for: topical fluorouracil) or A drug used to treat cancers of the breast, colon, rectum, stomach, and pancreas. Under the brand names Carac, Tolak, Efudex, and Fluoroplex, it is used as a cream to treat actinic keratosis (a skin condition that may become cancer). It is also used under the brand name Efudex as a cream to treat basal cell skin cancer that is superficial (not invasive) and cannot be removed by surgery. Fluoroplex is being studied in the treatment of other conditions and types of cancer. It stops cells from making DNA and may kill cancer cells. Fluoroplex is a type of antimetabolite. Also called 5-fluorouracil, 5-FU, Carac, Efudex, fluorouracil, and Tolak.

**Fluoropolymers:** Family of engineering plastics containing fluorine, characterized by high thermal stability, almost universal chemical resistance and low friction.

**fluoropyrimidine :** One of a group of substances used to treat cancer. A fluoropyrimidine is a type of antimetabolite. Examples are capecitabine,

floxuridine, and fluorouracil (5-FU).

**fluoroquinolone** : A type of drug used to prevent and treat infections.

**fluoroscope** : An x-ray machine that makes it possible to see internal organs in motion.

**fluorothymidine F 18** : A radioactive substance being studied in the diagnosis of cancer. Fluorothymidine F 18 is injected into the blood and builds up in cells that are dividing, including cancer cells. The radiation that it gives off as it decays (breaks down) helps make clear pictures of tumors during positron emission tomography (PET) scans. It is a type of radiopharmaceutical. Also called 18F-FLT and 3'-deoxy-3'-(18F) fluorothymidine.

**Fluorouracil**: An analog of thymine that inhibits the methylation of thymine to form thymidylate; fluorouracil is used in chemotherapy.

**fluorouracil** : A drug used to treat cancers of the breast, colon, rectum, stomach, and pancreas. Under the brand names Carac, Tolak, Efudex, and Fluoroplex, it is used as a cream to treat actinic keratosis (a skin condition that may become cancer). It is also used under the brand name Efudex as a cream to treat basal cell skin cancer that is superficial (not invasive) and cannot be removed by surgery. Fluorouracil is being studied in the treatment of other conditions and types of cancer. It stops cells from making DNA and may kill cancer cells. Fluorouracil is a type of antimetabolite. Also called 5-fluorouracil, 5-FU, Carac, Efudex, Fluoroplex, and Tolak.

**fluorouracil implant**: An implant containing a sustained release particle of fluorouracil, an antimetabolite fluoropyrimidine analog of the nucleoside pyrimidine, with antineoplastic activity. Upon implantation and subsequent release, fluorouracil is converted into the active metabolite 5-fluoroxymethyluridine monophosphate that competes with the pyrimidine uracil during RNA synthesis while another active metabolite, 5-fluoro-2'-deoxyuridine-5'-O-monophosphate, inhibits thymidylate synthase and thus DNA synthesis.

**fluorouracil injection**: An antimetabolite fluoropyrimidine analog of the nucleoside pyrimidine with antineoplastic activity. Fluorouracil and its metabolites possess a number of different mechanisms of action. In vivo, fluorouracil is converted to the active metabolite 5-fluoroxymethyluridine monophosphate (F-UMP); replacing uracil, F-UMP incorporates into RNA and inhibits RNA processing, thereby inhibiting cell growth. Another active

metabolite, 5-5-fluoro-2'-deoxyuridine-5'-O-monophosphate (F-dUMP), inhibits thymidylate synthase, resulting in the depletion of thymidine triphosphate (TTP), one of the four nucleotide triphosphates used in the in vivo synthesis of DNA. Other fluorouracil metabolites incorporate into both RNA and DNA; incorporation into RNA results in major effects on both RNA processing and functions.

**fluorouracil-e therapeutic implant:** An injectable collagen matrix gel containing the antimetabolite fluorouracil and the sympathicomimetic agent epinephrine with potential antineoplastic activity. After intratumoral injection, fluorouracil is converted into the active metabolite 5-fluoroxymethyluridine monophosphate that competes with uracil during RNA synthesis while another active metabolite, 5-5-fluoro-2'-deoxyuridine-5'-O-monophosphate, inhibits thymidylate synthase and, so, DNA synthesis. Epinephrine, a potent vasoconstrictor, is added to the gel to enhance penetration of fluorouracil into tumor tissue and reduce dispersion to surrounding tissues, thus enhancing the local concentration of fluorouracil. Compared to systemic administration, the intratumoral injection of fluorouracil combined with epinephrine may increase fluorouracil's chemotherapeutic efficacy while minimizing systemic toxicity.

**fluoxetine :** A drug used to treat depression. It is a type of antidepressant.

**fluoxymesterone:** A halogenated derivative of 17-alpha-methyltestosterone. Similar to testosterone, fluoxymesterone binds to and activates specific nuclear receptors, resulting in an increase in protein anabolism, a decrease in amino acid catabolism, and retention of nitrogen, potassium, and phosphorus. This agent also may competitively inhibit prolactin receptors and estrogen receptors, thereby inhibiting the growth of hormone-dependent tumor lines. Fluoxymesterone is approximately five times more potent than methyltestosterone.

**fluphenazine :** A drug that is used to treat mental and emotional disorders and is being studied in the treatment of multiple myeloma. Fluphenazine may stop tumor growth by keeping myeloma cells from dividing and causing them to die. It is a type of antipsychotic. Also called fluphenazine hydrochloride.

**fluphenazine hydrochloride:** The hydrochloride salt of fluphenazine, a phenothiazine with antipsychotic activity and potential antineoplastic activity. Fluphenazine blocks postsynaptic dopamine D2 receptors in the

limbic system, cortical system and basal ganglia, resulting a reduction of schizophrenia-associated hallucinations and delusions. In addition, as a serotonin antagonist, this agent may inhibit lymphocyte and myeloma cell proliferation by blocking 5-hydroxytryptamine type 1B (5-HT type 1B) receptors for serotonin.

**fluphenazine hydrochloride :** A drug that is used to treat mental and emotional disorders and is being studied in the treatment of multiple myeloma. Fluphenazine hydrochloride may stop tumor growth by keeping myeloma cells from dividing and causing them to die. It is a type of antipsychotic. Also called fluphenazine.

**flurbiprofen:** A derivative of propionic acid, and a phenylalkanoic acid derivative of non-steroidal antiinflammatory drugs (NSAIDs) with analgesic, antiinflammatory and antipyretic effects. Flurbiprofen non-selectively binds to and inhibits cyclooxygenase (COX). This results in a reduction of arachidonic acid conversion into prostaglandins that are involved in the regulation of pain, inflammation and fever. This NSAID also inhibits carbonic anhydrase, thereby reducing the production of hydrogen and bicarbonate ions. Upon ocular administration, flurbiprofen may reduce bicarbonate ion concentrations leading to a decrease in the production of aqueous humor, thereby lowering intraocular pressure.

**Flurizan:** (Other name for: tarenflurbil)

**Flush-panel:** Panel level with the surrounding beading or framing. Hence flush-panelled door where a single smooth unbroken surface is obtained.

**Flushield:** (Other name for: trivalent influenza vaccine)

**flutamide:** A toluidine derivative and nonsteroidal antiandrogen that is structurally related to bicalutamide and nilutamide. Flutamide and its more potent active metabolite 2-hydroxyflutamide competitively block dihydrotestosterone binding at androgen receptors, forming inactive complexes which cannot translocate into the cell nucleus. Formation of inactive receptors inhibits androgen-dependent DNA and protein synthesis, resulting in tumor cell growth arrest or transient tumor regression. or A drug used with another drug to treat certain types of prostate cancer.

Flutamide binds to proteins called androgen receptors, which are found in some prostate cancer cells, and keeps androgens (male hormones) from binding to the receptors. This blocks the ability of androgens to cause prostate cancer cells to grow. Flutamide is a type of antiandrogen.

**flutemetamol F-18:** A radiopharmaceutical containing flutemetamol, a thioflavin derivative of Pittsburgh compound B (PiB) labeled with the radioisotope fluorine F18 that can be used to detect beta-amyloid deposition upon positron emission tomography (PET). After intravenous administration of flutemetamol F 18, the flutemetamol moiety selectively accumulates in and binds to cerebral fibrillar amyloid-beta in the brain. The fluorine F18 radioisotope moiety is detected using PET, which allows imaging and quantification of amyloid-beta density. Amyloid plaque deposition is linked to cognitive decline, including Alzheimer's disease, and may be linked to chemotherapy-induced cognitive impairment (CICI).

**fluticasone propionate:** The propionate salt form of fluticasone, a synthetic trifluorinated glucocorticoid receptor agonist with antiallergic, antiinflammatory and antipruritic effects. Binding and activation of the glucocorticoid receptor results in the activation of lipocortin that in turn inhibits cytosolic phospholipase A2, which triggers cascade of reactions involved in synthesis of inflammatory mediators, such as prostaglandins and leukotrienes. Secondly, mitogen-activated protein kinase (MAPK) phosphatase 1 is induced, thereby leads to dephosphorylation and inactivation of Jun N-terminal kinase directly inhibiting c-Jun mediated transcription. Finally, transcriptional activity of nuclear factor (NF)-kappa-B is blocked, thereby inhibits the transcription of cyclooxygenase 2, which is essential for prostaglandin production.

**fluvastatin sodium:** The sodium salt of a synthetic lipid-lowering agent with potential antineoplastic activity. Fluvastatin competitively inhibits hepatic 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase, the enzyme that catalyzes the conversion of HMG-CoA to mevalonate, a key step in cholesterol synthesis. This agent lowers plasma cholesterol and lipoprotein levels, and modulates immune responses through the suppression of MHC II (major histocompatibility complex II) on interferon gamma-stimulated, antigen-presenting cells such as human vascular endothelial cells. Through the inhibition of mevalonate synthesis, statins, like fluvastatin, have been shown to inhibit the production of dolichol, geranylpyrophosphate (GPP) and farnesylpyrophosphate (FPP) and the isoprenylation of the intracellular G-proteins Ras and Rho, which may result in antiangiogenic, apoptotic, and antimetastatic effects in susceptible tumor cell populations.

**Fluvirin:** (Other name for: trivalent influenza vaccine)

**fluvoxamine :** A drug used to treat obsessive-compulsive disorder. It is a type of antidepressant agent and selective serotonin reuptake inhibitor (SSRI). Also called Luvox.

**fluvoxamine maleate:** The maleate salt form of fluvoxamine, a 2-aminoethyl oxime ether of aralkylketones, with antidepressant, antiobsessive-compulsive, and antibulimic activities. Fluvoxamine blocks serotonin reuptake by inhibiting the serotonin reuptake pump of the presynaptic neuronal membrane leading to an increase of serotonin levels within the synaptic cleft. This results in facilitated serotonergic transmission and decreased serotonin turnover leading to antidepressant and antiobsessive-compulsive effects.

**Flux:** A term applied to the amount of some type of particle (neutrons, alpha particles, etc.) or energy (photons, heat, etc.) crossing a unit area per unit time. The unit of flux is the number of particles, energy, etc., per square centimeter per second. OR a material used to promote joining of metals in soldering.

**Fluzone:** (Other name for: trivalent influenza vaccine)

**fluzoparib:** An orally available inhibitor of poly (ADP-ribose) polymerase (PARP) types 1 and 2, with potential antineoplastic activity. Upon oral administration, fluzoparib inhibits PARP 1 and 2 activity, which inhibits PARP-mediated repair of damaged DNA via the base excision repair (BER) pathway, enhances the accumulation of DNA strand breaks, promotes genomic instability, and leads to an induction of apoptosis. The PARP family of proteins catalyze post-translational ADP-ribosylation of nuclear proteins, which then transduce signals to recruit other proteins to repair damaged DNA. PARP inhibition may enhance the cytotoxicity of DNA-damaging agents and may reverse tumor cell chemoresistance and radioresistance.

**FMISO:** A radioactive substance being studied as an imaging agent in head and neck cancers and other types of cancer. It binds to large molecules in tumor cells that have a low level of oxygen. Radiation given off by FMISO is detected by a PET scan. The amount of FMISO in the tumor may help decide the best treatment and help predict whether the cancer will come back after treatment. FMISO is a type of radioimaging agent. Also called 18F-fluoromisonidazole and 18F-MISO.

**FMN (flavin mononucleotide):** Riboflavin phosphate, a coenzyme of certain oxidation-reduction enzymes.

**FMS inhibitor JNJ-40346527:** A small molecule and orally available inhibitor of colony-stimulating factor-1 receptor (CSF1R; FMS) with potential antineoplastic activity. FMS tyrosine kinase inhibitor JNJ-40346527 blocks the receptor-ligand interaction between FMS and its ligand CSF1, thereby preventing autophosphorylation of FMS. As a result, unphosphorylated FMS cannot activate FMS-mediated signaling pathways, thus potentially inhibiting cell proliferation in FMS-overexpressed tumor cells. FMS, a tyrosine kinase receptor, is overexpressed in certain tumor cell types and plays an essential role in macrophage differentiation, recruitment, and activation as well as the regulation of cell proliferation.

**Fms/Trk tyrosine kinase inhibitor PLX7486:** The tosylate salt form of PLX7486, a selective inhibitor of the receptor tyrosine kinases colony-stimulating factor-1 receptor (CSF1R; fms) and neurotrophic tyrosine kinase receptor types 1, 2 and 3 (TrkA, TrkB, and TrkC, respectively) with potential antineoplastic activity. Upon administration, PLX7486 binds to and inhibits the activity of these tyrosine kinases. This inhibits Fms and Trk-mediated signaling transduction pathways that are upregulated in certain cancer cell types. This may eventually halt tumor cell proliferation in Fms and TrkA, TrkB, and/or TrkC-overexpressing tumor cells. Fms and TrkA, TrkB, and TrkC are receptor tyrosine kinases that are upregulated or mutated in a variety of tumors and promote tumor cell proliferation and survival.

**FNA biopsy :** The removal of tissue or fluid with a thin needle for examination under a microscope. Also called fine-needle aspiration biopsy.

**FNU:** see formazin nephelometric unit.

**FOAM:** A foam is a stable, or otherwise, dispersion of a gas in a liquid. OR A colloid in which bubbles of gas are suspended in a solid or liquid. Aerogel (solid smoke) and Styrafoam are examples of solid foams; whipped cream is an example of a liquid foam. OR Process for producing plastic profiles with a cellular construction. Either a chemical or gaseous blowing agent is introduced into the polymer plastic melt while the plastic melt is being prepared in the extruder barrel. As the plastic melt exits the die, it expands a predetermined amount forming a cellular wall.

**FOAM BOOSTER:** A substance which enhances the quality and/or longevity of a foam.

**Foaming:** You're using the wrong type of roller. For instance, if you use a sponge roller to apply water-based paints, air is injected into the wet paint film and the air bubbles burst, forming craters on the surface which dry unevenly. As a rule of thumb, use short pile rollers for flat surfaces, medium pile rollers for medium textures and long pile rollers for textured surfaces. After rolling, some paints, particularly solvent-based gloss, may need to be 'layed-off' with a brush to eliminate foaming. To repair a foamy surface, thoroughly clean it down to remove all dirt, grease and surface contaminants. Rub down the surfaces with wet and dry abrasion and water or a suitable solvent. Finally, rinse down and allow to dry thoroughly before repainting. If this is impractical, line the walls before repainting. OR Foaming is the process of producing a cellular plastic by using foaming agents. A foaming agent is a material mixed with or dissolved in a plastic to make it foam. It includes expanding agents that produce gas on heating – such as easily volatile solvents – or chemical blowing agents that produce gas by thermal decomposition. Weight reduction is the percent volume of a foamed part which contains gas instead of resin. To get 10% weight reduction, the mold is filled 90%, then allowed to “foam” and fill that last 10%. Since only 90% of the volume is resin, the part weighs 10% less than a solid part of the same dimensions would. High weight reductions result in reduced material properties when compared to low weight reductions.

**Foaming Agent :** Any substance which alone or in combination with other substances is capable of producing a cellular structure in a plastic mass. OR Chemicals added to plastics and rubbers that generate inert gases on heating, causing the resin to assume a cellular structure.

**FOBT:** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Guaiac FOBT and immunochemical FOBT are two types of FOBTs. Guaiac FOBT uses a chemical substance called guaiac to check for blood in the stool. Immunochemical FOBT uses an antibody to check for blood in the stool. Also called fecal occult blood test.

**focal :** In terms of cancer, limited to a specific area.

**focus:** exact site of the origin of an earthquake, below the epicenter. OR the point of origin of an earthquake.

**FOG:** Fats, Oils and Greases. A measure of the non-petroleum based fats in waste treatment. OR Liquid particles less than 40 microns in diameter that are formed by condensation of vapor in air.

**FOIL DECORATING:** Molding paper, textile, or plastic foils printed with compatible inks directly into a plastic part so that the foil is visible below the surface of the part as integral decoration.

**folate :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Folate helps to make red blood cells. It is found in whole-grain breads and cereals, liver, green vegetables, orange juice, lentils, beans, and yeast. Folate is water-soluble (can dissolve in water) and must be taken in every day. Not enough folate can cause anemia (a condition in which the number of red blood cells is below normal), diseases of the heart and blood vessels, and defects in the brain and spinal cord in a fetus. Folate is being studied with vitamin B12 in the prevention and treatment of cancer. Also called folic acid.

**folate antagonist :** A type of drug that stops cells from using folic acid to make DNA and may kill cancer cells. Certain folate antagonists are used to treat some types of cancer and inflammatory conditions, such as rheumatoid arthritis. Also called antifolate and folic acid antagonist.

**folate binding protein E39 peptide vaccine:** A cancer vaccine comprised of human leukocyte antigen (HLA) A2 restricted folate binding protein (FBP) epitope E39 (amino acids 191 to 199), with potential immunostimulatory and antineoplastic activity. Upon intradermal injection, FBP E39 peptide vaccine may induce a specific cytotoxic T-lymphocyte (CTL) response against FBP-expressing tumor cell types. FBP is a membrane-bound, tumor-associated antigen highly overexpressed in various tumor cell types, such as in breast, ovarian and endometrial cancers; E 39 is a strong immunogenic peptide.

**folate binding protein J65 peptide vaccine:** A cancer vaccine comprised of human leukocyte antigen (HLA)-A2-restricted folate binding protein (FBP) epitope J65 (9 amino acids; EIWTFSTKV), with potential immunostimulatory and antineoplastic activities. Upon intradermal injection, FBP J65 peptide vaccine may induce a specific cytotoxic T-lymphocyte (CTL) response against J65 FBP-expressing tumor cell types.

FBP is a membrane-bound, tumor-associated antigen overexpressed in various tumor types, including breast, ovarian and endometrial cancers. J65 is a strongly immunogenic peptide.

**folate receptor alpha-loaded dendritic cell vaccine:** A cell-based vaccine composed of autologous-monocyte-derived dendritic cells (DCs) loaded with five immunogenic peptide epitopes, derived from the tumor-associated antigen human folate receptor alpha (FR alpha or FOLR1), including FR30, FR56, FR76, FR113, and FR238, with potential immunomodulatory and antineoplastic activity. Ex vivo treatment of the DCs with a p38 inhibitor decreases p38-mediated signaling and enhances ERK activation. This may allow, upon intradermal administration of the multi-epitope FR alpha-loaded DC vaccine into the patient, for decreased activation and expansion of CD4<sup>+</sup> regulatory T-cells (Tregs), increased differentiation and expansion of interleukin-17 secreting T helper cells (Th17) and activation of CD8<sup>+</sup> CTLs, which induces a strong anti-tumor T-cell immune response against FR alpha-overexpressing tumor cells. FR alpha is a high-affinity folate-binding protein and a member of the folate receptor family; this receptor is overexpressed in the majority of ovarian cancers and in about approximately 50% of breast cancers.

**folate receptor-targeted epothilone BMS753493:** A folate receptor-targeting antimetabolic agent with potential antineoplastic activity. Folate receptor-targeted epothilone BMS753493 contains an epothilone moiety linked to a single folate molecule. Mediated through the folate moiety, this agent delivers the antimetabolic epothilone component into cells expressing folic acid receptors, frequently upregulated in many types of tumor cells. After ligand-receptor internalization, the epothilone moiety induces microtubule polymerization and stabilizes microtubules against depolymerization, resulting in the inhibition of mitosis and cellular proliferation. Check for active clinical trials using this agent.

**folate receptor-targeted technetium Tc 99m EC20:** A folate receptor-targeting radiopharmaceutical consisting of a folate-containing tetrapeptide chelator to which technetium Tc 99m is linked. The folate component of folate receptor-targeted technetium Tc 99m EC20 binds to folic acid receptors, which are frequently upregulated in many types of tumor cells and activated macrophages. Gamma scintigraphy may then be used to image folate receptor-positive tumors.

**folate receptor-targeted tubulysin conjugate EC1456:** An injectable targeted small molecule drug conjugate (SMDC) consisting of folate (vitamin B9) covalently linked to the potent mitotic poison and cytotoxic agent, tubulysin B hydrazide (Tub-B-H) with potential antineoplastic activity. Upon administration, the folate moiety of folate receptor-targeted tubulysin conjugate EC1456 preferentially binds to tumor cells expressing folate receptors (FR). After binding to FR, the agent is internalized by tumor cells and the Tub-B-H moiety inhibits the polymerization of tubulin into microtubules. This may lead to both cell cycle arrest and tumor cell apoptosis. FR, the membrane-bound, high-affinity receptor for folate, is overexpressed on a wide range of primary and metastatic human cancers.

**folate receptor-targeted vinca alkaloid EC0489:** A folate receptor-targeting cytotoxic drug conjugate consisting of a folate vitamin analogue linked to a vinca alkaloid microtubule destabilizing agent with potential antineoplastic activity. Mediated through its folate moiety, folate receptor-targeted Vinca alkaloid EC0489 delivers the cytotoxic vinca alkaloid moiety directly to cells expressing folic acid receptors, frequently upregulated in many types of tumor cells. After ligand-receptor internalization, the vinca alkaloid moiety binds to tubulin and disrupts microtubule assembly-disassembly dynamics, resulting in cell cycle arrest and apoptosis. The relative tumor cell specificity of this agent reduces the toxicity profile of its Vinca alkaloid moiety.

**folate receptor-targeted vinca alkaloid/mitomycin C EC0225:** A folate receptor-targeting cytotoxic agent with potential antineoplastic activity. Folate receptor-targeted vinca alkaloid/mitomycin C EC0225 contains two potent cytotoxic agents, a vinca alkaloid and mitomycin C, linked to a single folate molecule. Mediated through the folate moiety, this agent delivers the cytotoxic agents directly into cells expressing folic acid receptors, frequently upregulated in many types of tumor cells. After ligand-receptor internalization, the vinca alkaloid moiety binds to tubulin and disrupts microtubule assembly-disassembly dynamics, resulting in cell cycle arrest and apoptosis. Mitomycin C alkylates DNA, producing DNA cross-links and inhibiting DNA replication. The relative tumor cell specificity of EC0225 reduces the toxicity profiles of its cytotoxic agent moieties.

**folate-FITC:** A conjugate consisting of fluorescein isothiocyanate (FITC) conjugated with folate with potential antineoplastic activity. Folate-FITC binds to folate receptors, which are overexpressed on the surfaces of many cancer cells including kidney and ovarian cancer cells. Once bound to the cancer cell through the folate moiety of the conjugate, circulating anti-fluorescein antibodies may recognize and bind to the FITC moiety, resulting in antibody-dependent cellular cytotoxicity.

**fold:** a bend in a layered rock.

**fold and thrust belt:** a mountain-building event in which rocks are folded during tectonic stress and detached as thin layers along thrust zones, which vertically stack the layers; typically occurs on the continental side of a magmatic arc.

**folded mountain:** a mountain created by intense compressional forces that fold, fault, and metamorphose the rocks, a process that resulted in many of the world's biggest mountain belts.

**folded mountains:** mountain range formed by the collision of continental plates, causing the rock layers to be crumpled.

**Folex:** (Other name for: methotrexate)

**Folex PFS:** (Other name for: methotrexate)

**FOLFIRI :** An abbreviation for a chemotherapy combination used to treat advanced colorectal cancer that has spread. It is also being studied in the treatment of other types of cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and irinotecan hydrochloride. Also called FOLFIRI regimen.

**FOLFIRI regimen:** A chemotherapy regimen consisting of leucovorin calcium (calcium folinate), 5-fluorouracil, and irinotecan used in the treatment of advanced-stage and metastatic colorectal cancer.

**FOLFIRI regimen :** An abbreviation for a chemotherapy combination used to treat advanced colorectal cancer that has spread. It is also being studied in the treatment of other types of cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and irinotecan hydrochloride. Also called FOLFIRI.

**FOLFIRI-Avastin regimen :** A chemotherapy combination used as an initial treatment of colorectal cancer that has spread. It includes the drugs leucovorin (folinic acid), fluorouracil, irinotecan hydrochloride, and

bevacizumab. Also called FOLFIRI-bevacizumab and FOLFIRI-bevacizumab regimen.

**FOLFIRI-bevacizumab :** A chemotherapy combination used as an initial treatment of colorectal cancer that has spread. It includes the drugs leucovorin (folinic acid), fluorouracil, irinotecan hydrochloride, and bevacizumab. Also called FOLFIRI-Avastin regimen and FOLFIRI-bevacizumab regimen.

**FOLFIRI-bevacizumab regimen:** A first-line chemotherapy regimen consisting of folinic acid (leucovorin), fluorouracil, irinotecan and bevacizumab used for the treatment of advanced-stage colorectal cancer. Or A chemotherapy combination used as an initial treatment of colorectal cancer that has spread. It includes the drugs leucovorin (folinic acid), fluorouracil, irinotecan hydrochloride, and bevacizumab. Also called FOLFIRI-Avastin regimen and FOLFIRI-bevacizumab.

**FOLFIRI-cetuximab :** A chemotherapy combination used to treat a certain type of colorectal cancer that has spread to other parts of the body. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, irinotecan hydrochloride, and cetuximab. Also called FOLFIRI-cetuximab regimen.

**FOLFIRI-cetuximab regimen:** A chemoimmunotherapy regimen consisting of leucovorin (folinic acid), 5-fluorouracil, and irinotecan plus cetuximab used for the treatment of metastatic colorectal cancer that is positive for the expression of the epidermal growth factor receptor (EGFR) and the wild-type form of KRAS. or A chemotherapy combination used as an initial treatment of colorectal cancer that has spread. It includes the drugs leucovorin (folinic acid), fluorouracil, irinotecan hydrochloride, and bevacizumab. Also called FOLFIRI-Avastin regimen and FOLFIRI-bevacizumab.

**FOLFIRINOX :** An abbreviation for a chemotherapy combination used to treat pancreatic cancer that has spread to other parts of the body. It includes the drugs leucovorin calcium, fluorouracil, irinotecan hydrochloride, and oxaliplatin. Also called FOLFIRINOX regimen.

**FOLFIRINOX regimen:** A regimen consisting of leucovorin calcium, fluorouracil, irinotecan hydrochloride, and oxaliplatin used for the treatment of pancreatic cancer.

**FOLFIRINOX regimen :** An abbreviation for a chemotherapy combination used to treat pancreatic cancer that has spread to other parts of

the body. It includes the drugs leucovorin calcium, fluorouracil, irinotecan hydrochloride, and oxaliplatin. Also called FOLFIRINOX.

**FOLFOX :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens, including FOLFOX-4, FOLFOX-6, modified FOLFOX-6 (mFOLFOX-6), and FOLFOX-7. They differ in the doses and ways in which the three drugs are given. Also called FOLFOX regimen.

**FOLFOX regimen:** One of several chemotherapy regimens that include leucovorin calcium (calcium folinate), 5-fluorouracil and oxaliplatin and which may be used in the treatment of advanced-stage and metastatic colorectal cancer. FOLFOX regimens differ in agent dosing and administration schedule and include FOLFOX 4, FOLFOX 6, modified FOLFOX 6 (mFOLFOX 6) and FOLFOX 7. or An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens, including FOLFOX-4, FOLFOX-6, modified FOLFOX-6 (mFOLFOX-6), and FOLFOX-7. They differ in the doses and ways in which the three drugs are given. Also called FOLFOX.

**FOLFOX-4 :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in which the three drugs are given. Also called FOLFOX-4 regimen.

**FOLFOX-4 regimen :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in which the three drugs are given. Also called FOLFOX-4.

**FOLFOX-6 :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in which the three drugs are given. Also called FOLFOX-6 regimen.

**FOLFOX-6 regimen :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in which the three drugs are given. Also called FOLFOX-6.

**FOLFOX-7 :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in which the three drugs are given. Also called FOLFOX-7 regimen.

**FOLFOX-7 regimen :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in which the three drugs are given. Also called FOLFOX-7.

**foliated texture:** layered mineral crystals in a metamorphic rock.

**foliation:** the alignment of parallel layers or bands of mineral grains in a rock subjected to prolonged differential stress and/or shearing.

**folic acid:** A collective term for pteroylglutamic acids and their oligoglutamic acid conjugates. As a natural water-soluble substance, folic acid is involved in carbon transfer reactions of amino acid metabolism, in addition to and purine and pyrimidine synthesis, and is essential for hematopoiesis and red blood cell production.

**folic acid :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Folic acid helps to make red blood cells. It is found in whole-grain breads and cereals, liver, green vegetables, orange juice, lentils, beans, and yeast. Folic acid is water-soluble (can dissolve in water) and must be taken in every day. Not enough folic acid can cause anemia (a condition in which the number of red blood cells is below normal), diseases of the heart and blood vessels, and defects in the brain and spinal cord in a fetus. Folic acid is being studied with vitamin B12 in the prevention and treatment of cancer. Also called folate.

**folic acid antagonist :** A type of drug that stops cells from using folic acid to make DNA and may kill cancer cells. Certain folic acid antagonists are used to treat some types of cancer and inflammatory conditions, such as rheumatoid arthritis. Also called antifolate and folate antagonist.

**folinic acid :** The active ingredient in a drug used to lessen the toxic effects of substances that block the action of folic acid, especially the anticancer drug methotrexate. Folinic acid is used to treat some types of anemia and is also used with fluorouracil to treat colorectal cancer. It is also being studied in the treatment of other types of cancer and other conditions. Folinic acid is a form of folic acid. It is a type of chemoprotective agent and a type of chemosensitizing agent. Also called leucovorin.

**folitixorin:** A folate-based biomodulator with potential antineoplastic activity. Folitixorin stabilizes the covalent binding of the fluorouracil metabolite 5-fluoro-2'-deoxyuridine-5'-O-monophosphate (FdUMP) to its target enzyme, thymidylate synthase, which results in inhibition of thymidylate synthase, depletion of thymidine triphosphate (TTP), a necessary constituent of DNA, and tumor cell death. Unlike leucovorin, folitixorin, as the active form of folate, does not require metabolic activation and may increase the chemotherapeutic effects of fluorouracil with lower toxicity.

**follicle :** A sac or pouch-like cavity formed by a group of cells. In the ovaries, one follicle contains one egg. In the skin, one follicle contains one hair.

**follicle-stimulating hormone :** A hormone made in the pituitary gland. In females, it acts on the ovaries to make the follicles and eggs grow. In males, it acts on the testes to make sperm. Also called follitropin and FSH.

**follicular large cell lymphoma :** A rare type of non-Hodgkin lymphoma (cancer that begins in the cells of the immune system) that is marked by enlarged lymph nodes and large cancer cells that may look cleaved (u-shaped) under the microscope. Follicular large cell lymphoma is treated as aggressive (fast-growing) lymphoma, but it sometimes recurs years later and acts like indolent (slow-growing) lymphoma.

**follicular lymphoma :** A type of B-cell non-Hodgkin lymphoma (cancer of the immune system) that is usually indolent (slow-growing). The tumor cells grow as groups to form nodules. There are several subtypes of follicular lymphoma.

**follicular mixed cell lymphoma :** An indolent (slow-growing) type of B-cell non-Hodgkin lymphoma (cancer of the lymphatic system) in which there are both small and large cancer cells.

**follicular thyroid cancer :** Cancer that forms in follicular cells in the thyroid. It grows slowly and is highly treatable.

**folliculitis :** Inflammation of a follicle (a sac or pouch-like cavity), usually a hair follicle.

**follitropin :** A hormone made in the pituitary gland. In females, it acts on the ovaries to make the follicles and eggs grow. In males, it acts on the testes to make sperm. Also called follicle-stimulating hormone and FSH.

**Follow up Pressure:** It is pressure on melt after the switch over point in the moulding process.

**follow-up :** Monitoring a person's health over time after treatment. This includes keeping track of the health of people who participate in a clinical study or clinical trial for a period of time, both during the study and after the study ends.

**follow-up care :** Care given to a patient over time after finishing treatment for a disease. Follow-up care involves regular medical checkups, which may include a physical exam, blood tests, and imaging tests. Follow-up care checks for health problems that may occur months or years after treatment ends, including the development of other types of cancer. Follow-up care is given after positive screening test results, such as a positive Pap test result. In cancer patients, one purpose of follow-up care is checking to see if the cancer has come back or has spread to other parts of the body.

**follow-up care plan :** A detailed plan for a patient's follow-up care after treatment for a disease ends. In cancer, the plan is based on the type of cancer and the treatment the patient received. A follow-up care plan may include schedules for physical exams and medical tests to see if the cancer has come back or spread to other parts of the body. Follow-up care also checks for health problems that may occur months or years after treatment ends, including other types of cancer. A follow-up care plan may also include information to help meet the emotional, social, legal, and financial needs of the patient. It may include referrals to specialists and recommendations for a healthy lifestyle, such as changes in diet and exercise and quitting smoking. Also called survivorship care plan.

**follow-up study :** A study in which individuals or populations, selected on the basis of whether they have been exposed to risk, received a specified preventive or therapeutic procedure, or possess a certain characteristic, are

followed to assess the outcome of exposure, the procedure, or effect of the characteristic, e.g., occurrence of disease (from Last, 1988).

**Follutein:** (Other name for: recombinant human chorionic gonadotropin)

**FOLOTYN:** (Other name for: pralatrexate) or A drug used in the treatment of peripheral T-cell lymphoma (a fast-growing form of non-Hodgkin lymphoma). It is also being studied in the treatment of other types of cancer. FOLOTYN may block the growth of cancer cells and cause them to die. It is a type of dihydrofolate reductase (DHFR) inhibitor. Also called pralatrexate.

**Fonatot:** (Other name for: diethylstilbestrol)

**fondaparinux :** A drug used to prevent blood clots from forming inside blood vessels in the leg. It is being studied in the prevention of blood clots in some cancer patients, including women having surgery for cancer of the reproductive tract. It is a type of anticoagulant. Also called Arixtra and fondaparinux sodium.

**fondaparinux sodium:** The sodium salt form of fondaparinux, a synthetic glucopyranoside with antithrombotic activity. Fondaparinux sodium selectively binds to antithrombin III, thereby potentiating the innate neutralization of activated factor X (Factor Xa) by antithrombin.

Neutralization of Factor Xa inhibits its activity and interrupts the blood coagulation cascade, thereby preventing thrombin formation and thrombus development. Check for active clinical trials using this agent.

**fondaparinux sodium :** A drug used to prevent blood clots from forming inside blood vessels in the leg. It is being studied in the prevention of blood clots in some cancer patients, including women having surgery for cancer of the reproductive tract. It is a type of anticoagulant. Also called Arixtra and fondaparinux.

**food additive:** Any non-nutritive substances added intentionally to food, generally in small quantities, to improve its appearance, flavour, texture or storage properties, with the exception of substances which are added to food exclusively for their nutritive properties, but including animal feed adjuncts which may result in residues in human food and components of packaging materials which may find their way into human food, and other contaminants (Vettorazzi, 1980).

**Food and Drug Administration :** An agency in the U.S. federal government whose mission is to protect public health by making sure that food, cosmetics, and nutritional supplements are safe to use and truthfully labeled. The Food and Drug Administration also makes sure that drugs, medical devices, and equipment are safe and effective, and that blood for transfusions and transplant tissue are safe. Also called FDA.

**Food and Utility Bags:** Small clear bags designed to hold a variety of small objects (e.g., bread, poultry, vegetables, etc.)

**Food chain:** Very simple pathway of nutrient flow. Ex. Carnivore > herbivore > plant . OR The sequence of transfer of matter and energy in the form of food from organism to organism in ascending or descending trophic levels (WHO, 1979). OR the transfer of food energy from producers to consumers. OR A sequence of organisms, each of which uses the next lower member of the sequence as a food source.

**Food grade:** Resins or mold release spray that are approved for use in the manufacture of parts that will contact food in their application.

**food pyramid:** a way of expressing the availability of food in an ecosystem at a successive number of trophic levels.

**food web:** A network of food chains (WHO, 1979). OR many interwoven food chains.

**Footings:** The lowest part of a wall or column standing immediately upon the foundations.

**Footprinting:** A technique used to determine the site of a protein that binds to DNA. DNA is digested in the presence or absence of the protein, and the sequence protected from digestion by the protein is identified. This sequence is the “footprint” of the protein. OR A technique for identifying the nucleic acid sequence bound by a DNA- or RNA-binding protein.

**footwall:** the block that underlies an inclined dip-slip fault.

**Forane:** (Other name for: isoflurane)

**force:** An entity that when applied to a mass causes it to accelerate. Sir Isaac Newton's Second Law of Motion states: the magnitude of a force=mass\*acceleration.

**Force Plate:** The plate that carries the plunger of force plug of a mold and guide pins and bushings. Since it is usually drilled for steam or water lines, it is also called the Steam Plate.

**Force Plug:** The portion of a mold that enters the cavity block and exerts pressure on the molding compound, designated as Top Force or Bottom Force by position in the assembly; also called Plunger or Piston.

**Force-on-Force (FOF):** Inspections designed to evaluate and improve the effectiveness of a licensee's security force and ability to defend a nuclear power plant and other nuclear facilities against a design-basis threat. An essential part of the security program instituted by the NRC, a full force-on-force inspection spans 2 weeks and includes tabletop drills and multiple simulated combat exercises between a mock commando-type adversary force and the plant's security force. For further detail, see Backgrounder on Force-on-Force Exercises at Nuclear Power Plants and Protecting Our Nation.

**Forced Dry:** Baking the paint between room temperature and 150° F to speed the drying process.

**forearc basin:** the relatively undisturbed expanse of ocean floor between an accretionary wedge and an island arc.

**forebrain:** a portion of the brain that consists of the cerebrum, thalamus, hypothalamus, and limbic system.

**foreign :** In medicine, foreign describes something that comes from outside the body. A foreign substance in the body's tissues, such as a bacterium or virus, may be recognized by the immune system as not belonging to the body. This causes an immune response. Other foreign substances in the body, such as artificial joints, are designed to not cause an immune response.

**Foreign Assignee Program:** An on-the-job training program, sponsored by the NRC for assignees from other countries, usually under bilateral information exchange arrangements with their respective regulatory organizations.

**foreland basin:** a shallow continental basin behind a magmatic arc, a result of subsidence.

**forensic:** Relating to the application of scientific knowledge to legal problems.

**Forensic science:** The application of scientific knowledge to questions of civil and criminal law

**foreset bed:** a sandy bed that composes the main body of a delta.

**foreshock:** one of the small earthquakes that may precede the main earthquake.

**foreskin :** The loose skin that covers the head of the penis.

**foretinib:** An orally bioavailable small molecule with potential antineoplastic activity. MET/VEGFR2 inhibitor GSK1363089 binds to and selectively inhibits hepatocyte growth factor (HGF) receptor c-MET and vascular endothelial growth factor receptor 2 (VEGFR2), which may result in the inhibition of tumor angiogenesis, tumor cell proliferation and metastasis. The proto-oncogene c-MET has been found to be over-expressed in a variety of cancers. VEGFR2 is found on endothelial and hematopoietic cells and mediates the development of the vasculature and hematopoietic cells through VEGF signaling. or A substance being studied in the treatment of cancer. Foretinib blocks enzymes involved in the growth and spread of tumor cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called MET/VEGFR-2 inhibitor GSK1363089 and XL880.

**Forfivo XL:** (Other name for: bupropion hydrochloride)

**Form FDA 1572-Statement of Investigator :** A form that must be filed by an investigator running a clinical trial to study a new drug or agent. The investigator agrees to follow the U.S. Food and Drug Administration (FDA) Code of Federal Regulations for the clinical trial. The investigator verifies that he or she has the experience and background needed to conduct the trial and that it will be done in a way that is ethical and scientifically sound. Also called 1572 form.

**formal charge:** a charge on an atom created by the loss or gain of electrons.

**Formaldehyde:** Formaldehyde is pungent-smelling gas that dissolves readily in water to form a 37% formaldehyde solution known as formalin. Formaldehyde is produced industrially by the oxidation of methanol over a metal catalyst. Formalin is used as a disinfectant and as a preservative medium for biological specimens. The main industrial application of formaldehyde, however, is in the production of urea-formaldehyde (UF), phenol-formaldehyde (PF) and melamine-formaldehyde (MF) resins for the manufacture of wood adhesives (e.g. for plywood and chipboard) and other applications. OR A colorless gas (usually employed as a solution in water)

which possesses a suffocating, pungent odor. It is derived from the oxidation of methanol or low-boiling petroleum gases such as methane, ethane, propane, and butane. It is widely used in the production of phenol formaldehyde (phenolic), urea formaldehyde (urea), and melamine formaldehyde (melamine) resins. OR A chemical used in manufacturing and chemical industries, and as a preservative by anatomists, embalmers, and pathologists. Being exposed to formaldehyde may increase the risk of developing leukemia and brain cancer.

**formation:** A reaction that forms one mole of a compound from its elements in their most stable forms. For example, the formation reaction for water is  $\text{H}_2(\text{g}) + \frac{1}{2}\text{O}_2 \rightarrow \text{H}_2\text{O}(\text{l})$ .

**formazin:** a polymer suspension used as the standard for turbidity.

**formazin nephelometric unit (FNU):** an industry standard unit measurement used in the European Union, equivalent to NTU.

**formazin turbidity unit (FTU):** a measure of water turbidity equivalent, but not equal, to Jackson Turbidity Units (JTU).

**formestane:** A synthetic steroidal substance with antineoplastic activity. Formestane binds irreversibly to and inhibits the enzyme aromatase, thereby blocking the conversion of cholesterol to pregnenolone and the peripheral aromatization of androgenic precursors into estrogens.

**Forming:** A general term encompassing processes in which the shape of plastic pieces such as sheets, rods or tubes is changed to a desired configuration. OR The process whereby the current shape of a plastic is transformed to another desired configuration.

**Forming Temperature:** the temperature to which a plastic must be heated in order for it to be able to be formed.

**formoterol fumarate oral:** The orally bioavailable fumarate salt of formoterol, a long-acting, selective beta<sub>2</sub>-adrenergic receptor agonist with bronchodilating and potential anti-cachexia and anabolic activities. In addition to formoterol's bronchodilating activity, formoterol exhibits anti-cachexia activity through the inhibition of the ATP-ubiquitin-dependent proteolytic system, which may result in a decrease in protein degradation and muscle cell apoptosis. In addition, formoterol may also increase insulin-like growth factor (IGF) signaling, resulting in an increase in protein synthesis. This agent may also inhibit the calcium-dependent calpain

system, resulting in the inhibition of muscle wasting. Check for active clinical trials using this agent.

**formoterol fumarate/roxithromycin:** A combination preparation of the fumarate salt of a beta<sub>2</sub>-adrenergic receptor agonist and a macrolide antibiotic, with muscle-sparing and anti-cachexia effects. Formoterol appears to antagonize cachexia by reducing proteolysis mediated through the ubiquitin-protease pathway. Roxithromycin strongly inhibits inflammatory cytokine production and secretion from T cells and macrophages in vitro and in vivo. The combination exhibits a greater muscle sparing effect than either drug given individually at comparable doses. Check for active clinical trials using this agent.

**formula:** an expression of chemical composition, using symbols and figures. OR A shorthand way of showing the composition of a substance with the use of symbols and numerical subscripts. OR This notation tells you the number of atoms in one molecule of a compound. A formula is written with element symbols and numbers in subscript (like the "2" in CO<sub>2</sub>). The formula for salt is NaCl. The formula for water is H<sub>2</sub>O. OR tells what chemicals a compound is made up of

**Formula Mass:** The formula mass is the total atomic mass of a compound. You can determine the formula mass by adding the individual masses of each atom in the compound. The formula mass of NaCl is 58.44.

**Formula quantity:** Special nuclear material, in any combination, in a quantity of 5000 grams or more computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium). This class of material is sometimes referred to as a Category I quantity of material (see 10 CFR 70.4).

**formula unit:** One formula weight of a compound.

**formula weight:** The formula weight is the sum of the atomic weights of the atoms in an empirical formula. Formula weights are usually written in atomic mass units (u).

**FORMULATION:** A blend of a number of base chemicals and additives designed to accomplish a specific purpose. OR Studies leading to the choice of specific processes and additives to be used in the final preparation of a drug dosage form. Also, the composition of that preparation. OR 1) a combination of ingredients before processing or made into a finished product. Also used as a synonym for a material, compound. 2) a selection of

components of a product formula or mixture to provide optimum specific properties for the end-use desired.

**forodesine** : A substance being studied in the treatment of some types of leukemia and lymphoma. It is a type of purine nucleoside phosphorylase (PNP) inhibitor. Also called BCX-1777 and forodesine hydrochloride.

**forodesine hydrochloride** : A substance being studied in the treatment of some types of leukemia and lymphoma. It is a type of purine nucleoside phosphorylase (PNP) inhibitor. Also called BCX-1777 and forodesine. Or The hydrochloride salt of the synthetic high-affinity transition-state analogue forodesine. Forodesine binds preferentially to and inhibits purine nucleotide phosphorylase (PNP), resulting in the accumulation of deoxyguanosine triphosphate and the subsequent inhibition of the enzyme ribonucleoside diphosphate reductase and DNA synthesis. This agent selectively causes apoptosis in stimulated or malignant T-lymphocytes. A transition state analogue is a substrate designed to mimic the properties or the geometry of the transition state of reaction.

**Fortamet:** (Other name for: metformin hydrochloride)

**Fortaz:** (Other name for: ceftazidime sodium)

**fortified food** : A food that has extra nutrients added to it or has nutrients added that are not normally there. Examples are milk with vitamin D added and salt with iodine added.

**Fosamax:** (Other name for: alendronate sodium) or A drug used to treat certain bone conditions, such as osteoporosis and Paget disease of the bone. It is also being studied in the treatment of hypercalcemia (high levels of calcium in the blood) and bone pain caused by cancer. Fosamax slows the breakdown of bone and prevents the loss of calcium. It is a type of bisphosphonate. Also called alendronate sodium.

**fosaprepitant dimeglumine** : A drug used together with other drugs to prevent and control nausea and vomiting caused by cancer treatment. It is given in a vein. It is a type of antiemetic and a type of substance P/neurokinin 1 receptor antagonist. Also called Emend for Injection.

**fosbretabulin disodium:** The disodium salt of a water-soluble phosphate derivative of a natural stilbenoid phenol derived from the African bush willow (*Combretum caffrum*) with potential vascular disrupting and antineoplastic activities. Upon administration, the prodrug fosbretabulin is

dephosphorylated to its active metabolite, the microtubule-depolymerizing agent combretastatin A4, which binds to tubulin dimers and prevents microtubule polymerization, resulting in mitotic arrest and apoptosis in endothelial cells. In addition, this agent disrupts the engagement of the endothelial cell-specific junctional molecule vascular endothelial-cadherin (VE-cadherin) and so the activity of the VE-cadherin/ $\beta$ -catenin/Akt signaling pathway, which may result in the inhibition of endothelial cell migration and capillary tube formation. As a result of fosbretabulin's dual mechanism of action, the tumor vasculature collapses, resulting in reduced tumor blood flow and ischemic necrosis of tumor tissue.

**fosbretabulin tromethamine:** The tromethamine salt form of prodrug fosbretabulin, a water-soluble phosphate derivative of a stilbenoid phenol derived from the African bush willow (*Combretum caffrum*) with antineoplastic activities. Upon administration, fosbretabulin is dephosphorylated to its active metabolite, combretastatin A4, which targets and binds to tubulin dimers and prevents microtubule polymerization, thereby resulting in mitotic arrest and apoptosis in endothelial cells. As apoptotic endothelial cells detach from their substrata, tumor blood vessels collapse; the acute disruption of tumor blood flow may result in tumor necrosis.

**foscarnet sodium :** A drug used to treat infections with herpesviruses in people whose immune systems are weakened by AIDS. It blocks the viruses from making copies of themselves. It is a type of antiviral agent. Also called Foscavir and phosphonoformate trisodium.

**Foscavir :** A drug used to treat infections with herpesviruses in people whose immune systems are weakened by AIDS. It blocks the viruses from making copies of themselves. It is a type of antiviral agent. Also called foscarnet sodium and phosphonoformate trisodium.

**fosfomycin tromethamine:** The tromethamine salt form of fosfomycin, a synthetic broad-spectrum antibiotic. Fosfomycin tromethamine binds to and inactivates the enzyme enolpyruvyl transferase. This leads to an irreversible blockage of the condensation of uridine diphosphate-N-acetylglucosamine with p-enolpyruvate, which is one of the first steps of bacterial cell wall synthesis, thereby eventually causing cell lysis. In addition, fosfomycin tromethamine reduces the adherence of bacteria to uroepithelial cells.

Check for active clinical trials using this agent.

**fosquidone:** A water-soluble pentacyclic pyrrolloquinone analogue of mitoguadone with potential antineoplastic activity. Currently, the mechanism of action of fosquidone is unknown. In vitro studies indicate that this agent does not bind to DNA or inhibit topoisomerases.

**Fossil** : The remains of an animal or plant that have been turned into rock and preserved. They are only found in sedimentary rocks (since the changes that produce metamorphic and igneous rocks would destroy any fossils) OR the trace of a plant or animal in a sedimentary rock. OR evidence that life was present, preserved in a rock.

**fossil assemblage:** a group of different kinds of fossils that coexisted; more useful than single types of fossils in determining the age of a formation.

**Fossil Fuel:** A fossil fuel is a fuel such as coal, oil or natural gas that was formed through the decomposition of ancient plant and animal life. Fossil fuels are generally burnt to release the energy stored in the chemical bonds of the hydrocarbons. A side-effect of this combustion is the release of gases such as carbon dioxide, which has been linked to global warming through the Greenhouse Effect. Fossil fuel reserves are also finite and some of them (particularly oil reserves) are likely to run out within our lifetime. OR coal, oil, or gas derived from organic-rich rocks. OR Any hydrocarbon deposit that can be burned for heat or power, such as petroleum, coal, and natural gas.

**Fossil record** : A method of dating rocks by looking at the types of fossils that are present and matching them to samples from elsewhere. It can also help in identifying the movement of continental plates.

**fostamatinib disodium:** An orally available disodium salt of the Syk kinase inhibitor fostamatinib with potential anti-inflammatory and immunomodulating activities. Fostamatinib inhibits Syk kinase-mediated IgG Fc gamma receptor signaling, resulting in inhibition of the activation of mast cells, macrophages, and B-cells and related inflammatory responses and tissue damage. Syk kinase, widely expressed in hematopoietic cells, is a nonreceptor tyrosine kinase that is involved in coupling activated immunoreceptors to signal downstream events that mediate diverse cellular responses, including proliferation, differentiation, and phagocytosis. or A substance being studied in the treatment of cancer and certain other diseases, such as rheumatoid arthritis. It may block tumor cell signaling and

growth. It is a type of tyrosine kinase inhibitor. Also called R788 sodium and Syk kinase inhibitor R-935788.

**fostriecin:** An anti-tumor antibiotic isolated from the bacterium *Streptomyces pulveraceus*. Fostriecin inhibits topoisomerase II catalytic activity, resulting in protein-associated strand breaks and impaired DNA and RNA synthesis in various malignant cell types. This agent also inhibits serine/threonine protein phosphatase type 2A in some tumor cell types, thereby interfering with cellular proliferation and differentiation. Check for active clinical trials using this agent.

**fotemustine:** A chloroethylating nitrosourea with antineoplastic activity. Fotemustine alkylates guanine by forming chloroethyl adducts at the 6 position of guanine, resulting in N1-guanine and N3-cytosine cross linkages, inhibition of DNA synthesis, cell cycle arrest, and finally apoptosis. This agent is lipophilic and crosses the blood-brain barrier. or A substance being studied in the treatment of advanced melanoma, glioblastoma (a type of brain tumor) that has come back, and certain types of lymphoma. Fotemustine damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent and a type of nitrosourea.

**founder mutation :** A gene mutation observed with high frequency in a group that is or was geographically or culturally isolated, in which one or more of the ancestors was a carrier of the mutant gene. This phenomenon is often called a founder effect.

**Fountain Effect:** The fountain effect describes how the melt front behaves during the filling of the mould. The leading melt front swells into the shape of a bubble; it behaves in much the same way as water flowing from a fountain.

**four-center interaction:** a reaction in which bonds are simultaneously formed and broken between four atoms. For example, the reaction  $A - A + B - B$  could form two  $A - B$  molecules by simultaneously forming the new bonds while breaking the old bonds.

**Fourier transform (FT):** The mathematical treatment of data in which an ensemble of sinusoidal signals are deconvoluted into individually contributing frequencies, amplitudes, and phases.

**FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR):** In this technique infrared radiation is passed through a sample and the amount absorbed is measured as a function of wavelength. FTIR allows a wide

range of wavelengths to be scanned quickly. By comparison to known spectra the polymer can be identified and its structure can be deduced. This technique is used extensively for polymer identification purposes.

**fowlpox virus vaccine vector:** A recombinant fowlpox virus-based vaccine vector designed to express various tumor-associated peptide antigens. Strong CD8 cytotoxic T cell responses may be induced after prolonged immunization with fowlpox virus vaccines and have been associated with tumor regression. Fowlpox virus is an attractive vector because its genome is easy to manipulate and it does not multiply in human tissues.

**fowlpox-NY-ESO-1 vaccine:** A cancer vaccine consisting of a recombinant fowlpox virus vector encoding an immunogenic peptide derived from the cancer-testis antigen NY-ESO-1, an antigen found in normal testis and various tumors, including bladder, breast, hepatocellular, melanoma, and prostate cancers. Vaccination with NY-ESO-1 peptide vaccine may stimulate the host immune system to mount a humoral and cytotoxic T lymphocyte (CTL) response against tumor cells expressing NY-ESO-1 antigen, resulting in tumor cell lysis.

**FPDA:** Fluid Power Distributors Association. Freelin-Wade is a member.

**FPG Oleochemicals:** A 50:50 joint venture project between P&G Chemicals and FELDA, or the Federal Land Development Authority of Malaysia. This operation is based in Kuantan, Malaysia, and manufactures fatty alcohols, methyl esters and glycerin.

**FR901228:** A drug used to treat cutaneous T-cell lymphoma in patients who have been treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. FR901228 blocks certain enzymes, which may help kill cancer cells. It is a type of depsipeptide and a type of histone deacetylase inhibitor. Also called Istodax and romidepsin.

**fraction:** The fraction is the mixture of hydrocarbons collected between a certain range of temperatures in the fractional distillation of crude oil. OR A set of hydrocarbons with similar boiling points that is produced by the fractional distillation of crude oil.

**Fractional Distillation:** A type of distillation that separates two substances with boiling points that are very close to each other. You increase the temperature in very small amounts. OR A technique for separation of liquid mixtures by distillation that uses a tower attached to a flask

containing the mixture to perform multiple distillations. Vapor moving up the column condenses on packing material inside the column, trickles down the column, and again vaporises. The more volatile component can then be drawn off at the top of the component, while the less volatile component remains at the bottom.

**Fractional Melt:** Resin which has a melt index less than 1.0.

**FRACTIONAL MELT INDEX:** A melt flow index of less than 1.0.

**Fractionating column :** Used in the fractional distillation of crude oil. It is hotter at the bottom. Crude oil is heated to form a vapour which is then passed in at the bottom of the fractionating tower.

**Fractionation:** Separation of a mixture of hydrocarbons into fractions with different boiling point ranges by heating crude oil in a column that is cooler at the top than at the bottom - 'fractions' are removed from the column at different heights where the temperature is different. OR A way of dividing a total dose of radiation or chemotherapy into separate doses that are larger or smaller than usual.

**fracture:** a crack in a rock along which no motion has taken place. OR the uneven breaking or cracking of a mineral. OR The separation of a body, usually characterized as either brittle or ductile.

**fragment:** c One of two 50-kd polypeptide chains produced when immunoglobulin G (igg) is cleaved by the protease papain; the Fc fragment of an intact igg molecule cannot participate in antigen binding but can mediate other important biological activities, such as complement fixation.

**Fragmin:** (Other name for: dalteparin) or A drug used to prevent blood clots from forming or to treat blood clots that have formed in patients with cancer or other conditions. Fragmin is a type of anticoagulant. Also called dalteparin and dalteparin sodium.

**fragrance :** A pleasant, sweet odor.

**Frame:** Any moulding or structure surrounding a panel or opening hence door frame window frame. Also used to describe the basic structure of a building especially of timber or steel construction.

**frame shift:** A mutation caused by insertion or deletion of one or more paired nucleotides, changing the reading frame of codons during protein synthesis; the polypeptide product has a garbled amino acid sequence beginning at the mutated codon.

**frameshift mutation** : An insertion or deletion involving a number of base pairs that is not a multiple of three, which consequently disrupts the triplet reading frame of a DNA sequence. Such mutations usually lead to the creation of a premature termination (stop) codon, and result in a truncated (shorter-than-normal) protein product. OR Insertions or deletions of genetic material that lead to a shift in the translation of the reading frame. The mutation usually leads to nonfunctional proteins.

**Francium:** Symbol:"Fr" Atomic Number:"87" Atomic Mass: (223)amu. One of the alkali metal family. Francium is the heaviest of the alkali metals and is extremely rare in nature. It can be created in a lab and acts like cesium.

**frankincense tree** : A tree that belongs to the incense tree family. The tree's amber-colored resin is used in incense. The resin has anti-inflammatory effects and has been used to treat arthritis, asthma, and ulcerative colitis. It is also being studied in the treatment of brain tumors. Also called *Boswellia serrata*.

**Fraunhofer diffraction:** A laser-light scattering in which particles create radially symmetrical diffraction patterns consisting of a bright center and coaxial light and dark rings. The angle of diffraction is size dependent; smaller particles diffract at larger angles compared to larger particles. Also known as static-light scattering (SLS) or low-angle forward light scattering.

**free electron:** Electron which is not attached to a nucleus.

**free energy:** the thermodynamic quantity measuring the tendency of a reaction to proceed; also called Gibbs free energy. OR That part of the energy of a system that is available to do useful work. OR A form of energy capable of doing work under conditions of constant temperature and pressure. Also, a measure of the usable energy generated in a chemical reaction; denoted by the symbol  $G$  in thermodynamics. The change in free energy ( $\Delta G$ ) of a system undergoing transformation at constant pressure is equal to the change in enthalpy ( $\Delta H$ ) minus the product of the absolute temperature ( $T$ ) and the change in entropy ( $\Delta S$ ). OR Energy that is actually available to do useful work. A decrease in free energy accompanies any spontaneous process. Free energy does not change for systems that are at equilibrium. OR The component of the total energy of a system that can do work at constant temperature and pressure.

**Free energy of activation:** The energy required to form the transition state from the substrate of a reaction.

**free flap :** A type of surgery used to rebuild the shape of the breast after a mastectomy. A tissue flap, including blood vessels, skin, fat, and sometimes muscle, is removed from one area of the body, such as the back or abdomen. It is then reattached to the chest to form a new breast mound. The blood vessels from the tissue are reconnected to blood vessels under the arm or in the chest. A free flap is a type of breast reconstruction.

**free PSA :** The amount of the protein prostate-specific antigen (PSA) in the blood that is not attached to other proteins. It is compared with the amount of PSA in the blood that is attached to other proteins. The amount of free PSA is higher in men with benign prostatic hyperplasia (BPH). The amount of PSA attached to other proteins is higher in men with prostate cancer.

**Free Radical:** A member of the socialist party not caught by McCarthy's inquisition. Also a molecule which has an odd number of electrons. The "unpaired" electron feels lonely and wants to find a friend. If it finds something that might be willing to give it an electron it reacts very quickly with it. Molecules such as other radicals and alkenes turn out to be good things for radicals to attack. The reaction of radicals with the double bonds in alkenes is how some of us earn our living. OR an atom or group that has a single unshared electron. OR A free radical is a molecule with an odd number of electrons. Free radicals do not have a completed octet and often undergo vigorous redox reactions. Free radicals produced within cells can react with membranes, enzymes, and genetic material, damaging or even killing the cell. Free radicals have been implicated in a number of degenerative conditions, from natural aging to Alzheimer's disease.

**free radical :** A type of unstable molecule that is made during normal cell metabolism (chemical changes that take place in a cell). Free radicals can build up in cells and cause damage to other molecules, such as DNA, lipids, and proteins. This damage may increase the risk of cancer and other diseases.

**free radical scavenger :** A substance, such as an antioxidant, that helps protect cells from the damage caused by free radicals. Free radicals are unstable molecules that are made during normal cell metabolism (chemical changes that take place in a cell). They can build up in cells and cause

damage to other molecules. This damage may increase the risk of cancer and other diseases.

**Free State:** Atoms that have a valence number of zero. Look to the noble gases for a valence number of zero.

**free-energy change ( $\Delta G$ ):** The amount of free energy released (negative  $\Delta G$ ) or absorbed (positive  $\Delta G$ ) in a reaction at constant temperature and pressure.

**free-radical chain reaction:** a reaction that proceeds by a free-radical intermediate in a chain mechanism, which is a series of self-propagating, interconnected steps. (Compare with "free-radical reaction.") OR a reaction that proceeds by a free-radical intermediate in a chain mechanism—a series of self-propagating, interconnected steps.

**free-radical polymerization:** a polymerization initiated by a free radical.

**Free-radical reaction:** A chemical reaction that conceptually involves three sequential types of reactions: 1) initiation steps in which free radicals (e.g., R or Cl) are formed, 2) propagation steps in which the free radicals react with molecules to form products and other free radicals, and 3) termination steps in which free radicals combine to form molecules. OR a reaction in which a covalent bond is formed by the union of two radicals. (Compare with "free-radical chain reaction.") OR a reaction in which a covalent bond is formed by the union of two radicals.

**Freedom of Information Act (FOIA):** A Federal law that requires Federal agencies to provide, upon written request, access to records or information. Some material is exempt from FOIA, and FOIA does not apply to records that are maintained by State and local governments, or Federal contractors, grantees or private organizations or businesses. For detail, see Freedom of Information Act and Privacy Act Requests.

**Freeze off :** the temperature of the material is reduced to the point that it blocks an area it would fill if it were hotter.

**freeze-dried :** A method used to dry substances, such as food, to make them last longer. The substance is frozen and then dried in a vacuum.

**freeze-dried black raspberry bioadhesive gel:** A bioadhesive gel containing 10% freeze-dried black raspberries (FBR) with potential chemopreventive and antioxidant activities. The four main constituent black raspberry anthocyanins that contribute significantly to the chemopreventive

effects are cyanidin 3-glucoside (C3GLU), cyanidin 3-rutinoside (C3RUT), cyanidin 3-sambubioside (C3SAM) and cyanidin 3-(2(G)-xylosyl) rutinoside (C3XRUT). Upon mucosal application, the anthocyanins from the gel penetrate the oral mucosa and are able to modulate expression of certain proapoptotic and terminal differentiation genes, and reduce the expression of epithelial cyclooxygenase-2 (COX-2) protein. In addition, this gel may also reduce vascular densities in the superficial connective tissues.

**Freeze-thaw:** When water turns to ice, it expands. If some water is trapped in a crack in a piece of rock, the freezing can cause more damage to the rock. If this process is repeated many times, the rock can be broken down. This is an example of physical weathering.

**freezing:** The change of phase from a liquid into a solid.

**Freezing Point:** A temperature point when a liquid becomes a solid. The word congeal is also used to describe the process of a liquid becoming a solid. OR The temperature where a liquid or solution changes from a liquid to a solid. Clearly, one person's Freezing Point will be another's Melting Point. In a solution the freezing point will be reduced by a number that depends on the number of particles in solution OR the temperature at which a liquid changes to a solid. OR The temperature at which the vapor pressure of a liquid is equal to the vapor pressure of the corresponding solid form. The liquid and solid forms can coexist at equilibrium at the freezing point. The standard melting point is the melting point at standard pressure. OR The freezing point is the temperature at which a liquid becomes solid. It is the same value as the melting point.

**freezing point depression:** the decrease in freezing point of a solution, proportional to the concentration of solute particles. OR It can be used to identify a substance and it also shows that a liquid is not pure. It explains why salt is spread on the icy roads. Salt solution has a lower freezing point than pure water.

**freezing point depressionfp:** The freezing point of a solution is always lower than the freezing point of the pure solvent. The freezing point depression is roughly proportional to the molality of solute particles in the solution. Freezing point depression is an example of a colligative property of a solution.

**French maritime pine bark extract:** A nutritional supplement containing an extract obtained from the French maritime pine bark *Pinus pinaster*, with potential immunomodulating and antioxidant activities. The French maritime pine bark extract contains high amounts of the phytochemicals proanthocyanidins. Proanthocyanidins are able to scavenge free radicals, and therefore may inhibit cellular damage. This extract may also ameliorate the symptoms of lymphedema and improve blood flow. It might also stimulate the immune system and have antioxidant effects.

**frequency:** Number of events in a given unit of time. When describing a moving wave, means the number of peaks which would pass a stationary point in a given amount of time. OR The number of complete waves passing a point in space in a given amount of time. OR The number of cycles of a wave that move past a fixed observation point per second. The SI unit of frequency is the Hertz (Hz).

**fresolimumab:** A pan-specific, recombinant, fully human monoclonal antibody directed against human transforming growth factor (TGF) -beta 1, 2 and 3 with potential antineoplastic activity. Fresolimumab binds to and inhibits the activity of all isoforms of TGF-beta, which may result in the inhibition of tumor cell growth, angiogenesis, and migration. TGF-beta, a cytokine often over-expressed in various malignancies, may play an important role in promoting the growth, progression, and migration of tumor cells. or A substance being studied in the treatment of breast cancer that has spread to other parts of the body. It is also being studied in the treatment of other cancers and conditions. Fresolimumab binds to a protein called transforming growth factor-beta (TGF-beta), which is found on some cancer cells. Fresolimumab may help keep cancer cells from growing and prevent the growth of new blood vessels that tumors need to grow. It is a type of monoclonal antibody and a type of antiangiogenesis agent. Also called anti-TGF-beta monoclonal antibody GC1008 and GC1008.

**Friction:** Resistance to motion due to contact of surfaces.

**Friction (dynamic):** Resistance to continued motion between two surfaces; also known as sliding friction.

**Friction (static):** Resistance to initial motion between two surfaces.

**Friction Coefficient:** A number expressing the amount of frictional effect.

**Friction, Break Out:** Friction developed during initial or starting motion.

**Frictional coefficient:** A characteristic of a molecule that is proportional to the shape of the molecule. This coefficient multiplied by the velocity at which a molecule moves through a medium constitutes viscous drag, a measure of resistance to movement of the molecule.

**FRictional HEATING:** Heat generated by the friction of the chains of molecules slipping past each other or over a surface. OR Whenever a highly viscous polymer melt is forced to flow through a channel, considerable heat is generated by internal friction. The rotating screw supplies actually more than 70% of the heat required to melt a polymer in an extruder through this frictional heating mechanism. During flow through dies, the frictional heating can cause a significant local temperature increase (hot spots) and thermal degradation, with an eventual discoloration of the product, black specks, pinking, etc.

**Frieze:** In classical architecture the area between the cornice and architrave. Commonly the plain or decorated upper part of a wall immediately below the ceiling or cornice and above the border or picture rail.

**fringing reef:** a flat expanse of reef that is attached directly to shore.

**Frog:** The depression in one or both sides of a brick in order to form a key for the mortar.

**front:** the boundary between two air masses.

**frontal sinus :** A type of paranasal sinus (a hollow space in the bones around the nose). There are two, large frontal sinuses in the frontal bone, which forms the lower part of the forehead and reaches over the eye sockets and eyebrows. The frontal sinuses are lined with cells that make mucus to keep the nose from drying out.

**frost heaving:** the process by which rock and soil are lifted vertically by the formation of ice and repeated freezing and thawing.

**frost point:** dew point temperature, below 0°C.

**frost wedging:** the widening and deepening of cracks by ice, breaking off pieces and slabs of rock.

**FROSTLINE:** In the extrusion of blown film, a ring-shaped zone of frosty appearance located at the point where the resin solidifies, caused by a reduction in film temperature below the melting point of the resin.

**frozen:** Indicates that some orbitals were not included in the treatment. Usually used as "frozen-core," to indicate that the core orbitals were left uncorrelated in a correlated calculation. Sometimes (esp. in some DFT programs) it means that core orbitals were fixed as taken from calculations on isolated atoms.

**Frozen Layer / skin:** The frozen layer is a skin of solid melt that forms next to the mould surface during the filling phase of the moulding cycle.

**FRP:** Fibre reinforced plastic. A composite (see separate entry) consisting of fibre reinforcement and a polymer matrix.

**fructooligosaccharide supplement:** A supplement containing oligosaccharide fructans, with gastrointestinal (GI) protective and immunopotentiating activities. Upon oral administration of the supplement, the oligosaccharides stimulate the growth of certain GI bacteria and activate the immune system. This improves the intestinal microflora, strengthens the immune system and increases the protective function of the GI barrier. Check for active clinical trials using this agent.

**fructooligosaccharide/Lactobacillus paracasei/Lactobacillus rhamnosus/Lactobacillus acidophilus/Bifidobacterium lactis:** A synbiotic nutritional supplement containing fructooligosaccharides (FOS), which are linear chains of fructose units that are linked by beta (2-1) bonds, and probiotic cultures of *Lactobacillus paracasei* (*L. paracasei*), *L. rhamnosus*, *L. acidophilus* and *Bifidobacterium lactis* (*B. lactis*), with gastrointestinal (GI) protective and immunomodulating activities. Upon oral administration, the bacteria in this probiotic supplement help maintain adequate colonization of the GI tract and modulate the composition of the normal microflora. Upon colonization of the GI tract, the probiotic bacteria form a protective barrier that helps maintain the integrity of the epithelial barrier. This will interfere with the attachment of pathogenic bacteria and other harmful substances, prevent inflammation and improve GI function. Additionally, the reconstituted microflora may metabolize FOS, which may promote calcium mobilization into the bloodstream by maintaining a neutral pH in the lower gut.

**fruit acid :** One of a group of substances that are found in several types of fruit and in milk. They are used in skin care products to reduce wrinkles and soften the skin. Examples of fruit acids are glycolic acid, lactic acid, and citric acid. Also called AHA and alpha hydroxyl acid.

**fruit and vegetable extracts:** Extracts from fruits and vegetables that contain fiber, vitamins, minerals, and other natural substances with antioxidant, lipid-lowering, and antiproliferative properties. Used in chemoprevention therapy, these extracts may prevent the development or recurrence of cancer.

**fruquintinib:** An orally available, small molecule inhibitor of vascular endothelial growth factor receptors (VEGFRs), with potential anti-angiogenic and antineoplastic activities. Upon oral administration, fruquintinib inhibits VEGF-induced phosphorylation of VEGFRs 1, 2, and 3 which may result in the inhibition of migration, proliferation and survival of endothelial cells, microvessel formation, the inhibition of tumor cell proliferation, and tumor cell death. Expression of VEGFRs may be upregulated in a variety of tumor cell types.

**FSH:** A hormone made in the pituitary gland. In females, it acts on the ovaries to make the follicles and eggs grow. In males, it acts on the testes to make sperm. Also called follicle-stimulating hormone and follitropin.

**Ftorafur :** A substance being studied in the treatment of some types of cancer. It is a combination of tegafur and uracil. The tegafur is taken up by the cancer cells and breaks down into 5-FU, a substance that kills tumor cells. The uracil causes higher amounts of 5-FU to stay inside the cells and kill them. Ftorafur is a type of antimetabolite. Also called tegafur-uracil and UFT.

**FTU:** see formazin turbidity unit.

**FU-LV:** An abbreviation for a chemotherapy combination used to treat colorectal cancer. It is also used with radiation therapy to treat esophageal cancer and stomach cancer. It includes the drugs fluorouracil and leucovorin calcium. Also called 5-FU/LV and FU-LV regimen.

**FU-LV regimen:** A regimen consisting of fluorouracil and leucovorin, used in both the adjuvant and metastatic disease setting, for the treatment of colorectal cancer. This regimen is also combined with radiation for the treatment of gastric and esophageal cancer. Or An abbreviation for a chemotherapy combination used to treat colorectal cancer. It is also used with radiation therapy to treat esophageal cancer and stomach cancer. It includes the drugs fluorouracil and leucovorin calcium. Also called 5-FU/LV and FU-LV.

**FUDF:** (Other name for: floxuridine)

**fuel:** A material that can be burned to provide a source of energy. OR A substance that can be burned to release energy. When considering energy resources, fuels are often divided into renewable and non-renewable fuels. Renewable fuels are those which can be replaced fairly quickly (such as alcohol which is formed from fermenting sugar from fast growing sugar cane).

**Fuel assembly (fuel bundle, fuel element):** A structured group of fuel rods (long, slender, metal tubes containing pellets of fissionable material, which provide fuel for nuclear reactors). Depending on the design, each reactor vessel may have dozens of fuel assemblies (also known as fuel bundles), each of which may contain 200 or more fuel rods.

**fuel cell:** A fuel cell is a cell in which the chemical energy stored in a fuel is converted directly into electrical energy. OR A device that converts the chemical energy obtained from a redox reaction directly into electrical energy.

**Fuel Oil:** Fuel Oil is the term used to define the heavy distillate stream produced from refinery operations. It is used to fuel power stations and in ships and industry. Different fuel oil grades are classified according to their viscosity and sulphur content.

**Fuel reprocessing (recycling):** The processing of reactor fuel to separate the unused fissionable material from waste material. Reprocessing extracts isotopes from spent nuclear fuel so they can be used again as reactor fuel. Commercial reprocessing is not practiced in the U.S., although it has been practiced in the past. However, the U.S. Department of Defense oversees reprocessing programs at DOE facilities such as in Hanford, WA, and Savannah River, SC. These wastes as well as those wastes at a formerly operating commercial reprocessing facility at West Valley, NY, are not regulated by the NRC. For related information, see High-Level Waste and Waste Incidental to Reprocessing.

**Fuel rod:** A long, slender, zirconium metal tube containing pellets of fissionable material, which provide fuel for nuclear reactors. Fuel rods are assembled into bundles called fuel assemblies, which are loaded individually into the reactor core.

**Fuel temperature coefficient of reactivity:** The change in reactivity per degree of change in the temperature of nuclear fuel. The physical property of fuel pellet material (uranium-238) that causes the uranium to absorb

more neutrons away from the fission process as fuel pellet temperature increases. This acts to stabilize power reactor operations. This coefficient is also known as the Doppler coefficient.

**Fugitive:** Colouring matter which readily suffers partial or total loss of its original colour on exposure to light or weather.

**Fugitive colour:** Description of a paint or pigment which fades on exposure to light or weather.

**Fujita scale:** scale for measuring the intensity of a tornado from F0 to F5.

**fulguration :** A procedure that uses heat from an electric current to destroy abnormal tissue, such as a tumor or other lesion. It may also be used to control bleeding during surgery or after an injury. The electric current passes through an electrode that is placed on or near the tissue. The tip of the electrode is heated by the electric current to burn or destroy the tissue. Fulguration is a type of electrosurgery. Also called electrocautery, electrocoagulation, and electrofulguration.

**full blood count :** A measure of the number of red blood cells, white blood cells, and platelets in the blood. The amount of hemoglobin (substance in the blood that carries oxygen) and the hematocrit (the amount of whole blood that is made up of red blood cells) are also measured. A full blood count is used to help diagnose and monitor many conditions. Also called blood cell count, CBC, and complete blood count.

**Full coat:** As heavy or thick a coat of paint as can be applied in a single application consistent with satisfactory appearance drying etc.

**Full Port Valve:** a valve in which the resistance to flow, in the fully open position, is comparable to the equivalent length of pipe.

**Full-time equivalent (FTE):** A human resources measurement equal to one staff person working full-time for one year.

**fulranumab:** A monoclonal antibody directed against nerve growth factor (NGF) with potential analgesic activity. Upon administration, fulranumab binds to NGF, preventing its binding to and activation of the NGF receptors TrkA and p75NTR. Inhibition of the NGF pathway may prevent the perception of pain and may induce analgesia. NGF, a neurotrophic factor that plays a key role in neuropathic and inflammatory-induced pain, promotes hyperalgesia and allodynia.

**fulvestrant:** A synthetic estrogen receptor antagonist. Unlike tamoxifen (which has partial agonist effects) and the aromatase inhibitors (which reduce the estrogen available to tumor cells), fulvestrant binds competitively to estrogen receptors in breast cancer cells, resulting in estrogen receptor deformation and decreased estrogen binding. In vitro studies indicate that fulvestrant reversibly inhibits the growth of tamoxifen-resistant, estrogen-sensitive, human breast cancer cell lines. or A drug used to treat certain types of breast cancer in postmenopausal women. It is also being studied in the treatment of other types of cancer. Fulvestrant blocks estrogen activity in the body and is a type of antiestrogen. Also called Faslodex and ICI 182780.

**fumagillin-derived polymer conjugate XMT-1107:** A polymeric prodrug consisting of the fumagillol-derived small molecule XMT-1191 tethered to the hydrophilic, biodegradable 70 kDa polymer poly[1-hydroxymethylethylene hydroxymethylformal] (PHF) with potential antiangiogenic and antineoplastic activities. Upon administration, fumagillin-derived polymer conjugate XMT-1107 releases XMT-1191, which may inhibit angiogenesis through the irreversible inhibition of the methionine aminopeptidase 2 (METAP2); although the exact mechanism of action has yet to be fully elucidated, this agent appears to induce cell cycle arrest in endothelial cells, inhibiting their proliferation and migration. Compared to an unconjugated fumagillin analog, XMT-1107 exhibits improved solubility and an extended half life due to its PHF backbone. METAP2, a member of the methionyl aminopeptidase family, binds two cobalt or manganese ions and protects the alpha subunit of eukaryotic initiation factor 2 (EIF2) from inhibitory phosphorylation by removing the amino-terminal methionine residue from nascent protein; this aminopeptidase may be overexpressed in a variety of tumor cell types.

**fumerole:** a vent in or near a volcano from which steam and other gases escape from molten rock below.

**fumigant:** A gaseous substance used to disinfect an object or to destroy pests.

**Functional chemical :** A functional chemical is added to achieve certain functional properties for the paper or tissue (e.g., hydrophobicity , softness, bulk, strength).

**Functional Group:** In organic chemistry, refers to specific group of atoms within a molecule that are responsible for the characteristic chemical reactions of the molecule. OR An atom or group of atoms that has similar chemical behavior, no matter what the rest of the molecule looks like. For example, the hydroxy (OH) group in all alcohols has similar reactivity, as does the thio (SH) group in all thiols. OR a set of bonded atoms that displays a specific molecular structure and chemical reactivity when bonded to a carbon atom in the place of a hydrogen atom. OR A substructure that imparts characteristic chemical behaviors to a molecule, for example, a carboxylic acid group. OR The specific atom or group of atoms that confers a particular chemical property on a biomolecule.

**functional magnetic resonance imaging :** A noninvasive tool used to observe functioning in the brain or other organs by detecting changes in chemical composition, blood flow, or both.

**Functional magnetic resonance imaging (fmri):** A brain-imaging technique that takes advantage of (1) the fact that magnetic properties of oxyhemoglobin and deoxyhemoglobin are different and can thus be distinguished and (2) the fact that, when a specific part of the brain is active, blood vessels relax and allow more blood flow. Thus, a more active part of the brain will be richer in oxyhemoglobin.

**functioning tumor :** A tumor that is found in endocrine tissue and makes hormones (chemicals that travel in the bloodstream and control the actions of other cells or organs).

**fundoscopy :** An exam that uses a magnifying lens and a light to check the fundus of the eye (back of the inside of the eye, including the retina and optic nerve). The pupils may be dilated (enlarged) with medicated eye drops so the doctor can see through the pupil to the back of the eye. Fundoscopy may be used to check for eye problems, such as glaucoma, macular degeneration, eye cancer, optic nerve problems, or eye injury. Also called funduscopy and ophthalmoscopy.

**fundus :** The larger part of a hollow organ that is farthest away from the organ's opening. The bladder, gallbladder, stomach, uterus, eye, and cavity of the middle ear all have a fundus.

**funduscopy :** An exam that uses a magnifying lens and a light to check the fundus of the eye (back of the inside of the eye, including the retina and optic nerve). The pupils may be dilated (enlarged) with medicated eye drops

so the doctor can see through the pupil to the back of the eye. Funduscopy may be used to check for eye problems, such as glaucoma, macular degeneration, eye cancer, optic nerve problems, or eye injury. Also called fundoscopy and ophthalmoscopy.

**fungating lesion :** A type of skin lesion that is marked by ulcerations (breaks on the skin or surface of an organ) and necrosis (death of living tissue) and that usually has a bad smell. This kind of lesion may occur in many types of cancer, including breast cancer, melanoma, and squamous cell carcinoma, and especially in advanced disease.

**Fungi:** Neither plants nor animals, fungi are eukaryotes (organisms whose cells have nuclei) which are incapable of making their own food by photosynthesis and survive by breaking down chemical compounds made by plants and bacteria to waste products, just like we do. OR a kingdom that includes the yeasts, molds, mildews, and mushrooms. OR Molds, mildews, yeasts, mushrooms, and puffballs, a group of organisms that lack chlorophyll and therefore are not photosynthetic. They are usually nonmobile, filamentous, and multicellular.

**fungicide:** A chemical used to kill fungi. See pesticide. OR Substances which are capable of destroying moulds and fungi. Solutions of fungicide are used in the painting trade for sterilising mould infected surfaces prior to the application of paint. Also incorporated in various types of paint to give protection against further attack.

**fungicide :** Any substance used to kill fungi (plant-like organisms that do not make chlorophyll), such as yeast and molds.

**fungicides:** A chemical that kills fungi or prevents them from growing.

**Fungizone:** (Other name for: amphotericin B deoxycholate)

**fungus :** A plant-like organism that does not make chlorophyll. Mushrooms, yeasts, and molds are examples. The plural is fungi.

**Furan Resins:** Dark colored, thermosetting resins available primarily as liquids ranging from low-viscosity polymers to thick, heavy syrups.

**Furanose:** A sugar that contains a five-membered ring as a result of intramolecular hemiacetal formation. OR A five-membered heterocyclic ring formed when a monosaccharide cyclizes to form a hemiacetal or a hemiketal; the five-membered oxygen-containing ring is similar to that of furan. OR A simple sugar containing the five-membered furan ring.

**furosemide:** An anthranilic derivative and loop diuretic with antihypertensive effect. Furosemide blocks the Na-K-Cl cotransporter (NKCC) in the luminal membrane of the thick ascending limb of the loop of Henle in the kidney, by binding to the Cl-binding site located in the cotransporter's transmembrane domain, thereby inhibiting reabsorption of sodium, chloride, potassium ions and water. This agent reduces plasma and extracellular fluid volume resulting in decreased blood pressure and cardiac output.

**fursultiamine:** A nutritional supplement and vitamin B1 derivative, with potential antineoplastic activity. Upon oral administration, fursultiamine inhibits the expressions of octamer-binding transcription factor 4 (OCT-4), SRY (sex determining region Y)-box 2 (SOX-2), and Nanog homeobox (NANOG) in cancer stem cells (CSCs). This may inhibit the proliferation of CSCs thereby preventing tumor cell growth. In addition, fursultiamine inhibits the expression of ATP-binding cassette (ABC) transporters subfamily B member 1 (ABCB1) and subfamily G member 2 (ABCG2) in cancer CSCs, which may abrogate resistance to chemo- and radiotherapy in CSCs. CSCs promote tumor initiation, progression and metastasis; they play a key role in cancer recurrence and resistance to chemotherapy and radiation.

**fuse:** a protective device containing a short piece of wire that melts and breaks when current through it exceeds a rated value, thus de-energizing the circuit. OR to join two plastic parts by softening the material by heat or solvents.

**Fused deposition modeling (FDM):** With FDM, a wire coil of material is extruded from a print head into successive cross-sectional layers that harden into three-dimensional shapes. OR Thermoplastic modeling material is fed into the temperature-controlled FDM extrusion head and heated to a liquid state. The head extrudes and deposits the material in ultra-thin layers onto a fixture-less base

**fusidic acid/betamethasone valerate topical cream:** A topical cream formulation of the bacteriostatic antibiotic fusidic acid and the synthetic, long-acting glucocorticoid betametasone valerate with potential anti-bacterial and immunomodulating activities. Fusidic acid/betamethasone valerate topical cream inhibits Gram-positive bacterial protein synthesis and replication and inhibits the inflammatory response by preventing

phospholipid release, inhibiting eosinophil activity, and decreasing pro-inflammatory cytokine production.

**Fusilev:** (Other name for: levoleucovorin calcium)

**fusion:** The joining of two small nuclei to form a larger nucleus. OR The melting and flowing of heated polymer particles to form a continuous film. OR melting.

**fusion gene :** A gene made by joining parts of two different genes. Fusion genes may occur naturally in the body by transfer of DNA between chromosomes. For example, the BCR-ABL gene found in some types of leukemia is a fusion gene. Fusion genes can also be made in the laboratory by combining genes or parts of genes from the same or different organisms.

**fusion protein:** (1) A family of proteins that facilitate membrane fusion. (2) The protein product of a gene created by the fusion of two distinct genes. OR A protein made from a fusion gene, which is created by joining parts of two different genes. Fusion genes may occur naturally in the body by transfer of DNA between chromosomes. For example, the BCR-ABL gene found in some types of leukemia is a fusion gene that makes the BCR-ABL fusion protein. Fusion genes and proteins can also be made in the laboratory by combining genes or parts of genes from the same or different organisms.

**Fusion reaction:** A reaction in which at least one heavier, more stable nucleus is produced from two lighter, less stable nuclei. Reactions of this type are responsible for enormous release of energy, such as the energy given off by stars.

**futile cycle:** A set of enzyme-catalyzed cyclic reactions that results in release of thermal energy by the hydrolysis of ATP.

**future perfect:** a verb tense that indicates action in a future time in relation to another time farther in the future; it is formed with will have and the past participle of the verb.

**future tense:** a verb tense that indicates the action has yet to take place

**Fuzz:** An accumulation of broken filaments.

**Fycompa:** (Other name for: perampanel)

**G:** (olf) An  $\alpha$  subunit, uniquely expressed in olfactory cilia, of a G protein associated with odorant receptors.

**G protein:** A guanyl nucleotide-binding protein that is a component of intracellular signaling pathways. In the inactive state, the G protein (sometimes called a heterotrimeric G protein) is a trimeric protein consisting of  $\alpha\beta\gamma$  subunits, with the GDP bound to the  $\alpha$  subunit. In the active state, the  $\alpha$  protein exchanges GDP for GTP and dissociates from the  $\beta\gamma$  subunits. The GTP-bound  $\alpha$  subunit propagates the signal. Signal propagation is terminated when the  $\alpha$  subunit hydrolyzes GTP to GDP and reassociates with the  $\beta\gamma$  subunits.

**G-actins:** Actin monomers that come together to form filaments called F-actin.

**G-CSF:** A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. It is also used to treat chronic neutropenia and to prepare the blood for the collection of certain types of blood cells. G-CSF is also used to help prevent damage to the bone marrow in patients who were exposed to very high doses of certain types of radiation. G-CSF helps the body make more white blood cells. It is a type of colony-stimulating factor. Also called filgrastim, granulocyte colony-stimulating factor, Neupogen, and Zarxio.

**G-quadruplex stabilizer BMVC:** A carbazole derivative (3,6-bis[2-(1-methylpyridinium)vinyl]carbazole diiodide) that selectively targets to the G-quadruplex DNA structure, used as a fluorescent probe for cancer cytological diagnosis and with potential antitumor activity. G-quadruplex stabilizer BMVC, preferentially uptaken by cancer cells, binds to and stabilizes the telomeric G-quadruplex structure at the end of DNA; when visualized with fluorescent imaging device, BMVC emits bright fluorescent light and can be used to differentiate tumor cells from normal cells. The BMVC/G-quadruplex complexes also interfere with the activity of telomerase, which is highly active in tumor cells and plays a key role in tumorigenesis while expressed at very low levels in most somatic cells.

**G' and G'' :** See STORAGE MODULUS and LOSS MODULUS

**G1:** Gaussian-1. A composite method for computing thermochemistry, involving extrapolations and a few parameters (9). Effectively superseded by G2 and G2(MP2).

**G1 phase:** That period of the cell cycle in which preparations are being made for chromosome duplication, which takes place in the S phase.

**G1 phase :** 1 a phase within interphase of the cell division cycle that prepares cells for DNA replication.

**G2:** Gaussian-2. A composite method for computing thermochemistry, involving extrapolations and a few parameters (10). Very popular but quite expensive; practical for up to seven "heavy" atoms (i.e., non-hydrogen) on a Cray supercomputer.

**G2 checkpoint inhibitor CBP501:** A peptide with G2 checkpoint-abrogating activity. G2 checkpoint inhibitor CBP501 inhibits multiple serine/threonine kinases, including MAPKAP-K2, C-Tak1, and CHK1, that phosphorylate serine 216 of the dual-specific phosphatase Cdc25C (cell division checkpoint 25 C); disruption of Cdc25C activity results in the inhibition of Cdc25C dephosphorylation of the mitotic cyclin-dependent kinase complex Cdc2/cyclin B, preventing entry into the mitotic phase of the cell cycle.

**G2 phase:** That period of the cell cycle between S phase and mitosis (M phase).

**G2(MP2):** Gaussian-2, second-order variant. A composite method for computing thermochemistry, involving extrapolations and a few parameters (11). Less-expensive alternative to G2, of comparable accuracy.

**G207:** A neuroattenuated, replication-competent, recombinant herpes simplex virus-1 (HSV-1) with potential oncolytic activity. Upon intracerebral administration, oncolytic HSV-1 G207 preferentially replicates within glioma cells, which may elicit tumor-specific systemic immune and cytotoxic T lymphocyte (CTL) responses in addition to direct cytopathic effects. Derived from wild-type HSV-1 strain F, this agent has been neuroattenuated by deletions in both copies of the gamma34.5 gene, the major determinant of HSV neurovirulence. In addition, the HSV-1 gene UL39, encoding the viral ribonucleotide reductase large subunit infected cell protein 6 (ICP6), has been inactivated through the insertion of the *Escherichia coli lacZ* gene. By inactivating UL39, viral ribonucleotide reductase activity is disrupted, resulting in the inhibition of nucleotide metabolism and viral DNA synthesis in nondividing cells but not in dividing cells.

**G250 peptide vaccine:** A cancer vaccine containing of a synthetic form of the renal cell carcinoma (RCC)-associated antigen G250 with potential antineoplastic activity. Vaccination with G250 peptide vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells positive for the G250 antigen, resulting in decreased tumor growth. Found in the majority of renal cell carcinomas, G250 is a cell surface tumor-associated antigen (TAA) that contains an HLA-A2.1-restricted epitope that is recognized by CTLs.

**G6PD deficiency :** An inherited disorder in which a person doesn't have enough of an enzyme called G6PD that helps red blood cells work the way they should. In G6PD deficiency, the red blood cells break down when the body is exposed to infection, severe stress, or certain drugs, chemicals, or foods. This may lead to a condition called hemolytic anemia. This disorder is most common in African-American men and in men of Middle Eastern or Mediterranean descent. Also called glucose-6-phosphate dehydrogenase deficiency.

**Ga-68-labeled F(ab')<sub>2</sub>- trastuzumab:** A radioimmunoconjugate consisting of a trastuzumab fragment labeled with the positron-emitting radioisotope gallium Ga 68 with radioisotopic and antibody activities. Upon administration, Ga-68-labeled F(ab')<sub>2</sub>-trastuzumab may bind to HER2-positive tumor cells, allowing radioimmunolocalization with positron emission tomography (PET). Trastuzumab is a recombinant humanized monoclonal antibody that selectively binds to the extracellular domain of human epidermal growth factor receptor 2 (HER2), overexpressed by many adenocarcinomas, particularly breast adenocarcinomas. Check for active clinical trials using this agent.

**gabapentin:** A synthetic analogue of the neurotransmitter gamma-aminobutyric acid with anticonvulsant activity. Although its exact mechanism of action is unknown, gabapentin appears to inhibit excitatory neuron activity. This agent also exhibits analgesic properties. or A substance that is being studied as a treatment for relieving hot flashes in women with breast cancer. It belongs to the family of drugs called anticonvulsants. or A substance that is being studied as a treatment for relieving hot flashes in women with breast cancer. It belongs to the family of drugs called anticonvulsants.

**Gable:** The triangular upper part of an external wall formed by the sloping ends of the roof.

**GAD:** A condition marked by excessive worry and feelings of fear, dread, and uneasiness that last six months or longer. Other symptoms of GAD include being restless, being tired or irritable, muscle tension, not being able to concentrate or sleep well, shortness of breath, fast heartbeat, sweating, and dizziness. Also called generalized anxiety disorder.

**Gadavist:** (Other name for: gadobutrol)

**gadobenate dimeglumine:** A gadolinium-based paramagnetic contrast agent. When placed in a magnetic field, gadobenate dimeglumine produces a large magnetic moment and so a large local magnetic field, which can enhance the relaxation rate of nearby protons; as a result, the signal intensity of tissue images observed with magnetic resonance imaging (MRI) may be enhanced. Because this agent is preferentially taken up by normal functioning hepatocytes, normal hepatic tissue is enhanced with MRI while tumor tissue is unenhanced. In addition, because gadobenate dimeglumine is excreted in the bile, it may be used to visualize the biliary system using MRI. or A drug used in MRI to help make clear pictures of blood vessels in the brain, spine, and nearby tissues. It is also being studied as a way to find abnormal areas in the liver and other organs and to help diagnose cancer. Gadobenate dimeglumine is a type of contrast agent. Also called MultiHance.

**gadobutrol:** A gadolinium-based, hydrophilic, macrocyclic, electrically neutral contrast agent used in contrast-enhanced MRI (CE-MRI). Gadobutrol is a non-ionic, paramagnetic complex consisting of gadolinium ( $Gd^{3+}$ ) chelated with the macrocyclic compound dihydroxy-hydroxymethylpropyl-tetraazacyclododecane-triacetic acid (butrol). Following intravenous administration, gadobutrol may increase MRI sensitivity for the detection of tumors and inflammatory and demyelinating diseases of the central nervous system (CNS) which are associated with areas with blood-brain barrier defects due to altered perfusion or an enlarged extracellular space. This agent is eliminated in an unchanged form via the kidneys; extra-renal elimination is negligible.

**gadodiamide:** A paramagnetic gadolinium-based contrast agent (GBCA), with imaging activity upon magnetic resonance imaging (MRI). When placed in a magnetic field, gadodiamide generates a large local magnetic

field, which can enhance the relaxation rate of nearby protons. This change in proton relaxation dynamics, increases the MRI signal intensity of tissues in which gadodiamide has accumulated; therefore, visualization of those tissues is enhanced.

**gadofosveset trisodium:** The trisodium salt form of gadofosveset, an injectable, intravascular, amphiphilic gadolinium-based contrast agent (GBCA) used with magnetic resonance angiography (MRA) imaging. Gadofosveset is a stable gadolinium diethylenetriaminepentaacetic acid (Gd-DTPA) chelate derivative with a diphenylcyclohexylphosphate group. Upon injection, gadofosveset binds reversibly to endogenous serum albumin which increases its intravascular retention time compared to non-protein binding contrast agents. The serum albumin binding also increases T1-relaxivity of gadofosveset. This produces an increase in signal intensity of blood, thereby enhancing the visualization of blood vessels upon MRA and may aid in the diagnosis of certain blood vessels and heart disorders.

**Gadolinium:** Symbol:"Gd" Atomic Number:"64" Atomic Mass: 157.25amu. Gadolinium is one of the elements in the lanthanide series of inner transition elements. It may be classified as a rare earth element. This silvery metal is used in many alloys. One of its best uses is in nuclear reactors because it can stop neutrons and contain radioactivity of dangerous reactions.

**gadolinium :** A metal element that is used in magnetic resonance imaging (MRI) and other imaging methods. It is a contrast agent, which helps show abnormal tissue in the body during imaging with a special machine.

**gadolinium texaphyrin :** A substance being studied in the treatment and diagnosis of some types of cancer. It builds up in some cancer cells, which may make them easier to kill with radiation therapy and chemotherapy. Gadolinium texaphyrin is also used in magnetic resonance imaging (MRI) to help find cancer cells in the body. It is a type of radiosensitizing agent, a type of chemosensitizing agent, and a type of contrast agent. Also called motexafin gadolinium.

**gadolinium-based contrast agent P03277:** A gadolinium-based paramagnetic contrast agent, with potential imaging enhancing activity upon magnetic resonance imaging (MRI). Upon administration of P03277 and placement in a magnetic field, this agent produces a large magnetic moment and creates a large local magnetic field, which can enhance the

relaxation rate of nearby protons. This change in proton relaxation dynamics, increases the MRI signal intensity of tissues in which this agent has accumulated; therefore, contrast and visualization of those tissues is enhanced compared to unenhanced MRI. Check for active clinical trials using this agent.

**gadolinium-chelate:** A coordination complex consisting of a gadolinium ion bound to a hexadentate organic chelating agent such as diethylenetriaminepentaacetic acid. Chelates of gadolinium are frequently utilized as magnetic resonance imaging (MRI) contrast agents and can be used to track nanoparticle-mediated drug delivery.

**gadopentetate dimeglumine:** A gadolinium complex of diethylenetriamine pentaacetic acid with ionic paramagnetic properties. Gadopentetate dimeglumine may provide contrast enhancement during magnetic resonance imaging (MRI) of intracranial lesions with abnormal vascularity or of abnormalities in the blood-brain barrier (BBB). or A substance used in magnetic resonance imaging (MRI) to help make clear pictures of the brain, spine, heart, soft tissue of joints, and inside bones. Gadopentetate dimeglumine is being studied in the diagnosis of cancer. It is a type of contrast agent. Also called Gd-DTPA and Magnevist.

**gadoterate meglumine:** A gadolinium chelate paramagnetic contrast agent. When placed in a magnetic field, gadoterate meglumine produces a large magnetic moment and so a large local magnetic field, which can enhance the relaxation rate of nearby protons; as a result, the signal intensity of tissue images observed with magnetic resonance imaging (MRI) may be enhanced. Because this agent is preferentially taken up by normal functioning hepatocytes, normal hepatic tissue is enhanced with MRI while tumor tissue is unenhanced. In addition, because gadobenate dimeglumine is excreted in the bile, it may be used to visualize the biliary system using MRI.

**Gadovist:** (Other name for: gadobutrol)

**gadoxetate disodium:** A paramagnetic contrast agent consisting of the disodium salt of the gadolinium ion chelated with the lipophilic moiety ethoxybenzyl (EOB) bound to diethylenetriamine pentaacetic acid (DTPA). When placed in a magnetic field, gadolinium produces a large magnetic moment and so a large local magnetic field, which can enhance the relaxation rate of nearby protons; as a result, the signal intensity of tissue

images observed with magnetic resonance imaging (MRI) may be enhanced. Because this agent is preferentially taken up by normal functioning hepatocytes, normal hepatic tissue is enhanced with MRI while tumor tissue is unenhanced. In addition, because this agent is excreted in the bile, it may be used to visualize the biliary system using MRI.

**Gag:267-274 peptide vaccine:** A peptide vaccine containing the amino acids 267 through 274 of the human immunodeficiency virus type 1 (HIV-1) gag core protein (gag:267-274), with potential immunostimulating activity. Upon vaccination, the immune system may exert a potent cytotoxic T-lymphocyte (CTL) response against the xenoantigen gag:267-274 and produces pro-inflammatory cytokines. The concomitant administration of a cancer peptide vaccine may benefit from an already activated immune system and may augment an immune response against the administered tumor associated antigen(s). Gag:267-274 peptide is highly immunogenic and may potentially be used as a cancer immunoadjuvant. Check for active clinical trials using this agent.

**Gail model :** A computer program that uses personal and family medical history information to estimate a woman's chance of developing breast cancer. Also called Gail risk model.

**Gail risk model :** A computer program that uses personal and family medical history information to estimate a woman's chance of developing breast cancer. Also called Gail model.

**gaining stream:** a stream into which groundwater flows from the saturated zone.

**galactomannan derivative:** A carbohydrate polymer composed of mannose and galactose, with chemotherapeutic enhancing activity. Galactomannan derivative binds to galectins on cell surfaces and may promote the transport of certain chemotherapeutics, such as 5-fluorouracil (5-FU), into tumor cells. This may increase the antineoplastic effect of 5-FU when administered concomitantly. Galectins are carbohydrate-binding proteins, upregulated on the surface of certain types of tumor cells, and may mediate cell association, survival and metastasis.

**galactose:** A hexose which is almost identical to glucose except that orientation of -H and -OH on carbon 4 are exchanged, making it an epimer at C-4 of glucose (in Fisher projection).

**Galactosemia:** A disease characterized by vomiting, diarrhea, liver dysfunction, and occasionally mental retardation, caused by galactose accumulation due to a deficiency of galactose 1-phosphate uridyl transferase.

**galantamine hydrobromide:** The hydrobromide salt form of galantamine, a tertiary alkaloid obtained synthetically or naturally from the bulbs and flowers of *Narcissus* and several other genera of the Amaryllidaceae family with anticholinesterase and neurocognitive-enhancing activities.

Galantamine competitively and reversibly inhibits acetylcholinesterase, thereby increasing the concentration and enhancing the action of acetylcholine (ACh). In addition, galantamine is a ligand for nicotinic acetylcholine receptors, which may increase the presynaptic release of ACh and activate postsynaptic receptors. This agent may improve neurocognitive function in mild and moderate Alzheimer's disease and may reduce abstinence-induced cognitive symptoms that promote smoking relapse. Check for active clinical trials using this agent.

**galectin inhibitor GR-MD-02:** A carbohydrate-based galectin inhibitor, with potential antineoplastic activity. Galectin inhibitor GR-MD-02 binds to the carbohydrate-binding domain of galectins, especially galectin-3, and may result in an induction of apoptosis mediated through activation of both mitochondria and caspases. This may reduce tumor growth in galectin-overexpressing tumor cells. Galectins, often overexpressed on tumor cells, play a key role in cancer cell proliferation, apoptosis, tumor angiogenesis and evasion of immune responses. Check for active clinical trials using this agent.

**galectin-1 inhibitor OTX008:** A calixarene-based compound and galectin-1 (Gal-1) inhibitor with potential anti-angiogenic and antineoplastic activities. Upon subcutaneous administration, galectin-1 inhibitor OTX008 binds Gal-1 which leads to Gal-1 oxidation and proteosomal degradation through a not yet fully elucidated mechanism, and eventually downregulates Gal-1. This decreases tumor cell growth and inhibits angiogenesis. Gal-1, a multifunctional carbohydrate-binding protein, is often overexpressed on tumor cells and plays a key role in cancer cell proliferation, apoptosis, tumor angiogenesis and evasion of immune responses.

**galeterone:** An orally bioavailable small-molecule androgen receptor modulator and CYP17 lyase inhibitor with potential antiandrogen activity. Galeterone exhibits three distinct mechanisms of action: 1) as an androgen receptor antagonist, 2) as a CYP17 lyase inhibitor and 3) by decreasing overall androgen receptor levels in prostate cancer tumors, all of which may result in a decrease in androgen-dependent growth signaling. Localized to the endoplasmic reticulum (ER), the cytochrome P450 enzyme CYP17 (P450C17 or CYP17A1) exhibits both 17alpha-hydroxylase and 17,20-lyase activities, and plays a key role in the steroidogenic pathway that produces progestins, mineralocorticoids, glucocorticoids, androgens, and estrogens.

**Galileo:** scientist whose observations supported the Copernican model.

**galiximab:** A humanized IgG1 monoclonal antibody directed against CD80, the natural ligand for the T-cell antigen CD28 which mediates T-cell and B-cell adhesion. Galiximab binds to CD80 expressed on the cell surfaces of follicular lymphomas, resulting in antibody-dependent cell-mediated cytotoxicity (ADCC). CD80 is expressed on activated B-cells and gamma-interferon-stimulated monocytes and is often expressed at low levels on the surfaces of follicular lymphoma cells and other lymphoid malignancies. Check for active clinical trials using this agent. or A substance being studied in the treatment of follicular non-Hodgkin lymphoma. It binds to the protein CD80, which is found on certain normal white blood cells and on white blood cells that are cancer. It is a type of monoclonal antibody.

**gallbladder :** The pear-shaped organ found below the liver. Bile is concentrated and stored in the gallbladder.

**gallbladder cancer :** Cancer that forms in tissues of the gallbladder. The gallbladder is a pear-shaped organ below the liver that collects and stores bile (a fluid made by the liver to digest fat). Gallbladder cancer begins in the innermost layer of tissue and spreads through the outer layers as it grows.

**Gallium:** Symbol:"Ga" Atomic Number:"31" Atomic Mass: 69.72amu. It is classified as a basic metal. Gallium is a very brittle, silvery metal. You will find it in electronics, alloys, and thermometers.

**gallium citrate Ga 67:** The citrate salt of the radioisotope gallium Ga 67. Although the mechanism is unknown, gallium Ga 67 concentrates in

lysosomes and is bound to a soluble intracellular protein in certain viable primary and metastatic tumors and focal sites of inflammation, allowing scintigraphic localization. Ga-67 scintigraphy (GS) cannot differentiate between tumor and acute inflammation.

**gallium Ga 68 citrate:** A radiopharmaceutical citrate salt form of the positron-emitting radioisotope gallium Ga 68, with potential imaging activity upon positron emission tomography (PET). Upon administration of Gallium Ga 68 citrate, the gallium Ga 3<sup>+</sup> ion dissociates from the weak citrate chelator. As Ga<sup>3+</sup> is very similar to iron (Fe<sup>3+</sup>) in chemical properties, this ion acts as an iron analogue. Ga<sup>3+</sup> binds to the iron-binding protein transferrin, distributes in blood, and enters and accumulates in the extracellular fluid space of inflamed or tumor-bearing tissue. In turn, the Ga<sup>3+</sup>-transferrin complex binds to transferrin receptors and is taken up by tumor cells. Tumor cells can then be imaged upon PET. Compared to healthy cells, tumor cells have increased iron metabolism and transferrin receptor expression. Increased Ga<sup>3+</sup> uptake is seen in inflamed and infected tissues as well. Check for active clinical trials using this agent.

**gallium Ga 68 OPS202:** A radioconjugate consisting of the somatostatin antagonistic peptide OPS202 that is labeled with the positron-emitting radionuclide gallium Ga 68, which may be used as a somatostatin receptor (SSTR) imaging agent in conjunction with positron emission tomography (PET) to image neuroendocrine tumors (NETs). Gallium Ga 68 OPS202 binds to SSTR subtype 2 present on the cell membranes of many types of NETs. This allows for visualization of SSTR-positive cells upon imaging. SSTR subtypes have been shown to be present in large numbers on NETs and their metastases, while most other normal tissues express low levels of SSTR subtypes. Check for active clinical trials using this agent.

**gallium Ga 68-DOTA-exendin-4:** A radiopharmaceutical composed of the glucagon-like peptide 1 receptor (GLP-1R) agonist exendin-4 linked by the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) to the positron-emitting radionuclide gallium Ga 68, with potential use in diagnostic imaging upon positron emission tomography (PET). Upon administration of gallium Ga 68-DOTA-exendin-4, the exendin-4 moiety binds to GLP-1R and is subsequently internalized. The radionuclide moiety can be detected using PET and GLP-1R-expressing

tumors can be localized. GLP-1R, located on beta cells, is overexpressed on insulinomas, which are insulin-secreting neuroendocrine tumors.

**gallium Ga 68-DOTANOC:** A gallium Ga 68-radiolabeled analogue of somatostatin that may be used in conjunction with positron emission tomography (PET) to image neuroendocrine tumors and metastases. Gallium Ga 68-DOTANOC is a conjugate of the somatostatin analogue 1-Nal3-octreotide (NOC) and gallium Ga 68-labeled 1,4,7,10-tetraazacyclododecane-N,N',N'',N'''-tetraacetic acid (DOTA). The somatostatin analogue NOC has a high affinity for somatostatin receptor subtypes 2, 3, and 5; these receptor subtypes have been shown to be present in large numbers on neuroendocrine tumors and their metastases, while most other normal tissues express low levels of these somatostatin receptor subtypes. Check for active clinical trials using this agent.

**gallium Ga 68-DOTATATE:** A radioconjugate consisting of the somatostatin analogue tyrosine-3-octreotate (Tyr3-octreotate or TATE) labeled with the positron emission tomography (PET) tracer gallium Ga 68 via the macrocyclic chelating agent dodecanetetraacetic acid (DOTA), which may be used as a somatostatin receptor (SSTR) imaging agent in conjunction with PET to image neuroendocrine tumors (NETs). Gallium Ga 68-DOTATATE binds to SSTRs, with a much higher affinity for type 2 SSTR, present on the cell membranes of many types of NETs. This allows for visualization of SSTR-positive cells upon imaging. SSTR subtypes have been shown to be present in large numbers on NETs and their metastases, while most other normal tissues express low levels of SSTR subtypes.

**gallium Ga 68-edotreotide:** A radioconjugate consisting of the octreotide derivative edotreotide labeled with gallium 68 (Ga-68) with potential application in somatostatin receptor (SSTR) imaging in conjunction with positron emission tomography (PET). Similar to octreotide, gallium Ga 68-edotreotide binds to SSTRs, especially type 2 receptors, present on the cell membranes of many types of neuroendocrine tumor cells and their metastases, thereby allowing for imaging of SSTR-expressing cells upon PET. Gallium Ga 68-edotreotide is produced by substituting tyrosine for phenylalanine at the 3 position of the somatostatin analogue octreotide (Tyr3-octreotide or TOC) and chelating the substituted octreotide to Ga-68 via the macrocyclic chelating agent dodecanetetraacetic acid (DOTA). Check for active clinical trials using this agent.

**gallium Ga 68-labeled affibody molecule ABY-025:** A radioconjugate composed of an optimized affibody conjugated, via its C-terminal cysteine, to maleimide-DOTA, and linked to the radioisotope gallium Ga 68, with potential use as a tracer for human epidermal growth factor receptor type 2 (HER2; ErbB2)-expressing tumors using positron emission tomography (PET). Upon intravenous administration of the gallium Ga 68-labeled affibody ABY-025, the affibody targets HER2-expressing tumor cells. This facilitates both detection of HER2-expressing tumor cells and assessment of responses to HER2-targeting chemotherapeutic agents during PET imaging. The affibody is an optimized antibody mimetic based on a 6.5-kDa 3-helical bundle Z domain derived from the staphylococcal protein A (Z her2:342); the nonbinding surface of the Z domain is reengineered (Z her2:2891) to increase binding affinity for HER2 and to improve tumor imaging. HER2 is overexpressed in many cancer cell types.

**gallium Ga 68-labeled BNOTA-PRGD2:** A radiopharmaceutical agent comprised of a pegylated arginine-glycine-aspartic acid dimer (PRGD2) labeled with gallium Ga 68, with potential alphaVbeta3 integrin imaging activity upon positron emission topography (PET) or single photon emission computed tomography (SPECT). This radiopharmaceutical is prepared by conjugating PRGD2 with chelator S-2-(4-isothiocyanatobenzyl)-1,4,7-triazacyclononane-1,4,7-triacetic acid (BNOTA) which is capable of forming a six-coordinate complex with Ga 68. After intravenous administration, gallium Ga 68-labeled BNOTA-PRGD2 binds to alphaVbeta3 integrin on the cell membrane via the cyclic tri-amino acids RGD motif. Upon PET imaging, alphaVbeta3 integrin-expressing tumor cells can be visualized and expression levels can be quantified. Compared to other radiolabeled RGD-containing peptides, this agent shows increased affinity to alphaVbeta3 integrin, enhanced tumor uptake as well as improved pharmacokinetics. alphaVbeta3 integrin is overexpressed on certain tumor cells and tumor endothelial cells while minimally or not expressed on healthy, normal cells and plays a key role in angiogenesis, tumor proliferation and survival. Check for active clinical trials using this agent.

**gallium Ga 68-labeled DOTA Di-HSG peptide IMP-288:** A radiolabeled divalent histamine-succinyl-glycine (HSG) hapten-peptide linked with the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) to the radionuclide gallium (Ga) 68 with potential use in

diagnostic imaging. After pretargeting with a bispecific monoclonal antibody (BiMoAB) directed against both a tumor-associated antigen (TAA) and the HSG hapten-peptide, the HSG portion of administered gallium Ga 68-labeled di-HSG-DOTA peptide IMP-288 binds the anti-HSG portion of the BiMoAB; Ga-68 radioisotopic activity localized to tumor cells bearing the TAA can then be visualized upon positron emission tomography (PET).

**gallium Ga 68-labeled GRPR antagonist BAY86-7548:** A radioconjugate containing a synthetic bombesin receptor antagonist targeting the gastrin-releasing peptide receptor (GRPR), that is linked by the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) to the radionuclide gallium (Ga) 68, with potential use in diagnostic imaging using positron emission tomography/computed tomography (PET/CT). Upon administration of gallium Ga 68 GRPR antagonist BAY86-7548, the peptide moiety targets and binds to GRPR. Upon PET/CT, GRPR-expressing tumor cells can then be visualized. GRPR, also called bombesin receptor 2 (BB2), is a G protein-coupled seven-transmembrane receptor belonging to the bombesin receptor family. It is overexpressed in certain types of cancers.

**gallium Ga 68-labeled MLN6907:** A radioconjugate containing a monoclonal antibody directed against guanylyl cyclase C (GCC) labeled with the radioisotope gallium Ga 68, with positron emission tomography (PET) imaging activity. The monoclonal antibody moiety of MLN6907 selectively binds to GCC, a transmembrane receptor normally found on intestinal cells and dopaminergic neurons in the brain, that is also overexpressed on the surface of a variety of cancer cells. Upon internalization of the agent and PET, tumors expressing GCC can be visualized.

**gallium Ga 68-labeled NODAGA-MJ9:** A radiopharmaceutical agent comprised of a peptide targeting the gastrin releasing peptide receptor (GRPR) chelated with 1,4,7-triazacyclononane,1-glutaric acid-4,7 acetic acid (NODAGA) and radiolabeled with gallium Ga 68, with potential tumor imaging activity upon positron emission tomography (PET). After administration of gallium Ga 68-labeled-NODAGA-MJ9, the MJ9 moiety binds to GRPR located on tumor cells. Upon PET imaging, GRPR-expressing tumor cells can be visualized and expression levels can be

quantified. GRPR is overexpressed on certain tumor cells and plays a key role in tumor proliferation and survival.

**gallium Ga 68-labeled PSMA ligand Glu-urea-Lys(Ahx):** A radioconjugate composed of a human prostate specific membrane antigen (PSMA)-targeting ligand, Glu-urea-Lys(Ahx) (Glu-NH-CO-NH-Lys(Ahx)), conjugated, via the acyclic radiometal chelator N,N'-bis [2-hydroxy-5-(carboxyethyl)benzyl] ethylenediamine-N,N'-diacetic acid (HBED-CC), to the radioisotope gallium Ga 68, with potential use as a tracer for PSMA-expressing tumors during positron emission tomography (PET). Upon intravenous administration of the gallium Ga 68-labeled PSMA ligand, the Glu-urea-Lys(Ahx) moiety targets and binds to PSMA-expressing tumor cells. Upon internalization, PSMA-expressing tumor cells can be detected during PET imaging. PSMA, a tumor-associated antigen and type II transmembrane protein, is expressed on the membrane of prostatic epithelial cells and overexpressed on prostate tumor cells.

**gallium Ga 68-NEB:** A radiotracer composed of a truncated form of the azo dye Evans blue (EB) conjugated, via a 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA) linker (NEB), to the radioisotope gallium Ga 68, with potential blood pool imaging activity for use in positron emission tomography (PET). Upon administration of gallium Ga 68-NEB, the NEB moiety, which has high affinity for serum albumin, targets and forms a complex with albumin. Upon PET, the lymph nodes (LN) and lymphatic vessels as well as other desired tissues can be visualized.

**gallium Ga 68-NOTA-Aca-BBN(7-14):** A radioconjugate containing the bombesin (BBN) fragment BBN(7-14) comprised of the amino acid sequence of Gln-Trp-Ala-Val-Gly-His-Leu-Met-NH<sub>2</sub>, which targets the gastrin-releasing peptide receptor (GRPR), bound to aminocaproic acid (Aca), and linked by the macrocyclic chelating agent, 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA), to the radionuclide gallium (Ga) 68, with potential use in diagnostic imaging using positron emission tomography/computed tomography (PET/CT). Upon administration of gallium Ga 68-NOTA-Aca-BBN(7-14), the peptide moiety targets and binds to GRPR. Upon PET/CT, GRPR-expressing tumor cells can then be visualized. GRPR, also called bombesin receptor 2 (BB2), is a seven-transmembrane G protein-coupled receptor belonging to the bombesin receptor family. It is overexpressed in certain types of cancers.

**gallium Ga 68-NOTA-AE105:** A radiotracer composed of AE105, an urokinase-type plasminogen activator receptor (uPAR) peptide antagonist, conjugated with the bifunctional, macrocyclic chelating agent 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA) and labeled with the radionuclide gallium Ga 68, with potential imaging activity using positron emission tomography (PET). Upon administration, the AE105 moiety of gallium Ga 68-NOTA-AE105 targets and binds, with high affinity, to uPAR expressed on tumor cells. Upon PET imaging, uPAR-expressing tumor cells can be visualized and the degree of tumor aggressiveness can be assessed. uPAR expression is correlated with increased tumor invasiveness and aggressiveness, as well as a poor prognosis.

**gallium Ga 68-NOTA-BBN-RGD:** A radioconjugate containing the bombesin (BBN) fragment BBN(7-14) comprised of the amino acid sequence Gln-Trp-Ala-Val-Gly-His-Leu-Met-NH<sub>2</sub>, which targets the gastrin-releasing peptide receptor (GRPR), and linked, via a glutamate linker, to the cyclic arginine-glycine-aspartic acid (RGD) sequence-based peptide cyclo[Arg-Gly-Asp-D-Tyr-Lys] (c(RGDyK)), which targets integrin alphaVbeta3 (αVβ3), and labeled with the radionuclide gallium (Ga) 68 through the macrocyclic chelating agent, 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA), with potential use in diagnostic imaging using positron emission tomography/computed tomography (PET/CT). Upon administration of gallium Ga 68-NOTA-BBN(7-14)-RGD, the BBN peptide moiety of the RGD-BBN heterodimer specifically targets and binds to GRPR while the RGD moiety specifically binds to the αVβ3. Upon PET/CT, GRPR- and/or αVβ3-expressing tumor cells can be visualized and expression levels can be quantified. GRPR, also called bombesin receptor 2 (BB2), is a seven-transmembrane G protein-coupled receptor belonging to the bombesin receptor family. αVβ3, an integrin receptor, plays a key role in angiogenesis, tumor proliferation and survival. Both are overexpressed in certain types of cancers.

**gallium Ga 68-NOTA-NFB:** A radioconjugate composed of a derivative of the CXCR4 peptide antagonist T140, in which the N-terminal 4-fluorobenzoyl group (NFB) is substituted with the chelating agent 1,4,7-triazacyclononane-N,N',N''-triacetic acid (NOTA) and radiolabeled with gallium Ga 68, with potential CXCR4 imaging activity during positron emission tomography (PET). Upon administration, gallium Ga 68-NOTA-NFB selectively binds to CXCR4 and CXCR4-expressing tumor cells can

then be visualized upon PET imaging. CXCR4, a chemokine receptor belonging to the G protein-coupled receptor (GPCR) gene family, plays an important role in chemotaxis and angiogenesis, and is upregulated in several tumor cell types. CXCR4 expression is correlated with tumor aggressiveness and high metastatic potential. Unmodified T140 binds non-specifically to red blood cells (RBCs); replacing the fluoro-benzoyl group with NOTA (NOTA-NFB) prevents the RBC binding almost entirely, while only minimally reducing the binding to CXCR4-positive tumor cells. Check for active clinical trials using this agent.

**gallium Ga 68-RGD:** A radiopharmaceutical agent comprised of a cyclic arginine-glycine-aspartic acid (Arg-Gly-Asp/RGD) peptide labeled with gallium Ga 68, with potential alphaVbeta3 integrin (avb3) imaging activity during positron emission topography (PET). After intravenous administration, gallium Ga 68-RGD selectively binds to avb3 on the cell membrane via the cyclic RGD motif. Upon PET imaging, avb3-expressing tumor cells can be visualized and their expression levels can be quantified. avb3, a member of the integrin receptor family, is overexpressed on certain tumor cells and tumor endothelial cells while minimally or not expressed on healthy, normal cells; it plays a key role in angiogenesis, tumor proliferation and survival.

**gallium nitrate:** A hydrated nitrate salt of the group IIIa element gallium with potential use in the treatment of malignancy-associated hypercalcemia. Gallium nitrate localizes preferentially to areas of bone resorption and remodeling and inhibits osteoclast-mediated resorption by enhancing hydroxyapatite crystallization and reduction of bone mineral solubility. This agent also increases calcium and phosphorous deposition into bone and may increase collagen synthesis. or A drug that lowers blood calcium. Used as treatment for hypercalcemia (too much calcium in the blood) and for cancer that has spread to the bone (bone metastases). A drug that lowers blood calcium. Used as treatment for hypercalcemia (too much calcium in the blood) and for cancer that has spread to the bone (bone metastases).

**gallium scan :** A procedure to detect areas of the body where cells are dividing rapidly. It is used to locate cancer cells or areas of inflammation. A very small amount of radioactive gallium is injected into a vein and travels through the bloodstream. The gallium is taken up by rapidly dividing cells in the bones, tissues, and organs and is detected by a scanner.

**gallstone** : Solid material that forms in the gallbladder or common bile duct. Gallstones are made of cholesterol or other substances found in the gallbladder. They may occur as one large stone or as many small ones, and vary from the size of a golf ball to a grain of sand. Also called cholelith.

**GalNAc-Anti-C5 siRNA ALN-CC5**: A proprietary formulation composed of small-interfering RNAs (siRNAs) directed against terminal complement component 5 (C5) of the complement pathway conjugated to a N-acetylgalactosamine (GalNAc) ligand, which has potential use in the treatment of complement-mediated diseases, such as paroxysmal nocturnal hemoglobinuria (PNH). Upon subcutaneous administration of ALN-CC5, the GalNAc ligand moiety specifically binds to and is taken up by the asialoglycoprotein receptor (ASGPR) expressed on hepatocytes. Inside the cell, the siRNAs bind to C5 mRNAs, which results in the inhibition of both the translation and expression of the C5 protein. This lowers plasma C5 levels, prevents C5 cleavage into pro-inflammatory components and blocks complement-mediated hemolysis. C5, a complement pathway protein, is expressed at high levels by the liver.

**galunisertib**: An orally available, small molecule antagonist of the tyrosine kinase transforming growth factor-beta (TGF- $\beta$ ) receptor type 1 (TGFBR1), with potential antineoplastic activity. Upon administration, galunisertib specifically targets and binds to the kinase domain of TGFBR1, thereby preventing the activation of TGF- $\beta$ -mediated signaling pathways. This may inhibit the proliferation of TGF- $\beta$ -overexpressing tumor cells. Dysregulation of the TGF- $\beta$  signaling pathway is seen in a number of cancers and is associated with increased cancer cell proliferation, migration, invasion and tumor progression. Check for active clinical trials using this agent.

**galvanic skin response** : A change in the heat and electricity passed through the skin by nerves and sweat. Galvanic skin response increases in certain emotional states and during hot flashes that happen with menopause. Also called electrodermal response and skin conduction.

**Galvanised iron**: Steel or iron that has been zinc-coated generally by immersion in a bath of molten zinc.

**galvanize**: The process of covering iron with a coat of zinc to make it less reactive to air and water. OR Galvanizing is a way of protecting iron from

rusting by coating it with zinc metal. OR A thin coating of zinc that covers iron or steel to prevent rust.

**galvanometer:** A device that is very sensitive and able to detect even small flows of electrons through a wire.

**gamboge resin extract TSB-9-W1:** An orally bioavailable extract from the yellow to brown gum-resin of the gamboge tree (genus *Garcinia*) belonging to the Clusiaceae (or Guttiferae) family, with potential anti-inflammatory and antineoplastic activities. Gamboge resin extract TSB-9-W1 contains various active ingredients, including gambogic acid, formoxanthone A, betulin, betulinic acid, morellic acid, isomorellic acid, isogambogic acid, isomorellinol and desoxymorellin. Upon oral administration, the various active components of the gamboge resin extract TSB-9-W1 may bind to and inhibit the activity of a variety of cancer-related proteins, may induce apoptosis, and may exert cytotoxic activity on tumor cells, thereby inhibiting tumor cell proliferation. TSB-9 is derived from TSB-14, which is the acetone-extract of gamboge resin, and pulverized into powder form; TSB-9 is 90% extract and 10% brown sugar. TSB-9-W1 is a milled form of TSB-9 with a particle size of 5 micrometers.

**GAMESS:** General Atomic and Molecular Electronic Structure System. A free ab initio software package that emphasizes multi-reference calculations (12). There is also a British program with the same name, distinguished as GAMESS-UK (vs. GAMESS-US).

**gametes:** sex cells of parent organisms; usually haploid cells. OR The ova and the sperm, haploid cells that unite during fertilization to generate a diploid zygote. OR Reproductive cells with a haploid gene content; sperm or egg cells.

**Gamimune N:** (Other name for: therapeutic immune globulin)

**gamma irradiation :** A type of radiation therapy that uses gamma radiation. Gamma radiation is a type of high-energy radiation that is different from x-rays.

**Gamma Knife therapy :** A treatment using gamma rays, a type of high-energy radiation that can be tightly focused on small tumors or other lesions in the head or neck, so very little normal tissue receives radiation. The gamma rays are aimed at the tumor from many different angles at once, and deliver a large dose of radiation exactly to the tumor in one treatment session. This procedure is a type of stereotactic radiosurgery. Gamma Knife

therapy is not a knife and is not surgery. Gamma Knife is a registered trademark of Elekta Instruments, Inc.

**Gamma radiation:** High-energy, short-wavelength, electromagnetic radiation emitted from the nucleus of an atom. Gamma radiation frequently accompanies emissions of alpha particles and beta particles, and always accompanies fission. Gamma rays are similar to x-rays, but are very penetrating and are best stopped or shielded by dense materials, such as lead or depleted uranium. OR Electromagnetic disturbance (photons) emanating from an atomic nucleus. This type of radiation travels in wave form, similar to X-Rays or light, but has a shorter wave length (approx. 1 Ado or 107 mm)

**gamma ray :** A type of high-energy radiation that is different from an x-ray. OR are electromagnetic radiations beyond the X-rays in frequency. They are usually produced in nuclear reactions. OR A very high energy form of electromagnetic radiation, typically with wavelengths of less than 3 pm. Gamma rays are produced by certain nuclear decay processes, and are used to sterilize food.

**gamma secretase inhibitor PF-03084014:** A selective gamma secretase (GS) inhibitor with potential antitumor activity. Gamma secretase inhibitor PF-03084014 binds to GS, blocking proteolytic activation of Notch receptors; Notch signaling pathway inhibition may follow, which may result in the induction of apoptosis in tumor cells that overexpress Notch. The integral membrane protein GS is a multi-subunit protease complex that cleaves single-pass transmembrane proteins, such as Notch receptors, at residues within their transmembrane domains. Overexpression of the Notch signaling pathway has been correlated with increased tumor cell growth and survival.

**gamma-delta tocotrienol:** An orally available nutritional supplement containing the gamma and delta forms of the vitamin E family member tocotrienol, with hypocholesterolemic, antithrombotic, antioxidant, and potential antineoplastic activity. Upon oral administration, gamma-delta tocotrienol accumulates in cancer cells and may exert their anti-cancer activity in part through 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase downregulation and/or degradation, cell cycle arrest, and induction of caspase-mediated apoptosis. In addition, this agent may inhibit angiogenesis partially through the blockage of vascular endothelial growth

factor receptor (VEGFR) and the inhibition of tumor cell-induced vessel formation. Altogether, this may result in the inhibition of tumor cell growth. Further, this agent prevents free radical formation and inhibits lipid peroxidation. Tocotrienols contain 3 double bonds, absent in tocopherols, on its farnesyl isoprenoid side chain that likely contribute to its anti-cancer activities.

**gamma-secretase/Notch signalling pathway inhibitor RO4929097:** An orally bioavailable, small-molecule gamma secretase (GS) inhibitor with potential antitumor activity. Gamma secretase inhibitor RO4929097 binds to GS and blocks activation of Notch receptors, which may inhibit tumor cell proliferation. The integral membrane protein GS is a multi-subunit protease complex that cleaves single-pass transmembrane proteins, such as Notch receptors, at residues within their transmembrane domains. Overexpression of the Notch signaling pathway has been correlated with increased tumor cell growth.

**gamma-tocopherol:** The orally bioavailable gamma form of the naturally-occurring fat-soluble vitamin E, found in certain nuts and seeds, with potential antioxidant activity. Although the exact mechanism of action of this tocopherol has yet to be fully identified, gamma-tocopherol appears to have the ability to scavenge free radicals, thereby protecting against oxidative damage.

**Gammagard S/D:** (Other name for: therapeutic immune globulin)

**Gammar-P:** (Other name for: therapeutic immune globulin)

**ganciclovir:** A synthetic guanine derivative with antiviral activity. As the active metabolite of ganciclovir, ganciclovir-5-triphosphate (ganciclovir-TP) appears to inhibit viral DNA synthesis by competitive inhibition of viral DNA polymerases and incorporation into viral DNA, resulting in eventual termination of viral DNA elongation. or An antiviral agent used to prevent or treat cytomegalovirus infections that may occur when the body's immune system is suppressed. In gene therapy, ganciclovir is used with an altered herpes simplex virus-1 gene to kill advanced melanoma cells and brain tumor cells.

**gantotinib:** An orally bioavailable imidazopyridazine and inhibitor of Janus kinase 2 mutant V617F (JAK2V617F), with potential antineoplastic activity. Upon oral administration, gantotinib selectively and competitively inhibits the activation of JAK2V617F, which may result in the inhibition of

the JAK-STAT signaling pathway and the induction of apoptosis in JAK2V617F-expressing tumor cells. JAK2V617F has a substitution of phenylalanine for valine at amino acid position 617 and plays a key role in tumor cell proliferation and survival. Check for active clinical trials using this agent.

**ganetespib:** A synthetic small-molecule inhibitor of heat shock protein 90 (Hsp90) with potential antineoplastic activity. Ganetespib binds to and inhibits Hsp90, resulting in the proteasomal degradation of oncogenic client proteins, the inhibition of cell proliferation and the elevation of heat shock protein 72 (Hsp72); it may inhibit the activity of multiple kinases, such as c-Kit, EGFR, and Bcr-Abl, which as client proteins depend on functional Hsp90 for maintenance. Hsp90, a 90 kDa molecular chaperone upregulated in a variety of tumor cells, plays a key role in the conformational maturation, stability and function of "client" proteins within the cell, many of which are involved in signal transduction, cell cycle regulation and apoptosis, including kinases, transcription factors and hormone receptors. Hsp72 exhibits anti-apoptotic functions; its up-regulation may be used as a surrogate marker for Hsp90 inhibition.

**Ganglioside:** A ceramide, common in membranes of the nervous system, in which an oligosaccharide is linked to the ceramide by a glucose residue. OR Sphingolipids, containing complex oligosaccharides as head groups; especially common in nervous tissue. OR A complex molecule that contains both lipids (fats) and carbohydrates (sugars) and is found in the plasma (outer) membrane of many kinds of cells. Several different types of gangliosides have been identified.

**Ganite:** (Other name for: gallium nitrate)

**ganitumab:** A recombinant, fully human monoclonal antibody directed against the insulin-like growth factor 1 receptor (IGF-1R) with potential antineoplastic activity. Ganitumab binds to membrane-bound IGF-1R, preventing binding of the ligand IGF-1 and the subsequent triggering of the PI3K/Akt signaling pathway; inhibition of this survival signaling pathway may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. IGF-1R is a tyrosine kinase and a member of the insulin receptor family. IGF-1R activation stimulates cell proliferation, enables oncogenic transformation, and suppresses apoptosis; IGF-1R signaling has been highly implicated in tumorigenesis and metastasis.

**Gap:** The space inside a reactor fuel rod that exists between the fuel pellet and the fuel rod cladding.

**Gap junctions:** Passageways between the interiors of two contiguous cells. Also known as cell-to-cell channels.

**Gardasil:** (Other name for: quadrivalent human papillomavirus (types 6, 11, 16, 18) recombinant vaccine)

**Gardasil :** A vaccine used to prevent anal, cervical, vulvar, and vaginal cancer caused by human papillomavirus (HPV) types 16 and 18 and genital warts caused by HPV types 6 and 11. Gardasil is approved for use in males and females aged 9 to 26 years. It is a type of quadrivalent vaccine (a vaccine that works against four different viruses or other microorganisms). Also called recombinant human papillomavirus quadrivalent vaccine.

**Gardasil 9:** (Other name for: recombinant human papillomavirus nonavalent vaccine) or A vaccine used to prevent anal, cervical, vulvar, and vaginal cancer caused by human papillomavirus (HPV) types 16, 18, 31, 33, 45, 52 and 58 and genital warts caused by HPV types 6 and 11. Gardasil 9 is approved for use in males aged 9 to 15 years and females aged 9 to 26 years. It is a type of nonavalent vaccine (a vaccine that works against nine different viruses or other microorganisms). Also called recombinant human papillomavirus nonavalent vaccine.

**garden heliotrope :** A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden valerian, Indian valerian, Mexican valerian, Pacific valerian, valerian, *Valeriana officinalis*, and *Valerianae radix*.

**garden valerian :** A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden heliotrope, Indian valerian, Mexican valerian, Pacific valerian, valerian, *Valeriana officinalis*, and *Valerianae radix*.

**GARDNER:** A unit of color density. Measured by comparison of the material to be analyzed against standards of known intensity. (see RFF 705.10.52 - COLOR).

**garlic:** A bulbous herb isolated from the plant *Allium sativum* with potential antineoplastic activity. Garlic contains a number of different

organosulfur compounds, some of which have displayed antineoplastic activity. Or A European plant that has a bulb used to flavor food. It has also been used in some cultures to treat certain medical conditions including high cholesterol, high blood pressure, infections, and cancer. The scientific name is *Allium sativum*.

**GarliPure Maximum Allicin:** (Other name for: garlic)

**gas:** a fluid having neither independent shape nor volume, but tending to expand indefinitely. The word is often used to denote anesthetics, combustibles (gasoline), poisonous materials, etc., whether liquid or solids at ordinary temperatures. OR The least dense state of matter. OR Gases are groups of atoms that are spread over a large space. One of their physical characteristics is that they fill containers evenly and completely. The atmosphere is made up of gases. OR a state of matter in which molecules are widely separated, fluid, expandable, and compressible. OR Matter in a form that has low density, is easily compressible and expandable, and expands spontaneously when placed in a larger container. Molecules in a gas move freely and are relatively far apart. "Vapor" often refers to a gas made of a substance that is usually encountered as a liquid or solid; for example, gaseous H<sub>2</sub>O is called "water vapor". OR One of the three states of matter. In a gas, the particles are a long way apart and are able to move freely. The particles bounce off each other and off the walls of the container. A gas cannot hold its own shape and will fill any container in which it is put.

**Gas centrifuge:** A uranium enrichment process used to prepare uranium for use in fabricating fuel for nuclear reactors by separating its isotopes (as gases) based on their slight difference in mass. This process uses a large number of interconnected centrifuge machines (rapidly spinning cylinders). No commercial gas centrifuge plants are operating in the United States; however, both Louisiana Energy Services (LES) and United States Enrichment Corporation (USEC) have received licenses to construct and operate such facilities, and both facilities are under construction. For additional information, see Gas Centrifuge Enrichment Facility Licensing and the Fact Sheet on Uranium Enrichment.

**gas chromatography:** An analytical chemistry technique in which a sample is vaporized and passed through a column whose walls are covered with a sticky organic solvent; different chemicals in the sample have

different affinities for the solvent and separate as they pass through the column. OR A chromatographic technique in which the sample is volatilized and passed through a column to separate the components of a sample. The column is packed either with a polymeric stationary phase coated on a solid support or simply a thin layer of polymer on the inner surface of a capillary. OR A way of separating chemical substances from a mixed sample by passing the sample, carried by a moving stream of gas, through a tube packed with a finely divided solid that may be coated with a liquid film. Gas chromatography devices are used to analyze air pollutants, blood alcohol content, essential oils, and food products. OR A common technique used in analytical chemistry that involves vapourisation, separation, and analysis of volatile compounds.

**gas constant:**  $R$  equals 0.082 liter-atmospheres per mole-degree.

**Gas Oil:** Gas Oil is the term given to middle distillate streams, generally used as a fuel in heating and air conditioning systems. In refining terms, gas oil comes between fuel oil and the lighter products such as naphtha and gasoline. Its broader definition covers the oil products diesel and jet fuel. Gas Oil can be used as a feedstock in Petrochemical steam cracking, producing ethylene alongside a wide range of co-products.

**Gas Permeability:** the ability of a gas or other volatile substance to penetrate a material. Materials that will allow significant passage of gases are said to be permeable, while materials that resist or stop the passage of gases are said to offer gas barrier properties.

**Gas-cooled reactor:** A nuclear reactor in which the coolant is a gas.

**Gaseous diffusion:** A uranium enrichment process used to prepare uranium for use in fabricating fuel for nuclear reactors by separating its isotopes (as gases) based on their slight difference in velocity. (Lighter isotopes diffuse faster through a porous membrane or vessel than do heavier isotopes.) This process involves filtering uranium hexafluoride (UF<sub>6</sub>) gas to separate uranium-234 and uranium-235 from uranium-238, in order to increase the percentage of uranium-235 from 1 to 3 percent. The only gaseous diffusion plant in operation in the United States is in Paducah, KY. A similar plant near Piketon, OH, was closed in March 2001. Both plants are leased by the United States Enrichment Corporation (USEC) from the DOE and regulated by the NRC since March 4, 1997. For

additional information, see Gaseous Diffusion and the Fact Sheet on Gaseous Diffusion.

**Gaseous diffusion plant:** A facility where uranium hexafluoride gas is filtered. Uranium-235 is separated from uranium-238, increasing the percentage of uranium-235 from 1 to about 3 percent. The process requires enormous amounts of electric power. For additional detail, see Gaseous diffusion.

**Gases:** A substance possessing perfect molecular mobility and the property of indefinite expansion, as opposed to a solid or liquid; any such fluid or mixture of fluids other than air. Normally, these formless substances completely fill the space, and take the shape of, their container.

**Gasification:** The conversion of soluble and suspended materials into gas during anaerobic decomposition. In clarifiers the resulting gas bubbles can become attached to the settled sludge and cause large clumps of sludge to rise and float on the water surface. In anaerobic sludge digesters, this gas is collected for fuel or disposed of using a waste gas burner.

**Gasket:** Piece used to make a joint fluid-tight. OR A static (stationary) sealing device used to retain fluids under pressure or to seal out foreign matter OR a device installed within the gap of a joint for the purpose of retaining fluid.

**gasohol:** A mixture of 90% gasoline and 10% ethyl alcohol that is used as an automotive fuel.

**gasoline:** A volatile, flammable, liquid mixture of hydrocarbons, obtained from petroleum, and used as fuel for internal-combustion engines. OR Gasoline is a relatively light distillate stream produced as one of the principle products from a crude oil refinery. Gasoline specifications vary from region to region with variation in both performance and environmental characteristics. These specifications include octane level, vapour pressure, as well as a wide variety of component limitations such as sulphur, lead, benzene and olefin limitations.

**gastrectomy :** An operation to remove all or part of the stomach.

**gastric :** Having to do with the stomach.

**gastric acid :** Acid that is released into the stomach from glands in the stomach wall. It helps digest food. Gastric acid is made of hydrochloric acid.

**gastric acid secretion test :** A test used to measure the amount of gastric acid made by the stomach. The patient receives an injection of the hormone gastrin or insulin. A tube is put through the nose or throat into the stomach and samples are taken from the stomach and sent to a laboratory for testing. Also called stomach acid stimulation test and stomach acid test.

**gastric atrophy :** A condition marked by thinning of the inner lining of the stomach wall and the loss of gland cells in the lining that release substances that help with digestion. It may be caused by infection with the bacterium *H. pylori* or by certain autoimmune conditions. Gastric atrophy may increase the risk of stomach cancer.

**gastric cancer :** Cancer that forms in tissues lining the stomach. Also called stomach cancer.

**gastric feeding tube :** A tube that is inserted through the nose, down the throat and esophagus, and into the stomach. It can be used to give drugs, liquids, and liquid food, or used to remove substances from the stomach. Giving food through a gastric feeding tube is a type of enteral nutrition. Also called nasogastric tube and NG tube.

**gastric mucosal hypertrophy :** A condition marked by inflammation and ulcers (breaks on the skin or on the surface of an organ) of the mucosa (inner lining) of the stomach and by overgrowth of the cells that make up the mucosa. Symptoms include vomiting, diarrhea, and weight loss. Patients with gastric mucosal hypertrophy may be at a higher risk of stomach cancer. Also called giant hypertrophic gastritis and Ménétrier disease.

**gastric reflux :** The backward flow of stomach acid contents into the esophagus (the tube that connects the mouth to the stomach). Also called esophageal reflux and gastroesophageal reflux.

**gastric scirrhous carcinoma :** A rare type of stomach cancer that begins in the lining of the stomach and spreads to the muscles of the stomach wall. This causes the wall of the stomach to become thick, hard, and rubbery, which leads to trouble digesting food. Also called linitis plastica.

**Gastrimmune:** (Other name for: gastrin immunotoxin)

**gastrin:** a hormone produced by digestive glands to influence digestive processes.

**gastrin :** A hormone released from special cells in the lining of the stomach after eating. Gastrin causes the stomach to release an acid that

helps digest food.

**gastrin immunotoxin:** An immunotoxin containing an epitope of human gastrin conjugated to diphtheria toxin, with antineoplastic activity. The gastrin epitope in this vaccine is chemically identical or similar to the endogenous gastrin-17 (G-17), a 17-amino acid peptide hormone that stimulates secretion of gastric acid by the stomach. Diphtheria toxin inhibits protein synthesis via modifying translation elongation factor 2 (EF-2). Vaccination with this immunotoxin may elicit production of antibodies against gastrinoma cells overexpressing gastrin, in addition to the toxic effects on protein synthesis exerted by the diphtheria toxin moiety.

**gastrinoma :** A tumor that causes overproduction of gastric acid. It usually begins in the duodenum (first part of the small intestine that connects to the stomach) or the islet cells of the pancreas. Rarely, it may also begin in other organs, including the stomach, liver, jejunum (the middle part of the small intestine), biliary tract (organs and ducts that make and store bile), mesentery, or heart. It is a type of neuroendocrine tumor, and it may metastasize (spread) to the liver and the lymph nodes.

**gastritis :** Inflammation of the lining of the stomach.

**gastroenteritis :** Inflammation of the lining of the stomach and the intestines. Symptoms may include nausea, vomiting, diarrhea, and abdominal cramps (dull or sharp pains). Gastroenteritis may be caused by infection with bacteria, parasites, or viruses. It may also be caused by food poisoning, allergic reactions, or reactions to certain medicines or foods.

**gastroenterologist :** A doctor who has special training in diagnosing and treating disorders of the digestive system.

**gastroesophageal junction :** The place where the esophagus is connected to the stomach.

**gastroesophageal reflux :** The backward flow of stomach acid contents into the esophagus (the tube that connects the mouth to the stomach). Also called esophageal reflux and gastric reflux.

**gastrointestinal :** Refers to the stomach and intestines. Also called GI.

**gastrointestinal carcinoid tumor :** An indolent (slow-growing) cancer that forms in cells that make hormones in the lining of the gastrointestinal tract (the stomach and intestines). It usually occurs in the small intestine, rectum, or appendix (a small fingerlike pouch of the large intestine). Having

gastrointestinal carcinoid tumor increases the risk of forming other cancers of the digestive system.

**gastrointestinal stromal tumor :** A type of tumor that usually begins in cells in the wall of the gastrointestinal tract. It can be benign or malignant. Also called GIST.

**gastrointestinal tract :** The stomach and intestines. The gastrointestinal tract is part of the digestive system, which also includes the salivary glands, mouth, esophagus, liver, pancreas, gallbladder, and rectum.

**GastroMARK:** (Other name for: ferumoxsil oral suspension)

**gastroscope :** A thin, tube-like instrument used to examine the inside of the stomach. A gastroscope has a light and a lens for viewing and may have a tool to remove tissue.

**gastroscopy :** Examination of the inside of the stomach using a gastroscope passed through the mouth and esophagus. A gastroscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called upper endoscopy.

**gastrostomy tube :** A tube inserted through the wall of the abdomen directly into the stomach. It allows air and fluid to leave the stomach and can be used to give drugs and liquids, including liquid food, to the patient. Giving food through a gastrostomy tube is a type of enteral nutrition. Also called PEG tube and percutaneous endoscopic tube.

**gataparsen sodium:** A second-generation antisense oligonucleotide directed against survivin mRNA with potential antitumor activity. Gataparsen sodium hybridizes to survivin mRNA, thereby blocking translation of survivin protein, a member of the inhibitor of apoptosis (IAP) family. Silencing the expression of survivin may result in the restoration of the apoptotic process in tumor cells, facilitating chemotherapeutic treatment. Survivin, expressed during embryonal development, is upregulated in a variety of human cancers while absent in most normal adult cells; its expression in tumors is associated with a more aggressive phenotype, shorter survival times, and a decreased response to chemotherapy. Check for active clinical trials using this agent.

**Gate:** In injection and transfer molding, the orifice through which the melt enters the cavity. Sometimes the gate has the same cross-section as the

runner leading to it; often, it is severely restricted. OR An orifice through which the melt enters the mold cavity. OR An opening found at the entrance of a cavity image (end of the runner system) that allows material to enter that cavity image. OR In injection and transfer molding, the orifice through which the melt enters the cavity. OR The generic term for the portion of the mold where resin enters the mold cavity. OR A silicone injection molding or plastic orifice through which the silicone rubber or plastic enters the cavity OR The channel into which melted plastic flows into a mold.

**Gate Blush:** A blemish or disturbance in the gate area of an injection molded article.

**Gate Edge:** A gate that is cut along one edge of the silicone rubber or plastic mold cavity

**Gate Fan:** Large cross sectional area for feeding plastic into the silicone rubber or plastic cavity. Flow channel tapered from the silicone rubber or plastic runner to the gate

**Gate Flash:** A gate that encompasses entire periphery of the silicone rubber or plastic part. Usually of low sectional thickness in relation to silicone rubber or plastic part

**Gate Mark:** A raised spot or small depression on the surface of a silicone rubber or plastic injection molded part where the gates interface the cavity

**Gate Sprue:** The type of gate in which the liquid silicone rubber or plastic is injected directly from the molding press into the cavity

**Gate Trim:** Remnant of plastic left over from cutting the component from the runner or sprue, usually to be cut flush with the edge of the component.

**Gate Trim :** Remnant of plastic left over from cutting the component from the runner or sprue, usually to be cut flush with the edge of the component.

**Gate Underside:** The orifice found between the “A” and “B” plate which carries the resin into the cavity in an overlap of the part in such a manner so as to obtain a clean break on the part. Usually found in thermoset molding

**Gating Strategy:** It is the approach you use to choose the number, dimension and location of gates in a mould.

**Gauge:** Term used to describe thickness of a plastic sheet, measured in mil's or microns. Mil (One thousandths of an inch) Term used in the measurement of LDPE and LLDPE can liners. One mil is .001". Can liners range between 0.35 to 4.0 mil. Micron Term used in the measurement of

HMW-HD can liners. 25.4 microns equals .001". 1,000 microns (M) = 1mm. HMW-HDPE can liners are 6 to 24 microns. OR Thickness of recycled plastic or plastic film measured in decimal inches or mils. OR Thickness measurement of plastic film, often expressed in mils. One mil equals one thousandth of an inch (0.001" or 0.001in.).

**Gauge Bands:** Raised regions in the machine direction around the circumference of a roll, produced by winding areas of thicker film in the same place on a roll.

**Gauging devices:** Devices used to measure, monitor, and control the thickness of sheet metal, textiles, paper napkins, newspaper, plastics, photographic film, and other products as they are manufactured. Gauges mounted in fixed locations are designed for measuring or controlling material density, flow, level, thickness, or weight. The gauges contain sealed sources that radiate through the substance being measured to a readout or controlling device. Portable gauging devices, such as moisture density gauges, are used at field locations. These gauges contain a gamma-emitting sealed source, usually cesium-137, or a sealed neutron source, usually americium-241 or beryllium. For additional detail, see Gauging Devices.

**Gaussian:** A popular package in the ab initio software industry is by Gaussian Inc (13). The name refers to the common use of gaussian functions as basis functions in quantum chemistry.

**gavage:** Dose given by intragastric intubation (WHO, 1979). OR A way of giving medicines and liquids, including liquid foods, through a small tube placed through the nose or mouth into the stomach or small intestine. Sometimes the tube is placed into the stomach or small intestine through an incision (cut) made on the outside of the abdomen. Gavage may be added to what a person is able to eat and drink, or it may be the only source of nutrition. It is a type of enteral nutrition. Also called tube-feeding.

**gavilimomab:** A murine IgM monoclonal antibody (MoAb) developed for the potential treatment of graft versus host disease (GvHD). Gavilimomab recognizes human CD147 antigen, weakly expressed on human leukocytes and up-regulated on activated lymphocytes. This MoAb is capable of neutralizing inflammatory reactions via a complement-dependent cytotoxic mechanism. However, gavilimomab does not offer an improvement over

antithymocyte globulin in the treatment of acute steroid resistant GVHD. Check for active clinical trials using this agent.

**gavinostat:** An orally bioavailable hydroxamate inhibitor of histone deacetylase (HDAC) with potential anti-inflammatory, anti-angiogenic, and antineoplastic activities. Gavinostat inhibits class I and class II HDACs, resulting in an accumulation of highly acetylated histones, followed by the induction of chromatin remodeling and an altered pattern of gene expression. At low, nonapoptotic concentrations, this agent inhibits the production of pro-inflammatory cytokines such as tumor necrosis factor- (TNF-), interleukin-1 (IL-1), IL-6 and interferon-gamma. HDAC inhibitor ITF2357 has also been shown to activate the intrinsic apoptotic pathway, inducing apoptosis in hepatoma cells and leukemic cells. This agent may also exhibit anti-angiogenic activity, inhibiting the production of angiogenic factors such as IL-6 and vascular endothelial cell growth factor (VEGF) by bone marrow stromal cells. Check for active clinical trials using this agent.

**gaw:** Group additivity method as implemented in the NIST Chemistry Webbook. See <http://webbook.nist.gov/chemistry/grp-add/> for a group additivity method that predicts enthalpies of formation and entropies. Group additivity methods assume that a molecule can be broken down into separate parts (groups), each of which contributes additively to the total enthalpy or entropy. For example acetone is composed of two methyl groups (each adds -42.7 kJ/mol) and a carbonyl group (which adds -131 kJ/mol) for an estimated enthalpy of formation of -216.4 kJ/mol.

**Gaylord:** A large corrugated container usually sized to match the length and width dimensions of a pallet. Gaylord is actually a trade name that has become synonymous with this specific type of container. OR a term used to designate a very large carton (i.e., 45" x 33" x 51") that will fit one per pallet. There are various sizes depending on the pallet and the customer requirements.

**Gazyva :** A drug used with bendamustine to treat follicular lymphoma that has come back or has not gotten better after treatment with rituximab. It is also used with chlorambucil to treat chronic lymphocytic leukemia (CLL) that has not already been treated. It is also being studied in the treatment of other types of cancer. Gazyva binds to a protein called CD20, which is found on B cells (a type of white blood cell) and some types of leukemia

and lymphoma cells. This may help the immune system kill cancer cells. Gazyva is a type of monoclonal antibody. Also called obinutuzumab.

**GBM:** A fast-growing type of central nervous system tumor that forms from glial (supportive) tissue of the brain and spinal cord and has cells that look very different from normal cells. GBM usually occurs in adults and affects the brain more often than the spinal cord. Also called glioblastoma, glioblastoma multiforme, and grade IV astrocytoma.

**GC box:** A component of many eukaryotic promoters, especially those from constitutively expressed genes. The consensus sequence for the GC box is 5'-GGGCGG-3'.

**GC1008:** A substance being studied in the treatment of breast cancer that has spread to other parts of the body. It is also being studied in the treatment of other cancers and conditions. GC1008 binds to a protein called transforming growth factor-beta (TGF-beta), which is found on some cancer cells. GC1008 may help keep cancer cells from growing and prevent the growth of new blood vessels that tumors need to grow. It is a type of monoclonal antibody and a type of antiangiogenesis agent. Also called anti-TGF-beta monoclonal antibody GC1008 and fresolimumab.

**GC1008:** A substance being studied in the treatment of breast cancer that has spread to other parts of the body. It is also being studied in the treatment of other cancers and conditions. GC1008 binds to a protein called transforming growth factor-beta (TGF-beta), which is found on some cancer cells. GC1008 may help keep cancer cells from growing and prevent the growth of new blood vessels that tumors need to grow. It is a type of monoclonal antibody and a type of antiangiogenesis agent. Also called anti-TGF-beta monoclonal antibody GC1008 and fresolimumab.

**GCP:** An international set of guidelines that helps make sure that the results of a clinical trial are reliable and that the patients are protected. GCP covers the way a clinical trial is designed, conducted, performed, monitored, audited, recorded, analyzed, and reported. Also called Good Clinical Practice.

**GCT:** A rare tumor that usually forms in bone, but may also form in cartilage, muscle, fat, blood vessels, or other supportive tissue in the body. Most GCTs occur at the ends of the long bones of the arms and legs, near a joint (such as the knee, wrist, hip, or shoulder). Most are benign (not

cancer) but some are malignant (cancer). GCTs usually occur in young and middle-aged adults. Also called giant cell tumor.

**Gd-DTPA:** A substance used in magnetic resonance imaging (MRI) to help make clear pictures of the brain, spine, heart, soft tissue of joints, and inside bones. Gd-DTPA is being studied in the diagnosis of cancer. It is a type of contrast agent. Also called gadopentetate dimeglumine and Magnevist.

**GD2 lactone/GD3 lactone-KLH conjugate bivalent vaccine:** A cancer vaccine, containing epitopes of the gangliosides GD2 and GD3 conjugated with the immunostimulant keyhole limpet hemocyanin (KLH), with potential antineoplastic activity. Vaccination with GD2 lactone/GD3 lactone-KLH conjugate bivalent vaccine may elicit antibodies against tumor cells expressing either epitope, resulting in complement-mediated cytotoxicity (CMC) and antibody-dependent cell-mediated cytotoxicity (ADCC). Located primarily in the nervous system, gangliosides, such as GD2 and GD3, are cell membrane components involved in cellular recognition and cell-cell communication.

**GD2-CAR-expressing autologous T-lymphocytes:** Genetically modified, autologous T-lymphocytes transduced with a retroviral vector encoding a 14g2a.zeta chimeric antigen receptor (CAR) directed against the disialoganglioside GD2, with potential immunomodulating and antineoplastic activities. Upon intravenous administration, the activated T-lymphocytes target the GD2 antigen on tumor cells and selectively kill those cells. The tumor-associated antigen GD2 is overexpressed on the surface of almost all tumors of neuroectodermal origin. Check for active clinical trials using this agent.

**GDC-0449:** A drug used to treat advanced basal cell carcinoma that has spread to other parts of the body or has come back after surgery. It is also used in patients who cannot be treated with surgery or radiation therapy. It is also being studied in the treatment of other types of cancer. GDC-0449 blocks a type of protein involved in tissue growth and repair and may block the growth of cancer cells. It is a type of Hedgehog signaling pathway antagonist. Also called Erivedge and vismodegib.

**gedatolisib:** An agent targeting the phosphatidylinositol 3 kinase (PI3K) and mammalian target of rapamycin (mTOR) in the PI3K/mTOR signaling pathway, with potential antineoplastic activity. Upon intravenous

administration, gedatolisib inhibits both PI3K and mTOR kinases, which may result in apoptosis and growth inhibition of cancer cells overexpressing PI3K/mTOR. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated independent of PI3K.

**gefitinib:** An anilinoquinazoline with antineoplastic activity. Gefitinib inhibits the catalytic activity of numerous tyrosine kinases including the epidermal growth factor receptor (EGFR), which may result in inhibition of tyrosine kinase-dependent tumor growth. Specifically, this agent competes with the binding of ATP to the tyrosine kinase domain of EGFR, thereby inhibiting receptor autophosphorylation and resulting in inhibition of signal transduction. Gefitinib may also induce cell cycle arrest and inhibit angiogenesis. Check for active clinical trials using this agent.

**gefitinib :** A drug that is used to treat certain types of non-small cell lung cancer and is being studied in the treatment of other types of cancer. It is a type of epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor. Also called Iressa and ZD1839.

**Geiger counter:** Instrument that measures radiation output.

**Geiger-Mueller counter:** A radiation detection and measuring instrument. It consists of a gas-filled tube containing electrodes, between which there is an electrical voltage, but no current, flowing. When ionizing radiation passes through the tube, a short, intense pulse of current passes from the negative electrode to the positive electrode and is measured or counted. The number of pulses per second measures the intensity of the radiation field. It was named for Hans Geiger and W. Mueller, who invented it in the 1920s. It is sometimes called simply a Geiger counter or a G-M counter and is the most commonly used portable radiation instrument. For related information, see Detecting Radiation.

**gel:** A colloid in which the dispersed phase has combined with the continuous phase to produce a semisolid material as a jelly; a colloid formed by coagulation of a sol. OR A gell is a sol in which the solid particles fuse or entangle to produce a rigid or semirigid mixture. For example, gelatin dissolved in water produces a sol of protein molecules. When the gelatin is cooked, the protein chains entangle and crosslink, forming a gel which is a mesh of solid protein with trapped pockets of

liquid inside. Fruit jellies are also gels OR Small globular mass which has not blended completely into the surrounding material, resulting in a fault in the film or sheet. OR Mass of unmelted polymer or degraded material causing a defect in plastic film. OR The state of a resin which has set to a jelly-like consistency, solid but not yet hard.

**gel electrode :** A device that uses a gel to carry an electric current from the skin to a measuring instrument. A sticky patch may hold the gel electrode on the skin so that the electrical activity of the heart or brain can be measured.

**Gel filtration chromatography:** A technique that makes use of certain polymers that can form porous beads with varying pore sizes. In columns made from such beads, it is possible to separate molecules, which cannot penetrate beads of a given pore size, from small molecules that can. Also called gel-exclusion or molecular sieve chromatography.

**gel filtration:** A chromatographic procedure for the separation of a mixture of molecules on the basis of size; based on the capacity of porous polymers to exclude solutes above a certain size.

**GEL PERMEATION CHROMATOGRAPHY (GPC):** In this measurement technique separation of polymer fractions is effected by flowing a pulse of a polymer solution through a packed bed of porous particles. By measuring the polymer concentration in the effluent stream, and comparing to calibration standards, the molecular weight distribution can be determined.

**Gel time:** The time taken for a resin to set to a non-fluid gel, also called setting time.

**Gel-coat:** A thin layer of unreinforced resin on the outer surface of a reinforced resin moulding (usually applied direct to the mould as the first layer), which hides the fibre pattern of the reinforcement, protects the resin/reinforcement bond, give a smooth external finish, and can also provide special properties. it is usually pigmented.

**Gel-filtration chromatography:** A separation technique based on size differences. A sample is applied to a column consisting of porous beads. Large molecules move through the column faster than small molecules because they cannot enter the beads and, thus, have a shorter path to travel.

**Gelation (compounding):** A stage in compounding material, at which it first becomes a coherent mass.

**Gelclair :** A gel used to lessen pain from mouth sores caused by chemotherapy or radiation therapy, oral surgery, braces, or disease. Gelclair is being studied in the treatment of pain caused by mouth sores in children receiving cancer treatment. It forms a thin layer over the surface of the mouth and throat to prevent irritation while eating, drinking, and talking. Also called polyvinylpyrrolidone-sodium hyaluronate gel.

**geldanamycin analog :** An antineoplastic antibiotic drug that belongs to the family of drugs called ansamycins.

**Gelfoam:** (Other name for: absorbable gelatin sponge)

**Gelling:** A condition in which a paint changes usually on storage into a jelly-like state and cannot be restored to a usable condition.

**GELS:** In polymer science, a gel is defined as a 3-dimensional network of sufficient cross-link density that prevents flow. However, in extrusion practice the term "GEL" encompasses various visual defects in the final product, which sometimes appear as elongated ellipses and even includes various contaminants that are called "fisheyes" (see FISHEYE).

**GEM 231:** A drug that may inhibit the growth of malignant tumors.

**GEM640:** A substance being studied in the treatment of cancer. GEM640 may kill cancer cells by blocking the production of a protein called XIAP that helps cells live longer. It also makes cancer cells more sensitive to anticancer drugs. It is a type of antisense oligonucleotide, and a type of chemosensitizing agent. Also called AEG35156.

**gemcitabine :** The active ingredient in a drug that is used to treat pancreatic cancer that is advanced or has spread. It is also used with other drugs to treat breast cancer that has spread, advanced ovarian cancer, and non-small cell lung cancer that is advanced or has spread. It is also being studied in the treatment of other types of cancer. Gemcitabine blocks the cell from making DNA and may kill cancer cells. It is a type of antimetabolite

**gemcitabine 5'-elaidic acid ester:** A lipophilic, unsaturated fatty acid ester derivative of gemcitabine (dFdC), an antimetabolite deoxynucleoside analogue, with potential antineoplastic activity. Upon hydrolysis intracellularly by esterases, the prodrug gemcitabine is converted into the

active metabolites difluorodeoxycytidine di- and tri-phosphate (dFdCDP and dFdCTP) by deoxycytidine kinase. dFdCDP inhibits ribonucleotide reductase, thereby decreasing the deoxynucleotide pool available for DNA synthesis; dFdCTP is incorporated into DNA, resulting in DNA strand termination and apoptosis. Due to its lipophilicity, gemcitabine 5'-elaidic acid ester exhibits an increased cellular uptake and accumulation, resulting in an increased conversion to active metabolites, compared to gemcitabine. In addition, this formulation of gemcitabine may be less susceptible to deamination and deactivation by deoxycytidine deaminase.

**gemcitabine hydrochloride:** The hydrochloride salt of an analogue of the antimetabolite nucleoside deoxycytidine with antineoplastic activity.

Gemcitabine is converted intracellularly to the active metabolites difluorodeoxycytidine di- and triphosphate (dFdCDP, dFdCTP). dFdCDP inhibits ribonucleotide reductase, thereby decreasing the deoxynucleotide pool available for DNA synthesis; dFdCTP is incorporated into DNA, resulting in DNA strand termination and apoptosis. or A drug used to treat pancreatic cancer that is advanced or has spread. It is also used with other drugs to treat breast cancer that has spread, advanced ovarian cancer, and non-small cell lung cancer that is advanced or has spread. It is also being studied in the treatment of other types of cancer. Gemcitabine hydrochloride blocks the cell from making DNA and may kill cancer cells. Also called Gemzar.

**gemcitabine hydrochloride emulsion:** An orally available nanoparticle-based formulation containing the hydrochloride salt form of gemcitabine, a broad-spectrum antimetabolite and deoxycytidine analogue, with antineoplastic activity. The formulation consists of an oil-in-water emulsion in which gemcitabine is solubilized in the excipient matrix containing a mixture of oil and (co)surfactants. Upon oral administration, gemcitabine is converted into the active metabolites difluorodeoxycytidine diphosphate (dFdCDP) and difluorodeoxycytidine triphosphate (dFdCTP) by deoxycytidine kinase. dFdCTP competes with deoxycytidine triphosphate (dCTP) and is incorporated into DNA, resulting in premature termination of DNA replication and the induction of apoptosis. Further, dFdCDP inhibits ribonucleotide reductase and reduces the deoxynucleotide pool available for DNA synthesis. Compared to gemcitabine alone, the emulsion allows for increased oral bioavailability and decreases its susceptibility to deamination and deactivation by cytidine deaminase.

**gemcitabine prodrug LY2334737:** An orally available valproic acid ester of gemcitabine, a broad-spectrum antimetabolite with antineoplastic activity. Upon administration, gemcitabine prodrug LY2334737 is hydrolyzed by carboxylesterase 2 (CES2) and releases gemcitabine systemically over a period of time consistent with formation rate-limited kinetics. In turn, gemcitabine is converted into the active metabolites difluorodeoxycytidine diphosphate and triphosphate (dFdCDP and dFdCTP) by deoxycytidine kinase. dFdCDP inhibits ribonucleotide reductase, thereby decreasing the deoxynucleotide pool available for DNA replication; dFdCTP is incorporated into DNA, resulting in premature termination of DNA replication and eventually the induction of apoptosis. Compared to gemcitabine, this prodrug is able to avoid hydrolysis in enterocytes and the portal circulation thus avoiding first pass metabolism and increasing systemic gemcitabine availability. In addition, the slow release of gemcitabine may enhance efficacy while lowering toxicity. CES2, a serine ester hydrolase, is expressed in certain tumors which may allow for increased conversion of gemcitabine at the tumor site, thus increasing cytotoxicity. Check for active clinical trials using this agent.

**gemcitabine-cisplatin :** A chemotherapy combination used to treat malignant mesothelioma, advanced non-small cell lung cancer, advanced bladder cancer, advanced cervical cancer, pancreatic cancer, and epithelial ovarian cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs gemcitabine hydrochloride and cisplatin. Also called gemcitabine-cisplatin regimen.

**gemcitabine-cisplatin regimen:** A chemotherapy regimen consisting of gemcitabine hydrochloride and cisplatin used in the treatment of advanced-stage non-small cell lung, advanced-stage bladder, advanced-stage cervical, pancreatic, and epithelial ovarian cancers; this regimen is also used in the treatment of malignant mesothelioma. or A chemotherapy combination used to treat malignant mesothelioma, advanced non-small cell lung cancer, advanced bladder cancer, advanced cervical cancer, pancreatic cancer, and epithelial ovarian cancer. It is also being studied in the treatment of other types of cancer. It includes the drugs gemcitabine hydrochloride and cisplatin. Also called gemcitabine-cisplatin.

**gemcitabine-erlotinib regimen:** A first-line chemotherapy regimen consisting of gemcitabine and erlotinib used for the treatment of locally

advanced and metastatic pancreatic cancer. Or A chemotherapy combination used for the treatment of locally advanced and metastatic pancreatic cancer. It includes the drugs gemcitabine hydrochloride and erlotinib hydrochloride. Also called gemcitabine-Tarceva regimen.

**gemcitabine-erlotinib regimen :** A chemotherapy combination used for the treatment of locally advanced and metastatic pancreatic cancer. It includes the drugs gemcitabine hydrochloride and erlotinib hydrochloride. Also called gemcitabine-Tarceva regimen.

**gemcitabine-oxaliplatin :** A chemotherapy combination used to treat pancreatic cancer and some other types of cancer. It includes the drugs gemcitabine hydrochloride and oxaliplatin. Also called gemcitabine-oxaliplatin regimen and GEMOX.

**gemcitabine-oxaliplatin regimen:** A regimen consisting of gemcitabine and oxaliplatin used for the treatment of biliary adenocarcinoma, pancreatic cancer, hepatocellular cancer, and testicular cancer. This regimen is currently being studied in a variety of other cancers. Or A chemotherapy combination used to treat pancreatic cancer and some other types of cancer. It includes the drugs gemcitabine hydrochloride and oxaliplatin. Also called gemcitabine-oxaliplatin and GEMOX.

**gemcitabine-phosphoramidate NUC-1031:** A pyrimidine analogue and a proprietary prodrug based on an aryloxy phosphoramidate derivative of gemcitabine with potential antineoplastic activity. Upon intravenous administration and cellular uptake, NUC-1031 is converted into the active metabolites difluorodeoxycytidine di- and triphosphate (dFdCDP, dFdCTP). dFdCDP inhibits ribonucleotide reductase, thereby decreasing the deoxynucleotide pool available for DNA replication; dFdCTP is incorporated into DNA, resulting in premature termination of DNA replication and eventually induction of apoptosis. With the phosphoramidate moiety on the gemcitabine monophosphate group, NUC-1031 has improved properties over its parent molecule: 1) is more lipophilic and accumulates in cancer cells by passive diffusion and does not require a nucleoside transporter, 2) as the agent is delivered in the monophosphate form, the first phosphorylation step by deoxycytidine kinase is not required, 3) this agent is not susceptible to deactivation by cytidine deaminase cleavage of the monophosphorylated form. Altogether, this may help overcome resistance to gemcitabine.

**gemcitabine-Tarceva regimen :** A chemotherapy combination used for the treatment of locally advanced and metastatic pancreatic cancer. It includes the drugs gemcitabine hydrochloride and erlotinib hydrochloride. Also called gemcitabine-erlotinib regimen.

**gemfibrozil:** A fibric acid derivative with hypolipidemic effects. Gemfibrozil interacts with peroxisome proliferator-activated receptors (PPAR $\alpha$ ) resulting in PPAR $\alpha$ -mediated stimulation of fatty acid oxidation and an increase in lipoprotein lipase (LPL) synthesis. This enhances triglyceride-rich lipoprotein clearance and reduces the expression of apolipoprotein C-III (apoC-III). The reduction in hepatic production of apoC-III results in subsequent reduction of serum levels of very-low-density-lipoprotein cholesterol (VLDL-C). In addition, gemfibrozil-mediated PPAR $\alpha$  stimulation of apoA-I and apoA-II expression results in an increase in high-density lipoprotein cholesterol (HDL-C). Check for active clinical trials using this agent.

**gemigliptin:** An orally bioavailable inhibitor of the serine protease dipeptidyl peptidase 4 (DPP-4), with hypoglycemic and potential renoprotective activities. Upon administration, gemigliptin binds to DPP-4 and inhibits the breakdown of the incretin hormones, glucagon-like peptide-1 (GLP-1) and glucose-dependent insulinotropic polypeptide (GIP). This prolongs incretin activity, increases postprandial insulin secretion from pancreatic beta cells, decreases glucagon secretion, delays gastric emptying and lowers blood glucose levels. In addition, gemigliptin exerts a renoprotective effect, probably through enhanced GLP-1 signaling, may prevent apoptosis and acute kidney injury induced by nephrotoxic agents, and may protect against diabetic nephropathy.

**geminal:** a term that describes the location of two identical atoms or groups as being bonded to the same carbon atom; a geminal dihalide, for example. (Compare with "vicinal.")

**GEMOX:** A chemotherapy combination used to treat pancreatic cancer and some other types of cancer. It includes the drugs gemcitabine hydrochloride and oxaliplatin. Also called gemcitabine-oxaliplatin and gemcitabine-oxaliplatin regimen.

**gemtuzumab ozogamicin:** A recombinant, humanized anti-CD33 monoclonal antibody attached to the cytotoxic antitumor antibiotic calicheamicin. In this conjugate, the antibody binds to and is internalized by

tumor cells expressing CD33 antigen (a sialic acid-dependent glycoprotein commonly found on the surface of leukemic blasts), thereby delivering the attached calicheamicin to CD33-expressing tumor cells. Calicheamicin binds to the minor groove of DNA, causing double strand DNA breaks and resulting in inhibition of DNA synthesis. or A drug that was used to treat acute myeloid leukemia (AML) that recurred (came back). It was used in older patients who were not able to take other anticancer drugs.

Gemtuzumab ozogamicin was taken off the market but continues to be studied in clinical trials for the treatment of certain types of leukemia. It contains a monoclonal antibody that binds to a protein called CD33, which is found on some leukemia cells. It also contains a toxic substance, which may help kill cancer cells. Gemtuzumab ozogamicin is a type of antibody-drug conjugate. Also called Mylotarg.

**gemtuzumab ozogamicin :** A drug that was used to treat acute myeloid leukemia (AML) that recurred (came back). It was used in older patients who were not able to take other anticancer drugs. Gemtuzumab ozogamicin was taken off the market but continues to be studied in clinical trials for the treatment of certain types of leukemia. It contains a monoclonal antibody that binds to a protein called CD33, which is found on some leukemia cells. It also contains a toxic substance, which may help kill cancer cells. Gemtuzumab ozogamicin is a type of antibody-drug conjugate. Also called Mylotarg.

**Gemzar :** A drug used to treat pancreatic cancer that is advanced or has spread. It is also used with other drugs to treat breast cancer that has spread, advanced ovarian cancer, and non-small cell lung cancer that is advanced or has spread. It is also being studied in the treatment of other types of cancer. Gemzar blocks the cell from making DNA and may kill cancer cells. Also called gemcitabine hydrochloride.

**Genasense :** A substance being studied in the treatment of cancer. It may kill cancer cells by blocking the production of a protein that makes cancer cells live longer and by making them more sensitive to anticancer drugs. It is a type of antisense oligodeoxyribonucleotide. Also called augmerosen, bcl-2 antisense oligodeoxynucleotide G3139, and oblimersen sodium.

**Gencept:** (Other name for: ethinyl estradiol/norethindrone)

**gene:** The fundamental physical and functional unit of heredity. A gene is an ordered sequence of nucleotides located in a particular position on a

particular chromosome that encodes a specific functional product (i.e., a protein or RNA molecule). OR This is the part of the DNA molecule in chromosomes which carries the information defining the sequence of amino-acids in a specific polypeptide chain. OR the functional segment of chromosomes. OR A segment of the genome that codes for a functional product. OR A chromosomal segment that codes for a single functional polypeptide chain or RNA molecule.

**gene :** The basic unit of heredity that occupies a specific location on a chromosome. Each consists of nucleotides arranged in a linear manner. Most genes code for a specific protein or segment of protein leading to a particular characteristic or function. Or The functional and physical unit of heredity passed from parent to offspring. Genes are pieces of DNA, and most genes contain the information for making a specific protein.

**Gene amplification:** The duplication of a particular gene within a chromosome two or more times.

**gene amplification :** An increase in the number of copies of a gene. There may also be an increase in the RNA and protein made from that gene. Gene amplification is common in cancer cells, and some amplified genes may cause cancer cells to grow or become resistant to anticancer drugs. Genes may also be amplified in the laboratory for research purposes.

**gene deletion :** The loss of all or a part of a gene. There may also be a change in the RNA and protein made from that gene. Certain gene deletions are found in cancer and in other genetic diseases and abnormalities.

**Gene duplication:** Duplication of a gene in the process of replication. One of the duplication products may accumulate mutations and eventually evolve into a gene with a different but related function.

**gene expression:** Transcription and, in the case of proteins, translation to yield the product of a gene; a gene is expressed when its biological product is present and active.

**gene expression :** The process by which a gene gets turned on in a cell to make RNA and proteins. Gene expression may be measured by looking at the RNA, or the protein made from the RNA, or what the protein does in a cell.

**gene expression profile :** A laboratory test that identifies all of the genes in a cell or tissue that are making messenger RNA. Messenger RNA

molecules carry the genetic information needed to make proteins. A gene expression profile may be used to find and diagnose a disease or condition or to see how well the body responds to treatment.

**gene flow:** a mechanism of evolution that results when individuals migrate from one group to another and contribute their genes to the gene pool of the new population.

**gene linkage:** the concept of transfer of a linkage group.

**gene linkage map:** a map that pinpoints the location of genes based on their connection to certain marker gene sequences.

**gene pool:** the collection of genes within a population; as changes in the gene pool occur, a population evolves.

**Gene splicing:** The cutting and rejoining of DNA sequences. OR The enzymatic attachment of one gene, or part of a gene, to another.

**gene therapy :** A type of experimental treatment in which foreign genetic material (DNA or RNA) is inserted into a person's cells to prevent or fight disease. Gene therapy is being studied in the treatment of certain types of cancer.

**gene transfer :** The insertion of genetic material into a cell.

**gene-modified :** Cells that have been altered to contain different genetic material than they originally contained.

**General acid catalysis:** Acid catalysis in which the source of the proton is a donor group rather than a free  $H^+$ .

**General acid-base catalysis:** Catalysis in which a molecule other than water plays the role of a proton donor or acceptor. OR Catalysis involving proton transfer(s) to or from a molecule other than water.

**general anesthesia :** A temporary loss of feeling and a complete loss of awareness that feels like a very deep sleep. It is caused by special drugs or other substances called anesthetics. General anesthesia keeps patients from feeling pain during surgery or other procedures.

**general circulation models:** Hydrodynamic models of the atmosphere on a grid or spectral resolution that determine the surface pressure and the vertical distributions of velocity, temperature, density, and water vapor as functions of time from the mass conservation and hydrostatic laws, the first law of thermodynamics, Newton's second law of motion, the equation of state, and the conservation law for water vapor. Abbreviated as GCM.

Atmospheric general circulation models are abbreviated AGCM, while oceanic general circulation models are abbreviated OGCM.

**General recombination:** Recombination that occurs between homologous chromosomes at homologous sites.

**general surgery :** The branch of surgery that covers the main areas of surgical treatment. General surgeons treat diseases of the abdomen, breast, head and neck, blood vessels, and digestive tract. They also manage care of patients who have been injured or who have deformities or other conditions that need surgery.

**generalized anxiety disorder :** A condition marked by excessive worry and feelings of fear, dread, and uneasiness that last six months or longer. Other symptoms of generalized anxiety disorder include being restless, being tired or irritable, muscle tension, not being able to concentrate or sleep well, shortness of breath, fast heartbeat, sweating, and dizziness. Also called GAD.

**Generation (gross):** The total amount of electric energy produced by a generating station as measured at the generator terminals.

**Generation (net):** The gross amount of electric energy produced by a generating station, minus the amount used to operate the station. Net generation is usually measured in watthours (Wh).

**Generation time:** The time it takes for a cell to double its mass under specified conditions. OR The time required for a given population to double in size. This time can be as short as 20 minutes or as long as a week.

**Generator capacity:** The maximum amount of electric energy that a generator can produce (from the mechanical energy of the turbine), adjusted for ambient conditions. Generator capacity is commonly expressed in megawatts (MW).

**Generator nameplate capacity:** The maximum amount of electric energy that a generator can produce under specific conditions, as rated by the manufacturer. Generator nameplate capacity is usually expressed in kilovolt-amperes (kVA) and kilowatts (kW), as indicated on a nameplate that is physically attached to the generator.

**generic :** Official nonbrand names by which medicines are known. Generic names usually refer to the chemical name of the drug.

**genetic :** Having to do with genes. Most genes are sequences of DNA that contain information for making specific proteins or molecules of RNA that perform important functions in a cell. The information in genes is passed from parents to children.

**genetic analysis :** The study of a sample of DNA to look for mutations (changes) that may increase risk of disease or affect the way a person responds to treatment.

**genetic anticipation :** A phenomenon in which the signs and symptoms of some genetic conditions tend to become more severe and/or appear at an earlier age as the disorder is passed from one generation to the next. Huntington disease is an example of a genetic disorder in which the biological mechanism for this phenomenon has been well documented. In other cases, it may be due to factors such as increased surveillance or other nongenetic causes.

**Genetic code:** The relation between nucleic acid sequence information and protein sequence information. OR The set of triplet code words in DNA (or mRNA) coding for the amino acids of proteins.

**genetic counseling :** A communication process between a specially trained health professional and a person concerned about the genetic risk of disease. The person's family and personal medical history may be discussed, and counseling may lead to genetic testing.

**genetic counseling :** A communication process that seeks to assist affected or at-risk individuals and families in understanding the natural history, disease risks, and mode of transmission of a genetic disorder; to facilitate informed consent for genetic testing when appropriate; to discuss options for risk management and family planning; and to provide for or refer individuals for psychosocial support as needed.

**genetic drift:** a mechanism of evolution that occurs when a small group of individuals leaves a population and establishes a new one in a geographically isolated region.

**Genetic engineering:** The manipulation of an organism's genes-introducing, eliminating, or changing them-using modern molecular biology techniques OR Scientists isolate a strand of DNA responsible for specific desired talents, but other undesirable traits, such as being slow-growing, finicky, delicate or belonging to a pathogenic organism, make the source strain unsuitable for large-scale commercial growth to produce desired raw

enzymes or end product. This isolated strand of desired DNA is often coupled with a gene for resistance to a specific antibiotic that is not native to a selected, safe, fast-growing, robust production strain so that exposing the genetically engineered cell to high levels of the antibiotic will kill off ALL clone offspring cells that did not incorporate the desired plasmid.

**genetic heterogeneity :** The production of the same or similar phenotypes (observed biochemical, physiological, and morphological characteristics of a person determined by his/her genotype) by different genetic mechanisms. There are two types: (1) allelic heterogeneity – when different alleles at a locus can produce variable expression of a condition; and (2) locus heterogeneity – the term used to describe disease in which mutations at different loci can produce the same disease phenotype.

**genetic infantile agranulocytosis :** An inherited disorder in which there is a lower-than-normal number of neutrophils (a type of white blood cell that is important in fighting infections). Infants with the disorder get infections caused by bacteria, and are at an increased risk of acute myelogenous leukemia (AML) or myelodysplasia (a bone marrow disorder). Also called congenital neutropenia, infantile genetic agranulocytosis, Kostmann disease, Kostmann neutropenia, and Kostmann syndrome.

**genetic information:** The hereditary information contained in a sequence of nucleotide bases in chromosomal DNA or RNA.

**Genetic map:** The arrangement of genes or other identifiable sequences on a chromosome. OR A diagram showing the relative sequence and position of specific genes along a chromosome.

**genetic marker :** An identifiable segment of DNA (e.g., Single Nucleotide Polymorphism [SNP], Restriction Fragment Length Polymorphism [RFLP], Variable Number of Tandem Repeats [VNTR], microsatellite) with enough variation between individuals that its inheritance and co-inheritance with alleles of a given gene can be traced; used in linkage analysis. or A specific sequence of DNA at a known location on a chromosome. There are many genetic markers on each chromosome. Genetic markers and genes that are close to each other on a chromosome are usually inherited (passed from parent to child) together. This may help researchers find a gene near a marker that may cause a certain disease or trait within a family. Examples of genetic markers are single polymorphism nucleotides (SNPs) and microsatellites.

**genetic marker of susceptibility :** A specific change in a person's DNA that makes the person more likely to develop certain diseases such as cancer.

**genetic predisposition :** Increased likelihood or chance of developing a particular disease due to the presence of one or more gene mutations and/or a family history that indicates an increased risk of the disease. Also called genetic susceptibility. Or An inherited increase in the risk of developing a disease. Also called genetic susceptibility.

**genetic profile :** Information about specific genes, including variations and gene expression, in an individual or in a certain type of tissue. A genetic profile may be used to help diagnose a disease or learn how the disease may progress or respond to treatment with drugs or radiation.

**genetic screening :** Genetic testing designed to identify individuals in a given population who are at higher risk of having or developing a particular disorder, or carrying a gene for a particular disorder.

**genetic susceptibility :** Increased likelihood or chance of developing a particular disease due to the presence of one or more gene mutations and/or a family history that indicates an increased risk of the disease. Also called genetic predisposition. Or An inherited increase in the risk of developing a disease. Also called genetic predisposition.

**genetic testing :** The process of analyzing cells or tissues to look for genetic changes that may be a sign of a disease or condition, such as cancer. These changes may be a sign that a person has an increased risk of developing a specific disease or condition.

**genetic variant :** An alteration in the most common DNA nucleotide sequence. The term variant can be used to describe an alteration that may be benign, pathogenic, or of unknown significance. The term variant is increasingly being used in place of the term mutation.

**genetically engineered HSV-1 expressing IL-12:** A genetically engineered, replication selective, infected cell protein (ICP) 34.5 gene-deleted, oncolytic human simplex virus type 1 (HSV-1) expressing the human immunostimulating cytokine interleukin-12 (IL-12), with potential antineoplastic activity. Upon intratumoral administration of HSV-1 expressing IL-12, the IL-12-expressing HSV-1 preferentially infects and replicates in tumor cells of neuronal origin causing viral-mediated tumor cell lysis. The released virus particles, in turn, infect and replicate in

neighboring tumor cells. In addition, the IL-12-expressing HSV-1 promotes the secretion of IL-12 by the tumor cells. IL-12 promotes the activation of natural killer cells, which induces both the secretion of interferon-gamma and a cytotoxic T-lymphocyte (CTL) response against the tumor cells. This results in both immune-mediated tumor cell death and further inhibition of tumor cell proliferation. Deletion of the gene encoding for ICP34.5 imparts tumor selectivity by preventing replication in healthy cells.

**genetically-modified MAGE-A3-expressing MG1 Maraba virus vaccine:** A vaccine consisting of the attenuated, genetically-modified, oncolytic form of the Maraba virus, MG1, which has been engineered to express a gene encoding the cancer testis antigen melanoma antigen family A3 (MAGE-A3), with potential antineoplastic activity. Upon administration of genetically-modified MAGE-A3-expressing MG1 Maraba virus vaccine, the attenuated Maraba virus selectively and rapidly replicates in cancer cells; however, it is unable to replicate in normal, healthy cells. This induces a selective Maraba virus-mediated cytotoxicity in those cancer cells, and leads to cancer cell lysis. In addition, the expression of MAGE-A3 further stimulates the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing MAGE-A3. The tumor-associated antigen MAGE-A3 is overexpressed by a variety of cancer cell types. The attenuated virus is a double mutant strain with single amino acid substitutions occurring in both G protein (Q242R) and M protein (L123W).

**geneticist :** A scientist who has special training in the study of genes and heredity (the passing of genetic information from parents to their children). A medical geneticist is a doctor who specializes in diagnosing and treating genetic disorders or conditions. Medical geneticists also counsel individuals and families at risk for certain genetic disorders or cancers.

**genetics :** The study of genes and heredity. Heredity is the passing of genetic information and traits (such as eye color and an increased chance of getting a certain disease) from parents to offspring.

**Genexol-PM:** (Other name for: paclitaxel-loaded polymeric micelle)

**Gengraf:** (Other name for: cyclosporine)

**genistein:** A soy-derived isoflavone and phytoestrogen with antineoplastic activity. Genistein binds to and inhibits protein-tyrosine kinase, thereby disrupting signal transduction and inducing cell differentiation. This agent

also inhibits topoisomerase-II, leading to DNA fragmentation and apoptosis, and induces G2/M cell cycle arrest. Genistein exhibits antioxidant, antiangiogenic, and immunosuppressive activities.

**genistein** : An isoflavone found in soy products. Soy isoflavones are being studied to see if they help prevent cancer.

**genital** : Refers to the genitalia (external and internal sex organs and glands).

**genital wart** : A raised growth on the surface of the genitals caused by human papillomavirus (HPV) infection. The HPV in genital warts is very contagious and can be spread by skin-to-skin contact, usually during oral, anal, or genital sex with an infected partner. Also called condyloma.

**genitourinary system** : The parts of the body that play a role in reproduction, getting rid of waste products in the form of urine, or both.

**genodermatosis** : An inherited syndrome that includes a dermatological (skin) phenotype.

**genome**: the set of all genes that specify an organism's traits. OR The total genetic content of a cell or a virus. OR All the genetic information encoded in a cell or virus. OR An organism's complete set of genetic information. OR The complete set of DNA (genetic material) in an organism. In people, almost every cell in the body contains a complete copy of the genome. The genome contains all of the information needed for a person to develop and grow. Studying the genome may help researchers understand how different types of cancer form and respond to treatment. This may lead to new ways to diagnose, treat, and prevent cancer.

**genome-wide association study** : A genome-wide association study (GWAS) is a way for scientists to identify inherited genetic variants associated with risk of disease or a particular trait. This method surveys the entire genome for genetic polymorphisms, typically single nucleotide polymorphisms (SNPs) (pronounced "snips"), that occur more frequently in cases (people with the disease or trait being assessed) than in controls (people without the disease or trait). Also called GWAS. or A study that compares DNA markers across the genome (the complete genetic material in a person) in people with a disease or trait to people without the disease or trait. These studies may uncover clues to help prevent, diagnose, and treat disease. Also called GWAS.

**genomic characterization :** A laboratory method that is used to learn about all the genes in a person or in a specific cell type, and the way those genes interact with each other and with the environment. Genomic characterization may be used to find out why some people get certain diseases while others do not, or why people react in different ways to the same drug. It may also be used to help develop new ways to diagnose, treat, and prevent diseases, such as cancer. Also called genomic profiling.

**genomic imprinting :** An epigenetic process resulting in the inactivation of an allele depending on which parent it was inherited from. Genomic imprinting can have clinical relevance because it may affect the expression of a gene mutation (i.e., the phenotype) in the offspring of an affected parent depending on which parent is passing on the mutation.

**Genomic library:** A collection of DNA fragments, inserted into vector molecules, that represents the entire genome of an organism.

**genomic profiling :** A laboratory method that is used to learn about all the genes in a person or in a specific cell type, and the way those genes interact with each other and with the environment. Genomic profiling may be used to find out why some people get certain diseases while others do not, or why people react in different ways to the same drug. It may also be used to help develop new ways to diagnose, treat, and prevent diseases, such as cancer. Also called genomic characterization.

**genomic sequencing :** A laboratory method that is used to determine the entire genetic makeup of a specific organism or cell type. This method can be used to find changes in areas of the genome that may be important in the development of specific diseases, such as cancer.

**genomics :** The study of the complete set of DNA (including all of its genes) in a person or other organism. Almost every cell in a person's body contains a complete copy of the genome. The genome contains all the information needed for a person to develop and grow. Studying the genome may help researchers understand how genes interact with each other and with the environment and how certain diseases, such as cancer, diabetes, and heart disease, form. This may lead to new ways to diagnose, treat, and prevent disease.

**Genotropin:** (Other name for: somatotropin)

**genotype:** the gene composition of a living organism. OR The genetic characteristics of an organism (distinguished from its observable

characteristics, or phenotype). OR The genetic constitution of an organism, as distinct from its physical characteristics, or phenotype. OR At its broadest level, genotype includes the entire genetic constitution of an individual. It is often applied more narrowly to the set of alleles present at one or more specific loci.

**genus:** a grouping of similar species (plural, genera).

**geocentric:** a model in which Earth is at the center of the universe.

**geochemistry:** The study of materials and chemical reactions in rocks, minerals, magma, seawater, and soil.

**geographic distribution:** the distribution of species in geographical areas.

**geologic cross section:** a vertical slice across a map area; depicts the spatial relationships of rock units and structures beneath the surface.

**Geological repository:** An excavated, underground facility that is designed, constructed, and operated for safe and secure permanent disposal of high-level radioactive waste. A geological repository uses an engineered barrier system and a portion of the site's natural geology, hydrology, and geochemical systems to isolate the radioactivity of the waste. The Nuclear Waste Policy Act of 1982, as amended, specifies that this waste will be disposed of in a deep geologic repository, and that Yucca Mountain, NV, will be the single candidate site for such a repository. On June 3, 2008, DOE submitted a license application to the NRC seeking authorization to construct the Yucca Mountain repository. For further detail, see High-Level Waste Disposal.

**Geometric Dimensioning & Tolerancing:** A means of specifying engineering design and drawing requirements with respect to actual function and relationship of part features, it is a technique which properly applied ensures the most economical and effective production of these features

**geometric isomer:** Geometric isomers are molecules that have the same molecular formula and bond connections, but distinctly different shapes.

**geometric isomers:** Isomers related by rotation about a double bond; also called cis and trans isomers.

**geomorphology:** The study of present-day landforms, including their classification, description, nature, origin, development, and relationships to

underlying structures. Also the history of geologic changes as recorded by these surface features. The term is sometimes restricted to features produced only by erosion and deposition.

**geophysics:** a field concerning the application of the laws of physics to the study of the earth.

**geosphere:** The solid mass (lithosphere) of the Earth as distinct from the atmosphere and hydrosphere or all three of these layers combined.

**geostatic pressure:** pressure that is equally applied to all sides of a deeply buried mass of rock.

**geostrophic flow:** A type of movement where the Coriolis force balances exactly the horizontal pressure force.

**geothermal energy:** the energy produced when exceptionally hot water underground is tapped by wells and used to generate electricity.

**geothermal gradient:** the rate at which temperature increases with depth.

**geotropism:** the turning of a plant away from or toward the earth.

**geranium :** A type of plant that is native to southern Africa and has white, pink, purple, or red flowers and 3- to 5-lobed leaves. An essential oil that smells like roses is taken from the leaves and used in perfume, in mosquito repellants, and in aromatherapy to treat skin problems and to reduce stress. The scientific name is *Pelargonium graveolens*. Also called pelargonium.

**germ :** A bacterium, virus, or other microorganism that can cause infection and disease.

**germ cell :** A reproductive cell of the body. Germ cells are egg cells in females and sperm cells in males.

**germ cell tumor :** A type of tumor that begins in the cells that give rise to sperm or eggs. Germ cell tumors can occur almost anywhere in the body and can be either benign or malignant.

**germ-line cell:** A type of animal cell that is formed early in embryogenesis and may multiply by mitosis or may produce, by meiosis, cells that develop into gametes (egg or sperm cells).

**German chamomile :** A plant whose daisy-like flowers are used in tea to calm and relax, improve sleep, and help stomach problems. German chamomile has been studied in the prevention of mucositis (mouth sores) caused by chemotherapy and radiation therapy. It has also been used in

some cultures to treat skin conditions, mild infections, and other disorders. The scientific name is *Matricaria recutita*.

**German Commission E :** The German Federal Institute for Drugs and Medical Devices Commission E. A committee made up of scientists, toxicologists, doctors, and pharmacists formed by the German government in 1978 to find out if herbs sold in Germany are safe and effective. The Commission has published information on the uses, side effects, and drug interactions of more than 300 herbs.

**Germanium:** Symbol:"Ge" Atomic Number:"32" Atomic Mass: 72.59amu. Germanium is classified as a semi-metallic element. Germanium is a grayish crystalline metal that is very brittle. You will find it in glass lenses, fluorescent lights, electronics, and many alloys.

**germfree :** Free of bacteria, viruses, and other microorganisms that can cause infection and disease.

**germicide :** Any substance or process that kills germs (bacteria, viruses, and other microorganisms that can cause infection and disease). Also called microbicide.

**germline :** The cells from which eggs or sperm (i.e., gametes) are derived.

**germline DNA :** Germline DNA refers to tissue derived from reproductive cells (egg or sperm) that become incorporated into the DNA of every cell in the body of the offspring. A germline mutation may be passed from parent to offspring. Also called constitutional DNA. Or The DNA in germ cells (egg and sperm cells that join to form an embryo). Germline DNA is the source of DNA for all other cells in the body. Also called constitutional DNA.

**germline mutation :** A gene change in a body's reproductive cell (egg or sperm) that becomes incorporated into the DNA of every cell in the body of the offspring. Germline mutations are passed on from parents to offspring. Also called hereditary mutation.

**germline variant :** A gene change in a reproductive cell (egg or sperm) that becomes incorporated into the DNA of every cell in the body of the offspring. A variant contained within the germline can be passed from parent to offspring, and is, therefore, hereditary.

**Gerota's capsule :** A fibrous envelope of tissue that surrounds the kidney. Also called Gerota's fascia and renal fascia.

**Gerota's fascia :** A fibrous envelope of tissue that surrounds the kidney. Also called Gerota's capsule and renal fascia.

**Gerson therapy :** A diet plan that has been claimed to be a treatment for cancer, migraine, tuberculosis, and other diseases. It is a vegetarian diet that includes eating organic fruits and vegetables and 13 glasses of fresh juice each day. It also includes supplements with iodine, vitamin B-12, potassium, thyroid hormone, liver extract, and pancreatic enzymes. No clinical trial to test Gerson therapy has been reported.

**gerund:** a noun created from the -ing form of a verb; gerunds act as subjects and objects in sentences.

**gerund phrase:** phrases that begin with the -ing form of a verb and have objects and modifiers; a gerund phrase always acts as a noun in a sentence, not as an adjective.

**Gesso:** A composition for executing designs in relief on woodwork and plaster “ made of whiting and glue or plaster of Paris and size.

**gestational trophoblastic disease :** A rare condition in which abnormal cells grow inside the uterus from tissue that forms after conception (the joining of sperm and egg). This tissue is made of trophoblastic cells, which normally surround the fertilized egg in the uterus and help connect the fertilized egg to the wall of the uterus. These cells also form part of the placenta (the organ that passes nutrients from the mother to the fetus). Most gestational trophoblastic diseases are benign (not cancer) and do not spread, but some types are malignant (cancer) and spread to nearby tissues or other parts of the body. The two main types of gestational trophoblastic diseases are hydatidiform mole and choriocarcinoma. Also called gestational trophoblastic tumor, GTD, and GTT.

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are hydatidiform mole and choriocarcinoma. Also called gestational trophoblastic disease, GTD, and GTT.

**Gesterol 100:** (Other name for: therapeutic progesterone)

**geyser:** an explosive hot spring that periodically erupts scalding water and steam; water temperatures in a geyser are generally near boiling. OR groundwater deep in the Earth that turns to steam and is forced to the surface when enough pressure is generated.

**geyserite:** a build-up of ledgelike layers, generally of calcite or silica, around a geyser.

**GF:** Glass-filled. This refers to a resin with glass fibers mixed into it. Glass-filled resins are much stronger and more rigid than the corresponding unfilled resin, but are also more brittle.

**gFOBT:** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards coated with a chemical substance called guaiac and sent to a doctor or laboratory for testing. A testing solution is put on the cards and the guaiac causes the stool sample to change color. If there is blood in the stool, the color changes very quickly. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called guaiac fecal occult blood test, guaiac smear test, and stool guaiac test.

**GG745:** A drug used to treat symptoms of an enlarged prostate gland. It is being studied in the treatment of male hair loss and prostate cancer. GG745 blocks enzymes the body needs to make male sex hormones. It is a type of 5-alpha reductase inhibitor. Also called Avodart and dutasteride.

**ghost function:** A basis function that is not accompanied by an atomic nucleus, usually for counterpoise corrections for BSSE.

**ghrelin peptide analogue:** A ghrelin peptide analogue with potential anti-cachexia activity. Upon subcutaneous administration, ghrelin peptide analogue binds to and stimulates the G protein-coupled growth hormone secretagogue receptor (GHSR) in the central nervous system (CNS), thereby mimicking the appetite-stimulating and growth hormone-releasing effects of endogenous ghrelin. Stimulation of GHSR may also reduce the production of the pro-inflammatory cytokines TNF-alpha and interleukin-6, which may play direct roles in cancer-related loss of appetite. Ghrelin,

naturally secreted by gastric endocrine cells, is a 28 amino acid peptide and an endogenous ligand for GHSR.

**GI:** Refers to the stomach and intestines. Also called gastrointestinal.

**GI-4000 vaccine:** A vaccine containing a heat-killed recombinant *Saccharomyces cerevisiae* yeast transfected with mutated forms of Ras, an oncogene frequently found in solid tumors, with potential immunostimulant and antitumor activity. Upon administration, GI-4000 vaccine elicits an immune response by stimulating a specific cytotoxic T-cell response against the mutated forms of Ras. This may lead to a destruction of cancer cells expressing a Ras mutation.

**GI14721:** An antitumor drug that belongs to the family of drugs called topoisomerase inhibitors. It is a camptothecin analog.

**giant cell fibroblastoma :** A rare type of soft tissue tumor marked by painless nodules in the dermis (the inner layer of the two main layers of tissue that make up the skin) and subcutaneous (beneath the skin) tissue. These tumors may come back after surgery, but they do not spread to other parts of the body. They occur mostly in boys and are related to dermatofibrosarcoma protuberans.

**giant cell tumor :** A rare tumor that usually forms in bone, but may also form in cartilage, muscle, fat, blood vessels, or other supportive tissue in the body. Most giant cell tumors occur at the ends of the long bones of the arms and legs, near a joint (such as the knee, wrist, hip, or shoulder). Most are benign (not cancer) but some are malignant (cancer). Giant cell tumors usually occur in young and middle-aged adults. Also called GCT.

**giant hypertrophic gastritis :** A condition marked by inflammation and ulcers (breaks on the skin or on the surface of an organ) of the mucosa (inner lining) of the stomach and by overgrowth of the cells that make up the mucosa. Symptoms include vomiting, diarrhea, and weight loss. Patients with giant hypertrophic gastritis may be at a higher risk of stomach cancer. Also called gastric mucosal hypertrophy and Ménétrier disease.

**giant lymph node hyperplasia :** A rare disorder in which benign (not cancer) growths form in lymph node tissue. There are two main ways that giant lymph node hyperplasia occurs: localized (unicentric) and multicentric. Unicentric giant lymph node hyperplasia affects only one group of lymph nodes in one part of the body, usually in the chest or abdomen. It may not cause symptoms. Multicentric giant lymph node

hyperplasia affects many groups of lymph nodes and lymphoid tissue all through the body. It can weaken the immune system and cause problems such as infection, fever, weight loss, fatigue, night sweats, nerve damage, and anemia. People with giant lymph node hyperplasia have an increased risk of lymphoma. Also called angiofollicular lymph node hyperplasia and Castleman disease.

**GIAO:** Gauge-independent atomic orbitals. A method specially designed for calculation of NMR shifts. Currently used with methods such as HF,MP2, or DFT. Research codes can handle CCSD.

**Gibb's free energy:** The energy of a system that is available to do work at constant temperature and pressure. OR A thermodynamic property devised by Josiah Willard Gibbs in 1876 to predict whether a process will occur spontaneously at constant pressure and temperature. Gibbs free energy  $G$  is defined as  $G = H - TS$  where  $H$ ,  $T$  and  $S$  are the enthalpy, temperature, and entropy. Changes in  $G$  correspond to changes in free energy for processes occurring at constant temperature and pressure; the Gibbs free energy change corresponds to the maximum nonexpansion work that can be obtained under these conditions. The sign of  $\Delta G$  is negative for all spontaneous processes and zero for processes at equilibrium.

**Gibbs free energy of formationf:** The change in Gibbs free energy that accompanies the formation of one mole of a compound from its elements in their most stable form.

**gigantism :** A condition in which the whole body or any of its parts grow much larger than normal.

**Gigaseal:** A high-resistance seal formed between a pipette and a small patch of plasma membrane, required for use in the patch-clamp technique.

**Gigawatt (GW):** A unit of power equivalent to one billion watts.

**Gigawatthour (GWh):** One billion watthours.

**gills:** structures that allow fish to exchange gases with their environment.

**Gilotrif:** (Other name for: afatinib dimaleate) OR A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients with certain mutations (changes) in a cell protein called epidermal growth factor receptor (EGFR). It is also being studied in the treatment of other types of cancer. Gilotrif blocks certain EGFRs, which may help keep

cancer cells from growing. It may also prevent the growth of new blood vessels that tumors need to grow. Gilotrif is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called afatinib dimaleate.

**gilteritinib:** An orally bioavailable inhibitor of the receptor tyrosine kinases (RTKs) FMS-related tyrosine kinase 3 (FLT3, STK1, or FLK2), AXL (UFO or JTK11) and anaplastic lymphoma kinase (ALK or CD246), with potential antineoplastic activity. Gilteritinib binds to and inhibits both the wild-type and mutated forms of FLT3, AXL and ALK. This may result in an inhibition of FLT3, AXL, and ALK-mediated signal transduction pathways and reduction of tumor cell proliferation in cancer cell types that overexpress these RTKs. FLT3, AXL and ALK, overexpressed or mutated in a variety of cancer cell types, play a key role in tumor cell growth and survival.

**gimatecan:** An orally bioavailable, semi-synthetic lipophilic analogue of camptothecin, a quinoline alkaloid extracted from the Asian tree *Camptotheca acuminata*, with potential antineoplastic and antiangiogenic activities. Gimatecan binds to and inhibits the activity of topoisomerase I, stabilizing the cleavable complex of topoisomerase I-DNA, which inhibits the religation of single-stranded DNA breaks generated by topoisomerase I; lethal double-stranded DNA breaks occur when the topoisomerase I-DNA complex is encountered by the DNA replication machinery, DNA replication is disrupted, and the tumor cell undergoes apoptosis. Although the mechanism of its antiangiogenic activity has yet to be fully elucidated, this agent may inhibit endothelial cell migration, tumor neovascularization, and the expression of proangiogenic basic fibroblast growth factor (bFGF).

**gimatecan :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called topoisomerase inhibitors. Also called ST1481.

**gimeracil:** A pyridine derivative with antitumor activity. Gimeracil enhances the antitumor activity of fluoropyrimidines by competitively and reversibly inhibiting the enzyme dihydropyrimidine dehydrogenase causing decreased degradation of the fluoropyrimidines.

**ginger :** An herb with a root that has been used in cooking, and by some cultures to treat nausea, vomiting, and certain other medical conditions. It is

being studied in the treatment of nausea and vomiting caused by cancer chemotherapy. The scientific name is *Zingiber officinale*.

**ginger extract:** An extract of the rhizome of the perennial plant *Zingiber officinale* with potential antineoplastic activity. Ginger extract contains a number of different phenolic compounds, some of which have displayed antineoplastic, anti-inflammatory, and antioxidant activities. This agent also exhibits antiemetic properties.

**gingiva :** The tissue of the upper and lower jaws that surrounds the base of the teeth. Also called gums.

**gingival:** relating to the gums

**ginkgo :** A tree native to China. Substances taken from the leaves and seeds have been used in some cultures to treat certain medical problems. Ginkgo has been studied in the prevention and treatment of Alzheimer disease, dementia, certain blood vessel diseases, and memory loss. It may cause bleeding or high blood pressure when used with certain drugs. Also called ginkgo biloba and maidenhair tree.

**ginkgo biloba :** A tree native to China. Substances taken from the leaves and seeds have been used in some cultures to treat certain medical problems. Ginkgo biloba has been studied in the prevention and treatment of Alzheimer disease, dementia, certain blood vessel diseases, and memory loss. It may cause bleeding or high blood pressure when used with certain drugs. Also called ginkgo and maidenhair tree.

**ginseng :** An herb with a root that has been used in some cultures to treat certain medical problems. It may have anticancer effects.

**ginseng compound:** A compound containing the traditional Chinese medicine (TCM) ginseng, a herb belonging to the Araliaceae family, with potential antioxidant, chemopreventive, anti-inflammatory and antineoplastic activities. Upon administration of the ginseng compound, the active ingredients, mainly ginsenosides, inhibit various signal transduction pathways that play key roles in carcinogenesis and inflammation. This leads to the induction of apoptosis in and inhibits proliferation of tumor cells. In addition, ginsenosides enhance the activity of various antioxidant enzymes, induce nitric oxide (NO) formation, inhibit the formation of reactive oxygen species (ROS) and protect against free radical-induced DNA damage. Ginseng also modulates various components of the immune system, including the activation of dendritic cells (DCs).

**girentuximab:** A chimeric monoclonal antibody directed against G250, a cell surface antigen found in the majority of renal cell carcinomas. Following binding, girentuximab may be internalized by G250 antigen-expressing renal carcinoma cells; mAb G250 may be useful as a carrier for radioisotopes and other antineoplastic therapeutic agents. Check for active clinical trials using this agent.

**GIST :** A type of tumor that usually begins in cells in the wall of the gastrointestinal tract. It can be benign or malignant. Also called gastrointestinal stromal tumor.

**GITR agonist MEDI1873:** An agonist of human glucocorticoid-induced tumor necrosis factor receptor (tumor necrosis factor superfamily, member 18; TNFRSF18; GITR), with potential immunomodulating and antineoplastic activities. Upon administration, GITR agonist MEDI1873 binds to GITR found on multiple types of T-cells, thereby inducing both the activation and proliferation of tumor antigen-specific T effector cells. This abrogates the suppression of T effector cells which is induced by inappropriately activated T regulatory cells (Tregs), and activates the immune system to help eradicate tumor cells. GITR, a member of the TNF receptor superfamily, is expressed on the surface of multiple types of immune cells, including regulatory T cells, effector T cells, B cells, dendritic cells (DCs) and natural killer (NK) cells.

**GITRL RNA-transfected autologous dendritic cell vaccine:** An autologous dendritic cell (DC) cancer vaccine with potential immunostimulatory activity. GITRL RNA-transfected autologous DC vaccine is prepared by transfecting DCs with RNAs encoding tumor necrosis factor (ligand) superfamily, member 18 (TNFSF18 or GITRL); expression of GITRL results in modulating T lymphocyte survival in peripheral tissues. Co-vaccination of this vaccine with melanoma antigen specific vaccine may eliminate the adverse effects associated with systemic administration of immune modulators, while also enhancing vaccine-induced immune responses.

**Giulio Natta:** Nobel prize winning chemist (1903-1979) who did a vast quantity of work on the catalysts allowing high density poly(ethene) and poly(propene) to be produced. Most of his work was done in Milan, Italy, for the Montecatini corporation, making him one of the most successful industrial chemists of the 20th century. He was married to Rosita Beati

Natta. Like Karl Ziegler, he was a keen mountain climber. A quote: "What had been exclusively in the power of Nature, namely to join the monomeric units in a giant molecule with a predetermined steric order and not at random, is now possible also for man." (quoted in "The Chain Straighteners," by F. McMillan)

**glacial maximum:** The position or time of the greatest advance of a glacier (e.g., the greatest equatorward advance of Pleistocene glaciation).

**glacial rebound:** The isostatic adjustment of previously glaciated areas after glacial retreat (e.g., the uplift of Scandinavia after the most recent glaciation).

**glaciation:** the movement of an ice mass over a land surface.

**glacier:** a large mass of ice that forms on land during cooler climatic periods. OR A mass of land ice that is formed by the cumulative recrystallization of firn. A glacier flows slowly (at present or in the past) from an accumulation area to an ablation area. Some well-known glaciers are: the Zermatt, Stechelberg, Grindelwald, Trient, Les Diablerets, and Rhone in Switzerland; the Nigards, Gaupne, Fanarak, Lom, and Bover in Norway; the Wright, Taylor, and Wilson Piedmont glaciers in Antarctica; the Bossons Glacier in France; the Emmons and Nisqually glaciers on Mt. Ranier, Washington; Grinnell glacier in Glacier National Park, Montana; the Dinwoody glacier in the Wind River Mountains and the Teton glacier in Teton National Park, both in Wyoming; and many glaciers in the Canadian Rockies.

**glacier flow (ice flow):** The slow downward or outward movement of ice in a glacier caused by gravity.

**Gland:** The space in a mechanical system into which a seal is installed. the gland consists of the seal groove and any additional space required to achieve the proper compression of the seal. Care should be taken to distinguish between the terms gland and groove, which are separate but related concepts

**gland :** An organ that makes one or more substances, such as hormones, digestive juices, sweat, tears, saliva, or milk. Endocrine glands release the substances directly into the bloodstream. Exocrine glands release the substances into a duct or opening to the inside or outside of the body.

**gland of Lieberkuhn :** Tube-like gland found in the lining of the colon and rectum. Glands of Lieberkuhn renew the lining of the intestine and make mucus. Also called colon crypt.

**glandular cell of the cervix :** A type of cell that makes mucus and is found in tissue that lines the inner part of the cervix. Abnormal glandular cells may be found in Pap tests and may be a sign of cancer or other serious condition.

**glans penis :** The rounded, gland-like head of the penis.

**Glass:** A solid that does not have an ordered arrangement of molecules and is hard or brittle; an amorphous solid below its glass-transition temperature. OR It is made from sodium carbonate, limestone and sand. Other materials can be added to give the glass special properties. OR It is made from sodium carbonate, limestone and sand. Other materials can be added to give the glass special properties.

**Glass Cloth:** fabric used as insulating material base formed by weaving yarns comprising glass filaments and possessing high strength, heat resistance and dielectric properties.

**Glass Fiber:** Glass in fibrous form that has cooled to a rigid condition without crystallizing. OR A family of reinforcing materials for reinforced plastics based on single filaments of glass.

**Glass Thread:** A type of threading in which the thread sides gradually taper down to the neck finish. Cross section of threads are semi-circular.

**Glass Transition:** The reversible change in an amorphous polymer or in amorphous regions of a partially crystalline polymer from (or to) a viscous or rubbery condition to (or from) a hard and relatively brittle one. NOTE – The glass transition generally occurs over a relatively narrow temperature region and is similar to the solidification of a liquid to a glassy state: it is not a phase transition. Not only do hardness and brittleness undergo rapid changes in this temperature region but other properties, such as thermal expansion and specific heat also change rapidly. This phenomenon has been called second order transition, rubber transition and rubbery transition. The word transformation has also been used instead of transition. Where more than one amorphous transition occurs in a polymer, the one associated with segmental motions of the polymer backbone chain or accompanied by the largest change in properties is usually considered to be the glass transition.

OR Change in an amorphous polymer from viscous to hard and relatively brittle.

**Glass transition temperature:** The temperature above which a glassy amorphous solid becomes rubbery,  $T_g$ . OR The temperature at which an amorphous polymer ceases to be brittle and glassy in character and becomes less rigid and more rubbery. OR The temperature where the molecules of a polymeric solid can begin to move relative to one another, giving a substance that behaves like a rubber, rather than a brittle glass.

Alternatively, you can think of it as the temperature where the molecules of a polymeric solid can no longer move relative to one another, giving a substance that behaves like glass, rather than a rubber that can be stretched without breaking. It all depends on which way you are going... OR The temperature at which a reversible change occurs in an amorphous polymer when it is heated to a certain temperature and undergoes a rather sudden transition from a hard, glassy, or brittle condition to a flexible or elastomeric condition.

**Glassy state:** A state of an amorphous material having rather low mobility, as in window glass.

**glaucoma :** A condition in which there is a build-up of fluid in the eye, which presses on the retina and the optic nerve. The retina is the layer of nerve tissue inside the eye that senses light and sends images along the optic nerve to the brain. Glaucoma can damage the optic nerve and cause loss of vision or blindness.

**Glaze:** In painting this refers to a transparent or lightly pigmented coating used to modify the previously applied coating to produce a rich effect in depth. OR A term used to describe several types of finishing materials. (1) Glazing putty is of a creamy consistency and is applied to fill imperfections in the surface. (2) A glazing stain is a pigmented stain applied over a stained, filled or painted surface to soften or blend the original color without obscuring it. (3) A glaze coat is a clear finish applied over previously coated surfaces to create a gloss finish. OR When used as a painting term denotes the application of a thin translucent coloured coating to produce an effect or depth of colour not obtainable by the use of a fully pigmented paint. OR Brightness or shine of a plastic resulting from a smooth surface within recycled plastic and plastic material. Similar to a

polished effect. OR Measure of how much light is reflected by a film. OR Brightness or luster of a plastic resulting from a smooth surface.

**Glazing bar:** The shaped and rebated narrow member of metal or wood into which glass is bedded or fixed.

**Gleason score :** A system of grading prostate cancer tissue based on how it looks under a microscope. Gleason scores range from 2 to 10 and indicate how likely it is that a tumor will spread. A low Gleason score means the cancer tissue is similar to normal prostate tissue and the tumor is less likely to spread; a high Gleason score means the cancer tissue is very different from normal and the tumor is more likely to spread.

**Gleevec :** A drug used to treat different types of leukemia and other cancers of the blood, gastrointestinal stromal tumors, skin tumors called dermatofibrosarcoma protuberans, and a rare condition called systemic mastocytosis. It is also being studied in the treatment of other types of cancer. Gleevec blocks the protein made by the bcr/abl oncogene. It is a type of tyrosine kinase inhibitor. Also called imatinib mesylate and STI571.

**glembatumumab vedotin:** An antibody-drug conjugate, consisting of the fully human monoclonal antibody CR011 directed against glycoprotein NMB (GPNMB) and conjugated via a cathepsin B-sensitive valine-citrulline (vc) linkage to the cytotoxic agent monomethyl auristatin E (MMAE), with potential antineoplastic activity. Upon administration, the monoclonal antibody CR011 moiety binds to glycoprotein nmb (GPNMB), expressed on the surfaces of a variety of cancer cell types; upon endocytosis, the synthetic dolastin analogue MMAE is released via enzymatic cleavage into the tumor cell cytosol, where it binds to tubulin and inhibits tubulin polymerization, which may result in G2/M phase arrest and apoptosis. The vc linkage system is highly stable in serum, rendering the cytotoxicity of glembatumumab vedotin specific for GPNMB-positive cells. GPNMB is a transmembrane protein overexpressed on the surfaces of various cancer cell types, including melanoma, breast, and prostate cancer cells.

**Gleostine:** (Other name for: lomustine)

**Gleostine :** A drug used to treat brain tumors that have already been treated with surgery or radiation therapy. It is also used to treat Hodgkin lymphoma that has not gotten better with other types of treatment or has come back. It is being studied in the treatment of other types of cancer. Gleostine damages

the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called CCNU and lomustine.

**Gliadel:** (Other name for: polifeprosan 20 with carmustine implant)

**Gliadel Wafer :** A biodegradable wafer that is used to deliver the anticancer drug carmustine directly into a brain tumor site after the tumor has been removed by surgery. Also called carmustine implant and polifeprosan 20 carmustine implant.

**glial cell :** Any of the cells that hold nerve cells in place and help them work the way they should. The types of glial cells include oligodendrocytes, astrocytes, microglia, and ependymal cells. Also called neuroglia. OR the cells of the nervous system that support, protect, and nourish the neurons.

**glial tumor :** A general term for tumors of the central nervous system, including astrocytomas, ependymal tumors, glioblastoma multiforme, and primitive neuroectodermal tumors.

**gliclazide:** A short-acting, relatively high-potency, second-generation sulfonylurea compound with hypoglycemic activity. Gliclazide also increases peripheral insulin sensitivity. This agent is metabolized by CYP2C9.

**Glide plane:** A symmetry element involving reflection through a plane followed by a translation.

**glimepiride:** A long-acting, third-generation sulfonylurea with hypoglycemic activity. Compared to other generations of sulfonylurea compounds, glimepiride is very potent and has a longer duration of action. This agent is metabolized by CYP2C9 and shows peroxisome proliferator-activated receptor gamma (PPARgamma) agonistic activity.

**glioblastoma :** A fast-growing type of central nervous system tumor that forms from glial (supportive) tissue of the brain and spinal cord and has cells that look very different from normal cells. Glioblastoma usually occurs in adults and affects the brain more often than the spinal cord. Also called GBM, glioblastoma multiforme, and grade IV astrocytoma.

**glioblastoma cancer vaccine ERC1671:** A cancer vaccine composed of a combination of autologous glioblastoma (GBM) tumor cells, allogeneic GBM tumor cells, generated from three different GBM donor cancer patients, and the lysates of all of these cells, with potential antineoplastic activity. Upon intradermal administration of GBM cancer vaccine

ERC1671, the mixture of the autologous and allogeneic cells and lysates stimulates the immune system to mount a cytotoxic T-lymphocyte (CTL) response against GBM-associated antigens, which leads to the destruction of glioblastoma cells.

**glioblastoma multiforme :** A fast-growing type of central nervous system tumor that forms from glial (supportive) tissue of the brain and spinal cord and has cells that look very different from normal cells. Glioblastoma multiforme usually occurs in adults and affects the brain more often than the spinal cord. Also called GBM, glioblastoma, and grade IV astrocytoma.

**glioblastoma multiforme multi-peptide vaccine IMA950:** A cancer vaccine comprising 11 peptides associated with glioblastoma multiforme (GBM), with potential immunomodulating and antineoplastic activities. Vaccination with glioblastoma multiforme multi-antigen vaccine IMA950 stimulates the host immune system to mount a cytotoxic T-lymphocyte (CTL) response as well as a T-helper (Th) immune response against tumor cells expressing these peptides, potentially resulting in decreased tumor growth of GBM. Peptides in IMA950 comprise the following: brevican (BCAN); chondroitin sulfate proteoglycan 4 (CSPG4); fatty acid binding protein 7, brain (FABP7); insulin-like growth factor 2 mRNA binding protein 3 (IGF2BP3); neuroligin 4, X-linked (NLGN4X); neuronal cell adhesion molecule (NRCAM); protein tyrosine phosphatase, receptor-type, Z polypeptide 1 ( PTPRZ1); tenascin C (TNC); Met proto-oncogene (MET); baculoviral IAP repeat-containing 5 (BIRC5); and hepatitis B virus core antigen. Check for active clinical trials using this agent.

**glioma :** A cancer of the brain that begins in glial cells (cells that surround and support nerve cells).

**glioma-associated antigen peptide-pulsed autologous dendritic cell vaccine:** A cancer vaccine comprised of autologous dendritic cells pulsed with synthetic glioma-associated antigen (GAA) peptides with potential antineoplastic activity. Upon administration, this vaccine may stimulate anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against GAA peptide-expressing glioma cells, resulting in tumor cell lysis.

**glioma-associated peptide-loaded dendritic cell vaccine SL-701:** A cell-based cancer vaccine comprised of dendritic cells (DCs) pulsed with various synthetic glioma-associated antigen (GAA) peptides, with potential antineoplastic activity. Upon subcutaneous administration, the glioma-

associated peptide-loaded DC vaccine SL-701 exposes the immune system to various GAA peptides. This may stimulate both anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against the GAA-expressing glioma cells, which may result in tumor cell lysis.

**gliosarcoma** : A type of glioma (cancer of the brain that comes from glial, or supportive, cells).

**glipizide**: A short-acting, second-generation sulfonylurea with hypoglycemic activity. Glipizide is rapidly absorbed, has a very quick onset of action and a short half-life. This agent is extensively metabolized in the liver and the metabolites as well as the unchanged form are excreted in the urine.

**gliquidone**: A potent, second-generation sulfonylurea with antihyperglycemic activity. Like other second-generation compounds, gliquidone exerts greater binding affinity to SUR1 and increased potency compared to first-generation compounds. In addition, this agent exerts peroxisome proliferator-activated receptor (PPAR) gamma agonistic activity. Check for active clinical trials using this agent.

**glisoxepide**: A second-generation sulfonylurea with antihyperglycemic activity. Like other second-generation compounds, glisoxepide exerts greater binding affinity than the first-generation compounds. Glisoxepide shows peroxisome proliferator-activated receptor (PPAR) gamma agonistic activity, has a short half-life and is excreted in both the bile and urine.

**Global dimming** : There is some evidence that the production of particulates during the combustion of fossil fuels is causing the sun's rays to be reflected away from the Earth.

**Global Energy Minimum**: Important in molecular modelling, the global energy minimum refers to a molecule's most stable conformation.

**Global warming** : Many people are worried that the average temperature of the Earth is increasing. Some scientists believe that this is nothing to worry about because the Earth's average temperature has always been changing both up and down. Other scientists are very worried because they believe that the temperature is rising too fast and will not go down again after a time.

**Globin fold**: A folding structure of a polypeptide chain, exemplified by myoglobin and hemoglobin subunits, that creates an environment for a

heme group to reversibly bind oxygen.

**Globo H-DT vaccine OBI-833:** A carbohydrate-based vaccine comprised of the Globo H hexasaccharide 1 (Globo H) antigen conjugated to DT-CRM197, a non-toxic, mutated form of diphtheria toxin (DT), with potential immunostimulating and antineoplastic activities. Upon administration of Globo H-DT vaccine OBI-833, the carbohydrate antigen Globo H may stimulate a cytotoxic T-lymphocyte (CTL) response against Globo H-expressing tumor cells, thereby decreasing tumor cell proliferation. The hexasaccharide Globo H is a tumor-associated antigen (TAA) commonly found on a variety of tumor cells. DT-CRM197 is used to increase the immunogenicity of the Globo H carbohydrate antigen.

**Globo H-KLH immunostimulant OPT-822:** A carbohydrate-based immunostimulant comprised of the Globo H hexasaccharide 1 (Globo H) epitope linked to the immunostimulant carrier protein keyhole limpet hemocyanin (KLH), with potential antineoplastic activity. Upon administration of Globo H-KLH immunostimulant OPT-822, the carbohydrate antigen Globo H may stimulate a cytotoxic T-lymphocyte (CTL) response against Globo H-expressing tumor cells, thereby decreasing tumor cell proliferation. Globo H is a tumor associated antigen (TAA) commonly found on a variety of tumor cells including breast cancer cells. KLH improves antigenic immune recognition and T-cell responses. Check for active clinical trials using this agent.

**Globo-H-GM2-Lewis-y-MUC1-32(aa)-sTn(c)-TF(c)-Tn(c)-KLH conjugate vaccine:** A heptavalent vaccine consisting of the tumor-associated carbohydrate antigens globohexaosylceramide (globo-H), GM2, Lewis-y, MUC1-32(aa), sTn(c), TF(c), and Tn(c) conjugated with keyhole limpet hemocyanin (KLH), an immunomodulator. This vaccine may induce the production of IgG and IgM antibodies and an antibody-dependent cell-mediated cytotoxicity (ADCC) against tumors expressing these antigens.

**Globular protein:** A folded protein that adopts an approximately globular shape. May also be called soluble proteins. OR Soluble proteins with a globular (somewhat rounded) shape.

**globulin component macrophage-activating factor:** A recombinant form of GC (group-specific component) protein-derived macrophage-activating factor (GC-MAF) with potential immunostimulating and antineoplastic activities. Upon administration, globulin component macrophage-activating

factor is able to stimulate macrophages to kill cancer cells, inhibit angiogenesis and stimulate the immune system. This decreases tumor cell proliferation. GC, also known as vitamin D binding protein (VDBP), is converted to GC-MAF by enzymes located in the membrane of B- and T-lymphocytes. However, deglycosylated GC protein cannot be converted to GC-MAF. Endogenous GC-MAF is often not activated in patients with cancer due to an increased activity of nagalase (also called alpha-N-acetylgalactosaminidase), an enzyme secreted by cancer cells that mediates the deglycosylation of GC; thus preventing macrophage activation and immunosuppression.

**glomerulus:** a ball of capillaries that comprises Bowman's capsule in the human kidney.

**Gloss:** The luster or shininess of paints and coatings. Different types of gloss are frequently arbitrarily differentiated, such as sheen, distinctness-of-image gloss, etc. Trade practice recognizes the following gloss levels, in increasing order of gloss: flat (or matte)-- practically free from sheen, even when viewed from oblique angles (usually less than 15 on 60-degree meter); eggshell-- usually 20-35 on 60-degree meter; semi-gloss--usually 35-70 on 60-degree meter; full-gloss--smooth and almost mirror-like surface when viewed from all angles, usually above 70 on 60-degree meter. OR The extent to which a painted surface reflects light. The degree of gloss may be described as ranging from: matt or flat (having no visible gloss); eggshell; semi-gloss; full gloss (usually meaning the highest obtainable gloss). OR The luster or shininess of paints and coatings are generally classified as flat, semi-gloss, or gloss; the latter has the higher reflecting ability.

**Gloss Meter:** A device for measuring the light reflectance of coatings. Different brands with the same description (such as semi-gloss or flat) may have quite different ratings on the gloss meter. OR A standard scale for measuring the shininess or light reflectance of paint. Different brands with the same description such as semi-gloss or flat may have quite different ratings on the gloss meter.

**Glossary:** A set of definitions of words, such as this one. Not all glossaries are self-referential.

**glossectomy :** Surgical removal of all or part of the tongue.

**glottis:** a slitlike structure at the opening to the mammalian trachea. OR The middle part of the larynx; the area where the vocal cords are located.

**glucagon:** a hormone produced in the pancreas that stimulates the breakdown of glycogen to glucose in the liver.

**Glucagon:** A polypeptide hormone that is secreted by the  $\alpha$  cells of the pancreas when the bloodglucose level is low and leads to glycogen breakdown in the liver and the release of glucose to the blood.

**glucagon :** A hormone produced by the pancreas that increases the level of glucose (sugar) in the blood.

**glucagonoma :** A rare pancreatic tumor that produces a hormone called glucagon. Glucagonomas can produce symptoms similar to diabetes.

**glucarpidase:** A zinc-dependent enzyme isolated from a strain of the bacterium *Pseudomonas*. Because glucarpidase rapidly hydrolyzes methotrexate into inactive metabolites, it may be useful as a rescue agent for methotrexate-induced nephrotoxicity. In antibody-directed enzyme prodrug therapy (ADEPT), this agent is conjugated with an antibody that binds to a specific tumor cell type, allowing for glucarpidase-catalyzed activation of a co-administered prodrug at the site of the tumor. or A drug used to treat toxic levels of methotrexate (an anticancer drug) in the blood of patients with kidney problems. It is a bacterial enzyme that breaks down proteins and other substances, such as methotrexate. Glucarpidase may also help certain drugs kill cancer cells. It is a type of chemoprotective agent and a type of prodrug activator. Also called carboxypeptidase-G2 and Voraxaze.

**Glucidex:** (Other name for: maltodextrin)

**glucocorticoid :** A compound that belongs to the family of compounds called corticosteroids (steroids). Glucocorticoids affect metabolism and have anti-inflammatory and immunosuppressive effects. They may be naturally produced (hormones) or synthetic (drugs).

**glucocorticoid receptor antagonist CORT125134:** An orally available antagonist of the glucocorticoid receptor (GR), with potential antineoplastic activity. Upon administration, CORT125134 competitively binds to and blocks GRs. This inhibits the activity of GRs, and prevents both the translocation of the ligand-GR complexes to the nucleus and gene expression of GR-associated genes. This decreases the negative effects that result from excess levels of endogenous glucocorticoids, like those seen

when tumors overproduce glucocorticoids. In addition, by binding to GRs and preventing their activity, inhibition with CORT125134 also inhibits the proliferation of GR-overexpressing cancer cells. GRs are overexpressed in certain tumor cell types and promote tumor cell proliferation. Check for active clinical trials using this agent.

**Glucocorticoids:** A class of steroid hormones, synthesized by the adrenal cortex and exemplified by cortisol, that promote gluconeogenesis, the formation of glycogen, and the degradation of fats and proteins.

**Glucodry:** (Other name for: maltodextrin)

**glucogenic amino acids:** Amino acids with carbon chains that can be metabolically converted into glucose or glycogen via gluconeogenesis.

**Gluconeogenesis:** The production of sugars from nonsugar precursors such as lactate or amino acids. Applies more specifically to the production of free glucose by vertebrate livers. OR The synthesis of glucose from noncarbohydrate precursors, including lactate, glycerol, and amino acids. OR The biosynthesis of a carbohydrate from simpler, noncarbohydrate precursors such as oxaloacetate or pyruvate.

**gluconeogenesis :** The process of making glucose (sugar) from its own breakdown products or from the breakdown products of lipids (fats) or proteins. Gluconeogenesis occurs mainly in cells of the liver or kidney.

**Glucophage:** (Other name for: metformin hydrochloride)

**Glucophage :** A drug used to treat diabetes mellitus (a condition in which the body cannot control the level of sugar in the blood ). It is also being studied in the treatment of cancer. It decreases the amount of glucose (a type of sugar) released into the bloodstream from the liver and increases the body's use of the glucose. Glucophage is a type of antidiabetic agent. Also called metformin hydrochloride.

**Glucophage XR:** (Other name for: metformin hydrochloride)

**glucosamine sulfate/chondroitin sulfate tablet:** An oral tablet formulation of a dietary supplement containing the sulfate salts of the amino sugar glucosamine and the glucosaminoglycan chondroitin with potential analgesic, anti-inflammatory, and anti-arthritic activities. Both glucosamine and chondroitin are naturally occurring substances that play a key role in cartilage formation and repair. Glucosamine is an essential substrate for glycosaminoglycans and hyaluronic acid, needed for formation

of the joint proteoglycan structural matrix, and may prevent chondrocytic catabolic activity and inhibit production of inflammatory mediators.

Chondroitin is the major glycosaminoglycan in cartilage, responsible for the elasticity of cartilage; it may reduce the IL-1beta-induced nuclear factor-kappaB (NF-kB) translocation in chondrocytes, inhibiting NF-kB-mediated inflammatory processes.

**glucose:** A 6-carbon sugar that plays a major role in cell metabolism. OR A common sugar, one of many with the chemical formula  $C_6O_6H_{12}$  but different three-dimensional structures. It is not the simplest of all sugars (that honour belongs to glyceraldehyde,  $C_3O_3H_6$ ), but glucose is the fundamental building block of many biopolymers, including starch and cellulose, and is the starting material for the serious biochemical reactions used to obtain energy in most "higher" organisms. OR a carbohydrate with the chemical formula  $C_6H_{12}O_6$  that serves as the primary carbon source of living things.

**glucose :** A type of sugar; the chief source of energy for living organisms.

**Glucose 6-phosphatase:** A membrane protein of the luminal side of the endoplasmic reticulum that catalyzes the formation of free glucose from glucose 6-phosphate. In the liver, the enzyme plays a key role in maintaining blood-glucose levels. OR A key intermediate in metabolism that can be processed to free glucose, stored as glycogen, oxidized to produce NADPH and ribose, or metabolized to generate cellular energy either aerobically or anaerobically.

**Glucose 6-phosphate dehydrogenase:** An enzyme that initiates the oxidative phase of the pentose phosphate pathway by oxidizing glucose 6-phosphate to 6-phosphoglucono- $\alpha$ -lactone to generate one molecule of NADPH.

**Glucose homeostasis:** Maintenance of a constant level of glucose in the blood.

**Glucose transporter:** An integral membrane protein consisting of a single polypeptide chain that has 12 transmembrane segments and facilitates the movement of glucose across the plasma membrane into the cell.

**glucose-6-phosphate dehydrogenase deficiency :** An inherited disorder in which a person doesn't have enough of an enzyme called G6PD that helps red blood cells work the way they should. In glucose-6-phosphate dehydrogenase deficiency, the red blood cells break down when the body is

exposed to infection, severe stress, or certain drugs, chemicals, or foods. This may lead to a condition called hemolytic anemia. This disorder is most common in African-American men and in men of Middle Eastern or Mediterranean descent. Also called G6PD deficiency.

**glucosuria:** excess urinary glucose output

**Glucotrol:** (Other name for: glipizide)

**glucuronic acid:** A carboxylic acid with structural similarity to glucose with detoxifying activity. The xenobiotic metabolism of various substances such as drugs, pollutants, bilirubin, androgens, estrogens, mineralocorticoids, glucocorticoids, fatty acid derivatives, retinoids, and bile acids involves glucuronidation, a process in which water-soluble, excretable glucuronides of these substances are formed via glycosidic linkages to glucuronic acid. UDP-glucuronic acid, formed in the liver through the linkage of glucuronic acid to uridine diphosphate (UDP) via a glycosidic bond, is an intermediate in the process of glucuronidation. or A form of a type of sugar called glucose that helps remove harmful substances from the body. Glucuronic acid and the harmful substance combine in the liver and then are passed in the urine. Glucuronic acid is also found in other substances in the body, such as cartilage and synovial fluid (fluid found in the joints).

**glufosfamide :** An anticancer drug that belongs to the family of drugs called alkylating agents.

**Glumetza:** (Other name for: metformin hydrochloride)

**glutamate:** Ionic salts of glutamic acid used as flavor enhancers in many foods. Glutamate is usually manufactured by acid hydrolysis of vegetable proteins. Besides being a basic building block of proteins, glutamate functions as a neurotransmitter that helps neurons grow new connections; as such, glutamate plays an important role in learning and memory. At high concentrations, glutamate can function as an excitotoxin.

**Glutamate dehydrogenase:** An enzyme that catalyzes the oxidative deamination of glutamate, yielding ammonium ion and  $\alpha$ -ketoglutarate.

**glutamate receptors:** Glutamate receptors are protein molecules that help gate the flow of ions across a nerve cell's membrane. They play a role in the formation of new connections between nerve cells (and so, in learning and memory). The receptors are normally activated by aspartate and glutamate.

In amnesic shellfish poisoning, domoic acid acts as an excitotoxin that very strongly activates some of these receptors, preventing their proper functioning.

**glutamic acid:** A naturally occurring amino acid that has a carboxylic acid group on its side chain. In proteins, glutamic acid residues can occur with the side-chain carboxylic acid group converted to an amide; the residue is then called glutamine.

**glutamic acid :** One of twenty amino acids (molecules that join together to form proteins). Glutamic acid may help nerve cells send and receive information from other cells. It is being studied for its ability to decrease or prevent nerve damage caused by anticancer drugs. Also called L-glutamic acid.

**glutaminase inhibitor CB-839:** An orally bioavailable inhibitor of glutaminase, with potential antineoplastic activity. Upon oral administration, CB-839 selectively and irreversibly inhibits glutaminase, a mitochondrial enzyme that is essential for the conversion of the amino acid glutamine into glutamate. By blocking glutamine utilization, proliferation in rapidly growing cells is impaired. Glutamine-dependent tumors rely on the conversion of exogenous glutamine into glutamate and glutamate metabolites to both provide energy and generate building blocks for the production of macromolecules, which are needed for cellular growth and survival.

**glutamine:** A nonessential amino acid. Glutamine can donate the ammonia on its side chain to the formation of urea (for eventual excretion by the kidneys) and to purines (necessary for the synthesis of nucleic acids). Glutamic acid-to-glutamine conversion, in which an ammonia group is added to glutamic acid (catalyzed by glutamine synthase), is of central importance in the regulation of toxic levels of ammonia in the body. This agent is a substrate for the production of both excitatory and inhibitory neurotransmitters (glutamate and GABA) and is also an important source of energy for the nervous system. Glutamine may become a conditionally essential amino acid during certain catabolic states. or An amino acid used in nutrition therapy. It is also being studied for the treatment of diarrhea caused by radiation therapy to the pelvis.

**glutamine:** The amide of the amino acid glutamic acid. Glutamic acid often occurs as glutamine when built into proteins.

**Glutamine phosphoryl amidotransferase:** An enzyme that catalyzes the committed step in purine synthesis, which is the displacement of pyrophosphate in 5-phosphoribosyl-1-pyrophosphate by ammonia to yield 5-phosphoribosyl-1-amine with the amine in the  $\beta$  configuration.

**Glutapak-10:** (Other name for: glutamine)

**GlutaSolve:** (Other name for: glutamine)

**Glutasolve Resource:** (Other name for: glutamine)

**glutathione:** A tripeptide comprised of three amino acids (cysteine, glutamic acid, and glycine) present in most mammalian tissue. Glutathione acts as an antioxidant, a free radical scavenger and a detoxifying agent. Glutathione is also important as a cofactor for the enzyme glutathione peroxidase, in the uptake of amino acids, and in the synthesis of leukotrienes. As a substrate for glutathione S-transferase, this agent reacts with a number of harmful chemical species, such as halides, epoxides and free radicals, to form harmless inactive products. In erythrocytes, these reactions prevent oxidative damage through the reduction of methemoglobin and peroxides. Glutathione is also involved in the formation and maintenance of disulfide bonds in proteins and in the transport of amino acids across cell membranes.

**glutathione :** A substance found in plant and animal tissues that has many functions in a cell. These include activating certain enzymes and destroying toxic compounds and chemicals that contain oxygen.

**Glutathione ( $\gamma$ -glutamylcysteinylglycine or GSH):** A tripeptide playing a role in combating oxidative stress by maintaining the reduced state of the cell. Glutathione cycles between the reduced (GSH) and oxidized (GSSG) state.

**glutathione disulfide NOV-002:** A stabilized formulation of disodium glutathione disulfide (GSSG; oxidized glutathione) and cisplatin (1000:1) with potential chemoprotective and immunomodulating activities. Mimicking endogenous GSSG, glutathione disulfide NOV-002 acts as a competitive substrate for gamma-glutamyl-transpeptidase (GGT), which may result in the S-glutathionylation of proteins, predominantly actin, a redox stress on endoplasmic reticulum (ER), and ER stress-induced apoptosis; S-glutathionylation may be stimulated by reactive oxygen species (ROS) liberated by a glutathione disulfide NOV-002-induced increase in GGT activity. Glutathione disulfide NOV-002 may also induce

phosphorylation of proteins such as ERK and p38, two kinases that play critical regulatory roles in cell proliferation and apoptosis. The cisplatin component of this agent does not provide an effective therapeutic concentration of cisplatin in vivo.

**glutathione pegylated liposomal doxorubicin hydrochloride**

**formulation 2B3-101:** A glutathione (GSH) pegylated, liposome-encapsulated preparation of the hydrochloride salt form of the anthracycline antineoplastic antibiotic doxorubicin, with potential antineoplastic activity. Upon administration, the glutathione pegylated liposomal formulation 2B3-101 specifically delivers doxorubicin into the brain. Doxorubicin intercalates between DNA base pairs and interferes with topoisomerase II activity, which inhibits both DNA replication and RNA synthesis, resulting in cancer cell death and tumor regression. Doxorubicin also generates reactive oxygen species, which causes cell membrane lipid peroxidation leading to cytotoxicity. The pegylated liposomal delivery of doxorubicin improves drug penetration into tumors and prolongs circulation time, thereby increasing doxorubicin's efficacy and decreasing its toxicity. Conjugation of GSH to the PEG molecules directs the liposomes to the GSH transporters on the blood brain barrier (BBB) and improves the delivery of doxorubicin into the brain.

**glutathione S-transferase :** A family of enzymes involved in metabolism and in making toxic compounds less harmful to the body.

**gluten-free compact nutritional supplement drink:** A gluten-free, calorie-dense, milkshake-like nutritional supplement drink containing all essential vitamins, minerals, and trace elements, as well as protein, fat and carbohydrates. Upon oral intake, gluten-free compact nutritional supplement drink may aid in the prevention of malnutrition and weight loss. The drink is provided in a reduced volume (125 ml) but with the same complete nutrition as the standard drink (200 ml); the reduced volume may increase patient compliance.

**gluten-free DHA/EPA/GLA/antioxidant-rich nutritional liquid:** A gluten- and lactose-free, energy-rich, calorie-dense, non-complete liquid nutritional supplement enriched with eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), gamma-linolenic acid (GLA) and antioxidants, with potential anti-cachexic and anti-inflammatory activities. The nutritional liquid also contains protein, in the form of sodium and

calcium caseinates, carbohydrates, as maltodextrin and sucrose, fat, as canola, borage, and marine oils, L-carnitine, taurine, and several other vitamins and minerals. Upon oral intake of the gluten-free DHA/EPA/GLA/antioxidant-rich nutritional liquid, the essential omega-3 polyunsaturated fatty acids EPA and DHA, derived from refined marine oil, and GLA, derived from borage oil, are incorporated into cell membranes and affect the production of pro-inflammatory mediators, which elicits an anti-inflammatory effect and may also prevent infections. The antioxidants, including ascorbic acid, beta-carotene, and tocopherols, neutralize free radicals, thereby protecting tissues and organs from oxidative damage. Medium chain triglycerides (MCT) and large chain triglycerides (LCT) in this supplement enhance fat absorption and increase calorie intake. Additionally, this nutritional supplement may prevent malnutrition and weight loss.

**gluten-free/fiber enriched compact nutritional supplement drink:** A gluten-free, calorie-dense, fiber-enriched milkshake-like nutritional supplement drink containing all essential vitamins, minerals, and trace elements, as well as protein, fat and carbohydrates. Upon oral intake, gluten-free, fiber-enriched compact nutritional supplement drink may aid in the prevention of malnutrition and weight loss. The drink is provided in a reduced volume (125 ml) but with the same complete nutrition as the standard drink (200 ml); the reduced volume may increase patient compliance. The fiber, acting as a prebiotic, promotes beneficial bacterial growth in the gastrointestinal (GI) tract, increases digestive health and may reduce the incidence of constipation and/or diarrhea.

**glyburide:** A sulfonamide urea derivative with antihyperglycemic activity that can potentially be used to decrease cerebral edema. Upon administration, glyburide binds to and blocks the sulfonylurea receptor type 1 (SUR1) subunit of the ATP-sensitive inwardly-rectifying potassium (K(ATP)) channels on the membranes of pancreatic beta cells. This prevents the inward current flow of positively charged potassium (K<sup>+</sup>) ions into the cell, and induces a calcium ion (Ca<sup>2+</sup>) influx through voltage-sensitive calcium channels, which triggers exocytosis of insulin-containing granules. In addition, glyburide also inhibits the SUR1-regulated nonselective cation (NC) Ca-ATP channel, melastatin 4 (transient receptor potential cation channel subfamily M member 4; (TRPM4)), thereby preventing capillary failure and brain swelling. SUR1-TRPM4 channels are formed by co-

assembly of SUR1 with TRPM4 in neurons, astrocytes, and capillary endothelium during cerebral ischemia. Upon ischemia-induced ATP depletion, channels open which results in sodium influx, cytotoxic edema formation, capillary fragmentation and necrotic cell death. SUR1-TRPM4 is not expressed in normal, uninjured tissues. Check for active clinical trials using this agent.

**Glycan:** A polysaccharide; a polymer of sugars; see oligosaccharide OR Another term for polysaccharide; a polymer of monosaccharide units joined by glycosidic bonds.

**glycan :** A large carbohydrate molecule. It contains many small sugar molecules that are joined chemically. Also called polysaccharide.

**glycan analysis :** A study of the types of carbohydrate (sugar) molecules attached to proteins in cells. Proteins with carbohydrate molecules are called glycoproteins. Glycan analysis is being studied to find out if glycoproteins on cancer cells may be used as biomarkers for cancer.

**glycemia :** Glucose (a type of sugar) found in the blood. Also called blood sugar.

**glycemic index :** A measure of the increase in the level of blood glucose (a type of sugar) caused by eating a specific carbohydrate (food that contains sugar) compared with eating a standard amount of glucose. Foods with a high glycemic index release glucose quickly and cause a rapid rise in blood glucose. Foods with a low glycemic index release glucose slowly into the blood. A relationship between the glycemic index and recurrent colorectal cancer is being studied.

**glyceride:** Glycerides are fats and oils that are esters of glycerol with one or more fatty acids. Monoglycerides, diglycerides, and triglycerides contain one, two, and three fatty acids linked to the glycerol, respectively.

**glycerin enema:** An enema solution containing 5% glycerin, a trihydroxy alcohol with osmotic laxative activity. Upon rectal administration, glycerin enema creates an osmotic gradient thereby attracting water into the rectum. This increases volume, increases peristalsis, stimulates evacuation, and relieves constipation.

**Glycerine:** Glycerine (chemical name 1,2,3-propanetriol), also known as glycerol or glycerine, is a non-toxic, colorless, odorless, sweet-tasting,

viscous (at room temperature) liquid that is hydrophilic (water loving), hygroscopic and emollient.

**Glycerol:** Glycerol is a biological compound that has three carbons with three alcohol functional groups. It is the backbone molecule of many fats when combined with fatty acids. OR Propan-1,2,3-triol, named from the greek word for 'sweet' thanks to its taste. It is the basis for many animal and vegetable fats.

**Glycerol 3-phosphate shuttle:** A pathway that transfers electrons from cytoplasmic NADH into the mitochondria; dihydroxyacetone phosphate (DHAP) is reduced by NADH to glycerol 3-phosphate, which enters the mitochondria and is oxidized to yield FADH<sub>2</sub> and DHAP, which leaves the mitochondria.

**glycerol<sup>22</sup>:** Glycerol is a small molecule with three alcohol groups. It is a basic building block of fats and oils.

**glycerophospholipid:** An amphipathic lipid with a glycerol backbone; fatty acids are ester-linked to C-1 and C-2 of glycerol, and a polar alcohol is attached through a phosphodiester linkage to C-3.

**Glycerol ether phospholipid:** A phospholipid that contains an ether unit rather than an acyl unit at C-1 and is synthesized starting with dihydroxyacetone phosphate rather than glycerol phosphate.

**glycinamide ribonucleotide formyltransferase inhibitor :** A drug that blocks DNA synthesis and may prevent tumor growth. It is being studied as a treatment for cancer.

**glycine:** A non-essential, non-polar, non-optical, glucogenic amino acid. Glycine, an inhibitory neurotransmitter in the CNS, triggers chloride ion influx via ionotropic receptors, thereby creating an inhibitory post-synaptic potential. In contrast, this agent also acts as a co-agonist, along with glutamate, facilitating an excitatory potential at the glutaminergic N-methyl-D-aspartic acid (NMDA) receptors. Glycine is an important component and precursor for many macromolecules in the cells.

**Glycine max :** A product from a plant of Asian origin that produces beans used in many food products. Glycine max contains isoflavones (estrogen-like substances) that are being studied for the prevention of cancer, hot flashes that occur with menopause, and osteoporosis (loss of bone density).

Glycine max in the diet may lower cholesterol levels and reduce the risk of heart disease. Also called soy, soya, and soybean.

**glycine<sup>22</sup>:** A naturally occurring aliphatic amino acid, found in large quantities in gelatin.

**Glycoforms:** Forms of a specific protein that differ only in patterns of glycosylation.

**glycogen:** A polysaccharide the body uses for energy storage; it is made up of chains of glucose molecules. When the body has depleted the free glucose in the blood, the liver breaks down glycogen into more glucose. OR a polysaccharide composed of thousands of glucose units that serves as the storage form of glucose in the human liver. OR A polymer of glucose residues in 1,4 linkage, with 1,6 linkages at branchpoints. OR A readily mobilized storage form of glucose in which the glucose monomers are linked by  $\alpha$ -1,4-glycosidic bonds and with branches ( $\alpha$ -1,6-glycosidic bonds) at about every tenth residue.

**Glycogen degradation:** The cleavage of glycogen by phosphorolysis, catalyzed by glycogen phosphorylase, to yield glucose 1-phosphate, which can be converted into glucose 6-phosphate.

**Glycogen phosphorylase:** An enzyme that catalyzes the phosphorolysis of glycogen to yield glucose 1-phosphate; an allosteric enzyme whose activity is further regulated by reversible covalent modification.

**glycogen storage disease :** A type of inherited disorder in which there are problems with how a form of glucose (sugar) called glycogen is stored and used in the body. Certain enzymes that help make or break down glycogen are missing or do not work the way they should. This causes abnormal amounts or types of glycogen in the tissues, especially in the liver and in muscle tissue. There are many types of glycogen storage disease, which can cause problems in different parts of the body, including the liver, muscles, kidneys, and heart. Also called GSD.

**Glycogen storage diseases:** Any of a number of heritable diseases characterized by an inability to store or utilize glycogen appropriately.

**Glycogen synthase:** An allosteric enzyme that can be reversibly covalently regulated and is responsible for the synthesis of glycogen; it transfers glucose from UDP-glucose to the hydroxyl group at a C-4 terminus of glycogen.

**Glycogen synthesis:** The synthesis of glycogen from UDP-glucose, which is catalyzed by the enzyme glycogen synthase.

**Glycogenic:** Describing amino acids whose metabolism may lead to gluconeogenesis.

**Glycogenin:** A protein that bears an oligosaccharide of  $\alpha$ -1,4 glucose units and is the primer for glycogen synthase. Glycogenin uses UDP-glucose to catalyze its own autoglycosylation.

**glycol:** a class of alcohols that contain two — OH groups;  $C_nH_{2n}(OH)_2$ .

**glycolic acid :** A substance found in some fruits, sugar beets, and sugar cane. It is used in skin care products to reduce wrinkles and soften the skin. It is a type of alpha hydroxyl acid.

**Glycolipid:** A lipid covalently linked to a sugar OR A lipid containing a carbohydrate group.

**glycolipid:** A lipid covalently linked to a sugar or polysaccharide. These biomolecules are important parts of animal cell membranes.

**Glycolipids:** Sugar-containing lipids that are derived from sphingosine; the sugar moiety is attached at the alcohol on sphingosine.

**glycolysis:** A complex biochemical process in which one molecule of glucose is anaerobically converted into two molecules of pyruvate and energy in the form of ATP. OR the subdivision of cellular respiration in which glucose molecules are broken down to form pyruvic acid molecules. OR The catabolic conversion of glucose to pyruvate with the production of ATP. OR A sequence of reactions that convert glucose into pyruvate with the concomitant generation of energy. OR The catabolic pathway by which a molecule of glucose is broken down into two molecules of pyruvate.

**glycolysis :** A process in which glucose (sugar) is partially broken down by cells in enzyme reactions that do not need oxygen. Glycolysis is one method that cells use to produce energy. When glycolysis is linked with other enzyme reactions that use oxygen, more complete breakdown of glucose is possible and more energy is produced.

**glycooptimized trastuzumab-GEX:** A glycoengineered form of a monoclonal antibody directed against the human epidermal growth factor receptor-2 (HER2), with potential antineoplastic activity. Glycooptimized trastuzumab-GEX specifically binds to the extracellular domain of HER2, thereby inducing an antibody-dependent cell-mediated cytotoxicity

(ADCC) against HER2-expressing tumor cells. This eventually results in apoptosis and growth inhibition of tumor cells. HER2, a member of the receptor tyrosine kinase EGFR superfamily, is overexpressed on the cell surfaces of various solid tumors. This agent has a specific glycosylation profile that may enhance its ADCC response against HER2-expressing tumor cells.

**glycopeptide :** A short chain of amino acids (the building blocks of proteins) that has sugar molecules attached to it. Some glycopeptides have been studied for their ability to stimulate the immune system.

**glycopeptide antibiotic:** One of a class of antibiotics originally isolated from plant and soil bacteria with structures containing either a glycosylated cyclic or polycyclic nonribosomal peptide. These antibiotics inhibit the cell wall structure of susceptible organisms (principally Gram-positive cocci) by inhibiting peptidoglycan synthesis. First-generation glycopeptide antibiotics include vancomycin, teicoplanin, and ramoplanin; second-generation semi-synthetic glycopeptide antibiotics include oritavancin, dalbavancin, and telavancin. Check for active clinical trials using this agent.

**Glycoprotein:** A protein covalently linked to a sugar OR A protein containing a carbohydrate group. OR A protein linked to an oligosaccharide or a polysaccharide. Glycosaminoglycans: Long, unbranched polysaccharide chains composed of repeating disaccharide subunits in which one of the two sugars is either N-acetylglucosamine or N-acetylgalactosamine.

**glycoprotein :** A protein that has sugar molecules attached to it.

**glycoprotein 100 :** gp100. A tumor-specific antigen used in the development of cancer vaccines. Also called gp100.

**Glycoproteins:** Proteins that have a specific carbohydrate moiety attached.

**glycopyrrolate:** A synthetic quaternary ammonium that is an anticholinergic agent with antispasmodic activity. Glycopyrrolate competitively binds to peripheral muscarinic receptors in the autonomic effector cells of, and inhibits cholinergic transmission in smooth muscle, cardiac muscle, the sinoatrial (SA) node, the atrioventricular (AV) node, exocrine glands and in the autonomic ganglia. Blockage of cholinergic transmission, in smooth muscle cells located in the gastrointestinal tract and the bladder, causes smooth muscle relaxation and prevents the occurrence

of painful spasms. In addition, glycopyrrolate inhibits the release of gastric, pharyngeal, tracheal, and bronchial secretions.

**Glycosaminoglycan:** A heteropolysaccharide made of repeating disaccharide units and containing the amino sugar glucosamine or galactosamine. OR A heteropolysaccharide of two alternating units: one is either N-acetylglucosamine or N-acetylgalactosamine; the other is a uronic acid (usually glucuronic acid). Formerly called mucopolysaccharide.

**glycosaminoglycan :** A type of long, unbranched polysaccharide molecule. Glycosaminoglycans are major structural components of cartilage and are also found in the cornea of the eye.

**Glycoscience:** A branch of chemistry dedicated to the study of the many types of carbohydrate molecules

**Glycosidase:** A class of enzymes that cleave glycosidic bonds; lysozyme is a glycosidase.

**Glycosidic bond:** The bond between a sugar and an alcohol Also the bond that links two sugars in disaccharides, oligosaccharides, and polysaccharides. OR A covalent bond between an aldehyde or ketone function of a monosaccharide and an oxygen, nitrogen, or sulfur atom of another molecule. The most common glycosidic linkages are O-links between the anomeric carbon atom of a sugar and a hydroxyl group of another saccharide. OR Bonds between a sugar and another molecule (typically an alcohol, purine, pyrimidine, or sugar) through an intervening oxygen or nitrogen atom; the bonds are classified as O-glycosidic or N-glycosidic, respectively.

**glycosylated recombinant human G-CSF AVI-014:** A glycosylated form of a recombinant agent that is chemically identical to or similar to endogenous human granulocyte colony-stimulating factor (G-CSF) and is produced using transgenic biotechnology. Transgenic hens carrying recombinant human G-CSF cDNA express the naturally glycosylated recombinant human protein in egg albumen from which glycosylated recombinant human G-CSF AVI-014 is isolated. Produced endogenously by monocytes, fibroblasts, and endothelial cells, G-CSF binds to and activates specific cell surface receptors, stimulating neutrophil progenitor proliferation and differentiation and selected neutrophil functions.

**glycosylated recombinant human interleukin-7:** A glycosylated recombinant protein which is chemically identical to or similar to

endogenous human interleukin-7 (IL-7) with hematopoietic and immunopotentiating activities. Naturally produced by bone marrow, thymic stromal, and spleen cells, the cytokine interleukin-7 is a hematopoietic growth factor for progenitor B cells and T cells, stimulating proliferation and differentiation of mature T-cells and natural killer (NK) cells. As with glycosylated endogenous proteins, glycosylation of recombinant proteins may fundamentally affect their biological activity, function, clearance from circulation, and antigenicity; glycosylation of recombinant proteins that are chemically identical to similar to endogenous proteins may render protein structures and biological activities that are more similar to those of glycosylated endogenous proteins. Check for active clinical trials using this agent.

**Glycosyltransferase:** Any one of a number of specific enzymes that catalyze the formation of glycosidic bonds.

**glymidine:** A sulfapyrimidine derivative, also known as glycodiazine, with antihyperglycemic activity. Like sulfonylureas, glymidine is able to lower blood glucose levels by increasing the release of insulin from pancreatic beta cells and increasing the sensitivity of peripheral tissues to insulin.

**Glyoxylate cycle:** A pathway that uses some of the enzymes of the TCA cycle and some enzymes whereby acetate can be converted into succinate and carbohydrates. OR A metabolic pathway that converts two-carbon units into succinate for energy production and biosyntheses; found primarily in bacteria and plants, the cycle bypasses two decarboxylation steps in the citric acid cycle and allows the net formation of glucose and other molecules through oxaloacetate from acetate or acetyl coa. OR A variant of the citric acid cycle, for the net conversion of acetate into succinate and, eventually, new some OR A modification of the Krebs cycle, which occurs in some bacteria. Acetyl coenzyme A is generated directly from oxidation of fatty acids or other lipid compounds.

**Glyoxysome:** An organelle containing some enzymes of the glyoxylate cycle. OR A specialized peroxisome containing the enzymes of the glyoxylate cycle; found in cells of germinating seeds. OR Plant organelles in which enzymes of the glyoxylate pathway are present.

**Glyset:** (Other name for: miglitol)

**GlyT2/5HT2a antagonist VVZ-149:** An antagonist of both glycine transporter type 2 (GlyT2) and serotonin receptor 2A (5HT2A), with

potential anti-nociceptive activity. Upon administration, GlyT2/5HT2A antagonist VVZ-149 binds to and blocks both GlyT2 and 5HT2A. Blockage of GlyT2 prevents the re-uptake of the inhibitory neurotransmitter glycine in the synaptic cleft, thereby potentiating glycine-mediated inhibitory signaling, and inhibiting the firing of neurons, which suppresses the transmission of pain signals to the brain and induces analgesia. Blockage of 5HT2A prevents both the binding of its ligand serotonin and 5HT/5HT2A-mediated signaling. This also suppresses pain signaling and induces analgesia. GlyT2 and 5HT2A play key roles in the induction and transmission of pain signals. GlyT2, a glycine plasma membrane transporter, modulates glycine-mediated inhibition of synaptic transmission in the spinal cord and mediates pain signal transmission to the brain; inhibition of GlyT2 potentiates glycinergic mediated pain signaling. Serotonin and its 5HT2A receptor are involved in both serotonin receptor-mediated signaling and the perception of pain.

**GM-CSF:** A substance that helps make more white blood cells, especially granulocytes, macrophages, and cells that become platelets. It is a cytokine that is a type of hematopoietic (blood-forming) agent. Also called granulocyte-macrophage colony-stimulating factor and sargramostim.

**GM-CSF-encoding oncolytic adenovirus CGTG-102:** A recombinant, oncolytic serotype 5/3 capsid-modified adenovirus encoding the immunostimulatory cytokine granulocyte-macrophage colony-stimulating factor (GM-CSF) with potential antineoplastic activity. Upon administration, the oncolytic adenovirus selectively infects and replicates in tumor cells, which may result in tumor cell lysis. Synergistically, GM-CSF (sargramostim) expressed by the oncolytic adenovirus enhances antigen presentation, promotes natural killer (NK) cell-mediated killing and causes a cytotoxic T cell (CTL) response against tumor cells harboring the oncolytic adenovirus, resulting in an immune-mediated tumor cell death. CGTG-102 is designed to replicate only in cells with defects in the p16/Rb/E2F pathway, attributed to a mutation common in many solid tumors. Replacement of the Ad5 capsid protein knob with a knob domain from serotype 3 causes higher transduction in cancer cells as compared to normal cells.

**GM-CSF-secreting breast tumor vaccine :** A vaccine that is being studied as a way to help the body's immune system kill breast cancer cells.

To make the vaccine, the GM-CSF gene is put into breast cancer cells in the laboratory. The cells are then treated with radiation to stop them from growing and injected into the same or a different patient. The GM-CSF protein made by the changed breast cancer cells may help the immune system kill breast cancer cells in the body.

**GM-K562 cell vaccine:** A cell-based vaccine comprised of K562 cells transfected with the granulocyte macrophage-colony stimulating factor (GM-CSF) gene with potential immunopotentiating properties. Vaccination with GM-K562 cells may stimulate the host immune system to produce an antitumoral T-lymphocyte response, thereby inhibiting tumor growth. K562 cells are derived from the human erythroleukemia cell line K562. GM-CSF (also known as sargramostim) expressed by vaccine cells binds to specific cell surface receptors, modulating the proliferation and differentiation of a variety of hematopoietic progenitor cells with some specificity towards stimulation of leukocyte production. GM-CSF also promotes antigen presentation, up-regulates antibody-dependent cellular cytotoxicity (ADCC), and increases interleukin-2-mediated lymphokine-activated killer cell function; it may also augment host antitumoral immunity.

**GM.CD40L cell vaccine:** A cell-based vaccine composed of irradiated tumor cells transduced with granulocyte-macrophage colony-stimulating factor (GM-CSF) and CD40-ligand (CD40L) genes. Upon administration, this vaccine may stimulate an anti-tumoral dendritic cell-mediated host immune response.

**GM2-KLH vaccine:** A cancer vaccine consisting of GM2 ganglioside, a melanoma-specific antigen, conjugated with the immunostimulant keyhole limpet hemocyanin. Vaccination with GM2-KLH vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against GM2 ganglioside-expressing melanoma cells, resulting in tumor growth inhibition. or A substance used to stimulate the production of antibodies that fight certain cancer cells

**GM2/GD2/GD3 lactone-KLH conjugate trivalent vaccine:** A trivalent cancer vaccine containing the ganglioside lactones GM2, GD2 and GD3 conjugated with the immunostimulant keyhole limpet hemocyanin (KLH), with potential antineoplastic activity. Vaccination with GM2 lactone/GD2 lactone/GD3 lactone-KLH conjugate trivalent vaccine may elicit antibodies

against tumor cells expressing any of these epitopes, resulting in an antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells expressing these gangliosides. GM2, GD2 and GD3 are tumor associated antigens (TAAs) that are overexpressed in a variety of tumor cell membranes.

**GnRH:** A hormone made by a part of the brain called the hypothalamus. GnRH causes the pituitary gland in the brain to make and secrete the hormones luteinizing hormone (LH) and follicle-stimulating hormone (FSH). In men, these hormones cause the testicles to make testosterone. In women, they cause the ovaries to make estrogen and progesterone. Also called gonadotropin-releasing hormone, LH-RH, LHRH, and luteinizing hormone-releasing hormone.

**GnRH agonist :** A substance that keeps the testicles and ovaries from making sex hormones by blocking other hormones that are needed to make them. In men, GnRH agonists cause the testicles to stop making testosterone. In women, they cause the ovaries to stop making estrogen and progesterone. Some GnRH agonists are used to treat prostate cancer. Also called gonadotropin-releasing hormone agonist, LH-RH agonist, and luteinizing hormone-releasing hormone agonist.

**GnRH antagonist :** A substance that blocks the pituitary gland from making hormones called follicle-stimulating hormone (FSH) and luteinizing hormone (LH). In men, this causes the testicles to stop making testosterone. In women, this causes the ovaries to stop making estrogen and progesterone. Some GnRH antagonists are used to treat advanced prostate cancer. They are also used to treat certain gynecologic conditions and are being studied in the treatment of hormone-sensitive breast cancer. Also called gonadotropin-releasing hormone antagonist, LH-RH antagonist, and luteinizing hormone-releasing hormone antagonist.

**GnRH antagonist TAK-385:** An orally available, non-peptide gonadotropin-releasing hormone (GnRH or luteinizing hormone-releasing hormone (LHRH)) antagonist, with potential antineoplastic activity. GnRH antagonist TAK-385 competitively binds to and blocks the GnRH receptor in the anterior pituitary gland, which both prevents GnRH binding to the GnRH receptor and inhibits the secretion and release of both luteinizing hormone (LH) and follicle stimulating hormone (FSH). In males, the inhibition of LH secretion prevents the release of testosterone from Leydig

cells in the testes. Since testosterone is required to sustain prostate growth, reducing testosterone levels may inhibit hormone-dependent prostate cancer cell proliferation.

**goiter** : An enlarged thyroid. It may be caused by too little iodine in the diet or by other conditions. Most goiters are not cancer.

**Gold:** Symbol:"Au" Atomic Number:"79" Atomic Mass: 196.97amu. Gold is one of the transition elements. Gold is one of the Earth's precious metals. You will find the yellow colored metal used in jewelry, electronics, coins, satellites, and even medicines. Gold is very non-reactive and will not oxidize in air.

**gold fiducial marker seeds** : Tiny, gold seeds, about the size of a grain of rice, that are put in and/or around a tumor to show exactly where it is in the body. Doctors are then able to target the tumor directly and give higher doses of radiation with less harm to nearby healthy tissue. Also called gold fiducial markers, gold seeds, and gold-seed fiducial markers.

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**Gold size:** A general description for an adhesive used for affixing gold leaf. It can be either a gelatine or glue-size or an oil-varnish. The latter product is now usually meant and is also used as a drier in oil paints or a hardener/drier for stopping and filling compounds. It should more correctly be termed 'Japan gold size'.

**gold sodium thiomalate:** The sodium salt of gold thiomalic acid, an organogold compound with antirheumatic and potential antineoplastic activities. Gold sodium thiomalate (GST) appears to inhibit the activity of atypical protein kinase C iota (PKCiota) by forming a cysteinyl-aurothiomalate adduct with the cysteine residue Cys-69 within the PB1 binding domain of PKCiota. This prevents the binding of Par6 (Partitioning

defective protein 6) to PKC $\zeta$ , thereby inhibiting PKC $\zeta$ -mediated oncogenic signaling, which may result in the inhibition of tumor cell proliferation, the promotion of tumor cell differentiation, and the induction of tumor cell apoptosis. Atypical PKC $\zeta$ , a serine/threonine kinase overexpressed in numerous cancer cell types, plays an important role in cancer proliferation, invasion, and survival; Par6 is a scaffold protein that facilitates atypical PKC-mediated phosphorylation of cytoplasmic proteins involved in epithelial and neuronal cell polarization.

**gold therapy :** A procedure that uses gold salts (a salt form of the metal element gold) to treat diseases, such as rheumatoid arthritis. The gold salts stop cells from releasing chemicals that can harm tissues. Also called aurotherapy and chrysotherapy.

**Gold-leaf:** Pure gold beaten out to produce an extremely thin leaf (approx. 1/2000 000 of an inch) and applied to surfaces to be gilded.

**gold-seed fiducial markers :** Tiny, gold seeds, about the size of a grain of rice, that are put in and/or around a tumor to show exactly where it is in the body. Doctors are then able to target the tumor directly and give higher doses of radiation with less harm to nearby healthy tissue. Also called gold fiducial marker seeds, gold fiducial markers, and gold seeds.

**goldenrod:** A group of North American weedy herbs belonging to the genus *Solidago* (family Asteraceae) with potential chemopreventive activities. Goldenrod may also possess anti-inflammatory, antiseptic properties, diuretic and antifungal properties, and may relieve chemotherapy-induced side-effects.

**Goldman equation:** An equation expressing the quantitative relationship between the concentrations of charged species on either side of a membrane and the resting transmembrane potential.

**Golgi apparatus:** an organelle within eukaryotic cells comprised of a series of flattened sacs; the site of protein and lipid processing and packaging; also called Golgi bodies. OR A complex series of double-membrane structures that interact with the endoplasmic reticulum and that serve as a transfer point for proteins destined for other organelles, the plasma membrane, or extracellular transport.

**Golgi apparatus :** A stack of small flat sacs formed by membranes inside the cell's cytoplasm (gel-like fluid). The Golgi apparatus prepares proteins and lipid (fat) molecules for use in other places inside and outside the cell.

The Golgi apparatus is a cell organelle. Also called Golgi body and Golgi complex.

**Golgi body :** A stack of small flat sacs formed by membranes inside the cell's cytoplasm (gel-like fluid). The Golgi body prepares proteins and lipid (fat) molecules for use in other places inside and outside the cell. The Golgi body is a cell organelle. Also called Golgi apparatus and Golgi complex.

**Golgi complex:** In the cytoplasm, a stack of membranous sacks that constitute the major sorting center for proteins that reside in cell membranes and the lumen of organelles. OR A complex membranous organelle of eukaryotic cells; functions in the posttranslational modification of proteins and their secretion from the cell or incorporation into the plasma membrane or organellar membranes.

**Golgi complex :** A stack of small flat sacs formed by membranes inside the cell's cytoplasm (gel-like fluid). The Golgi complex prepares proteins and lipid (fat) molecules for use in other places inside and outside the cell. The Golgi complex is a cell organelle. Also called Golgi apparatus and Golgi body.

**golnerminogene pradenovec:** A recombinant agent consisting of a genetically-modified adenovirus 5 vector encoding the protein cytokine tumor necrosis factor (TNF) alpha. TNF exhibits potent anti-tumor cytolytic properties; the adenovirus 5 vector efficiently infects tumor cells, delivering tumor-specific TNF.

**golotimod:** An orally bioavailable synthetic peptide containing the amino acids D-glutamine and L-tryptophan connected by a gamma-glutamyl linkage with potential immunostimulating, antimicrobial and antineoplastic activities. Although the exact mechanism of action is unknown, golotimod appears to inhibit the expression of STAT-3, reversing immunosuppression and stimulating an anti-tumor immune response. This agent may stimulate the production of T-lymphocytes (in particular the helper T [Th1] cells), activate macrophages, and increase levels of interleukin 2 and interferon gamma. STAT-3, a transcription factor upregulated in many cancer cell types, is involved in tumor cell growth and survival and immunosuppression.

**golvatinib:** An orally bioavailable dual kinase inhibitor of c-Met (hepatocyte growth factor receptor) and VEGFR-2 (vascular endothelial growth factor receptor-2) tyrosine kinases with potential antineoplastic

activity. Golvatinib binds to and inhibits the activities of both c-Met and VEGFR-2, which may inhibit tumor cell growth and survival of tumor cells that overexpress these receptor tyrosine kinases. c-Met and VEGFR-2 are upregulated in a variety of various tumor cell types and play important roles in tumor cell growth, migration and angiogenesis.

**gonad** : The part of the reproductive system that produces and releases eggs (ovary) or sperm (testicle/testis).

**gonadal dysgenesis** : Abnormal development of a gonad (ovary or testicle). Men with gonadal dysgenesis have a greater risk of developing testicular cancer. Gonadal dysgenesis is usually part of a genetic syndrome.

**gonadal shielding** : A procedure used to help keep a person fertile by preventing damage to reproductive organs during radiation therapy. A protective shield is placed on the outside of the body to cover the area of the gonads (the testicles or ovaries) and other parts of the reproductive system during radiation therapy. For males, this would also include the prostate and penis. For females, it would also include the fallopian tubes, uterus, cervix, and vagina. Gonadal shielding is a type of fertility preservation.

**gonadotrophin releasing hormone analogue**: A synthetic analog of the endogenous hormone gonadotropin-releasing hormone (GnRH), with potential antineoplastic activity. Upon administration, GnRH analog mimics endogenous GnRH and strongly binds to and activates pituitary GnRH receptors, which stimulates the synthesis and secretion of the gonadotropic hormones, follicle stimulating hormone (FSH) and luteinizing hormone (LH). Continuous, prolonged activation by the GnRH analog results in pituitary GnRH receptor desensitization and receptor downregulation. This causes inhibition of pituitary gonadotropin secretion of LH and FSH. In males, the inhibition of LH secretion prevents the production and release of testosterone from Leydig cells in the testes and causes a significant decline in testosterone production that is near the levels seen after castration. This may inhibit androgen receptor-positive tumor progression. In females, this results in a decrease in estradiol production. GnRH, also called luteinizing hormone-releasing hormone (LH-RH), is normally synthesized in and secreted by the hypothalamus. Synthetic analogs of GnRH have a stronger receptor binding affinity than the endogenous form.

**gonadotropin-releasing hormone agonist** : A substance that keeps the testicles and ovaries from making sex hormones by blocking other

hormones that are needed to make them. In men, gonadotropin-releasing hormone agonists cause the testicles to stop making testosterone. In women, they cause the ovaries to stop making estrogen and progesterone. Some gonadotropin-releasing hormone agonists are used to treat prostate cancer. Also called GnRH agonist, LH-RH agonist, and luteinizing hormone-releasing hormone agonist.

**gonadotropin-releasing hormone antagonist :** A substance that blocks the pituitary gland from making hormones called follicle-stimulating hormone (FSH) and luteinizing hormone (LH). In men, this causes the testicles to stop making testosterone. In women, this causes the ovaries to stop making estrogen and progesterone. Some gonadotropin-releasing hormone antagonists are used to treat advanced prostate cancer. They are also used to treat certain gynecologic conditions and are being studied in the treatment of hormone-sensitive breast cancer. Also called GnRH antagonist, LH-RH antagonist, and luteinizing hormone-releasing hormone antagonist.

**Gondwanaland:** a paleocontinent that consisted of what is now Africa, India, South America, Australia, and Antarctica.

**Goniometer head:** A device used to mount crystals and control their orientation at precise angles.

**gonioscopy :** A procedure in which a gonioscope (special lens) is used to look at the front part of the eye between the cornea (the clear layer) and the iris (the colored part of the eye). Gonioscopy checks for blockages in the area where fluid drains out of the eye.

**Gonzalez regimen :** An alternative therapy that is being studied as a treatment for pancreatic cancer. It includes a special diet, nutritional supplements, pancreatic enzymes, and coffee enemas.

**good agricultural practice in the use of pesticides:** Good agricultural practice in the use of pesticide is the officially recommended or authorized usage of pesticides under practical conditions at any stage of production, storage, transport, distribution, and processing of food and other agricultural commodities, bearing in mind the variations in requirements within and between regions and taking into account the minimum quantities necessary to achieve adequate control, the pesticide being applied in such a manner as to leave residues that are the smallest amounts practicable and that are toxicologically acceptable (WHO, 1976).

**Good Clinical Practice :** An international set of guidelines that helps make sure that the results of a clinical trial are reliable and that the patients are protected. Good Clinical Practice covers the way a clinical trial is designed, conducted, performed, monitored, audited, recorded, analyzed, and reported. Also called GCP.

**Goodbelly Probiotic:** (Other name for: Lactobacillus plantarum 299v/Lactobacillus acidophilus/Bifidobacterium lactis probiotic supplement)

**Gorlin syndrome :** A genetic condition that causes unusual facial features and disorders of the skin, bones, nervous system, eyes, and endocrine glands. People with this syndrome have a higher risk of basal cell carcinoma. Also called basal cell nevus syndrome and nevoid basal cell carcinoma syndrome.

**goserelin acetate:** The acetate salt of a synthetic decapeptide analog of luteinizing hormone-releasing hormone (LHRH). Continuous, prolonged administration of goserelin in males results in inhibition of pituitary gonadotropin secretion, leading to a significant decline in testosterone production; in females, prolonged administration results in a decrease in estradiol production. (NCI04) or A drug used to treat prostate cancer and to relieve the symptoms of advanced breast cancer. It is also used to treat problems with the endometrium (lining of the uterus). Goserelin acetate keeps the body from making the hormones luteinizing hormone-releasing hormone (LHRH) and luteinizing hormone (LH). This causes the testicles to stop making testosterone (a male hormone) in men, and the ovaries to stop making estradiol (a form of the hormone estrogen) in women. Goserelin acetate may stop the growth of cancer cells that need testosterone or estrogen to grow. It is a type of LHRH agonist. Also called ZDX and Zoladex.

**gossan:** a rusty, iron-bearing cap; a remnant of a weathered metallic ore deposit at the surface.

**gossypol:** An orally-active polyphenolic aldehyde with potential antineoplastic activity. Derived primarily from unrefined cottonseed oil, gossypol induces cell cycle arrest at the G0/G1 phase, thereby inhibiting DNA replication and inducing apoptosis. This agent also inhibits cell-signaling enzymes, resulting in inhibition of cell growth, and may act as a male contraceptive.

**gossypol** : A substance being studied in the treatment of several types of cancer. It comes from the seed of the cotton plant (Gossypium). It blocks the growth of cells and may kill cancer cells. Gossypol may also act as a male contraceptive (a type of birth control). Also called cottonseed meal toxin.

**gossypol acetic acid** : A substance being studied in the treatment of several types of cancer. It is a form of a chemical taken from the seed of the cotton plant (Gossypium). It blocks the growth of cells and may kill cancer cells. Gossypol acetic acid may also act as a male contraceptive (form of birth control).

**Gouache**: A method of painting with opaque colours that have been ground in water and mixed with a preparation of gum; also any picture painted by this method.

**Gout**: A disease characterized by inflammation of the joints and kidneys due to the precipitation of abnormally high levels of sodium urate, a breakdown product of purines. OR A condition marked by increased levels of uric acid in the blood, joints, and tissue. The buildup of uric acid in the joints and tissues causes arthritis and inflammation.

**gp100**: A tumor-specific antigen used in the development of cancer vaccines. Also called glycoprotein 100.

**gp100 antigen**: A melanoma-associated antigen. When administered in a vaccine formulation, gp100 antigen may stimulate a cytotoxic T cell HLA-A2.1-restricted immune response against tumors that express this antigen, which may result in a reduction in tumor size. Check for active clinical trials using this agent.

**gp100-fowlpox vaccine**: A cancer vaccine comprised of a recombinant fowlpox virus vector encoding the melanoma antigen glycoprotein 100 (gp 100) with potential antineoplastic activity. The expression of gp100 may generate a cellular immune response to melanoma cells; this effect is enhanced by the co-administration of interleukin 2 (IL-2). Check for active clinical trials using this agent.

**gp100:154-162 peptide vaccine**: A peptide consisting of amino acid residues 154 through 162 of the melanoma-melanocyte antigen gp100. Vaccination with gp100:154-162 peptide may enhance tumor-specific T-cell immunity. gp100 antigen is a self-antigen expressed by melanocytes,

pigmented retinal cells, and most melanoma lesions and is recognized via class I and II HLA-restricted mechanisms.

**gp100:209-217(210M) peptide vaccine:** A synthetic peptide cancer vaccine consisting of amino acid residues 209 through 217 of the glycoprotein 100 (gp100) melanoma antigen, with a methionine substitution at position 210 designed to improve immunogenicity. Vaccination with gp100:209-217(210M) peptide may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing gp100.

**gp100:209-217(210M) peptide vaccine:** A synthetic peptide cancer vaccine consisting of amino acid residues 209 through 217 of the glycoprotein 100 (gp100) melanoma antigen, with a methionine substitution at position 210 designed to improve immunogenicity. Vaccination with gp100:209-217(210M) peptide may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing gp100.

**gp100:280-288(288V) peptide vaccine:** A peptide vaccine consisting of the amino acids 280 through 288 of the melanoma antigen glycoprotein 100 (gp100) with potential antineoplastic activity. gp100:280-288(288V) peptide has a valine substitution at amino acid position 288 to improve immunogenicity. Vaccination with gp100:280-288(288V) peptide may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells positive for the gp100 antigen, resulting in decreased tumor growth.

**GP2 peptide/GM-CSF vaccine:** A vaccine containing a HER2/Neu-derived epitope (amino acids 654-662) (GP2), and combined with granulocyte-macrophage colony-stimulating factor (GM-CSF), with potential antineoplastic and immunoadjuvant activity. Upon vaccination, GP2 may activate the immune system to mount a cytotoxic T-lymphocyte (CTL) immune response against HER2/Neu expressing cancer cells. GM-CSF may potentiate a tumor-specific cytotoxic T-lymphocyte (CTL) response against cancer cells expressing the HER2/Neu antigen. HER2/neu, a tumor associated antigen (TAA), is overexpressed in a variety of tumor cell types and is highly immunogenic.

**gp209-2M:** A peptide (short piece of protein) made from the tumor-specific antigen gp100, and used to make vaccines being studied in the

treatment of melanoma.

**gp96 heat shock protein-peptide complex vaccine :** A vaccine made from a patient's tumor cells that may help the body's immune system kill cancer cells. This vaccine is used to treat kidney cancer, a type of brain cancer called glioma, and metastatic melanoma (a type of skin cancer that has spread). It is also being studied in the treatment of other types of cancer. Also called gp96 HSP-peptide complex, Oncophage, and vitespen.

**gp96 HSP-peptide complex :** A vaccine made from a patient's tumor cells that may help the body's immune system kill cancer cells. This vaccine is used to treat kidney cancer, a type of brain cancer called glioma, and metastatic melanoma (a type of skin cancer that has spread). It is also being studied in the treatment of other types of cancer. Also called gp96 heat shock protein-peptide complex vaccine, Oncophage, and vitespen.

**gp96-secreting allogeneic bladder cancer cell vaccine HS-410:** An allogeneic urothelial bladder cancer cell vaccine expressing a recombinant secretory form of the immunoadjuvant heat shock protein gp96 fused with an immunoglobulin Fc domain (gp96-Ig) protein, with potential antineoplastic activity. Upon administration of the gp96-Ig-secreting allogeneic bladder cancer cell vaccine HS-410, the live, irradiated tumor cells continuously secrete gp96-Ig along with its chaperoned tumor associated antigens (TAAs). This enhances antigen cross presentation to cytotoxic T-lymphocytes (CTLs) and, upon expansion, leads to the induction of a potent CTL response against the TAAs on the endogenous bladder cancer cells. This vaccine also induces a memory T cell response that could fight recurring cancer cells. gp96-Ig is constructed by replacing the KDEL endoplasmic reticulum (ER) retention sequence of gp96 with the Fc portion of the IgG1 protein. This allows for gp96, normally an ER-resident chaperone peptide, to be released from cells.

**GPI-0100:** A semi-synthetic triterpene glycoside, derived from the naturally occurring saponins. GPI-0100 functions as an adjuvant when given as part of a vaccine preparation to improve the immunogenicity of antigens such as proteins, carbohydrates. GPI-0100 containing vaccines have been used with both viral and tumor antigens to elicit a Type 1 helper T cell response for those diseases in which a cytotoxic T lymphocyte (CTL) response is desired. Check for active clinical trials using this agent.

**GPX-100:** An analogue of the anthracycline antineoplastic antibiotic doxorubicin. GPX-100 intercalates DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. GPX-100 was designed to be a non-cardiotoxic anthracycline antibiotic.

**GPX-100:** An anticancer drug that belongs to the family of drugs called antitumor antibiotics. It is an anthracycline.

**Graafian follicle:** a cluster of cells within the ovary that is derived from egg cells and secretes female hormones called estrogens.

**grab sample:** a single sample of wastewater taken at neither set time nor flow.

**graben:** a feature formed when a block that is bounded by normal faults slips downward, usually because of a tensional force, creating a valleylike depression.

**Grade:** the designation given to a specific formulation of a given plastic compound. While similar formulations from different suppliers are often interchangeable, some suppliers have unique (and often proprietary) formulations.

**grade :** In cancer, a description of a tumor based on how abnormal the cancer cells and tissue look under a microscope and how quickly the cancer cells are likely to grow and spread. Low-grade cancer cells look more like normal cells and tend to grow and spread more slowly than high-grade cancer cells. Grading systems are different for each type of cancer. They are used to help plan treatment and determine prognosis. Also called histologic grade and tumor grade.

**grade 1 follicular lymphoma :** An indolent (slow-growing) type of non-Hodgkin lymphoma marked by enlarged lymph nodes and small cells that have cleaved (u-shaped) nuclei.

**grade 2 follicular lymphoma :** An indolent (slow-growing) type of non-Hodgkin lymphoma marked by enlarged lymph nodes and a mix of large cells and small cells that have cleaved (u-shaped) nuclei.

**grade 3 follicular lymphoma :** A type of non-Hodgkin lymphoma marked by large cells and enlarged lymph nodes. Grade 3 follicular lymphoma is less common, and more aggressive than grades 1 or 2 follicular lymphoma.

**grade IV astrocytoma :** A fast-growing type of central nervous system tumor that forms from glial (supportive) tissue of the brain and spinal cord and has cells that look very different from normal cells. Grade IV astrocytoma usually occurs in adults and affects the brain more often than the spinal cord. Also called GBM, glioblastoma, and glioblastoma multiforme.

**graded bed:** a bed in which the base consists of coarser material and subsequent beds grade upward through sand and silt to the finest clay sizes at the top.

**graded effect:** An effect that can usually be measured on a graded scale of intensity or severity and its magnitude related directly to the dose (WHO, 1978a).

**graded stream:** a stream that has smoothed out its longitudinal profile to resemble a smooth, concave-upward curve.

**grading :** A system for classifying cancer cells in terms of how abnormal they appear when examined under a microscope. The objective of a grading system is to provide information about the probable growth rate of the tumor and its tendency to spread. The systems used to grade tumors vary with each type of cancer. Grading plays a role in treatment decisions.

**Graffiti:** Graffiti is a very difficult problem to deal with and may require a specialist removal company in the most severe cases. Normal decorative paints are not suitable for painting over graffiti as many felt marker inks and aerosol spray paints tend to bleed through conventional coatings. Take great care when attempting to remove graffiti from unpainted surfaces, especially when the substrate is porous. To avoid permanent damage to the affected area it may be best to seek professional advice.

**graft :** Healthy skin, bone, or other tissue taken from one part of the body and used to replace diseased or injured tissue removed from another part of the body.

**Graft Copolymers:** A chain of one type of polymer to which side chains of a different type are attached or grafted (i.e., polymerizing butadiene and styrene monomer at the same time).

**graft-versus-host disease :** A disease caused when cells from a donated stem cell graft attack the normal tissue of the transplant patient. Symptoms

include jaundice, skin rash or blisters, a dry mouth, or dry eyes. Also called GVHD.

**graft-versus-tumor** : An immune response to a person's tumor cells by immune cells present in a donor's transplanted tissue, such as bone marrow or peripheral blood.

**Graham's law**: The rate of diffusion of a gas is inversely proportional to the square root of its molar mass.

**Grain** : This is a tiny piece of rock. They are usually rounded because they have been greatly weathered.

**Graining**: A method of imitating the grain of wood by the application of semi-transparent coat or coats over a painted groundwork. It should not be confused with 'staining' which is the direct application of a coloured stain or coating direct to bare timber.

**Gralise**: (Other name for: gabapentin)

**gram**: A metric unit of mass, equal to 1/1000 of a kilogram. Kilograms are the base SI units for mass, not grams. OR A gram is metric unit of measure for mass. It is the weight of one milliliter of water at a temperature of 39.2 degrees Fahrenheit. OR The basic unit of mass in the metric system.

**gram** : A unit of weight in the metric system. One gram is equal to one thousandth of a kilogram and is approximately 30-times less than an ounce.

**gram formula**: weight an amount of a substance equal in grams to the sum of the atomic weights.

**Gram molecular weight**: For a given compound, the weight in grams that is numerically equal to its molecular weight. OR The weight in grams of a compound that is numerically equal to its molecular weight; the weight of 1 mole.

**Gram negative**: Bacteria cells which lose the crystal violet during the decolorizing step and are then colored by the counterstain. Pseudomonas and Thiobacillus are examples of gram negative strains.

**Gram positive**: Bacterial cells which retain the crystal violet stain during a staining procedure. Most strains of bacilli are gram positive.

**Gram-mole**: This is a specific measure of mass. The mass of a substance when there is one mole of the substance. For sodium chloride, the formula mass is 58.44. One gram-mole of sodium chloride is 58.44 grams.

**grana:** Stacks of thylakoids, flattened membranous sacs or discs, in chloroplasts.

**granisetron hydrochloride:** The hydrochloride salt of an indazole derivative with antiemetic properties. As a selective serotonin receptor antagonist, granisetron competitively blocks the action of serotonin at 5-hydroxytryptamine<sub>3</sub> (5-HT<sub>3</sub>) receptors, resulting in the suppression of chemotherapy- and radiotherapy-induced nausea and vomiting.

**granisetron hydrochloride :** A drug used to prevent nausea and vomiting caused by chemotherapy and radiation therapy. It is also used to prevent nausea and vomiting after surgery. Granisetron hydrochloride blocks the action of the chemical serotonin, which binds to certain nerves and may trigger nausea and vomiting. Blocking serotonin may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called Kytril.

**granisetron hydrochloride nasal spray:** An intranasal formulation containing the hydrochloride salt form of the indazole derivative granisetron, a selective serotonin (5-hydroxytryptamine; 5-HT) receptor antagonist, with antinauseant and antiemetic activities. Upon administration to the nostril, granisetron selectively binds to and inhibits 5-HT subtype 3 receptors (5-HT<sub>3</sub>R) located peripherally on vagus nerve terminals and centrally in the chemoreceptor trigger zone (CTZ) of the area postrema, which may result in suppression of chemotherapy-induced nausea and vomiting (CINV).

**granisetron transdermal system:** A transdermal system containing the selective serotonin (5-HT) receptor antagonist granisetron with antinauseant and antiemetic activities. Upon application of the transdermal system (patch) to the skin and the subsequent sustained release of granisetron into the bloodstream, granisetron selectively binds to and inhibits 5-HT subtype 3 (5-HT<sub>3</sub>) receptors located peripherally on vagus nerve terminals and centrally in the chemoreceptor trigger zone (CTZ) of the area postrema, which may result in suppression of chemotherapy-induced nausea and vomiting. Check for active clinical trials using this agent.

**Granite :** This is an igneous rock that has large crystals. It has formed slowly as the molten rock (magma) cooled inside other rock. Compare it with basalt.

**Granocyte:** (Other name for: lenograstim)

**granular leukocyte :** A type of immune cell that has granules (small particles) with enzymes that are released during infections, allergic reactions, and asthma. Neutrophils, eosinophils, and basophils are granular leukocytes. A granular leukocyte is a type of white blood cell. Also called granulocyte, PMN, and polymorphonuclear leukocyte.

**Granular Structure:** Non-uniform appearance of finished plastic material due to retention of, or incomplete fusion of, particles of composition, either within the mass or on the surface.

**Granulator:** A machine designed to grind up rejected pre-molded plastic (products or runners)The material generated by this process is called regrind.

**granule:** one of the individual cells that make up the photosphere of the sun.

**granulocyte :** A type of immune cell that has granules (small particles) with enzymes that are released during infections, allergic reactions, and asthma. Neutrophils, eosinophils, and basophils are granulocytes. A granulocyte is a type of white blood cell. Also called granular leukocyte, PMN, and polymorphonuclear leukocyte.

**granulocyte colony-stimulating factor :** A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. It is also used to treat chronic neutropenia and to prepare the blood for the collection of certain types of blood cells. Granulocyte colony-stimulating factor is also used to help prevent damage to the bone marrow in patients who were exposed to very high doses of certain types of radiation. Granulocyte colony-stimulating factor helps the body make more white blood cells. It is a type of colony-stimulating factor. Also called filgrastim, G-CSF, Neupogen, and Zarxio.

**granulocyte-macrophage colony-stimulating factor :** A substance that helps make more white blood cells, especially granulocytes, macrophages, and cells that become platelets. It is a cytokine that is a type of hematopoietic (blood-forming) agent. Also called GM-CSF and sargramostim.

**granulocytic sarcoma :** A malignant, green-colored tumor of myeloid cells (a type of immature white blood cell). This tumor is usually associated

with myelogenous leukemia. Also called chloroma.

**granulocytopenia** : A condition in which there is a lower-than-normal number of granulocytes (a type of white blood cell).

**granulosa cell tumor** : A type of slow-growing, malignant tumor that usually affects the ovary.

**Granum**: Proteolytic enzymes secreted by activated T cells into target cells to initiate apoptosis.

**graphical model**: a graph showing relationships.

**graphite**: The most stable allotrope, or form of carbon, having a hexagonal type linking of atoms with relatively strong bonds to 3 neighboring carbon atoms, and a much weaker bond to a fourth carbon atom. OR A form of carbon, similar to that used in pencils, used as a moderator in some nuclear reactors. OR An amorphous form of carbon, made of carbon atoms bound hexagonally in sheets (like chickenwire).

**Gravitation**: A process used to separate compounds that have different densities. When river water is thoroughly mixed, sand will settle on the bottom of a glass before the silt. Sand settles first because it has a greater density.

**gravity meter**: a device that measures the force of gravity between a mass inside the instrument and the earth.

**Gray (Gy)**: One of the two units used to measure the amount of radiation absorbed by an object or person, known as the "absorbed dose," which reflects the amount of energy that radioactive sources (with any type of ionizing radiation) deposit in materials (e.g., water, tissue, air) through which they pass. One gray (Gy) is the international system of units (SI) equivalent of 100 rads, which is equal to an absorbed dose of 1 Joule/kilogram. An absorbed dose of 0.01 Gy means that 1 gram of material absorbed 100 ergs of energy (a small but measurable amount) as a result of exposure to radiation. For additional information, see Doses in Our Daily Lives and Measuring Radiation.

**gray elm** : The inner bark of this plant has been used in some cultures to treat certain medical problems. It may have antioxidant effects. Also called Indian elm, red elm, slippery elm, sweet elm, *Ulmus fulva*, and *Ulmus rubra*.

**Green chemistry:** A chemical philosophy, also called sustainable chemistry, that encourages the design of products and processes that reduce or eliminate the use and generation of hazardous substances

**Green fluorescent protein:** A protein isolated from the jelly fish *Aequorea victoria* that fluoresces. Because the protein can be attached to other proteins by genetic engineering techniques, it provides a means of localizing proteins in cells.

**Green Manufacturing:** A method of product development and manufacturing that is seen to be minimally-invasive for the environment and the associated ecosystem.

**green tea:** Tea derived from the dried leaves of the plant *Camellia sinensis* with potential antioxidant, chemopreventive, and lipid-lowering activities. Green tea contains polyphenols that may be responsible for its chemopreventive effect. The polyphenol fraction contains mainly epigallocatechin-3-gallate (EGCG) and other catechins, such as epicatechin (EC), gallic acid (GCG), epigallocatechin (EGC), and epicatechin gallate (ECG). Green tea polyphenols act as antioxidants and free radical scavengers and may affect enzymes involved in cellular replication and tumor angiogenesis by modulating angiogenic factors, such as vascular endothelial growth factor (VEGF).

**green tea extract:** A defined, decaffeinated green tea polyphenol mixture isolated from *Camellia sinensis*, a plant native to Asia, with antiviral and antioxidant activities and potential chemopreventive activity. Green tea extract contains antioxidant compounds, including flavonoids, vitamins and polyphenols such as epigallocatechin-3-gallate (EGCG), which may have antineoplastic properties. Consumption of green tea extract may confer chemopreventive protection against various cancers including those of the prostate, stomach, and esophagus.

**green tea extract :** A mixture that is prepared from the leaves of the *Camellia sinensis* plant. It contains substances called flavonoids and polyphenols, which are antioxidants. Antioxidants help protect cells from damage caused by certain chemicals that may increase the risk of cancer and other diseases. Green tea extract may be taken to treat certain conditions. It is also being studied in the prevention of cancer and other diseases.

**green tea extract-based antioxidant supplement:** A dietary supplement containing a green tea extract including the catechin epigallocatechin gallate and other vitamins and antioxidants, with potential antineoplastic and chemopreventive activities. The polyphenols in green tea act as antioxidants and scavenge free radicals which may inhibit cellular oxidation and prevent free radical damage to cells. In addition, polyphenols may affect enzymes involved in cellular reproduction and tumor angiogenesis by modulating angiogenic factors. Other ingredients in green tea extract-based antioxidant supplement include dry cinnamon extract, germanium, zinc sulfate, manganese sulfate, arginine, cysteine, malic acid, ascorbic acid (vitamin c), glycyrrhizinic acid, glycine, glucosamine, pyridoxal (vitamin B6), calcium pantothenate (vitamin B5), folic acid, cyanocobalamin (vitamin B12).

**green tea lozenge:** A lozenge formulation of green tea, derived from the dried leaves of *Camellia sinensis*, with potential antioxidant and chemopreventive activities. Green tea lozenge contains polyphenols that may be responsible for its chemopreventive effect. The polyphenol fraction contains mainly epigallocatechin-3-gallate (EGCG) and other catechins, such as epicatechin (EC), gallic acid (GCG), epigallocatechin (EGC), and epicatechin gallate (ECG). Green tea polyphenols act as antioxidants and free radical scavengers, protecting cells from the damaging effects of reactive oxygen species (ROS). Check for active clinical trials using this agent.

**Greene Menopause Index :** A tool used by researchers to study the symptoms of menopause. It is a standard list of 21 questions which women use to rate how much they are bothered by menopause symptoms such as hot flashes, night sweats, rapid heartbeat, and difficulty sleeping.

**greenhouse effect:** incoming (shortwave) energy is reradiated as heat energy (longwave) and trapped by the greenhouse gases in the atmosphere; causes global warming. OR A popular term used to describe the roles of water vapor, carbon dioxide, and other trace gases in keeping the Earth's surface warmer than it would be otherwise. These " radiatively active " gases are relatively transparent to incoming shortwave radiation, but are relatively opaque to outgoing longwave radiation. The latter radiation, which would otherwise escape to space, is trapped by these gases within the lower levels of the atmosphere. The subsequent reradiation of some of the

energy back to the surface maintains surface temperatures higher than they would be if the gases were absent. There is concern that increasing concentrations of greenhouse gases, including carbon dioxide, methane, and manmade chlorofluorocarbons, may enhance the greenhouse effect and cause global warming.

**Greenhouse effect and greenhouse gas** : The Sun's energy is trapped by the Earth's atmosphere. It is said to be a contributor to global warming. Many gases can cause global warming but carbon dioxide and methane are the most talked about. If people use a lot of energy that has been provided by burning fuels, they are responsible for releasing large amounts of carbon dioxide into the atmosphere. In recent years, the term "carbon footprint" has been used to try to help people understand that we all have a share in this problem.

**greenhouse gas:** A greenhouse gas is a gas, such as carbon dioxide, in the Earth's atmosphere that absorbs infrared radiation and contributes to global warming. OR a gas produced from burn fossil fuels, which hold and trap heat energy; carbon dioxide is an example. OR A gas that raises the temperature of the earth's atmosphere by absorbing part of the long-wave radiation reflected back from the earth's surface. Carbon dioxide is an example

**greenhouse gases:** Those gases, such as water vapor, carbon dioxide, tropospheric ozone, nitrous oxide, and methane, that are transparent to solar radiation but opaque to longwave radiation. Their action is similar to that of glass in a greenhouse. Also see greenhouse effect and trace gas.

**Greenland Ice Sheet:** See ice sheet.

**grenz:** A soil horizon, which is frequently marked by a bed of clay, that results from a temporary halt in the accumulation of vegetal material.

**Grid:** See Electric Power Grid.

**grief** : The normal response to a major loss, such as the death of a loved one. Grief may also be felt by a person with a serious, long-term illness or with a terminal illness. It may include feelings of great sadness, anger, guilt, and despair. Physical problems, such as not being able to sleep and changes in appetite, may also be part of grief.

**grief counseling** : The process by which a trained counselor or a support group helps a person work through normal feelings of sorrow after a loss,

such as the death of a loved one.

**grief therapy :** Treatment that helps a person work through a greater than normal reaction to a loss, such as the death of a loved one. This reaction may include behavioral and physical problems, extreme mourning, and being unable to separate emotionally from the person who died. Grief therapy may be individual or group therapy.

**Grignard reagent:** an organometallic reagent in which magnesium metal inserts between an alkyl group and a halogen; for example,  $\text{CH}_3\text{MgBr}$ .

**Grinning:** When a paint does not completely obliterate the under-surface the latter is said to be 'grinning through'. OR When an under-surface shows through a painted surface, it is said to be 'grinning through'. This can happen when a paint fails to completely cover the under-surface, or when an incorrect undercoat has been used for a gloss system. To correct the grinning, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants, rub down with a suitable abrasive, dust off and repaint.

**Grit:** The heavy material present in wastewater, such as sand coffee grounds, eggshells, gravel and cinders.

**Grit Blasted:** A surface treatment of a mold in which steel grit or sand materials are blown to the walls of the cavity to produce a roughened surface. Air escape from mold is improved and special appearance of molded article is often obtained by this method.

**groin:** one of a series of walls built perpendicular to the coast to widen beaches that are losing sand to longshore drift.

**groin :** The area where the thigh meets the abdomen.

**GROOVED (BARREL) EXTRUDERS:** The forward conveying action of a single-screw extruder can be increased by intentionally roughening the barrel surface (grooves) in the solids-conveying zone. Grooved extruders can produce rapid pressure rise, which can sometimes be high enough to damage the screw or barrel. Grooved extruders produce higher throughputs, but they might be susceptible to output instabilities and surging problems.

**gross error:** Gross errors are undetected mistakes that cause a measurement to be very much farther from the mean measurement than other measurements.

**gross primary production:** The total amount or weight of organic matter created by photosynthesis over a defined time period (total product of photosynthesis). Abbreviated GPP.

**Ground:** A general term for a surface suitable for painting; also used for an undercoat particularly an undercoat for graining or glazing.

**ground cover:** Plants grown to keep soil from eroding.

**ground fog:** fog formed by radiational cooling.

**ground moraine:** a thin, widespread layer of till deposited across the surface as an ice sheet melts.

**ground state:** the electronic configuration of lowest energy for an atom. OR the most stable electron configuration for an atom; this configuration has the least energy associated with it. OR The lowest electronic energy state of an atom or a molecule. OR The lowest energy state for an atom or molecule. When an atom is in its ground state, its electrons fill the lowest energy orbitals completely before they begin to occupy higher energy orbitals, and they fill subshells in accordance with Hund's rule (usually!) OR The normal, stable form of an atom or molecule; as distinct from the excited state.

**ground tissue:** the tissue of the vascular plant that is responsible for storing the carbohydrates produced by the plant.

**ground wire:** a conductor leading from electrical equipment to a low resistance connection with the earth.

**grounding line:** The boundary between the area where an ice shelf or a glacier is floating on water and where it is in contact with the shore or underlying earth (grounded).

**groundwater:** water derived from rain and melting snow that percolates downward from the surface and collects in the open pore spaces between soil particles or in cracks and fissures in bedrock.

**groundwater:** The supply of fresh water found beneath the surface of the Earth (usually in aquifers) that often supplies wells and springs.

**group:** a family of elements with similar chemical properties, represented by a vertical column in the periodic table. OR A vertical column in the periodic table. OR On the periodic table, the columns are called groups. Elements are arranged in groups by the number of electrons that are in the outside shell. The elements of each group have the same number of

electrons in their outer shells. OR Groups are the vertical columns in the Periodic Table, consisting of elements with similar properties (chemical 'families'). OR a column of elements in the periodic table. OR 1. A substructure that imparts characteristic chemical behaviors to a molecule, for example, a carboxylic acid group. (also: functional group). 2. A vertical column on the periodic table, for example, the halogens. Elements that belong to the same group usually show chemical similarities, although the element at the top of the group is usually atypical.

**group transfer potential:** A measure of the ability of a compound to donate an activated group (such as a phosphate or acyl group); generally expressed as the standard free energy of hydrolysis.

**Group-transfer reaction:** A reaction in which a chemical group is transferred from one molecule to another.

**grouping symbols:** Usually parentheses, but grouping is also indicated by brackets and braces.

**Grout:** Thin fluid mortar or cement mixture for filling joints or interstices or for bonding loose rubble.

**growth and development milestones :** Goals for the expected sizes of infants and children and activities they should be able to do at specific ages, such as sit, stand, play, speak, think, and interact with others.

**Growth factor:** A substance that must be present in the growth medium to permit eucaryotic cell proliferation. OR A substance made by the body that functions to regulate cell division and cell survival. Some growth factors are also produced in the laboratory and used in biological therapy.

**Growth fork:** The region on a DNA duplex molecule where synthesis is taking place. It resembles a fork in shape, since it consists of a region of duplex DNA connected to a region of unwound single strands.

**growth hormone :** A protein made by the pituitary gland that helps control body growth and the use of glucose and fat in the body. Also called somatotropin.

**growth water-use efficiency:** A measure at the individual plant level of how well plants use available water in growth. The units of dry matter synthesized are divided by the units of water lost.

**GRP:** Glass reinforced plastic.

**GS-pan Notch inhibitor BMS-986115:** An orally bioavailable, gamma secretase (GS) and pan-Notch inhibitor, with potential antineoplastic activity. Upon administration, GS/pan-Notch inhibitor BMS 986115 binds to GS and blocks the proteolytic cleavage and release of the Notch intracellular domain (NICD), which would normally follow ligand binding to the extracellular domain of the Notch receptor. This prevents both the subsequent translocation of NICD to the nucleus to form a transcription factor complex and the expression of Notch-regulated genes. This results in the induction of apoptosis and the inhibition of growth of tumor cells that overexpress Notch. Overexpression of the Notch signaling pathway plays an important role in tumor cell proliferation and survival. The integral membrane protein GS is a multi-subunit protease complex that cleaves single-pass transmembrane proteins, such as Notch receptors, at residues within their transmembrane domains and leads to their activation.

**GS/pan-Notch inhibitor BMS-906024:** An orally bioavailable, small-molecule gamma secretase (GS) and pan-Notch inhibitor, with potential antineoplastic activity. Upon administration, GS/pan-Notch inhibitor BMS-906024 binds to GS and blocks activation of Notch receptors, which may inhibit the proliferation of tumor cells with an overly-active Notch pathway. The integral membrane protein GS is a multi-subunit protease complex that cleaves single-pass transmembrane proteins, such as Notch receptors, at residues within their transmembrane domains that lead to their activation. Overexpression of the Notch signaling pathway has been correlated with increased tumor cell growth. Check for active clinical trials using this agent.

**GSD:** A type of inherited disorder in which there are problems with how a form of glucose (sugar) called glycogen is stored and used in the body. Certain enzymes that help make or break down glycogen are missing or do not work the way they should. This causes abnormal amounts or types of glycogen in the tissues, especially in the liver and in muscle tissue. There are many types of GSD, which can cause problems in different parts of the body, including the liver, muscles, kidneys, and heart. Also called glycogen storage disease.

**GSK1070916A:** A substance being studied in the treatment of some types of cancer. It blocks certain enzymes (Aurora kinases) involved in cell division and may kill cancer cells. It is a type of serine/threonine protein kinase inhibitor. Also called Aurora B/C kinase inhibitor GSK1070916A.

**GTD:** A rare condition in which abnormal cells grow inside the uterus from tissue that forms after conception (the joining of sperm and egg). This tissue is made of trophoblastic cells, which normally surround the fertilized egg in the uterus and help connect the fertilized egg to the wall of the uterus. These cells also form part of the placenta (the organ that passes nutrients from the mother to the fetus). Most GTDs are benign (not cancer) and do not spread, but some types are malignant (cancer) and spread to nearby tissues or other parts of the body. The two main types of GTDs are hydatidiform mole and choriocarcinoma. Also called gestational trophoblastic disease, gestational trophoblastic tumor, and GTT.

**GTI-2040:** A 20-mer antisense oligonucleotide complementary to a coding region in the mRNA of the R2 small subunit component of human ribonucleotide reductase. GTI-2040 decreases mRNA and protein levels of R2 in vitro and may inhibit tumor cell proliferation in human tumors in vivo. or A substance being studied in the treatment of cancer. It blocks the production of a protein called ribonucleotide reductase, which helps cells make DNA. This may kill cancer cells that need ribonucleotide reductase to grow. It may also make cells more sensitive to anticancer drugs. It is a type of antisense oligonucleotide, and a type of ribonucleotide reductase inhibitor.

**GTN transdermal patch:** (Other name for: nitroglycerin transdermal patch)

**GTO:** Gaussian-type orbital. Basis function consisting of a Gaussian function, i.e.,  $\exp(-r^2)$ , multiplied by an angular function. If the angular function is "cartesian", there are six d-functions, ten f-functions, etc. (6d, 10f). If the angular function is spherical, there will be the usual number of functions (5d, 7f).

**GTT:** A rare condition in which abnormal cells grow inside the uterus from tissue that forms after conception (the joining of sperm and egg). This tissue is made of trophoblastic cells, which normally surround the fertilized egg in the uterus and help connect the fertilized egg to the wall of the uterus. These cells also form part of the placenta (the organ that passes nutrients from the mother to the fetus). Most GTTs are benign (not cancer) and do not spread, but some types are malignant (cancer) and spread to nearby tissues or other parts of the body. The two main types of GTTs are

hydatidiform mole and choriocarcinoma. Also called gestational trophoblastic disease, gestational trophoblastic tumor, and GTD.

**guadecitabine:** A dinucleotide antimetabolite of a decitabine linked via phosphodiester bond to a guanosine, with potential antineoplastic activity. Following metabolic activation by phosphorylation and incorporation into DNA, guadecitabine inhibits DNA methyltransferase, thereby causing genome-wide and non-specific hypomethylation and inducing cell cycle arrest at S-phase. This agent is resistant to cytidine deaminase, hence may result in gradual release of decitabine both extra- and intracellularly, leading to more prolonged exposures to decitabine.

**guaiac :** A substance from a type of tree called Guaiacum that grows in the Caribbean. Guaiac is used in the fecal occult blood test (a test for blood in human stool samples).

**guaiac fecal occult blood test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards coated with a chemical substance called guaiac and sent to a doctor or laboratory for testing. A testing solution is put on the cards and the guaiac causes the stool sample to change color. If there is blood in the stool, the color changes very quickly. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called gFOBT, guaiac smear test, and stool guaiac test.

**guaiac smear test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards coated with a chemical substance called guaiac and sent to a doctor or laboratory for testing. A testing solution is put on the cards and the guaiac causes the stool sample to change color. If there is blood in the stool, the color changes very quickly. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called gFOBT, guaiac fecal occult blood test, and stool guaiac test.

**guanabenz acetate:** The orally bioavailable, acetate salt form of guanabenz, a centrally-acting alpha-2 adrenergic receptor agonist, with anti-hypertensive and potential antineoplastic, cytoprotective and bone resorption inhibitory activities. Upon oral administration, guanabenz suppresses endoplasmic reticulum (ER) stress by inhibiting the stress-induced dephosphorylation of eukaryotic translation initiation factor 2 alpha (eIF2a), thereby enhancing the phosphorylation level of eIF2a. This causes

eIF2a-mediated downregulation of the Rac1 pathway, upregulates the expression of activating transcription factor 4 (ATF4), which plays a key role in osteoblastogenesis, and downregulates the expression of nuclear factor of activated T-cells, cytoplasmic 1 (NFATc1), which is a transcription factor that plays a key role in osteoclastogenesis. This enhances osteoblastogenesis and suppresses osteoclastogenesis. Altogether, this promotes new bone formation and prevents bone degradation. In addition, guanabenz blocks the proliferation, survival, motility and invasiveness of tumor cells through the eIF2a-mediated downregulation of Rac1 signaling. Rac1, a Ras-related small GTPase belonging to the Rho family, plays a key role in tumor cell proliferation, survival and motility.

**guanazole:** A cytostatic triazole derivative antimetabolite. Guanazole scavenges tyrosine free radicals, thereby inhibiting mammalian ribonucleotide reductase activity and DNA synthesis.

**Guanine:** A purine base found in DNA or RNA. OR A chemical compound that is used to make one of the building blocks of DNA and RNA. It is a type of purine.

**Guanosine:** A purine nucleoside found in DNA and RNA.

**Guanylate cyclase:** An enzyme that catalyzes the synthesis of cgmp, a second messenger, from GTP.

**guarana supplement:** An herbal supplement containing an extract from guarana (*Paullinia cupana*), a climbing plant of the Sapindaceae family which is native to the Amazon basin, with stimulant, antioxidant and potential chemoprotective activities. Guarana supplement contains various phytochemicals, including caffeine, theobromine, theophylline, tannins, saponins, catechins, epicatechins, proanthocyanidols and other compounds in minor concentrations. Caffeine is a central nervous system stimulant and may reduce chemotherapy-related fatigue. Tannins and other polyphenols may have chemopreventive activity. Intake of the guarana supplement may prevent cancer-related anorexia. In addition, animal studies have demonstrated that the ingestion of guarana resulted in decreased proliferation and increased apoptosis of tumor cells.

**Guard Edge Plate :** Plates assembled between links and mesh to prevent product from falling off belt. Guard edge plates are tack welded to links as needed to secure position.

**guggulsterone:** also called guggul (or guggal) or guggul lipid; is an extract from the Commiphora mukul tree of India

**GUIDE PINS:** Devices that maintain proper alignment of core and cavity as mold closes. Also called "Leader Pins." OR Devices that maintain proper alignment of force plug and cavity as mold closes.

**guided imagery :** A technique in which a person focuses on positive images in his or her mind. It can help people reach a relaxed, focused state and help reduce stress and give a sense of well-being. Also called imagery.

**guideline level:** A guideline level is the maximum concentration of a pesticide residue that might occur after the officially recommended or authorized use of a pesticide for which no acceptable daily intake or temporary acceptable daily intake is established and that need not to be exceeded if good practices are followed. It is expressed in milligrams for the residue per kilogram of food (WHO, 1976).

**guides to air quality:** Sets of concentrations and exposure times that are associated with specific effects of varying degrees of air pollution on man, animals, vegetation, and on the environment in general (WHO, 1979).

**guides to environmental quality:** Sets of levels and exposure times that are associated with the specific effects of varying levels of environmental factors on man, animals, vegetation, and the environment in general (WHO, 1979).

**guinea pig maximization test:** This is a skin test for screening possible contact allergens. It is considered to be a useful model for predicting moderate and strong sensitizers in humans.

**Gulf Stream meander:** A transient winding bend in the Gulf Stream. These bends intensify as the Gulf Stream merges into the North Atlantic and can break up into detached eddies at about 40 degrees S.

**Gum:** An amorphous substance or mixture which, at ordinary temperatures, is either a very viscous liquid or a solid which softens gradually on heating, and which either swells in water or is soluble in it. Natural gums, obtained from the cell walls of plants, are carbohydrates or carbohydrate derivatives of intermediate molecular weight.

**gums :** The tissue of the upper and lower jaws that surrounds the base of the teeth. Also called gingiva.

**gusperimus:** A derivative of the antitumor antibiotic spergualin with immunosuppressant activity. Gusperimus inhibits the interleukin-2-stimulated maturation of T cells to the S and G2/M phases and the polarization of the T cells into IFN-gamma-secreting Th1 effector T cells, resulting in the inhibition of growth of activated naive CD4 T cells; this agent may suppress growth of certain T-cell leukemia cell lines.

**Gusset:** A tuck placed in each side of a tube of blown tubing as produced to provide a convenient square or rectangular package, similar to that of the familiar brown paper bag or sack, in subsequent packaging. OR a tuck placed in each side of a tube of blown tubing as produced to provide a convenient square or rectangular package, similar to that of the familiar brown paper bag or sack, in subsequent packaging. OR Gussets are indented folds on the sides or bottom of a poly bag that allow the bag to expand up to the limits of the fold in order to comfortably accommodate variable volume or shaped contents. Gusseted bags are designated in three dimension measurements; Side Seal =  $W \times \text{Gusset} \times \text{Length}$ ; Bottom Gusset =  $W \times L + BG$ . OR The inward fold in the sides of bags which reduce the width of the bag and allow the bags to assume a rectangular form when opened.

**Gustation:** The sense of taste.

**Gustducin:** An  $\alpha$  subunit of a G protein that is primarily expressed in taste buds and is associated with 7TM bitter and sweet receptors.

**gut flora :** Bacteria and other organisms that live inside the intestines. They help digest food. Vitamins such as biotin and vitamin K are made by gut flora. Also called gut microflora, intestinal flora, intestinal microflora, and microflora.

**gut microflora :** Bacteria and other organisms that live inside the intestines. They help digest food. Vitamins such as biotin and vitamin K are made by gut microflora. Also called gut flora, intestinal flora, intestinal microflora, and microflora.

**gutka :** A type of smokeless tobacco that is made in India and is widely used throughout Asia. It is a mixture of tobacco, crushed areca nut (also called betel nut), spices, and other ingredients. It is used like chewing tobacco and is placed in the mouth, usually between the gum and cheek. Gutka contains nicotine and many harmful, cancer-causing chemicals.

Using it can lead to nicotine addiction and can cause cancers of the lip, mouth, tongue, throat, and esophagus. Also called betel quid with tobacco.

**Gutta-percha:** While natural rubber from the rubber tree *Hevea brasiliensis* is cis-poly(isoprene), the Malaysian sapodilla tree *Palaquium oblongifolia* produces a latex that is trans-poly(isoprene). This material is called gutta-percha and is more brittle and hard than natural rubber.

**guyot:** a submerged, flat-topped seamount that was once above sea level and was eroded flat by continual wave action. OR flat-topped seamount, eroded by ocean waves while exposed.

**GVAX lung cancer vaccine:** An autologous lung cancer vaccine consisting of patient-specific lung cancer cells genetically modified to secrete granulocyte-macrophage colony stimulating factor (GM-CSF), an immunostimulatory cytokine. GM-CSF modulates the proliferation and differentiation of a variety of hematopoietic progenitor cells with some specificity towards stimulation of leukocyte production and may reverse treatment-induced neutropenias. This agent also promotes antigen presentation, up-regulates antibody-dependent cellular cytotoxicity (ADCC), and increases interleukin-2-mediated lymphokine-activated killer cell function and may augment host antitumoral immunity. For safety, cells are irradiated prior to vaccination.

**GVAX pancreatic cancer vaccine:** A whole cell vaccine expressing human granulocyte macrophage-colony stimulating factor (GM-CSF) with potential antineoplastic activity. Tumor cells from prostate cancer patients are harvested and then genetically modified to secrete GM-CSF, an immune stimulatory growth factor that plays a key role in stimulating the body's immune responses against tumor cells. Because the vaccine is derived from allogeneic cells, it has demonstrated a favorable side effect profile than other approaches of delivering long-lasting GM-CSF.

**GVB:** Generalized valence bond. A limited type of MCSCF, in which excitations are taken within an electron pair but not between orbitals in different pairs. Dissociation-consistent. If restricted to doubles, is called "perfect pairing" (GVB-PP). If includes both singles and doubles, is called "restricted configuration interaction" (GVB-RCI).

**GVHD:** A disease caused when cells from a donated stem cell graft attack the normal tissue of the transplant patient. Symptoms include jaundice, skin

rash or blisters, a dry mouth, or dry eyes. Also called graft-versus-host disease.

**GW572016:** A drug used with another anticancer drug to treat breast cancer that is HER2 positive and has advanced or metastasized (spread to other parts of the body) after treatment with other drugs. GW572016 is also being studied in the treatment of other types of cancer. It is a type of ErbB-2 and EGFR dual tyrosine kinase inhibitor. Also called lapatinib, lapatinib ditosylate, and Tykerb.

**GW786034:** A drug used to treat advanced renal cell carcinoma, which is the most common type of kidney cancer. It is also used to treat advanced soft tissue sarcoma that has been treated with other anticancer drugs. It is being studied in the treatment of other types of cancer. GW786034 may prevent the growth of new blood vessels that tumors need to grow. It is a type of protein tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called pazopanib hydrochloride and Votrient.

**GWAS :** A GWAS (genome-wide association study) is a way for scientists to identify inherited genetic variants associated with risk of disease or a particular trait. This method surveys the entire genome for genetic polymorphisms, typically single nucleotide polymorphisms (SNPs) (pronounced “snips”), that occur more frequently in cases (people with the disease or trait being assessed) than in controls (people without the disease or trait). Also called genome-wide association study. or A study that compares DNA markers across the genome (the complete genetic material in a person) in people with a disease or trait to people without the disease or trait. These studies may uncover clues to help prevent, diagnose, and treat disease. Also called genome-wide association study.

**gymnosperms:** vascular plants having naked seeds, such as the conifers.

**Gyne-Lotrimin:** (Other name for: clotrimazole)

**gynecologic :** Having to do with the female reproductive tract (including the cervix, endometrium, fallopian tubes, ovaries, uterus, and vagina).

**gynecologic cancer :** Cancer of the female reproductive tract, including the cervix, endometrium, fallopian tubes, ovaries, uterus, and vagina.

**gynecologic oncologist :** A doctor who has special training in diagnosing and treating cancers of the female reproductive organs.

**gynecologist** : A doctor who has special training in diagnosing and treating diseases of the female reproductive organs.

**gynecomastia** : The abnormal growth of breast gland tissue in males. Gynecomastia in infants and boys may be caused by an imbalance in certain hormones. It may also be caused by conditions that affect hormones, such as tumors; malnutrition; kidney, liver, or thyroid disease; or treatment with certain drugs. It can occur at any age.

**Gypsum**: A hydrous crystalline calcium sulphate used as an extender pigment in some paints and in special cement paints and is the basis of some wall plasters.

**gyres**: Major circular flow patterns in the oceans. The wind- driven eastward- and westward-flowing equatorial currents are blocked by the continents and rotate slowly in a clockwise direction in the North Atlantic and Pacific Oceans and in a counter- clockwise direction in the South Atlantic, South Pacific, and Indian Oceans.

**H-ras gene** : A gene that may cause cancer when it is mutated (changed). The H-ras gene makes the HRAS protein, which is involved in cell signaling pathways, cell growth, and apoptosis (cell death). Agents that block the actions of the mutated H-ras gene or its protein in cancer cells may stop the growth of cancer. Also called Hras gene.

**H. pylori** : A type of bacterium that causes inflammation and ulcers in the stomach or small intestine. People with H. pylori infections may be more likely to develop cancer in the stomach, including MALT (mucosa-associated lymphoid tissue) lymphoma. Also called Helicobacter pylori.

**H1299 tumor cell lysate vaccine**: A cell lysate derived from a lung cancer cell line, H1299, with potential immunostimulatory and antineoplastic activities. Upon intramuscular administration, the H1299 tumor cell lysate exposes the immune system to an undefined amount of tumor associated antigens (TAA), particularly cancer testis antigens (CTAs), which may result in the induction of both anti-tumoral cytotoxic T-lymphocytes (CTL) and antibody-dependent responses against TAA-expressing cells, leading to tumor cell lysis. CTAs, such as MAGE, are selectively expressed in a variety of cancers but are not expressed in normal, healthy cells outside the testis.

**hA20**: A substance being studied in the treatment of several types of lymphoma. It binds to the protein CD20, which is found on B cells (a type

of immune system cell) and some types of lymphoma cells. This causes the immune system to kill the cancer cells. hA20 is a type of monoclonal antibody. Also called HCD20, IMMU-106, and veltuzumab.

**HAART :** Treatment that uses a combination of three or more drugs to treat HIV infection. HAART stops the virus from making copies of itself in the body. This may lessen the damage to the immune system caused by HIV and may slow down the development of AIDS. It may also help prevent transmission of HIV to others, including from mother to child during birth. Also called cART, combination antiretroviral therapy, and highly active antiretroviral therapy.

**Habit:** See Crystal habit.

**haceous deposits:** sandy, gritty, nodular masses of urate crystals typical in patients with gout

**Hadley cell:** A direct thermally-driven and zonally symmetric large-scale atmospheric circulation first proposed by George Hadley in 1735 as an explanation for the trade winds. It carries momentum, sensible heat, and potential heat from the tropics to the mid-latitudes (30 degrees). The poleward transport aloft is complemented by subsidence in the subtropical high pressure ridge and a surface return flow. The variability of this cell and the Walker cell is hypothesized to be a major factor in short-term climatic change.

**Haelan 951:** (Other name for: fermented soybean protein beverage)

**haematite:** Haematite is a mineral composed of iron (III) oxide. It is the major ore of iron.

**Haemophilus influenzae b vaccine:** A vaccine against serotype b of the Gram-negative bacterium *H. influenzae* (Hib). Hib vaccines contain polysaccharide-protein conjugate antigens that produce greater host immune responses than first-generation purified polysaccharide vaccine. These vaccines may differ with regard to use of protein carriers, polysaccharides, diluents, and preservatives.

**Hafnium:** Symbol:"Hf" Atomic Number:"72" Atomic Mass: 178.49amu. Hafnium is one of the transition elements. Hafnium is often found with zirconium. This silvery metal has been put to use in nuclear reactor control rods and in many alloys.

**hafnium oxide-containing nanoparticles NBTXR3:** A suspension of nanoparticles containing inert inorganic hafnium oxide (HfO<sub>2</sub>) crystals with potential antineoplastic activity. Upon injection of NBTXR3 into the tumor, the hafnium oxide-containing nanoparticles accumulate in the tumor cells. Subsequent application of radiation beams to the tumor tissue causes HfO<sub>2</sub> particles to emit huge amounts of electrons. This results in the formation of free radicals within the tumor cells, which in turn causes targeted destruction of the cancer cells. Compared to standard radiotherapy, because of the inert nature of NBTXR3, this agent emits electrons only during its exposure to radiation which improves radiotherapy efficiency.

**hail:** layers of ice formed in a large thunderstorm cloud that fall to Earth.

**Hair cells:** Specialized neurons inside the cochlea of the inner ear; hair cells use a connected bundle of stereocilia to detect motion and initiate the hearing signal-transduction pathway.

**Hair cracks:** This usually refers to very fine cracks which occur in plaster or cement rendered walls and which are often not seen until the surface is being painted. These cracks are too fine to 'fill' and the only remedy is to apply lining paper. On external walls the use of an aggregate type coating will often give satisfactory results.

**hair follicle :** A shaft or opening on the surface of the skin through which hair grows.

**Hairpin loop:** A single-stranded complementary region of DNA or RNA that folds back on itself and base-pairs into a double helix. OR A loop of nucleic acid formed by duplex formation within a single strand.

**hairy cell leukemia :** A rare type of leukemia in which abnormal B-lymphocytes (a type of white blood cell) are present in the bone marrow, spleen, and peripheral blood. When viewed under a microscope, these cells appear to be covered with tiny hair-like projections.

**Halaven :** A drug used to treat metastatic breast cancer in patients who have already been treated with other chemotherapy. It is also being studied in the treatment of other types of cancer. Halaven may block cancer cell growth by stopping cell division. It belongs to the family of drugs called antitubulin agents. Also called E7389 and eribulin mesylate.

**Haldol :** A drug used to treat certain mental and neurological disorders. It is also being studied in the treatment of nausea and vomiting caused by

some cancer treatments. It is a type of antiemetic and a type of antipsychotic. Also called haloperidol.

**half life:** The amount of time it takes for half an initial amount to disintegrate. OR The half life of a reaction is the time required for the amount of reactant to drop to one half its initial value.

**half-cell:** An oxidation or reduction reaction that occurs at an electrode. Two half-cells must be combined to form an electrochemical cell.

**half-equation:** A half-equation describes the reaction at an electrode during electrolysis (or during any reduction/oxidation reaction) that includes the electrons involved, e.g.  $\text{Na}^+ + \text{e}^-$

**half-life:** The time required for concentration of one substance to reach half of its initial value. The time it takes for one half of a substance to be metabolized and/or excreted from the body. OR In terms of pharmacology, drug half-life refers to the time taken for a drug's plasma concentration to fall by half. In terms of nuclear chemistry, half-life refers to the time taken for a radioisotope to fall to half its original value. OR the amount of time it takes a radioactive element to decay into half of its original mass. OR the time it takes for half of a known quantity of radioactive material to convert to daughter products. OR The time in which one half of the atoms of a particular radioactive substance disintegrate into another nuclear form. Measured half-lives vary from millionths of a second to billions of years. Also called physical or radiological half-life. OR The time required for the disappearance of one half of a substance. OR The time required for the disappearance or decay of one-half of a given component in a system.

**Half-life (radiological):** The time required for half the atoms of a particular radioisotope to decay into another isotope. A specific half-life is a characteristic property of each radioisotope. Measured half-lives range from millionths of a second to billions of years, depending on the stability of the nucleus. Radiological half-life is related to, but different from, the biological half-life and the effective half-life.

**Half-life, biological:** The time required for the body to eliminate one half of the material taken in by natural biological means.

**Half-life, effective:** The time required for the activity of a particular radioisotope deposited in a living organism, such as a human or an animal, to be reduced by 50 percent as a result of the combined action

of radioactive decay and biological elimination. Effective half-life is related to, but different from, the radiological half-life and the biological half-life.

**half-reaction:** A reaction that shows the electrons involved in an oxidation or reduction step of a reaction. OR an oxidation or reduction reaction with free electrons as a product or reactant.

**half-sibling :** A person's brother or sister who has one parent in common.

**Half-thickness:** Any given absorber that will reduce the intensity of an original beam of ionizing radiation to one-half of its initial value.

**halide:** The ions of charge -1 of the elements in the next to last column of the periodic table: chloride, fluoride, bromide, iodide (and astatide, but there are only eleven known atoms of astatine, so no one ever counts it).

OR A compound or ion containing fluorine, chlorine, bromine, iodine, or astatine. OR A negatively charged ion of the group VIIA elements.

**Halide Mineral:** This is a mineral that is made of compounds with one or more halogen atoms. Salt (Halite) is considered a halide because it has sodium and chloride in the formula.

**halides:** Halides are ionic salts of the Group 7 elements, e.g. sodium fluoride, potassium iodine.

**hallucination :** A sight, sound, smell, taste, or touch that a person believes to be real but is not real. Hallucinations can be caused by nervous system disease, certain drugs, or mental disorders.

**halo:** the zone of metamorphism surrounding an intrusion in contact metamorphism.

**haloalkane:** an alkane that contains one or more halogen atoms; also called an alkyl halide.

**halocline:** In the oceans, a well-defined vertical gradient of salinity.

**Halodrin:** (Other name for: fluoxymesterone)

**halofuginone hydrobromide:** The hydrobromide salt of halofuginone, a semisynthetic quinazolinone alkaloid anticoccidial derived from the plant *Dichroa febrifuga*, with antifibrotic and potential antineoplastic activities. Halofuginone specifically inhibits collagen type I gene expression and matrix metalloproteinase 2 (MMP-2) gene expression, which may result in the suppression of angiogenesis, tumor stromal cell development, and tumor cell growth. These effects appear to be due to halofuginone-mediated

inhibition of the collagen type I and MMP-2 promoters. Collagen type I and MMP-2 play important roles in fibro-proliferative diseases.

**halofuginone hydrobromide** : A substance that is being studied for its ability to slow the growth of connective tissue and to prevent the growth of new blood vessels that tumors need to grow. It is a type of quinazolinone alkaloid and a type of antiangiogenesis agent.

**halogen**: An element of group VIIA (a. k. a. Group 18). The name means "salt former"; halogens react with metals to form binary ionic compounds. Fluorine (F), chlorine (Cl), bromine (Br), iodine (I), and astatine (At) are known at this time. OR an electronegative, nonmetallic element in Group VII of the periodic table, including fluorine, chlorine, bromine, and iodine. Halogens are often represented in structural formulas by an "X." OR One of the elements in the next-to-last column of the periodic table - fluorine, chlorine, bromine, iodine, and astatine. OR Halogen is the name of the seventh group of elements. They all have seven electrons in their outer shell. They are also very reactive. OR The group VIIa elements in the periodic table.

**halogenation**: a reaction in which halogen atoms are bonded to an alkene at the double bond.

**halogens**: The halogens are the elements of Group 7 in the Periodic Table fluorine, chlorine, bromine, iodine, and astatine. OR the column of elements from fluorine to astatine.

**halonium ion**: a halogen atom that bears a positive charge. This ion is highly unstable.

**haloperidol**: A phenylbutylpiperadine derivative with antipsychotic, neuroleptic, and antiemetic activities. Haloperidol competitively blocks postsynaptic dopamine (D2) receptors in the mesolimbic system of the brain, thereby eliminating dopamine neurotransmission and leading to antidelusionary and antihallucinagenic effects. Antagonistic activity mediated through D2 dopamine receptors in the chemoreceptive trigger zone (CTZ) accounts for its antiemetic activity. or A drug used to treat certain mental and neurological disorders. It is also being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of antiemetic and a type of antipsychotic. Also called Haldol.

**Halophilic or Halotolerant**: Bacteria which thrive in a highly salt environment, up to 25% NaCl.

**Halotestin:** (Other name for: fluoxymesterone)

**Halsted radical mastectomy :** Surgery for breast cancer in which the breast, chest muscles, and all of the lymph nodes under the arm are removed. For many years, this was the breast cancer operation used most often, but it is used rarely now. Doctors consider radical mastectomy only when the tumor has spread to the chest muscles. Also called radical mastectomy.

**hamartin:** protein encoded by the tuberous sclerosis 1 (TSC1) gene

**hamartoma :** A benign (not cancer) growth made up of an abnormal mixture of cells and tissues normally found in the area of the body where the growth occurs.

**Hammett equation:** A linear free-energy relationship for substituent effects in reactions or ionizations (pKa) given as: where  $k_H$  is the rate constant or equilibrium constant for the parent compound,  $k_X$  is the constant for the compound bearing a substituent X,  $r$  is a constant for a given reaction under a given set of conditions, and  $s_X$  is a constant characteristic of the group X.

**Hand Load:** For low production mold with undercut, steel fixture which create the undercut are manually removed from the mold during the part ejection process.

**hand-foot syndrome :** A condition marked by pain, swelling, numbness, tingling, or redness of the hands or feet. It sometimes occurs as a side effect of certain anticancer drugs. Also called palmar-plantar erythrodysesthesia.

**hanging valley:** a valley that forms a cliff face with the main valley it enters because its lower part has been eroded away by glacial action.

**hanging wall:** the block that overlies the inclined fault plane in a dip-slip fault.

**Hansch Analysis:** In QSAR, Hansch analysis expresses biological activity using electronic, hydrophobic, and steric parameters.

**haploid:** cells containing one copy of each chromosome. OR Having a single set of genetic information; describing a cell with one chromosome of each type.

**Haploid cell:** A cell containing only one chromosome of each type.

**haploinsufficiency :** The situation that occurs when one copy of a gene is inactivated or deleted and the remaining functional copy of the gene is not

adequate to produce the needed gene product to preserve normal function.

**haplotype** : A set of closely linked genetic markers present on one chromosome which tend to be inherited together.

**happy major** : A plant whose seeds and root have been used in some cultures to treat certain medical problems. It may have antioxidant effects. The scientific name is *Arctium lappa*. Also called burdock and lappa.

**Hapten**: A small foreign molecule that can elicit specific antibody formation when attached to a macromolecule. The dinitrophenyl group is effective at eliciting an antigenic response and has been widely used as a haptenic determinant.

**Hard Drug**: In medicinal chemistry, hard drugs refer to compounds that are generally nonmetabolisable.

**Hard dry**: This term is normally used to denote that the paint has dried without 'tack' or 'softness'. In the case of primer or undercoat a hard dry surface is one which can be rubbed down without undue clogging of the abrasive paper and which can be safely overcoated.

**Hard gloss paint**: General term for an oil-varnish bound paint originally used to distinguish such paints from those based solely on a drying oil.

**hard palate** : The front, bony part of the roof of the mouth.

**Hard stopper**: A drying or setting material which is sufficiently stiff to stop up open joints and holes in timber without sagging and which will not shrink when set. Usually applied with a putty knife or small trowel. Bare surface should be primed before applying a hard stopper.

**Hard stopping**: A material in stiff paste form usually applied by knife to fill deep indentations cracks or joints in a painted surface. It dries hard through and should not be confused with ordinary putty.

**Hardboard**: Hard-pressed fibre building board.

**Hardener**: A substance or mixture of substance added to a material to increase or control the curing reaction by taking part in it.

**hardness**: a characteristic of water, imparted by salts of calcium, magnesium, and iron, such as bicarbonates, carbonates, sulfates, chlorides, and nitrates that cause curdling of soap, deposition of scale in boilers, damage in some industrial process, and sometimes objectionable taste. It may be determined by a standard laboratory procedure or computed from the amounts of calcium and magnesium as well as iron, aluminum,

manganese, barium, strontium, and zinc; expressed as equivalent parts per million of calcium carbonate. OR Hardness is a measure of how easily you can scratch a substance. Diamonds have a greater hardness than copper sulfate crystals. Copper sulfate is softer than a diamond. OR The ability of a paint film to resist denting, scratching or marring. OR a quality of minerals determined by the Mohs hardness scale. OR property of matter that determines how easily the substance can be scratched. OR The hardness of a material can be measured by its resistance to scratching or to indentation. Mostly used hardness tests involve the determination of the material resistance to indentation under standardized conditions. A hard indenter of standard shape is pressed into the surface of the material under a specified load. The resulting area of indentation or the depth of indentation is measured and assigned a numerical value. Various methods can be used. For plastics, the most widely used methods are Ball hardness, Rockwell and Shore methods. OR A measurement of the resistance to penetration of a silicone rubber sample by an indenter on a Durometer tester. High values indicate harder materials while low values indicate softer materials. OR The resistance of a material to compression and indentation. Among the most important methods of testing this property are Brinell hardness, Rockwell hardness and Shore hardness. OR The hardness of a material can be measured by its resistance to scratching or to indentation. Mostly used hardness tests involve the determination of the material resistance to indentation under standardized conditions. A hard indenter of standard shape is pressed into the surface of the material under a specified load. The resulting area of indentation or the depth of indentation is measured and assigned a numerical value. Various methods can be used. For plastics, the most widely used methods are Ball hardness, Rockwell and Shore methods.

**Hardness Points:** Steel rods used by geologists to test the hardness of minerals and rocks.

**hardpan:** a layer of soil, usually the B horizon, that is so hard (usually cemented by calcite or quartz) that even a backhoe cannot break through it.

**Hardwood:** Wood from a tree of the botanical group of trees that are broadleaved and usually deciduous. The term has no reference to the actual hardness of the wood.

**harmless parentheses:** Parentheses that are not necessary but that do not do any harm in the expression.

**Hartman–Hann Condition:** A spin-lock experiment that increases the efficiency of cross polarization; it uses two rf fields, one at the Larmor frequency of the protons and one at the Larmor frequency of the carbons.

**hartree:** One atomic unit of energy, equal to 2625.5 kJ/mol, 627.5 kcal/mol, 27.211 eV, and 219474.6 cm<sup>-1</sup>.

**Hartree-Fock:** Simplest and least expensive ab initio wavefunction. Involves only a single Slater determinant (a single electron configuration). Orbitals that contain electrons are "occupied," those that are vacant are called "virtual."

**hartreeh:** The atomic unit of energy, equal to  $4.359\,743\,81 \times 10^{-18} \text{ J} \pm 0.000\,000\,34 \times 10^{-18} \text{ J}$  [1998 CODATA values].

**Hashimoto disease :** An autoimmune condition of the thyroid gland (a gland located beneath the larynx). It is caused by the formation of antibodies that attack the thyroid gland and it usually causes hypothyroidism (too little thyroid hormone). Symptoms include fatigue, weight gain, constipation, dry skin, depression, and the inability to exercise. It is more common in females and can run in families. Also called autoimmune thyroiditis and Hashimoto thyroiditis.

**Hashimoto thyroiditis :** An autoimmune condition of the thyroid gland (a gland located beneath the larynx). It is caused by the formation of antibodies that attack the thyroid gland and it usually causes hypothyroidism (too little thyroid hormone). Symptoms include fatigue, weight gain, constipation, dry skin, depression, and the inability to exercise. It is more common in females and can run in families. Also called autoimmune thyroiditis and Hashimoto disease.

**Hassium:** Symbol:"Hs" Atomic Number:"108" Atomic Mass: (265)amu. Hassium is one of the postactinide elements. Scientists have created these in labs and may have found only a few atoms of the element. You will not find these in use anywhere.

**Haul-off:** Also called a "caterpillar," it is an apparatus used for the continual removal of extrudate from the die.

**Havrix:** (Other name for: hepatitis A vaccine)

**Haworth perspective formulas:** A method for representing cyclic chemical structures so as to define the configuration of each substituent group; the method commonly used for representing sugars.

**Haworth projection:** A depiction of a cyclic carbohydrate in which the plane of each ring is perpendicular to the plane of the page and in which ring carbon atoms are not explicitly shown.

**hawthorn fruit :** The fruit of the hawthorn tree or bush. It has been used in some cultures to treat certain medical problems, including heart problems and gastrointestinal problems.

**hazard:** A source of danger a qualitative term expressing the potential that an environmental agent can harm health (WHO, 1988).

**hazard identification:** The identification of the substance of concern, its adverse effects, target populations, and conditions of exposure (WHO, 1988).

**hazard ratio :** A measure of how often a particular event happens in one group compared to how often it happens in another group, over time. In cancer research, hazard ratios are often used in clinical trials to measure survival at any point in time in a group of patients who have been given a specific treatment compared to a control group given another treatment or a placebo. A hazard ratio of one means that there is no difference in survival between the two groups. A hazard ratio of greater than one or less than one means that survival was better in one of the groups.

**Haze:** The cloudy or turbid appearance of an otherwise transparent material caused by light scattered from within the specimen or from its surfaces.

**HBOC syndrome :** An inherited disorder in which the risk of breast cancer (especially before the age of 50) and ovarian cancer is higher than normal. Most cases of HBOC syndrome are caused by certain mutations (changes) in the BRCA1 or the BRCA2 gene. People with HBOC syndrome may also have an increased risk of other types of cancer, including pancreatic cancer, prostate cancer, and melanoma. Also called hereditary breast and ovarian cancer syndrome.

**HBV:** A virus that causes hepatitis (inflammation of the liver). It is carried and passed to others through the blood and other body fluids. Different ways the virus is spread include sharing needles with an infected person and being stuck accidentally by a needle contaminated with the virus. Infants born to infected mothers may also become infected with the virus. Although many patients who are infected with HBV may not have symptoms, long-

term infection may lead to cirrhosis (scarring of the liver) and liver cancer. Also called hepatitis B virus.

**HCA:** A chemical that is formed when meat, poultry, or fish is cooked at high temperatures, such as frying, broiling, and barbecuing. HCAs are carcinogens (substances that may cause cancer). Also called heterocyclic amine.

**HCD20:** A substance being studied in the treatment of several types of lymphoma. It binds to the protein CD20, which is found on B cells (a type of immune system cell) and some types of lymphoma cells. This causes the immune system to kill the cancer cells. HCD20 is a type of monoclonal antibody. Also called hA20, IMMU-106, and veltuzumab.

**HCP:** Healthcare proxy. A type of advance directive that gives a person (such as a relative, lawyer, or friend) the authority to make healthcare decisions for another person. It becomes active when that person loses the ability to make decisions for himself or herself. Also called healthcare proxy.

**hCRF:** A substance being studied in the treatment of brain cancer. It is made naturally by the hypothalamus (a part of the brain) and can also be made in the laboratory. hCRF may help reduce symptoms caused by edema (swelling) of the brain. It is a type of neurohormone. Also called human corticotropin-releasing factor.

**HCT:** The amount of whole blood that is made up of red blood cells. It depends on the number and size of red blood cells. A HCT test is usually part of a complete blood count (CBC). It may be used to check for conditions such as anemia, dehydration, malnutrition, and leukemia. Also called hematocrit.

**HCV:** A virus that causes hepatitis (inflammation of the liver). It is carried and passed to others through the blood and other body fluids. Different ways the virus is spread include sharing needles with an infected person and being stuck accidentally by a needle contaminated with the virus. Infants born to infected mothers may also become infected with the virus. Although patients who are infected with HCV may not have symptoms, long-term infection may lead to cirrhosis (scarring of the liver) and liver cancer. These patients may also have an increased risk for certain types of non-Hodgkin lymphoma. Also called hepatitis C virus.

**HCV DNA vaccine INO-8000:** A multi-antigen DNA vaccine consisting of plasmids encoding the hepatitis C virus (HCV) nonstructural proteins 3 (NS3), 4A (NS4A), 4B (NS4B) and 5A (NS5A), with potential immunomodulating and cancer preventive activities. Administered via intramuscular injection followed by electroporation, cells transfected with the HCV DNA vaccine INO-8000 express the encoded HCV proteins, which may elicit a cytotoxic T-lymphocyte (CTL) response against HCV-infected liver cells expressing the NS3, NS4A, NS4B or NS5A proteins. This results in the eradication of HCV-infected cells. HCV, a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family, is associated with the development of hepatocellular carcinoma (HCC).

**HDAC:** An enzyme that removes a small molecule called an acetyl group from histones (proteins found in chromosomes). This changes the way the histones bind to DNA and may affect its activity. HDAC inhibitors are being studied in the treatment of cancer. Also called histone deacetylase.

**HDAC inhibitor :** A substance that causes a chemical change that stops tumor cells from dividing. HDAC inhibitors are being studied in the treatment of cancer. Also called histone deacetylase inhibitor.

**HDAC inhibitor 4SC-202:** An orally bioavailable benzamide and inhibitor of human class I histone deacetylases (HDACs) isoenzymes 1, 2 and 3, with potential antineoplastic activity. HDAC inhibitor 4SC-202 selectively binds to and inhibits class I HDACs leading to an accumulation of highly acetylated histones. This may result in an induction of chromatin remodeling, the selective transcription of tumor suppressor genes, and the tumor suppressor protein-mediated inhibition of tumor cell division and eventually the induction of tumor cell apoptosis. This may inhibit tumor cell proliferation in susceptible tumor cells. HDACs, upregulated in many tumor types, are a class of enzymes that deacetylate chromatin histone proteins. Check for active clinical trials using this agent.

**HDAC inhibitor ACY-241:** An orally available histone deacetylase (HDAC) inhibitor, with potential antineoplastic activity. Upon oral administration, ACY-241 inhibits the activity of HDACs; this results in an accumulation of highly acetylated chromatin histones, the induction of chromatin remodeling and an altered pattern of gene expression. This leads to the inhibition of tumor oncogene transcription, and the selective transcription of tumor suppressor genes, which inhibit tumor cell division

and induce tumor cell apoptosis. HDAC, an enzyme upregulated in many tumor types, deacetylates chromatin histone proteins.

**HDAC inhibitor AR-42:** An orally available phenylbutyrate-derived histone deacetylase (HDAC) inhibitor, with potential antineoplastic activity. Upon oral administration, AR-42 inhibits the catalytic activity of HDAC, which results in an accumulation of highly acetylated chromatin histones, the induction of chromatin remodeling and an altered pattern of gene expression. This leads to the inhibition of tumor oncogene transcription, and the selective transcription of tumor suppressor genes, which inhibits tumor cell division and induces tumor cell apoptosis. HDAC, an enzyme upregulated in many tumor types, deacetylates chromatin histone proteins.

**HDAC inhibitor CG200745:** A histone deacetylase (HDAC) inhibitor with potential antineoplastic activity. CG200745 inhibits the catalytic activity of HDAC, resulting in an accumulation of highly acetylated chromatin histones, followed by the induction of chromatin remodeling and an altered pattern of gene expression. In particular, this agent enhances the histone acetylation of the tumor suppressor gene p53. This results in an accumulation of p53, p53-dependent transactivation and apoptosis in tumor cells. HDAC, an enzyme upregulated in many tumor types, deacetylates chromatin histone proteins.

**HDAC inhibitor CHR-2845:** A hydroxamic acid-derived histone deacetylase (HDAC) inhibitor with potential antineoplastic activity. CHR-2845 inhibits HDAC leading to an accumulation of highly acetylated histones, which may result in chromatin remodeling, inhibition of tumor oncogene transcription, inhibition of tumor cell division, and the induction of tumor cell apoptosis. HDAC, an enzyme upregulated in many tumor types, deacetylates chromatin histone proteins; this agent may specifically target HDACs in cells of the monocyte-macrophage lineage.

**HDAC inhibitor CHR-3996:** An orally bioavailable, second-generation hydroxamic acid-based inhibitor of histone deacetylase (HDAC) with potential antineoplastic activity. HDAC inhibitor CHR-3996 inhibits HDAC, resulting in an accumulation of highly acetylated histones, the induction of chromatin remodeling, and the selective transcription of tumor suppressor genes; these events may result in the inhibition of tumor cell division and the induction of tumor cell apoptosis. This agent may upregulate HSP70 and downregulate anti-apoptotic Bcl-2 proteins more

substantially than some first-generation HDAC inhibitors. HDACs, upregulated in many tumor cell types, are a family of metalloenzymes responsible for the deacetylation of chromatin histone proteins.

**HDAC inhibitor CXD101:** A novel histone deacetylase (HDAC) inhibitor with potential antineoplastic activity. Although the exact therapeutic mechanism of action for CXD101 is not known, oral administration of this agent should inhibit the catalytic activity of HDAC, which results in an accumulation of highly acetylated histones, followed by the induction of chromatin remodeling and an altered pattern of gene expression. HDAC, a family of enzymes upregulated in many tumor types, deacetylates chromatin-associated histone proteins.

**HDAC inhibitor MPT0E028:** An orally bioavailable N-hydroxyacrylamide-derived inhibitor of both human pan-histone deacetylase (HDAC) enzymes and the serine/threonine protein kinase Akt (protein kinase B), with potential antineoplastic activity. Upon administration, HDAC inhibitor MPT0E028 selectively binds to and inhibits HDACs, which inhibits deacetylation of histone proteins and leads to the accumulation of highly acetylated histones. This may result in both an induction of chromatin remodeling, and the selective transcription of tumor suppressor genes. This prevents cell division and induces both cell cycle arrest and apoptosis, which may inhibit the proliferation of susceptible tumor cells. In addition, MPT0E028 inhibits the phosphorylation and activation of Akt, which prevents the activation of downstream signaling pathways, independent of its HDAC inhibitory activity. HDACs, upregulated in many tumor cell types, are a family of enzymes that deacetylate histone proteins. Akt, overexpressed in many tumor cell types, plays a key role in tumor cell proliferation and survival.

**HDAC inhibitor OBP-801:** An inhibitor of histone deacetylase (HDAC) enzymes, with potential antineoplastic activity. Upon administration, OBP-801 inhibits the activity of HDACs; this results in an accumulation of highly acetylated chromatin histones, the induction of chromatin remodeling and an altered pattern of gene expression. This leads to selective transcription of tumor suppressor genes, tumor suppressor protein-mediated inhibition of tumor cell division and induction of tumor cell apoptosis. This may inhibit proliferation of susceptible tumor cells. HDAC,

which is upregulated in many tumor cell types, deacetylates chromatin histone proteins.

**HDAC inhibitor SHP-141:** A topical formulation containing the histone deacetylase (HDAC) inhibitor with potential antineoplastic activity. Upon cutaneous administration, SHP-141 selectively binds to and inhibits HDAC, resulting in an accumulation of highly acetylated histones in the skin (dermis and epidermis), the induction of chromatin remodeling, and the selective transcription of tumor suppressor genes. These events may result in the inhibition of tumor cell division and the induction of tumor cell apoptosis. HDACs, upregulated in many tumor cell types, are a family of metalloenzymes responsible for the deacetylation of chromatin histone proteins. Topical administration of SHP-141 allows for high concentrations of this agent locally while minimizing systemic toxicity.

**HDAC inhibitor SNDX-275 :** A substance being studied in the treatment of several types of cancer. It blocks enzymes needed for cell division and may kill cancer cells. It is a type of histone deacetylase (HDAC) inhibitor. Also called entinostat and SNDX-275.

**HDAC/EGFR/Her2 inhibitor CUDC-101:** A multi-targeted, small-molecule inhibitor of histone deacetylase (HDAC), epidermal growth factor receptor tyrosine kinase (EGFR/ErbB1), and human epidermal growth factor receptor 2 tyrosine kinase (HER2/neu or ErbB2) with potential antineoplastic activity. HDAC/EGFR/HER2 inhibitor CUDC-101 inhibits the activity of these three enzymes but the exact mechanism of action is presently unknown. This agent may help overcome resistance to inhibition of EGFR and Her2 through a simultaneous, synergistic inhibition of EGFR, Her2, and HDAC.

**HDL (high-density lipoprotein):** A lipoprotein that collects cholesterol released into the blood from dying cells or from membranes undergoing turnover.

**HDM2 antagonist JNJ-26854165:** An orally bioavailable, small-molecule HDM2 antagonist with potential antineoplastic activity. HDM2 antagonist JNJ-26854165 inhibits the binding of the HDM2–p53 complex to the proteasome, blocking the degradation of p53; p53 signaling and p53-mediated induction of tumor cell apoptosis may thus be restored. In addition to p53, degradation of other HDM2 client proteins may be inhibited. HDM2 (human homolog of double minute 2), a zinc finger

protein, is a negative regulator of the p53 pathway; often overexpressed in cancer cells, this oncoprotein has been implicated in cancer cell proliferation and survival.

**HDM2 inhibitor HDM201:** An orally bioavailable human double minute 2 homolog (HDM2) inhibitor with potential antineoplastic activity. HDM2 inhibitor HDM201 inhibits the binding of the HDM2 protein to the transcriptional activation domain of the tumor suppressor protein p53. By preventing this HDM2-p53 interaction, the proteasome-mediated enzymatic degradation of p53 is inhibited, which may result in the restoration of both p53 signaling and p53-mediated induction of tumor cell apoptosis. HDM2, a zinc finger protein and negative regulator of the p53 pathway, is often overexpressed in cancer cells and has been implicated in cancer cell proliferation and survival.

**HDM2 inhibitor MK-8242:** An orally bioavailable inhibitor of human homolog of double minute 2 (HDM2), with potential antineoplastic activity. Upon oral administration, HDM2 inhibitor MK-8242 inhibits the binding of the HDM2 protein to the transcriptional activation domain of the tumor suppressor protein p53. By preventing this HDM2-p53 interaction, the degradation of p53 is inhibited, which may result in the restoration of p53 signaling. This induces p53-mediated tumor cell apoptosis. HDM2 is a member of the RING finger-type family of E3 ubiquitin protein ligases and targets p53 for degradation; it is often overexpressed in cancer cells and has been implicated in cancer cell proliferation and survival. Check for active clinical trials using this agent.

**HDPE:** This is the acronym for High density, (0.95-0.965) polyethylene. It has much higher stiffness, higher temperature resistance and much better water vapor barrier properties than LDPE, but it is considerably hazier.

**HDR:** An amount of radiation that is greater than that given in typical radiation therapy. HDR is precisely directed at the tumor to avoid damaging healthy tissue, and may kill more cancer cells in fewer treatments. Also called high-dose radiation.

**HDT:** Heat-deflection test

**HE4:** A protein found on cells that line the lungs and reproductive organs, such as the ovaries. HE4 may be found in higher than normal amounts in patients with some types of cancer, including ovarian epithelial cancer. Measuring the amount of HE4 in the blood may help plan cancer treatment

or find out if cancer is getting worse or has come back. It is a type of tumor marker. Also called human epididymis protein 4.

**Head:** a unit of measure representing the relative energy of a flowing fluid. Commonly recorded in “feet” of fluid, it provides a convenient means of combining the pressure, velocity, and elevation energy portions of a flowing fluid.

**head and neck cancer :** Cancer that arises in the head or neck region (in the nasal cavity, sinuses, lips, mouth, salivary glands, throat, or larynx [voice box]).

**Head Loss:** energy loss in a fluid as it passes through a flow passage. The loss is due to friction between fluid particles and can be expressed as a linear change in the height of a column of fluid.

**Head Space:** the space between the level of the contents in the neck of a bottle and the closure. It is intended to furnish space for expansion of product due to heat or other action after packing. Head space may also refer to the amount of space in a corrugated shipper carton filled with plastic bottles or jars.

**Head, reactor vessel:** The removable top section of a reactor pressure vessel. It is bolted in place during power operation and removed during refueling to permit access of fuel handling equipment to the core.

**Header:** A stone or brick laid across the thickness of the wall. On the face of the brickwork only the end of the header is visible. Opposite to 'stretcher'.

**headland:** a rocky arm of a coastline that juts into the sea.

**headward erosion:** erosion that results when a valley is extended upward above its original source by gullying, mass wasting, and sheet erosion.

**headwaters:** the origination of a stream; usually in higher elevations of mountainous terrain.

**Headworks:** The facilities where wastewater enters a wastewater treatment plant. The headworks may consist of bar screens, comminutors, a wet well and pumps.

**healing touch :** A form of complementary and alternative medicine based on the belief that vital energy flows through the human body. This energy is said to be balanced or made stronger by practitioners who pass their hands over, or gently touch, a patient's body. Healing touch is being studied in

patients receiving cancer therapy, to find out if it can improve quality of life, boost the immune system, or reduce side effects. Healing touch is a type of energy therapy. Also called therapeutic touch.

**health:** A state of complete physical, mental and social well-being, and not merely the absence of disease or infirmity (WHO, 1978b).

**Health Insurance Portability and Accountability Act :** A 1996 U.S. law that allows workers and their families to keep their health insurance when they change or lose their jobs. The law also includes standards for setting up secure electronic health records and to protect the privacy of a person's health information and to keep it from being misused. Also called HIPAA and Kassebaum Kennedy Act.

**Health physics:** The science concerned with recognizing and evaluating the effects of ionizing radiation on the health and safety of people and the environment, monitoring radiation exposure, and controlling the associated health risks and environmental hazards to permit the safe use of technologies that produce ionizing radiation. For further information, see Frequently Asked Questions About Health Physics Based on 10 CFR Part 20.

**healthcare provider :** A licensed person or organization that provides healthcare services.

**healthcare proxy :** A type of advance directive that gives a person (such as a relative, lawyer, or friend) the authority to make healthcare decisions for another person. It becomes active when that person loses the ability to make decisions for himself or herself. Also called HCP.

**healthy control :** In a clinical study, a person who does not have the disorder or disease being studied. Results from healthy controls are compared to results from the group being studied.

**healthy worker effect:** A phenomenon observed initially in studies of occupational diseasesworkers usually exhibit lower overall death rates than the general population, due to the fact that the severely ill and disabled are ordinarily excluded from employment. Death rates in the general population may be inappropriate for comparison if this effect is not taken into account (Last, 1983).

**Heap leach:** A method of extracting uranium from ore using a leaching solution. Small ore pieces are placed in a heap on an impervious material

(plastic, clay, asphalt) with perforated pipes under the heap. Acidic solution is then sprayed over the ore, dissolving the uranium. The solution in the pipes is collected and transferred to an ion-exchange system for concentration of the uranium.

**heart cancer :** A rare cancer that develops in tissues of the heart. Also called cardiac sarcoma.

**heart disease :** A type of disease that affects the heart or blood vessels. The risk of certain heart diseases may be increased by smoking, high blood pressure, high cholesterol, unhealthy diet, lack of exercise, and obesity. The most common heart disease is coronary artery disease (narrow or blocked coronary arteries), which can lead to chest pain, heart attacks, or stroke. Other heart diseases include congestive heart failure, heart rhythm problems, congenital heart disease (heart disease at birth), and endocarditis (inflamed inner layer of the heart). Also called cardiovascular disease.

**heart rate :** In medicine, the number of times the heart beats within a certain time period, usually a minute. The heart rate can be felt at the wrist, side of the neck, back of the knees, top of the foot, groin, and other places in the body where an artery is close to the skin. The resting heart rate is normally between 60 and 100 beats a minute in a healthy adult who is at rest. Measuring the heart rate gives important information about a person's health. Also called pulse.

**Heartwood:** Inner zone of wood that in a growing tree has ceased to contain living cells. It is usually more durable than the outer zone of sapwood.

**heat:** The transfer of (thermal) energy between two objects that are at different temperatures. OR Energy transferred between a system and its surroundings as a consequence of a temperature difference. heat always flows from a higher temperature to a lower one. OR a form of energy that spontaneously flows from a warm body to a cold body. OR a form of energy marked by differences in temperatures OR Heat is a transfer of energy that occurs when objects with different temperatures are placed into contact. Heat is a process, not a property of a material.

**Heat Aging:** The unique process of aging a thermoplastic or thermoset product and examining the percentage of retained physical and chemical properties after exposure to heat for a prolonged period of time.

**Heat Capacity:** A measure of how much heat is needed to raise the temperature of one gram of anything one degree Celsius. OR the amount of energy needed to raise the temperature of a substance by one degree Celsius. OR The heat required to raise the temperature of an object by 1°C is called the heat capacity of the object. Heat capacity is an extensive property with units of J K<sup>-1</sup>.

**Heat capacity rule:** This rule states that at a given temperature, if the higher melting polymorph has a heat capacity greater than another modification, the system is enantiotropic. Otherwise, the system is monotropic.

**Heat Chamber:** In injection molding, that part of the machine in which the cold feed is reduced to a hot melt. Also Heating Cylinder.

**Heat conduction calorimetry:** A technique in which the response of the instrument is directly proportional to the rate of the heat produced in the sample cell. The advantage of this technique is that small values of heat ( $\mu\text{W}$ ) can be detected.

**Heat conductor (thermal conductor):** A substance that can allow heat to pass through it easily. Metals are good heat conductors. The bottom of a frying pan is made of metal so that the heat from the cooker can reach the food very easily.

**Heat Deflection Temperature (HDT):** The temperature at which a standard test bar (ASTM D648) deflects 0.010 in. under a stated load of either 66 or 264 psi. OR indicates how loaded material deforms at higher temperature. Test bars are placed in a heating bath, resting horizontally on two supports. A constant load is applied in the center of the specimen and the bath temperature is raised at a constant rate. The temperature of the bath at which the flexural deflection of the loading point has reached a predefined level is the heat deflection temperature of the material.

**Heat Distortion Point:** The temperature in degrees Celsius at which a standard test bar (ASTM D648) deflects .010 in. under a stated load of either 66 or 264 psi, when the temperature is raised at a specific rate of increase.

**Heat exchanger:** A process unit through which two fluid streams at different temperatures flow on opposite sides of a metal barrier. Heat is transferred from the stream at the higher temperature through the barrier to

the other stream. OR Any device that transfers heat from one fluid (liquid or gas) to another fluid or to the environment.

**heat flow:** of the earth in general, the amount of heat from the earth's interior that is lost at the surface.

**heat flux (thermal flux):** The amount of heat that is transferred across a surface of unit area in a unit of time.

**heat island effect:** A dome of elevated temperatures over an urban area caused by the heat absorbed by structures and pavement.

**Heat Loss:** power dissipated as heat.

**heat of combustion:** the energy released when an alkane is completely oxidized.

**Heat of combustion:** The amount of heat released in burning completely an amount of substance is its heat of combustion. The amount needed for one mole is naturally called the molar heat of combustion. A general formula for the combustion of any organic compound is:

**Heat of Fusion:** The amount of energy required to transform a substance from a liquid state to a solid state. The amount of energy is measured in calories and is a measure of how many calories must be removed from the system since solids hold less energy overall than liquids. OR The heat required to mobilize the molecules of a solid polymer to produce a fluid melt i.e. the heat required to destroy the solid crystal structure without increasing the temperature. For amorphous polymers like polystyrene (PS) the heat of fusion is zero. For LDPE it is about 130,000 J/kg, which is roughly equivalent to the heat required to raise the temperature of 1kg of LDPE by about 50°C.

**Heat of fusion rule:** See Enthalpy of fusion rule

**heat of hydrogenation:** the energy released when two hydrogen atoms bond to the carbon atoms of a former double bond.

**Heat of transition rule:** See Enthalpy of transition rule

**Heat of vaporisation:** The amount of heat energy required to transform an amount of a substance from the liquid phase to the gas phase is its heat of vaporisation. The amount needed for one mole is naturally called the molar heat of vaporisation...

**Heat Seal:** The process of bonding two or more thermoplastic films using heat and pressure.

**Heat Sealing:** A method of joining plastic films by simultaneous application of heat and pressure to areas in contact. Heat may be supplied conductively or dielectrically. OR The process of joining two or more thermoplastic films or sheets by heating areas in contact with each other to the temperature at which fusion occurs, usually aided by pressure.

**Heat sink:** Anything that absorbs heat. It is usually part of the environment, such as the air, a river, or a lake.

**Heat Stabilizers:** These additives increase the ability of the material to withstand the negative effects of heat exposure. They are used to increase the overall service temperature of the material. Hesitation effect: occurs in parts of varied thicknesses. The flow moves preferentially into a thicker area causing an adjacent thin area to freeze off while the thicker area fills. Gates should be positioned as far as possible from where the flow divides into thick and thin flow paths. OR These additives increase the ability of the material to withstand the negative effects of heat exposure. They are used to increase the overall service temperature of the material.

**Heat-Distortion Point:** The temperature at which a standard test bar (ASTM D648) deflects 0.010 in. under a stated load of either 66 or 264 psi. OR The temperature at which a standard test bar deflects 0.010 in. under a stated load of either 66 or 264 psi.

**heat-shock protein :** One of a group of proteins that help protect cells from stresses such as heat, cold, and low amounts of oxygen or glucose (sugar). Heat-shock proteins help other proteins function in normal cells and may be present at high levels in cancer cells. Blocking the activity of a heat-shock protein called HSP90 is being studied in the treatment of cancer. Other heat-shock proteins including HSP70 and gp96 are being studied in vaccines to treat cancer. Also called HSP and stress protein.

**Heat-shock proteins:** A ubiquitous group of proteins that are synthesized in response to stress, such as a heat shock, and that bind unfolded polypeptides and assist in their refolding.

**heat-treated varicella-zoster virus vaccine V212:** A heat-treated varicella-zoster virus (VZV) vaccine with potential immunomodulating activity. Upon vaccination with heat-treated varicella-zoster virus vaccine V212, this vaccine may activate the immune system to generate specific anti-VZV antibodies and an active immunity against VZV infection.

**Heater bands:** Bracelet-shaped electrical heaters that are placed around the outside circumference of the heating barrel. OR Electrical heating units shaped to fit extruder barrels, injection molding cylinders, and the like, for heating the plastic material to the desired temperature.

**Heating cylinder:** That section of the injection molding machine in which the plastic resin is heated to the proper molding temperature prior to injection into the mold.

**Heating zone:** An area of the heating barrel that is controlled by a temperature controller attached to a set of heater bands. There are four major zones: rear, center, front, and nozzle. OR Parts of the barrel, head and die arranged for independent temperature control.

**Heatup:** The rise in temperature of the reactor fuel rods resulting from an increase in the rate of fission in the core.

**Heavy (H) chain:** A 50-kd polypeptide that is one of two types of paired chains found in the immunoglobulin G molecule; each heavy chain consists of a variable region and three constant regions, and each chain is linked by a disulfide bond to a light chain.

**heavy atom:** An atom beyond helium, i.e.,  $Z > 2$ .

**Heavy Crude:** Heavy Crude is a term used to define crude oils with a high fraction of high boiling point waxy components such that processing cannot be performed in "normal" refinery operations. Heavy Crude is defined as those crudes having a specific gravity below 28 API and include some Venezuelan oils and oil from Canadian Tar Sand deposits.

**heavy crude oil:** a dense, viscous petroleum that flows so slowly it is usually left behind in an oil field.

**Heavy gram bottles:** bottles blown from a parison or preform to a size that is relatively small for the parison's/preform's capacity. The result is a bottle with greater wall thickness, because more plastic has been distributed over a smaller bottle shape.

**Heavy isoes:** Heavy isoes. Forms of atoms that contain greater numbers of neutrons than the most common form (e.g.,  $^{15}\text{N}$ ,  $^{13}\text{C}$ ).

**Heavy isotopes:** Forms of atoms that contain greater numbers of neutrons than the most common form (e.g.,  $^{15}\text{N}$ ,  $^{13}\text{C}$ ).

**Heavy meromyosin (HMM):** Along with light meromyosin, one of the tryptic digestion products of myosin; it retains atpase activity and the ability

to bind actin but does not form filaments.

**heavy metals:** a general term given to the ions of metallic elements such as copper, zinc, chromium, and aluminum. They are removed from wastewater by forming an insoluble precipitate (usually a metallic hydroxide).

**Heavy water (D<sub>2</sub>O):** Water containing significantly more than the natural proportions (one in 6,500) of heavy hydrogen (deuterium, D) atoms to ordinary hydrogen atoms. Heavy water is used as a moderator in some reactors because it slows down neutrons effectively and also has a low probability of absorption of neutrons.

**Heavy water moderated reactor:** A reactor that uses heavy water as its moderator. Heavy water is an excellent moderator and thus permits the use of unenriched uranium as a fuel.

**heavy water<sub>2</sub>:** Water that contains 2H, rather than 1H. Heavy water is about 11% denser than ordinary water.

**Heavy-atom method:** A method used to determine the crystal structure of compounds that contain atoms with atomic numbers greater than 17.

**Hecoria:** (Other name for: tacrolimus)

**Hectorol:** (Other name for: doxercalciferol)

**Hedgehog inhibitor PF-04449913:** An orally bioavailable small-molecule inhibitor of the Hedgehog (Hh) signaling pathway with potential antineoplastic activity. Hedgehog inhibitor PF-04449913 appears to inhibit Hh pathway signaling. The Hh signaling pathway plays an important role in cellular growth, differentiation and repair. Constitutive activation of Hh pathway signaling has been observed in various types of malignancies.

**Hedyotis diffusa :** An herb used in traditional Chinese medicine to treat certain medical problems. It has been used to boost the immune system and may have anticancer effects.

**Heel:** Refers to the portion of an automatic custom injection mold that keeps the slide in the forward position when the molding machine is closed on the mold. OR the part of a bottle between the bottom bearing surface and the side wall.

**height:** altitude. From the highest point, a perpendicular drawn to the base.

**height (of a triangle):** A line segment that is perpendicular to the base of a triangle, with one endpoint being the opposite vertex.

**Height Indicator:** This is used to accurately measure small distances and angles as well as amplify them to make them more obvious.

**Heisenberg uncertainty principle:** This principle states that it is not possible to know a particle's location and momentum precisely at any time.

**helical computed tomography :** A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The x-ray machine scans the body in a spiral path. This allows more images to be made in a shorter time than with older CT methods. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly on the x-ray. Helical computed tomography also creates more detailed pictures and may be better at finding small abnormal areas inside the body. It may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called spiral CT scan.

**helical tomotherapy :** A type of therapy in which radiation is aimed at a tumor from many different directions. The patient lays on a table and is moved through a donut-shaped machine. The radiation source in the machine rotates around the patient in a spiral pattern. Before radiation, a 3-dimensional (3-D) image of the tumor is taken. This helps doctors find the highest dose of radiation that can be used to kill tumor cells while causing less damage to nearby tissue. Helical tomotherapy is a type of intensity-modulated radiation therapy (IMRT). Also called tomotherapy.

**helicase:** An enzyme that catalyzes the separation of strands in a DNA molecule before replication.

**Helicases:** Enzymes that catalyze the ATP-driven unwinding of nucleic acids; DNA helicases are important in DNA replication.

**Helicobacter pylori :** A type of bacterium that causes inflammation and ulcers in the stomach or small intestine. People with Helicobacter pylori infections may be more likely to develop cancer in the stomach, including MALT (mucosa-associated lymphoid tissue) lymphoma. Also called H. pylori.

**heliocentric:** sun-centered model of the solar system.

**helium:** Element 2, atomic weight 4.0026. A colorless, odorless, inert gas, first discovered in the emission spectrum of the sun in 1868.

**Helium:** Symbol:"He" Atomic Number:"2" Atomic Mass: 4.00amu.

Helium is a very non-reactive element. It is the first in the group of noble or

inert gases. You can find it in balloons, scuba tanks, lasers, nuclear reactors, and blimps.

**Helium pycnometry:** An analytical method for determining the density of a powdered solid. An accurately weighed sample (~5 g) is placed in a sample cell and evacuated to remove ambient gases. The cell is then pressurized with helium, followed by adiabatic expansion into a chamber of known volume. The resulting pressure is recorded after thermal equilibrium. The density of the solid is calculated as follows: where WS is the weight of the sample, VS is the volume of the sample, V1 is the volume of the sample cell, V2 is the volume of the expansion chamber, P1 is the original pressure of the sample cell, and P2 is the pressure of the system after the expansion step.

**Helix:** A spiral structure with a repeating pattern.

**Helix-turn-helix:** A recurring motif found in many DNA-binding proteins, in which two  $\alpha$ -helical segments are linked by a short hairpin turn; the two segments are 34 Å apart, which allows them to fit into adjoining major grooves in DNA.

**helix,  $\alpha$ :** See  $\alpha$  helix.

**Helmholtz free energy:** A thermodynamic property that can be used to predict whether a process will occur spontaneously at constant volume and temperature. Helmholtz free energy A is defined as  $A = U - TS$  where U, T and S are the internal energy, temperature, and entropy. Changes in A correspond to changes in free energy for processes occurring at constant temperature and volume. The sign of  $\Delta A$  is negative for spontaneous processes and zero for processes at equilibrium.

**helper T cell :** A type of immune cell that stimulates killer T cells, macrophages, and B cells to make immune responses. A helper T cell is a type of white blood cell and a type of lymphocyte. Also called CD4-positive T lymphocyte. OR T cells that stimulate the proliferation of specific B lymphocytes and cytotoxic T cells.

**hemagglutinin-neuraminidase :** A protein found in the outer coat of paramyxoviruses. This protein helps virus particles bind to cells, making infection easier.

**Hemangeol :** A drug used to treat infantile hemangioma (a benign blood vessel tumor). It is used in infants 5 weeks to 5 months of age. It is also

being studied in the treatment of other conditions and some types of cancer. Hemangeol may help shrink certain types of vascular tumors. Hemangeol contains the active ingredient propranolol hydrochloride. It is a type of beta blocker.

**hemangiopericytoma** : A type of cancer involving blood vessels and soft tissue.

**hemangiosarcoma** : A type of cancer that begins in the cells that line blood vessels.

**hemarthroses**: bleeding in the joints

**Hematide**: (Other name for: synthetic peptide-based erythropoiesis stimulating agent)

**hematocrit** : The amount of whole blood that is made up of red blood cells. It depends on the number and size of red blood cells. A hematocrit test is usually part of a complete blood count (CBC). It may be used to check for conditions such as anemia, dehydration, malnutrition, and leukemia. Also called HCT.

**hematogenous** : Originating in the blood or spread through the bloodstream.

**hematologic cancer** : Cancer that begins in blood-forming tissue, such as the bone marrow, or in the cells of the immune system. Examples of hematologic cancer are leukemia, lymphoma, and multiple myeloma. Also called blood cancer.

**hematologist** : A doctor who has special training in diagnosing and treating blood disorders.

**hematoma** : A pool of clotted or partially clotted blood in an organ, tissue, or body space, usually caused by a broken blood vessel.

**hematopathology laboratory** : A laboratory that specializes in doing tests that help to diagnose and treat diseases of the blood, bone marrow, and lymph system.

**hematopoiesis** : The formation of new blood cells.

**hematopoietic growth factor** : A group of proteins that causes blood cells to grow and mature.

**hematopoietic stem cell** : An immature cell that can develop into all types of blood cells, including white blood cells, red blood cells, and platelets.

Hematopoietic stem cells are found in the peripheral blood and the bone marrow. Also called blood stem cell.

**hematopoietic tissue :** Tissue in which new blood cells are formed.

**hematoporphyrin derivative:** A complex mixture of monomeric and aggregated porphyrins with photosensitizing activity. Upon systemic administration, hematoporphyrin derivatives accumulate in tumor cells and, once activated by red laser light (630 nm), in the presence of oxygen, produce singlet oxygen and other reactive oxygen radicals, resulting in local radical-mediated tumor cell death. or A drug used in photodynamic therapy that is absorbed by tumor cells. When exposed to light, it becomes active and kills the cancer cells.

**hematuria :** Blood in the urine.

**Heme:** An iron-porphyrin complex found in hemoglobin and cytochromes  
**Hemiacetal**The product formed by the condensation of an aldehyde with an alcohol; it contains one oxygen linked to a central carbon in a hydroxyl fashion and one oxygen linked to the same central carbon by an ether linkage. or The prosthetic group of myoglobin and hemoglobin as well as other proteins; consists of an organic constituent, protoporphyrin, and an iron atom. Or The iron-porphyrin prosthetic group of heme proteins.

**heme :** The part of certain molecules that contains iron. The heme part of hemoglobin is the substance inside red blood cells that binds to oxygen in the lungs and carries it to the tissues.

**heme protein:** A protein containing a heme as a prosthetic group.

**hemiasterlin analogue E7974:** An analogue of the sponge-derived anti-microtubule tripeptide hemiasterlin with antimitotic and potential antineoplastic activities. Hemiasterlin analogue E7974 binds to the Vinca domain on tubulin, resulting in inhibition of tubulin polymerization and microtubule assembly; depolymerization of existing microtubules; inhibition of mitosis; and inhibition of cellular proliferation. This agent may have more affinity for the beta-3 tubulin isotype.

**hemihypertrophy :** A condition in which one side of the body or a part of one side is larger than the other. Children with hemihypertrophy have an increased risk of developing certain types of cancer, including Wilms tumor (a childhood kidney cancer) and liver cancer.

**hemiketal:** a functional group of the structure or A compound formed by the reaction of a ketone group and a hydroxyl group; for example, the C-2 keto group of the open-chain form of fructose reacts with the C-5 hydroxyl group to form an intermolecular hemiketal.

**hemilaryngectomy :** An operation to remove one side of the larynx (voicebox).

**hemizygous :** Describes an individual who has only one member of a chromosome pair or chromosome segment rather than the usual two. Hemizyosity is often used to describe X-linked genes in males who have only one X chromosome. This term is sometimes used in somatic cell genetics where cancer cell lines are often hemizygous for certain alleles or chromosomal regions.

**hemochromatosis:** a disorder in iron metabolism that is characterized by excess iron absorption, saturation of iron-binding proteins and deposition of hemosiderin (amorphous iron deposits) in the tissues

**hemochromatosis :** A condition in which the body takes up and stores more iron than it needs. The extra iron is stored in the liver, heart, and pancreas, which may cause liver disease, heart problems, organ failure, and cancer. It may also cause bronze skin, diabetes, pain in the joints and abdomen, tiredness, and impotence. Hemochromatosis may be inherited, or it may be caused by blood transfusions. Also called iron overload.

**hemodialysis:** a method for removing waste products such as potassium and urea, as well as free water from the blood when the kidneys are in renal failure

**hemoglobin:** a red pigment that binds oxygen and carbon dioxide molecules and carries them through the bloodstream. OR An allosteric protein that is the primary oxygen-carrying protein in vertebrates; it also plays a role in the transport of CO<sub>2</sub> and H<sup>+</sup>. Or A heme protein in erythrocytes; functions in oxygen transport. OR A protein inside red blood cells that carries oxygen from the lungs to tissues and organs in the body and carries carbon dioxide back to the lungs. Testing for the amount of hemoglobin in the blood is usually part of a complete blood cell (CBC) test. It is used to check for conditions such as anemia, dehydration, and malnutrition.

**Hemoglobinopathy:** A genetic disorder resulting from any number of mutations that produce insufficient amounts of normal hemoglobin or

normal amounts of defective hemoglobin chains.

**hemolysis :** The breakdown of red blood cells. Some diseases, medicines, and toxins may cause red blood cells to break down more quickly than usual.

**hemophagocytic lymphohistiocytosis :** A rare disorder in which histiocytes and lymphocytes (types of white blood cells) build up in organs including the skin, spleen, and liver, and destroy other blood cells. Hemophagocytic lymphohistiocytosis may be inherited or caused by certain conditions or diseases, including infections, immunodeficiency (inability of the body to fight infections), and cancer. Also called HLH.

**Hemophilia:** A general term for a number of disorders of blood clotting, in which one or another protein in the blood-clotting pathway is defective or missing.

**hemophilia :** Group of hereditary disorders in which affected individuals fail to make enough of certain proteins needed to form blood clots.

**hemoptysis :** Coughing or spitting up blood from the respiratory tract.

**hemorrhage :** In medicine, loss of blood from damaged blood vessels. A hemorrhage may be internal or external, and usually involves a lot of bleeding in a short time.

**hemorrhagic cystitis :** A condition in which the lining of the bladder becomes inflamed and starts to bleed. The blood can be seen in the urine. Symptoms include pain and a burning feeling while urinating, feeling a need to urinate often, and being unable to control the flow of urine. Hemorrhagic cystitis may be caused by anticancer drugs, radiation therapy, infection, or being exposed to chemicals, such as dyes or insecticides.

**hemorrhoid :** An enlarged or swollen blood vessel, usually located near the anus or the rectum.

**henatinib maleate:** The maleate salt form of henatinib, an orally bioavailable, multitargeted tyrosine kinase inhibitor with potential antitumor and antiangiogenic activities. Henatinib inhibits vascular endothelial growth factor receptor type 2 (VEGFR2), a tyrosine kinase receptor upregulated in many tumor cells that plays a key role in angiogenesis. This may result in an inhibition of angiogenesis and eventually tumor cell proliferation. Henatinib, structurally similar to sunitinib, also inhibits, though to a lesser

extent, mast/stem cell growth factor receptor (c-Kit) and, platelet-derived growth factor receptor (PDGFR) alpha and beta.

**Henderson-Hasselbalch equation:** An equation that relates the pKa, to the pH and the ratio of the proton acceptor (A-) and the proton donor (HA) species of a conjugate acid base pair. OR An equation relating the pH, the pKa, and the ratio of the concentrations of the protonacceptor (A-) and proton-donor (HA) species in a solution.

**Henry's Law:** Henry's law predicts that the solubility (C) of a gas or volatile substance in a liquid is proportional to the partial pressure (P) of the substance over the liquid: OR Gases are able to be dissolved in solvent just like solids and liquids. Henry's law says that gases that don't react with the solute are able to dissolve an amount relative to the partial pressure of the gas over the solution. So, if you have oxygen above water, some oxygen will dissolve in the water. As you increase the pressure, more gas will be able to dissolve in the water. OR The amount of gas dissolved in a solution is directly proportional to the pressure of the gas above the solution.

**heparan sulfate glycosaminoglycan mimetic M402:** A low molecular weight heparin derivative and heparan sulfate proteoglycan (HSPG) mimetic with no or minimal anticoagulant activity and potential antineoplastic activities. Upon administration, M402 mimics HSPGs by binding to and inhibiting various heparin-binding growth factors, chemokines, and cytokines such as VEGF, HGF, FGF2, SDF-1a, heparanase and P-selectin all of which are essential for tumor angiogenesis and metastasis to occur. This inhibits heparin binding growth factor-mediated signaling and disrupts tumor-stromal interactions eventually leading to an inhibition of angiogenesis and tumor cell progression. In addition, M402 may enhance the cytotoxic effect of other chemotherapeutic agents.

**heparan sulfate glycosaminoglycan mimetic nanopolymer mouthwash:** A nanopolymer-based mouthwash formulation containing a mimetic of the glycosaminoglycan (GAG) heparan sulfate, with potential anti-mucositic and protective activities. Upon rinsing with the mouthwash, GAGs bind to heparan sulfate binding sites on macromolecules within the extracellular matrix (EMC), which prevents the destruction of the ECM and protects both growth factors and cytokines from being degraded. By replacing the GAGs damaged by chemotherapy and/or radiation, this mouthwash may

protect healthy tissue against the cytotoxic effects of chemotherapy and radiation and may prevent against radiotherapy- and chemotherapy-induced mucositis.

**heparin:** A sulfur-rich glycosaminoglycan with anticoagulant property. Heparin binds to antithrombin III to form a heparin-antithrombin III complex. The complex binds to and irreversibly inactivates thrombin and other activated clotting factors, such as factors IX, X, XI, and XII, thereby preventing the polymerization of fibrinogen to fibrin and the subsequent formation of clots. or A substance that slows the formation of blood clots. Heparin is made by the liver, lungs, and other tissues in the body and can also made in the laboratory. Heparin may be injected into muscle or blood to prevent or break up blood clots. It is a type of anticoagulant.

**hepatectomy :** Surgery to remove all or part of the liver.

**hepatic :** Refers to the liver.

**hepatic arterial infusion :** A procedure to deliver chemotherapy directly to the liver. Catheters are put into an artery in the groin that leads directly to the liver, and drugs are given through the catheters.

**hepatic arterial occlusion :** A block in blood flow to the liver. It can happen while giving chemotherapy through a catheter in the hepatic artery. Sometimes doctors use drugs or other agents to cause hepatic arterial occlusion on purpose. This block of blood flow to the liver helps kill cancer cells growing in the liver.

**hepatic artery :** The major blood vessel that carries blood to the liver.

**hepatic portal vein :** A blood vessel that carries blood to the liver from the intestines, spleen, pancreas, and gallbladder. Also called portal vein.

**hepatic veno-occlusive disease :** A condition in which some of the veins in the liver are blocked. This causes a decrease in blood flow inside the liver and may lead to liver damage. Signs and symptoms include weight gain, yellowing of the skin and whites of the eyes, dark-colored urine, and increased liver size. It may occur at some point in time after radiation therapy to the liver and bile ducts or after high-dose anticancer drugs were given before a stem cell transplant. Also called sinusoidal obstruction syndrome.

**hepatitis :** Disease of the liver causing inflammation. Symptoms include an enlarged liver, fever, nausea, vomiting, abdominal pain, and dark urine.

**hepatitis A vaccine:** An inactivated virus vaccine that provides active immunization against hepatitis A virus (HAV). Immunization with hepatitis A vaccine induces the formation of anti-HAV antibodies which provide protection against hepatitis A infection. Or A vaccine used to prevent infection with the hepatitis A virus, which causes a serious liver disease. The vaccine is made of a weakened form of the virus that cannot cause disease but causes the body's immune system to make antibodies that destroy the hepatitis A virus.

**hepatitis A virus :** A virus that causes a serious liver disease. It is usually spread by contact with an infected person's stool by eating food he or she has handled after not washing hands, but it can be spread in other ways. Symptoms of infection include jaundice, dark urine, and fever and other flu-like symptoms.

**hepatitis B vaccine (recombinant):** A non-infectious mixture containing recombinant hepatitis B surface antigen (HBsAg) in a liquid vehicle. Immunization with the hepatitis B vaccine induces the formation of specific anti-hepatitis B antibodies and an active immunity against hepatitis B infection. Check for active clinical trials using this agent.

**hepatitis B virus :** A virus that causes hepatitis (inflammation of the liver). It is carried and passed to others through the blood and other body fluids. Different ways the virus is spread include sharing needles with an infected person and being stuck accidentally by a needle contaminated with the virus. Infants born to infected mothers may also become infected with the virus. Although many patients who are infected with hepatitis B virus may not have symptoms, long-term infection may lead to cirrhosis (scarring of the liver) and liver cancer. Also called HBV.

**hepatitis C immune globulin intravenous:** A human plasma-derived, polyclonal, intravenous immunoglobulin G (IgG) formulation containing high levels of antibodies against hepatitis C virus (HCV), a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family, with potential immunomodulating and antiviral activities. The hepatitis C IgG is isolated from donors expressing high amounts of HCV antibodies. Upon intravenous administration, the anti-HCV antibodies bind to the virus and provide passive immunization against HCV. This may prevent both infection by HCV in immunocompromised patients and hepatitis C-related

liver disease. The polyclonal anti-HCV antibodies are able to target various viral epitopes.

**hepatitis C virus :** A virus that causes hepatitis (inflammation of the liver). It is carried and passed to others through the blood and other body fluids. Different ways the virus is spread include sharing needles with an infected person and being stuck accidentally by a needle contaminated with the virus. Infants born to infected mothers may also become infected with the virus. Although patients who are infected with hepatitis C virus may not have symptoms, long-term infection may lead to cirrhosis (scarring of the liver) and liver cancer. These patients may also have an increased risk for certain types of non-Hodgkin lymphoma. Also called HCV.

**hepatitis D virus :** A type of hepatitis virus that may be present in the body at the same time as the hepatitis B virus. It makes the hepatitis (inflammation of the liver) caused by hepatitis B much worse. The hepatitis D virus and the hepatitis B virus are spread to others through blood or sexual contact. Infants born to infected mothers may also become infected with the virus. Also called hepatitis delta virus.

**hepatitis delta virus :** A type of hepatitis virus that may be present in the body at the same time as the hepatitis B virus. It makes the hepatitis (inflammation of the liver) caused by hepatitis B much worse. The hepatitis delta virus and the hepatitis B virus are spread to others through blood or sexual contact. Infants born to infected mothers may also become infected with the virus. Also called hepatitis D virus.

**hepatitis E virus :** A virus that causes hepatitis (inflammation of the liver). It is usually spread through food that has been handled by an infected person, or through drinking water that is contaminated with human waste.

**hepatitis G virus :** A virus that may be found in patients with hepatitis (inflammation of the liver). It is spread to others through blood or sexual contact. Infants born to infected mothers may also become infected with the virus.

**hepatobiliary :** Having to do with the liver, bile ducts, and/or gallbladder.

**hepatoblastoma :** A type of liver tumor that occurs in infants and children.

**hepatocellular carcinoma :** A type of adenocarcinoma and the most common type of liver tumor.

**hepatocyte:** The major cell type of liver tissue. OR A liver cell.

**hepatoma** : A liver tumor.

**hepatomegaly** : Enlarged liver.

**hepatotoxic**: The adjective applied to anything which is harmful to the liver.

**Hepsera**: (Other name for: adefovir dipivoxil)

**hepsulfam**: A bisulfamic ester which is similar in structure to busulfan and belongs to the family of drugs known as alkylsulfonate alkylating agents. Hepsulfam forms covalent linkages with nucleophilic centers in DNA, resulting in depurination, base miscoding, strand scission, DNA-DNA and DNA-protein cross-linking, and cytotoxicity. Check for active clinical trials using this agent.

**heptagon**: a plane closed figure with seven sides and seven angles.

**Heptoses**: Monosaccharides that have seven carbon atoms.

**HER-2-neu, CEA peptides, GM-CSF, Montanide ISA-51 vaccine**: A vaccine comprised of HER-2-neu and carcinoembryonic antigen synthetic (CEA) peptides, combined with the adjuvants granulocyte-macrophage colony stimulating factor (GM-CSF), and Montanide ISA-51 with potential antineoplastic activity. HER-2-neu, CEA peptides, GM-CSF, Montanide ISA-51 vaccine may stimulate a cytotoxic T-cell response against HER-2-neu- and CEA-expressing tumor cells. The GM-CSF adjuvant stimulates the proliferation of monocytes and monocyte differentiation into macrophages and dendritic cells, immunohematopoietic elements with important antitumoral functions. Montanide ISA-51, also known as incomplete Freund's adjuvant or IFA, is a stabilized water-in-oil emulsion adjuvant containing mineral oil with mannide oleate added as a surfactant that non-specifically stimulates cell-mediated immune responses to antigens.

**HER-2-positive B-cell peptide antigen IMU-131**: A cancer vaccine consisting of a fusion peptide, composed of three peptides derived from the extracellular domain (ECD) of the HER2 peptide antigen found on B-cells (P4, P6 and P7; P467), conjugated to the carrier protein DT-CRM197, a non-toxic, mutated form of diphtheria toxin (DT), and combined with the immunoadjuvant montanide ISA 51, with potential immunostimulatory and antineoplastic activities. Upon administration, IMU-131 vaccine induces the production of polyclonal antibodies against the HER2 protein. In turn, the

antibodies bind to three separate binding sites on HER2 expressed on tumor cells and inhibit HER2 dimerization and activity, resulting in the inhibition of HER2-mediated signal transduction pathways. This induces apoptosis in and reduces cellular proliferation of HER2-overexpressing tumor cells. In addition, IMU-131 induces a cytotoxic T-lymphocyte (CTL) response against the HER2-expressing tumor cells. The tumor-associated antigen (TAA) HER2, also called Neu or ErbB2, is a tyrosine kinase receptor for epidermal growth factor (EGF) and is often overexpressed by a variety of tumor cell types. Montanide ISA 51, also known as incomplete Freund's adjuvant or IFA, is a stabilized water-in-oil (w/o) emulsion adjuvant containing mineral oil with mannide oleate added as a surfactant that non-specifically stimulates cell-mediated immune responses to antigens. DT-CRM197 is used to increase the immunogenicity of the HER2/neu peptide antigen. In P467, the three B-cell epitopes were combined in a specific order into a single 49 amino acid peptide antigen. Check for active clinical trials using this agent.

**HER-2/neu intracellular domain protein:** The cytoplasmic domain or intracellular domain (ICD) of the HER2/neu protein that exhibits tyrosine kinase activity. Based on sensitization theory, co-administration of trastuzumab (anti-HER-2/neu monoclonal antibody) and HER-2/neu intracellular domain protein may result in the potentiation of a HER2/neu-specific cytotoxic T lymphocyte (CTL) response against tumor cells overexpressing the HER2/neu protein. HER-2/neu protein, a glycoprotein cell surface receptor that is composed of an extracellular domain (ECD), a transmembrane domain, and an ICD, is overexpressed by many adenocarcinomas including breast adenocarcinoma.

**HER-2/neu peptide vaccine:** A cancer vaccine comprised of peptides derived from the extracellular domain of the tumor-associated antigen Her-2/neu with potential antineoplastic activity. HER-2/neu peptide vaccine may induce antibodies with anti-tumor activity and may also elicit a specific CD8 T-cell response against specific tumor cell types. Check for active clinical trials using this agent.

**HER1 :** The protein found on the surface of some cells and to which epidermal growth factor binds, causing the cells to divide. It is found at abnormally high levels on the surface of many types of cancer cells, so

these cells may divide excessively in the presence of epidermal growth factor. Also called EGFR, epidermal growth factor receptor, and ErbB1.

**HER2 ECD+TM virus-like replicon particles vaccine AVX901:** A cancer vaccine based on virus-like replicon particles (VRP) packaged with an alphaviral vector encoding the extracellular domain (ECD) and transmembrane (TM) regions of the human epidermal growth factor receptor 2 (EGFR2, NEU or HER2), with potential antineoplastic activity. After immunization with HER2 ECD+TM virus-like replicon particles vaccine AVX901, the VRPs infect cells and express HER2 ECD+TM protein that may activate the immune system to elicit a cytotoxic T-lymphocyte (CTL) response against HER2-expressing tumor cells. The alphaviral replicon of this vaccine is an attenuated strain of the Venezuelan equine encephalitis virus (VEEV) in which 3 of the 7 viral genes were substituted with a truncated HER2 gene to create a self-amplifying replicon RNA. HER2, a tyrosine kinase involved in several cell growth signaling pathways, is dysregulated or overexpressed in a wide variety of cancer cell types. Check for active clinical trials using this agent.

**HER2 negative :** Describes cancer cells that do not have a large amount of a protein called HER2 on their surface. In normal cells, HER2 helps to control cell growth. Cancer cells that are HER2 negative may grow more slowly and are less likely to recur (come back) or spread to other parts of the body than cancer cells that have a large amount of HER2 on their surface. Checking for the amount of HER2 on some types of cancer cells may help plan treatment. These cancers include breast, bladder, ovarian, pancreatic, and stomach cancers. Also called human epidermal growth factor receptor 2 negative.

**HER2 positive :** Describes cancer cells that have too much of a protein called HER2 on their surface. In normal cells, HER2 helps to control cell growth. When it is made in larger than normal amounts by cancer cells, the cells may grow more quickly and be more likely to spread to other parts of the body. Checking to see if a cancer is HER2 positive may help plan treatment, which may include drugs that kill HER2 positive cancer cells. Cancers that may be HER2 positive include breast, bladder, pancreatic, ovarian, and stomach cancers. Also called c-erbB-2 positive and human epidermal growth factor receptor 2 positive.

**HER2 test:** A laboratory test that measures the amount of HER2 protein on cancer cells or how many copies of the HER2 gene are in the DNA. The HER2 protein is involved in normal cell growth. It may be made in larger than normal amounts by some types of cancer, including breast, ovarian, bladder, pancreatic, and stomach cancer. This may cause cancer cells to grow more quickly and spread to other parts of the body. A HER2 test may be done to help plan treatment. It is a type of tumor marker test. Also called HER2/neu test and human epidermal growth factor receptor 2 test.

**HER2-pulsed type-1 polarized autologous dendritic cell vaccine:** A dendritic cell (DC)-based cancer vaccine composed of autologous, type-1 polarized dendritic cells (DCs) pulsed with human leukocyte antigen (HLA)-A2-restricted HER-2-derived peptides, with potential immunomodulatory and antineoplastic activities. Autologous DCs were treated with GM-CSF, interleukin-4, interferon-gamma and bacterial lipopolysaccharide (LPS), a toll-like receptor type 4 agonist, to produce highly polarized DCs (alphaDC1) that are capable of producing high levels of interleukin-12p70 (IL-12p70). Upon administration, HER2-pulsed autologous DC vaccine may stimulate a potent cytotoxic T-lymphocyte (CTL) response against HER-2-positive tumor cells, which may result in tumor cell death and decreased tumor growth. HER-2, a tyrosine kinase receptor for epidermal growth factor (EGF) (also known as neu and ErbB2), is overexpressed by a variety of cancers.

**HER2-targeted liposomal doxorubicin hydrochloride MM-302:** An antibody-targeted lipidic nano-carrier containing the antineoplastic anthracycline antibiotic doxorubicin encapsulated within liposomes, and conjugated to a monoclonal antibody against the human epidermal growth factor receptor 2 (HER2), with potential antitumor activity. Upon administration of HER2-targeted liposomal doxorubicin hydrochloride MM-302, the immunoliposome allows for specific delivery of doxorubicin to tumors overexpressing the HER2 receptor. Once inside the HER2-expressing tumor cells, doxorubicin intercalates into DNA and interferes with topoisomerase II activity, thereby inhibiting DNA replication and RNA synthesis. Compared to doxorubicin alone or liposomal doxorubicin, targeted liposomal delivery of doxorubicin improves efficacy while lowering the toxicity profile. HER2, a tyrosine kinase receptor, is overexpressed in many cancer cell types. Check for active clinical trials using this agent.

**HER2-targeting antibody Fc fragment FS102:** A proprietary, antibody fragment composed of a constant (Fc) region that is engineered to bind to the tumor-associated antigen human epidermal growth factor receptor-2 (HER2), with potential antineoplastic activity. HER2-targeted antibody Fc fragment FS102 specifically binds to its HER2 epitope, and causes downregulation of HER2-mediated signaling. This leads to tumor cell apoptosis. HER2, a member of the receptor tyrosine kinase (RTK) epidermal growth factor receptor (EGFR) superfamily, is overexpressed on the cell surface of various solid tumors.

**HER2/neu :** A protein involved in normal cell growth. It is found on some types of cancer cells, including breast and ovarian. Cancer cells removed from the body may be tested for the presence of HER2/neu to help decide the best type of treatment. HER2/neu is a type of receptor tyrosine kinase. Also called c-erbB-2, human EGF receptor 2, and human epidermal growth factor receptor 2.

**HER2/neu test:** A laboratory test that measures the amount of HER2/neu protein on cancer cells or how many copies of the HER2 gene are in the DNA. The HER2/neu protein is involved in normal cell growth. It may be made in larger than normal amounts by some types of cancer, including breast, ovarian, bladder, pancreatic, and stomach cancer. This may cause cancer cells to grow more quickly and spread to other parts of the body. A HER2/neu test may be done to help plan treatment. It is a type of tumor marker test. Also called HER2 test and human epidermal growth factor receptor 2 test.

**HER2Bi-armed activated T cells:** Activated T cells (ATC) that have been coated with bispecific antibodies (BiAb), with potential antineoplastic and immunomodulating activities. In vitro, T cells are activated through exposure to the anti-CD3 murine monoclonal antibody OKT3 and interleukin 2 for 14 days and then armed with anti-CD3 × anti-Her2 bispecific antibody (Her2Bi). Upon administration, HER2Bi-armed activated T cells attach to CD3-expressing T cells and HER2/neu-expressing tumor cells, selectively cross-linking T cells and tumor cells; this may result in the recruitment and activation of cytotoxic T lymphocytes (CTLs), CTL perforin-mediated tumor cell cytolysis, and the secretion of antitumor cytokines and chemokines.

**herba scutellaria barbata:** A Chinese herb isolated from the plant *Scutellaria barbata* D. Don (Lamiaceae) with potential antineoplastic activity. Containing the antioxidant flavone scutellarin, herba *Scutellaria barbata* has been shown to induce apoptosis of ovarian and breast tumor cells in vitro.

**herba *Scutellaria barbatae* :** An herb used in traditional Chinese medicine to treat certain medical problems. It may have anticancer effects.

**herbal :** Having to do with plants.

**herbal cigarette :** A type of cigarette that contains a mixture of flowers, herbs, and other natural ingredients. Herbal cigarettes do not contain tobacco or nicotine. When they are smoked, they make many of the same harmful chemicals found in tobacco smoke, including tar and carbon monoxide.

**herbal medicine :** A type of medicine that uses roots, stems, leaves, flowers, or seeds of plants to improve health, prevent disease, and treat illness.

**herbal polysaccharide saliva substitute:** A plant-based, proprietary formulation of saliva substitute with potential anti-xerostomia activity. Extracted from the plant called yerba santa (holy herb), herbal polysaccharide saliva substitute contains plant mucins, which is nearly identical to that of human mucous membranes. Upon direct application using the polysaccharide-containing spray, a protective film of moisture is deposited over the mucous membranes of the mouth and throat. The xylitol in this preparation protects against the formation of harmful oral flora and thus helps to prevent cavities. Moreover, this agent has shown a demineralization effect on dentin.

**herbal supplement :** A product made from a plant that is thought to be useful in treating disease or staying healthy. Herbal supplements are taken by mouth.

**herbicide:** The descriptor applied to a chemical used to kill plants. See pesticide.

**herbicide :** A chemical that kills plants.

**herbivore:** An animal that feeds on plants.

**herbivores:** animals that eat plants.

**Herceptin** : A drug used to treat breast cancer that is HER2-positive (expresses the human epidermal growth factor receptor 2). It is also used with other drugs to treat HER2-positive stomach cancer that has not already been treated and has spread to other parts of the body. It is being studied in the treatment of other types of cancer. Herceptin binds to HER2 on the surface of HER2-positive cancer cells, and may kill them. It is a type of monoclonal antibody. Also called trastuzumab.

**hereditary** : In medicine, describes the passing of genetic information from parent to child through the genes in sperm and egg cells. Also called inherited.

**hereditary breast and ovarian cancer syndrome** : An inherited disorder in which the risk of breast cancer (especially before the age of 50) and ovarian cancer is higher than normal. Most cases of hereditary breast and ovarian cancer syndrome are caused by certain mutations (changes) in the BRCA1 or the BRCA2 gene. People with hereditary breast and ovarian cancer syndrome may also have an increased risk of other types of cancer, including pancreatic cancer, prostate cancer, and melanoma. Also called HBOC syndrome.

**hereditary cancer syndrome** : A type of inherited disorder in which there is a higher-than-normal risk of certain types of cancer. Hereditary cancer syndromes are caused by mutations (changes) in certain genes passed from parents to children. In a hereditary cancer syndrome, certain patterns of cancer may be seen within families. These patterns include having several close family members (such as a mother, daughter, and sister) with the same type of cancer, developing cancer at an early age, or having two or more types of cancer develop in the same person. Examples of hereditary cancer syndromes are hereditary breast and ovarian cancer syndrome, Li-Fraumeni syndrome, Cowden syndrome, and Lynch syndrome. Also called inherited cancer syndrome.

**hereditary leiomyomatosis and renal cell cancer syndrome** : A rare inherited disorder that increases the risk of developing benign (not cancer) tumors of the skin and the uterus (leiomyomas) and malignant (cancer) tumors of the uterus (leiomyosarcoma) and the kidney. Also called HLRCC.

**hereditary mutation** : A gene change in a body's reproductive cell (egg or sperm) that becomes incorporated into the DNA of every cell in the body of

the offspring. Hereditary mutations are passed on from parents to offspring. Also called germline mutation.

**hereditary nonpolyposis colon cancer :** An inherited disorder in which affected individuals have a higher-than-normal chance of developing colorectal cancer and certain other types of cancer, often before the age of 50. Also called HNPCC and Lynch syndrome.

**Hereditary nonpolyposis colorectal cancer (HPCC):** A common form of hereditary colon cancer due to defective correction of DNA mismatches. Also called Lynch syndrome.

**hereditary paraganglioma-pheochromocytoma syndrome :** A rare, genetic disorder marked by tumors called paragangliomas, which are found in paraganglia. Paraganglia are groups of nerve-like cells found near the adrenal glands and near blood vessels or nerves in the head, neck, chest, abdomen, and pelvis. Paragangliomas that form in the adrenal glands are called pheochromocytomas. Paragangliomas are usually benign (not cancer), but sometimes become malignant (cancerous). People with hereditary paraganglioma-pheochromocytoma syndrome usually have more than one paraganglioma, and may have an increased risk of certain types of cancer, such as kidney cancer and thyroid cancer.

**heritability :** The proportion of variation in a population trait that can be attributed to inherited genetic factors. Heritability estimates range from 0 to 1 and are often expressed as a percentage. A number close to 1 may be indicative of a highly heritable trait within a population. It should not be used to estimate risk on an individual basis. or In medicine, describes a characteristic or trait that can be passed from a parent to a child through the genes. Several types of cancer have heritable forms, in which the risk of developing a particular type of cancer is inherited from a parent. Some signs of heritable cancer are a family history of the cancer, mutations (changes) in certain genes passed from a parent to a child, or a mutation that occurs at the time of conception (fertilization of an egg by a sperm). Heritable forms of cancer often develop at an early age.

**heritage :** Something handed down from the past, such as a tradition, birthright, or inherited traits.

**Hermetic seal:** a seal that will exclude air and will be gas tight at normal temperatures and atmospheric pressures.

**hernia** : The bulging of an internal organ through a weak area or tear in the muscle or other tissue that holds it in place. Most hernias occur in the abdomen.

**heroin** : A substance made from morphine. Heroin is very addictive, and it is illegal to use or sell it in the United States. It may be used outside the United States to treat severe pain. Heroin binds to opioid receptors in the central nervous system. It is a type of analgesic agent and a type of opiate. Also called diacetylmorphine hydrochloride and diamorphine hydrochloride.

**herpes simplex virus** : A type of virus that causes herpes infections and has DNA as its genetic material. There are two types of herpes simplex viruses. Infections with type 1 viruses cause cold sores on the lips or nostrils. Infections with type 2 viruses cause sores on the genitals (external and internal sex organs and glands). Also called HHV, HSV, and human herpesvirus.

**herpes zoster vaccine GSK1437173A**: A recombinant, subunit herpes zoster (HZ) vaccine containing varicella-zoster virus (VZV) glycoprotein E (gE), that can potentially be used to prevent HZ infection, also called shingles. Upon administration, HZ vaccine GSK1437173A stimulates the host immune system to induce both specific CD4-positive T-cells and antibodies against VZV gE, thereby protecting against infection with HZ. VZV gE, the most common antigen in VZV viral particles, plays a key role in VZV infection. Compared to live-attenuated vaccines, the subunit vaccine prevents the risk of vaccine-induced HZ in immunocompromised patients.

**herpesvirus** : A member of the herpes family of viruses.

**Herplex**: (Other name for: idoxuridine)

**Herringbone** : Arrangement of support rails in which rails are arranged in a "V-shape" pattern. Tip of "v" points in direction of belt travel. This arrangement provides even distribution of wear across belt width, and aids to keep the belt centered in its path.

**herringbone cross-bedding**: a distinctive pattern of alternating cross-bedding directions that is reflective of a rhythmic, high-energy environment, such as a tidal zone.

**Hers disease:** A disease resulting from a lack of liver glycogen phosphorylase; glycogen is present in increased amounts with mild clinical effects.

**hertz:** a measure of a wave's frequency. A hertz equals the number of waves that passes a specific point per second.

**hertz (Hz):** in electrical/electronic applications with alternating current, a unit of frequency where 1 Hz equals one cycle per second.

**Hertz-1:** The SI unit of frequency, equal to one cycle of the wave per second (s<sup>-1</sup>).

**Hesitation effect :** occurs in parts of varied thicknesses. The flow moves preferentially into a thicker area causing an adjacent thin area to freeze off while the thicker area fills. Gates should be positioned as far as possible from where the flow divides into thick and thin flow paths.

**Hess's law:** The heat released or absorbed by a process is the same no matter how many steps the process takes. For example, given a reaction A → B, Hess's law says that H for the reaction is the same whether the reaction is written as A → C → B or as A → B. This is the same as writing that  $H(A \rightarrow B) = H(A \rightarrow C) + H(C \rightarrow B)$ .

**hetastarch:** A synthetic, nonionic hydroxyethyl derivative of starch used as a plasma expander when prepared in an isotonic solution. Upon intravenous administration, hydroxyethyl starch colloid increases blood volume and thus improves circulation. This agent is almost exclusively excreted by the kidneys and is potentially nephrotoxic. Check for active clinical trials using this agent.

**hetero atom:** in organic chemistry, an atom other than carbon.

**Heteroatom:** In terms of organic compounds, heteroatoms are any atoms that are not carbon or hydrogen.

**Heterochromatin:** Highly condensed regions of chromosomes that are not usually transcriptionally active.

**heterocycle:** A compound containing at least one ring that consists of both carbon and non-carbon atoms .

**Heterocycle:** Cyclic organic compounds that contain at least two different elements in the ring system.

**heterocyclic:** An organic group or molecule containing rings with at least one noncarbon atom on the ring.

**heterocyclic amine :** A chemical that is formed when meat, poultry, or fish is cooked at high temperatures, such as frying, broiling, and barbecuing. Heterocyclic amines are carcinogens (substances that may cause cancer). Also called HCA.

**heterocyclic compound:** a class of cyclic compounds in which one of the ring atoms is not carbon; epoxyethane, for example.

**heterodimeric interleukin-15:** A fusion protein complex composed of heterodimeric IL-15 (hetIL-15), which consists of a synthetic form of the endogenous cytokine interleukin-15 chain (IL-15) complexed to the soluble IL-15 binding protein IL-15 receptor alpha chain (IL-15Ra) (IL15:sIL-15Ra), with potential immunomodulatory, anti-infective and antineoplastic activities. Upon administration, hetIL-15 binds to the IL-2/IL-15 receptor beta-common gamma chain (IL-2Rbeta-gamma) receptor on natural killer (NK) and T-lymphocytes, which activates and increases the levels of NK cells and CD8+ and CD4+ T cells. The T cells enhance the secretion of the cytokine interferon-gamma (IFN-g), which further potentiates the immune response against tumor cells. Altogether, this enhances tumor cell killing and decreases tumor cell proliferation. By coupling IL-15 to IL15Ra, this agent has an improved pharmacokinetic profile, shows an increased ability to bind IL-2Rbeta-gamma, and shows increased immunostimulatory activity as compared to IL-15 alone.

**Heteroduplex:** An annealed duplex structure between two DNA strands that do not show perfect complementarity. Can arise by mutation, recombination, or the annealing of complementary single-stranded DNAs.

**heteroduplex analysis :** A method of detecting sequence differences between normal DNA and the DNA to be tested. It is commonly used as a screening method to detect potential mutations in a gene.

**heteroduplex DNA:** Duplex DNA containing complementary strands derived

**heterogeneity logarithm of the odds score :** A statistical estimate of whether two genetic loci are physically near enough to each other (or “linked”) on a particular chromosome that they are likely to be inherited together. A heterogeneity logarithm of the odds score is calculated in the presence of locus heterogeneity (when the same phenotype can be caused by mutations in genes at different chromosomal loci). Also called HLOD score.

**heterogeneous:** Describes a material or substance or chemical reaction which is not the same throughout in its properties, composition, or state of matter.

**HETEROGENEOUS:** materials are not uniform throughout. OR A sample of matter consisting of more than one pure substance and more than one phase. Blood, protoplasm, milk, chocolate, smoke, and chicken soup are examples of heterogeneous mixtures.

**heterogeneous :** Made up of elements or ingredients that are not alike.

**heterogenic :** Derived from a different source or species. Also called heterogenous.

**heterogenic bond formation:** a type of bond formed by the overlap of orbitals on adjacent atoms. One orbital of the pair donates both of the electrons to the bond.

**heterogenous :** Derived from a different source or species. Also called heterogenic.

**heterogenous mixture:** A common misspelling of heterogeneous.

**heterolytic cleavage:** the fracture of a bond in such a manner that one of the atoms receives both electrons. In reactions, this asymmetrical bond rupture generates carbocation and carbanion mechanism.

**Heteropolymer:** A polymer containing more than one type of monomeric unit.

**Heterotroph:** A microorganism which uses organic matter for energy and growth. OR An organism that requires preformed organic compounds for growth. OR An organism that requires complex nutrient molecules, such as glucose, as a source of energy and carbon.

**heterotrophic:** species that acquire food from organic matter.

**Heterotrophs:** Organisms that obtain energy from chemical fuels only and that are ultimately dependent on autotrophs for fuel.

**heterotrophs:** Organisms that break down and use organic matter.

**Heterotropic effects:** The effects of nonsubstrate molecules on allosteric enzymes. OR An allosteric enzyme requiring a modulator other than its substrate.

**heterozygous:** two different alleles that are present for a particular characteristic. OR Describing an organism (a heterozygote) that carries two

different alleles for a given gene.

**heterozygous genotype :** Occurs when the two alleles at a particular gene locus are different. A heterozygous genotype may include one normal allele and one mutation, or two different mutations. The latter is called a compound heterozygote.

**Hexa-:** A prefix meaning six

**Hexa-Betalin:** (Other name for: pyridoxine hydrochloride)

**hexagon:** a plane closed figure with six sides and six angles.

**Hexagonal Crystal:** This crystal shape has six sides and no specific length. It looks like an elongated hexagon. OR A crystal class containing one six-fold rotation axis. This class contains 27 space groups and has three restrictions: 1) the lengths of the a and b axes are equal, 2) the a and b angles are equal to  $90^\circ$ , and 3) the c angle is equal to  $120^\circ$ .

**Hexalen:** (Other name for: altretamine)

**hexamethylene bisacetamide:** A hybrid polar-planar compound with potential antineoplastic activity that induces terminal differentiation, inhibits cell growth, and causes apoptosis in several tumor cell lines. Its precise mechanism of action is unknown.

**Hexamethylene diamine or 1,6-diaminohexane (HMDA):**

Hexamethylene diamine or 1,6-diaminohexane (HDMA) is produced by catalytic hydrogenation of adiponitrile. The majority of HMDA is reacted with adipic acid to produce nylon 6,6 in a two-step process.

**hexamethylmelamine:** (Other name for: altretamine)

**hexaminolevulinate:** The hexyl ester of 5-aminolevulinic acid (ALA) with photodynamic properties. As a precursor of photoactive porphyrins, hexaminolevulinate induces the endogenous production of the photosensitizer protoporphyrin IX (PPIX) which accumulates selectively in tumor tissue. When exposed to specific wavelengths of light, PPIX is activated and, depending on the wavelength and/or intensity of light, either fluoresces, thereby allowing tumor imaging, or induces tumor cell apoptosis.

**hexaminolevulinate hydrochloride:** The hydrochloride salt form of hexaminolevulinate, a hexyl ester of the heme precursor 5-aminolevulinic acid (ALA) with potential photosensitizing activity. Hexaminolevulinate serves as a precursor of photoactive porphyrins (PAPs), particularly

protoporphyrin IX (PpIX), which selectively accumulate in rapidly proliferating cells, such as those seen in tumor tissue. When exposed to blue light, PpIX is activated and emit red light thereby allowing tumor imaging.

**Hexene:** Used as a monomer in the formation of polymers, usually LLDPE resin.

**Hexokinase:** A kinase that phosphorylates six-carbon sugars, usually glucose, at the expense of ATP.

**hexose:** A simple sugar with a backbone containing six carbon atoms.

**high-energy compound:** A compound that on hydrolysis undergoes a large decrease in free energy under standard conditions. OR Monosaccharides that have six carbons.

**Hexose:** A sugar with a six-carbon backbone.

**Hextend:** (Other name for: hetastarch)

**hexyl 5-aminolevulinate :** A substance that is used to find and kill tumor cells. It enters tumor cells and becomes activated when exposed to a special type of light. A chemical reaction causes the cells to produce fluorescent light and die.

**HF:** Hartree-Fock. In the Gaussian programs, HF denotes RHF for closed-shell molecules and UHF for open-shell.

**HFS:** Hartree-Fock Slater. An older DFT method involving only local, Slater-style exchange. Often synonymous with the X alpha method.

**HGS-ETR1:** A substance being studied in the treatment of some types of cancer. It binds to a protein called TRAIL R1 on the surface of some tumor cells. This may kill the tumor cells. HGS-ETR1 is a type of monoclonal antibody. Also called anti-TRAIL R1-mAb and mapatumumab.

**HGS-ETR2:** A substance being studied in the treatment of some types of cancer. It binds to a protein called TRAIL-R2 on the surface of some tumor cells, which may kill the tumor cells. HGS-ETR2 is a type of monoclonal antibody. Also called anti-TRAIL R2 mAb HGS-ETR2 and lexatumumab.

**HHV:** A type of virus that causes herpes infections and has DNA as its genetic material. There are two types of HHVs. Infections with type 1 viruses cause cold sores on the lips or nostrils. Infections with type 2 viruses cause sores on the genitals (external and internal sex organs and glands). Also called herpes simplex virus, HSV, and human herpesvirus.

**HHV8:** A type of virus that causes Kaposi sarcoma (a rare cancer in which lesions grow in the skin, lymph nodes, lining of the mouth, nose, and throat, and other tissues of the body). HHV8 also causes certain types of lymphoma (cancer that begins in cells of the immune system). Also called human herpesvirus 8, Kaposi sarcoma-associated herpesvirus, and KSHV.

**HibTITER:** (Other name for: Haemophilus influenzae b vaccine)

**Hiding power:** The ability of paint to hide or obscure a surface colour of stain over which it has been uniformly applied. Hiding power is provided by the paint's pigment OR The ability of a paint to hide the previous surface or color.

**HIF-1alpha inhibitor PX-478:** An orally active small molecule with potential antineoplastic activity. Although its mechanism of action has yet to be fully elucidated, HIF1-alpha inhibitor PX-478 appears to inhibit hypoxia-inducible factor 1-alpha (HIF1A) expression, which may result in decreased expression of HIF1A downstream target genes important to tumor growth and survival, a reduction in tumor cell proliferation, and the induction of tumor cell apoptosis. The inhibitory effect of this agent is independent of the tumor suppressor genes VHL and p53 and may be related to derangements in glucose uptake and metabolism due to inhibition of glucose transporter-1 (Glut-1).

**HIF-2alpha inhibitor PT2385:** An orally active, small molecule inhibitor of hypoxia inducible factor (HIF)-2alpha, with potential antineoplastic activity. Upon oral administration, HIF-2alpha inhibitor PT2385 allosterically binds to HIF-2alpha, thereby preventing HIF-2alpha heterodimerization and its subsequent binding to DNA. This results in decreased transcription and expression of HIF-2alpha downstream target genes, many of which regulate tumor cell growth and survival. Blocking HIF-2alpha reduces the proliferation of HIF-2alpha-expressing tumor cells. HIF-2alpha, a heterodimeric transcription factor overexpressed in many cancers, promotes tumorigenesis.

**HIFU:** A procedure in which high-energy sound waves are aimed directly at an area of abnormal cells or tissue in the body. The waves create heat that kills the cells. HIFU is being studied in the treatment of prostate cancer and some other types of cancer and other diseases. Also called high-intensity focused ultrasound therapy.

**high blood pressure :** A blood pressure of 140/90 or higher. High blood pressure usually has no symptoms. It can harm the arteries and cause an increase in the risk of stroke, heart attack, kidney failure, and blindness. Also called hypertension.

**high blood sugar :** Higher than normal amount of glucose (a type of sugar) in the blood. High blood sugar can be a sign of diabetes or other conditions. Also called hyperglycemia.

**High Conservation Value Forest (HCVF):** A term that is designed to describe forest and ecosystem areas that are “set aside” and restricted from commercial development or deforestation, based on its biodiversity or socioeconomic factors.

**HIGH DENSITY POLYETHYLENE:** This term is generally considered to include polyethylenes ranging in density from about 0.940 to 0.960 and over. Whereas the molecules in low density polyethylene are branched in random fashion, those in the higher density polyethylenes have fewer side branches, resulting in more rigid material with greater strength, hardness, chemical resistance, and higher softening temperature.

**High Density Polyethylene (HDPE):** High density polyethylene (HDPE) is the name given to the densest member of the polyethylene family. HDPE is more rigid and opaque than the other polyethylenes and is used in many packaging and container applications which benefit from its strength and high temperature resistance. HDPE goods are commonly marked with a 2 following the recycling codes developed by the American Society of the Plastics Industry. HDPE was initially produced by low pressure reaction of ethylene monomers with specialized Ziegler-Natta catalysts in slurry reactors. More recently production has also been obtained by low pressure gas phase HDPE/LLDPE swing plants. OR Polyethylene resin with a density over .940 gm/cc.

**high grade :** A term used to describe cells and tissue that look abnormal under a microscope. High-grade cancer cells tend to grow and spread more quickly than low-grade cancer cells. Cancer grade may be used to help plan treatment and determine prognosis. High-grade cancers usually have a worse prognosis than low-grade cancers and may need treatment right away or treatment that is more aggressive (intensive).

**HIGH LOAD MELT FLOW INDEX (HLMFI):** This is a melt flow index test that uses a higher than the usual (2.16 kg) weight. For PE, the

HLMFI weight is usually 10 kg, but sometimes 21.6 kg.

**High melting point:** Substances with high melting points have strong attractions between their particles. Metals (in general) have high melting points and so do ionic compounds and macromolecules.

**high performance liquid chromatography:** An efficient form of column chromatography that pumps a liquid solution of the sample at very high pressure through a column packed with a stationary phase made of very tiny particles. The high pressure pumps required make HPLC an expensive technique.

**High Performance Liquid Chromatography (HPLC):** A form of liquid chromatography used in analytical chemistry used to separate, identify, and quantify the components of a mixture.

**High radiation area:** Any area with dose rates greater than 100 millirems (1 millisievert) in one hour 30 centimeters from the source or from any surface through which the ionizing radiation penetrates. Areas at licensee facilities must be posted as "high radiation areas" and access into these areas is maintained under strict control.

**high spin complex:** A metal-ligand complex with the same number of unpaired electrons as the uncomplexed metal ion. When a weak ligand complexes the metal ion, the crystal field splitting is small and the electrons can still occupy all of the d orbitals without pairing.

**High Tension :** Tension meeting or exceeding the capabilities of the belt. High tension can result from system layout, high coefficient of friction between belt and product (dirty system), or product loading.

**High Throughput Screening:** An automated method of performing large amounts of in vitro experiments.

**High-alloy steel :** Some steels contain up to 25% of other elements. Stainless steel is an example of a high alloy steel (it contains large amounts of nickel and chromium).

**High-density lipoprotein (HDL):** A lipoprotein that picks up cholesterol from dying cells and from membranes undergoing turnover, esterifies it, and then transfers the cholesterol esters to the liver and other steroid-synthesizing tissues.

**High-Density Polyethylene (HDPE):** a rigid, tough and strong resin of natural milky color. Hdpe has very good stress crack resistance as well as

high impact and melt strength. With hdpe it is easy to add color. OR A conventional (not biodegradable) plastic, as used commonly in single-use plastic carry bags (HDPE). OR This term is generally considered to include polyethylene plastics ranging in density from about 0.940 to 0.960 and over in recycled plastic and plastic materials. Its main usages are crates and boxes, bottles (for food products, detergents, cosmetics), food containers, toys, petrol tanks, industrial wrapping and film, pipes and houseware.

**high-dose chemotherapy** : An intensive drug treatment to kill cancer cells, but that also destroys the bone marrow and can cause other severe side effects. High-dose chemotherapy is usually followed by bone marrow or stem cell transplantation to rebuild the bone marrow.

**high-dose radiation** : An amount of radiation that is greater than that given in typical radiation therapy. High-dose radiation is precisely directed at the tumor to avoid damaging healthy tissue, and may kill more cancer cells in fewer treatments. Also called HDR.

**high-dose-rate remote brachytherapy** : A type of internal radiation treatment in which the radioactive source is removed between treatments. Also called high-dose-rate remote radiation therapy and remote brachytherapy.

**high-dose-rate remote radiation therapy** : A type of internal radiation treatment in which the radioactive source is removed between treatments. Also called high-dose-rate remote brachytherapy and remote brachytherapy.

**High-energy compound**: A compound that undergoes hydrolysis with a high negative standard free energy change.

**high-energy photon therapy** : A type of radiation therapy that uses high-energy photons (units of light energy). High-energy photons penetrate deeply into tissues to reach tumors while giving less radiation to superficial tissues such as the skin.

**High-enriched uranium**: Uranium enriched to at least 20 percent uranium-235 (a higher concentration than exists in natural uranium ore). For detail, see Uranium Enrichment.

**high-grade lymphoma** : A type of lymphoma that grows and spreads quickly and has severe symptoms. Also called aggressive lymphoma and intermediate-grade lymphoma.

**high-grade squamous intraepithelial lesion :** A growth on the surface of the cervix with moderately or severely abnormal cells. High-grade squamous intraepithelial lesions are usually caused by certain types of human papillomavirus (HPV) and are found when a Pap test is done. If not treated, these abnormal cells may become cancer and spread to nearby normal tissue. A high-grade squamous intraepithelial lesion is sometimes called moderate or severe dysplasia. Also called HSIL.

**high-intensity focused ultrasound therapy :** A procedure in which high-energy sound waves are aimed directly at an area of abnormal cells or tissue in the body. The waves create heat that kills the cells. High-intensity focused ultrasound therapy is being studied in the treatment of prostate cancer and some other types of cancer and other diseases. Also called HIFU.

**High-performance liquid chromatography (HPLC):** A chromatographic technique that involves passing a solution at high pressures through a packed column of fine particles. The components of a sample are separated on the column and noted by a detector (e.g., UV-Vis, refractive index, potentiometric, etc.) An octadecylsilyl (C-18) column is the most commonly used column and a UV detector is the most commonly used detector.

**high-performance liquid chromatography (HPLC):** Chromatographic procedures, often conducted at relatively high pressures, using automated equipment that permits refined and highly reproducible profiles.

**High-Pressure Laminates (molding pressure high):** Laminates molded and cured at pressures not lower than 1,000 psi. (Pressures of 1,000 to 2,500 psi are not uncommon.)

**high-risk cancer :** Cancer that is likely to recur (come back), or spread.

**high-risk HPV :** A type of human papilloma virus (HPV) that can cause cervical cancer and other types of cancer, such as cancers of the anus, vagina, vulva, penis, and oropharynx. Most high-risk HPV infections go away on their own without treatment, and do not cause cancer. Also called high-risk human papillomavirus.

**high-risk human papillomavirus :** A type of human papilloma virus (HPV) that can cause cervical cancer and other types of cancer, such as cancers of the anus, vagina, vulva, penis, and oropharynx. Most high-risk

human papillomavirus infections go away on their own without treatment, and do not cause cancer. Also called high-risk HPV.

**high-selenium baker's yeast:** A baker's yeast (*Saccharomyces cerevisiae*) containing high levels of the trace element selenium (Se) with potential chemopreventive, immunomodulating and antioxidant activities. Selenium is introduced into yeast during fermentation and incorporated into selenocompounds, such as selenomethionine and glutamyl SE methylselenocysteine. Selenium functions as a cofactor for antioxidant enzymes such as glutathione peroxidases and thioredoxin reductase.

**high-selenium Brassica juncea:** A formulation of the mustard plant *Brassica juncea* grown in a medium that has been enriched with the trace element selenium with potential chemopreventive and chemopotentiating activities. *Brassica juncea* hyperaccumulates trace elements in soil. Selenium amino acid species found in selenized *Brassica juncea* include methylselenomethionine (MeSeMet) and methylselenocysteine (MeSeCys); both may be incorporated into selenoproteins in vivo. Selenium functions as a cofactor for antioxidant enzymes such as glutathione peroxidases and thioredoxin reductase, which protect cells from the free radical damage. In addition, in vitro MeSeCys has been shown to potentiate the antitumor effects of the irinotecan metabolite SN-38, by inducing phosphorylation of checkpoint kinase 2 (chk2) at threonine 68, which results in poly(ADP-ribose) polymerase cleavage, caspase 3 activation, and DNA fragmentation.

or v

**high-titer RSV immune globulin RI-001:** A plasma-derived, polyclonal, intravenous immunoglobulin formulation (IVIG) containing standardized high levels of antibodies against respiratory syncytial virus (RSV), a single-stranded, enveloped paramyxovirus, with potential immunomodulating activity. The high-titer RSV immune globulin RI-001 is derived from healthy donors with high amounts of RSV antibodies. Upon intravenous administration, the antibodies against RSV may provide passive immunization against RSV. This may prevent lower respiratory tract infections by RSV in immunocompromised patients. The polyclonal antibodies in RI-001 are able to target various viral epitopes.

**Higher Oxo-alcohols:** Higher oxo-alcohols are collectively the heavier, smaller volume oxo-alcohols which are produced in addition to the principal oxo-alcohols 2-ethylhexanol and butanols. Oxo-alcohols are so

named because of the “oxo process” process by which they are produced, which involves hydroformulation of an olefin with syngas. Higher oxo-alcohols have a wide variety of end-uses ranging from pesticides to perfumery. Higher oxo-alcohol production is relatively specialised and small volume chemistry and tends to be restricted to large industrial economies.

**Highly (or High-) enriched uranium:** Uranium enriched to at least 20 percent uranium-235 (a higher concentration than exists in natural uranium ore). For detail, see Uranium Enrichment.

**highly active antiretroviral therapy :** Treatment that uses a combination of three or more drugs to treat HIV infection. Highly active antiretroviral therapy stops the virus from making copies of itself in the body. This may lessen the damage to the immune system caused by HIV and may slow down the development of AIDS. It may also help prevent transmission of HIV to others, including from mother to child during birth. Also called cART, combination antiretroviral therapy, and HAART.

**highly purified Staphylococcal protein A PRTX-100:** A proprietary formulation containing a highly purified form of Staphylococcal protein A (SpA; protein A), with potential immunomodulating activity. Upon administration of PRTX-100, this protein is able to specifically bind to both the subset of B lymphocytes that express the heavy chain variable region 3 (VH3)-encoded immunoglobulin (Ig) (VH3-B-cells) and macrophages. This prevents B-cell activation, induces apoptosis, prevents VH3-derived antibody formation, antibody-mediated immune responses, and destruction by macrophages. This may modulate specific immune signaling pathways and restore normal immune system functions caused by certain immune-mediated inflammatory diseases. In patients with the autoimmune-mediated disease immune thrombocytopenia (ITP), PRTX-100 prevents destruction of platelets, increases platelet production and platelet blood levels, and decreases the risk of bleeding. SpA, a 42 kDa bacterial membrane protein produced by *Staphylococcus aureus* bacteria, consists of five nearly identical Ig binding domains; each SpA domain binds with high affinity to the Igs containing regions encoded by the VH3 gene family. B-lymphocytes that express VH3-encoded Igs are specifically involved in various autoimmune diseases. Check for active clinical trials using this agent.

**hilar :** Refers to the area where nerves and blood vessels attach to an organ.

**Hill reaction:** The evolution of oxygen and the photoreduction of an artificial electron acceptor by a chloroplast preparation in the absence of carbon dioxide.

**Hiltonol:** (Other name for: poly ICLC)

**hindbrain:** the portion of the brain that consists of the medulla, pons, and cerebellum.

**hinge line:** the center axis of a fold.

**HIP:** High-impact polystyrene

**HIPAA :** A 1996 U.S. law that allows workers and their families to keep their health insurance when they change or lose their jobs. The law also includes standards for setting up secure electronic health records and to protect the privacy of a person's health information and to keep it from being misused. Also called Health Insurance Portability and Accountability Act and Kassebaum Kennedy Act.

**HIPS:** High Impact Polystyrene is a low density, rigid, clear plastic extrusion material mostly used for indoor applications (see Polystyrene).

**Hirschsprung disease :** A condition in which certain nerve cells are missing from the muscle layers of part of the large intestine. This causes severe constipation or blockage of the large intestine. Constipation is when stool becomes hard, dry, and difficult to pass and bowel movements occur less often than normal. Other symptoms include swollen abdomen, vomiting, bloody diarrhea, gas, lack of energy, and trouble gaining weight. Hirschsprung disease is present from birth, but the symptoms may not appear until later in a child's life. This condition has been linked to an increased risk of thyroid cancer and neuroblastoma. Also called aganglionic megacolon.

**histamine :** A substance that has many effects in the body. It is released from some types of white blood cells during allergic reactions. It causes small blood vessels to dilate (widen) and become leaky, which can cause tissues to swell. It also causes smooth muscles to contract, gastric acid to be made, and the heart rate to increase. Histamine is used in tests for allergies, asthma, and gastric acid secretion. It is a type of neurotransmitter.

**histamine dihydrochloride :** A substance being studied in the treatment of some types of cancer and other conditions. When used together with interleukin-2, histamine dihydrochloride may help some immune cells find and kill tumor cells. It is a type of biological response modifier. Also called Maxamine.

**histiocytoid hemangioma :** A rare benign (not cancer) tumor of small blood vessels surrounded by lymphocytes and eosinophils (types of white blood cells). Histiocytoid hemangioma usually forms on or in the skin, especially the skin of the head, but can occur in other areas of the body, such as in bone. On the skin, it may appear as firm pink to red bumps that may be itchy or painful. If the tumor is in bone, it may cause swelling and pain. Histiocytoid hemangioma is sometimes caused by injury and often comes back after treatment. Histiocytoid hemangioma is most common in young and middle-aged adults. It is a type of vascular tumor. Also called angiolymphoid hyperplasia with eosinophilia and epithelioid hemangioma.

**histologic examination :** The examination of tissue specimens under a microscope.

**histologic grade :** A description of a tumor based on how abnormal the cancer cells and tissue look under a microscope and how quickly the cancer cells are likely to grow and spread. Low-grade cancer cells look more like normal cells and tend to grow and spread more slowly than high-grade cancer cells. Grading systems are different for each type of cancer. They are used to help plan treatment and determine prognosis. Also called grade and tumor grade.

**histology :** The study of tissues and cells under a microscope.

**histone :** A type of protein found in chromosomes. Histones bind to DNA, help give chromosomes their shape, and help control the activity of genes.

**Histone acetyltransferase (HAT):** An enzyme that catalyzes the attachment of acetyl groups from acetyl coa to specific lysine residues in the amino-terminal domains of histones. These enzymes play crucial roles in the modification of chromatin structure that enhances transcription.

**Histone deacetylase:** An enzyme that contributes to transcriptional repression by deacetylation of acetylated lysine residues in histones.

**histone deacetylase :** An enzyme that removes a small molecule called an acetyl group from histones (proteins found in chromosomes). This changes

the way the histones bind to DNA and may affect its activity. Histone deacetylase inhibitors are being studied in the treatment of cancer. Also called HDAC.

**histone deacetylase inhibitor :** A substance that causes a chemical change that stops tumor cells from dividing. Histone deacetylase inhibitors are being studied in the treatment of cancer. Also called HDAC inhibitor.

**histone-lysine N-methyltransferase EZH2 inhibitor GSK2816126:** A small molecule selective and S-adenosyl methionine (SAM) competitive inhibitor of histone-lysine N-methyltransferase EZH2, with potential antineoplastic activity. Upon administration, histone-lysine N-methyltransferase EZH2 inhibitor GSK2816126 inhibits the activity of EZH2 and specifically prevents the methylation of histone H3 lysine 27 (H3K27). This decrease in histone methylation alters gene expression patterns associated with cancer pathways and results in decreased tumor cell proliferation in cancer cells that overexpress this enzyme. EZH2, which belongs to the class of histone methyltransferases (HMTs), is overexpressed or mutated in a variety of cancers and plays a key role in tumor cell proliferation.

**histones:** nuclear proteins that coil DNA molecules.

**Histones:** The family of basic proteins that is normally associated with DNA in most cells of eukaryotic organisms. OR A highly conserved group of small basic proteins found in eukaryotes in association with DNA to form nucleosomes. OR The family of five basic proteins that associate tightly with DNA in the chromosomes of all eukaryotic cells.

**histopathology :** The study of diseased cells and tissues using a microscope.

**historic cohort study :** A research study in which the medical records of groups of individuals who are alike in many ways but differ by a certain characteristic (for example, female nurses who smoke and those who do not smoke) are compared for a particular outcome (such as lung cancer). Also called retrospective cohort study.

**historical control subject :** An individual treated in the past and used in a comparison group when researchers analyze the results of a clinical study that had no control group. The use of a control, or comparison, group helps researchers determine the effects of a new treatment more accurately.

**histosol:** Wet organic soils, such as peats and mucks.

**histrelin acetate:** The acetate salt form of histrelin, a long-acting, synthetic nonapeptide analog of gonadotropin-releasing hormone (GnRH) with potential anti-tumor activity. Upon administration, histrelin binds to and activates GnRH receptors; prolonged administration results in pituitary GnRH receptor desensitization and inhibition of follicle stimulating hormone (FSH) and luteinizing hormone (LH) secretion, leading to a significant decline in testosterone production in males and may inhibit androgen receptor-positive tumor progression; in females, prolonged administration results in decreased estradiol production.

**HIV:** The cause of acquired immunodeficiency syndrome (AIDS). Also called human immunodeficiency virus.

**HIV antibody :** A substance produced by certain white blood cells in reaction to contact with the human immunodeficiency virus (HIV).

**HIV antibody test :** A test to check for human immunodeficiency virus (HIV) infection. HIV is the virus that causes acquired immunodeficiency syndrome (AIDS). An HIV antibody test checks for HIV antibodies in a sample of blood, urine, or saliva. It can take from 2 weeks to 6 months after a person is infected with HIV before the antibodies are found with this test. It is the most common type of HIV test.

**HIV DNA test:** A test to check for human immunodeficiency virus (HIV) infection. HIV is the virus that causes acquired immunodeficiency syndrome (AIDS). An HIV DNA test checks for DNA (genetic material) from the virus in a sample of blood. This test can find HIV in the blood about 9-11 days after the person is infected with the virus. An HIV DNA test may be used to test someone who has just become infected with HIV and it may also be used to test for infection in infants born to mothers infected with HIV.

**HIV negative :** Refers to a person who is not infected with the human immunodeficiency virus (HIV). HIV is the virus that causes acquired immunodeficiency syndrome (AIDS).

**HIV positive :** Refers to a person who is infected with the human immunodeficiency virus (HIV). HIV is the virus that causes acquired immunodeficiency syndrome (AIDS).

**HIV RNA test:** A test to check for human immunodeficiency virus (HIV) infection. HIV is the virus that causes acquired immunodeficiency syndrome (AIDS). An HIV RNA test checks for RNA (genetic material) from the virus in a sample of blood. This test can find HIV in the blood about 9-11 days after the person is infected with the virus. An HIV RNA test is used to test someone who may have just become infected with HIV.

**HIV test :** A test to check for human immunodeficiency virus (HIV) infection. HIV is the virus that causes acquired immunodeficiency syndrome (AIDS). The most common type of HIV test is called the HIV antibody test, which checks for antibodies against HIV in a sample of blood, urine, or fluid from the mouth. It can take from 2 weeks to 6 months after a person is infected with HIV before the antibodies are found with an HIV antibody test. Another type of HIV test checks for RNA or DNA from HIV in a sample of blood. This test can find HIV in a person's blood about 9-11 days after the person is infected with the virus.

**HIV window period :** The time period that starts when a person becomes infected with the human immunodeficiency virus (HIV) and ends when the body makes enough antibodies against the virus or HIV DNA or RNA to be found with an HIV test. For the test that looks for antibodies against HIV, the HIV window period can last from 2 weeks to 6 months. For the HIV DNA or RNA test, the HIV window period is about 9-11 days. During the HIV window period, an infected person may have negative HIV test results but still be able to infect other people.

**hives :** Itchy, raised red areas on the skin. Hives are caused by a reaction to certain foods, drugs, infections, or emotional stress. Also called urticaria.

**Hivid:** (Other name for: zalcitabine)

**HLA:** A type of molecule found on the surface of most cells in the body. HLAs play an important part in the body's immune response to foreign substances. They make up a person's tissue type, which varies from person to person. HLA tests are done before a donor stem cell or organ transplant, to find out if tissues match between the donor and the person receiving the transplant. Also called human leukocyte antigen and human lymphocyte antigen.

**HLA matching :** A process in which blood or tissue samples are tested for human leukocyte antigens (HLAs). HLAs are molecules found on the surface of most cells in the body. They make up a person's tissue type,

which varies from person to person. They play an important part in the body's immune response to foreign substances. HLA matching is done before a donor stem cell or organ transplant to find out if tissues match between the donor and the person receiving the transplant. Also called human leukocyte antigen matching.

**HLA-A\*0201-restricted TERT(572Y)/TERT(572) peptides vaccine Vx-001:** A peptide-based cancer vaccine consisting of two human leukocyte antigen (HLA)-A\*0201 restricted 9-mer epitopes derived from the human telomerase reverse transcriptase (hTERT), TERT 572Y (YLFFYRKS<sup>V</sup>; TYR-Vx001) and TERT 572 (RLFFYRKS<sup>V</sup>; ARG-Vx001), with potential immunostimulating and antineoplastic activities. Subcutaneous injection of TERT(572Y) peptide followed by subcutaneous administration of the TERT(572) peptide may elicit a specific and possibly optimal cytotoxic T cell (CTL) response against hTERT-expressing tumor cells. hTERT, the catalytic subunit of human telomerase, is a human leukocyte antigen-A\*0201-restricted cryptic epitope of telomerase. TERT is expressed in the majority of human cancer cells, is not expressed or is expressed at very low levels in normal cells and plays a key role in tumorigenesis. TERT572Y is the optimized variant of the native cryptic peptide TERT572 in which tyrosine has been substituted for an arginine at position 1; TERT572Y shows increased HLA-A\*0201 binding affinity compared to TERT572.

**HLA-A\*0201-restricted TRP2-gp100-EphA2-HER2 multipeptide vaccine:** A cancer vaccine containing four HLA-A\*0201-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Vaccine peptide epitopes are derived from the tumor associated antigens (TAAs) tyrosinase-related protein 2 (TRP2), glycoprotein 100 (gp100), Ephrin receptor A2 (EphA2) and human epidermal growth factor receptor 2 (HER2). Upon administration, HLA-A\*0201-restricted TRP2-gp100-EphA2-HER2 multipeptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against TRP2-gp100-EphA2-HER2-expressing tumor cells, resulting in tumor cell lysis and decreased tumor cell proliferation. HLA-A\*0201 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*0201 may improve antigenic peptide immunogenicity.

**HLA-A\*0201-restricted URLC10-VEGFR1-VEGFR2 multipeptide vaccine:** A cancer vaccine containing three HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory, antiangiogenic, and antitumor activities. Vaccine peptide epitopes are derived from the tumor associated antigen (TAA) URLC (up-regulated in lung cancer 10) and vascular endothelial growth factor receptors (VEGFR) 1 and 2. Upon administration, HLA-A\*0201-restricted URLC10-VEGFR1-VEGFR2 multipeptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against URLC10-expressing tumor cells and the tumor microvasculature expressing VEGFR 1 and 2 peptides; this may result in tumor cell lysis, the inhibition of tumor angiogenesis, and decreased tumor growth. HLA-A\*0201 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*0201 may improve antigenic peptide immunogenicity.

**HLA-A\*0201-restricted VEGFR1 peptide vaccine:** A cancer vaccine containing an HLA-A\*0201-restricted vascular endothelial growth factor receptor 1 (VEGFR1) peptide (sequence: TLFWLLLTL) with potential immunostimulatory and antitumor activities. Upon administration, HLA-A\*0201-restricted VEGFR1-derived peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing VEGFR1, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*0201 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*0201 may improve antigenic peptide immunogenicity.

**HLA-A\*0201-restricted VEGFR1-VEGFR2 multipeptide vaccine:** A cancer vaccine containing two HLA-A\*0201-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Peptide epitopes in this vaccine are derived from: vascular endothelial growth factor receptors (VEGFR) 1 and 2. Upon administration, HLA-A\*0201-restricted VEGFR1-VEGFR2 multipeptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing VEGFR 1 and 2 peptides, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*0201 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most

efficiently to HLA-A\*0201 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted CDCA1-A24-56 peptide vaccine:** A cancer vaccine containing the HLA-A\*2402-restricted peptide epitope derived from cell division associated gene 1 (CDCA1), with potential immunostimulatory and antitumor activities. Upon administration, HLA-A\*2402-restricted CDCA1-A24-56 peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against CDCA1-expressing tumor cells, resulting in tumor cell lysis and decreased tumor cell proliferation. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted CDCA1-KIF20A multipeptide vaccine:** A cancer vaccine containing two HLA-A\*2402-restricted peptide epitopes derived from cancer-testis antigens with potential immunostimulatory and antitumor activities. The peptide epitopes are derived from cell division associated 1 (CDCA1) and kinesin-like family member 20A (KIF20A). Upon administration, HLA-A\*2402-restricted CDCA1-KIF20A multipeptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against CDCA1- and KIF20A-expressing tumor cells, resulting in tumor cell lysis and decreased tumor cell proliferation. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity. Check for active clinical trials using this agent.

**HLA-A\*2402-restricted KOC1-TTK-CO16-DEPDC1-MPHOSPH1 multipeptide vaccine:** A cancer vaccine containing five HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Peptide epitopes in this vaccine are derived from IGF II mRNA binding protein 3 (KOC1); TTK protein kinase (TTK); URLC10 (up-regulated lung cancer 10); DEP domain containing 1 (DEPDC1); and M phase phosphoprotein 1 (MPHOSPH1). Upon administration, HLA-A\*2404-restricted KOC1-TTK-CO16-DEPDC1-MPHOSPH1 multipeptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing KOC1, TTK, CO16, DEPDC1 and MPHOSPH1

peptides, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted multipeptide vaccine S-488410:** A cancer vaccine composed of HLA-A\*2402-restricted epitopic peptides derived from three cancer/testis (CT) antigens, with potential antineoplastic activity. Upon subcutaneous administration, HLA-A\*2402-restricted multipeptide vaccine S-488410 may elicit a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing these CT antigens. CT antigens, normally expressed only in germ cells of the testis, are overexpressed in a wide variety of human cancers.

**HLA-A\*2402-restricted URLC10 peptides vaccine:** A cancer vaccine containing HLA-A\*2402-restricted epitope peptides URLC10 (up-regulated lung cancer 10) with potential immunostimulatory and antineoplastic activities. Upon administration, HLA-A\*2402-restricted URLC10 peptides vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against URLC10-expressing tumor cells. URLC10, a tumor associated antigen, is often overexpressed in lung, esophageal and gastric cancers. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted URLC10-CDCA1-KIF20A multipeptide vaccine:** A cancer vaccine containing three HLA-A\*2402-restricted peptide epitopes derived from cancer-testis antigens with potential immunostimulatory and antitumor activities. The peptide epitopes are derived from up-regulated lung cancer 10 (URLC10); cell division cycle associated 1 (CDCA1); and kinesin-like family member 20A (KIF20A). Upon administration, HLA-A\*2402-restricted URLC10-CDCA1-KIF20A multipeptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against URLC10-, CDCA1-, and KIF20A-expressing tumor cells, resulting in tumor cell lysis and decreased tumor cell proliferation. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most

efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted URLC10-CDCA1-VEGFR1-VEGFR2**

**multi-peptide vaccine:** A cancer vaccine containing four HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory and antitumor activities. The peptide epitopes are derived from URLC10 (up-regulated lung cancer 10); CDCA1 (cell division associated 1); and vascular endothelial growth factor receptors (VEGFRs) 1 and 2. Upon administration, HLA-A\*2402-restricted URLC10-CDCA1-VEGFR1-VEGFR2 multi-peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against URLC10-, CDCA1-, VEGFR1- and VEGFR2-expressing tumor cells, resulting in tumor cell lysis and decreased tumor cell proliferation. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted URLC10-KOC1-VEGFR1-VEGFR2**

**multi-peptide vaccine:** A cancer vaccine containing four HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Peptide epitopes in this vaccine are derived from URLC10 (up-regulated lung cancer 10 or CO16); KOC1 (IGF II mRNA Binding Protein 3); and vascular endothelial growth factor receptors (VEGFRs) 1 and 2. Upon administration, this multi-peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against URLC10-, KOC1-, VEGFR1- and VEGFR2-expressing tumor cells, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity. Check for active clinical trials using this agent.

**HLA-A\*2402-restricted URLC10-TTK-KOC1 multi-peptide vaccine:**

A cancer vaccine containing three HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Peptide epitopes in this vaccine are derived from URLC10 (up-regulated lung cancer 10); TTK (TTK protein kinase); and KOC1 (IGF II mRNA Binding Protein 3). Upon administration, URLC10-TTK-KOC1 multi-peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells

expressing URLC10, TTK and KOC1 peptides, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted URLC10-TTK-VEGFR1-VEGFR2**

**multi-peptide vaccine:** A cancer vaccine containing four HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Peptide epitopes in this vaccine are derived from: URLC10 (up-regulated lung cancer 10), TTK (TTK protein kinase), and VEGFRs (vascular endothelial growth factor receptors) 1 and 2. Upon administration, URLC10-TTK-KOC1-VEGFR1-VEGFR2 multi-peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing URLC10, TTK, VEGFR 1 and 2 peptides, resulting in cell lysis and decreased tumor growth. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity. Check for active clinical trials using this agent.

**HLA-A\*2402-restricted VEGFR1 peptide vaccine:** A cancer vaccine containing the HLA-A\*2402-restricted vascular endothelial growth factor receptor 1 (VEGFR1) peptide epitope with potential immunostimulatory and antitumor activities. Upon administration, HLA-A\*2402-restricted VEGFR1 peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing VEGFR 1 peptide, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2402-restricted VEGFR1/2 multi-peptide vaccine:** A cancer vaccine containing two HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Peptide epitopes in this vaccine are derived from vascular endothelial growth factor receptors (VEGFRs) 1 and 2. Upon administration, this peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against VEGFR1- and VEGFR2-expressing tumor cells, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*2402 is an MHC class I molecule that presents

antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**HLA-A\*2404-restricted RNF43-TOMM34-VEGFR1-VEGFR2**

**multi-peptide vaccine:** A cancer vaccine containing four HLA-A\*2402-restricted peptide epitopes with potential immunostimulatory and antitumor activities. Peptide epitopes in this vaccine are derived from ring finger protein 43 (RNF43); translocase of outer mitochondrial membrane 34 (TOMM34); and vascular endothelial growth factor receptors (VEGFR) 1 and 2. Upon administration, HLA-A\*2404-restricted RNF43-TOMM34-VEGFR1-VEGFR2 multi-peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing RNF43, TOMM34, and VEGFR 1 and 2 peptides, resulting in tumor cell lysis and decreased tumor growth. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity. Check for active clinical trials using this agent.

**HLA-A1-binding MAGE-1/MAGE-3 multi-peptide-pulsed autologous dendritic cell vaccine:**

A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with human leukocyte antigen (HLA)-A1-binding melanoma-associated antigen peptides MAGE-1 and MAGE-3 with potential immunomodulating and antineoplastic activity. Upon vaccination, HLA-A1-binding MAGE-1/MAGE-3 multi-peptide-pulsed autologous dendritic cell vaccine may stimulate the host immune system to mount an anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against MAGE1- and MAGE-3-expressing cancer cells, resulting in tumor cell lysis. HLA-A1 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A1 may improve antigenic peptide immunogenicity. Check for active clinical trials using this agent.

**HLA-A1, A2, B35-restricted survivin peptides/Montanide ISA-51**

**vaccine:** A peptide vaccine comprised of synthetic HLA-A1, -A2 and -B35 restricted survivin epitopes combined with the adjuvant Montanide ISA-51 with potential antineoplastic activity. Upon administration, HLA-A1, A2, B35-restricted survivin peptides/Montanide ISA-51 vaccine may stimulate a cytotoxic T cell response against tumor cells that overexpress survivin,

resulting in tumor cell lysis. Montanide ISA-51, also known as incomplete Freund's adjuvant or IFA, is a stabilized water-in-oil emulsion adjuvant containing mineral oil with mannide oleate added as a surfactant that non-specifically stimulates cell-mediated immune responses to antigens.

**HLA-A2-binding TYR/MART-1/gp100 multi-peptide-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with human leukocyte antigen (HLA)-A2-restricted melanoma-associated antigen peptides tyrosinase (TYR), MART-1 (melanoma antigen recognized by T-cells) and melanoma antigen glycoprotein 100 (gp100), with potential immunomodulating and antineoplastic activity. Upon vaccination, HLA-A2-binding TYR/MART-1/gp100 multi-peptide-pulsed autologous dendritic cell vaccine may stimulate the host immune system to mount an anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against Tyr-, MART-1 and gp100-expressing cancer cells, resulting in tumor cell lysis. HLA-A2 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A2 may improve antigenic peptide immunogenicity. Check for active clinical trials using this agent.

**HLA-A2-restricted melanoma-specific peptides vaccine GRN-1201:** A cancer peptide vaccine composed of four human leukocyte antigen (HLA)-A2 (HLA-A\*02)-restricted peptides derived from four specific and separate tumor-associated antigens (TAAs) expressed by melanoma cells, with potential antineoplastic activity. Upon administration of the HLA-A2-restricted melanoma-specific peptides vaccine, the melanoma specific antigens in the vaccine activate the immune system to exert a cytotoxic T-lymphocyte (CTL) response against the HLA-A2-positive melanoma cells.

**HLA-A2-restricted synthetic glioma antigen peptides vaccine:** A synthetic peptide cancer vaccine consisting of HLA-A2-restricted peptides derived from glioma-associated antigens (GAA) with potential immunostimulating and antineoplastic activities. Upon administration, HLA-A2-restricted synthetic glioma antigen peptides vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing the corresponding GAAs, resulting in glioma tumor cell lysis. HLA-A2 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to

epitopes that bind most efficiently to HLA-A2 may improve antigenic peptide immunogenicity.

**HLA-A2, A3-restricted FGF-5 peptides/Montanide ISA-51 vaccine:** A peptide vaccine comprised of synthetic HLA-A2- and HLA-A3-binding peptides, derived from amino acid sequences of fibroblast growth factor-5 (FGF-5), combined with the adjuvant Montanide ISA-51 with potential antineoplastic activity. HLA-A2, A3-restricted FGF-5 peptides contain motifs recognized by the MHC class I molecules HLA-A2 and HLA-A3 and may stimulate a cytotoxic T-cell response against tumor cells that overexpress FGF-5. Montanide ISA-51 (also known as incomplete Freund's adjuvant or IFA), a stabilized water-in-oil emulsion adjuvant containing mineral oil with mannide oleate added as a surfactant, non-specifically stimulates cell-mediated immune responses to antigens.

**HLA-DP0401/0402-restricted, MAGE-A3-reactive T cell receptor-transduced autologous T cells:** Human autologous T-lymphocytes transduced with a retroviral vector encoding a T-cell receptor (TCR) specific for the human leukocyte antigen (HLA)-DP0401/0402-restricted, melanoma antigen A3 (MAGE-A3), with potential antineoplastic activity. CD4-positive cells are isolated from a patient, transduced with an anti-MAGE-A3-DP0401/0402 restricted TCR, expanded ex vivo, and reintroduced into the HLA-DP0401/0402 positive patient. Then, the HLA-DP0401/0402-restricted, MAGE-A3-reactive TCR-transduced autologous T cells bind to tumor cells expressing the MAGE-A3 antigen, which may result in both an inhibition of growth and increased cell death for MAGE-A3-expressing cancer cells. The tumor-associated antigen MAGE-A3 is overexpressed by a variety of cancer cell types. Check for active clinical trials using this agent.

**HLH:** A rare disorder in which histiocytes and lymphocytes (types of white blood cells) build up in organs including the skin, spleen, and liver, and destroy other blood cells. HLH may be inherited or caused by certain conditions or diseases, including infections, immunodeficiency (inability of the body to fight infections), and cancer. Also called hemophagocytic lymphohistiocytosis.

**hLL1:** A substance being studied in the treatment of multiple myeloma and several other types of cancer. It binds to CD74, a protein on the surface of myeloma cells and certain other types of cells. It may help kill cancer cells.

hLL1 is a type of monoclonal antibody. Also called IMMU-110 and milatuzumab.

**HLOD score :** A statistical estimate of whether two genetic loci are physically near enough to each other (or “linked”) on a particular chromosome that they are likely to be inherited together. An HLOD score is calculated in the presence of locus heterogeneity (when the same phenotype can be caused by mutations in genes at different chromosomal loci). Also called heterogeneity logarithm of the odds score.

**HLRCC:** A rare inherited disorder that increases the risk of developing benign (not cancer) tumors of the skin and the uterus (leiomyomas) and malignant (cancer) tumors of the uterus (leiomyosarcoma) and the kidney. Also called hereditary leiomyomatosis and renal cell cancer syndrome.

**HME:** High-vinyl modified epoxy

**HMG-CoA reductase inhibitor :** A substance that blocks an enzyme needed by the body to make cholesterol and lowers the amount of cholesterol in the blood. HMG-CoA reductase inhibitor drugs are called statins. Also called hydroxymethylglutaryl-coenzyme A reductase inhibitor.

**HMGA1:** A protein that binds to the DNA and certain proteins in chromosomes. It is involved in many functions in the cell, and helps protect cells from dying. HMGA1 is found at high levels in several types of cancer cells.

**HMR 1275:** A substance being studied in the treatment of several types of cancer. It stops cells from dividing and may kill cancer cells. It is a type of cyclin-dependent kinase (CDK) inhibitor. Also called alvocidib and flavopiridol.

**HMW:** High molecular weight

**HMW-HIGH DENSITY POLYETHYLENE:** High molecular weight high density polyethylene is usually defined as a polyethylene with a density of 0.940 or greater and a flow rate of 1 to 20 (190°C/21.6 Kg). The average molecular weight ranges from 200,000 to 500,000.

**HNPC:** An inherited disorder in which affected individuals have a higher-than-normal chance of developing colorectal cancer and certain other types of cancer, often before the age of 50. Also called hereditary nonpolyposis colon cancer and Lynch syndrome.

**HO/02/02:** A topical formulation that can be used to relieve radiation dermatitis.

**Hob:** A master model in hardened steel used to sink the shape of a mold into a steel block. OR A master model in hardened steel. Also the wearing in of an A&B plate of a silicone injection mold

**Hodgkin disease :** A cancer of the immune system that is marked by the presence of a type of cell called the Reed-Sternberg cell. The two major types of Hodgkin disease are classical Hodgkin lymphoma and nodular lymphocyte-predominant Hodgkin lymphoma. Symptoms include the painless enlargement of lymph nodes, spleen, or other immune tissue. Other symptoms include fever, weight loss, fatigue, or night sweats. Also called Hodgkin lymphoma.

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**Hodgkin's antigens-GM-CSF-expressing cell vaccine:** An allogeneic vaccine consisting of Hodgkin lymphoma cells transfected with the granulocyte macrophage-colony-stimulating factor (GM-CSF) gene with potential antineoplastic activity. Upon vaccination, Hodgkin antigens-GM-CSF-expressing cell vaccine may stimulate a cytotoxic T-lymphocyte (CTL) immune response against Hodgkin lymphoma-associated antigens, which may result in the lysis of tumor cells expressing these antigens. In addition, transfected Hodgkin lymphoma cells secrete GM-CSF, which may potentiate the CTL response against Hodgkin lymphoma-associated antigens.

**Hold Downs :** Members that limit the amount the belt edges can rise in a Christmas Tree or flip-up condition.

**Hold on Pressure Follow up pressure:** It is pressure on melt after the switch over point in the moulding process.

**Hold Pressure:** The applied hydraulic injection pressure maintained after the completion of mold filling. Also referred to as secondary pressure.

**Holdridge life zone:** A climate category defined by three weighted climatic indexes, namely, mean annual heat, precipitation, and atmospheric moisture.

**Holidays:** A term used to define a small area missed during the application of a paint coating e.g. where during application of a gloss paint a small area of undercoat is left unpainted.

**Holliday intermediate:** An intermediate in genetic recombination in which two double-stranded DNA molecules are joined by virtue of a reciprocal crossover involving one strand of each molecule.

**Holliday junction:** A crosslike structure, formed by four polynucleotide chains, that is a key intermediate in the recombination process.

**Holmium:** Symbol:"Ho" Atomic Number:"67" Atomic Mass: 164.93amu. Holmium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. You can find this magnetic metal in many minerals. It has even been used in some lasers.

**holmium Ho 166 DOTMP :** A drug containing a radioactive isotope that is used in the diagnosis and treatment of cancer.

**Holocene:** The most recent epoch of the Quaternary period , covering approximately the last 10,000 years.

**Holoenzyme:** An intact enzyme containing all of its subunits and any necessary cofactors with full enzymatic activity. OR An enzyme that consists of the protein component forming the main body of the enzyme (the apoenzyme) and any necessary, usually small, cofactors. OR A catalytically active enzyme including all necessary subunits, prosthetic groups, and cofactors.

**holy thistle :** A plant whose leaves, stems, and flowers have been used in some cultures to treat certain medical problems. Holy thistle may have anti-inflammatory and anticancer effects. The scientific name is Cnicus benedictus. Also called blessed thistle, cardin, spotted thistle, and St. Benedict's thistle.

**homologous proteins:** Proteins having sequences and functions similar in different species; for example, the hemoglobins. made up ride unit.

**homeobox:** A conserved DNA sequence of 180 base pairs encoding a protein domain found in many proteins that play a regulatory role in development.

**homeodomain:** The protein domain encoded by the homeobox.

**homeopathic medicine :** An alternative approach to medicine based on the belief that natural substances, prepared in a special way and used most often in very small amounts, restore health. According to these beliefs, in order for a remedy to be effective, it must cause in a healthy person the same symptoms being treated in the patient. Also called homeopathy.

**homeopathy:** A system of disease treatment involving application of minute doses of a remedy that, in a healthy person, would produce symptoms of the disease. OR An alternative approach to medicine based on the belief that natural substances, prepared in a special way and used most often in very small amounts, restore health. According to these beliefs, in order for a remedy to be effective, it must cause in a healthy person the same symptoms being treated in the patient. Also called homeopathic medicine.

**homeostasis:** the process in which the internal environment exists at a steady-state equilibrium despite changes in the external environment. OR The maintenance of a dynamic steady state by regulatory mechanisms that compensate for changes in external circumstances. OR A state of balance among all the body systems needed for the body to survive and function correctly. In homeostasis, body levels of acid, blood pressure, blood sugar, electrolytes, energy, hormones, oxygen, proteins, and temperature are constantly adjusted to respond to changes inside and outside the body, to keep them at a normal level.

**homeostatic :** Having to do with homeostasis, which is a state of balance among all the body systems, needed for the body to function correctly.

**homeothermic:** animals that can maintain a constant body temperature.

**homeotic genes:** Genes that regulate the development of the pattern of segments in the *Drosophila* body plan; similar genes are found in most vertebrates.

**HOMO:** Highest occupied molecular orbital. The energy of this orbital approximates the ionization energy of the molecule (Koopmans' theorem).

**Homo Neanderthalensis:** A species of human, now extinct, that was common in Europe and the Mideast about 100 000 years ago. The name comes from Neandertal, meaning 'Neander valley', in northwestern Germany, which was in turn named after the 17th century latin teacher and

school principal Joachim Neander, where the first remains of Neandertal man were discovered. Here is more info.

**HOMO-1:** The second-highest occupied molecular orbital.

**homogeneous:** Having uniform properties or composition. OR Describes a material or substance or chemical reaction which is the same throughout in its properties, composition, or state of matter. OR materials are the same throughout. All solutions are homogeneous.

**homogeneous mixture:** A sample of matter consisting of more than one pure substance with properties that do not vary within the sample.

**homogeneous units:** When both numbers are measured with the same units.

**homogenic bond formation:** a type of bond formation in which each atom donates one electron to the bond.

**homogenous:** A common misspelling of homogeneous.

**homoharringtonine :** A drug used to treat certain types of chronic myelogenous leukemia (CML) that have not gotten better after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Homoharringtonine blocks certain proteins involved in cancer cell growth and may kill cancer cells. It is a type of plant alkaloid. Also called omacetaxine mepesuccinate and Synribo.

**homolog:** A compound belonging to a series of compounds that differ by a repeating group. For example, propanol ( $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$ ), n-butanol ( $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$ ), and n-pentanol ( $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$ ) are homologs; they belong to a homologous series  $\text{CH}_3(\text{CH}_2)_n\text{OH}$ .

**Homologous chromosomes:** Chromosomes that carry the same pattern of genes, but not necessarily the same alleles.

**homologous genetic recombination:** Recombination between two DNA molecules of similar sequence, occurring in all cells; occurs during meiosis and mitosis in eukaryotes.

**Homologous recombination:** Recombination between homologous segments of two DNA molecules. Also called general recombination.

**homologous series:** A homologous series is a family of organic molecules all containing the same groupings of atoms (for example, the alcohols, which all contain the  $-\text{OH}$  group). OR a set of compounds with common

compositions; for example, the alkanes, the alkenes, and the alkynes. OR a set of compounds with common compositions; for example, the alkanes.

**Homologs:** Molecules that have evolved from a common ancestor. Also referred to as homologous molecules.

**homologue:** one of a series of compounds in which each member differs from the next by a constant unit.

**homolytic cleavage:** the fracture of a bond in such a manner that both of the atoms receive one of the bond's electrons. This symmetrical bond rupture forms free radicals; in reactions, it generates free-radical mechanisms.

**Homopolymer:** Homopolymers are polymers which are made up of one single repeated basic unit or (mono)mer. OR Plastic that results from the polymerization of a single monomer. OR A polymer, consisting of (neglecting the ends, branch junctions, and other minor irregularities) a single type of repeating unit. OR a polymer that consists of only one monomer unit; their properties can be regulated via molar mass distribution and the degree of isotacticity (stereoregular structure). OR Homopolymers are polymers which are made up of one single repeated basic unit or (mono)mer. OR The result of the polymerization of a single monomer. In the plastic industry a homopolymer is a sequence of identical bases. OR A polymer composed of only one type of monomeric building block.

**Homotropic effects:** The effects of substrate molecules on allosteric enzymes.

**homotropic enzyme:** An allosteric enzyme that uses its substrate as a modulator.

**Homozygous:** Describing an organism (a homozygote) that carries two identical alleles for a given gene. OR An ab initio program package; genealogically related to GAMESS. OR two identical alleles that are present for a particular characteristic.

**homozygous genotype :** Occurs when both alleles at a particular gene locus are the same. A person may be homozygous for the normal allele or for a mutation.

**honey:** A sweet and viscous fluid produced by honey bees from flower nectar and other plant fluids.

**honey-containing mouthwash:** A mouthwash containing honey with potential antimucositis activity. Upon rinsing with this mouthwash, honey modulates the production of pro-inflammatory cytokines which may kill bacteria thus potentially preventing inflammation of the mucosal membranes and may decrease chemotherapy- and/or radiation-induced oral mucositis. In addition, honey may have a protective and healing effect on the oral mucosa. Check for active clinical trials using this agent.

**Honeycomb:** Manufactured product consisting of sheet metal or a resin impregnated sheet material (paper, fibrous, glass, etc.) which has been formed into hexagonal-shaped cells. Used as core material for sandwich constructions.

**Honing:** A machining process that sharpens, enlarges, and smooths material through the use of a fine-grit stone

**hookah :** A device used to smoke a special type of tobacco that comes in different flavors. In a hookah, charcoal is used to heat the tobacco. The smoke from the heated tobacco is cooled by passing it through a water-filled bowl. It is then inhaled through a flexible tube with a mouthpiece. Hookah tobacco smoke contains nicotine and many cancer-causing chemicals that are harmful to both smokers and nonsmokers. Hookah smoking can lead to nicotine addiction and can cause many of the same health problems as cigarette smoking. Hookah smoking is not safer than cigarette smoking. Also called water pipe.

**Hoop Stress:** The force per unit area in the wall of the pipe in the circumferential orientation due to internal hydrostatic pressure. OR the circumferential stress imposed on a cylindrical wall by internal pressure loading.

**HOPPER:** The container that holds the resin before it enters the extruder feed zone. OR In polymer processing, the container holding a supply of molding material to be fed to the screw or ram. The hopper may be intermittently filled or continuously fed. OR A funnel-shaped container mounted over the feed throat of a molding machine. It holds fresh material to be gravity fed into the feed zone of the heating barrel. Hoppers are normally designed to hold enough material to run the injection molding process for an average of two hours. OR Conical feed reservoir into which molding powder is loaded and from which it falls into a molding machine or extruder, sometimes through a metering device.

**HOPPER BLENDER:** Mixes material such as virgin resin, regrind, blowing agents, fillers, and colorants in desired proportions. Materials to be blended are metered in ratio to a mixing chamber and then discharged into the hopper of the processing machine.

**Hopper Dryer:** A combination feeding and drying device for extrusion and injection molding of thermoplastics. Hot air flows upward through the hopper containing the feed pellets. OR Auxiliary equipment that removes moisture from resin pellets. OR Auxiliary equipment for the plastic extrusion process that removes moisture from the resin pellets. OR Auxiliary equipment for automatically loading resin pellets into machine hopper.

**HOPPER LOADER:** A device for automatically feeding resins to hoppers of extruders, injection molding machines, and the like. OR A curved pipe through which molding powders are pneumatically conveyed from shipping drums to machine hoppers. OR Auxiliary equipment for automatically loading plastic pellets into the hopper.

**Horizontal gene transfer:** The passing of pieces of DNA (plasmids) between species that provide a selective advantage in particular environments.

**Horizontal Gene Transfer:** The process by which bacteria and Archaea transfer genes to other bacteria or Archaea, especially obvious when a sudden environmental change forces resident bacteria or Archaea to seek a faster method of evolution than will occur slowly due to mutations of native DNA. Methods used include: 1. conjugation - One cell binds to another cell, often unrelated, opening a connection through which it can pass a strand of DNA, copied from its primary DNA, into a separate contained packet of DNA, called a plasmid, to the recipient cell, without risking spilling cell contents from either donor or recipient cell into the environment.

Conjugation is often a two-way transfer that enhances survival of both participants. If bacteria develop antibiotic resistance due to improper application of antibiotics (incorrect selection of treatment antibiotic, insufficient dosage to kill ALL bacteria exposed to the antibiotic), escaping bacteria may choose to pass antibiotic resistance along in plasmids to other bacteria they encounter in their environment (whether they normally live in hospitals, sewage systems, lakes, ponds, rivers or turf that is grazed by livestock). 2. DNA scavenging - One cell samples DNA strands strewn about

during cell wall breakdown following death of bacterial cells that were intolerant of primary environmental conditions (temperature, pH, salinity, available food sources, antibiotics produced by native bacteria to keep them dominant, etc.), sometimes delivering beneficial enzyme pathways to the resident species. When horizontal gene transfer happens naturally in the environment, huge leaps in adaptation can occur, creating new species very distinct from parental strains. I

**hormonal therapy :** Treatment that adds, blocks, or removes hormones. For certain conditions (such as diabetes or menopause), hormones are given to adjust low hormone levels. To slow or stop the growth of certain cancers (such as prostate and breast cancer), synthetic hormones or other drugs may be given to block the body's natural hormones. Sometimes surgery is needed to remove the gland that makes a certain hormone. Also called endocrine therapy, hormone therapy, and hormone treatment.

**Hormone:** A chemical substance made in one cell and secreted so as to influence the metabolic activity of a select group of cells located at other sites in the organism.

**hormone:** A molecule produced by endocrine glands that controls specific biological processes like growth and metabolism. OR A chemical substance synthesized in small amounts by an endocrine tissue and carried in the blood to another tissue, where it acts as a messenger to regulate the function of the target tissue or organ.

**hormone :** One of many substances made by glands in the body. Hormones circulate in the bloodstream and control the actions of certain cells or organs. Some hormones can also be made in the laboratory.

**Hormone receptor:** A protein that is located on the cell membrane or inside the responsive cell and that interacts specifically with the hormone. OR A protein in, or on the surface of, target cells that binds a specific hormone and initiates the cellular response.

**hormone receptor :** A cell protein that binds a specific hormone. The hormone receptor may be on the surface of the cell or inside the cell. Many changes take place in a cell after a hormone binds to its receptor.

**hormone receptor test :** A test to measure the amount of certain proteins, called hormone receptors, in cancer tissue. Hormones can attach to these proteins. A high level of hormone receptors may mean that hormones help the cancer grow.

**hormone replacement therapy :** Treatment with hormones to replace natural hormones when the body does not make enough. For example, hormone replacement therapy may be given when the thyroid gland does not make enough thyroid hormone or when the pituitary gland does not make enough growth hormone. Or, it may be given to women after menopause to replace the hormones estrogen and progesterone that are no longer made by the body. Also called HRT.

**Hormone response elements (hres):** Specific DNA sequences that bind members of the nuclear receptor family of transcription factors; hres for steroid receptors are palindromic 6-bp sequences separated by a 3-bp spacer.

**hormone responsive :** In oncology, describes cancer that responds to hormone treatment.

**hormone therapy :** Treatment that adds, blocks, or removes hormones. For certain conditions (such as diabetes or menopause), hormones are given to adjust low hormone levels. To slow or stop the growth of certain cancers (such as prostate and breast cancer), synthetic hormones or other drugs may be given to block the body's natural hormones. Sometimes surgery is needed to remove the gland that makes a certain hormone. Also called endocrine therapy, hormonal therapy, and hormone treatment.

**hormone treatment :** Treatment that adds, blocks, or removes hormones. For certain conditions (such as diabetes or menopause), hormones are given to adjust low hormone levels. To slow or stop the growth of certain cancers (such as prostate and breast cancer), synthetic hormones or other drugs may be given to block the body's natural hormones. Sometimes surgery is needed to remove the gland that makes a certain hormone. Also called endocrine therapy, hormonal therapy, and hormone therapy.

**Hormone-binding domain:** A conserved 240-residue domain in members of the nuclear receptor superfamily of transcription factors that binds a hormone or hormonelike molecule, thus activating the factor.

**hormone-refractory :** In medicine, describes a disease or condition that does not respond to treatment with hormones. Also called hormone-resistant.

**hormone-resistant :** In medicine, describes a disease or condition that does not respond to treatment with hormones. Also called hormone-refractory.

**hormones:** biochemical substances produced within plant or animal cells, or glands, that exert a particular effect.

**horn:** a sharply defined peak that has formed from erosional processes along the rim of a cirque.

**Horner syndrome :** A condition in which one side of the face is flushed, does not produce sweat, and has a constricted pupil and drooping eyelid. It can be caused by an injury to, or paralysis of, nerves in the neck, or by a tumor.

**Horse Latitudes:** area of little surface winds and high pressure along 30° N latitude.

**horst:** a feature that results when a block that is bounded by normal faults experiences a compressive force that forces the block upward, forming mountainous terrain.

**Hose:** Hose A tube that has been reinforced with an innerbraid. Freelin-Wade offers a variety of flexible hose products.

**hospice :** A program that gives special care to people who are near the end of life and have stopped treatment to cure or control their disease. Hospice offers physical, emotional, social, and spiritual support for patients and their families. The main goal of hospice care is to control pain and other symptoms of illness so patients can be as comfortable and alert as possible. It is usually given at home, but may also be given in a hospice center, hospital, or nursing home.

**hospitalist :** A medical doctor who manages and coordinates the daily medical care of patients while they are in the hospital. A hospitalist may also supervise and teach medical students, interns, and residents. A patient's personal doctor will work with a hospitalist to care for his or her patient while the patient is in the hospital.

**Host cell:** A cell used for growth and reproduction of a virus. OR A cell that is infected by a virus or another type of microorganism.

**host dendritic cell vaccine-001 MSSM/BIIR:** A dendritic cell (DC) vaccine containing ex vivo expanded autologous DCs obtained from a patient with leukemia with potential immunostimulating activity. Upon reintroduction into the host, the host dendritic cell vaccine-001 MSSM/BIIR may stimulate the immune system to mount a leukemia-specific cytotoxic T lymphocyte (CTL) response.

**Hot:** A colloquial term meaning highly radioactive.

**hot (circuit):** connected, alive, energized.

**hot flash :** A sudden, temporary onset of body warmth, flushing, and sweating (often associated with menopause).

**Hot Gas Welding:** a technique for joining thermoplastic materials (usually sheet) whereby the materials are softened by a jet of hot air from a welding torch, and joining together at the softened points. Generally thin rod if the same material is used to fill and consolidate the gap. OR Hot-plate welding consists of two stages: Two parts to be joined together are placed close to or in contact with heating modules that are first pre-heated to the temperature needed for assembly. Secondly, once the parts soften sufficiently they are removed from the heating module and quickly brought into contact for the controlled assembly phase.

**Hot hardness:** Ability of a coating to retain hardness and wear resistance at elevated temperatures. Usually a characteristic of coatings based on thermosetting resin binders.

**hot nodule :** When radioactive material is used to examine the thyroid with a scanner, nodules that collect more radioactive material than the surrounding thyroid tissue are considered "hot." Hot nodules are rarely malignant. Hot nodules are sometimes called hyperfunctioning nodules.

**Hot Runner Manifold:** Runner less plastic injection molding of a thermoplastic, the melt stays molten until it reaches gate at cavity.

**hot spot:** weak or thin area in a plate that allows magma to rise up and reach the surface. OR The region in a radiation/contamination area where the level of radiation/contamination is significantly greater than in neighboring regions in the area.

**hot spring:** a spring with water 6 to 9 degrees centigrade (11 to 16 degrees Fahrenheit) warmer than the mean annual air temperature for the locality where it occurs. OR groundwater heated by magma rising to the surface through an opening in the ground.

**hot springs deposit:** a disseminated metal deposit formed in response to hot spring activity at the surface of the earth.

**Hot Stamp:** process for marking plastic by applying a leaf to the surface through the use of hot metal dies.

**Hot Stamping:** Dry printing method in which a heated die and foil are used to apply graphics to a surface. OR Engraving operation for marking plastics in which roll leaf is stamped with heated metal dies onto the face of an article by means of felt rolls, ink is applied to type or by means of heat and pressure, type is impressed into the material, leaving the marking compound in the indentation

**Hot surface:** In the painting sense this denotes a highly absorbent surface which tends to take up the liquid content of paint very rapidly.

**HOT TACK:** Hot tack is a measure of the strength of a heat seal before the seal has cooled completely.

**Hot tip gate:** A specialized gate that injects the resin into a face on the A-side of the mold. This type of gate doesn't require a runner or sprue.

**Hot-Runner Mold:** A mold in which the runners are insulated from the chilled cavities and are kept hot. Hot-runner molds make parts that have no scrap. OR A mold in which the runners are insulated from the chilled cavities and are kept hot. Parting line is at gate of cavity, runners are in separate plate(s), so they are not, as is the case usually, ejected with the piece. OR Hot runner molds consist of 2 plates that are heated with a manifold system. The manifold sends the melted plastic to nozzles which fill the part cavities.

**Hot-stamping:** Engraving operation for marketing plastics in which roll leaf is stamped with heated metal dies onto the face of the plastics. Ink compounds can also be used. By means of felt rolls, ink is applied to type and by means of heat and pressure, type is impressed into the material, leaving the marking compound in the indentation. OR Engraving operation for marking plastics in which roll leaf is stamped with heated metal dies onto the face of the plastics.

**HOT/HEATED MANIFOLD MOLD:** A thermoplastic injection mold in which the portion of the mold which contains the runner system has its own heating elements which keep the molding material in a plastic state ready for injection into the cavities, from which the manifold is insulated.

**HOT/HEATED MANIFOLD MOLD:** A thermoplastic injection mold wherein the portion of the mold that contains the runner system has its own heating elements that keep the molding material in a plastic state ready for injection into the cavities from which the manifold is insulated.

**hotspot :** In genetics, an area of DNA that is likely to mutate (change).

**House Sewer:** The pipeline connecting the house and drain and the septic tank.

**HPPH:** A lipophilic, second-generation, chlorin-based photosensitizer. Upon intravenous administration, HPPH selectively accumulates in the cytoplasm of cancer or pre-cancerous cells. When laser light is applied, a photodynamic reaction between HPPH and oxygen occurs, resulting in the production of cytotoxic free radicals and singlet oxygen and free radical-mediated cell death. Compared to the first-generation photosensitizer porfimer sodium, HPPH shows improved pharmacokinetic properties and causes only mild skin photosensitivity which declines rapidly within a few days after administration. Check for active clinical trials using this agent. or 2-(1-hexyloxyethyl)-2-devinyl pyropheophorbide-a. A drug that is used in photodynamic therapy that is absorbed by tumor cells; when exposed to light, it becomes active and kills the cancer cells.

**HPV:** A type of virus that can cause abnormal tissue growth (for example, warts) and other changes to cells. Infection for a long time with certain types of HPV can cause cervical cancer. HPV may also play a role in some other types of cancer, such as anal, vaginal, vulvar, penile, oropharyngeal, and squamous cell skin cancers. Also called human papillomavirus.

**HPV 16 E6 peptides vaccine/candida albicans extract:** A human papillomavirus (HPV) type 16 vaccine containing four E6 peptides in combination with the extract of *Candida albicans*, with potential immunomodulating activity. Upon administration of HPV-16 E6 peptides vaccine/*Candida albicans* extract, the four HPV-16 E6 peptides and the *candida albicans* may activate the immune system to mount a cytotoxic T lymphocyte (CTL) response against cells expressing the E6 oncoprotein, resulting in tumor cell lysis. The HPV 16 transforming protein E6 is expressed in precancerous and malignant cervical lesions. *Candida albicans* allergenic extract may be used as a recall antigen to stimulate the immune system against HPV.

**HPV 16 E7 antigen-expressing Lactobacillus casei vaccine BLS-ILB-E710c:** An orally available *Lactobacillus casei* (*L. casei*)-based vaccine expressing the human papillomavirus (HPV) type 16 isoform E7 protein linked to the poly-gamma-glutamate synthetase complex gene PgsA, with potential immunostimulating activity. Upon oral administration, the

expressed HPV 16 E7 may stimulate the immune system to mount a mucosal cytotoxic T-lymphocyte (CTL) response against HPV 16 E7-expressing tumor cells. The poly-glutamic acid synthetase PgsA from *Bacillus subtilis* acts as an anchoring motif that facilitates the expression of the HPV antigen protein on the surface of the bacteria. HPV 16 E7, a cell surface glycoprotein and tumor associated antigen, is overexpressed in various viral-related cancers.

**HPV 16 E7:86-93 peptide vaccine:** A synthetic peptide vaccine consisting of amino acids 86 through 93 (TLGIVCPI) of the viral oncoprotein human papillomavirus (HPV) 16 E7. Vaccination with HPV-16 E7:86-93 peptide, which binds to HLA-A\* 0201 molecule, may stimulate the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells positive for HPV-16 E7. Check for active clinical trials using this agent.

**HPV DNA plasmids therapeutic vaccine VGX-3100:** A DNA vaccine consisting of plasmids encoding the E6 and E7 genes of human papilloma virus (HPV) subtypes 16 and 18, respectively, with potential immunostimulating and antineoplastic activities. Administered via intramuscular electroporation, HPV DNA plasmids therapeutic vaccine VGX-3100 expresses E6 and E7 proteins, which may elicit a cytotoxic T-lymphocyte (CTL) response against cervical cancer cells expressing E6 and E7 proteins, resulting in tumor cell lysis. HPV type 16 and HPV type 18 are the most common HPV types involved in cervical carcinogenesis.

**HPV DNA test :** A laboratory test in which cells are scraped from the cervix to look for DNA of human papillomaviruses (HPV). HPV can cause abnormal tissue growth (for example, warts) and other changes to cells. Infection for a long time with certain types of HPV can cause cervical cancer. HPV can also play a role in other types of cancer, such as cancers of the anus, vagina, vulva, penis, and oropharynx. Also called human papillomavirus DNA test.

**HPV E1/E2 interaction inhibitor gel AP611074:** A topical gel composed of a human papillomavirus (HPV) E1/E2 protein:protein interaction (PPI) inhibitor with potential antiviral activity. Upon topical application of AP611074, this agent prevents binding of the HPV viral proteins E1 to E2, thereby preventing viral DNA replication and growth of HPV. This inhibits viral proliferation and may prevent the formation of anogenital warts

caused by HPV. The HPV proteins E1 and E2 are essential for HPV viral replication.

**HPV E6/E7 DNA vaccine GX-188E:** A therapeutic DNA vaccine encoding the E6/E7 fusion protein of human papillomavirus (HPV) subtypes 16 and 18, plus the immune-enhancer, Fms-like tyrosine kinase-3 ligand (FLT3L), with potential immunostimulating and antineoplastic activities. DNA vaccine GX-188E is administered using a proprietary delivery system that electroporates the vaccine into cervical cells.

Expression of the E6/E7 fusion product may elicit a cytotoxic T-lymphocyte (CTL) response against cervical cancer cells expressing E6 and E7 oncoproteins, resulting in tumor cell lysis. FLT3L is a ligand for the FLT3 tyrosine kinase receptor, which upon activation stimulates the proliferation of hematopoietic progenitor cells. HPV types 16 and 18 are the most common HPV types involved in cervical carcinogenesis. Check for active clinical trials using this agent.

**HPV L1 VLP vaccine V504:** A vaccine formulation consisting of several types of human papillomavirus (HPV)-derived noninfectious virus-like particles (VLPs) with potential immunoprophylactic activity. Upon administration, HPV L1 VLP vaccine V504 may generate humoral immunity against various HPV L1 major capsid proteins, thereby preventing cervical infection upon exposure to the associated HPV types. VLPs are composed of self-assembling L1 major capsid proteins or functional L1 major capsid protein derivatives.

**HPV RNA test :** A laboratory test in which cells are scraped from the cervix to look for RNA of the most common types of human papillomavirus (HPV). Certain types of HPV may cause abnormal tissue growth, such as warts, and other changes to cells. Infection for a long time with other types of HPV may cause cervical cancer. An HPV RNA test may be done with a Pap test to check for HPV infection and cervical cancer. HPV infection may also cause other types of cancer, such as cancers of the anus, vagina, vulva, penis, and oropharynx. Also called human papillomavirus RNA test.

**HPV test:** A laboratory test in which cells are tested for DNA or RNA from certain types of human papillomavirus (HPV) that are known to cause cervical cancer. These high-risk types of HPV can also cause other types of cancer, including cancers of the anus, vagina, vulva, penis, and oropharynx. An HPV test may be done at the same time as a Pap test for cervical cancer

screening in women aged 30 to 65 years. An HPV test may also be done after certain abnormal Pap test results. Also called human papillomavirus test.

**HPV vaccine :** A vaccine used to prevent genital warts, anal cancer, cervical cancer, vulvar cancer, and vaginal cancer caused by certain types of human papillomavirus (HPV). It is also used to prevent lesions that are caused by those viruses and that can lead to anal, cervical, vulvar, or vaginal cancer. Also called human papillomavirus vaccine.

**HPV-6-targeting immunotherapeutic vaccine INO-3106:** A DNA vaccine consisting of plasmids encoding the E6 and E7 genes of human papilloma virus subtype 6 (HPV-6), with potential immunostimulating and antineoplastic activities. Administered via intramuscular electroporation, HPV-6-targeting immunotherapeutic vaccine INO-3106 expresses the HPV-6 E6 and E7 proteins, which may elicit a cytotoxic T-lymphocyte (CTL) response against tumor cells that are expressing those proteins, resulting in tumor cell lysis. HPV-6 infections are associated with aerodigestive malignancies.

**HPV/Pap cotest:** A procedure in which a human papillomavirus (HPV) test and a Pap test are done at the same time to check for cervical cancer. The HPV test looks for DNA or RNA from certain high-risk types of HPV in samples of cells taken from the cervix. The Pap test checks for cervical cancer cells and cell changes that may lead to cervical cancer. The same cell sample may be used for both the HPV test and the Pap test. Women aged 30 to 65 years may have an HPV/Pap cotest every 5 years. Cotesting is more likely to find abnormal cells or cervical cancer than a Pap test alone is. Also called Pap/HPV cotest.

**HPV16 L2/E6/E7 fusion protein vaccine TA-CIN:** A recombinant human papillomavirus (HPV), genetically engineered fusion protein vaccine in which the three HPV16 viral proteins L2, E6 and E7 are fused together in a single tandem fusion protein (TA-CIN; HPV16 L2\E6\E7), with potential immunoprotective and antineoplastic properties. Upon administration, HPV16 L2/E6/E7 fusion protein vaccine TA-CIN may stimulate the immune system to generate HPV16 E6\E7-specific CD4+ and CD8+ T-cell responses as well as the induction of L2-specific antibodies. In addition, this vaccine may prevent infection and the development of other HPV16-

associated diseases. L2, a minor viral capsid protein, is able to induce a strong antibody response against certain HPV types.

**Hras gene :** A gene that may cause cancer when it is mutated (changed). The Hras gene makes the HRAS protein, which is involved in cell signaling pathways, cell growth, and apoptosis (cell death). Agents that block the actions of the mutated Hras gene or its protein in cancer cells may stop the growth of cancer. Also called H-ras gene.

**HRT:** Hours of Retention Time. OR Treatment with hormones to replace natural hormones when the body does not make enough. For example, HRT may be given when the thyroid gland does not make enough thyroid hormone or when the pituitary gland does not make enough growth hormone. Or, it may be given to women after menopause to replace the hormones estrogen and progesterone that are no longer made by the body. Also called hormone replacement therapy.

**HSIL:** A growth on the surface of the cervix with moderately or severely abnormal cells. HSILs are usually caused by certain types of human papillomavirus (HPV) and are found when a Pap test is done. If not treated, these abnormal cells may become cancer and spread to nearby normal tissue. A HSIL is sometimes called moderate or severe dysplasia. Also called high-grade squamous intraepithelial lesion.

**HSP:** One of a group of proteins that help protect cells from stresses such as heat, cold, and low amounts of oxygen or glucose (sugar). HSPs help other proteins function in normal cells and may be present at high levels in cancer cells. Blocking the activity of a HSP called HSP90 is being studied in the treatment of cancer. Other HSPs including HSP70 and gp96 are being studied in vaccines to treat cancer. Also called heat-shock protein and stress protein.

**Hsp70-peptide TKD/IL-2-activated autologous natural killer cells:** A preparation of autologous natural killer (NK) cells that are stimulated ex vivo by a 14-mer heat shock protein 70 (Hsp70) TKD peptide and interleukin-2 (IL-2), with potential tumor-selective cytolytic activity. Upon re-infusion into the patient, the treated NK cells recognize and bind to Hsp70-expressing tumor cells, which induces NK-mediated tumor cell lysis. Hsp70, a membrane-bound, stress-inducible protein, is overexpressed on almost all tumor cells; however, it is absent or minimally present on

normal, healthy cells. TKD is the C-terminal substrate-binding domain of Hsp70 and is the structure recognized by the activated NK cells.

**Hsp90 antagonist KW-2478:** An agent that targets the human heat-shock protein 90 (Hsp90) with potential antineoplastic activity. Although the mechanism of action remains to be fully elucidated, Hsp90 antagonist KW-2478 appears to inhibit Hsp90, resulting in impaired signal transduction, inhibition of cell proliferation, and the induction of apoptosis in tumor cells. HSP90 is a molecular chaperone that plays a key role in the conformational maturation of oncogenic signaling proteins, such as HER2/ERBB2, AKT, RAF1, BCR-ABL, and mutated p53, as well as many other molecules that are important in cell cycle regulation or immune responses.

**Hsp90 inhibitor AB-010:** An orally bioavailable nanoparticle albumin-bound inhibitor of heat shock protein 90 (Hsp90) with potential antineoplastic activity. Hsp90 inhibitor AB-010 selectively binds to Hsp90, inhibiting its chaperone function and promoting the degradation of oncogenic signaling proteins involved in tumor cell proliferation and survival. This agent may inhibit the growth of a wide variety of cancer cell types; the incorporation of albumin into its formulation may facilitate its endothelial transcytosis through the gp60-regulated albumin transport pathway. Hsp90, a chaperone protein upregulated in a variety of tumor cells, regulates the folding and degradation of many oncogenic signaling proteins. Check for active clinical trials using this agent.

**Hsp90 inhibitor AT13387:** A synthetic, orally bioavailable, small-molecule inhibitor of heat shock protein 90 (Hsp90) with potential antineoplastic activity. Hsp90 inhibitor AT13387 selectively binds to Hsp90, thereby inhibiting its chaperone function and promoting the degradation of oncogenic signaling proteins involved in tumor cell proliferation and survival. Hsp90, a chaperone protein upregulated in a variety of tumor cells, regulates the folding, stability and degradation of many oncogenic signaling proteins.

**Hsp90 inhibitor AUY922:** A derivative of 4,5-diarylisoaxazole and a third-generation heat shock protein 90 (Hsp90) inhibitor with potential antineoplastic activity. Hsp90 inhibitor AUY922 has been shown to bind with high affinity to and inhibit Hsp90, resulting in the proteasomal degradation of oncogenic client proteins; the inhibition of cell proliferation; and the elevation of heat shock protein 72 (Hsp72) in a wide range of

human tumor cell lines. Hsp90, a 90 kDa molecular chaperone, plays a key role in the conformational maturation, stability and function of other substrate or "client" proteins within the cell, many of which are involved in signal transduction, cell cycle regulation and apoptosis, including kinases, transcription factors and hormone receptors. Hsp72 exhibits anti-apoptotic functions; its up-regulation may be used as a surrogate marker for Hsp90 inhibition. Check for active clinical trials using this agent.

**Hsp90 inhibitor BIIB028:** A small-molecule inhibitor of heat shock protein (Hsp) 90 with potential antineoplastic activity. Hsp90 inhibitor BIIB028 blocks the binding of oncogenic client proteins to Hsp90, which may result in the proteasomal degradation of these proteins and so the inhibition of tumor cell proliferation. Hsp90 is a molecular chaperone that plays a key role in the conformational maturation of oncogenic signaling proteins, such as Her2/ErbB2, Akt, Raf1, Bcr-Abl, and mutated p53, in addition to other molecules involved in cell cycle regulation and immune responses.

**Hsp90 inhibitor CNF2024:** An orally active, purine-scaffold, small-molecule inhibitor of heat shock protein 90 (HSP90) with potential antineoplastic activity. HSP90 inhibitor CNF2024 specifically blocks active HSP90, inhibiting its chaperone function and promoting the degradation of oncogenic signaling proteins involved in tumor cell proliferation and survival; this may result in the inhibition of cellular proliferation in susceptible tumor cell populations. HSP90, a chaperone protein upregulated in a variety of tumor cell types, regulates the folding and degradation of many oncogenic signaling proteins.

**Hsp90 inhibitor debio 0932:** An orally active and small molecule inhibitor of heat shock protein 90 (Hsp90) with potential antineoplastic activity. Hsp90 inhibitor Debio 0932 specifically blocks Hsp90, thereby inhibiting its chaperone function and promoting the degradation of its client proteins, many of which are oncogenic signaling proteins involved in tumor cell proliferation and survival. This may lead to an inhibition of tumor cell proliferation. Hsp90, a chaperone protein upregulated in a variety of tumor cells, regulates the folding, stabilization and degradation of many oncogenic signaling proteins.

**Hsp90 inhibitor DS-2248:** An orally active and small molecule inhibitor of heat shock protein 90 (Hsp90), with potential antineoplastic activity.

Upon oral administration, Hsp90 inhibitor DS-2248 specifically blocks Hsp90, which inhibits its chaperone function and promotes the proteasomal degradation of oncogenic signaling proteins involved in tumor cell proliferation and survival. This may lead to an inhibition of tumor cell proliferation. Hsp90, a chaperone complex protein upregulated in a variety of tumor cell types, regulates the folding and degradation of many oncogenic signaling proteins.

**HSP90 inhibitor HSP990:** An orally bioavailable inhibitor of human heat-shock protein 90 (Hsp90) with potential antineoplastic activity. Hsp90 inhibitor Hsp990 binds to and inhibits the activity of Hsp90, which may result in the proteasomal degradation of oncogenic client proteins, including HER2/ERBB2, and the inhibition of tumor cell proliferation. Hsp90, upregulated in a variety of tumor cells, is a molecular chaperone that plays a key role in the conformational maturation, stability and function of oncogenic signaling proteins, such as HER2/ERBB2, AKT, RAF1, BCR-ABL, and mutated p53, as well as many other molecules that are important in cell cycle regulation and/or immune responses.

**Hsp90 inhibitor MPC-3100:** An orally bioavailable, synthetic, second-generation small-molecule inhibitor of heat shock protein 90 (Hsp90) with potential antineoplastic activity. Hsp90 inhibitor MPC-3100 selectively binds to Hsp90, thereby inhibiting its chaperone function and promoting the degradation of oncogenic signaling proteins involved in tumor cell proliferation and survival; this agent may inhibit the growth and survival of a wide variety of cancer cell types. Hsp90, a chaperone protein upregulated in a variety of tumor cells, regulates the folding, stability, and degradation of many oncogenic signaling proteins.

**HSP90 inhibitor PU-H71:** A purine-based heat shock protein 90 (Hsp90) inhibitor with potential antineoplastic activity. Hsp90 inhibitor PU-H71 specifically inhibits active Hsp90, thereby inhibiting its chaperone function and promoting the proteasomal degradation of oncogenic signaling proteins involved in tumor cell proliferation and survival. This may result in the inhibition of cellular proliferation in susceptible tumor cell populations. Hsp90, a molecular chaperone protein, is upregulated in a variety of tumor cell types.

**Hsp90 inhibitor SNX-5422 mesylate:** The orally bioavailable mesylate salt of a synthetic prodrug targeting the human heat-shock protein 90

(Hsp90) with potential antineoplastic activity. Although the mechanism of action remains to be fully elucidated, Hsp90 inhibitor SNX-5422 is rapidly converted to SNX-2112, which accumulates more readily in tumors relative to normal tissues. SNX-2112 inhibits Hsp90, which may result in the proteasomal degradation of oncogenic client proteins, including HER2/ERBB2, and the inhibition of tumor cell proliferation. Hsp90 is a molecular chaperone that plays a key role in the conformational maturation of oncogenic signaling proteins, such as HER2/ERBB2, AKT, RAF1, BCR-ABL, and mutated p53, as well as many other molecules that are important in cell cycle regulation or immune responses.

**Hsp90 inhibitor XL888:** An orally bioavailable, ATP-competitive, small-molecule inhibitor of heat shock protein 90 (Hsp90) with potential antineoplastic activity. Hsp90 inhibitor XL888 specifically binds to Hsp90, inhibiting its chaperone function and promoting the proteasomal degradation of oncogenic signaling proteins involved in tumor cell proliferation and survival; inhibition of tumor cell proliferation may result. Hsp90, a chaperone complex protein upregulated in a variety of tumor cell types, regulates the folding and degradation of many oncogenic signaling proteins, including Her-2 and Met.

**HspE7:** A recombinant chimeric protein composed of the heat shock protein 65 (Hsp65) from *Mycobacterium bovis*, and the human papilloma viral (HPV) protein E7. Hsp65, similar to other members of its family of proteins, elicits a strong immune response and may be used to design vaccines against a number of different cancers. E7 protein is involved in carcinogenesis of anal and cervical tumors, and represents a tumor antigen that may be specifically targeted by lymphocytes.

**HSV:** A type of virus that causes herpes infections and has DNA as its genetic material. There are two types of HSVs. Infections with type 1 viruses cause cold sores on the lips or nostrils. Infections with type 2 viruses cause sores on the genitals (external and internal sex organs and glands). Also called herpes simplex virus, HHV, and human herpesvirus.

**HSV-1 HF10:** A non-engineered, naturally oncolytic, replication-competent spontaneous herpes simplex virus (HSV) type I mutant variant. Upon intratumoral injection, HSV1 HF10 transfects, replicates in, and lyses rapidly dividing cells such as tumor cells. In addition, this agent may increase host immune responses that may kill non-infected tumor cells.

**HSV-TK-transduced donor lymphocytes:** A preparation of donor lymphocytes transduced with the "suicide" gene herpes simplex virus thymidine kinase (HSV-TK) with potential immunomodulating activity. Administration of HSV-TK-transduced lymphocytes after T cell-depleted allogeneic stem cell transplantation allows an early controllable immune reconstitution, which takes advantage of the antitumor effect of donor lymphocytes and helps to mitigate the risk of post-transplant opportunistic infection. To control graft-versus-host disease (GvHD) due to donor lymphocyte infusion, HSV-TK-transduced donor lymphocytes are selectively eliminated by administration of the antiviral agent ganciclovir. Ganciclovir, a prodrug, is readily phosphorylated by the suicide gene HSV-TK within HSV-TK-transduced lymphocytes to its monophosphate form and, subsequently, converted into its active triphosphate form, which specifically kills HSV-TK-transduced donor lymphocytes.

**hTERT I540/R572Y/D988Y multi-peptide vaccine:** A peptide vaccine consisting of multiple epitopes derived from the human telomerase reverse transcriptase (hTERT), the catalytic subunit of human telomerase, with potential immunostimulating and antineoplastic activities. hTERT I540/R572Y/D988Y multi-peptide vaccine contains strongly antigenic peptide epitopes I540 (9-mer), R572Y (9-mer) and D988Y (10-mer). Vaccination with this agent may elicit a cytotoxic T cell (CTL) response against telomerase-expressing tumor cells. Directly linked to tumorigenesis, telomerase is expressed in the majority of human cancer cells but is infrequently expressed in normal cells.

**hTERT mRNA /survivin peptide-double-loaded autologous dendritic cell vaccine:** A cancer vaccine containing autologous dendritic cells (DCs) that are pulsed with mRNA encoding human telomerase reverse transcriptase (hTERT) and survivin peptide, with potential immunostimulatory and antineoplastic activities. Upon administration, hTERT mRNA/survivin peptide-double-loaded autologous dendritic cell vaccine may elicit an immune response against cancer cells expressing hTERT and survivin by activating cytotoxic T-cells (CTLs), natural killer cells (NKs), and B-lymphocytes. The tumor associated antigens (TAAs) hTERT, the catalytic subunit of human telomerase, and survivin, a member of the inhibitor of apoptosis (IAP) family of proteins, may be upregulated in certain tumor cell types and play key roles in tumor cell growth and survival. Check for active clinical trials using this agent.

**hTERT multipeptide/Montanide ISA-51 VG/imiquimod GX 301:** A therapeutic cancer vaccine consisting of four epitopes derived from the human telomerase reverse transcriptase (hTERT), the catalytic subunit of human telomerase, including hTERT (540-548) acetate, hTERT (611-626) acetate, hTERT (672-686) acetate and hTERT (766-780) acetate, emulsified individually in the adjuvant montanide ISA-51 VG and administered with the immune response modifier (IRM) imiquimod, with potential immunostimulating and antineoplastic activities. Each hTERT peptide emulsion is administered individually by intradermal injection. Subsequently, imiquimod is applied topically to the injection site(s). Vaccination with GX 301 may elicit a cytotoxic T-cell (CTL) response against telomerase-expressing tumor cells. Telomerase is expressed in the majority of human cancer cells, infrequently expressed in normal cells, and is directly linked to tumorigenesis. Imiquimod stimulates cytokine production through the activation of toll-like receptor 7 (TLR-7), and also exhibits antiproliferative effects. Montanide ISA-51, also known as incomplete Freund's adjuvant (IFA), is a stabilized water-in-oil emulsion containing mineral oil with mannide oleate, which contains vegetable-grade (VG) oleic acid derived from olive oil. ISA-51 non-specifically stimulates cell-mediated immune responses to antigens.

**hTERT vaccine V934/V935:** A cancer vaccine directed against human telomerase reverse transcriptase (hTERT), the catalytic subunit of human telomerase, with potential immunostimulating and antineoplastic activities. Upon administration, hTERT vaccine V934/V935 may elicit a cytotoxic T cell (CTL) response against telomerase-expressing tumor cells, which may result in tumor cell death. Telomerase is involved in the restoration and maintenance of telomere length and so the functional lifespan of cells. Abnormally reactivated in tumorigenesis, telomerase is expressed in the majority of human cancer cells but is not expressed or is expressed at very low levels in normal cells.

**hTERT-encoding DNA vaccine INVAC-1:** A DNA vaccine consisting of a plasmid encoding a modified, inactive form of the human telomerase reverse transcriptase (hTERT), the catalytic subunit of human telomerase which synthesizes telomeric DNA at the chromosome ends, fused to ubiquitin, with potential immunostimulating and antineoplastic activities. Upon intradermal vaccination of the hTERT encoding DNA vaccine INVAC-1 in combination with electroporation, hTERT protein is expressed

and activates the immune system to mount a cytotoxic T-cell (CTL) response against telomerase-expressing tumor cells, which may result in tumor cell death. Telomerase prolongs the functional lifespan of cells via the restoration and maintenance of telomere length. Abnormally activated in tumorigenesis, telomerase is expressed in the majority of human cancer cells, but its expression is low or non-existent in normal cells. hTERT conjugation to ubiquitin, a 76 amino-acid peptide involved in the regulation of normal protein intracellular turnover in the cytoplasm, enhances proteasome-dependent degradation of the hTERT protein, increases hTERT presentation by major histocompatibility complex (MHC) class I molecules and results in an increased immune response against hTERT.

**hTERT/survivin/CMV multipeptide vaccine:** A vaccine containing multiple peptides derived from the human telomerase reverse transcriptase (hTERT), survivin and cytomegalovirus (CMV), with potential immunostimulating and antineoplastic activities. Upon administration, hTERT/survivin/CMV multipeptide vaccine may elicit a cytotoxic T cell (CTL) response against tumor cells expressing hTERT, survivin and CMV. hTERT, the catalytic subunit of telomerase, and the inhibitor of apoptosis (IAP) family member survivin, both often upregulated in tumor cells, play key roles in tumor cell growth and survival. Further, CMV expression is correlated with certain types of cancer.

**hTERT/survivin/melanoma tumor cell-derived mRNA-transfected dendritic cell vaccine:** A cancer vaccine containing dendritic cells (DCs) that are transfected with messenger RNA (mRNA) encoding human telomerase reverse transcriptase (hTERT) and survivin in addition to patient-specific melanoma-derived mRNA with potential immunostimulatory and antineoplastic activities. Upon administration, hTERT/survivin/melanoma tumor cell-derived mRNA-transfected dendritic cell vaccine may elicit a highly specific cytotoxic T-cell (CTL) response against melanoma cells expressing hTERT, survivin, and patient-specific melanoma-associated antigens. hTERT, the catalytic subunit of human telomerase, and survivin, a member of the inhibitor of apoptosis (IAP) family of proteins, may be upregulated in certain tumor cell types, playing key roles in tumor cell growth and survival.

**HTLV-1:** A type of virus that infects T cells (a type of white blood cell) and can cause leukemia and lymphoma. HTLV-1 is spread by sharing

syringes or needles, through blood transfusions or sexual contact, and from mother to child during birth or breast-feeding. Also called human T-cell leukemia virus type 1 and human T-cell lymphotropic virus type 1.

**<http://www.nih.gov>**: A drug used to treat prostate cancer that has spread to other parts of the body. It is used in patients who have had surgery to remove the testicles (orchiectomy). Nilutamide binds to proteins called androgen receptors, which are found in some prostate cancer cells, and keeps androgens (male hormones) from binding to the receptors. This blocks the ability of androgens to cause prostate cancer cells to grow. Nilutamide is a type of antiandrogen. Also called Nilandron.

**hu14.18-IL2 fusion protein**: A recombinant protein consisting of the hu14.18 monoclonal antibody fused to the cytokine interleukin-2 (IL2) with potential antineoplastic activity. The monoclonal antibody portion of the hu14.18-IL2 fusion protein binds to tumor cells expressing the GD2 antigen (melanoma, neuroblastoma and certain other tumors); the Fc component of the fusion protein antibody moiety and natural killer (NK) cells mediate antibody-dependent cell-mediated cytotoxicity (ADCC) and complement-dependent cellular cytotoxicity (CDCC) towards GD2-expressing tumor cells. The localized IL2 moiety of the fusion protein stimulates NK and T-cell antitumor cellular immune responses.

**hu14.18-interleukin-2 fusion protein** : An anticancer drug in which hu14.18, a monoclonal antibody, is combined with interleukin-2. The monoclonal antibody binds to the cancer cells and delivers IL-2, which stimulates the immune system to destroy the cancer cells.

**Hu3S193**: A monoclonal antibody that is being studied in the treatment of some types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. Hu3S193 binds to the protein Lewis(y), which is found on colon, breast, lung, ovary, and prostate cancer cells.

**huachansu**: A traditional Chinese medicine (TCM) containing a water soluble Bufo toad skin extract that includes the cardiac glycosides bufalin, cinobufagin and resibufogenin with potential antineoplastic and antiangiogenic activities. Although the exact mechanism of action of this TCM has yet to be fully elucidated, huachansu, which may be administered in an injectable form, may induce cell cycle arrest and apoptosis by

suppressing the expression of anti-apoptotic proteins, such as Bcl-2, while inducing the expression of pro-apoptotic proteins, such as BAX.

**HuAFP31:** A monoclonal antibody being studied in the treatment of several types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. HuAFP31 attaches to tumor cells that make alpha fetoprotein (AFP). This makes it easier for T cells to find and kill the tumor cells.

**Huaier extract granule:** An orally bioavailable traditional Chinese medicine (TCM) composed of a granule containing an aqueous extract of *Trametes robiniophila murr* (Huaier), a mushroom found on hardwood tree trunks, with potential antineoplastic and anti-angiogenic activities. Although the exact mechanism of action through which Huaier exerts its effects is largely unknown, upon administration, this agent induces cell cycle arrest and apoptosis, and inhibits proliferation and migration of susceptible cancer cells through the modulation of various signal transduction pathways involved in carcinogenesis and angiogenesis.

**Huang Lian :** A Chinese herb that has been used as a treatment for a variety of medical problems. It is being studied as an anticancer drug.

**huBC1-huIL12 fusion protein AS1409:** An immunoconjugate consisting of the anti-tumor cytokine interleukin-12 (IL-12) fused to the tumor-targeting antibody BC1 with potential immunostimulatory and antineoplastic activities. The antibody moiety of huBC1-huIL12 fusion protein AS1409 binds to the human fibronectin splice variant ED-B, delivering IL-12 directly to the tumor vasculature; tumor vasculature-targeted IL-12 initiates localized immune cascade responses and exhibits cytotoxic and anti-angiogenic activity while minimizing the systemic side effects of IL-12. The human fibronectin splice variant ED-B is over-expressed in the extracellular matrix and blood vessels of tumor tissues.

**huC242-DM4:** A substance being studied in the treatment of some types of cancer. It is made by linking the monoclonal antibody huC242 to a toxic substance called maytansinoid DM4. The monoclonal antibody binds to the surfaces of cancer cells and the maytansinoid DM4 enters the cells and blocks their growth. It is a type of immunotoxin. Also called maytansinoid DM4-conjugated humanized monoclonal antibody huC242.

**Hückel's rule:** a rule stating that a compound with  $4n + 2 \pi$  electrons will have a closed shell electron configuration and will be aromatic.

**Hue:** the attribute of a color by which we distinguish red from green, blue from yellow, etc. It is what we think of as the colors in a color wheel. Black, white and the grays between them are called neutral colors. They have no hue. Colors that have a hue are called chromatic colors. In color space hues are arranged circularly around the vertical axis. OR The attribute of a colour that determines whether it is red yellow green blue purple etc.

**HuHMFG1:** A monoclonal antibody that binds to the protein MUC1, which is found on breast, ovarian, pancreatic, gastric, and colon cancer cells. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. HuHMFG1 is being studied in the treatment of some types of cancer.

**HuLuc63:** A drug used with lenalidomide and dexamethasone to treat multiple myeloma. It is used in patients whose cancer was treated with one to three anticancer therapies. HuLuc63 binds to a protein called CS1, which is found on myeloma cells and some types of immune cells. HuLuc63 may block CS1 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called elotuzumab and Empliciti.

**Humalog:** (Other name for: insulin lispro)

**human combinatorial antibody library-based antibody VAY736:** A fully human combinatorial antibody library (HuCAL)-derived monoclonal antibody targeting the B-cell-activating factor receptor (BAFF-R), with potential anti-inflammatory and antineoplastic activities. Upon administration of HuCAL-based antibody VAY736, the antibody targets and binds to BAFF-R, which inhibits both BAFF/BAFF-R interaction and BAFF-R-mediated signaling. This may decrease cell growth in tumor cells expressing BAFF-R. BAFF-R, also known as tumor necrosis factor receptor superfamily member 13C, is overexpressed in certain tumor cell types and autoimmune diseases. In cancer cells, BAFF-R plays a key role in B-cell proliferation and survival. VAY736 was developed using HuCAL technology.

**human corticotropin-releasing factor :** A substance being studied in the treatment of brain cancer. It is made naturally by the hypothalamus (a part of the brain) and can also be made in the laboratory. Human corticotropin-releasing factor may help reduce symptoms caused by edema (swelling) of the brain. It is a type of neurohormone. Also called hCRF.

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**human ecology:** The interrelations between man and his physical, biological, socio-economic, and cultural environment, including the interrelations between himself and other individuals or groups of other species, and the interrelationship between himself and his entire environment. Because of the broad approach, human ecology studies are almost always multidisciplinary (WHO, 1988).

**human epidermal growth factor receptor 2 :** A protein involved in normal cell growth. It is found on some types of cancer cells, including breast and ovarian. Cancer cells removed from the body may be tested for the presence of human epidermal growth factor receptor 2 to help decide the best type of treatment. Human epidermal growth factor receptor 2 is a type of receptor tyrosine kinase. Also called c-erbB-2, HER2/neu, and human EGF receptor 2.

**human epidermal growth factor receptor 2 negative :** Describes cancer cells that do not have a large amount of a protein called HER2 on their surface. In normal cells, HER2 helps to control cell growth. Cancer cells that are human epidermal growth factor receptor 2 negative may grow more slowly and are less likely to recur (come back) or spread to other parts of the body than cancer cells that have a large amount of HER2 on their surface. Checking for the amount of HER2 on some types of cancer cells may help plan treatment. These cancers include breast, bladder, ovarian, pancreatic, and stomach cancers. Also called HER2 negative.

**human epidermal growth factor receptor 2 positive :** Describes cancer cells that have too much of a protein called HER2 on their surface. In normal cells, HER2 helps to control cell growth. When it is made in larger than normal amounts by cancer cells, the cells may grow more quickly and be more likely to spread to other parts of the body. Checking to see if a cancer is human epidermal growth factor receptor 2 positive may help plan treatment, which may include drugs that kill human epidermal growth factor receptor 2 positive cancer cells. Cancers that may be human epidermal growth factor receptor 2 positive include breast, bladder,

pancreatic, ovarian, and stomach cancers. Also called c-erbB-2 positive and HER2 positive.

**human epidermal growth factor receptor 2 test :** A laboratory test that measures the amount of HER2 protein on cancer cells or how many copies of the HER2 gene are in the DNA. The HER2 protein is involved in normal cell growth. It may be made in larger than normal amounts by some types of cancer, including breast, ovarian, bladder, pancreatic, and stomach cancer. This may cause cancer cells to grow more quickly and spread to other parts of the body. A human epidermal growth factor receptor 2 test may be done to help plan treatment. It is a type of tumor marker test. Also called HER2 test and HER2/neu test.

**human epididymis protein 4 :** A protein found on cells that line the lungs and reproductive organs, such as the ovaries. Human epididymis protein 4 may be found in higher than normal amounts in patients with some types of cancer, including ovarian epithelial cancer. Measuring the amount of human epididymis protein 4 in the blood may help plan cancer treatment or find out if cancer is getting worse or has come back. It is a type of tumor marker. Also called HE4.

**human gp100 plasmid DNA vaccine:** A vaccine consisting of a plasmid DNA encoding the human melanoma-associated antigen gp100. Upon administration, expressed gp100 antigen may stimulate a cytotoxic T cell HLA-A2.1-restricted immune response against tumor cells that express this antigen, resulting in tumor cell lysis.

**human herpesvirus :** A type of virus that causes herpes infections and has DNA as its genetic material. There are two types of human herpesviruses. Infections with type 1 viruses cause cold sores on the lips or nostrils. Infections with type 2 viruses cause sores on the genitals (external and internal sex organs and glands). Also called herpes simplex virus, HHV, and HSV.

**human herpesvirus 8 :** A type of virus that causes Kaposi sarcoma (a rare cancer in which lesions grow in the skin, lymph nodes, lining of the mouth, nose, and throat, and other tissues of the body). Human herpesvirus 8 also causes certain types of lymphoma (cancer that begins in cells of the immune system). Also called HHV8, Kaposi sarcoma-associated herpesvirus, and KSHV.

**human immunodeficiency virus :** The cause of acquired immunodeficiency syndrome (AIDS). Also called HIV.

**Human immunodeficiency virus (HIV):** The cause of acquired immune deficiency syndrome (AIDS). HIV destroys helper T cells by increasing the permeability of the T cell membrane. Loss of the helper T cells severely cripples the immune system, rendering the victim susceptible to many types of infection.

**human lactoferrin peptide hLF1-11:** A synthetic peptide corresponding to the first 11 N-terminal amino acids of human lactoferrin (hLF1-11) with potential antimicrobial activity. Although the exact mechanism through which this peptide exerts its effect has yet to be fully elucidated, hLF1-11 binds ferric iron, limiting the availability of free iron for microbial functions. hLF1-11 may be effective against a variety of bacteria and fungi, including multidrug-resistant (MDR) strains of *Acinetobacter baumannii* and *Staphylococcus aureus*, and fluconazole-resistant *Candida albicans* strains. Human lactoferrin, a 692 amino acid glycoprotein belonging to the transferrin family of metal-binding proteins, can be found in human milk and other secretory fluids, and the secondary granules of polymorphonuclear (PMN) cells. Human lactoferrin plays a role in the innate defense of mucosal surfaces.

**human leukocyte antigen :** A type of molecule found on the surface of most cells in the body. Human leukocyte antigens play an important part in the body's immune response to foreign substances. They make up a person's tissue type, which varies from person to person. Human leukocyte antigen tests are done before a donor stem cell or organ transplant, to find out if tissues match between the donor and the person receiving the transplant. Also called HLA and human lymphocyte antigen.

**Human leukocyte antigen (HLA):** The name given to a member of the major-histocompatibility complex proteins in human beings.

**human leukocyte antigen matching :** A process in which blood or tissue samples are tested for human leukocyte antigens (HLAs). HLAs are molecules found on the surface of most cells in the body. They make up a person's tissue type, which varies from person to person. They play an important part in the body's immune response to foreign substances. Human leukocyte antigen matching is done before a donor stem cell or organ

transplant to find out if tissues match between the donor and the person receiving the transplant. Also called HLA matching.

**human MHC non-restricted cytotoxic T-cell line TALL-104:** An allogeneic human cytotoxic T-lymphocyte cell line with potential antineoplastic activity. Human MHC non-restricted cytotoxic T-cell line TALL-104 is an IL-2-dependent human leukemic T cell line, expressing CD8 and CD3 but not CD16. Upon administration, human MHC non-restricted cytotoxic T-cell line TALL-104 interacts with tumor cells and activates apoptotic and necrotic pathways, resulting in tumor cell lysis. Endowed with MHC-non-restricted killer activity, these cells are cytotoxic against a broad range of tumor cells, sparing normal cells. In addition, TALL-104 may induce secretion of various cytokines, such as interferon-gamma, potentially enhancing its cytotoxic activity.

**human monoclonal antibody 216:** A naturally-occurring human IgM monoclonal antibody with potential antineoplastic activity. Human monoclonal antibody 216, derived from the gene VH4-34, binds to the glycosylated epitope CDIM on the surface of both malignant and normal B cells. Upon binding to B cells, this antibody may crosslink two or more CDIM molecules, resulting in the formation of cell membrane pores, the disruption of cell membrane integrity, and B cell lysis; this mechanism of antibody-mediated cell death is direct and does not involve mechanisms of complement-mediated cytotoxicity or antibody-dependent cell-mediated cytotoxicity (ADCC). CDIM is the glyco-moiety of a 75 kD MW B-cell cell surface glycoprotein.

**human monoclonal antibody B11-hCG beta fusion protein CDX-1307:** A human monoclonal antibody (B11) directed against the mannose receptor and linked to the beta-subunit of human chorionic gonadotropin (hCG beta) with potential immunostimulating and antineoplastic activities. The monoclonal antibody moiety of human monoclonal antibody B11-hCG beta fusion protein CDX-1307 binds to mannose receptors on antigen presenting cells (APCs), including human dendritic cells (DCs) and macrophages. Upon internalization and processing, APCs present the processed hCG beta antigen on their cell surfaces, which may initiate an antibody-dependent cell-mediated cytotoxicity (ADCC) response against hCG beta-expressing tumor cells. The tumor-associated antigen (TAA) hCG beta is selectively overexpressed by a number of tumors including breast, colorectal,

pancreatic, bladder and ovarian tumors; its expression may correlate with the stage of disease.

**human myeloid progenitor cells CLT-008:** Early- to late-stage myeloid progenitor cells derived from adult human stem cells with potential hematopoietic activity. Upon infusion, human myeloid progenitor cells CLT-008 proliferate into mature myeloid cells, including granulocytes, macrophages, platelets, and erythrocytes. These myeloid progenitor cells die within forty-five days after a burst of hematopoiesis. This agent cannot create lymphoid cells, including T cells associated with graft-versus-host disease (GVHD).

**human papillomavirus :** A type of virus that can cause abnormal tissue growth (for example, warts) and other changes to cells. Infection for a long time with certain types of human papillomavirus can cause cervical cancer. Human papillomavirus may also play a role in some other types of cancer, such as anal, vaginal, vulvar, penile, oropharyngeal, and squamous cell skin cancers. Also called HPV.

**human papillomavirus 16 E7 peptide:** A synthetic peptide sequence of human papillomavirus (HPV) E7 nuclear protein which is used to produce vaccines against HPV infection and HPV-related neoplasms. HPV E7 oncogenic protein binds the retinoblastoma tumor suppressor protein, pRB, as well as a number of other cellular proteins, and serves as a transcriptional activator. This protein is important in the induction and maintenance of cellular transformation and is co-expressed in the majority of HPV-containing carcinomas.

**human papillomavirus 16/18 L1 virus-like particle/AS04 vaccine:** A recombinant, bivalent, human papillomavirus (HPV) vaccine, containing virus-like particles for HPV types 16 and 18 linked to the adjuvant AS04, with potential immunoprotective and antineoplastic properties. Upon administration, HPV 16/18 L1 virus-like particle/AS04 vaccine may generate humoral and cellular immunity against HPV types-16 and -18 antigens, thereby preventing cervical infection upon exposure to HPV types 16 and 18. In addition, this agent may stimulate an antitumoral cellular immune response against cervical cancer associated with HPV infection.

**human papillomavirus DNA test :** A laboratory test in which cells are scraped from the cervix to look for DNA of human papillomaviruses (HPV). HPV can cause abnormal tissue growth (for example, warts) and

other changes to cells. Infection for a long time with certain types of HPV can cause cervical cancer. HPV can also play a role in other types of cancer, such as cancers of the anus, vagina, vulva, penis, and oropharynx. Also called HPV DNA test.

**human papillomavirus RNA test :** A laboratory test in which cells are scraped from the cervix to look for RNA of the most common types of human papillomavirus (HPV). Certain types of HPV may cause abnormal tissue growth, such as warts, and other changes to cells. Infection for a long time with other types of HPV may cause cervical cancer. A human papillomavirus RNA test may be done with a Pap test to check for HPV infection and cervical cancer. HPV infection may also cause other types of cancer, such as cancers of the anus, vagina, vulva, penis, and oropharynx. Also called HPV RNA test.

**human papillomavirus test :** A laboratory test in which cells are tested for DNA or RNA from certain types of human papillomavirus (HPV) that are known to cause cervical cancer. These high-risk types of HPV can also cause other types of cancer, including cancers of the anus, vagina, vulva, penis, and oropharynx. A human papillomavirus test may be done at the same time as a Pap test for cervical cancer screening in women aged 30 to 65 years. A human papillomavirus test may also be done after certain abnormal Pap test results. Also called HPV test.

**human papillomavirus vaccine :** A vaccine used to prevent genital warts, anal cancer, cervical cancer, vulvar cancer, and vaginal cancer caused by certain types of human papillomavirus (HPV). It is also used to prevent lesions that are caused by those viruses and that can lead to anal, cervical, vulvar, or vaginal cancer. Also called HPV vaccine.

**human papillomavirus vaccine V503:** A vaccine consisting of noninfectious, recombinant virus-like particles (VLP) containing the major viral capsid protein L1 of nine strains of human papillomavirus (HPV), with potential immunoprotective activity. Vaccination with HPV V503 may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against cells positive for any of these nine strains of HPV, thereby preventing cervical infection upon exposure to certain HPV subtypes.

**human participant protection regulations :** Laws set by the U.S. Department of Health and Human Services (DHHS) to protect a person

from risks in research studies that any federal agency or department has a part in. Also called 45 CFR 46, 45 Code of Federal Regulations Part 46, and Protection of Human Subjects.

**human prostate-specific membrane antigen plasmid DNA vaccine:** A vaccine consisting of a plasmid DNA encoding the human prostate-specific membrane antigen (PSMA). Upon administration, expressed PSMA may stimulate a cytotoxic T cell response against tumor cells that express this antigen, resulting in tumor cell lysis.

**human T-cell leukemia virus type 1 :** A type of virus that infects T cells (a type of white blood cell) and can cause leukemia and lymphoma. Human T-cell leukemia virus type 1 is spread by sharing syringes or needles, through blood transfusions or sexual contact, and from mother to child during birth or breast-feeding. Also called HTLV-1 and human T-cell lymphotropic virus type 1.

**human T-cell lymphotropic virus type 1 :** A type of virus that infects T cells (a type of white blood cell) and can cause leukemia and lymphoma. Human T-cell lymphotropic virus type 1 is spread by sharing syringes or needles, through blood transfusions or sexual contact, and from mother to child during birth or breast-feeding. Also called HTLV-1 and human T-cell leukemia virus type 1.

**human trefoil factor 1-secreting Lactococcus lactis AG013:** An oral rinse solution containing a strain of the bacteria *Lactococcus lactis* (*L. lactis*) genetically modified to express human Trefoil Factor 1 (hTFF1) with potential cytoprotective activity. With oral rinsing, human trefoil factor 1-secreting *Lactococcus lactis* AG013 may secrete and deliver hTFF1 to oral mucosal tissue, protecting or promoting the healing of damaged oral mucosa. hTFF1, a peptide belonging to the Trefoil factors family (TFF), is normally secreted by mucous epithelia and is involved in protecting mucosal tissue and maintaining mucosal surface integrity.

**human varicella zoster immune globulin:** A human plasma-derived immunoglobulin G (IgG) formulation containing high levels of antibodies against varicella zoster virus (VZV), a double-stranded DNA virus that causes chickenpox and herpes zoster (shingles), with potential immunomodulating and antiviral activities. VZV IgG (VZIG) is isolated from donors expressing high amounts of VZV antibodies. Upon intramuscular (IM) administration, the anti-VZV antibodies provide passive

immunization against VZV. This may prevent infection by VZV in immunocompromised patients.

**humanized monoclonal antibody** : A type of antibody made in the laboratory by combining a human antibody with a small part of a mouse or rat monoclonal antibody. The mouse or rat part of the antibody binds to the target antigen, and the human part makes it less likely to be destroyed by the body's immune system.

**humanized monoclonal antibody 3F8**: A humanized monoclonal antibody directed against the human tumor-associated antigen GD2, with potential antineoplastic activity. Upon vaccination, the humanized monoclonal antibody 3F8 stimulates antibody-dependent cell-mediated cytotoxicity (ADCC) against GD2-expressing tumor cells. GD2, a disialoganglioside with expression in normal tissues restricted primarily to the cerebellum and peripheral nerves, is commonly expressed at high levels on tumors of neuroectodermal origins such as melanomas and neuroblastomas. Compared to the murine monoclonal antibody 3F8 (m3F8), the humanized form does not cause a human anti-mouse antibody (HAMA) response and shows enhanced ADCC activity.

**humanized monoclonal antibody MEDI-522** : A substance being studied in the treatment of some types of cancer and other conditions. Humanized monoclonal antibody MEDI-522 binds to a protein on the surface of blood vessels and may prevent the growth of new blood vessels that tumors need to grow. It may also prevent the spread of cancer. It is a type of antiangiogenesis agent, a type of metastasis inhibitor, and a type of monoclonal antibody. Also called Abegrin, etaracizumab, and MEDI-522.

**Humatin**: (Other name for: paromomycin sulfate)

**HuMax-CD20**: A drug used to treat chronic lymphocytic leukemia (CLL) that has not gotten better with other anticancer drugs. It is also used with chlorambucil in patients who have not already been treated and cannot receive certain anticancer drugs. It is also being studied in the treatment of other types of cancer. HuMax-CD20 binds to a protein called CD20, which is found on B cells (a type of white blood cell) and some types of leukemia and lymphoma cells. This may help the immune system kill cancer cells. HuMax-CD20 is a type of monoclonal antibody. Also called Arzerra and ofatumumab.

**humectant:** A substance that absorbs or retains moisture, added to a product to keep it from drying out.

**humidifier :** A machine that puts moisture in the air.

**humor therapy :** A type of therapy that uses humor to help relieve pain and stress and improve a person's sense of well-being. It may be used to help people cope with a serious disease, such as cancer. Humor therapy may include laughter exercises, clowns, and comedy movies, books, games, and puzzles. It is a type of complementary therapy. Also called laughter therapy.

**Humoral immune response:** A system for the recognition of foreign substances that employs soluble antibodies to bind to and inactivate such substances.

**Humulin N:** (Other name for: insulin, NPH)

**Humulin R Insulin:** (Other name for: insulin, regular)

**Humus:** The dark organic material in soils, produced by the decomposition of soils. The matter that remains after the bulk of detritus has been consumed (leaves, roots). Humus mixes with top layers of soil (rock particles), supplies some of the nutrients needed by plants -increases acidity of soil; inorganic nutrients more soluble under acidic conditions, become more available, EX. wheat grows OR This is a component of soil. Humus is the mixture of rotting vegetation and animal remains. A compost bin will provide a source of humus for a gardener. OR Decomposed organic material.

**Hund's rule:** A rule of thumb stating that subshells fill so that the number of unpaired spins is maximized, or "spread them out and line them up."

**Hungry:** Almost a synonym for 'hot' and indicates a porous surface that quickly absorbs paint applied to it. It is also sometimes used to describe the appearance of a paint film that has been affected by the excessive porosity of the surface beneath - hence is applied to any thin coating with poor 'build'. Alternatively the term 'starved' may be used. OR A thin coating applied over a porous surface can often have poor 'build', known as a 'hungry' coating. The solution is to thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants, then rub down with a suitable abrasive and dust off. Prime the whole surface with a suitable primer before repainting.

**hurricane:** low-pressure system with sustained winds of 74 mph or greater.

**Hurthle cell neoplasm :** An uncommon type of thyroid tumor that can be benign or malignant.

**Hyalo GYN:** (Other name for: hyaluronic acid-based hydrating vaginal gel)

**hyaluronic acid:** A glucosaminoglycan consisting of D-glucuronic acid and N-acetyl-D-glucosamine disaccharide units that is a component of connective tissue, skin, vitreous humour, umbilical cord, synovial fluid and the capsule of certain microorganisms contributing to adhesion, elasticity, and viscosity of extracellular substances. Check for active clinical trials using this agent.

**hyaluronic acid-based hydrating vaginal gel:** A clear, colorless water-based vaginal gel containing the partial benzyl ester of hyaluronic acid (HA) with potential hydrating activity. Upon vaginal application, HA adheres to the vaginal mucosa where it retains water, provides moisture to the vagina and protects the vaginal mucosa. This gel may provide relief in vaginal dryness and may prevent sexual discomfort, itching and irritation. This HA derivative is less susceptible to enzymatic breakdown and provides longer lasting activity compared to HA. HA is naturally present in the vaginal epithelium.

**hyaluronic acid-containing topical cream:** A topical cream formulation containing hyaluronic acid (HA) with wound repair-promoting, skin moisturizing, and potential radioprotective activities. Upon application of the topical cream, HA adheres to injured tissues, provides hydration to the skin, and protects against dehydration and chemical or mechanical irritation. Hyaluronate, a non-sulfated glucosaminoglycan, is a major component of the extracellular matrix in connective, epithelial, and neural tissues and contributes significantly to cell proliferation and migration.

**Hybrid:** A resin or reinforcement made from two or more different polymers or reinforcement materials.

**Hybrid (or chimeric) plasmid:** A plasmid that contains DNA from two different organisms.

**hybrid atomic orbital:** a probability area created by a linear combination of atomic orbitals.

**hybrid orbital:** an orbital formed by the linear combination of atomic orbitals in the ground state.

**hybrid orbital number rule:** the hybrid orbital number is equal to the sum of a molecule's  $\sigma$  bonds plus the number of unshared electron pairs. A hybrid orbital number of 2 indicates sp hybridization; 3 indicates sp<sup>2</sup> hybridization; 4 indicates sp<sup>3</sup> hybridization.

**Hybrid resin:** A combination of two or more common resins.

**hybridization:** The combination of a set of atomic orbitals to produce a new set of "hybrid" orbitals. Hybridized orbitals are theoretical constructions that make molecular structures easier to explain. For example, combining the valence s and p orbitals of carbon produces a set of four "sp<sup>3</sup>" hybrid orbitals that can be used to explain the tetrahedral bonding in CH<sub>4</sub>. OR A technique used to determine the relatedness of nucleic acids by assaying the ability of single strands of one sample to form a duplex by complementary base pairing to single strands of another sample. OR the changing, or mixing, of orbitals to form new atomic or molecular orbitals that are lower in energy. OR A mixing process, often applied to description of atomic orbitals, producing orbitals that have characteristics intermediate between the various types of orbitals involved.

**Hybridoma cell:** A cell, resulting from the fusion of an antibody-producing cell and a tumor cell, that produces a single antibody and has an unlimited capacity for proliferation.

**Hycamtin:** (Other name for: topotecan hydrochloride)

**Hycamtin :** A drug used to treat certain types of ovarian cancer, lung cancer, and cervical cancer. Hycamtin is a type of topoisomerase inhibitor. Also called topotecan and topotecan hydrochloride.

**Hycamtin Capsules:** (Other name for: oral topotecan hydrochloride)

**hycanthone:** A thioxanthene derivative of lucanthone with anti-schistosomal activity and potential antineoplastic activity. Hycanthone interferes with parasite nerve function, resulting in parasite paralysis and death. This agent also intercalates into DNA and inhibits RNA synthesis in vitro.

**hydatidiform mole :** A slow-growing tumor that develops from trophoblastic cells (cells that help an embryo attach to the uterus and help form the placenta) after fertilization of an egg by a sperm. A hydatidiform

mole contains many cysts (sacs of fluid). It is usually benign (not cancer) but it may spread to nearby tissues (invasive mole). It may also become a malignant tumor called choriocarcinoma. Hydatidiform mole is the most common type of gestational trophoblastic tumor. Also called molar pregnancy.

**Hydeltra:** (Other name for: prednisolone)

**Hydeltrasol:** (Other name for: prednisolone)

**Hydratase:** An enzyme that adds the elements of water to a carbon-carbon double bond.

**hydrate:** A crystalline solid with molecules of water trapped in the solid state structure, which can often be removed partly or completely by relatively gentle heating. OR A hydrate is an addition compound that contains water in weak chemical combination with another compound. For example, crystals of  $\text{CuSO}_4 \cdot 5 \text{H}_2\text{O}$  (copper sulfate pentahydrate) are made of regularly repeating units, each containing 5 molecules of water weakly bound to a copper(II) ion and a sulfate ion.

**hydrated sodium calcium aluminosilicate:** A naturally occurring, highly mineralized phyllosilicate clay used as a nutritional supplement with mycotoxin binding and protective activities. Upon ingestion prior to each meal, hydrated sodium calcium aluminosilicate is not absorbed by the gastrointestinal tract but rather binds certain food contaminants, including aflatoxin (AF) and fumonisin B1 (FB1), thereby reducing the bioavailability of these substances. Dietary exposure of AF and FB1 has been associated with an increased risk of certain cancers. Check for active clinical trials using this agent.

**hydration:** Having solvent molecules of water surrounding and becoming attached to ions or molecules of the solute. OR Hydration is the addition of  $\text{H}_2\text{O}$  to a molecule in a chemical reaction. OR the addition of the elements of water to a molecule. OR Combination with water. OR The process of combining with water. In medicine, the process of giving fluids needed by the body.

**Hydraulic:** A system in which energy is transferred from one place to another by means of compression and flow of a fluid (e.g., water, oil).

**hydraulic action:** the ability of flowing water to dislodge, pick up, and transport rock particles or sediment.

**Hydraulic clamp:** A term used to describe the use of a large hydraulic cylinder to open and close the clamp unit of a molding machine.

**Hydraulic loading:** Hydraulic loading refers to the flows (MGD or  $m^3/day$ ) to a treatment plant or treatment process.

**hydrazine sulfate:** The synthetic sulfate salt of hydrazine, a derivative of ammonia. Hydrazine inhibits the enzyme phosphoenol pyruvate carboxykinase, thereby blocking gluconeogenesis. This agent has been reported to decrease the excessive energy needs and cachexia of cancer patients. Classified as a likely human carcinogen, hydrazine sulfate is also a weak inhibitor of mono-amine oxidase (MAO).

**hydrazine sulfate :** A substance that has been studied as a treatment for cancer and as a treatment for cachexia (body wasting) associated with advanced cancer.

**hydrazine<sup>22</sup>:** A colorless, fuming, corrosive liquid that is a powerful reducing agent.  $NH_2NH_2$  is used in jet and rocket fuels, and as an intermediate in the manufacture of agricultural, textile, photographic, and industrial chemicals.

**Hydrea:** (Other name for: hydroxyurea) OR A drug used to treat chronic myelogenous leukemia (CML) that has not gotten better with other treatment. It is also used with radiation therapy and other anticancer drugs to treat certain types of head and neck cancer. It is also being studied in the treatment of other conditions and types of cancer. Hydrea stops cells from making DNA and may kill cancer cells. It may also make cancer cells easier to kill with radiation therapy. Hydrea contains the active ingredient hydroxyurea. It is a type of antimetabolite.

**hydride ion-:** A  $-1$  ion formed from hydrogen. Hydride ions and hydride ionic compounds react instantly and sometimes violently with water.

**hydride shift:** the movement of a hydride ion, a hydrogen atom with a negative charge, to form a more inductively stabilized carbocation.

**hydroboration:** the addition of boron hydride to a multiple bond.

**hydroboration-oxidation:** the addition of borane ( $BH_3$ ) or an alkyl borane to an alkene and its subsequent oxidation to produce the anti-Markovnikov indirect addition of water.

**hydrocarbon:** A hydrocarbon is a compound containing only hydrogen and carbon. OR An organic compound containing only the elements

hydrogen and carbon. OR a chemical compound containing only hydrogen and carbon; the largest source of hydrocarbons comes from petroleum crude oil. OR Any chemical compound containing only hydrogen and carbon. We have been unable to determine where the word comes from. OR an organic compound containing only carbon and hydrogen. OR Hydrocarbons are organic compounds that contain only hydrogen and carbon. The simplest hydrocarbons are the alkanes. OR An organic molecule consisting of hydrogen and carbon atoms only. An example is petroleum, which contributes to air pollution when released into the atmosphere OR a molecule that contains exclusively carbon and hydrogen atoms. The central bond may be a single, double, or triple covalent bond, and it forms the backbone of the molecule. OR an organic compound that consists exclusively of the elements carbon and hydrogen. Generally, the term hydrocarbon is used for the chemicals that are derived from natural gas, oil, and coal. OR This is the chemical term for an organic compound containing only carbon and hydrogen. OR A hydrocarbon is a chemical that contains ONLY hydrogen atoms and carbon atoms. The main source of hydrocarbons is crude oil. This is mostly alkanes (hydrocarbons with only single bonds). The hydrocarbons in crude oil are separated by fractional distillation into groups that have similar boiling points.

**hydrocarbon :** A substance made of only hydrogen and carbon. Examples of hydrocarbons are coal, petroleum, natural gas and tar. They are used as energy sources. Being exposed to hydrocarbons may increase the risk of certain types of cancer.

**Hydrocarbon Plastics:** Plastics based on resins made by the polymerization of monomers composed of carbon and hydrogen only.

**hydrocephalus :** The abnormal buildup of cerebrospinal fluid in the ventricles of the brain.

**Hydrochloric acid (HCl) :** A gaseous, strong acid, used typically as water solution. A key component in manufacturing inorganic coagulants.

**hydrocodone bitartrate :** A drug used to treat moderate to severe pain and cough. Hydrocodone bitartrate is made from codeine and binds to opioid receptors in the central nervous system. It is a type of analgesic agent, a type of antitussive, and a type of opiate.

**hydrocodone/acetaminophen:** A combination preparation of the analgesic acetaminophen and the semisynthetic opioid agonist hydrocodone with

analgesic and antitussive activities. Acetaminophen exerts its analgesic activity by inhibiting prostaglandin synthesis while hydrocodone exerts its analgesic activity by binding to the mu-receptors in the central nervous system (CNS), thereby mimicking the effects of endogenous opioids.

**hydrocortisone :** A drug used to relieve the symptoms of certain hormone shortages and to suppress an immune response.

**hydrocortisone sodium succinate:** The sodium salt of hydrocortisone succinate with glucocorticoid property. Hydrocortisone sodium succinate is chemically similar to the endogenous hormone that stimulates anti-inflammatory and immunosuppressive activities, in addition to exhibiting minor mineralocorticoid effects. This agent binds to intracellular glucocorticoid receptors and is translocated into the nucleus, where it initiates the transcription of glucocorticoid-responsive genes, such as various cytokines and lipocortins. Lipocortins inhibit phospholipase A<sub>2</sub>, thereby blocking the release of arachidonic acid from membrane phospholipids and preventing the synthesis of prostaglandins and leukotrienes, both potent mediators of inflammation.

**Hydrocortone:** (Other name for: therapeutic hydrocortisone)

**Hydrodealkylation (HDA):** Hydrodealkylation of toluene to benzene is the most common dealkylation route. The use of toluene dealkylation is sensitive to the producer's alternative value for toluene (i.e. gasoline or chemicals), the hydrogen value (on-purpose or by-product), as well as the benzene market price. As a result the motivation to dealkylate is very different for each producer with some producers dedicated to dealkylate at all times (usually lacking a sufficient gasoline pool or chemical market for toluene) while others are "opportunistic" dealkylators, running their plants at times when the economics fully justify and encourage the process and spot benzene sales are available.

**Hydrogen:** Symbol:"H" Atomic Number:"1" Atomic Mass: 1.01amu. Hydrogen is the first element in the periodic table. It is very light and the smallest atom. There is more hydrogen in the universe than any other element. On Earth, it is usually found with oxygen in water. OR This gas is produced when a metal reacts with an acid. Hydrogen gas has a very low density. It burns with a squeaky pop. This is the test for hydrogen OR Element 1, atomic weight 1.00797. The most abundant element in the universe. Hydrogen occurs as H<sub>2</sub> at ambient temperature and pressure, a

colorless, odorless, and extremely flammable gas. Discovered in 1766 by Cavendish.

**Hydrogen Bond:** A chemical bond that has hydrogen covalently bonded to an electronegative atom. It happens when oxygen bonds to hydrogen. OR is a special situation that exists between the hydrogen atom in one molecule (like water) and the oxygen atom in another molecule (like another water molecule). This bond is ten times weaker than the covalent bond, and ten times stronger than the van der Waals force. The hydrogen bond caused water to have its unusual properties of high boiling point, high melting point, high surface tension, and its formation of the six-sided ring structure in ice. The latter causes water to expand upon freezing, become less dense, and float in water. OR Attractive interactions involving two groups: one containing an electron-deficient hydrogen covalently bonded to an electronegative atom and one containing an electron-rich heteroatom. OR The strongest attraction between two dipoles is when one or both of them involves a bond between hydrogen and a strongly electronegative atom, like oxygen, fluorine, or nitrogen. Because hydrogen only has one electron, if it forms a bond with an element that is very keen to grab an electron, it becomes much more positive than an element that has plenty of other electrons left to hang around the positively charged nucleus. Dipole-dipole interactions between these sort of molecules (like water {H<sub>2</sub>O}, ammonia {NH<sub>3</sub>}, hydrofluoric acid {HF}) are so much stronger than ordinary dipole-dipole bonds that we give them the special name of 'hydrogen bonds'. OR a weak, secondary bond between a partially positive hydrogen atom and a partially negative N, O, or F atom. An inter-molecular force of attraction. OR A weak, noncovalent, attractive force between one electronegative atom and a hydrogen atom that is covalently linked to a second electronegative atom. OR A bond formed when two relatively electronegative atoms, such as oxygen or nitrogen, unequally share a hydrogen atom that is covalently bonded to one of the electronegative atoms. OR An especially strong dipole-dipole force between molecules X-H...Y, where X and Y are small electronegative atoms (usually F, N, or O) and ... denotes the hydrogen bond. Hydrogen bonds are responsible for the unique properties of water and they loosely pin biological polymers like proteins and DNA into their characteristic shapes. OR A weak electrostatic attraction between one electronegative atom (such as oxygen or nitrogen) and a hydrogen atom covalently linked to a second electronegative atom.

**Hydrogen Bond Acceptor (HBA):** The functional group that contains the electron-rich heteroatom and is the recipient of the hydrogen bond.

**Hydrogen Bond Donor (HBD):** The functional group that contains the electron-deficient hydrogen covalently bonded to an electronegative atom.

**hydrogen bonding:** Strong type of intermolecular dipole-dipole attraction. Occurs between hydrogen and F, O or N.

**HYDROGEN BONDING:** The electrostatic attraction between a hydrogen atom bearing a slight positive charge and an electronegative atom, such as oxygen, in the same (intramolecular), or a different (intermolecular) molecule.

**hydrogen ion concentration:** the normality of a solution with respect to hydrogen ions,  $H^+$ ; it is related to acidity measurements in most cases by the equation  $pH = -\log [H^+]$  where  $H^+$  is the hydrogen ion concentration in gram equivalents per liter of solution.

**hydrogen peroxide :** A chemical used in bleaches, dyes, cleansers, antiseptics, and disinfectants. In a concentrated form, it is toxic and irritating to tissues.

**Hydrogen peroxide” (H<sub>2</sub>O<sub>2</sub>) :** Hydrogen peroxide has strong oxidizing properties, and is a powerful bleaching agent. It is also used as a disinfectant, an antiseptic agent and an oxidizer.

**Hydrogen sulfide:** 'Rotten egg gas', H<sub>2</sub>S. It is responsible for the distinctive odour of Rotorua, in New Zealand.

**Hydrogen sulfide gas:** Hydrogen sulfide is a gas with a rotten egg odor. This gas is produced under anaerobic conditions. Hydrogen sulfide is particularly dangerous because it dulls your sense of smell so that you don't notice it after you have been around it for a while and because the odor is not noticeable in high concentrations. The gas is very poisonous to your respiratory system, explosive, flammable, and colorless.

**hydrogenation:** the infusing of unsaturated or impure hydrocarbons with hydrogen gas at controlled temperatures and pressures for the purpose of obtaining saturated hydrocarbons and/or removing various impurities such as sulfur and nitrogen. OR Hydrogenation is a chemical reduction reaction which results in the addition of hydrogen to an unsaturated compound (e.g. alkenes). Metal catalysts are typically used for these reactions, including cobalt-molybdenum or nickel-molybdenum OR the addition of hydrogen to

a multiple bond. OR the addition of hydrogen to an unsaturated compound.  
OR Chemical process whereby hydrogen is introduced into a compound.

**hydrogenous sediments:** sediments on the ocean floor that have chemically precipitated from seawater.

**hydrohalogenation:** a reaction in which a hydrogen atom and a halogen atom are added to a double bond to form a saturated compound.

**hydrolases:** Enzymes (proteases, lipases, phosphatases, nucleases, for example) that catalyze hydrolysis reactions.

**hydrologic budget:** A quantitative accounting of all water volumes and their changes with time for a basin or area.

**hydrologic cycle:** the continuous exchange of water between the atmosphere, oceans, continents, plants, and animals. OR The process of evaporation, vertical and horizontal transport of vapor, condensation, precipitation, and the flow of water from continents to oceans. It is a major factor in determining climate through its influence on surface vegetation, the clouds, snow and ice, and soil moisture. The hydrologic cycle is responsible for 25 to 30 percent of the mid-latitudes' heat transport from the equatorial to polar regions.

**hydrology:** The science dealing with the properties, distribution, and circulation of water.

**Hydrolysis:** Cleavage of a bond, such as an anhydride or peptide bond, by the addition of the elements of water, yielding two or more products. OR A catch-all term for any reaction in which the water molecule is split. OR The cleavage of a molecule by the addition of water. OR Hydrophilic Preferring to be in contact with water. OR Hydrolysis is a reaction where water attacks a part of a molecule, usually breaking it up. An example of hydrolysis is the breaking of the ester linkages to form a soap out of an oil. In this reaction, the ester linkage is broken, releasing an alcohol and an acid. OR Hydrolysis is the breakdown of a compound by water. OR Cleavage of a covalent bond brought about by water; the H- and -OH of water typically become attached to the respective cleavage fragments. For example: OR The reactions of cations with water to produce a weak base or of anions to produce a weak acid. OR The process in which carbohydrates and starches are simplified into organic soluble organics, usually by facultative anaerobes.

**hydrolysis :** A chemical reaction that uses water to break down a compound.

**Hydrolysis Reaction:** A reaction that occurs when water is added to a compound. In the case of a disaccharide, the molecule is broken up into monosaccharides with the addition of water. OR Reactions in which bonds are cleaved by the addition of water.

**hydrolyze:** to cleave a bond via the elements of water. OR To add hydrogen or hydroxyl to a substance.

**hydrometer:** An instrument for measuring the specific gravity of liquids. A hydrometer is a weight with a vertical scale attached. When placed into a liquid, the hydrometer bobs upright, and sinks to a certain level. The specific gravity or solution composition can be read from the liquid level on the vertical scale. Hydrometers are often calibrated in degrees Baumé.

**hydromorphone hydrochloride:** The hydrochloride salt of the semi-synthetic opioid hydromorphone with analgesic activity. Hydromorphone, the hydrogenated ketone of morphine, selectively binds the mu-opioid receptor, a G protein-coupled receptor. Binding stimulates the exchange of guanosine triphosphate (GTP) for guanosine diphosphate (GDP) on the G-protein complex, resulting in inhibition of plasma membrane-associated adenylate cyclase (AC) and a reduction in intracellular cyclic 3',5'-adenosine monophosphate (cAMP) levels. Due to a reduction in cAMP levels, voltage-gated potassium channels are activated, resulting in neuronal hyperpolarization and a reduction in neuronal excitability. In addition, this agent inhibits the opening of voltage-gated calcium channels, resulting in inhibition of calcium entry into neuronal cells and a reduction in the release of nociceptive neurotransmitters such as substance P and glutamate.

**hydromorphone hydrochloride :** A drug used to treat moderate to severe pain. It may also be used to treat certain types of cough. Hydromorphone hydrochloride is made from morphine and binds to opioid receptors in the central nervous system. It is a type of opioid and a type of analgesic agent. Also called Dilaudid, Exalgo, and Hydrostat IR.

**hydronephrosis :** Abnormal enlargement of a kidney, which may be caused by blockage of the ureter (such as by a kidney stone) or chronic kidney disease that prevents urine from draining into the bladder.

**hydronium ion:** The hydrated hydrogen ion (H<sub>2</sub>O<sup>+</sup>).

**hydronium ion $3+$ :** The  $H_3O^+$  ion, formed by capture of a hydrogen ion by a water molecule. A strong covalent bond is formed between the hydrogen ion and water oxygen; all hydrogen ions in aqueous solution are bound inside hydronium ions.

**hydropathy index:** A scale that expresses the relative hydrophobic and hydrophilic tendencies of a chemical group.

**Hydropathy plot:** A means of determining transmembrane sequences in proteins by measuring the change in free energy required to move a segment comprising 20 amino acids of a protein from a hydrophobic environment to water. The free-energy change is plotted against the position of the amino acid sequence in the protein.

**HYDROPHILE:** A material having an affinity for, attracting, adsorbing or absorbing water. The opposite of hydrophobe.

**HYDROPHILE-LIPOPHILE BALANCE:** A measure of the relative simultaneous attraction of a surfactant to both phases of an emulsion.

**Hydrophilic:** Something that is attracted to water. The term is also used to describe portions of molecules that dissolve well in polar water molecules. "Hydro" means water. "Philic" means to "like or love." OR Refers to molecules or groups that are polar and are capable of forming strong hydrogen bonds with water. OR From the greek words for water (something like hydro) and love (something like philos). A hydrophilic compound is one that "loves" water and easily dissolves in it. Having lots of potential for hydrogen bonding or having a charge will make a compound hydrophilic. Most inorganic salts and some organic molecules including ethanol and diethyl ether are hydrophilic. Opposite of hydrophobic. OR A polar molecule or group that can form strong hydrogen bonds with water. OR Polar or charged; describing molecules or groups that associate with (dissolve easily in) water.

**Hydrophilic Interactions:** Interactions between molecules where nonpolar portions of the molecule are attracted to any interaction with polar water molecules. The molecule will align itself so that the hydrophobic portions have the best chance of coming into contact with the other polar molecules.

**HYDROPHOBE:** A material lacking affinity for, repelling, failing to adsorb or absorb water. The opposite of hydrophile.

**hydrophobic:** A nonpolar molecule or group that has little affinity for water. Hydrophobic groups on molecules in solution tend to turn in on themselves or clump together with other hydrophobic groups because they are unable to disrupt the network of strong hydrogen bonds in the water around them. OR Nonpolar; describing molecules or groups that are insoluble in water.

**Hydrophobic:** From the greek words for water (something like hydro) and fear (something like phobos). A compound is hydrophobic if it is "hates" water and will not dissolve in it. Having little hydrogen bonding capacity and no charge makes a molecule hydrophobic. Most organic molecules, such as hexane, triolein, and styrene are hydrophobic. Opposite of hydrophilic. Nothing to do with rabies (hydrophobia).

**Hydrophobic:** Preferring not to be in contact with water, as is the case with the hydrocarbon portion of a fatty acid or phospholipid chain.

**Hydrophobic:** Refers to non-polar molecules that have little affinity for water.

**Hydrophobic:** Something that is afraid or repulsed by water. The term is also used to describe portions of molecules that do not dissolve well in polar water molecules. "Hydro" means water. "Phobic" means to be afraid of or dislike.

**Hydrophobic effect:** The noncovalent association of nonpolar groups with each other in aqueous solution.

**Hydrophobic Interactions:** Interactions between molecules in which nonpolar portions of the molecule tend to avoid interaction with polar water molecules. The molecule will align itself so that the hydrophobic portions have the least chance of coming into contact with the other polar molecules. OR Refers to the tendency of nonpolar molecules in water to interact with one another; the interactions are driven by an increase in the entropy of water when the water molecules in contact with the nonpolar molecules are released into bulk water.

**hydrophobic interactions:** The association of nonpolar groups, or compounds, with each other in aqueous systems, driven by the tendency of the surrounding water molecules to seek their most stable (disordered) state.

**hydrops fetalis:** a condition in the fetus characterized by an accumulation of fluid, or edema, in at least two fetal compartments, including the

subcutaneous tissue, pleura, pericardium, or in the abdomen

**hydrosphere:** the water layer of the Earth. OR The aqueous envelope of the Earth, including the oceans, freshwater lakes, rivers, saline lakes and inland seas, soil moisture and vadose water, groundwaters, and atmospheric vapor.

**Hydrostat:** (Other name for: hydromorphone hydrochloride)

**Hydrostat IR :** A drug used to treat moderate to severe pain. It may also be used to treat certain types of cough. Hydrostat IR is made from morphine and binds to opioid receptors in the central nervous system. It is a type of opioid and a type of analgesic agent. Also called Dilaudid, Exalgo, and hydromorphone hydrochloride.

**hydrostatic equation:** In the vector equation of motion, the form assumed by the vertical component when all Coriolis, earth-curvature, frictional, and vertical-acceleration terms are considered negligible compared with those involving the vertical pressure force and the force of gravity. The error in applying the hydrostatic equation to the atmosphere for cyclonic-scale motions is less than 0.01%. In extreme situations, the strong vertical accelerations in thunderstorms and mountain waves can be 1% of gravity.

**hydrostatic skeleton:** a water-based skeleton present in many animals (such as the earthworm) that lack structures, such as bone, for muscles to pull against.

**hydrothermal deposit:** of metallic ore, the result of the formation of rich deposits from hydrothermal solutions that circulate through fractured country rock.

**hydrothermal rocks:** those rocks whose minerals crystallized from hot water or whose minerals have been altered by hot water passing through them.

**hydrothermal vein:** minerals that are deposited from hydrothermal processes and fill a crack in the country rock.

**HYDROTROPE:** A substance, such as sodium xylene sulfonate, which increases the aqueous solubility of surfactants and other substances. Hydrotropes are sometimes used to reduce a systems viscosity. (see RFF 705.10.08 - HYDROTROPES).

**hydroureter :** Abnormal enlargement of the ureter caused by any blockage that prevents urine from draining into the bladder.

**hydroxide:** refers to the OH<sup>-</sup> ion.

**Hydroxide Mineral:** A mineral that is made up of compounds with a hydroxide group bonded to a metal. Bauxite is a good example of a hydroxide mineral.

**hydroxide-:** 1. The OH<sup>-</sup> ion. 2. Compounds containing the OH<sup>-</sup> ion. See also: hydroxide compounds.

**Hydroxy group:** An hydroxy group is an -OH group hanging off an organic molecule.

**Hydroxyapatite:** A calcium phosphate gel used, in the case of nucleic acids, to selectively absorb duplex DNA-RNA from a mixture of single-stranded and duplex nucleic acids.

**hydroxychloroquine:** A 4-aminoquinoline with immunosuppressive, antiautophagy, and antimalarial activities. Although the precise mechanism of action is unknown, hydroxychloroquine may suppress immune function by interfering with the processing and presentation of antigens and the production of cytokines. As a lysosomotropic agent, hydroxychloroquine raises intralysosomal pH, impairing autophagic protein degradation; hydroxychloroquine-mediated accumulation of ineffective autophagosomes may result in cell death in tumor cells reliant on autophagy for survival. In addition, this agent is highly active against the erythrocytic forms of *P. vivax* and *malariae* and most strains of *P. falciparum* but not the gametocytes of *P. falciparum*.

**hydroxychloroquine :** A substance that decreases immune responses in the body. It is used to treat some autoimmune diseases, and is being studied as a treatment for graft-versus-host disease. Hydroxychloroquine belongs to the family of drugs called antiprotozoals.

**hydroxydaunorubicin :** A drug used to treat many types of cancer, including leukemia, lymphoma, neuroblastoma, sarcoma, Wilms tumor, and cancers of the lung, breast, stomach, ovary, thyroid, and bladder. It is also being studied in the treatment of other types of cancer.

Hydroxydaunorubicin comes from the bacterium *Streptomyces peucetius*. It damages DNA and may kill cancer cells. It is a type of anthracycline antitumor antibiotic. The brand names Adriamycin PFS, Adriamycin RDF, and Rubex have been taken off the market and are no longer available. Also called doxorubicin and doxorubicin hydrochloride.

**hydroxyl:** 1. An -OH group within a molecule. 2. A free radical formed by abstraction of a hydrogen atom from water.

**Hydroxyl Group:** This is a side group which is one hydrogen atom bonded to one oxygen atom. The result is a negatively charged ion (OH<sup>-</sup>).

**HYDROXYL NUMBER:** A measure of the hydroxyl content of ethoxylates. Measured titrimetrically. Usually used for molecular weight determinations.

**hydroxyl radical:** an oxygen and hydrogen atom occurring as a group (OH<sup>-</sup>).

**hydroxymethylglutaryl-coenzyme A reductase inhibitor :** A substance that blocks an enzyme needed by the body to make cholesterol and lowers the amount of cholesterol in the blood. Hydroxymethylglutaryl-coenzyme A reductase inhibitor drugs are called statins. Also called HMG-CoA reductase inhibitor.

**hydroxytyrosol:** A phenolic phytochemical naturally occurring in extra virgin olive oil, with potential antioxidant, anti-inflammatory and cancer preventive activities. Although the mechanisms of action through which hydroxytyrosol exerts its effects have yet to be fully determined, this agent affects the expression of various components of the inflammatory response, possibly through the modulation of the nuclear factor-kappa B (NF- $\kappa$ B) pathway. The effects include the modulation of pro-inflammatory cytokines, such as the inhibition of interleukin-1alpha (IL-1 $\alpha$ ), IL-1beta, IL-6, IL-12, and tumor necrosis factor-alpha (TNF- $\alpha$ ); increased secretion of the anti-inflammatory cytokine IL-10; inhibition of the production of certain chemokines, such as C-X-C motif chemokine ligand 10 (CXCL10/IP-10), C-C motif chemokine ligand 2 (CCL2/MCP-1), and macrophage inflammatory protein-1beta (CCL4/MIP-1b); and inhibition of the expression of the enzymes inducible nitric oxide synthase (iNOS/NOS2) and prostaglandin E2 synthase (PGES), which prevent the production of nitric oxide (NO) and prostaglandin E (PGE2), respectively. In addition, hydroxytyrosol is able to regulate the expression of other genes involved in the regulation of tumor cell proliferation, such as extracellular signal-regulated and cyclin-dependent kinases. Also, hydroxytyrosol scavenges free radicals and prevents oxidative DNA damage. This induces apoptosis and inhibits proliferation in susceptible cancer cells. Check for active clinical trials using this agent.

**hydroxyurea:** A monohydroxyl-substituted urea (hydroxycarbamate) antimetabolite. Hydroxyurea selectively inhibits ribonucleoside diphosphate reductase, an enzyme required to convert ribonucleoside diphosphates into deoxyribonucleoside diphosphates, thereby preventing cells from leaving the G1/S phase of the cell cycle. This agent also exhibits radiosensitizing activity by maintaining cells in the radiation-sensitive G1 phase and interfering with DNA repair.

**hydroxyurea :** A drug used to treat chronic myelogenous leukemia (CML) that has not gotten better with other treatment. It is also used with radiation therapy and other anticancer drugs to treat certain types of head and neck cancer. It is used under the brand name Hydrea to treat these cancers. It is also used under the brand name Droxia to treat certain patients with sickle cell anemia. Hydroxyurea is also being studied in the treatment of other conditions and types of cancer. It stops cells from making DNA and may kill cancer cells. It may also make cancer cells easier to kill with radiation therapy. Hydroxyurea is a type of antimetabolite.

**hygiene :** The science of health, and the practice of cleanliness that promotes good health and well-being.

**hygiene :** The science of health, and the practice of cleanliness that promotes good health and well-being.

**hygrometer:** an instrument used to measure humidity; can be made from hair.

**Hygroscopic:** Absorbing or attracting moisture from the air. OR Able to absorb moisture from air. For example, sodium hydroxide pellets are so hygroscopic that they dissolve in the water they absorb from the air. OR Tending to absorb moisture. OR A term applied to those plastics (such as ABS and nylon) that absorb moisture from the atmosphere.

**Hygroscopic solid:** A solid that can adsorb atmospheric moisture. There is both a kinetic and a thermodynamic component to this process. The kinetic component determines the rate of water uptake, while the thermodynamic component determines the energy of this process.

**hygroscopically:** By absorbing moisture from air. OR The hygroscopic nature of a solid. OR The ability of a substance to absorb moisture from air. For example, sodium hydroxide pellets are so hygroscopic that they dissolve in the water they absorb from the air.

**Hymorphan:** (Other name for: hydromorphone hydrochloride)

**hyper-CVAD :** An abbreviation for a chemotherapy combination used to treat some types of acute lymphoblastic leukemia (ALL) and non-Hodgkin lymphoma (NHL). Hyper-CVAD includes the drugs cyclophosphamide, vincristine sulfate, doxorubicin hydrochloride (Adriamycin), and dexamethasone. It also includes the drugs methotrexate and cytarabine. It is given as hyperfractionated therapy, in which the total dose of the drugs is divided into small doses and given more than once a day. Also called hyper-CVAD regimen.

**Hyper-CVAD regimen:** A regimen consisting of cyclophosphamide, vincristine, doxorubicin and dexamethasone, administered on a hyperfractionated schedule, used to treat adult L3 acute lymphoblastic leukemia (ALL3 or Burkitt's-type) and adult small non-cleaved cell (Burkitt's) lymphoma.

**hyper-CVAD regimen :** An abbreviation for a chemotherapy combination used to treat some types of acute lymphoblastic leukemia (ALL) and non-Hodgkin lymphoma (NHL). Hyper-CVAD regimen includes the drugs cyclophosphamide, vincristine sulfate, doxorubicin hydrochloride (Adriamycin), and dexamethasone. It also includes the drugs methotrexate and cytarabine. It is given as hyperfractionated therapy, in which the total dose of the drugs is divided into small doses and given more than once a day. Also called hyper-CVAD.

**hyperactivity :** A higher than normal level of activity. Hyperactivity can be used to describe the increased action of a body function, such as hormone production, or behavior. A person who is hyperactive may seem to be always moving or fidgeting, impulsive, unable to concentrate, and talking too much.

**Hyperacute Melanoma:** (Other name for: B16alphaGal melanoma vaccine)

**HyperAcute-Lung Cancer Vaccine:** (Other name for: alpha-1,3-galactosyltransferase-expressing allogeneic lung tumor cell vaccine)

**Hyperacute-Pancreatic Cancer Vaccine:** (Other name for: algenpantucel-L)

**HyperAcute™ Renal:** (Other name for: alpha-1,3-galactosyltransferase-expressing allogeneic renal cell carcinoma vaccine)

**hyperalimentation :** A form of nutrition that is delivered into a vein. Hyperalimentation does not use the digestive system. It may be given to people who are unable to absorb nutrients through the intestinal tract because of vomiting that won't stop, severe diarrhea, or intestinal disease. It may also be given to those undergoing high-dose chemotherapy or radiation and bone marrow transplantation. It is possible to give all of the protein, calories, vitamins and minerals a person needs using hyperalimentation. Also called parenteral nutrition, total parenteral nutrition, and TPN.

**Hyperammonemia:** A condition characterized by high levels of ammonia in the blood due to deficiencies in the urea cycle, which can result in brain damage and death.

**hyperbaric oxygen:** Oxygen that is administered at a higher pressure compared to standard (i.e. sea-level) atmospheric pressure. Administration of oxygen under hyperbaric conditions enhances the delivery of oxygen to hypoxic tumor cells, thereby increasing their sensitivity to radiation and chemotherapy. In addition, hyperbaric oxygen may improve the healing of radiation-induced injuries by improving oxygen delivery to damaged tissue.

**hyperbaric oxygen :** Oxygen that is given at a pressure that is higher than the pressure of the atmosphere at sea level. In medicine, breathing hyperbaric oxygen increases the amount of oxygen in the body. It is used in treating certain kinds of wounds, injuries, and infections. It is also used to treat carbon monoxide poisoning and other conditions in which the tissues are not getting enough oxygen. It is being studied in the treatment of some types of cancer. Hyperbaric oxygen may increase the amount of oxygen in cancer cells, which may make them easier to kill with radiation therapy and chemotherapy. It is a type of radiosensitizing agent and a type of chemosensitizing agent.

**hyperbilirubinemia :** Higher-than-normal amount of bilirubin in the blood. Bilirubin is a substance formed when red blood cells break down.

**hypercalcemia :** Higher than normal levels of calcium in the blood. Some types of cancer increase the risk of hypercalcemia.

**hyperchromic effect:** The large increase in light absorption at 260 nm occurring as a double-helical DNA is melted (unwound).

**Hyperchromism:** An increase in the absorbance of light by the unstacking of base pairs when a DNA duplex is melted into single strands.

**hyperfractionated radiation therapy :** Radiation treatment in which the total dose of radiation is divided into small doses and treatments are given more than once a day. Hyperfractionated radiation therapy is given over the same period of time (days or weeks) as standard radiation therapy. Also called superfractionated radiation therapy.

**hyperfractionation :** A treatment schedule in which the total dose of radiation or chemotherapy is divided into small doses and treatments are given more than once a day.

**hyperglycemia :** Higher than normal amount of glucose (a type of sugar) in the blood. Hyperglycemia can be a sign of diabetes or other conditions. Also called high blood sugar.

**hypergolic mixture:** An oxidizing agent and a fuel that react or ignite instantly and spontaneously on contact. Methylhydrazine and dinitrogen tetroxide is a hypergolic mixture used as a propellant in the space shuttle's orbital maneuvering engines.

**Hypericum perforatum :** An herbal product sold as an over-the-counter treatment for depression. It is being studied for its ability to lessen certain side effects of cancer treatment. Also called St. John's wort.

**hyperimmune bovine colostrum:** A dietary supplement consisting of bovine colostrum, containing high titers of immunoglobulins (Igs), with immunostimulating and anti-infective activities. Hyperimmune bovine colostrum is harvested during the first days after calving from cows that have been inoculated repeatedly with specific pathogens during pregnancy. In addition to high titers of anti-pathogen specific antibodies, hyperimmune colostrum is also rich in other immune factors, proline-rich polypeptides (PRP), lactoferrin, glycoproteins, lactalbumins, cytokines, growth factors, vitamins, and minerals. This dietary supplement may exhibit anti-infective activity in immunocompromised patients.

**hyperkeratosis :** A condition marked by thickening of the outer layer of the skin, which is made of keratin (a tough, protective protein). It can result from normal use (corns, calluses), chronic inflammation (eczema), or genetic disorders (X-linked ichthyosis, ichthyosis vulgaris).

**hyperlordosis:** exaggerated lumbar curvature of the spine

**hypermetric saccades:** fast movement of the eyes

**hypernephroma :** The most common type of kidney cancer. It begins in the lining of the renal tubules in the kidney. The renal tubules filter the blood and produce urine. Also called renal cell adenocarcinoma, renal cell cancer, and renal cell carcinoma.

**hyperparathyroidism :** A condition in which the parathyroid gland (one of four pea-sized organs found on the thyroid) makes too much parathyroid hormone. This causes a loss of calcium from the bones and an increased level of calcium in the blood. Symptoms include bone pain and kidney problems.

**hyperphagia:** excessive hunger and abnormally large intake of solid foods OR An increase in the number of cells in an organ or tissue. These cells appear normal under a microscope. They are not cancer, but may become cancer.

**hyperpolarized helium 3:** A contrast agent composed of hyperpolarized helium He 3 gas (HP3He), with potential usage in diagnostic nuclear magnetic resonance (NMR)-based imaging (MRI). Upon inhalation, the hyperpolarized helium He 3 gas is distributed throughout the lungs. MRI, immediately following HP3He administration, allows for the visualization of lung structures based on the distribution pattern of the gas. This may aid in the diagnosis of certain lung abnormalities. Hyperpolarization of He 3 enhances NMR signals and thus improves imaging and assessment of lung function.

**hyperpolarized xenon 129:** A contrast agent composed of hyperpolarized xenon Xe 129 gas (HP129Xe), with potential usage in diagnostic nuclear magnetic resonance (NMR)-based imaging (MRI). Upon inhalation, the hyperpolarized xenon 129 gas is distributed throughout the lungs. MRI, immediately following HP129Xe administration, allows for the visualization of lung structures based on the distribution pattern of the gas. This may aid in the diagnosis of certain lung abnormalities. Hyperpolarization of Xe 129 enhances NMR signals and thus improves imaging and assessment of lung function.

**hyperreflexia:** defined as overactive or over responsive reflexes

**Hypersensitive sites:** Regions of the chromosome that are especially sensitive to digestion by exogenous DNases; such regions are usually located at the 5' end of actively transcribed genes.

**hypersensitivity** : An exaggerated response by the immune system to a drug or other substance.

**hypertelorism**: an abnormally increased distance between two organs or bodily parts, usually referring to an increased distance between the eyes

**hypertension** : A blood pressure of 140/90 or higher. Hypertension usually has no symptoms. It can harm the arteries and cause an increase in the risk of stroke, heart attack, kidney failure, and blindness. Also called high blood pressure.

**hyperthermia** : Abnormally high body temperature. This may be caused as part of treatment, by an infection, or by exposure to heat.

**hyperthermia therapy** : A type of treatment in which body tissue is exposed to high temperatures to damage and kill cancer cells or to make cancer cells more sensitive to the effects of radiation and certain anticancer drugs.

**hyperthermic perfusion** : A procedure in which a warmed solution containing anticancer drugs is used to bathe, or is passed through the blood vessels of, the tissue or organ containing the tumor.

**hyperthyroidism** : Too much thyroid hormone. Symptoms include weight loss, chest pain, cramps, diarrhea, and nervousness. Also called overactive thyroid.

**hypertonic**: Describes a solution which has higher osmotic pressure than some other solution (usually, higher osmotic pressure than cell or body fluids). Freshwater fish die if placed in seawater because the seawater is hypertonic, and causes water to leave the cells in fish's body.

**hypertonic saline**: Any solution of sodium chloride (NaCl) in water with a concentration of NaCl higher than that found in physiological saline (0.9% w/v). When administered in vivo, hypertonic saline (HTS) exhibits several physiological effects beneficial to cerebral injury including: 1) osmotic and vasoregulatory - by promoting the flow of excess water from cerebral tissue to the blood via osmosis and decreasing edema in the vascular endothelium of injured tissues, thus lowering vascular resistance and allowing more blood flow; 2) hemodynamic - by effectively expanding plasma volume; 3) immunomodulatory - by preventing leukocytes from becoming activated and adhering to injured neurons and; 4) neurochemical - by counteracting detrimental excitatory amino acids through the normalization of neuronal

cell membranes and by restoration of normal electrolyte and neurotransmitter levels in brain cells, and normal cell volumes.

**hypertrichosis:** excessive growth of hair in locations where it is not normally found

**Hyperuricemia:** Excessively high levels of blood urate; hyperuricemia can induce gout. OR A buildup of uric acid (a byproduct of metabolism) in the blood. Hyperuricemia is a side effect of some anticancer drugs.

**Hypervariable loop:** In immunoglobulin light and heavy chains, polypeptide segments that have great sequence variability and are responsible for antigenic specificity.

**Hypervariable segment:** In immunoglobulin light and heavy chains, polypeptide segments that have great sequence variability and are responsible for antigenic specificity.

**hypervascular :** Having a large number of blood vessels.

**hypnosis :** A trance-like state in which a person becomes more aware and focused on particular thoughts, feelings, images, sensations, or behaviors. While under hypnosis, a person may feel calm, relaxed, and more open to suggestion. Hypnosis is usually done with the help of a specially trained therapist. It may be used to help relieve stress, anxiety, and pain, and to help a person quit smoking or lose weight. Hypnosis is a type of complementary and alternative medicine (CAM).

**Hypochromism:** A decrease in the absorbance coefficient as DNA renatures from the single-stranded to the double-stranded form. OR a defect of the reproductive system that results in lack of function of the gonads (ovaries or testes).

**hypofractionated radiation therapy :** Radiation treatment in which the total dose of radiation is divided into large doses and treatments are given once a day or less often. Hypofractionated radiation therapy is given over a shorter period of time (fewer days or weeks) than standard radiation therapy.

**hypofractionation :** A treatment schedule in which the total dose of radiation is divided into large doses and treatments are given once a day or less often.

**hypogammaglobulinemia :** A condition in which the level of immunoglobulins (antibodies) in the blood is low and the risk of infection is

high.

**hypoglycemia** : Abnormally low blood sugar.

**hypomagnesemia** : Lower-than-normal amount of magnesium in the blood.

**hyponatremia** : Lower-than-normal amount of sodium in the blood.

**hypopharyngeal cancer** : Cancer that forms in tissues of the hypopharynx (the bottom part of the throat). The most common type is squamous cell carcinoma (cancer that begins in flat cells lining the hypopharynx).

**hypopharynx** : The bottom part of the throat. Cancer of the hypopharynx is also known as hypopharyngeal cancer.

**hypophosphatemia** : Lower-than-normal amount of phosphorus in the blood.

**hypoplasia**: underdevelopment or incomplete development of a tissue or organ

**hypospadias** : A birth defect in which the opening of the urethra (the tube through which urine leaves the body) is not in its normal place. In males with hypospadias, the urethra opens on the underside of the penis or between the anus and the scrotum. In females with hypospadias, it opens into the vagina. Hypospadias is much more common in males than in females, and can be corrected by surgery. Children with hypospadias have an increased risk of developing Wilms tumor (a type of kidney cancer).

**hypotension** : Abnormally low blood pressure.

**hypotenuse**: in a right triangle, the side opposite the  $90^\circ$  angle.

**hypothalamus**: the portion of the forebrain that serves as the control center for hunger, thirst, body temperature, and blood pressure. OR The area of the brain that controls body temperature, hunger, and thirst.

**hypothesis**: A hypothesis is a conjecture designed to guide experimentation. Hypotheses are extremely useful in problem solving, and are essential in developing new theories. OR the proposal of a solution to the question within the scientific method. OR A scientific "hunch," a tentative explanation of or prediction derived from experimentation. OR A tentative proposal made to explain certain observations or facts that requires further investigation to be verified.

**hypothyroidism :** Too little thyroid hormone. Symptoms include weight gain, constipation, dry skin, and sensitivity to the cold. Also called underactive thyroid.

**hypotonia:** a disorder that causes low muscle tone (the amount of tension or resistance to movement in a muscle), often involving reduced muscle strength

**hypotonic:** Describes a solution which has lower osmotic pressure than some other solution (usually, lower osmotic pressure than cell or body fluids). Washing your contact lenses with distilled water rather than saline is painful because distilled water is hypotonic; it causes water to move into cells, and they swell and burst.

**Hypoxanthine:** A purine base that reacts with 5-phosphoribosyl-1-pyrophosphate (PRPP) to form inosinate; the reaction is part of the salvage pathway for purine nucleotides.

**hypoxemia :** A condition in which there is not enough oxygen in the blood.

**hypoxia :** A condition in which there is a decrease in the oxygen supply to a tissue. In cancer treatment, the level of hypoxia in a tumor may help predict the response of the tumor to the treatment.

**hypoxia-activated prodrug TH-302:** A hypoxia-activated prodrug consisting of a 2-nitroimidazole phosphoramidate conjugate with potential antineoplastic activity. The 2-nitroimidazole moiety of hypoxia-activated prodrug TH-302 acts as a hypoxic trigger, releasing the DNA-alkylating dibromo isophosphoramidate mustard moiety within hypoxic regions of tumors. Normoxic tissues may be spared due to the hypoxia-specific activity of this agent, potentially reducing systemic toxicity.

**hypoxia-activated prodrug TH-4000:** A proprietary, hypoxia-activated prodrug with potential antineoplastic activity. Upon administration, the hypoxia-activated prodrug TH-4000 is activated in the hypoxic cells within tumors into an irreversible pan-HER inhibitor via a mechanism of action not yet fully elucidated. As a result, this agent inhibits cellular proliferation and differentiation of tumor cells overexpressing HER kinases, which belong to the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases. Healthy, normal tissues may be spared due to the hypoxia-specific activity of this agent, potentially reducing systemic toxicity. Check for active clinical trials using this agent.

**hypoxic** : Having too little oxygen.

**Hypoxin:** (Other name for: hypoxia-activated prodrug TH-4000)

**hyparrhythmia:** abnormal EKG patterns observed in infants suffering spasms

**hypothermal period:** The period about 4000 to 8000 years ago when the Earth was apparently several degrees warmer than it is now. More rainfall occurred in most of the subtropical desert regions and less in the central midwest United States and Scandinavia. It is also called the altithermal period and can serve as a past climate analog for predicting the regional pattern of climate change should the mean Earth surface temperature increase from an increase in atmospheric carbon dioxide concentration.

**hysterectomy** : Surgery to remove the uterus and, sometimes, the cervix. When the uterus and the cervix are removed, it is called a total hysterectomy. When only the uterus is removed, it is called a partial hysterectomy.

**Hysteresis (sensor memory):** the occurrence of a different value in the potential difference after the concentration of the test solution has been changed and then restored to its original value. This systematic error is generally in the direction of the concentration of the previous solution. Thus, if the electrodes are washed with water between each sample measurement, successive readings of the same solution can be expected to become progressively lower for cations and higher for anions.

**Hytone:** (Other name for: therapeutic hydrocortisone)

**Hytrin** : A drug used to treat urinary problems caused by an enlarged prostate. It is also used to treat high blood pressure and is being studied in the treatment of other conditions. Hytrin relaxes muscle tissue in blood vessels and in the prostate. It is a type of alpha blocker. Also called terazosin and terazosin hydrochloride.

**I 131 monoclonal antibody CC49:** A radioimmunoconjugate of the humanized monoclonal antibody CC49 labeled with iodine I 131. Iodine I 131 monoclonal antibody CC49 delivers beta and gamma radiation-emitting I 131 radionuclide specifically to tumor cells that express tumor-associated glycoprotein (TAG)-72, allowing localization of TAG-72-expressing tumor cells with radioimaging devices in diagnostic applications or resulting in specific TAG-72-expressing tumor cell radiocytotoxicity in therapeutic

applications. Monoclonal antibody CC49 binds to TAG-72, a pancarcinoma antigen, with high affinity.

**I-cell disease:** A lysosomal storage disease in which certain hydrolases are missing from the lysosomes owing to a defect in the synthesis of the lysosomal targeting signal, mannose 6-phosphate.

**IAP inhibitor AT-406:** An orally bioavailable inhibitor of IAP (Inhibitor of Apoptosis Protein) family of proteins with potential apoptotic inducing and antineoplastic activity. IAP inhibitor AT-406 selectively inhibits the biological activity of IAP proteins, including X chromosome-linked IAP (XIAP), the cellular IAPs 1 (c-IAP1) and 2 (c-IAP2) and melanoma inhibitor of apoptosis protein (ML-IAP). This may restore and promote the induction of apoptosis through apoptotic signaling pathways. AT-406 may work synergistically with cytotoxic drugs to overcome tumor cell resistance to apoptosis. IAPs are overexpressed by many cancer cell types, suppressing apoptosis by binding and inhibiting active caspases-3, -7 and -9 via their BIR (baculoviral IAP repeat) domains.

**IAP inhibitor HGS1029:** The hydrochloride salt of a small-molecule inhibitor of IAP (Inhibitor of Apoptosis Protein) family proteins with potential antineoplastic activity. IAP inhibitor HGS1029 selectively inhibits the biological activity of IAP proteins, which may restore apoptotic signaling pathways; this agent may work synergistically with cytotoxic drugs to overcome tumor cell resistance to apoptosis. IAPs are overexpressed by many cancer cell types, suppressing apoptosis by binding and inhibiting active caspases-3, -7 and -9 via their BIR (baculoviral IAP repeat) domains.

**iAPA-based dendritic cells/cytotoxic T lymphocytes:** A cell-based product composed of dendritic cells (DCs) pulsed with tumor-associated antigens (TAAs) and devoid of the inhibitory effect of antigen presentation attenuators (iAPA) combined with cytotoxic T-lymphocytes (CTLs) (iAPA-DC/CTL), with potential immunostimulating and antineoplastic activities. DCs are transduced with a viral vector containing small interfering RNAs (siRNAs) against APAs, which prevents the expression of APA genes and inhibits attenuation of antigen presentation. Upon administration of iAPA-DC/CTL, the DCs are able to efficiently present antigens to the immune system, stimulate the immune system against tumor-associated antigens (TAAs) and hyperactivate TAA-specific CTLs and T-helper cells. Also, the

iAPA-based DCs inhibit the activity of the T-regulatory cells (Tregs), thereby abrogating their negative effect on CTL activation and preventing their immunosuppressive activity against TAAs. Altogether, this inhibits tumor cell proliferation. Additionally, the administered CTLs induce direct cancer cell lysis. APAs negatively regulate antigen presentation, activate Tregs and their immunosuppressive activity, affect inflammatory cytokine production by DCs, and negatively regulate the immunostimulatory activity of DCs; they have an overall inhibitory effect on the stimulation of the immune system.

**IAPD:** International Association of Plastics Distributors.

**ibandronate :** A drug that is used to prevent and treat osteoporosis, and is being studied in the treatment of cancer that has spread to the bones. It belongs to the family of drugs called bisphosphonates.

**ibandronate sodium:** The sodium salt of ibadronic acid, a synthetic nitrogen-containing bisphosphonate. Ibandronic acid inhibits farnesyl pyrophosphate synthase, resulting in a reduction in geranylgeranyl GTPase signaling proteins and apoptosis of osteoclasts. This agent increases bone mineral density, decreases bone remodeling, inhibits osteoclast-mediated bone resorption, and reduces metastases-related and corticosteroid-related bone pain.

**Ibrance :** A drug used to treat hormone-receptor positive (HR+), HER2 negative (HER2-) breast cancer that is advanced or has spread to other parts of the body. It is used with fulvestrant in women whose disease has gotten worse after treatment with hormone therapy. It is used with letrozole in postmenopausal women who have not been treated with hormone therapy. It is also being studied in the treatment of other types of cancer. Ibrance blocks certain proteins, which may help keep cancer cells from growing. It is a type of cyclin-dependent kinase inhibitor. Also called palbociclib.

**ibritumomab tiuxetan:** An immunoconjugate of the monoclonal antibody ibritumomab conjugated with the linker-chelator tiuxetan, a high affinity, conformationally restricted chelation site for radioisotopes. When bound to indium In 111 or yttrium Y 90, ibritumomab tiuxetan, targeting the CD20 antigen on B cell surfaces, specifically delivers a potentially cytotoxic dose of radiation to B lymphocytes. Ibritumomab is a murine IgG1 kappa monoclonal antibody directed against the CD20 antigen, which is found on the surface of normal and malignant B lymphocytes. or A monoclonal

antibody that is used to treat certain types of B-cell non-Hodgkin lymphoma and is being studied in the treatment and detection of other types of B-cell tumors. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. Ibritumomab binds to the protein called CD20, which is found on B cells. It is linked to the compound tiuxetan. This allows certain radioisotopes to be attached before it is given to a patient. It is a type of monoclonal antibody-chelator conjugate. Also called Zevalin.

**ibrutinib:** An orally bioavailable, small-molecule inhibitor of Bruton's tyrosine kinase (BTK) with potential antineoplastic activity. Upon oral administration, ibrutinib binds to and irreversibly inhibits BTK activity, thereby preventing both B-cell activation and B-cell-mediated signaling. This leads to an inhibition of the growth of malignant B cells that overexpress BTK. BTK, a member of the src-related BTK/Tec family of cytoplasmic tyrosine kinases, is required for B cell receptor signaling, plays a key role in B-cell maturation, and is overexpressed in a number of B-cell malignancies. The expression of BTK in tumor cells is also associated with increased proliferation and survival. Check for active clinical trials using this agent.

**IBS:** A disorder of the intestines commonly marked by abdominal pain, bloating, and changes in a person's bowel habits. This may include diarrhea or constipation, or both, with one occurring after the other. Also called irritable bowel syndrome, irritable colon, mucus colitis, and spastic colon.

**ibuprofen:** A propionic acid derivate and nonsteroidal anti-inflammatory drug (NSAID) with anti-inflammatory, analgesic, and antipyretic effects. Ibuprofen inhibits the activity of cyclo-oxygenase I and II, resulting in a decreased formation of precursors of prostaglandins and thromboxanes. This leads to decreased prostaglandin synthesis, by prostaglandin synthase, the main physiologic effect of ibuprofen. Ibuprofen also causes a decrease in the formation of thromboxane A<sub>2</sub> synthesis, by thromboxane synthase, thereby inhibiting platelet aggregation.

**ibuprofen :** A drug used to treat fever, swelling, pain, and redness by preventing the body from making a substance that causes inflammation. It is a type of nonsteroidal anti-inflammatory drug (NSAID). Also called Advil and Motrin.

**ibuprofen intravenous:** A formulation for intravenous injection containing ibuprofen, a propionic acid derivative and nonsteroidal anti-inflammatory drug (NSAID), with anti-inflammatory, analgesic, and antipyretic activities. Upon intravenous injection, ibuprofen inhibits the activity of the enzymes cyclooxygenase I (COX-1) and II (COX-2), resulting in a decreased formation of precursors of prostaglandins and thromboxanes. Inhibition of COX-2 specifically blocks the conversion of arachidonic acid (AA) to prostaglandins, which mediate inflammation, fever and pain.

**IC-GREEN:** (Other name for: indocyanine green solution)

**iC9-GD2-CD28-OX40-expressing T lymphocytes:** Modified T-lymphocytes expressing a 3rd generation chimeric antigen receptor (CAR) specific for the disialoganglioside GD2, which contains the CD3zeta chain, the signaling domains of the co-stimulatory molecules CD28 and CD134 (OX-40) and the suicide gene inducible caspase 9 (iCasp9), with potential immunomodulating and antineoplastic activities. Upon administration, iC9-GD2-CD28-OX40-expressing T lymphocytes target the GD2 antigen on tumor cells, thereby providing selective toxicity towards GD2-expressing tumor cells. iCasp9 consists of a human FK506 drug-binding domain with an F36V mutation (FKBP12-F36V) linked to human caspase 9. If the administered T cells lead to unacceptable side effects, the chemical homodimerizer AP1903 can be administered, which binds to the drug binding FKBP12-F36V domain and activates caspase 9, resulting in the apoptosis of the administered T-cells. The tumor-associated antigen GD2 is overexpressed on the surface of almost all tumors of neuroectodermal origin. OX40 and CD28, both T-cell surface-associated co-stimulatory molecules, are required for full T-cell activation.

**ICD:** A small device used to correct a heartbeat that is abnormal (too fast, too slow, or irregular). The device is placed by surgery in the chest or abdomen. Wires are passed through a vein to connect the device to the heart. When it detects abnormal heartbeats, it sends an electrical shock to the heart to restore the heartbeat to normal. Also called implantable cardioverter-defibrillator.

**ICE :** An abbreviation for a chemotherapy combination that is used to treat non-Hodgkin and Hodgkin lymphomas that have come back and do not respond to other treatments. It includes the drugs ifosfamide, carboplatin, and etoposide phosphate. Also called ICE regimen.

**ice age:** A glacial epoch or time of extensive glacial activity. Also, as Ice Age, which refers to the latest glacial epoch, the Pleistocene Epoch.

**ice and snow albedo:** The reflectivity of ice and snow-covered surfaces. The albedo of freshly fallen snow may be as much as 90%, while older snow may have values of 75% or less. The larger the areal extent of snow and ice cover, the higher the albedo value. The surface albedo will also increase as a function of the depth of snow cover up to 13 cm and be unaffected by increased snow cover after reaching that depth.

**ice and snow-albedo-temperature feedback:** Interactions that can be described as a theoretical concept of a feedback mechanism in which the interacting elements are the areal extent of polar ice and snow cover, the albedo of the polar region (dependent on areal extent of ice and snow), absorption of solar radiation (dependent on the albedo), temperature (dependent on the absorption of solar radiation) and the area of ice and snow cover (dependent on temperature). Less snowfall would mean more absorption of solar radiation, therefore a surface warming would occur. Climate modeling studies indicate an amplification effect (i.e., positive feedback) of the ice and snow-albedo feedback on increased surface air temperatures caused by increases in the atmospheric concentration of carbon dioxide.

**ice cap:** a glacial ice mass that is centered on a highland area and migrates outward in all directions.

**ice cover:** During the present time, the extent, especially the thickness, of glacier ice on a land surface. Also the same as ice concentration, which is the ratio of an area of sea ice to the total area of sea surface within some large geographic area.

**ice fall:** a blocky, piled-up ice surface that results when rapid ice movements rupture glacial crevasses.

**ice flow:** See glacier flow.

**ice front:** The floating vertical cliff that forms the seaward face or edge of a glacier or an ice shelf that enters water. It can vary from 2 to 50 m in height.

**ICE regimen:** A chemotherapy regimen consisting of ifosfamide, carboplatin and etoposide used in the treatment of relapsed and refractory non-Hodgkin and Hodgkin lymphomas. Or An abbreviation for a

chemotherapy combination that is used to treat non-Hodgkin and Hodgkin lymphomas that have come back and do not respond to other treatments. It includes the drugs ifosfamide, carboplatin, and etoposide phosphate. Also called ICE.

**ice sheet:** a glacier that covers a broad expanse of land and is not restricted to a channel.

**ice sheet (continental glacier):** A glacier of considerable thickness and more than 50,000 sq km in area. It forms a continuous cover of ice and snow over a land surface. An ice sheet is not confined by the underlying topography but spreads outward in all directions. During the Pleistocene Epoch, ice sheets covered large parts of North America and northern Europe but they are now confined to polar regions (e.g., Greenland and Antarctica).

**ice shelf:** A sheet of very thick ice with a level or gently undulating surface. It is attached to the land on one side, but most of it is floating. On the seaward side, it is bounded by a steep cliff (ice front) 2 to 50 m or more above sea level. Ice shelves have formed along polar coasts (e.g., Antarctica and Greenland); they are very wide with some extending several hundreds of kilometers toward the sea from the coastline. They increase in size from annual snow accumulation and seaward extension of land glaciers. They decrease in size from warming, melting, and calving.

**iceberg:** a floating mass of ice that results from calving from a glacial face into the water of a lake or ocean.

**ICI 182780:** A drug used to treat certain types of breast cancer in postmenopausal women. It is also being studied in the treatment of other types of cancer. ICI 182780 blocks estrogen activity in the body and is a type of antiestrogen. Also called Faslodex and fulvestrant.

**ICI D1694:** An anticancer drug that stops tumor cells from growing by blocking the ability of cells to make DNA. It belongs to the family of drugs called thymidylate synthase inhibitors. Also called raltitrexed.

**Iclusig :** A drug used to treat chronic myelogenous leukemia (CML) and Philadelphia chromosome-positive acute lymphoblastic leukemia. It is used in patients who are not able to take or have not gotten better after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Iclusig blocks BCR-ABL and other proteins, which may help keep cancer cells from growing and may kill them. It may also prevent

the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called ponatinib hydrochloride.

**icodextrin solution:** An isosmotic solution containing icodextrin, a starch-derived, water-soluble glucose polymer, used in peritoneal dialysis and for the prevention of adhesion after surgery. Due to its isoosmotic nature and inability to cross the peritoneal membrane, the icodextrin solution, upon administration into the peritoneal cavity, is able to exert osmotic pressure. This allows for the removal of excess fluids and waste products in dialysis patients. In addition, icodextrin can provide a barrier between tissue surfaces when administered during surgery. This physically separates tissues, prevents adhesion after surgery and promotes wound healing.

**Icosahedral symmetry:** The symmetry displayed by a regular polyhedron that is composed of 20 equilateral triangular faces with 12 corners.

**icotinib hydrochloride:** An orally available quinazoline-based inhibitor of epidermal growth factor receptor (EGFR), with potential antineoplastic activity. Icotinib selectively inhibits the wild-type and several mutated forms of EGFR tyrosine kinase. This may lead to an inhibition of EGFR-mediated signal transduction and may inhibit cancer cell proliferation. EGFR, a receptor tyrosine kinase, is upregulated in a variety of cancer cell types. Check for active clinical trials using this agent.

**icrucumab:** A fully human IgG1 monoclonal antibody directed against human vascular endothelial growth factor receptor 1 (VEGFR-1/FLT-1) with potential antiangiogenesis and antineoplastic activities. Icrucumab specifically binds to and inhibits the activity of VEGFR-1, which may prevent the activation of downstream signaling pathways and so inhibit tumor angiogenesis; the subsequent reduction in tumor nutrient supply may inhibit tumor cell proliferation. Tumor cell overexpression of VEGFR-1 may be associated with tumor angiogenesis and tumor cell proliferation and invasion; VEGFR-1 may modulate VEGFR-2 signaling.

**icteric:** yellowish

**ID (Inner Diameter):** The innermost (smallest diameter) surface of a circular object, such as a bore or a round seal

**Idamycin :** A drug used with other drugs to treat acute myelogenous leukemia (AML). It is also being studied in the treatment of other types of cancer. Idamycin blocks a certain enzyme needed for cell division and DNA

repair, and it may kill cancer cells. It is a type of anthracycline antibiotic and a type of topoisomerase inhibitor. Also called 4-demethoxydaunorubicin and idarubicin hydrochloride.

**idarubicin hydrochloride:** The hydrochloride salt of the anthracycline antineoplastic antibiotic idarubicin. Idarubicin intercalates into DNA and inhibits topoisomerase II, thereby inhibiting DNA replication and ultimately, interfering with RNA and protein synthesis. Due to its high lipophilicity, idarubicin penetrates cell membranes more efficiently than other anthracycline antibiotic compounds. or A drug used with other drugs to treat acute myelogenous leukemia (AML). It is also being studied in the treatment of other types of cancer. Idarubicin hydrochloride blocks a certain enzyme needed for cell division and DNA repair, and it may kill cancer cells. It is a type of anthracycline antibiotic and a type of topoisomerase inhibitor. Also called 4-demethoxydaunorubicin and Idamycin.

**idarubicin-eluting beads:** A sustained-release drug delivery embolization system containing small polymeric beads impregnated with the anthracycline antibiotic idarubicin with potential antineoplastic activity. The beads consist of polyvinyl alcohol (PVA) microspheres modified with sulfonic acid groups and loaded with idarubicin. During transarterial chemoembolization (TACE) in the hepatic artery, idarubicin-eluting beads embolize to the tumor vasculature, occlude tumor blood vessels and induce ischemic necrosis of tumor tissue due to mechanical blockage of the tumor vasculature. Simultaneously, idarubicin-eluting beads release cytotoxic idarubicin locally and in a sustained manner. This may result in idarubicin-mediated inhibition of tumor cell proliferation.

**idasanutlin:** An orally available, small molecule, antagonist of MDM2 (mouse double minute 2; Mdm2 p53 binding protein homolog), with potential antineoplastic activity. Idasanutlin binds to MDM2 blocking the interaction between the MDM2 protein and the transcriptional activation domain of the tumor suppressor protein p53. By preventing the MDM2-p53 interaction, p53 is not enzymatically degraded and the transcriptional activity of p53 is restored. This may lead to p53-mediated induction of tumor cell apoptosis. MDM2, a zinc finger nuclear phosphoprotein and negative regulator of the p53 pathway, is often overexpressed in cancer cells and has been implicated in cancer cell proliferation and survival.

**Ideal Gas:** An ideal gas is a perfect gas. There is no ideal gas in the world. An ideal gas would follow the combined gas law exactly in any environment. OR A gas whose pressure  $P$ , volume  $V$ , and temperature  $T$  are related by  $PV = nRT$ , where  $n$  is the number of moles of gas and  $R$  is the ideal gas law constant. Ideal gases have molecules with negligible size, and the average molar kinetic energy of an ideal gas depends only on its temperature. Most gases behave ideally at sufficiently low pressures.

**ideal gas equation:** the equation relating the volume of a gas to its pressure, temperature and moles of gas.

**ideal gas law:**  $PV=nRT$  Describes the relationship between pressure ( $P$ ), temperature ( $T$ ), volume ( $V$ ), and moles of gas ( $n$ ). This equation expresses behavior approached by real gases at low pressure and high temperature.

**ideal gas law constant:** A constant  $R$  equal to  $PV/(nT)$  for ideal gases, where the pressure, volume, moles, and temperature of the gas are  $P$ ,  $V$ ,  $n$ , and  $T$ , respectively. The value and units of  $R$  depend on the units of  $P$ ,  $V$ , and  $T$ . Commonly used values and units of  $R$  include:  $82.055 \text{ cm}^3 \text{ atm K}^{-1} \text{ mol}^{-1}$ ;  $0.082055 \text{ L atm mol}^{-1} \text{ K}^{-1}$ ;  $8.31434 \text{ J mol}^{-1} \text{ K}^{-1}$ ;  $1.9872 \text{ cal K}^{-1} \text{ mol}^{-1}$ ;  $8314.34 \text{ L Pa mol}^{-1} \text{ K}^{-1}$ ;  $8.31434 \text{ Pa m}^3 \text{ mol}^{-1} \text{ K}^{-1}$ .

**ideal solution:** All molecules in an "ideal solution" interact in exactly the same way; the solvent-solvent, solvent-solute, and solute-solute intermolecular forces are all equivalent. Ideal solutions obey Raoult's law exactly. Real solutions behave ideally only when they are very dilute.

**IDEC-Y2B8:** A drug used with the drug rituximab to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of B-cell tumors. IDEC-Y2B8 contains a monoclonal antibody that binds to a protein called CD20, which is found on B cells. It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. IDEC-Y2B8 is a type of radioimmunoconjugate. Also called Y 90 ibritumomab tiuxetan, Y 90 Zevalin, and yttrium Y 90 ibritumomab tiuxetan.

**idelalisib:** An orally bioavailable, small molecule inhibitor of the delta isoform of the 110 kDa catalytic subunit of class I phosphoinositide-3 kinase (PI3K) with potential immunomodulating and antineoplastic activities. Idelalisib inhibits the production of the second messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3), preventing the activation of the PI3K signaling pathway and inhibiting tumor cell proliferation,

motility, and survival. Unlike other isoforms of PI3K, PI3K-delta is expressed primarily in hematopoietic lineages. The targeted inhibition of PI3K-delta is designed to preserve PI3K signaling in normal, non-neoplastic cells. or A drug used with rituximab to treat chronic lymphocytic leukemia (CLL) that has come back. It is also used to treat follicular B-cell non-Hodgkin lymphoma (NHL) and small lymphocytic lymphoma (SLL) that have come back after treatment with other anticancer therapy. It is also being studied in the treatment of other types of cancer. Idelalisib blocks certain proteins, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor. Also called Zydelig.

**identify the variable(s):** The process of choosing a letter to represent the unknown value and describing that variable.

**identity:** A math property which states:  $A+0=A$  and  $A*1=A$ .

**identity property of multiplication:** Any number times one has the same value.

**IDH mutant inhibitor AG-881:** An orally available inhibitor of mutated forms of both isocitrate dehydrogenase type 1 (IDH1, IDH1 [NADP+ soluble) in the cytoplasm and type 2 (IDH2, isocitrate dehydrogenase [NADP+], mitochondrial) in the mitochondria, with potential antineoplastic activity. Upon administration, pan-IDH mutant inhibitor AG-881 specifically inhibits mutant forms of IDH1 and IDH2, thereby inhibiting the formation of the oncometabolite 2-hydroxyglutarate (2HG) from alpha-ketoglutarate (a-KG). This prevents 2HG-mediated signaling and leads to both an induction of cellular differentiation and an inhibition of cellular proliferation in tumor cells expressing IDH mutations. In addition, AG-881 is able to penetrate the blood-brain barrier (BBB). IDH1 and 2, metabolic enzymes that catalyze the conversion of isocitrate into a-KG, play key roles in energy production and are mutated in a variety of cancer cell types. In addition, mutant forms of IDH1 and 2 catalyze the formation of 2HG and drive cancer growth by blocking cellular differentiation and inducing cellular proliferation.

**IDH1 inhibitor AG-120:** An orally available inhibitor of isocitrate dehydrogenase type 1 (IDH1), with potential antineoplastic activity. Upon administration, AG-120 specifically inhibits a mutated form of IDH1 in the cytoplasm, which inhibits the formation of the oncometabolite, 2-hydroxyglutarate (2HG). This may lead to both an induction of cellular

differentiation and an inhibition of cellular proliferation in IDH1-expressing tumor cells. IDH1, an enzyme in the citric acid cycle, is mutated in a variety of cancers; it initiates and drives cancer growth by both blocking cell differentiation and catalyzing the formation of 2HG.

**IDH1(R132) inhibitor IDH305:** An inhibitor of the citric acid cycle enzyme isocitrate dehydrogenase [NADP] cytoplasmic (isocitrate dehydrogenase 1; IDH1) with mutations at residue R132 (IDH1(R132)), with potential antineoplastic activity. Upon administration, IDH305 specifically inhibits IDH1(R132) mutant forms in the cytoplasm, which inhibits the formation of the oncometabolite 2-hydroxyglutarate (2HG). This may lead to both an induction of cellular differentiation and an inhibition of cellular proliferation in IDH1(R132)-expressing tumor cells. IDH1(R132) mutations are highly expressed in certain malignancies, including gliomas. They initiate and drive cancer growth by both blocking cell differentiation and catalyzing the formation of 2HG.

**IDH1R132H mutation-targeting IDH1 peptide vaccine:** A peptide vaccine consisting of a 20-mer peptide derived from isocitrate dehydrogenase type 1 (IDH1) containing the point mutation R132H (IDH1R132H), with potential antineoplastic activity. Upon subcutaneous vaccination with the IDH1R132H mutation-targeting IDH1 peptide vaccine, the vaccine stimulates the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells that express the IDH1R132H protein. R132H is a point mutation, which contains an amino acid substitution where arginine is replaced by histidine at position 132 of IDH1, and is highly expressed in gliomas as well as other tumor types; this mutation is associated with increased production of the oncometabolite R-2-hydroxyglutarate (2HG).

**IDH1R132H-specific peptide vaccine PEPIDH1M:** A peptide vaccine consisting of a peptide derived from isocitrate dehydrogenase 1 (IDH1) containing the point mutation R132H (IDH1R132H), with potential antineoplastic activity. Intradermal vaccination with the IDH1R132H-specific peptide vaccine PEPIDH1M may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells that express the IDH1R132H protein. The IDH1 point mutation of amino acid residue 132 is highly expressed in gliomas and is associated

with increased production of the oncometabolite R-2-hydroxyglutarate (2HG).

**IDH2 inhibitor AG-221:** An orally available inhibitor of isocitrate dehydrogenase type 2 (IDH2), with potential antineoplastic activity. Upon administration, AG-221 specifically inhibits IDH2 in the mitochondria, which inhibits the formation of 2-hydroxyglutarate (2HG). This may lead to both an induction of cellular differentiation and an inhibition of cellular proliferation in IDH2-expressing tumor cells. IDH2, an enzyme in the citric acid cycle, is mutated in a variety of cancers; It initiates and drives cancer growth by blocking differentiation and the production of the oncometabolite 2HG.

**idiom:** an accepted phrase or expression that doesn't follow the usual patterns of language, or has a meaning other than the literal.

**idiopathic :** Describes a disease of unknown cause.

**idiopathic myelofibrosis :** A progressive, chronic disease in which the bone marrow is replaced by fibrous tissue and blood is made in organs such as the liver and the spleen, instead of in the bone marrow. This disease is marked by an enlarged spleen and progressive anemia. Also called agnogenic myeloid metaplasia, chronic idiopathic myelofibrosis, myelosclerosis with myeloid metaplasia, and primary myelofibrosis.

**idiopathic pneumonia syndrome :** A set of pneumonia-like symptoms (such as fever, chills, coughing, and breathing problems) that occur with no sign of infection in the lung. Idiopathic pneumonia syndrome is a serious condition that can occur after a stem cell transplant.

**idiopathic pulmonary fibrosis :** A disease in which the alveoli (tiny air sacs at the end of the bronchioles in the lungs) are overgrown with fibrous tissue. The cause of the disease is unknown and it gets worse over time. Symptoms include difficult, painful breathing and shortness of breath.

**idiopathic thrombocytopenic purpura :** A condition in which platelets (blood cells that cause blood clots to form) are destroyed by the immune system. The low platelet count causes easy bruising and bleeding, which may be seen as purple areas in the skin, mucous membranes, and outer linings of organs. Also called immune thrombocytopenic purpura and ITP.

**idiosyncrasy:** The increased individual sensitivity of an organism to the effect of certain substances (UNEP/IRPTC, 1982).

**idiotype-pulsed autologous dendritic cell vaccine APC8020:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with tumor-derived clonal immunoglobulin (Ig) with potential immunostimulatory and antineoplastic activities. Upon administration, idiotype-pulsed autologous dendritic cell vaccine APC8020, containing idiotype (Id) protein structures that can be recognized by antibodies and by CD41 T lymphocytes and CD81 T lymphocytes, may stimulate antitumoral cytotoxic T lymphocyte (CTL) and antibody responses against Id-expressing tumor cells. The Id represents the unique antigenic determinants in the variable regions of the clonal Ig.

**Idls (intermediate-density lipoproteins):** Lipoprotein particles that remain after much of the triacylglycerides from VLDL are hydrolyzed and absorbed by other tissues; can be absorbed by the liver or converted into LDL.

**IDO inhibitor NLG919:** An orally available inhibitor of indoleamine 2,3-dioxygenase 1 (IDO1), with potential immunomodulating and antineoplastic activities. Upon administration, NLG919 targets and binds to IDO1, a cytosolic enzyme responsible for the oxidation of the essential amino acid tryptophan into kynurenine. By inhibiting IDO1 and decreasing kynurenine in tumor cells, this agent increases tryptophan levels, restores the proliferation and activation of various immune cells, including dendritic cells (DCs), natural killer (NK) cells, T-lymphocytes, and causes a reduction in tumor-associated regulatory T-cells (Tregs). Activation of the immune system, which is suppressed in many cancers, may induce a cytotoxic T-lymphocyte (CTL) response against the IDO1-expressing tumor cells. IDO1 is overexpressed by a variety of tumor cell types and plays an important role in immunosuppression. Tryptophan depletion is associated with immunosuppression caused by T-cell suppression.

**idoxifene :** A drug that blocks the effects of estrogen.

**idoxuridine:** An iodinated analogue of deoxyuridine, with antiviral activity against herpes simplex virus (HSV) and potential radiosensitizing activities. Upon ocular administration, idoxuridine (IUdR) is converted to its mono-, di-, and triphosphate forms, is incorporated into DNA and disrupts viral replication. Upon oral administration of the idoxuridine prodrug ropidoxuridine and hepatic conversion by aldehyde oxidase into

idoxuridine, this agent incorporates into DNA and sensitizes cells to ionizing radiation by increasing DNA strand breaks.

**idoxuridine** : A drug that reduces the risk of cancer cell growth by interfering with the cells' DNA.

**idronoxil**: A synthetic flavonoid derivative. Idronoxil activates the mitochondrial caspase system, inhibits X-linked inhibitor of apoptosis (XIAP), and disrupts FLICE inhibitory protein (FLIP) expression, resulting in tumor cell apoptosis. This agent also inhibits DNA topoisomerase II by stabilizing the cleavable complex, thereby preventing DNA replication and resulting in tumor cell death.

**IEEE**: Institute for Electrical and Electronic Engineers.

**IEP**: An education plan for children with certain disabilities or health conditions, such as cancer. By law, these children must receive special education services and other support they need in school. An IEP describes which special services the child needs and how those needs will be met. This may include special class placement, extra help with class assignments and tests, tutoring, and other services such as counseling, speech therapy, and physical therapy. IEPs are covered in the U.S. law, Individuals with Disabilities Education Act. Also called individualized education plan.

**IFA**: A mixture of oil and water that is combined with a specific antigen to boost the immune response to that antigen. It is being studied in immunotherapy and as a way to increase the immune response to cancer vaccines. It is a type of immune modulator. Also called incomplete Freund's adjuvant and Montanide ISA-51.

**Ifex**: (Other name for: ifosfamide)

**Ifex** : A drug that is used with other drugs to treat germ cell testicular cancer that did not respond to previous treatment with other drugs. It is also being studied in the treatment of other types of cancer. Ifex attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent and a type of antimetabolite. Also called ifosfamide.

**IFN alpha-2B** : A drug used to treat AIDS-related Kaposi sarcoma in certain patients, hairy cell leukemia, and melanoma that has been removed by surgery. It is also used with other anticancer drugs to treat a certain type of non-Hodgkin lymphoma. IFN alpha-2B is also used to treat some infections caused by viruses, such as the hepatitis C virus. It is being

studied in the treatment of other types of cancer and other conditions. IFN alpha-2B is a form of interferon alfa (a substance normally made by cells in the immune system) and is made in the laboratory. It is a type of cytokine and a type of biological response modifier. Also called interferon alfa-2b, Intron A, and recombinant interferon alfa-2b.

**iFOBT:** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. An antibody that binds to a blood protein called hemoglobin is used to detect any blood. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called fecal immunochemical test, FIT, immunoassay fecal occult blood test, immunochemical fecal occult blood test, and immunologic fecal occult blood test.

**ifosfamide:** A synthetic analogue of the nitrogen mustard cyclophosphamide with antineoplastic activity. Ifosfamide alkylates and forms DNA crosslinks, thereby preventing DNA strand separation and DNA replication. This agent is a prodrug that must be activated through hydroxylation by hepatic microsomal enzymes. or A drug that is used with other drugs to treat germ cell testicular cancer that did not respond to previous treatment with other drugs. It is also being studied in the treatment of other types of cancer. Ifosfamide attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent and a type of antimetabolite. Also called Ifex.

**Ifosfamidum:** (Other name for: ifosfamide)

**Ig :** A protein that is made by B cells and plasma cells (types of white blood cells) and helps the body fight infection. Some Igs may be found in higher than normal amounts in patients with certain conditions or certain types of cancer, including multiple myeloma and Waldenstrom macroglobulinemia. Measuring the amount of specific Igs in the blood and urine may help diagnose cancer or find out how well treatment is working or if cancer has come back. Some Igs may be used as tumor markers. Also called immunoglobulin.

**IGES:** Initial Graphics Exchange Specification. It is a common file format for exchanging CAD data. Protomold can use IGES solid or surface files to create molded parts.

**IGF:** A protein made by the body that stimulates the growth of many types of cells. IGF is similar to insulin (a hormone made in the pancreas). There are two forms of IGF called IGF-1 and IGF-2. Higher than normal levels of IGF-1 may increase the risk of several types of cancer. IGF is a type of growth factor and a type of cytokine. Also called insulin-like growth factor and somatomedin.

**IGF ligand neutralizing antibody BI 836845:** A humanized IgG1 insulin-like growth factor (IGF) monoclonal antibody targeting the IGF ligands 1 (IGF-1) and 2 (IGF-2), with potential antineoplastic activity. Upon administration, IGF ligand neutralizing antibody BI 836845 binds to both IGF-1 and IGF-2 and inhibits the binding of these ligands to their receptor, IGF-1R. This blocks the insulin growth factor (IGF) signaling pathway, which is upregulated in a number of cancer cell types and plays a key role in cancer cell proliferation and chemoresistance. In addition, BI 836845 prevents the binding of IGF-2 to insulin receptor variant A (IR-A), preventing its activation. Check for active clinical trials using this agent.

**IGF-1R antagonist BMS-754807:** An oral small molecule inhibitor of insulin-like growth factor 1 receptor (IGF-1R) and insulin receptor (InsR) tyrosine kinases with potential antineoplastic activity. Dual IGF-1R/InsR inhibitor BMS-754807 binds reversibly to and inhibits the activities of IGF-1R and InsR, which may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. IGF-1R and InsR tyrosine kinases, overexpressed in a variety of human cancers, play significant roles in mitogenesis, angiogenesis, and tumor cell survival.

**IGF-1R antisense oligodeoxynucleotide-treated autologous glioma cells:** Autologous glioma cells treated ex vivo with an 18-mer antisense oligodeoxynucleotide of insulin-like growth factor receptor 1 (IGF-1R/AS ODN), with potential antineoplastic activity. IGF-1R/AS ODN pre-treated glioma cells encapsulated in small Lucite diffusion chambers are implanted into a subcutaneous pocket in the patient's abdominal rectus sheath. Within the diffusion chambers, IGF-1R/AS ODN binds to IGF-1R mRNA, and shuts down the translation of IGF-1R in the glioma cells. Downregulation of IGF-1R induces apoptosis and causes the release of exosomes, which contain tumor-associated antigens (TAAs). The diffusion of exosomes and IGF-1R/AS ODN from the Lucite chambers may activate the patient's immune system and mount a cytotoxic T-lymphocyte (CTL) response

against cells expressing these TAAs. IGF-1R, a receptor tyrosine kinase, is overexpressed in a variety of tumor cell types and is essential for tumor cell growth, transformation and survival.

**IGF-1R inhibitor OSI-906 :** A substance being studied in the treatment of cancer. It blocks a protein called IGF-1R, which is found at high levels in some types of tumors. IGF-1R is needed for cell growth and blocking it may cause tumor cells to die. IGF-1R inhibitor OSI-906 is a type of IGF-1R inhibitor. Also called OSI-906.

**IGF-1R inhibitor PL225B:** An orally bioavailable inhibitor of the insulin-like growth factor 1 receptor (IGF-1R) with potential antineoplastic activity. IGF-1R inhibitor PL225B selectively binds to and inhibits the activities of IGF-1R, which may result in both the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis in IGF-1R-overexpressing tumor cells. IGF-1R, a receptor tyrosine kinase overexpressed in a variety of human cancers, plays a significant role in the stimulation of cellular proliferation, oncogenic transformation, and suppression of apoptosis.

**IGF-1R/IR inhibitor KW-2450:** An orally bioavailable inhibitor of insulin-like growth factor 1 receptor (IGF-1R) and insulin receptor (IR) tyrosine kinases with potential antineoplastic activity. IGF-1R/IR inhibitor KW-2450 selectively binds to and inhibits the activities of IGF-1R and IR, which may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. IGF-1R and IR tyrosine kinases, overexpressed in a variety of human cancers, play significant roles in the stimulation of cellular proliferation, oncogenic transformation, and suppression of apoptosis.

**IGF-methotrexate conjugate:** A conjugate containing the antimetabolite and antifolate agent methotrexate conjugated to insulin-like growth factor (IGF), with potential antineoplastic activity. After intravenous administration, the IGF moiety of the IGF-methotrexate conjugate binds to and is internalized by IGF receptors (IGFR) on the surface of tumor cells. Following cell entry, the methotrexate then binds to and inhibits the enzyme dihydrofolate reductase, which catalyzes the conversion of dihydrofolate to tetrahydrofolate. This results in both the inhibition of DNA and RNA synthesis and the induction of death in rapidly dividing cells. Binding to IGFR can localize the cytotoxic effect of methotrexate in tumor cells. This may increase its efficacy while decreasing its toxicity to normal, healthy

cells. IGFR is overexpressed on many types of cancer cells and has been implicated in metastasis and resistance to apoptosis.

**IGFR:** A protein found on the surface of some types of cells that binds to insulin-like growth factor (IGF). This causes the cells to grow and divide. IGFR is found at high levels on the surface of several types of cancer cells, which causes these cells to grow rapidly in the presence of IGF. Also called insulin-like growth factor receptor.

**IgG-RFT5-dgA:** A monoclonal antibody linked to a toxic substance. It is being studied in the treatment of melanoma that has spread to distant parts of the body. IgG-RFT5-dgA is made in the laboratory. It can find and kill certain white blood cells that prevent the immune system from killing cancer cells. Also called RFT5-dgA immunotoxin.

**igneous:** rock formed when molten rock cools.

**Igneous Rock:** A rock type that has been created from super-heated magma. The three main types of rock are igneous, sedimentary, and metamorphic. OR Igneous rock is rock formed when molten rock cools down and solidifies. OR rock that at one time was molten and part of magmas or lavas and that then cooled.

**IGRT:** A procedure that uses a computer to create a picture of a tumor to help guide the radiation beam during radiation therapy. The pictures are made using CT, ultrasound, X-ray, or other imaging techniques. IGRT makes radiation therapy more accurate and causes less damage to healthy tissue. Also called image-guided radiation therapy.

**IH636 grape seed extract :** A substance being studied for its ability to prevent damage to normal tissue caused by radiation therapy. It is a type of antioxidant.

**IH636 grape seed proanthocyanidin extract:** An oligomeric proanthocyanidin extracted from grape seeds. IH636 grape seed proanthocyanidin extract exhibits dose-dependent free-radical scavenging and antioxidant properties.

**IL:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. ILs regulate immune responses. ILs made in the laboratory are used as biological response modifiers to boost the immune system in cancer therapy. An interleukin is a type of cytokine. Also called interleukin.

**IL-1:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-1 is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. There are two forms of IL-1, alpha and beta, which act the same. IL-1 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-1 is a type of cytokine. Also called interleukin-1.

**IL-1-alfa :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-1-alfa, one form of IL-1, is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. The other form of IL-1, IL-1-beta, acts the same as IL-1-alfa. IL-1-alfa made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-1-alfa is a type of cytokine. Also called IL-1-alpha, interleukin-1-alfa, and interleukin-1-alpha.

**IL-1-alpha :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-1-alpha, one form of IL-1, is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. The other form of IL-1, IL-1-beta, acts the same as IL-1-alpha. IL-1-alpha made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-1-alpha is a type of cytokine. Also called IL-1-alfa, interleukin-1-alfa, and interleukin-1-alpha.

**IL-1-beta :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-1-beta, one form of IL-1, is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. The other form of IL-1, IL-1-alpha, acts the same as IL-1-beta. IL-1-beta

made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-1-beta is a type of cytokine. Also called IL-1B and interleukin-1-beta.

**IL-10:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-10 is made by activated macrophages and by some T lymphocytes. It reduces inflammation by blocking production of cytokines by immune cells. IL-10 also increases antibody production by plasma cells and helps them live longer. IL-10 made in the laboratory is used as a biological response modifier to boost the immune system. It is a type of cytokine. Also called interleukin-10.

**IL-10 immunomodulator MK-1966:** An agent that downregulates the activity of the anti-inflammatory cytokine human interleukin-10 (IL-10), with potential immunomodulating and antineoplastic activities. Upon administration, IL-10 immunomodulator MK-1966 blocks the activity of IL-10 and may abrogate the IL-10-induced immunosuppressive tumor microenvironment. This activates cell-mediated immunity against cancer cells, increases cytokine production, including interferon-gamma (IFN-g), decreases T regulatory cell (Treg) activity, and induces a tumor-specific cytotoxic CD8<sup>+</sup> T-cell-mediated immune response, which enhances tumor cell death.

**IL-11:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-11 is made by support cells in the bone marrow. It causes the growth of several types of blood cells. Oprelvekin (IL-11 made in the laboratory) is used as a biological response modifier to increase the number of platelets, especially in patients receiving chemotherapy for cancer. IL-11 is a type of cytokine. Also called interleukin-11.

**IL-12:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-12 is made mainly by B lymphocytes and macrophages. It causes other immune cells to make cytokines and increases the growth of T lymphocytes. It may also block the growth of new blood vessels. IL-12 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-12 is a type of cytokine. Also called interleukin-12.

**IL-12-expressing mesenchymal stem cell vaccine GX-051:** Human mesenchymal stem cells (MSCs) transduced with a retroviral vector

encoding a modified form of the cytokine interleukin-12 (IL-12), with potential immunomodulating and antineoplastic activities. Upon intratumoral administration, IL-12-expressing MSC vaccine GX-051 secretes IL-12. IL-12 activates the immune system by both promoting the secretion of interferon-gamma, which activates natural killer cells (NKs), and inducing cytotoxic T-cell responses, which may result in both decreased cell proliferation and increased cell death in tumor cells.

**IL-13:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-13 is made by a type of T lymphocyte. It reduces inflammation by blocking production of cytokines by macrophages. It also increases the number and activity of B lymphocytes. IL-13 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. It is a type of cytokine. Also called interleukin-13.

**IL-1B:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-1B, one form of IL-1, is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. The other form of IL-1, IL-1-alpha, acts the same as IL-1B. IL-1B made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-1B is a type of cytokine. Also called IL-1-beta and interleukin-1-beta.

**IL-2:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-2 is made by a type of T lymphocyte. It increases the growth and activity of other T lymphocytes and B lymphocytes, and affects the development of the immune system. Aldesleukin (IL-2 made in the laboratory) is being used as a biological response modifier to boost the immune system in cancer therapy. IL-2 is a type of cytokine. Also called interleukin-2.

**IL-2 plasmid DNA/lipid complex:** An immunotherapeutic agent consisting of a plasmid DNA encoding human Interleukin-2 (IL-2) complexed with a cationic lipid, 1,2-dimyristyloxypropyl-3-dimethyl-hydroxyethyl ammonium bromide/dioleoyl-phosphatidyl-ethanolamine (DMRIE/DOPE), in a 5:1 ratio. Due to the lipophilic nature of this cation

liposome complex, this gene transfer system may improve the efficiency of introducing the IL-2 gene into the cells, thereby increasing the production of IL-2 and inducing an immune response.

**IL-2 recombinant fusion protein ALT-801:** A recombinant protein consisting of the cytokine interleukin-2 (IL-2) fused to a humanized soluble T-cell receptor (TCR) directed against a tumor suppressor p53-derived antigen with potential immunopotentiating and antineoplastic activities. The TCR moiety of IL-2 recombinant fusion protein ALT-801 binds to tumor cells displaying p53 epitope/MHC complexes; subsequently, the tumor cell-localized IL-2 moiety may stimulate natural killer (NK) cell and T cell cytotoxic immune responses against p53-expressing tumor cells.

**IL-2/Lptn gene-modified allogeneic neuroblastoma tumor cell vaccine:** A cancer vaccine consisting of allogeneic neuroblastoma tumor cells have been genetically modified to secrete the human cytokine interleukin-2 (IL-2) and the human chemokine lymphotactin (Lptn) with potential immunostimulating and antineoplastic activities. Upon administration, IL-2 and Lptn are secreted by the IL-2/Lptn gene-modified allogeneic neuroblastoma tumor cell vaccine, potentially enhancing the cytotoxic T lymphocyte (CTL) response elicited by vaccine neuroblastoma tumor-associated antigens (TAAs) against host neuroblastoma tumor cells. Produced by activated progenitor T cells, Lptn belongs to the C chemokine subfamily and is a potent chemotactic factor for lymphocytes; IL-2 stimulates natural killer (NK) cells and may enhance a vaccine-elicited CTL immune response against tumor cells.

**IL-3:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-3 is made mainly by a type of T lymphocyte. It increases the number of blood cells made by the bone marrow. IL-3 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-3 is a type of cytokine. Also called interleukin-3.

**IL-4:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-4 is made by a type of T lymphocyte. It causes B lymphocytes to increase and to make antibodies and also increases the production of T lymphocytes. IL-4 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-4 is a type of cytokine. Also called interleukin-4.

**IL-5:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-5 is made mainly by some T lymphocytes. It causes B lymphocytes to make more antibodies and increases the number of eosinophils. IL-5 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. It is a type of cytokine. Also called interleukin-5.

**IL-6:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-6 is made mainly by some T lymphocytes. It causes B lymphocytes to make more antibodies and also causes fever by affecting areas of the brain that control body temperature. IL-6 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-6 is a type of cytokine. Also called interleukin-6.

**IL-7:** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. IL-7 is made by cells that cover and support organs, glands, and other structures in the body. It causes the growth of T lymphocytes and B lymphocytes. IL-7 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. IL-7 is a type of cytokine. Also called interleukin-7 and lymphopoietin-1.

**IL13Ralpha2-specific hinge-optimized 41BB-co-stimulatory CAR truncated CD19-expressing autologous T-lymphocytes:** A preparation of ex vivo expanded, genetically modified autologous central memory-enriched T-cells (T<sub>cm</sub>) transduced with a replication-incompetent, self-inactivating (SIN) lentiviral vector expressing a hinge-optimized, chimeric antigen receptor (CAR) specific for interleukin-13 receptor alpha 2 (IL13Ra2), and containing the cluster of differentiation 137 (CD137; 4-1BB) co-stimulatory signaling domain fused to the signaling domain of the T cell antigen receptor complex zeta chain (CD3-zeta), and a truncated form of human cluster of differentiation 19 (CD19t), with potential immunostimulating and antineoplastic activities. Upon intratumoral or intracavitary administration, IL13Ra2-specific, hinge-optimized, 41BB-co-stimulatory CAR/truncated CD19 expressing T-lymphocytes are directed to, and induce selective toxicity and cytolysis in IL13Ra2-expressing tumor cells. IL13Ra2, overexpressed by a variety of tumor cell types, is associated with increased tumor cell proliferation, migration and invasiveness. The

costimulatory signaling domain enhances both proliferation of T cells and antitumor activity. Hinge optimization prevents the recognition and clearance of the CAR by endogenous Fc receptors (FcRs). CD19t is used as a surface marker to both quantify and track the gene-modified T cells in vivo.

**IL4-Pseudomonas exotoxin fusion protein PRX321:** A fusion protein consisting of the cytokine interleukin-4 (IL-4) linked to a truncated form of Pseudomonas exotoxin with potential antineoplastic activity. Upon specific, high-affinity binding to IL-4 receptors (IL-4Rs) located on the tumor cell surface., IL4-Pseudomonas exotoxin fusion protein PRX321 is internalized; the exotoxin moiety then binds to translation elongation factor 2 (EF-2), which may result in ADP ribosylation, deactivation of EF-2, inhibition of protein synthesis, and tumor cell apoptosis. The Pseudomonas exotoxin moiety of this agent has been engineered to reduce non-specific binding to cells expressing its receptor, the multiligand cell surface receptor alpha 2-macroglobulin receptor/low-density lipoprotein receptor-related protein (alpha 2MR/LRP). IL-4R is a type I transmembrane protein that binds IL-4 and IL-13 and may be overexpressed by cancers such as renal cell carcinoma (RCC) and glioma.

**ilaprazole:** A substituted benzimidazole prodrug with selective and irreversible proton pump inhibitor activity. A weak base, ilaprazole accumulates in the acidic environment of the secretory canaliculus of the gastric parietal cell where it is converted to an active sulfenamide form that binds to cysteine sulfhydryl groups on the luminal aspect of the proton pump hydrogen-potassium adenosine triphosphatase (H<sup>+</sup>/K<sup>+</sup> ATPase), thereby inhibiting the pump's activity and the parietal cell secretion of H<sup>+</sup> ions into the gastric lumen, the final step in gastric acid production.

**ileostomy :** An opening into the ileum, part of the small intestine, from the outside of the body. An ileostomy provides a new path for waste material to leave the body after part of the intestine has been removed.

**ileum :** the final 12 feet of the small intestine. OR The last part of the small intestine. It connects to the cecum (first part of the large intestine). The ileum helps to further digest food coming from the stomach and other parts of the small intestine. It absorbs nutrients (vitamins, minerals, carbohydrates, fats, proteins) and water from food so they can be used by the body.

**ileus** : Blockage of the intestines

**Ilopan**: (Other name for: dexpanthenol cream)

**iloprost**: A prostacyclin analogue with potential chemopreventive activity. Iloprost binds to the prostacyclin receptor in various target cells, thereby causing vasodilation, inhibition of platelet aggregation, and decreased tumor cell adhesion to endothelium among other effects. Prostacyclin is a naturally occurring eicosanoid with anti-inflammatory, antineoplastic, and anti-metastatic properties. or A substance that is being studied in the prevention of lung cancer. It belongs to the family of drugs called prostaglandin analogs.

**ilorasertib**: An orally bioavailable, adenosine triphosphate mimetic, and inhibitor of Aurora kinases, vascular endothelial growth factor receptors (VEGFRs) and platelet-derived growth factor receptor (PDGFRs), with potential antineoplastic activity. Upon administration, ilorasertib selectively binds to and inhibits Aurora kinases A, B and C, which may disrupt both the assembly of the mitotic spindle apparatus and chromosome segregation, and inhibit both cellular division and proliferation in Aurora kinase-overexpressing tumor cells. In addition, ilorasertib selectively binds to and inhibits VEGFRs and PDGFRs, which may result in the inhibition of both angiogenesis and tumor cell proliferation in VEGFR/PDGFR-overexpressing tumor cells. This agent also inhibits the Src family of cytoplasmic tyrosine kinases. Aurora kinases A, B and C, are serine/threonine kinases that play essential roles in mitotic checkpoint control and are overexpressed by a wide variety of tumor cell types. Both VEGFRs and PDGFRs are receptor tyrosine kinase families whose members may be upregulated in various tumor cell types.

**Ilotycin**: (Other name for: erythromycin)

**ILX-295501**: A substance that is being studied as an anticancer drug. It belongs to the family of drugs called diarylsulfonylureas.

**ILX23-7553**: A substance that is being studied as an anticancer drug.

**IM**: Within or into muscle. Also called intramuscular.

**IM-862**: An anticancer drug that belongs to the family of drugs called angiogenesis inhibitors.

**Image analysis**: An automated microscopic technique for analyzing particle properties, especially shape and size distributions.

**image-guided radiation therapy :** A procedure that uses a computer to create a picture of a tumor to help guide the radiation beam during radiation therapy. The pictures are made using CT, ultrasound, X-ray, or other imaging techniques. Image-guided radiation therapy makes radiation therapy more accurate and causes less damage to healthy tissue. Also called IGRT.

**Imagent:** (Other name for: perflubron)

**imagery :** A technique in which a person focuses on positive images in his or her mind. It can help people reach a relaxed, focused state and help reduce stress and give a sense of well-being. Also called guided imagery.

**imaging :** In medicine, a process that makes pictures of areas inside the body. Imaging uses methods such as x-rays (high-energy radiation), ultrasound (high-energy sound waves), and radio waves.

**imaging procedure :** A type of test that makes detailed pictures of areas inside the body. Imaging procedures use different forms of energy, such as x-rays (high-energy radiation), ultrasound (high-energy sound waves), radio waves, and radioactive substances. They may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Examples of imaging procedures are computed tomography (CT), ultrasonography, magnetic resonance imaging (MRI), and nuclear medicine tests. Also called imaging test.

**imaging test :** A type of test that makes detailed pictures of areas inside the body. Imaging tests use different forms of energy, such as x-rays (high-energy radiation), ultrasound (high-energy sound waves), radio waves, and radioactive substances. They may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Examples of imaging tests are computed tomography (CT), ultrasonography, magnetic resonance imaging (MRI), and nuclear medicine tests. Also called imaging procedure.

**imalumab:** A human, recombinant monoclonal antibody (MoAb) against macrophage migration inhibitory factor (MIF), with potential immunomodulating, anti-inflammatory and antineoplastic activities. Upon intravenous administration, imalumab binds to MIF, blocking its activity and preventing the MIF-mediated secretion of certain cytokines, including interleukin-1 beta and tumor necrosis factor-alpha. This may lead to an inhibition of cancer cell proliferation in MIF-overexpressing tumor cells.

MIF, a pro-inflammatory cytokine overexpressed in some cancers, plays a key role in inflammation, immune responses and cancer cell proliferation.

**imatinib mesylate:** The mesylate salt of imatinib, a tyrosine kinase inhibitor with antineoplastic activity. Imatinib binds to an intracellular pocket located within tyrosine kinases (TK), thereby inhibiting ATP binding and preventing phosphorylation and the subsequent activation of growth receptors and their downstream signal transduction pathways. This agent inhibits TK encoded by the bcr-abl oncogene as well as receptor TKs encoded by the c-kit and platelet-derived growth factor receptor (PDGFR) oncogenes. Inhibition of the bcr-abl TK results in decreased proliferation and enhanced apoptosis in malignant cells of Philadelphia-positive (Ph+) hematological malignancies such as CML and ALL; effects on c-kit TK activity inhibit mast-cell and cellular proliferation in those diseases overexpressing c-kit, such as mastocytosis and gastrointestinal stromal tumor (GIST).

**imatinib mesylate :** A drug used to treat different types of leukemia and other cancers of the blood, gastrointestinal stromal tumors, skin tumors called dermatofibrosarcoma protuberans, and a rare condition called systemic mastocytosis. It is also being studied in the treatment of other types of cancer. Imatinib mesylate blocks the protein made by the bcr/abl oncogene. It is a type of tyrosine kinase inhibitor. Also called Gleevec and STI571.

**Imbruvica :** A drug used to treat Waldenstrom macroglobulinemia (a type of non-Hodgkin lymphoma). It is also used to treat mantle cell lymphoma and chronic lymphocytic leukemia (CLL) in patients who have already received other treatment. It is also being studied in the treatment of other types of cancer. Imbruvica blocks a protein called Bruton's tyrosine kinase (BTK), which may help keep cancer cells from growing. It is a type of tyrosine kinase inhibitor. Also called ibrutinib.

**IMC-1121B:** A drug used with other drugs to treat colorectal cancer and non-small cell lung cancer that have spread to other parts of the body. It is used alone or with another drug to treat cancer of the stomach or gastroesophageal junction (area where the esophagus connects to the stomach) that is advanced or has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. IMC-1121B binds to receptors for a protein called vascular endothelial growth factor (VEGF),

which may be found on some types of cancer cells. This may prevent the growth of new blood vessels that tumors need to grow. IMC-1121B is a type of antiangiogenesis agent and a type of monoclonal antibody. Also called anti-VEGFR-2 fully human monoclonal antibody IMC-1121B, Cyramza, and ramucirumab.

**IMC-3G3:** A substance being studied in the treatment of glioblastoma (a type of brain tumor) that has come back. It binds to receptors for a protein called platelet-derived growth factor (PDGF). This keeps PDGF from binding to the cells. This may stop the growth of cancer cells and blood vessels that have the receptors for PDGF. It is a type of monoclonal antibody. Also called anti-PDGFR alpha monoclonal antibody IMC-3G3 and anti-platelet-derived growth factor receptor alpha monoclonal antibody IMC-3G3.

**IMC-A12:** A substance being studied in the treatment of some types of cancer. It is a monoclonal antibody that is made in the laboratory and can bind to substances in the body. IMC-A12 blocks the action of a protein needed for cell growth and may kill cancer cells. It is a type of insulin-like growth factor-1 receptor (IGF-1R) inhibitor. Also called cixutumumab.

**imetelstat sodium:** The sodium salt of imetelstat, a synthetic lipid-conjugated, 13-mer oligonucleotide N3' P5'-thio-phosphoramidate with potential antineoplastic activity. Complementary to the template region of telomerase RNA (hTR), imetelstat acts as a competitive enzyme inhibitor that binds and blocks the active site of the enzyme (a "telomerase template antagonist"), a mechanism of action which differs from that for the antisense oligonucleotide-mediated inhibition of telomerase activity through telomerase mRNA binding. Inhibition of telomerase activity in tumor cells by imetelstat results in telomere shortening, which leads to cell cycle arrest or apoptosis.

**imexon:** A 2-cyanoaziridine derivative with antitumor activity in multiple myeloma. Although its mechanism of action is not clearly known, imexon may induce apoptosis via a pathway involving cleaved caspase-3, caspase-9, and/or caspase-8. Other cytotoxic mechanisms of action of this agent may involve thiol depletion, generation of reactive oxygen species (ROS), and decreases in the mitochondrial membrane potential. or A substance that is being studied in the treatment of some types of cancer, including pancreatic, lung, breast, prostate, melanoma, and multiple myeloma. It

belongs to the family of drugs called cyanoaziridine derivatives. Also called Amplimexon.

**imidazole mustard:** A synthetic derivative of imidazole with potent antineoplastic properties. Imidazole mustard alkylates DNA, preferentially at guanine residues, resulting in DNA interstrand crosslinks and inhibition of DNA replication and RNA and protein synthesis. Check for active clinical trials using this agent.

**imidazolyl ethanamide pentandioic acid:** An orally bioavailable small molecule, with potential hematopoiesis inducing and antiviral activities. Upon oral administration, myelo001 stimulates the differentiation of bone marrow cells of the leukocytic, lymphocytic, and erythrocytic lineages, and prevents apoptosis of hematopoietic cells. This prevents chemotherapy-induced neutropenia (CIN), inhibits the risk of infections, increases tolerance and allows for the continuation of the neutropenia-inducing chemotherapeutic agent. In addition, myelo 001 has antiviral properties.

**Imine:** A molecule containing a nitrogen atom attached to a carbon atom by a double bond. The nitrogen is also covalently linked to a hydrogen. **Immunofluorescence:** A cytological technique in which a specific fluorescent antibody is used to label an antigen. Frequently used to determine the location of an antigen in a tissue or a cell.

**imipenem:** A broad-spectrum, semi-synthetic beta-lactam carbapenem derived from thienamycin, produced by *Streptomyces cattleya*. Imipenem binds to and inactivates penicillin-binding proteins (PBPs) located on the inner membrane of the bacterial cell wall. PBPs are enzymes that are involved in the last stages of assembling the bacterial cell wall and in reshaping the cell wall during growth and division. This inactivation results in the weakening of the bacterial cell wall and eventually causes cell lysis. Imipenem has the greatest affinity for PBP 1A, 1B, and 2, and its lethal effect is related to binding to PBP 2 and 1B. This antibiotic is active against a wide range of gram-positive and gram-negative organisms and is stable in the presence of beta-lactamases. or An antibiotic drug used to treat severe or very resistant infection. It belongs to the family of drugs called carbapenems.

**imiquimod:** A synthetic agent with immune response modifying activity. As an immune response modifier (IRM), imiquimod stimulates cytokine production, especially interferon production, and exhibits antitumor

activity, particularly against cutaneous cancers. Imiquimod's proapoptotic activity appears to be related to Bcl-2 overexpression in susceptible tumor cells.

**imiquimod :** A drug used to treat early basal cell skin cancer and certain other skin conditions. It is being studied in the treatment of other types of cancer. Imiquimod is a type of biological response modifier. Also called Aldara.

**imisopasem manganese:** A manganese-based non-peptidyl mimetic of the human mitochondrial manganese superoxide dismutase (MnSOD), with potential antioxidant and chemo/radioprotective activities. Upon administration, imisopasem manganese mimics the activity of MnSOD and scavenges reactive oxygen species (ROS), such as superoxide anion, which prevents oxygen free radical damage to macromolecules such as DNA. This reduces ROS-mediated lipid peroxidation, prevents apoptosis and protects against oxygen free radical-induced toxicity in normal tissues.

**Imitrex:** (Other name for: sumatriptan succinate)

**Imlygic :** A drug used to treat melanoma that has recurred (come back) after surgery. It is used in patients whose cancer is in the skin and lymph nodes and cannot be removed by surgery. It is also being studied in the treatment of other types of cancer. Imlygic is made with a form of the herpesvirus that has been changed in the laboratory to infect and break down cancer cells without harming normal cells. It may also help the immune system kill cancer cells. Imlygic is injected directly into tumors in the skin and lymph nodes. It is a type of oncolytic virus therapy. Also called T-VEC and talimogene laherparepvec.

**immature teratoma :** A rare type of germ cell tumor (type of tumor that begins in the cells that give rise to sperm or eggs). Immature teratomas often contain several different types of tissue such as hair, muscle, and bone.

**immediate-release afuresertib:** An immediate-release (IR) tablet formulation containing afuresertib, an inhibitor of the serine/threonine protein kinase Akt (protein kinase B) with potential antineoplastic activity. Upon oral administration of the IR formulation, afuresertib binds to and inhibits the activity of Akt, which may result in the inhibition of PI3K/Akt signaling pathway, decreased tumor cell proliferation and the induction of tumor cell apoptosis in Akt-expressing tumor cells. Activation of the

PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**immediate-release onapristone:** An immediate-release (IR) formulation of onapristone, an orally bioavailable progesterone receptor (PR) antagonist, with antineoplastic activity. Onapristone binds to the PR and inhibits both PR activation and the associated expression of PR-responsive genes. This may inhibit PR-mediated proliferative effects in cancer cells overexpressing PR. PR is expressed in certain cancer cell types and plays a key role in proliferation and survival. Check for active clinical trials using this agent.

**immiscible:** Two liquids are considered "immiscible" or unmixable if shaking equal volumes of the liquids together results in a meniscus visible between two layers of liquid. If the liquids are completely immiscible, the volumes of the liquid layers are the same as the volumes of liquids originally added to the mixture. OR Liquids are said to be immiscible when they do not mix, for example oil and water. OR Descriptive of two or more fluids which are not mutually soluble. OR Incapable of intermittently mixing, i.e., oil and water are immiscible.

**immiscible:** Two liquids that do not dissolve in each other.

**Immobilization of the reagent :** procedure used in the design of the receptor part, required to obtain stable signal of a chemical sensor. The appropriate reagent immobilization consists the main problem of the design of receptor part of fiber optic chemical sensor. The reagent can be immobilized either directly on the surface or in the bulk of the optomembrane. Physical (entrapment, formation of lipophilic ionpairs) and chemical (covalent binding of the chromoionophore) methods of the reagent immobilization in the chemooptical interface are used. Also there is possible to immobilize the reagent phase directly on the fiber. In all cases, the efficiency of the reagent immobilization governs the durability of the designed sensor.

**ImmTher:** (Other name for: disaccharide tripeptide glycerol dipalmitoyl)

**IMMU-106:** A substance being studied in the treatment of several types of lymphoma. It binds to the protein CD20, which is found on B cells (a type of immune system cell) and some types of lymphoma cells. This causes the

immune system to kill the cancer cells. IMMU-106 is a type of monoclonal antibody. Also called hA20, HCD20, and veltuzumab.

**IMMU-110:** A substance being studied in the treatment of multiple myeloma and several other types of cancer. It binds to CD74, a protein on the surface of myeloma cells and certain other types of cells. It may help kill cancer cells. IMMU-110 is a type of monoclonal antibody. Also called hLL1 and milatuzumab.

**Immucell WGP:** (Other name for: beta-glucan)

**Immun-Aid:** (Other name for: arginine/omega-3 fatty acids/nucleotides oral supplement)

**immune adjuvant :** A drug that stimulates the immune system to respond to disease.

**immune checkpoint inhibitor :** A type of drug that blocks certain proteins made by some types of immune system cells, such as T cells, and some cancer cells. These proteins help keep immune responses in check and can keep T cells from killing cancer cells. When these proteins are blocked, the “brakes” on the immune system are released and T cells are able to kill cancer cells better. Examples of checkpoint proteins found on T cells or cancer cells include PD-1/PD-L1 and CTLA-4/B7-1/B7-2. Some immune checkpoint inhibitors are used to treat cancer.

**immune complex hemolytic anemia :** A condition in which the body’s immune system stops red blood cells from forming or causes them to clump together. Immune complex hemolytic anemia can occur in patients who have chronic lymphocytic leukemia (CLL). Also called autoimmune hemolytic anemia and immunohemolytic anemia.

**immune function :** Production and action of cells that fight disease or infection.

**immune response:** the stimulation of B and T lymphocytes. OR The capacity of a vertebrate to generate antibodies to an antigen, a macromolecule foreign to the organism. OR The immune response is a general reaction of the body to substances that are foreign or treated as foreign. It may take various forms antibody production, cell-mediated immunity, immunological tolerance, or allergy. OR The activity of the immune system against foreign substances (antigens).

**immune system** : A complex network of cells, tissues, organs, and the substances they make that helps the body fight infections and other diseases. The immune system includes white blood cells and organs and tissues of the lymph system, such as the thymus, spleen, tonsils, lymph nodes, lymph vessels, and bone marrow.

**immune system disorder** : A condition that affects the immune system. The immune system is made up of cells, tissues, and organs that help the body fight infections and other diseases. There are many different types of immune system disorders, including immunodeficiency disease, autoimmune disorders, and allergic disorders. Immunodeficiency disease occurs when a part of the immune system is missing or not working properly. Autoimmune disorders occur when the immune system recognizes its own tissues as foreign and attacks them. Allergic disorders occur when the immune system overreacts to substances that are usually not harmful, such as pollen, molds, and certain foods. Cancers of the immune system (such as leukemia and lymphoma) are also immune system disorders.

**immune system tolerance** : The failure of the immune system to respond to an antigen that previously caused an immune response.

**immune thrombocytopenic purpura** : A condition in which platelets (blood cells that cause blood clots to form) are destroyed by the immune system. The low platelet count causes easy bruising and bleeding, which may be seen as purple areas in the skin, mucous membranes, and outer linings of organs. Also called idiopathic thrombocytopenic purpura and ITP.

**immunity** : The condition of being protected against an infectious disease. Immunity can be caused by a vaccine, previous infection with the same agent, or by transfer of immune substances from another person or animal.

**immunization** : A technique used to cause an immune response that results in resistance to a specific disease, especially an infectious disease.

**immunoadjuvant QS-DG**: A synthetic saponin, chemically identical to the natural saponin QS-21, with immunoadjuvant activity. When co-administered with vaccine antigens, immunoadjuvant QS-DG may increase total antitumoral vaccine-specific antibody responses and cytotoxic T-lymphocyte (CTL) responses.

**immunoassay** : A test that uses the binding of antibodies to antigens to identify and measure certain substances. Immunoassays may be used to diagnose disease. Also, test results can provide information about a disease

that may help in planning treatment (for example, when estrogen receptors are measured in breast cancer).

**immunoassay fecal occult blood test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. An antibody that binds to a blood protein called hemoglobin is used to detect any blood. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called fecal immunochemical test, FIT, iFOBT, immunochemical fecal occult blood test, and immunologic fecal occult blood test.

**Immunocal:** (Other name for: whey protein isolate)

**immunochemical fecal occult blood test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. An antibody that binds to a blood protein called hemoglobin is used to detect any blood. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called fecal immunochemical test, FIT, iFOBT, immunoassay fecal occult blood test, and immunologic fecal occult blood test.

**immunocompetence :** The ability to produce a normal immune response.

**immunocompetent :** Having the ability to produce a normal immune response.

**immunocompromised :** Having a weakened immune system caused by certain diseases or treatments.

**immunoconjugate :** An agent made up of an immune substance, such as a monoclonal antibody, that is chemically linked to a cell-killing substance such as a toxin, a radioactive molecule, or a drug. The antibody part of the immunoconjugate targets cancer cells and the linked substance may kill the cells or make them visible in the body. Some immunoconjugates are used to treat cancer or to help find cancer cells in the body.

**immunoconjugate RO5479599:** An immunoconjugate containing a glycoengineered, humanized monoclonal antibody directed against the human epidermal growth factor receptor HER3 (ErbB3), with potential antineoplastic activity. Upon administration, RO5479599 binds to the extracellular domain of HER3 and inhibits HER3 dimerization; thereby,

preventing EGFR-dependent signaling. In addition, RO5479599 stimulates the immune system to exert antibody-dependent cellular cytotoxicity (ADCC). This may decrease proliferation of HER3-overexpressing tumor cells. HER3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in tumors; it has no active kinase domain but is activated through heterodimerization with other members of the EGFR receptor family, such as HER2. Check for active clinical trials using this agent.

**immunoconjugate therapy :** A type of treatment that uses an immune substance, such as a monoclonal antibody, that is chemically linked to a cell-killing substance such as a toxin, radioisotope, or drug. The immune substance targets certain types of cells and the linked substance kills the targeted cells without harming other cells. Immunoconjugates are used in the treatment of cancer. Examples include antibody-drug conjugates, immunotoxins, and some targeted therapy drugs.

**immunocytochemistry :** A lab test that uses antibodies to test for certain antigens (markers) in a sample of cells. The antibodies are usually linked to an enzyme or a fluorescent dye. When the antibodies bind to the antigen in the cell sample, the enzyme or dye is activated, and the antigen can then be seen under a microscope. Immunocytochemistry is used to help diagnose diseases, such as cancer. It may also be used to help tell the difference between different types of cancer.

**immunocytokine NHS-IL12:** A fusion protein consisting of the heavy-chains of the human antibody NHS76, raised against DNA released by necrotic tumor cells, and fused to two molecules of a genetically modified human interleukin-12 (IL-12) with potential immunostimulating and antineoplastic activities. Upon administration, the antibody moiety of immunocytokine NHS-IL12 binds to DNA released from necrotic tumor cells located primarily at the core of necrotic solid tumors, thereby delivering the IL-12 moiety. In turn, the IL-12 moiety of this agent stimulates the host immune system to mount an immune response against tumor cells, thereby inhibiting tumor growth. IL-12 is a proinflammatory cytokine with numerous immunoregulatory functions and may augment host immune responses to tumor cells. By targeting tumor cells, NHS-IL-12 may reduce the toxicity associated with systemic administration of recombinant human IL-12.

**immunocytokine NHS-IL2-LT:** A fusion protein consisting of a mouse-human chimeric antibody directed against DNA released by necrotic tumor cells fused to two molecules of a genetically modified human interleukin-2 (IL-2) with potential antineoplastic activity. Upon administration, the antibody moiety of immunocytokine NHS-IL2-LT binds to DNA released by necrotic tumor cells located primarily at the core of necrotic solid tumors, delivering the IL-2 moiety. In turn, the IL-2 moiety of this agent activates the immune system to mount a cytotoxic T lymphocyte response against nearby tumor cells.

**immunodeficiency :** The decreased ability of the body to fight infections and other diseases.

**immunodeficiency syndrome :** The inability of the body to produce an immune response.

**Immunoglobulin:** A protein made in a B plasma cell and usually secreted; it interacts specifically with a foreign agent. Synonymous with antibody. It is composed of two heavy and two light chains linked by disulfide bonds. Immunoglobulins can be divided into five classes (IgG, IgM, IgA, IgD, and IgE) based on their heavy-chain component. OR An antibody protein generated against, and capable of binding specifically to, an antigen.

**immunoglobulin :** A protein that is made by B cells and plasma cells (types of white blood cells) and helps the body fight infection. Some immunoglobulins may be found in higher than normal amounts in patients with certain conditions or certain types of cancer, including multiple myeloma and Waldenstrom macroglobulinemia. Measuring the amount of specific immunoglobulins in the blood and urine may help diagnose cancer or find out how well treatment is working or if cancer has come back. Some immunoglobulins may be used as tumor markers. Also called Ig.

**Immunoglobulin A (iga):** The major class of antibodies in external secretions, such as saliva, tears, bronchial mucus and intestinal mucus.

**Immunoglobulin D (igd):** An antibody of unknown function.

**Immunoglobulin E (ige):** An antibody that confers protection against parasites; ige also initiates allergic reactions.

**Immunoglobulin fold:** A common structural motif for immunoglobulins, in which two broad sheets of antiparallel  $\beta$  strands enclose hydrophobic side

chains, and complementarity-determining regions of variable domains pair to form an antigen-binding site.

**Immunoglobulin G (igg):** The major antibody in serum; igg possesses two antigen-binding sites.

**Immunoglobulin M (igm):** The first class of antibodies to appear in the serum after exposure to an antigen; igm possesses ten antigen-binding sites.

**immuno-hemolytic anemia :** A condition in which the body's immune system stops red blood cells from forming or causes them to clump together. Immuno-hemolytic anemia can occur in patients who have chronic lymphocytic leukemia (CLL). Also called autoimmune hemolytic anemia and immune complex hemolytic anemia.

**immunohistochemistry :** A lab test that uses antibodies to test for certain antigens (markers) in a sample of tissue. The antibodies are usually linked to an enzyme or a fluorescent dye. When the antibodies bind to the antigen in the tissue sample, the enzyme or dye is activated, and the antigen can then be seen under a microscope. Immunohistochemistry is used to help diagnose diseases, such as cancer. It may also be used to help tell the difference between different types of cancer.

**immunologic fecal occult blood test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards and sent to a doctor or laboratory for testing. An antibody that binds to a blood protein called hemoglobin is used to detect any blood. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called fecal immunochemical test, FIT, iFOBT, immunoassay fecal occult blood test, and immunochemical fecal occult blood test.

**immunological adjuvant :** A substance used to help boost the immune response to a vaccine so that less vaccine is needed.

**immunological adjuvant OPT-821:** A purified, natural saponin isolated from the soapbark tree *Quillaja saponaria* Molina with potential immunoadjuvant activity. When co-administered with vaccine peptides, OPT-821 may increase the antibody and cytotoxic T-cell responses against the targeted antigen(s).

**immunology :** The study of the body's immune system.

**immunomodulating agent** : A substance that stimulates or suppresses the immune system and may help the body fight cancer, infection, or other diseases. Specific immunomodulating agents, such as monoclonal antibodies, cytokines, and vaccines, affect specific parts of the immune system. Nonspecific immunomodulating agents, such as BCG and levamisole, affect the immune system in a general way.

**immunomodulation** : Change in the body's immune system, caused by agents that activate or suppress its function.

**immunomodulator OHR/AVR118**: A peptide-nucleic acid immunomodulator with proinflammatory, broad-spectrum antiviral, and potential antineoplastic activities. Immunomodulator OHR/AVR118 stimulates the peripheral blood mononuclear cell (PBMC) production of the proinflammatory cytokines IFN- $\gamma$ , IL-1 $\beta$ , IL-6 and TNF- $\alpha$ . This agent may reduce HIV-1 p24 antigen; viral reverse transcriptase activity; syncytial cell formation; and viral mRNA in infected PBMCs and human CD4+ lymphocyte H9 cells, and may decrease viral loads and increase CD4+ and CD8+ T-cell counts in HIV patients. In vitro, immunomodulator OHR/AVR118 has been shown to induce the maturation of HL60 leukemic cells and to inhibit the invasive and metastatic properties of a highly malignant breast cancer cell line.

**immunomodulatory agent CC-11006**: A proprietary, orally available, small molecule and thalidomide analog, with potential immunomodulating and antineoplastic activity. CC-11006 appears to have a similar mechanism to thalidomide and may modulate the expression of proinflammatory and regulatory cytokines. Check for active clinical trials using this agent.

**immunophenotyping** : A process that uses antibodies to identify cells based on the types of antigens or markers on the surface of the cells. This process is used to diagnose specific types of leukemia and lymphoma by comparing the cancer cells to normal cells of the immune system. Immunophenotyping may also be used to separate cells into different groups based on the markers they have on the surface.

**immunophilin**: intracellular proteins that binds to immunosuppressive drugs such as FK506 and rapamycin

**Immunoreceptor tyrosine-based activation motif (ITAM)**: The intracellular region of Ig- $\alpha$  and Ig- $\beta$  membrane proteins of immature B cells; upon antigen binding to the membrane-bound antibodies of the B cell,

the ITAM regions of Ig- $\alpha$  and Ig- $\beta$  are phosphorylated, which initiates pathways leading to cell growth and B-cell differentiation.

**immunoscintigraphy** : An imaging procedure in which antibodies labeled with radioactive substances are given to the person. A picture is taken of sites in the body where the antibody localizes.

**immunosignature** : Information about the antibodies in a person's blood at a given point in time. Over time, the antibodies can change and immunosignatures might be used to help track a person's health and diagnose infections, cancer, or other medical conditions earlier.

**immunostimulant** : A substance that increases the ability of the immune system to fight infection and disease.

**immunosuppression** : Suppression of the body's immune system and its ability to fight infections and other diseases. Immunosuppression may be deliberately induced with drugs, as in preparation for bone marrow or other organ transplantation, to prevent rejection of the donor tissue. It may also result from certain diseases such as AIDS or lymphoma or from anticancer drugs.

**immunosuppressive** : Describes the ability to decrease the body's immune system responses.

**immunosuppressive agent** : An agent that decreases the body's immune responses. It reduces the body's ability to fight infections and other diseases, such as cancer. Immunosuppressive agents may be used to keep a person from rejecting a bone marrow or organ transplant. They are also used in the treatment of conditions marked by overactive immune responses, such as autoimmune diseases and allergies.

**immunosuppressive therapy** : Treatment that lowers the activity of the body's immune system. This reduces its ability to fight infections and other diseases, such as cancer. Immunosuppressive therapy may be used to keep a person from rejecting a bone marrow or organ transplant. It may also be used to treat conditions in which the immune system is overactive, such as autoimmune diseases and allergies. Some types of immunosuppressive therapy may increase a person's risk of cancer by lowering the body's ability to kill cancer cells.

**immunotherapeutic combination product CMB305**: An immunotherapeutic combination product composed of LV305, an

engineered lentiviral vector that both targets dendritic cells (DCs) and contains nucleic acids encoding the human tumor-associated cancer-testis antigen NY-ESO-1 (CTAG1), and G305, a cancer vaccine comprised of an NY-ESO-1 recombinant protein and glucopyranosyl lipid adjuvant (GLA)-stable emulsion (GLA-SE), with potential synergistic immunostimulatory and antineoplastic activities. Upon intradermal administration of LV305, the DC-targeting lentiviral vector targets and binds to dermal DCs via the DC-specific intercellular adhesion molecule-3-grabbing non-integrin (DC-SIGN) receptor. Upon internalization of the vector, the NY-ESO-1 protein is expressed, which stimulates DC maturation, and activates the immune system to mount a cytotoxic T-lymphocyte (CTL) response against NY-ESO-1-expressing cells; this may result in tumor cell lysis. Upon the sequential intramuscular injection of G305, the adjuvant portion of G305 binds to toll-like receptor 4 (TLR-4) expressed on various immune cells, including DCs, monocytes, macrophages and B-cells. The activated DCs present the NY-ESO-1 antigen to CD4-positive Th1 T-lymphocytes. The induction of antigen-specific CD4-positive T-lymphocytes further induces a CTL response against NY-ESO-1-expressing tumor cells. In addition, G305 induces an NY-ESO-1-specific antibody response. NY-ESO-1, expressed in normal testes and on the surfaces of various tumor cells, plays a key role in tumor cell proliferation and survival.

**immunotherapeutic GSK1572932A:** An immunotherapeutic containing a proprietary adjuvant system combined with a melanoma-associated antigen peptide MAGE-A3 epitope with potential immunomodulating and antineoplastic activities. Intramuscular administration with GSK1572932A may stimulate the immune system to exert both humoral and cellular immune responses against MAGE-A3-expressing tumor cells. MAGE-A3, a tumor associated antigen (TAA), is overexpressed in a variety of tumor cell types, including non-small cell lung cancer (NSCLC), melanoma, head and neck cancer, and bladder cancer. Check for active clinical trials using this agent.

**immunotherapy :** A type of biological therapy that uses substances to stimulate or suppress the immune system to help the body fight cancer, infection, and other diseases. Some types of immunotherapy only target certain cells of the immune system. Others affect the immune system in a general way. Types of immunotherapy include cytokines, vaccines, bacillus Calmette-Guerin (BCG), and some monoclonal antibodies.

**immunotherapy regimen MKC-1106-MT:** An immunotherapy regimen containing three components: a plasmid encoding portions of the two melanoma-associated antigens Melan A (also called MART-1) and tyrosinase and two synthetic analogs of Melan-A and tyrosinase antigen epitopes with potential immunostimulating and antitumor activities. First, the plasmid is injected directly into lymph nodes in order to sensitize or prime antigen-presenting cells (APCs) and central memory T cells in lymph nodes to plasmid-expressed Melan A and tyrosinase. After several priming injections with plasmids, the Melan A and tyrosinase synthetic epitope analogs are injected directly into lymph nodes; upon binding to major histocompatibility complex (MHC) molecules on APC cell surfaces, these synthetic epitope analogs may stimulate a "primed" cytotoxic T lymphocyte (CTL) response against melanoma tumor cells, resulting in tumor cell lysis. Melan-A and tyrosinase are overexpressed by melanoma tumor cells.

**immunotoxin :** An antibody linked to a toxic substance. Some immunotoxins can bind to cancer cells and kill them.

**immunotoxin CMD-193:** A humanized immunotoxin directed against the Lewis Y antigen conjugated with calicheamicin, a hydrophobic enediyne antibiotic, with potential antineoplastic activity. CMD193 binds to the Lewis Y antigen, a tetrasaccharide expressed on the cell surfaces of many tumor cell types. Upon binding, CMD-193 is internalized, thereby delivering the attached calicheamicin to Lewis Y antigen-expressing tumor cells. Calicheamicin binds non-covalently to the minor groove of DNA and prompts conformational changes and DNA oxidation, thereby inhibiting DNA synthesis and inducing apoptosis.

**immunotoxin D2C7-(scdsFv)-PE38KDEL:** A recombinant immunotoxin fusion protein consisting of single-chain variable-region antibody fragments (scFvs), which contain disulfide stabilized heavy- (Vh) and light- (Vl) chain variable regions of the monoclonal antibody D2C7 (D2C7-scdsFv), targeting both the wild-type form (EGFRwt) and the in-frame deletion mutant form (EGFRvIII) of epidermal growth factor receptor (EGFR), and fused, via a 15-amino acid peptide linker to domains II and III of the Pseudomonas exotoxin A (PE38KDEL) (D2C7-(scdsFv)-PE38KDEL), with potential antineoplastic activity. Upon intratumoral administration by convection-enhanced delivery, the scFv moiety of immunotoxin anti-EGFR scFv monoclonal antibody fragment immunotoxin D2C7-(scdsFv)-

PE38KDEL targets and binds to a specific amino acid epitope present in the extracellular domain of both the EGFRwt and EGFRvIII proteins. This binding facilitates the internalization of the immunotoxin by tumor cells. Inside the cells, the exotoxin portion of the fusion protein binds to translation elongation factor 2 (EF-2), and deactivates EF-2 through ADP ribosylation. This results in the inhibition of protein synthesis, the induction of apoptosis and a reduction in cell proliferation of EGFRwt/EGFRvIII-expressing tumor cells. Compared to intact IgG antibodies and single-chain antibodies, scFvs are smaller with increased tumor-penetrating capacity which may enhance therapeutic efficacy. The EGFR gene, a transmembrane receptor tyrosine kinase, and its mutant form, EGFRvIII, which contains a deletion of exons 2–7 of the EGFR gene, are frequently amplified and overexpressed in a variety of cancers. KDEL increases the toxin's intracellular retention, thereby enhancing its cytotoxicity. Check for active clinical trials using this agent.

**Immunox:** (Other name for: thymopentin)

**Imodium :** A drug used to treat diarrhea. Imodium slows the movement of the muscles in the small intestine to allow more water to be taken out of the feces (waste matter) and more nutrients to be absorbed. Also called loperamide hydrochloride.

**Imodium A-D:** (Other name for: loperamide hydrochloride)

**IMP321:** A T-cell immunostimulatory factor derived from the soluble form of lymphocyte-activation gene 3 (LAG-3) protein with potential antineoplastic activity. Upon administration, alone or in combination with tumor antigens, IMP321 binds, with high affinity, to MHC class II molecules expressed by dendritic cells (DC), which may result in DC maturation, DC migration to lymph nodes, enhanced DC cross-presentation of antigens to T cells, and antitumor cytotoxic T cell responses.

**Impact:** (Other name for: arginine/omega-3 fatty acids/nucleotides oral supplement)

**Impact Bar (specimen):** A test specimen of specified dimensions which is utilized to determine the relative resistance of a plastic to fracture by shock.

**Impact Modifiers:** Additive used to enhance the material's ability to withstand the force of impact.

**Impact Resistance:** relative susceptibility of material to fracture by stress at high speeds. OR Relative susceptibility of plastics or silicone rubber to fracture by shock as indicated by the energy expended by a standard pendulum type impact machine in breaking a standard specimen in one blow

**IMPACT STRENGTH:** (1) The ability of a material to withstand shock loading. (2) The work done in fracturing, under shock loading, a specified test specimen in a specified manner. (3) Molded plastics are usually given a value on an izod scale. An Izod impact test is designed to determine the resistance of a plastics material to a shock loading, it involves the notching of a specimen, which is then placed in the jaws of the machine and struck with a weighted pendulum.

**impairment :** A loss of part or all of a physical or mental ability, such as the ability to see, walk, or learn.

**impedance:** total opposition to flow of current, measured in ohms; combined effort of resistance, inductance, and capacitance.

**IMPEP:** Acronym for the Integrated Materials Performance Evaluation Program. The U.S. Nuclear Regulatory Commission (NRC) implemented this program in 1996 to ensure that public health and safety are adequately protected from the potential hazards associated with the use of radioactive materials, and that Agreement State programs are compatible with the NRC's program.

**imperative:** refers to the mood of the verb used in requests and commands.

**impermeable:** rock that water cannot sink into or through.

**Impermeable:** describes a material that prevents the passage of a substance into or through it.

**Impervious:** An impervious paint system is one which will prevent the passage of moisture or moisture vapour.

**implant :** A substance or object that is put in the body as a prosthesis, or for treatment or diagnosis.

**implant displacement views :** A procedure used to do a mammogram (x-ray of the breasts) in women with breast implants. The implant is pushed back against the chest wall and the breast tissue is pulled forward and

around it so the tissue can be seen in the mammogram. Also called Eklund displacement views and Eklund views.

**implant radiation therapy :** A type of radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called brachytherapy, internal radiation therapy, and radiation brachytherapy.

**implantable cardioverter-defibrillator :** A small device used to correct a heartbeat that is abnormal (too fast, too slow, or irregular). The device is placed by surgery in the chest or abdomen. Wires are passed through a vein to connect the device to the heart. When it detects abnormal heartbeats, it sends an electrical shock to the heart to restore the heartbeat to normal. Also called ICD.

**implantable pump :** A small device installed under the skin to administer a steady dose of drugs.

**implied multiplication:** Multiplication is implied when a number is placed next to a variable, or when a number is placed next to an expression surrounded by parentheses.

**impotence :** In medicine, refers to the inability to have an erection of the penis adequate for sexual intercourse. Also called erectile dysfunction.

**impotent :** In medicine, describes the inability to have an erection of the penis adequate for sexual intercourse.

**Impregnate:** 1) to fill the voids and interstices of material with a compound (this does not imply complete fill or complete coating of the surfaces by a hole-free film). 2) the process of thoroughly soaking a material of an open or porous nature with a resin.

**Impregnation:** The process of thoroughly soaking a material such as wood, paper or fabric, with a synthetic resin so that the resin gets within the body of the material. The process is usually carried out in an impregnator. OR Saturation of reinforcement with a liquid resin.

**Imprime PGG:** (Other name for: PGG beta-glucan)

**imprinting:** process whereby expression of a given gene is determined by the parental origin; involves differential DNA methylation

**Impulse Sealing:** a heat sealing technique in which a pulse of intense thermal energy is applied to the sealing area for a very short time, followed immediately by cooling. It is usually accomplished using a RF heated metal

bar which is cored for water cooling or is of such a mass that it will cool rapidly at ambient temperatures.

**IMRT:** A type of 3-dimensional radiation therapy that uses computer-generated images to show the size and shape of the tumor. Thin beams of radiation of different intensities are aimed at the tumor from many angles. This type of radiation therapy reduces the damage to healthy tissue near the tumor. Also called intensity-modulated radiation therapy.

**IMT-1012 immunotherapeutic vaccine:** A multi-peptide cancer vaccine with potential immunostimulating and antineoplastic activities. IMT-1012 immunotherapeutic vaccine contains twelve different synthetic peptides or tumor associated antigens (TAAs), including cyclin I (CCNI), cyclin-dependent kinase CDC2, EDDRI and TACE/ADAM17, each of which is involved in a different pathway associated with tumor growth, survival, and metastasis. Each antigen in the vaccine elicits a specific cytotoxic T-lymphocyte (CTL) immune response against tumor cells expressing that antigen. This multi-antigen/multi-pathway targeting strategy provides broad immunotherapeutic coverage with respect to tumor complexity and heterogeneity and may result in enhanced vaccine efficacy.

**Imuran:** (Other name for: azathioprine sodium)

**In 111 ibritumomab tiuxetan :** A radiolabeled monoclonal antibody that is used to detect certain types of B-cell non-Hodgkin lymphoma and is being studied in the detection of other types of B-cell tumors. It is made up of the monoclonal antibody ibritumomab plus the radioisotope indium 111. It binds to the protein called CD20, which is found on B cells. A machine is used to detect which cells in the body have bound the antibody. In 111 ibritumomab tiuxetan is a type of radiopharmaceutical. Also called In 111 Zevalin and indium In 111 ibritumomab tiuxetan.

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**In silico:** Refers to experiments and/or studies performed with a computer. OR Literally "within silicon" refers to modeling research conducted with computers only

**in situ:** from Latin, meaning "in place."

**in situ :** In its original place. For example, in carcinoma in situ, abnormal cells are found only in the place where they first formed. They have not spread.

**In situ hybridization:** A technique in which cells are immobilized and their DNA is denatured and then hybridized to radioactive RNA probes; these hybrids are then detected by autoradiography.

**In situ leach:** A process using a solution called lixiviant to extract uranium from underground ore bodies in place (in other words, in situ). Lixiviant, which typically contains an oxidant such as oxygen and/or hydrogen peroxide mixed with sodium carbonate or carbon dioxide, is injected through wells into the ore body in a confined aquifer to dissolve the uranium. This solution is then pumped via other wells to the surface for processing. For additional detail, see In Situ Recovery Facilities.

**In situ recovery (ISR):** One of the two primary recovery methods that are currently used to extract uranium from ore bodies where they are normally found underground (in other words, in situ), without physical excavation. Also known as "solution mining" or in situ leaching. For additional detail, see In Situ Recovery Facilities.

**in vitro:** A term applied to any study carried out in isolation from the living organism in an experimental system ('in a test tube'). OR Refers to experiments and/or studies performed with isolated macromolecules, cells, or tissue samples. OR From the Latin for "in glass," isolated from the living organism and artificially maintained, as in a test tube. OR "In glass"; that is, in the test tube.

**in vitro :** In the laboratory (outside the body). The opposite of in vivo (in the body).

**in vitro fertilization :** A procedure in which eggs are removed from a woman's ovary and combined with sperm outside the body to form embryos. The embryos are grown in the laboratory for several days and then either placed in a woman's uterus or cryopreserved (frozen) for future use.

**in vivo:** The term used in contrast with 'in vitro' describing any study carried out within the living organism. OR Refers to experiments and/or studies performed with live animals or humans. OR From the Latin for "in one that is living," occurring within the living. OR "In life"; that is, in the living cell or organism. OR In the body. The opposite of in vitro (outside the body or in the laboratory).

**In-Run :** The length of belt from the load point to point tangent to the cage of a spiral system or turn of a fixed turn conveyor. Also known as infeed.

**in-transit metastasis :** A type of metastasis in which skin cancer spreads through a lymph vessel and begins to grow more than 2 centimeters away from the primary tumor but before it reaches the nearest lymph node.

**inactivated poliovirus vaccine:** A vaccine consisting of inactivated poliovirus (IPV) types 1,2 and 3, with active immunizing activity against poliomyelitis. Upon intramuscular vaccination, inactivated poliovirus vaccine (IPV) activates the immune system to develop antibodies against polioviruses.

**inalimarev:** A cancer vaccine comprised of a recombinant vaccinia viral vector encoding the carcinoembryonic antigen (CEA), MUC-1 (mucin-1), a transmembrane glycoprotein secreted by glandular tissues, and TRICOM, comprised of the three co-stimulatory molecule transgenes B7-1, ICAM-1 and LFA-3. Upon administration, inalimarev may enhance CEA and MUC-1 presentation to antigen presenting cells (APC) and may activate a cytotoxic T lymphocyte (CTL) response against CEA- and MUC-1-expressing tumor cells.

**inalimarev :** A cancer vaccine made with a form of vaccinia virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins, including the tumor markers called CEA and MUC-1, that may help immune cells in the body kill tumor cells. Also called PANVAC-V and recombinant vaccinia-CEA-MUC-1-TRICOM vaccine.

**Inapsine:** (Other name for: droperidol)

**Incel:** (Other name for: biricodar dicitrate)

**incidence:** The number of instances of illness commencing, or of persons falling ill, during a given period in a specific population. Incidence is usually expressed as a rate, the denominator being the average number of

persons in the specified population during a defined period or the estimated number of persons at the mid-point of that period. The basic distinction between incidence and prevalence is that whereas incidence refers only to new cases, prevalence refers to all cases, irrespective of whether they are new or old. When the terms incidence and prevalence are used, it should be stated clearly whether the data represent the numbers of instances of the disease recorded or the numbers of persons ill (WHO, 1966).

**incidence :** The number of new cases of a disease diagnosed each year.

**incidence rate:** The rate at which new events occur in a population. The numerator is the number of new events that occur in a defined period; the denominator is the population at risk of experiencing the event during this period, sometimes expressed as person-time. The incidence rate most often used in public health practice is calculated by the formula

**Incident response (IR):** Activities that address the short-term, direct effects of a natural or human-caused event and require an emergency response to protect life or property. For detail, see Emergency Preparedness and Response and the NRC Incident Response Plan (NUREG-0728) .

**incineration:** the combustion of organic matter in wastewater sludge solids after water evaporation from the solids. OR Burning of wastes under controlled high temperatures and oxygen levels that results in their complete combustion; not the same as burning leaves in the back yard or wood in the fireplace.

**incised meander:** a steep-walled canyon that results from the down-cutting of a meandering stream.

**incision :** A cut made in the body to perform surgery.

**incisional biopsy :** A surgical procedure in which a portion of a lump or suspicious area is removed for diagnosis. The tissue is then examined under a microscope to check for signs of disease.

**Incivek:** (Other name for: telaprevir)

**inclinometer:** a device on a compass used to measure dip angle.

**inclusion:** a rock fragment enclosed within an intrusive rock unit.

**incomplete combustion:** Incomplete combustion is the burning of a substance in a limited supply of air or oxygen. OR A combustion reaction or process that does not convert all of the fuel's carbon and hydrogen into

carbon dioxide and water, respectively. For example, incomplete combustion of carbon produces carbon monoxide.

**incomplete dominance:** an allele combination in which two characteristics blend and both alleles can express themselves; one example is red, white, and pink snapdragons.

**incomplete Freund's adjuvant:** A water-in-oil emulsion that stimulates the T-cell immune response to antigens and may be used in various types of cancer vaccines. A mixture of oil and water that is combined with a specific antigen to boost the immune response to that antigen. It is being studied in immunotherapy and as a way to increase the immune response to cancer vaccines. It is a type of immune modulator. Also called IFA and Montanide ISA-51.

**incomplete octet:** 1. An atom with less than eight electrons in its valence shell. 2. An atom with less than eight total bonding and nonbonding electrons in a Lewis structure, for example, B in  $BH_3$  has an incomplete octet.

**inconclusive :** A negative test result in an individual where a clearly deleterious mutation has not been found in any family members. The genetic risk status of such an individual must be interpreted in the context of his or her personal and family history. Also called indeterminate and uninformative.

**incontinence :** Inability to control the flow of urine from the bladder (urinary incontinence) or the escape of stool from the rectum (fecal incontinence).

**incretin:** any substance/hormone that induces insulin release from the pancreas in response to food intake

**incubated :** Grown in the laboratory under controlled conditions. For example, white blood cells can be grown in special conditions so that they attack specific cancer cells when returned to the body.

**incyclinide:** A chemically-modified tetracycline with potential antineoplastic activity. Incyclinide inhibits matrix metalloproteinases (MMPs), thereby inducing extracellular matrix degradation, and inhibiting angiogenesis, tumor growth and invasion, and metastasis. This agent also causes mitochondrial depolarization in tumor cells and induces both cellular apoptosis and tissue necrosis.

**IND:** A substance that has been tested in the laboratory and has been approved by the U.S. Food and Drug Administration (FDA) for testing in people. Clinical trials test how well INDs work and whether they are safe to use. An IND may be approved by the FDA for use in one disease or condition but still be considered investigational in other diseases or conditions. Also called experimental drug, investigational agent, investigational drug, and investigational new drug.

**indefinite pronouns:** (all, any, he, she, it, and so on) stand in for nouns but do not specify the persons or things to which they refer.

**Indented label panel:** when the diameter of the label panel area on a bottle is smaller than the diameter of the bottle immediately above and below the label panel area.

**independent clause:** a clause that contains a subject and a predicate, expresses a complete thought, and can stand alone as a sentence.

**Independent molecule:** A term used to describe the unique, non-symmetry-related molecules in a unit cell.

**Independent spent fuel storage installation (ISFSI):** A complex designed and constructed for the interim storage of spent nuclear fuel; solid, reactor-related, greater than Class C waste; and other associated radioactive materials. A spent fuel storage facility may be considered independent, even if it is located on the site of another NRC-licensed facility. For further information, see Storage of Spent Nuclear Fuel and Locations of Independent Spent Fuel Storage Installations.

**independent variable:** An independent variable that can be set to a known value in an experiment. Several independent variables may be controlled in an experiment. For example, in an experiment where the vapor pressure of a liquid is measured at several different temperatures, temperature is the independent variable and vapor pressure is the dependent variable.

**Inderal :** A drug used to treat high blood pressure, including before surgery for pheochromocytoma, and to treat chest pain (angina), abnormal heartbeat (arrhythmia), and several other conditions. It is also being studied in the treatment of other conditions and types of cancer. Inderal blocks certain receptors on nerve cells and causes blood vessels to relax and dilate (widen). This allows blood to flow more easily and lowers blood pressure and heart rate. Inderal contains the active ingredient propranolol hydrochloride. It is a type of beta blocker.

**indeterminate** : A negative test result in an individual where a clearly deleterious mutation has not been found in any family members. The genetic risk status of such an individual must be interpreted in the context of his or her personal and family history. Also called inconclusive and uninformative.

**index case** : A clinically affected individual through whom attention is first drawn to a genetic disorder in a family.

**index fossil**: a fossil of an organism that occurred for a short amount of time and over a widespread area; used to connect rock layers over long distances. OR a fossil of those species that lived only during a restricted period and that identifies the narrow time range during which the host rock could have formed.

**Indian cress** : Parts of the flowering plant have been used in some cultures to treat certain medical problems. It may have anticancer effects. The scientific name is *Nasturtium officinale*. Also called watercress.

**Indian elm** : The inner bark of this plant has been used in some cultures to treat certain medical problems. It may have antioxidant effects. Also called gray elm, red elm, slippery elm, sweet elm, *Ulmus fulva*, and *Ulmus rubra*.

**Indian rhubarb** : The root of this plant has been used in some cultures to treat certain medical problems. It may have anti-inflammatory and anticancer effects. The scientific name is *Rheum palmatum* or *Rheum officinale*. Also called Chinese rhubarb, da-huang, rhubarb, and Turkish rhubarb.

**Indian saffron** : An East Indian plant that is a member of the ginger family and is used as a spice and food color. The underground stems are used in some cultures to treat certain stomach problems. The substance in Indian saffron that gives it a yellow color (curcumin) is being studied in the treatment of cancer, Alzheimer disease, cystic fibrosis, and psoriasis. The scientific name is *Curcuma longa*. Also called jiang huang and turmeric.

**Indian valerian** : A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden heliotrope, garden valerian, Mexican valerian, Pacific valerian, valerian, *Valeriana officinalis*, and *Valeriana radix*.

**indibulin:** A synthetic small molecule with antimitotic and potential antineoplastic activities. Indibulin binds to a site on tubulin that is different from taxane- or Vinca alkaloid-binding sites, destabilizing tubulin polymerization and inducing tumor cell cycle arrest and apoptosis. This agent has been shown to be active against multidrug-resistant (MDR) and taxane-resistant tumor cell lines.

**indication :** In medicine, a sign, symptom, or medical condition that leads to the recommendation of a treatment, test, or procedure.

**indicative:** refers to a mood of the verb that is used in most statements and questions.

**indicator:** a compound that changes color at a particular pH, or over a particular narrow range of pH, used to show titration end points. OR A substance used to indicate the end point of a titration by a change in color. OR A substance that undergoes a sharp, easily observable change when conditions in its solutions change. See, for example, acid-base indicator and redox indicator. OR A substance which takes on a different colour dependin on the pH of a solution.

**indicator diagram:** A plot of pressure vs. volume. Lines or curves on the indicator diagram represent processes. The areas under curves on the indicator diagram are equal to the work released by the process.

**Indicatrix:** A structural representation, portrayed as an ellipsoid, of the magnitudes and directions of the O and E rays within a crystal.

**indicine-N-oxide:** A natural pyrrolizidine alkaloid with antineoplastic properties. Indicine-N-oxide alkylates and crosslinks DNA.

**indinavir :** A drug that interferes with the ability of a virus to make copies of itself.

**indinavir sulfate:** A synthetic antiviral agent. Indinavir selectively binds to the active site of human immunodeficiency virus (HIV) protease and inhibits its activity, preventing the protease-mediated cleavage of gag-pol viral polyproteins; as a result immature, noninfectious virions are produced.

**indirect bilirubin:** when bilirubin is not conjugated to glucuronate the measurement of this form of bilirubin requires the addition of alcohol to promote the azotization reaction used for determining bilirubin concentration

**Indirect method:** This is used to compare study populations for which the specific rates are either statistically unstable or unknown. The specific rates in the standard population are averaged, using as weights the distribution of the study population. The ratio of the crude rate for the study population to the weighted average so obtained is the standardized mortality (or morbidity) ratio, or SMR. The indirectly standardized rate itself is the product of the SMR and the crude rate for the standard population (Last, 1988).

**indirect object:** tells to or for whom an action is done, although the words to and for are not used; it is used with a transitive verb and precedes the direct object.

**indirect ophthalmoscopy :** An exam of the inside of the back of the eye using a beam of light and a hand-held lens. Indirect ophthalmoscopy gives a wider view inside the eye than an exam using an ophthalmoscope does.

**indirect question:** a question that is being reported rather than asked and ends with a period rather than a question mark.

**Indium:** Symbol:"In" Atomic Number:"49" Atomic Mass: 114.82amu. It is classified as a basic metal. This metal is a lot like zinc. It is a soft, silvery metal used in electronics and mirrors. One interesting note is that there are more isotopes of indium than any other element.

**Indium 111 ProstaScint:** (Other name for: indium In 111 capromab pendetide)

**indium In 111 anti-CD45 monoclonal antibody BC8:** A radioimmunoconjugate containing the murine IgG1 anti-CD45 monoclonal antibody (MoAb) BC8 labeled with the gamma-emitting isotope indium 111 (In 111), with potential radioimaging application. Upon administration, indium In 111 anti-CD45 monoclonal antibody BC8 binds to CD45 antigen, a receptor protein tyrosine phosphatase expressed on the surface of most of the normal and malignant hematopoietic cells. After binding and internalization by CD45-expressing tumor cells, radioactive In 111 allows for the detection of BC8 distribution and tumor localization using gamma scintigraphy.

**indium In 111 anti-CEA monoclonal antibody M5A :** A substance being studied in the imaging of some types of cancer. M5A is a monoclonal antibody that binds to a protein called CEA on the surface of some tumor cells. It is linked to a radioisotope called indium In 111. The combined

substance is injected into the blood, and a machine is used to find cells in the body that bind to it. Indium In 111 anti-CEA monoclonal antibody M5A is a type of radioimmunoconjugate.

**indium In 111 anti-EGFR monoclonal antibody ABT-806:** A radioimmunoconjugate composed of a humanized monoclonal antibody IgG1 directed against the epidermal growth factor receptor (EGFR) and labeled with the radioisotope indium In 111, with potential radioimaging activity. Indium In 111 anti-EGFR monoclonal antibody ABT-806 binds to a specific epitope of either wild-type or EGFR variant III mutant on tumor cells, thereby allowing imaging of EGFR-expressing tumor cells using gamma scintigraphy. ABT-806 is the humanized version derived from the predecessor chimeric monoclonal antibody 806. EGFR, a receptor tyrosine kinase overexpressed on the cell surfaces of many tumor cell types, plays a key role in tumor cell proliferation. Check for active clinical trials using this agent.

**indium In 111 bevacizumab:** A radioimmunoconjugate comprised of the recombinant humanized monoclonal antibody bevacizumab conjugated with the gamma-emitting radioisotope indium In 111. Indium I 111 bevacizumab binds to vascular endothelial growth factor (VEGF), allowing the detection of VEGF distribution using gamma scintigraphy. Check for active clinical trials using this agent.

**indium In 111 capromab pendetide:** A radioimmunoconjugate consisting of the murine IgG1 kappa monoclonal antibody capromab (7E11-C5.3), conjugated to the linker-chelator glycyl-tyrosyl-(N,-diethylenetriaminepentaacetic acid)-lysine hydrochloride (GYK-DTPA-HCl) and labeled with radioisotope indium In 111, with ligand-binding and gamma-emitting activities. Upon intravenous administration, indium In 111-capromab pendetide binds to a cytoplasmic epitope of human prostate specific membrane antigen (PSMA) expressed on prostate tumor cell surfaces via its capromab moiety and, upon internalization, allows radioimmunolocalization with gamma scintigraphy. PSMA is a cell surface glycoprotein abundantly expressed by prostate epithelium and is typically overexpressed by prostate cancer cells.

**indium In 111 chimeric monoclonal antibody 806:** A recombinant chimeric, mouse-human monoclonal antibody IgG1, directed against the epidermal growth factor receptor (EGFR) and labeled with the radioisotope

indium-111, with potential radioimaging activity. Indium 111 chimeric monoclonal antibody 806 binds to a specific epitope on EGFR-expressing tumor cells, allowing imaging of EGFR-expressing tumor cells using gamma scintigraphy. EGFR is a receptor tyrosine kinase that is involved in the regulation of cell growth and is found to be overexpressed on the cell surfaces of many tumor cell types.

**indium In 111 CHX-A DTPA trastuzumab:** An indium I 111-labeled trastuzumab with potential use as an imaging agent. Indium In 111 CHX-A DTPA trastuzumab is chemically conjugated via a bifunctional metal chelator molecule, 2-(p-isothiocyanatobenzyl)-cyclohexyl-diethylenetriaminepentaacetic acid (CHX-A DTPA), a backbone-substituted derivative of DTPA. This agent may allow radioimmunolocalization of HER2-positive cells. Trastuzumab, a recombinant humanized monoclonal antibody that selectively binds with high affinity to the extracellular domain of human epidermal growth factor receptor 2 (HER2), may elicit an antibody-dependent cellular cytotoxicity (ADCC) against tumor cells that overexpress HER2.

**indium In 111 CHX-A DTPA trastuzumab :** A substance being studied in the imaging of breast cancer and some other types of cancer. It is made by attaching a radioactive substance called indium 111 to the monoclonal antibody trastuzumab (Herceptin). Trastuzumab binds to the human growth factor receptor 2 (HER2/neu) on some breast cancer cells and on several other types of cancer cells. Indium In 111 CHX-A DTPA trastuzumab is a type of radioimmunoconjugate.

**indium In 111 ibritumomab tiuxetan:** A targeted radioimmunoconjugate composed of a murine monoclonal anti-CD20 antibody (ibritumomab) linked by a chelator (tiuxetan) to the imaging radioisotope indium-111. This radioimmunoconjugate binds to CD20-positive cells, permitting radioimmuno-localization of CD20-positive cell biodistribution. or A radiolabeled monoclonal antibody that is used to detect certain types of B-cell non-Hodgkin lymphoma and is being studied in the detection of other types of B-cell tumors. It is made up of the monoclonal antibody ibritumomab plus the radioisotope indium 111. It binds to the protein called CD20, which is found on B cells. A machine is used to detect which cells in the body have bound the antibody. Indium In 111 ibritumomab tiuxetan is a

type of radiopharmaceutical. Also called In 111 ibritumomab tiuxetan and In 111 Zevalin.

**indium In 111 monoclonal antibody BrE-3:** A humanized monoclonal antibody conjugated to the imaging radioisotope (indium-111). This radioimmunoconjugate binds to the breast epithelial mucin antigen, which is found primarily on breast cancer cells, permitting radioimmuno-localization of mucin-positive tumor cells and an estimate of radiation dosimetry prior to administration of cytotoxic radiotherapy.

**indium In 111 monoclonal antibody huPAM4:** The humanized monoclonal antibody huPAM4, directed against the pancreatic cancer antigen MUC-1 and radiolabeled with the gamma-emitting radioisotope indium I 111, with radioisotopic and antibody activities. Upon administration, indium In 111 monoclonal antibody huPAM4 may bind to MUC-1-positive tumor cells, allowing radioimmunolocalization with gamma scintigraphy. Overexpressed by many tumor cell types, MUC-1 antigen, a mammary-type apomucin, is a high-molecular-weight transmembrane glycoprotein.

**indium In 111 pentetate:** A sterile, non-pyrogenic, isotonic solution of radioactive indium In 111 diethylenetriamine pentaacetate (DTPA). When administered intrathecally, indium In 111 pentetate percolates up the spinal canal with the cerebrospinal fluid (CSF) to the basal cisterns of the posterior and middle cranial fossas. This agent is used in radionuclide cisternography to image the flow of CSF, for the identification of abnormalities in CSF circulation, for location of sites of CSF leakage, and for evaluation of CSF shunt patency. Normally, this agent does not penetrate into the brain ventricles.

**indium In 111 pentetreotide:** An indium 111 radioconjugate of pentetreotide, the diethylenetriaminopentaacetic (DTPA) conjugate of the human hormone somatostatin peptide analogue (octreotide), used for radioimaging neuroendocrine tumor cells. The pentetreotide moiety of indium In 111 pentetreotide binds to somatostatin receptors (SSTRs), especially type 2 receptors, present on the cell membranes of many types of neuroendocrine tumor cells. Upon binding and internalization, this radioconjugate allows for specific imaging of neuroendocrine tumors that overexpress somatostatin using scintigraphic imaging techniques. In addition, high dose indium In 111 pentetreotide may specifically deliver a

cytotoxic dose of gamma radiation to SSTR-positive cells thereby killing SSTR-expressing tumor cells. or An anticancer drug belonging to a family of drugs called radiopharmaceuticals.

**indium In 111 pertuzumab:** A radioimmunoconjugate composed of a humanized recombinant monoclonal antibody directed against the extracellular dimerization domain of the tyrosine kinase receptor human epidermal growth factor-2 (HER-2) and linked to the gamma-emitting radioisotope indium In 111, with potential use in radioimaging. Upon administration, indium In 111 pertuzumab binds to HER-2. After binding and internalization into HER-2-expressing tumor cells, radioactive In 111 facilitates the detection of HER-2-expressing tumor cells using single photon emission computed tomography (SPECT). This may predict or evaluate the tumor's response to certain HER-2-targeting chemotherapeutics.

**indium In 111-CMD-193:** A radiolabeled antibody-targeted antineoplastic antibiotic consisting of the enediyne antibiotic calicheamicin conjugated with anti-Lewis Y antibody and labeled with indium In 111. In 111 CMD-193 binds to Lewis Y antigen-expressing tumor cells via its antibody moiety and is internalized; subsequently, the calicheamicin moiety binds to the minor groove of tumor cell DNA, causing double-strand DNA breaks, the inhibition of DNA synthesis, and apoptosis. The indium In 111 radiolabel allows the detection of CMD-193 distribution and tumor localization using gamma scintigraphy.

**indium In 111-DOTA-biotin:** A radioimmunoconjugate of biotin conjugated with the bifunctional, macrocyclic chelating agent tetraazacyclododecanetetra-acetic acid (DOTA) and labeled with indium 111 (In-111). Biotin is a water-soluble B-complex vitamin, present in minute amounts in every living cell, while its level in cancerous tissue is higher than that of normal tissue. In 111-DOTA-Biotin could be used in 3-step pre-targeting radioimmunotherapy that employs tumor targeting antibody conjugated with streptavidin, the natural ligand of biotin. Check for active clinical trials using this agent.

**indium In 111-DOTA-exendin-4:** A radiopharmaceutical composed of the glucagon-like peptide 1 receptor (GLP-1R) agonist exendin-4 linked by the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) to the positron-emitting radionuclide indium In 111, with

potential use in diagnostic imaging upon positron emission tomography (PET). Upon administration of indium In 111-DOTA-exendin-4, the exendin-4 moiety binds to GLP-1R and is subsequently internalized. The radionuclide moiety can be detected using PET and GLP-1R-expressing tumors can be localized. GLP-1R, located on beta cells, is overexpressed on insulinomas, which are insulin-secreting neuroendocrine tumors.

**indium In 111-DOTA-girentuximab:** A radioimmunoconjugate comprised of the chimeric monoclonal antibody girentuximab conjugated with the gamma-emitting radioisotope indium In 111. Indium In 111-DOTA-girentuximab binds to G250, allowing the localization of G250-expressing tumor cells using gamma scintigraphy. Found in the majority of renal cell carcinomas (RCCs), G250 or carbonic anhydrase isozyme IX (CA IX) is a cell surface tumor-associated antigen (TAA).

**indium In 111-labeled autologous peripheral blood mononuclear cells:** A preparation of autologous peripheral blood mononuclear cells (PBMCs) radiolabeled with indium In 111 with radioisotopic activity. Autologous PBMCs are isolated, expanded ex vivo, radiolabeled with indium In 111, and then infused back into the patient. Gamma scintigraphy may then be used to image gamma ray-emitting indium In 111 PBMCs localized in lymphoma tissue.

**indium In 111-labeled autologous polymorphonuclear leukocytes:** A preparation of autologous peripheral polymorphonuclear (PMNLs) radiolabeled with indium In 111 with radioisotopic activity. Autologous PMNLs are isolated, expanded ex vivo, radiolabeled with indium In 111, and then infused back into the patient. Gamma scintigraphy may then be used to image gamma ray-emitting indium In 111 PMNLs localized in lymphoma tissue.

**indium In-111-DOTA-di-HSG peptide IMP-288:** A radiolabeled divalent histamine-succinyl-glycine (HSG) hapten-peptide linked with the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) to the radionuclide indium (In) 111. After pretargeting with a bispecific monoclonal antibody (BiMoAB) directed against both a tumor associated antigen (TAA) and the HSG hapten-peptide, the HSG portion of administered indium-In-labeled di-HSG-DOTA peptide IMP-288 binds the anti-HSG portion of the BiMoAB; In-111 radioisotopic activity localized to

tumor cells bearing the TAA can then be visualized scintigraphically. Check for active clinical trials using this agent.

**Individual plant examination (IPE):** As requested by the NRC in Generic Letter 88-20, "Individual Plant Examination for Severe Accident Vulnerabilities" (November 23, 1988), a risk analysis that considers the unique aspects of a particular nuclear power plant, identifying the specific vulnerabilities to severe accident of that plant.

**Individual plant examination for external events (IPEEE):** While the "individual plant examination" takes into account events that could challenge the design from things that could go awry internally (in the sense that equipment might fail because components do not work as expected), the "individual plant examination for external events" considers challenges such as earthquakes, internal fires, and high winds.

**individualized education plan :** An education plan for children with certain disabilities or health conditions, such as cancer. By law, these children must receive special education services and other support they need in school. An individualized education plan describes which special services the child needs and how those needs will be met. This may include special class placement, extra help with class assignments and tests, tutoring, and other services such as counseling, speech therapy, and physical therapy. Individualized education plans are covered in the U.S. law, Individuals with Disabilities Education Act. Also called IEP.

**Individually Quick Frozen:** Freezes bagged meat or vegetables rapidly by exposing it to blast of air at approximately -40° F.

**Indocin:** (Other name for: indomethacin)

**indocyanine green solution:** A sterile solution of a nontoxic tricarboyanine dye with a peak spectral absorption at 790 nm, used for determining cardiac output, hepatic function, and liver blood flow, as well as for ophthalmic angiography. Designed to be administered intravenously, indocyanine green solution (ICG) contains less than 5% sodium iodide. Upon intravenous injection, ICG rapidly binds to its principle carrier, plasma protein, and is thereby confined to the vascular space. This agent, with a half-life of 150 to 180 seconds, is removed exclusively by the liver from circulation to bile juice. Furthermore, due to poor uptake, ICG is not suitable for angiography or functional output analysis of kidney, lung, cerebro-spinal, or peripheral tissues.

**indocyanine green/albumin solution:** A solution containing a non-toxic, fluorescent tricarbo-cyanine dye with a peak spectral absorption at 790 nm bound to the plasma protein albumin, that may be used in sentinel node mapping using a near infrared (NIR) imaging system. Upon injection of the indocyanine green (ICG)/albumin solution around the tumor, the ICG/albumin complex, travels through the vascular system. Using a NIR imaging system, the ICG, which emits light in the NIR range, permits the visualization of sentinel nodes and may help in cancer staging. Check for active clinical trials using this agent.

**indole :** A type of chemical found in plants and in certain vegetables, such as broccoli, cabbage, and cauliflower. Indoles may promote good health and are being studied in the prevention of certain types of cancer, including breast cancer, prostate cancer, and colon cancer. An indole is a type of phytochemical.

**indole-3-carbinol:** A naturally occurring, orally available cleavage product of the glucosinolate glucobrassicin, a natural compound present in a wide variety of plant food substances including members of the family Cruciferae with antioxidant and potential chemopreventive properties. Indole-3-carbinol scavenges free radicals and induces various hepatic cytochrome P450 monooxygenases. Specifically, this agent induces the hepatic monooxygenase cytochrome P4501A1 (CYP1A1), resulting in increased 2-hydroxylation of estrogens and increased production of the chemoprotective estrogen 2-hydroxyestrone. or A substance that is being studied as a cancer prevention drug. It is found in cruciferous vegetables.

**indole-3-carbinol/calcium/Schizandra/vitamin D3/milk thistle/stinging nettle/lignan-based nutritional capsule:** An orally available capsule-based nutritional supplement containing indole-3-carbinol, calcium-D-glucarate, Schizandra, vitamin D3, milk thistle, stinging nettle and hydroxymatairesinol (HMR) lignans, with potential estrogen modulating, antiproliferative and antioxidant activity. Indole-3-carbinol, found in vegetables of the Cruciferae family, may inhibit mammary cell growth and exerts antiestrogenic activity; Milk thistle (*Silybum marianum*) and Schizandra chinensis may enhance some of the phase II detoxification enzymes; calcium-D-glucarate and vitamin D3 may inhibit mammary cell growth; stinging nettle may exert its effect through its aromatase inhibiting activity; HMR lignans may have a beneficial effect on estrogen balance and

levels. Therefore, ingredients in indole-3-carbinol/calcium/Schizandra/vitamin D3/milk thistle/stinging nettle/lignan-based nutritional capsule may alter estrogen balance and may protect against mammary carcinogenesis.

**indoleamine 2,3-dioxygenase peptide vaccine:** A peptide vaccine against the immunomodulatory enzyme indoleamine 2,3-dioxygenase (IDO), with potential immunomodulating and antineoplastic activities. Vaccination with indoleamine 2,3-dioxygenase peptide vaccine may activate the immune system to induce an immune response against IDO-expressing cells. This may increase and restore the proliferation and activation of various immune cells, including dendritic cells (DCs), natural killer (NK) cells, and T-lymphocytes, and may eradicate IDO-expressing tumor cells. IDO, a cytosolic enzyme responsible for tryptophan catabolism and conversion of tryptophan into kynurenine, is overexpressed by a variety of tumor cell types and antigen presenting cells (APCs) and plays an important role in immunosuppression; tryptophan depletion inhibits T-lymphocyte proliferation and activation, and suppresses the immune system. Check for active clinical trials using this agent.

**indolent :** A type of cancer that grows slowly.

**indolent lymphoma :** A type of lymphoma that tends to grow and spread slowly, and has few symptoms. Also called low-grade lymphoma.

**indomethacin:** A synthetic nonsteroidal indole derivative with anti-inflammatory activity and chemopreventive properties. As a nonsteroidal anti-inflammatory drug (NSAID), indomethacin inhibits the enzyme cyclooxygenase, thereby preventing cyclooxygenase-mediated DNA adduct formation by heterocyclic aromatic amines. This agent also may inhibit the expression of multidrug-resistant protein type 1, resulting in increased efficacies of some antineoplastic agents in treating multi-drug resistant tumors. In addition, indomethacin activates phosphatases that inhibit the migration and proliferation of cancer cells and downregulates survivin, which may result in tumor cell apoptosis. or A drug that reduces pain, fever, swelling, and redness. It is also being used to reduce tumor-induced suppression of the immune system and to increase the effectiveness of anticancer drugs. It is a type of nonsteroidal anti-inflammatory drug (NSAID).

**indoximod:** A methylated tryptophan with immune checkpoint inhibitory activity. Indoximod inhibits the enzyme indoleamine 2,3-dioxygenase (IDO), which degrades the essential amino acid tryptophan, and may increase or maintain tryptophan levels important to T cell function. Tryptophan depletion is associated with immunosuppression involving T cell arrest and anergy. Check for active clinical trials using this agent.

**Induced Dipole Interactions:** A charge or a dipole can induce a dipole in another molecule. Induced dipole interactions refer to interactions between a charge or a dipole and an induced dipole.

**Induced fit:** A change in the shape of an enzyme that results from the binding of substrate. OR The modification of the shape of an active site in an enzyme after the substrate is bound. OR A change in the conformation of an enzyme in response to substrate binding that renders the enzyme catalytically active; also used to denote changes in the conformation of any macromolecule in response to ligand binding such that the binding site of the macromolecule better conforms to the shape of the ligand.

**Induced radioactivity:** Radioactivity that is created when stable substances are bombarded by ionizing radiation. For example, the stable isotope cobalt-59 becomes the radioactive isotope cobalt-60 under neutron bombardment.

**Inducer:** A small molecule that binds to a repressor and alters its interaction with an operator. OR A signal molecule that, when bound to a regulatory protein, produces an increase in the expression of a given gene. OR Molecules that cause an increase in a protein activity when added to cells.

**inducible CD4+CD25+ regulatory T cells:** Inducible regulatory T-lymphocytes that express CD4, CD25 (the alpha chain of the interleukin 2 receptor) and forkhead box P3 (FOXP3), with potential immunomodulating activity. Inducible CD4+CD25+ T regulatory cells (iTregs) are a subset of CD4+ T lymphocytes that are induced from CD25- precursors in peripheral lymphoid organs with interleukin-2 and transforming growth factor-beta. These regulatory T cells are essential in maintaining immunologic homeostasis. They may also prevent autoimmunity by suppressing self-reactive T cells, and may induce tolerance to allogeneic organ transplants such as in hematopoietic stem cell transplants.

**Inducible proteins:** Those which are synthesized in different amounts depending on cellular signals.

**induction:** An increase in the expression of a gene in response to a change in the activity of a regulatory protein.

**induction therapy :** The first treatment given for a disease. It is often part of a standard set of treatments, such as surgery followed by chemotherapy and radiation. When used by itself, induction therapy is the one accepted as the best treatment. If it doesn't cure the disease or it causes severe side effects, other treatment may be added or used instead. Also called first-line therapy, primary therapy, and primary treatment.

**Induction Welding:** A type of welding in which coalescence is achieved by heat derived from the work's resistance to an induced electric current, either with or without applied pressure.

**inductive effect:** the electron donating or electron withdrawing effect that is transmitted through  $\sigma$  bonds. It can also be defined as the ability of an alkyl group to "push" electrons away from itself. The inductive effect gives stability to carbocations and makes tertiary carbocations the most stable. OR An inductive effect is the polarization of a chemical bond caused by the polarization of an adjacent bond. (Field effects are polarization caused by nonadjacent bonds).

**Industrial chemists:** What is the difference between an industrial chemist and a chemical engineer? While a chemical engineer is concerned with moving lots of chemicals around and ensuring reactors do what they're supposed to, industrial chemists are more like real chemists and busy themselves with the reactions that are going on, trying to optimise how much of an industrial product is made and how quickly it is made.

**inecalcitol:** An analog of calcitriol and a vitamin D3 receptor (VDR) agonist, with potential antineoplastic activity. Upon administration, inecalcitol targets and binds to VDR. This activates VDR and VDR-mediated signal transduction pathways. This modulates the VDR-mediated expression of certain genes, including the expression of anti-cancer genes, enhances cellular differentiation, induces tumor cell apoptosis and inhibits tumor cell growth. VDR plays a central role in calcium homeostasis and in the growth of certain cancer cells.

**Inert:** deficient in active properties; not affecting other substances when in contact with them such as inert gases not participating in any fashion in

chemical reactions. Infrared the band of light in the electromagnetic spectrum that lies between the visible light range and the radar range. OR The word inert is used to describe the elements in group eight. They all have enough electrons to fill their outer shell. It is the column where Helium is at the top. Inert gases are very non-reactive. OR 'Inert' means unreactive.

**inert gas:** Any of the elements of Group 18, which includes helium, neon, argon, krypton, xenon, radon, and element 118. These elements are referred to as "inert" or "noble" because they do not easily form compounds with other elements.

**inert gases:** the column of elements from helium to radon; also called noble gases.

**inert pair:** Valence electrons in an s orbital penetrate to the nucleus better than electrons in p orbitals, and as a result they're more tightly bound to the nucleus and less able to participate in bond formation. A pair of such electrons is called an "inert pair". The inert pair effect explains why common ions of Pb are  $Pb^{4+}$  and  $Pb^{2+}$ , and not just  $Pb^{4+}$  as we might expect from the octet rule.

**Inert pigments:** Materials which are resistant to attack by chemicals normally encountered in the environment in which they will be used e.g. atmospheric pollution.

**inertia:** The tendency of a body to stay at rest or to continue to move at the same velocity, unless acted on by an outside force. A tractor trailer has more inertia than a bicycle. A bowling ball has more inertia than a tennis ball.

**Infanrix:** (Other name for: diphtheria toxoid/tetanus toxoid/acellular pertussis vaccine adsorbed)

**infantile genetic agranulocytosis :** An inherited disorder in which there is a lower-than-normal number of neutrophils (a type of white blood cell that is important in fighting infections). Infants with the disorder get infections caused by bacteria, and are at an increased risk of acute myelogenous leukemia (AML) or myelodysplasia (a bone marrow disorder). Also called congenital neutropenia, genetic infantile agranulocytosis, Kostmann disease, Kostmann neutropenia, and Kostmann syndrome.

**infantile hemangioma :** A benign (not cancer) blood vessel tumor that forms on the skin, in the tissue below the skin, or in an organ. Infantile

hemangiomas may be raised or flat and usually appear as bright red-blue lesions on the skin. They may sometimes be called a “strawberry mark”. They can occur anywhere on or in the body, but usually form on the skin of the head and neck. Infantile hemangiomas are not usually seen at birth but appear when the infant is 3 to 6 weeks old. They usually get bigger, then stop growing and slowly go away on their own. Infantile hemangiomas are the most common type of vascular tumor in children.

**infantile rickets :** A condition in children in which bones become soft and deformed because they don’t have enough calcium and phosphorus. It is caused by not having enough vitamin D in the diet or by not getting enough sunlight. In adults, this condition is called osteomalacia. Also called juvenile rickets, rachitis, and rickets.

**Infasurf Intratracheal Suspension:** (Other name for: calfactant)

**infection :** The invasion and growth of germs in the body. The germs may be bacteria, viruses, yeast, fungi, or other microorganisms. Infections can begin anywhere in the body and may spread all through it. An infection can cause fever and other health problems, depending on where it occurs in the body. When the body’s immune system is strong, it can often fight the germs and cure an infection. Some cancer treatments can weaken the immune system, which may lead to infection.

**inference:** an educated guess based on collected data.

**Infergen:** (Other name for: interferon alfacon-1)

**inferior vena cava :** A large vein that empties into the heart. It carries blood from the legs and feet and from organs in the abdomen and pelvis.

**infertile :** Unable to produce children.

**infertility :** The inability to produce children.

**infiltrating breast cancer :** Cancer that has spread from where it began in the breast to surrounding normal tissue. The most common type of infiltrating breast cancer is infiltrating ductal carcinoma, which begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple). Another type is infiltrating lobular carcinoma, which begins in the lobules (milk glands) of the breast. Infiltrating breast cancer can spread through the blood and lymph systems to other parts of the body. Also called invasive breast cancer.

**infiltrating cancer :** Cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues. Also called invasive cancer.

**infiltrating ductal carcinoma :** The most common type of infiltrating breast cancer. It begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple) and spreads outside the ducts to surrounding normal tissue. Infiltrating ductal carcinoma can also spread through the blood and lymph systems to other parts of the body. Also called invasive ductal carcinoma.

**infiltrating lobular carcinoma :** A type of invasive breast cancer that begins in the lobules (milk glands) of the breast and spreads to surrounding normal tissue. It can also spread through the blood and lymph systems to other parts of the body. Also called invasive lobular carcinoma.

**infiltration:** water sinking into the ground.

**infiltration (soil):** Movement of water from the ground surface into the soil.

**infinitive:** the base form of a verb with to, and that usually functions as a noun, although it can be an adjective or adverb.

**infinitive phrase:** a phrase containing an infinitive and its objects and modifiers; infinitive phrases usually function as nouns, although they can be used as adjectives and adverbs.

**Inflammation:** The body's reaction to noxious stimuli or foreign particles, resulting in swelling, redness, and pain

**inflammation :** Redness, swelling, pain, and/or a feeling of heat in an area of the body. This is a protective reaction to injury, disease, or irritation of the tissues.

**inflammatory :** Having to do with inflammation (redness, swelling, pain, and a feeling of heat that helps protect tissues affected by injury or disease).

**inflammatory bowel disease :** A general term that refers to the inflammation of the colon and rectum. Inflammatory bowel disease includes ulcerative colitis and Crohn disease.

**inflammatory breast cancer :** A type of breast cancer in which the breast looks red and swollen and feels warm. The skin of the breast may also show the pitted appearance called peau d'orange (like the skin of an orange). The

redness and warmth occur because the cancer cells block the lymph vessels in the skin.

**infiximab:** A recombinant chimeric, mouse-human monoclonal antibody directed against tumor necrosis factor alpha (TNF-alpha), a protein involved in inflammation, cell survival, and apoptosis. Infiximab may be pro- apoptotic or anti-apoptotic, depending on cell type. or A monoclonal antibody that blocks the action of a cytokine called tumor necrosis factor alfa. It is being studied in the treatment and prevention of weight loss and loss of appetite in patients with advanced cancer. It belongs to the family of drugs called monoclonal antibodies.

**influent:** sewage, water or other liquid, either raw or partly treated, flowing into a reservoir basin, or treatment plant or any part thereof.

**influenza A virus :** One of three types of virus that cause the illness called influenza (flu). The influenza A virus can infect people, birds, pigs, horses, and other animals. It is the main cause of most influenza epidemics.

**informational macromolecules:** Biomolecules containing information in the form of specific sequences of different monomers; for example, many proteins, lipids, polysaccharides, and nucleic acids.

**informative :** In genetic testing, a test result that reveals definitively the presence or absence of the germline genetic alteration associated with the hereditary disorder being assessed. In linkage analysis, the ability to distinguish between maternally inherited and paternally inherited DNA markers (polymorphisms) within or near a given gene of interest.

**informed consent :** A process of information exchange between a clinician and an individual or their legal proxy designed to facilitate autonomous, informed decision making. The informed consent process for genetic testing should include an explanation of the medical and psychosocial risks, benefits, limitations, and potential implications of genetic analysis, a discussion of privacy, confidentiality, the documentation and handling of genetic test results, as well as options for managing the hereditary disease risk. Also called consent process. or A process in which patients are given important information, including possible risks and benefits, about a medical procedure or treatment, a clinical trial, or genetic testing. This is to help them decide if they want to be treated, tested, or take part in the trial. Patients are also given any new information that might affect their decision to continue. Also called consent process.

**Infra-red:** Part of the electromagnetic spectrum between the visible light range and the radar range. Radiant heat is in this range, and infra-red heaters are used in sheet thermoforming.

**infrared coagulation :** A technique in which abnormal tissue is exposed to a burst of infrared light (a type of radiation). This causes blood in veins in the tissue to coagulate (harden) and the abnormal tissue to shrink. It is being studied in the prevention of anal cancer in some patients with HIV.

**infrared radiation:** Electromagnetic radiation lying in the wavelength interval from 0.7 micrometers to 1000 micrometers. Its lower limit is bounded by visible radiation, and its upper limit by microwave radiation. Most of the energy emitted by the Earth and its atmosphere is at infrared wavelength. Infrared radiation is generated almost entirely by large-scale intra- molecular processes. The tri-atomic gases, such as water vapor, carbon dioxide, and ozone, absorb infrared radiation and play important roles in the propagation of infra- red radiation in the atmosphere.

Abbreviated IR; also called "longwave radiation". OR Electromagnetic radiation with wavelength longer than visible light but shorter than that of microwaves. Infrared radiation is produced by hot objects; absorption of infrared radiation causes chemical bonds to vibrate.

**Infrared Spectroscopy:** Spectroscopic technique that deals with the infrared region of the electromagnetic spectrum. Used during the characterisation of molecules. OR A method of analysis that involves the absorption of infrared energy by the sample. The molecules that absorb the infrared energy are in an excited, vibrational state and the wavelengths of the various vibrations reveal structural details of the given molecules. OR a type of spectroscopy that provides structural information about a molecule, based on the molecule's interaction with energy from infrared light. OR A technique for determining the structure (and sometimes concentration) of molecules by observing how infrared radiation is absorbed by a sample.

**infrared thermography :** In medicine, a procedure in which an infrared camera (one that senses heat) is used to measure temperature differences on the surface of the body. The camera makes pictures that show areas of possible abnormal cell growth because abnormal tissue gives off more heat than normal tissue does.

**infratentorium :** The lower back part of the brain that contains the cerebellum and brain stem. Examples of tumors that form in the

infratentorium are medulloblastomas and brain stem gliomas.

**Infumorph:** (Other name for: morphine sulfate)

**infusion :** A method of putting fluids, including drugs, into the bloodstream. Also called intravenous infusion.

**ingenol derivative LEO 43204 gel:** A topical, aqueous gel formulation containing a derivative of ingenol, a selective small-molecule activator of protein kinase C (PKC) that is isolated from the sap of Euphorbia species, with the potential to treat preneoplastic skin lesions. Upon topical application of the ingenol derivative LEO 43204 gel, the agent presumably activates various PKC isoforms, which may induce apoptosis in abnormal cells found in severely sun-damaged skin with multiple actinic keratoses. This may decrease the number of actinic keratoses and prevent the development of skin neoplasms. The PKC family consists of signaling isoenzymes that regulate many cell processes, including proliferation, differentiation, and apoptosis.

**ingenol mebutate:** A selective small-molecule activator of protein kinase C (PKC) isolated from the plant Euphorbia peplus with potential antineoplastic activity. Ingenol mebutate (I3A) activates various protein kinase C (PKC) isoforms, thereby inducing apoptosis in some tumor cells, including myeloid leukemia cells, melanoma cells, and basal cell carcinoma cells. The PKC family consists of signaling isoenzymes that regulate many cell processes including proliferation, differentiation, and apoptosis.

**ingenol mebutate gel:** A topical, aqueous gel formulation containing the mebutate salt form of ingenol, a selective small-molecule activator of protein kinase C (PKC) that is isolated from the sap of Euphorbia species, with potential antineoplastic activity. Upon topical application of the ingenol mebutate gel, ingenol activates various PKC isoforms, which induces apoptosis in certain tumor cells, including myeloid leukemia cells, melanoma cells, and basal cell carcinoma cells. The PKC family consists of signaling isoenzymes that regulate many cell processes, including proliferation, differentiation, and apoptosis.

**ingestion :** Taking into the body by mouth.

**inguinal orchiectomy :** An operation in which the testicle is removed through an incision in the groin.

**inhalation** : In medicine, refers to the act of taking a substance into the body by breathing.

**inhaler** : A device for giving medicines in the form of a spray that is inhaled (breathed in) through the nose or mouth. Inhalers are used to treat certain medical problems, such as bronchitis, angina, emphysema, and asthma. They are also used to help relieve symptoms that occur when a person is trying to quit smoking.

**inherited** : In medicine, describes the passing of genetic information from parent to child through the genes in sperm and egg cells. Also called hereditary.

**inherited bone marrow failure syndrome** : A rare disorder in which a person's bone marrow is unable to make enough blood cells and there is a family history of the same disorder. There are several different types of inherited bone marrow failure syndrome, and patients with one of them are at high risk of forming acute leukemia or certain solid tumors. Also called IBMFS.

**inherited cancer syndrome** : A type of inherited disorder in which there is a higher-than-normal risk of certain types of cancer. Inherited cancer syndromes are caused by mutations (changes) in certain genes passed from parents to children. In an inherited cancer syndrome, certain patterns of cancer may be seen within families. These patterns include having several close family members (such as a mother, daughter, and sister) with the same type of cancer, developing cancer at an early age, or having two or more types of cancer develop in the same person. Examples of inherited cancer syndromes are hereditary breast and ovarian cancer syndrome, Li-Fraumeni syndrome, Cowden syndrome, and Lynch syndrome. Also called hereditary cancer syndrome.

**inherited cancer syndrome** : Describes the clinical manifestations associated with a mutation conferring cancer susceptibility.

**inherited erythroblastopenia** : A very rare disorder in which the bone marrow doesn't make enough red blood cells. It is usually seen in the first year of life. Patients may have deformed thumbs and other physical problems. They also have an increased risk of leukemia and sarcoma, especially osteosarcoma (bone cancer). Patients with inherited erythroblastopenia may have a mutation (change) in one of the genes that make proteins found in the cell's ribosomes. Also called Blackfan–

Diamond anemia, congenital hypoplastic anemia, congenital pure red cell aplasia, DBA, Diamond-Blackfan anemia, and erythrocytopenia.

**Inhibitor:** An additive which retards or prevents chemical reactions (such as cure). OR a substance that slows down chemical reactions. Inhibitors are sometimes used in certain types of monomers and resins to prolong storage life. OR A substance that retards the rate of a chemical reaction. OR An inhibitor is a compound that slows down the process of a reaction. You may also hear the term negative catalyst. OR An inhibitor is a substance that slows down a chemical reaction (a type of 'negative catalyst').

**Inhibitor 1:** A protein that, when phosphorylated, inhibits the activity of protein phosphatase 1 and thereby sustains glycogen breakdown and inhibits glycogen synthesis.

**iniparib:** A small molecule iodobenzamide with potential cytotoxic and antineoplastic activities. Although the mechanism of action is unknown, iniparib appears to be cytotoxic in cells with DNA alterations or DNA damage, like that found in tumor cells with mutations in the ataxia telangiectasia mutated (ATM) gene. ATM encodes a serine/threonine protein kinase and mutations of the gene are associated with ataxia telangiectasia and contribute to certain cancers such as T-cell acute lymphoblastic leukemia, B-cell chronic lymphocytic leukemia and B-cell non-Hodgkin lymphomas. or A substance being studied in the treatment of some types of cancer. Iniparib may kill cancer cells. Also called BSI-201.

**Initiation:** The first of the three stages common to all biological polymerization reactions; this stage establishes conditions for the beginning of the polymerization process.

**initiation codon:** AUG (sometimes GUG in prokaryotes); codes for the first amino acid in a polypeptide sequence: N-formylmethionine in prokaryotes, and methionine in eukaryotes.

**Initiation complex:** A complex of an RNA polymerase, promoter elements, and specific transcription factors that permits the initiation of RNA synthesis. OR A complex of a ribosome with an mRNA and the initiating Met-tRNA<sup>Met</sup> or fMet-tRNA<sup>fMet</sup>, ready for the elongation steps.

**Initiation factor:** One of a set of proteins that assist in the association of the ribosome, mRNA, and initiator tRNA to initiate the process of protein synthesis. OR Those protein factors that are specifically required during the initiation phase of protein synthesis.

**initiation step:** the first step in the mechanism of a reaction.

**Initiator:** A compound required to start a chain reaction, such as free-radical polymerisation. Unlike a catalyst, it is consumed in the reaction, but only a small quantity is normally required since one molecule of initiator can initiate the reaction of many other molecules. OR a material capable of being easily fragmented into free radicals, which in turn initiate a free-radical reaction.

**injectable Astragalus membranaceus polysaccharide:** An injectable form of a polysaccharide isolated from the radix of Astragalus membranaceus (PG2), used in traditional Chinese medicine, with potential hematopoiesis inducing and immunomodulating activities. Upon injection, APS may be able to relieve certain chemotherapy-induced side effects, including myelosuppression, fatigue, mucositis, pain, nausea and vomiting, as well as loss of appetite and body weight. Also, APS may exert immunostimulatory activities by stimulating B-lymphocytes, activating T-lymphocytes, inducing cytokine production, and activating macrophages and natural killer cells through as of yet unidentified mechanism(s). APS may improve compliance of radiotherapy and/or chemotherapy.

**injectable liposomal vinorelbine:** An injectable, sphingomyelin/cholesterol liposome-encapsulated formulation of the semisynthetic vinca alkaloid vinorelbine with antineoplastic activity. Vinorelbine binds to tubulin and prevents formation of the mitotic spindle, resulting in cell cycle arrest in metaphase. Like other vinca alkaloids, vinorelbine may also interfere with the metabolism of nucleic acids, lipids, amino acids, cAMP, and glutathione, as well as other biological processes including calmodulin-dependent Ca<sup>2+</sup>-transport, ATPase activity, or cellular respiration. Liposomal delivery of vinorelbine may improve drug penetration into tumors and decreases drug clearance, increasing the duration of therapeutic effects while lowering the toxicity profile.

**Injectafer:** (Other name for: ferric carboxymaltose solution)

**Injection:** The act of forcing molten resin into the mold to form the part.

**injection :** Use of a syringe and needle to push fluids or drugs into the body; often called a "shot."

**Injection (also known as Fill Time):** Time required to fill the cavity or mold.

**Injection blowmolding:** A two-stage, plastic bottling process. First, a preform (or parison) is injection molded forming the bottle finish. Then, the preform is transferred to a blow mold where the bottle takes its ultimate shape. OR Blow molding process by which the plastic parison to be blown is formed by injection molding.

**Injection capacity:** A rating of the maximum amount of plastic material, in ounces, a machine is capable of injecting in a single stroke of the injection screw or plunger. It is based on the specific gravity of polystyrene as a standard.

**Injection Compression Molding:** A method of molding where the plastic is injected into a partially open cavity with injection pressure typically 50-75% lower than standard injection molding depending on wall thickness and mold open distance. The 2nd stage clamp action closes the telescoping core and subsequently compresses and distributes the melt into the far extremities of the cavity, including ribs and bosses. OR The method of forming objects from granular or powdered plastics, most often of the thermoplastic type, in which the material is fed from a hopper to a heated chamber in which it is softened, after which a ram or screw forces the material into a mold. Pressure is maintained until the mass has hardened sufficiently for removal from the mold. OR method of forming a plastic to the desired shape by forcing heat softening plastic into a relatively cool cavity where it rapidly solidifies.

**Injection Molding Pressure:** The pressure applied to the cross-sectional area of the molding cylinder.

**Injection molds:** a mold into which a plasticated material is introduced from an exterior heating cylinder.

**Injection Moulding:** The method of forming objects from granular or powdered thermoplastic materials using moulds. The mould gives the plastic product its shape by means of a confining cavity or matrix. This is a different process to plastic extrusion manufacture using different grades of plastic compounds.

**Injection Or Fill Time:** Time required to fill the cavity or mold.

**Injection pressure:** That pressure that performs the initial filling of the mold. It is supplied by the injection screw or plunger as it pushes material out of the heating barrel and into the mold. OR The pressure on the face of the silicone injecting ram when injecting material into the mold

**Injection Pressure :** The applied hydraulic pressure used to push the resin into the mold cavity.

**Injection Pressure Profile:** Before the switch over point the set pressure remains constant but set injection speed is varied with stroke position. After switch over point injection speed should remain at lower value and pressure is changed with time till the mould is just filled with out over packing. This set pressure for filling stage and follow up / hold on pressure change with respect to time is called Injection pressure profile.

**Injection Ram:** The ram which applies pressure to the plunger in the process of injection molding or transfer molding.

**Injection Rate:** It is the flow rate of melt (cc/sec) coming out of nozzle. Melt comes out in the form of jet. Then it spreads inside the mould in shape of the space between the core and cavity.

**Injection Speed:** The elapsed time required to fill the mold cavity.

**Injection Tearout:** A molding defect identified by a hole in the silicone liquid rubber part at varying widths and depths located at the point where the silicone rubber is injected into the cavity area

**Injection unit:** The section of the molding machine that contains the injection components, including the hopper, heating cylinder, screw (or plunger), nozzle, and heater bands.

**Inline forming:** Process where a plastic sheet moves from a roll onto inline thermo formers and through the heating section. The heated thermoforming material advances into the forming section where pressure and/or vacuum force the plastic onto a mold. It then proceeds to another station where formed parts are finish-trimmed.

**Inlyta:** (Other name for: axitinib)

**Inlyta :** A drug used to treat advanced renal cell carcinoma (the most common type of kidney cancer). It is used in patients who have not gotten better with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Inlyta blocks the action of proteins called growth factor receptors and may prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called axitinib.

**innate defense regulator SGX942:** A synthetic, 5-amino acid peptide and innate defense regulator (IDR), with immunomodulating, anti-

inflammatory, anti-infective and anti-mucositis activities. Upon intravenous administration, SGX942 binds to the ZZ domain of sequestosome-1, also called p62, and activates regulatory signaling transduction pathways involved in the modulation of the innate immune system, such as those mediated by mitogen-activated protein kinase (MAPK) p38 and CCAAT-enhancer-binding protein. This agent promotes monocyte and macrophage recruitment to, and accelerates healing in damaged and infected tissue; it suppresses inflammation through the regulation of the expression of multiple cytokines. This agent may prevent or decrease chemo- or radiotherapy-induced mucositis as well as other types of infection. p62, an intracellular adaptor protein that functions downstream of certain signaling receptors, plays a key role in the activation of the innate immune system.

**innate immunostimulator rBBX-01:** A recombinant 19 kDa protein derived from the Apicomplexa protozoan *Eimeria* with potential immunostimulating and antitumor activities. Upon administration, innate immunostimulator rBBX-01 activates dendritic cells (DCs), stimulates the Toll-like receptor 11 (TLR-11)-mediated release of interleukin-12 (Il-12) from DCs, and induces a T-helper 1 (Th1) type immune response, which may induce an immune response against tumor cells. Infection with *Eimeria*, a coccidian commonly infecting the intestine, may be negatively correlated with tumorigenesis.

**inner cell mass:** a group of cells that continues to develop at one end of the blastocyst.

**inner core:** the solid center of the Earth, composed of iron and nickel. OR the spherical, solid, innermost part of the earth.

**Inner Transition Elements:** Elements in the periodic table that have three shells that are not filled with electrons. The shells are usually the outer three shells. Uranium and holmium are examples of inner transition elements. The actinide and lanthanide series are all inner transition elements.

**Innerbraid:** A woven thread that is inside a tube providing reinforcement. The thread may be any one of many materials though nylon is most common.

**Innohep :** A drug that is used with another drug, warfarin, to treat blood clots that form deep in the veins and to prevent new blood clots from forming. It is a type of anticoagulant. Also called tinzaparin and tinzaparin sodium.

**Innopran XL:** (Other name for: propranolol hydrochloride)

**INO-1001:** A isoindolinone derivative and potent inhibitor of the nuclear enzyme poly (ADP-ribose) polymerase (PARP) with chemosensitization and radiosensitization properties. INO-1001 inhibits PARP, which may result in inhibition of tumor cell DNA repair mechanisms and, so, tumor cell resistance to chemotherapy and radiation therapy. PARP enzymes are activated by DNA breaks and have been implicated in the repair of DNA single-strand breaks (SSB).

**inoperable :** Describes a condition that cannot be treated by surgery.

**Inorganic chemistry:** The branch of chemistry that studies substances not derived from a living organism and/or not composed of carbon and hydrogen (a hydrocarbon) OR the study of chemical elements and compounds except for carbon. OR The study of inorganic compounds, specifically their structure, reactions, catalysis, and mechanism of action.

**Inorganic coagulant :** Aluminum or iron salt based water treatment chemicals.

**inorganic compound:** A compound that does not contain carbon chemically bound to hydrogen. Carbonates, bicarbonates, carbides, and carbon oxides are considered inorganic compounds, even though they contain carbon.

**inorganic pyrophosphatase:** An enzyme that hydrolyzes a molecule of inorganic pyrophosphate to yield two molecules of (ortho) phosphate; also known as pyrophosphatase.

**Inosinate:** A purine nucleotide formed by the reaction of hypoxanthine with 5-phosphoribosyl-1- pyrophosphate (PRPP); a precursor to both AMP and GMP.

**inosine 5'- monophosphate dehydrogenase inhibitor FF-10501-01:** An orally bioavailable inhibitor of inosine 5'- monophosphate dehydrogenase (IMPDH), with potential antineoplastic activity. Upon administration, IMPDH inhibitor FF-10501-01 competitively inhibits the enzyme IMPDH, thereby preventing the conversion of inosine monophosphate to xanthosine monophosphate. This inhibits the synthesis of guanine nucleotides, deprives cancer cells of guanosine triphosphate (GTP), disrupts DNA and RNA synthesis, and decreases tumor cell proliferation. Tumor cells are highly susceptible to IMPDH inhibition because they are rapidly dividing cells that

are dependent on rapid DNA synthesis, which requires a high concentration of nucleotides. IMPDH, an enzyme that catalyzes the rate-limiting step in the synthesis of guanosine triphosphate (GTP), is overexpressed in numerous tumor cell types.

**inosine dialdehyde:** A toxic purine analogue. Inosine dialdehyde inhibits ribonucleotide reductase, resulting in decreased synthesis of DNA, RNA, and proteins, and G2/M-phase cell cycle arrest. This agent also forms stable covalent crosslinks in proteins, thereby inhibiting the activity of enzymes involved in nucleic acid synthesis.

**inositol:** A natural sugar found in cell membrane phospholipids, plasma lipoproteins, and (as the phosphate form) in the nucleus with potential chemopreventive properties. As one of a number of intracellular phosphate compounds, inositol is involved in cell signaling and may stimulate tumor cell differentiation.

**inositol :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Inositol helps cells make membranes and respond to messages from their environment. It has the same chemical formula as glucose (the chief source of energy for living organisms) but has a different arrangement of atoms. It is found in beans, peas, brown rice, wheat bran and nuts. It is water-soluble (can dissolve in water) and must be taken in every day. Inositol is being studied in the prevention of cancer. Also called myoinositol.

**Inositol 1,4,5-trisphosphate:** A second messenger of the phosphoinositide cascade that causes an increase in intracellular calcium levels.

**inositol hexaphosphate :** A substance found in many foods that come from plants, including corn, wheat, rice, and soybeans, and in large amounts in cereals and legumes. It is being studied in the prevention of cancer. Also called IP6 and phytic acid.

**inotuzumab ozogamicin:** A CD22-targeted cytotoxic immunoconjugate composed of a humanized IgG4 anti-CD22 antibody covalently linked to N-acetyl-gamma-calicheamicin dimethyl hydrazide (CalichDMH) with potential antineoplastic activity. Inotuzumab ozogamicin is rapidly internalized upon binding of the antibody moiety to B cell-specific CD22 receptors, delivering the conjugated CalichDMH intracellularly; the CalichDMH moiety binds to the minor groove of DNA in a sequence-specific manner, resulting in double-strand DNA breaks and apoptosis.

CalichDMH is a derivative of gamma calicheamicin, a cytotoxic antibiotic produced by the bacterium *Micromonospora echinospora*.

**INS316:** A substance being studied in the diagnosis of lung diseases, including lung cancer. It helps bring up a sample of mucus from deep in the lungs and improves the quality of the sample for testing. It is a type of nucleoside triphosphate.

**inscribed angle:** in a circle, an angle formed by two chords. Its vertex is on the circle. The measure of an inscribed angle equals one-half the measure of its arc.

**insecticide:** A chemical used to kill insects. See pesticides.

**Insegia:** (Other name for: gastrin immunotoxin)

**inselberg:** an isolated bedrock remnant of a former mountain front; may project through the pediment cover.

**Insert:** A removable part of the mold imparting increased resistance to wear, heat transferability, or changeable part shape to that area of the mold.

**Insert:** An integral part of a plastics molding consisting of metal or other material which may be molded into position or may be pressed into the molding after the molding is completed. Also a removable or interchangeable component of the mold.

**Insert Molding:** Insert molding is the process of molding plastic around preformed metal inserts. This process is compatible with both thermoplastic and thermoset materials. OR A means of producing a part with two or more materials, the metal, plastic or liquid silicone rubber part is inserted into the mold and plastic or silicone rubber is injected onto to the part attaching by means of mechanical or chemical bond OR Insert Molding combines metal and plastics, or multiple combinations of materials and components into a single unit. The process makes use of engineering plastics for improved wear resistance, tensile strength and weight reduction as well as using metallic materials for strength and conductivity.

**Insert Part:** An article of metal or other material which is incorporated into a plastic molded part either by pressing the insert into the finished molded part or by placing the insert in the cavity so that it becomes an integral part of the molding.

**Insert Pull-Out Strength:** Force required to pull an insert straight out of a material at least 0.020" thick. Insert performance criterion maintained for

the most part in molded parts.

**Insert, Mold:** A removable part of the mold imparting increased resistance to wear or heat transferability to that area of the mold.

**Insertion:** A type of mutation in which one or more base pairs are erroneously inserted into DNA.

**insertion:** placing between two atoms.

**insertion :** A type of genetic change that involves the addition of a segment of DNA. It may be as small as a single base but can vary significantly in size.

**insertion mutation:** A mutation caused by insertion of one or more extra bases, or a mutagen, between two successive bases in DNA.

**Insertion sequence:** A simple DNA transposon, composed of a kilobase sequence that specifies a transposase and is bounded on either end by inverted terminal repeats; an insertion sequence can insert itself into any site on a bacterial chromosome. OR Specific base sequences at either end of a transposable segment of DNA.

**Insertional inactivation:** Gene inactivation that occurs when an unrelated DNA fragment is inserted at a restriction site; inactivation of a gene for antibiotic resistance in a plasmid can be used to detect those plasmids in which a DNA fragment has been successfully inserted.

**Inside Radius :** The distance from the rotational axis (center) of the drum to the driving surface of the drum.

**Inside Turn Radius :** Turn radius measured to the inside edge of the belt

**insolation:** a combination of the words incoming solar radiation. OR The solar radiation incident on a unit horizontal surface at the top of the atmosphere. It is sometimes referred to as solar irradiance. The latitudinal variation of insolation supplies the energy for the general circulation of the atmosphere. Insolation depends on the angle of incidence of the solar beam and on the solar constant.

**Insoluble:** An insoluble substance is one that is not able to dissolve in another substance. Some solutes are not able to dissolve in some solvents. Carbonates are often insoluble compounds. They just sink to the bottom of solutions. OR Refers to a substance that does not dissolve in a solvent to any significant degree. Compounds with solubilities of less than 1 g per liter

of water are often referred to as 'insoluble', even though they do dissolve to a small extent.

**insomnia :** Difficulty in going to sleep or getting enough sleep.

**Inspection Reports:** Reports are issued periodically to document inspection findings. These may cover a specific time period for the baseline inspection or a particular event or problem examined in a reactive inspection. All inspection reports are public documents and, when issued, are posted to the NRC's internet web site.

**Inspra:** (Other name for: eplerenone)

**instability:** A wavefunction is expressed as a long list of parameters (basis-set expansion) that are adjusted to minimize the total energy. Sometimes the global minimum is not obtained; the local minimum that is obtained may be unstable with respect to various perturbations or liberalization of constraints. Such a wavefunction is said to be unstable. One of the more common instabilities is an RHF to UHF instability, which indicates that the UHF solution (different alpha and beta orbitals) is of lower energy than the RHF solution (identical alpha and beta orbitals) for a closed-shell system. This may be encountered, for example, when a bond is stretched.

**instantaneous transpiration efficiency:** A measure at the physiologic level of how well plants use available water in photosynthesis. The assimilation rate is divided by the transpiration rate; the moles of CO<sub>2</sub> taken up are divided by the moles of water lost through transpiration in a unit of time.

**instillation :** In medicine, a method used to put a liquid into the body slowly or drop by drop.

**Institutional Review Board :** A group of scientists, doctors, clergy, and patient advocates that reviews and approves the detailed plan for every clinical trial. Institutional Review Boards are meant to protect the people who take part in a clinical trial. They check to see that the trial is well designed, legal, ethical, does not involve unneeded risks, and includes a safety plan for patients. There is an Institutional Review Board at every health care facility that does clinical research. Also called IRB.

**Instron:** An instrument utilized to determine the tensile and compressive properties of material.

**instrument:** tool used to extend your senses and gather data.

**Insulated Runner:** A mold in which the runners are insulated from the chilled cavities and are kept hot.

**Insulated Runner (also known as Hot-Runner Mold or Runnerless Molding) :** A mold in which the runners are insulated from the chilled cavities and are kept hot. Hot-runner molds make parts that have no scrap.

**Insulation:** Material having a high resistance to the flow of electric current, to prevent leakage of current from a conductor.

**Insulation:** material having a high resistance to the flow of electric current, to prevent leakage of current from a conductor.

**Insulation board:** Commonly refers to soft fibre board but can also be used for similar boards of any composition.

**Insulation Resistance:** the ratio of the applied voltage to the total current between two electrodes in contact with a specific conductor under prescribed conditions of test.

**Insulin:** A polypeptide hormone secreted by the  $\beta$  cells of the pancreas, that stimulates fuel storage and protein synthesis.

**insulin :** A hormone made by the islet cells of the pancreas. Insulin controls the amount of sugar in the blood by moving it into the cells, where it can be used by the body for energy.

**insulin glargine :** A drug used to control the amount of sugar in the blood of patients with diabetes. It is a form of the hormone insulin that is made in the laboratory. Insulin glargine controls blood sugar longer than insulin does. It is a type of therapeutic insulin. Also called insulin glargine recombinant and Lantus.

**insulin glargine recombinant :** A drug used to control the amount of sugar in the blood of patients with diabetes. It is a form of the hormone insulin that is made in the laboratory. Insulin glargine recombinant controls blood sugar longer than insulin does. It is a type of therapeutic insulin. Also called insulin glargine and Lantus.

**insulin lispro:** A recombinant therapeutic agent which is chemically identical to or similar to endogenous human insulin. In lispro insulin, the amino acid proline at B-28 and the amino acid lysine at B-29 are reversed, resulting in the rapid dissolution of this insulin to a monomer that is absorbed rapidly after subcutaneous administration. Lispro insulin is equipotent to human insulin on a molar basis but its effects are faster and of

shorter duration. Endogenous insulin, a pancreatic hormone composed of two polypeptide chains, is important in the normal metabolism of carbohydrates, proteins and fats, promoting glucose utilization and protein synthesis; it has anabolic effects on many types of tissues. Check for active clinical trials using this agent.

**insulin-like growth factor :** A protein made by the body that stimulates the growth of many types of cells. Insulin-like growth factor is similar to insulin (a hormone made in the pancreas). There are two forms of insulin-like growth factor called IGF-1 and IGF-2. Higher than normal levels of IGF-1 may increase the risk of several types of cancer. Insulin-like growth factor is a type of growth factor and a type of cytokine. Also called IGF and somatomedin.

**insulin-like growth factor receptor :** A protein found on the surface of some types of cells that binds to insulin-like growth factor (IGF). This causes the cells to grow and divide. Insulin-like growth factor receptor is found at high levels on the surface of several types of cancer cells, which causes these cells to grow rapidly in the presence of IGF. Also called IGFR.

**insulin, NPH:** An intermediate-acting insulin used in the treatment of diabetes mellitus. Administered once or twice daily, NPH (neutral protamine hagedorn) insulin lowers blood glucose within 1 to 2 hours after administration and exerts a peak effect at 6 to 10 hours. Endogenous insulin, a pancreatic hormone composed of two polypeptide chains, is important in the normal metabolism of carbohydrates, proteins and fats, promoting glucose utilization and protein synthesis; it has anabolic effects on many types of tissues.

**insulin, regular:** A recombinant form of the naturally occurring human pancreatic hormone insulin. Upon administration, regular insulin mimics the action of endogenous human insulin and binds to insulin receptors located on muscle and fat cells. This both facilitates the cellular uptake of glucose and lowers blood glucose levels. In addition, insulin inhibits the liver's conversion of stored glycogen into glucose, which also decreases blood glucose levels. Insulin also inhibits lipolysis in adipose tissue, inhibits proteolysis, and enhances protein synthesis.

**insulinoma :** An abnormal mass that grows in the beta cells of the pancreas that make insulin. Insulinomas are usually benign (not cancer). They secrete insulin and are the most common cause of low blood sugar caused by

having too much insulin in the body. Also called beta cell neoplasm, beta cell tumor of the pancreas, and pancreatic insulin-producing tumor.

**intake:** The amount of a substance or material that is taken into the body, regardless of whether or not it is absorbed. The daily intake may be expressed as the amount taken in by a particular exposure route, e.g., ingestion or inhalation. The daily intake from food is the total amount of a given substance taken in during one day through the consumption of food. The daily intake by inhalation is calculated by multiplying the concentration of the substance (or agent) in air by the total amount of air inhaled during one day (24 hours). The total daily intake is the sum of the daily intake by an individual from food, drinking-water, and inhaled air (WHO, 1979).

**integer:** A counting number or a negative whole number.

**integral enthalpy of solution:** ( $H_{\text{soln}}$ ) integral heat of solution; integrated heat of solution; integrated enthalpy of solution. Compare with enthalpy of solution. The heat absorbed or released when a solute is dissolved in a definite amount of solvent. The heat of solution depends on the nature of the solute and on its concentration in the final solution. The integral heat of solution when one mole of solute is added to an infinite amount of solvent is sometimes written as  $H_{\text{soln}}$ .

**Integral Guard Edge :** Inside leg link raised to prevent product from falling off belt. Integral guard edge links offer improved cleanup and sanitation over guard edge plates.

**Integral membrane proteins:** Proteins found in membranes that interact extensively with the hydrocarbon chains of the membrane lipids and usually span the membrane. OR Proteins firmly bound to a membrane by hydrophobic interactions; as distinct from peripheral proteins.

**Integrated plant evaluation:** An evaluation that considers the plant as a whole rather than system by system.

**integrated rate law:** Rate laws like  $d[A]/dt = -k[A]$  give instantaneous concentration changes. To find the change in concentration over time, the instantaneous changes must be added (integrated) over the desired time interval. The rate law  $d[A]/dt = -k[A]$  can be integrated from time zero to time  $t$  to obtain the integrated rate law  $\ln([A]/[A]_0) = -kt$ , where  $[A]_0$  is the initial concentration of A.

**integrative medicine :** A type of medical care that combines conventional (standard) medical treatment with complementary and alternative (CAM) therapies that have been shown to be safe and to work. CAM therapies treat the mind, body, and spirit.

**integrin receptor antagonist GLPG0187:** A small molecule integrin receptor antagonist (IRA) with potential antineoplastic activity. Upon administration, GLPG0187 binds to and blocks the activity of 5 RGD-integrin receptor subtypes, including  $\alpha v \beta 1$ ,  $\alpha v \beta 3$ ,  $\alpha v \beta 5$ ,  $\alpha v \beta 6$  and  $\alpha 5 \beta 1$ . This may result in the inhibition of endothelial cell-cell interactions and endothelial cell-matrix interactions, and the prevention of angiogenesis and metastasis in tumor cells expressing these integrin receptors. Integrin receptors are transmembrane glycoproteins expressed on the surface of tumor vessel endothelial cells and some types of cancer cells, and play a crucial role in endothelial cell adhesion and migration. Check for active clinical trials using this agent.

**intensification therapy :** Treatment that is given after cancer has disappeared following the initial therapy. Intensification therapy is used to kill any cancer cells that may be left in the body. It may include radiation therapy, a stem cell transplant, or treatment with drugs that kill cancer cells. Also called consolidation therapy and postremission therapy.

**intensifiers:** words intended to add force to what you say.

**intensity-modulated radiation therapy :** A type of 3-dimensional radiation therapy that uses computer-generated images to show the size and shape of the tumor. Thin beams of radiation of different intensities are aimed at the tumor from many angles. This type of radiation therapy reduces the damage to healthy tissue near the tumor. Also called IMRT.

**intensive property:** A property that does not change when the amount of sample changes. Examples are density, pressure, temperature, color.

**Intercalating agent:** A chemical, usually containing aromatic rings, that can sandwich in-between adjacent base pairs in a DNA duplex. The intercalation leads to an adjustment in the DNA secondary structure, as adjacent base pairs are usually close-packed.

**Intercalating agents:** Flat, aromatic compounds that can insert between adjacent base pairs in a DNA double helix; these agents, such as ethidium bromide, can cause insertions and deletions.

**intercalating mutagen:** A mutagen that inserts itself between two successive bases in a nucleic acid, causing a frame-shift mutation.

**intercalation:** Insertion between two stacked aromatic or planar rings; for example, the insertion of a planar molecule between two successive bases in a nucleic acid.

**intercalation:** The binding of a molecule between adjacent base pairs in DNA.

**intercellular communication :** The transfer of information from one cell to another. Cells signal each other by direct contact with each other or by the release of a substance from one cell that is taken up by another cell. Intercellular communication is important for cells to grow and work normally. Cells that lose the ability to respond to signals from other cells may become cancer cells. Also called cell-cell signaling and cell-to-cell signaling.

**Intercoat:** (Other name for: absorbable adhesion barrier gel)

**Intercoat adhesion:** A coating's ability to adhere to previously applied films, including primers.

**Interesting example of a steric effect:** Results for a reaction in which a phenyl ring was added to toluene or t-butylbenzene are given below. There are no relevant chemical differences between the methyl and t-butyl groups; the difference in product distribution is entirely due to the greater size of the t-butyl group.

**Interface:** an electronic device, which allows connecting the output from a sensor directly to a desktop or laptop computer without the need for an expensive ion meter. Interfaces are provided with sophisticated software, which facilitates complex data processing, display and storage. Multiple interfaces can connect several electrode systems to one PC at the same time and permit continuous monitoring of batch processes or simultaneous multicomponent analysis.

**Interface:** The contact area between reinforcement and resin matrix.

**Interfacial angle:** The angle between faces in a crystal. This angle is dictated by the Miller indices of the faces and the crystallographic unit cell.

**INTERFACIAL INSTABILITY IN COEXTRUSION:** Highly irregular or sometimes regular waviness, which appears in coextruded structures at

the polymer/polymer interface. Two types of interfacial instability are common zigzag and wave.

**interference:** The amplitudes of waves moving into the same region of space add to produce a single resultant wave. The resultant wave can have higher or lower amplitude than the component waves. See constructive interference and destructive interference.

**Interference:** the effect of any species, other than the ion being measured, which presence in the sample solution affects the measured potential difference of the cell. The most common cause of interference is due to the fact that most ionselective membranes are not 100% selective for the detected ion. Many permit the passage of other ions to some extent. These extra ions generally increase the measured electrode potential and cause spuriously high concentration results. Other interferences may be due to chemical reactions with the membrane material which may cause positive or negative anomalies, and reactions in the sample which may cause precipitation, complexing, oxidation or reduction of the ion being measured, and thus spuriously low results.

**Interfering ion:** any ion in solution, other than that being measured, that reacts with the ISE membrane to change the measured potential (see Interference).

**interfering thought :** An unpleasant memory or idea that occurs often in a person's everyday thoughts and keeps him or her from thinking about other things. Interfering thoughts can make sleep difficult and make a person unable to carry out daily activities. Also called intrusive thought.

**Interferon:** One of a family of proteins that are liberated by special host cells in the mammal in response to viral infection. The interferons attach to an infected cell, where they stimulate antiviral protein synthesis.

**interferon :** A biological response modifier (a substance that can improve the body's natural response to infections and other diseases). Interferons interfere with the division of cancer cells and can slow tumor growth. There are several types of interferons, including interferon-alpha, -beta, and -gamma. The body normally produces these substances. They are also made in the laboratory to treat cancer and other diseases.

**interferon alfa-2b :** A drug used to treat AIDS-related Kaposi sarcoma in certain patients, hairy cell leukemia, and melanoma that has been removed by surgery. It is also used with other anticancer drugs to treat a certain type

of non-Hodgkin lymphoma. Interferon alfa-2b is also used to treat some infections caused by viruses, such as the hepatitis C virus. It is being studied in the treatment of other types of cancer and other conditions. Interferon alfa-2b is a form of interferon alfa (a substance normally made by cells in the immune system) and is made in the laboratory. It is a type of cytokine and a type of biological response modifier. Also called IFN alpha-2B, Intron A, and recombinant interferon alfa-2b.

**interferon alfacon-1:** An analogue of consensus interferon which contains an additional methionyl amino acid residue. Consensus interferon (also known as interferon alfacon-1, rCon-IFN, and CIFN) is a genetically engineered synthetic interferon created from the most common amino acid sequences from the naturally occurring alpha interferons. Alpha interferons bind to specific cell-surface receptors, resulting in the transcription and translation of genes whose protein products have antiviral, antiproliferative, anticancer, and immune-modulating effects. An analogue of consensus interferon which contains an additional methionyl amino acid residue. Consensus interferon (also known as interferon alfacon-1, rCon-IFN, and CIFN) is a genetically engineered synthetic interferon created from the most common amino acid sequences from the naturally occurring alpha interferons. Alpha interferons bind to specific cell-surface receptors, resulting in the transcription and translation of genes whose protein products have antiviral, antiproliferative, anticancer, and immune-modulating effects.

**interferon beta-secreting mesenchymal stem cells:** Human autologous mesenchymal stem cells (MSCs) harvested from the bone marrow of healthy individuals and transduced with a retroviral vector encoding the human cytokine interferon beta (IFN $\beta$ ), with potential immunomodulating and antineoplastic activities. Upon administration of IFN $\beta$ -secreting MSCs, the cells are attracted and specifically migrate to tumor sites and become part of the tumor microenvironment. Since the MSCs express IFN $\beta$ , these cells selectively deliver high levels of IFN $\beta$  to the tumor site. In turn, IFN $\beta$  binds to IFN-specific cell surface receptors and modulates the transcription and translation of certain genes whose protein products are involved in tumor cell proliferation. This decreases tumor cell growth.

**interferon-gamma-expressing adenovirus vaccine ASN-002:** A replication-defective adenoviral serotype 5 vector encoding a recombinant

form of the human cytokine interferon-gamma (IFN-g), with potential antineoplastic and immunoregulatory activities. Upon intratumoral administration, the sustained expression of IFN-g by IFN-g-expressing adenovirus vaccine ASN-002 promotes a T-helper type 1 (Th1) immune response and inhibits the Th2-mediated cytokine production observed in many cutaneous lymphomas. IFN-g also mediates interleukin-12 (IL-12) production by antigen-presenting cells (APCs); activates macrophages, cytotoxic T-cells, and natural killer (NK) cells; upregulates major histocompatibility complex (MHC) molecules; and stimulates antibody-dependent cellular cytotoxicity (ADCC). Altogether, these IFN-g-mediated effects may result in both an inhibition of tumor cell proliferation and tumor cell death. Compared to IFN-g injections, the prolonged local production of IFN-g at the tumor site allows for higher efficacy and a reduction of systemic toxicity.

**interferons:** A class of glycoproteins with antiviral activities.

**interior angles:** angles formed inside the shape or within two parallel lines.

**interior drainage pattern:** a drainage pattern in which streams empty into landlocked basins.

**interjection:** words that express a burst of emotion but are not grammatically related to other elements in a sentence.

**interleukin :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukins regulate immune responses. Interleukins made in the laboratory are used as biological response modifiers to boost the immune system in cancer therapy. An interleukin is a type of cytokine. Also called IL.

**interleukin-1 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-1 is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. There are two forms of interleukin-1, alpha and beta, which act the same. Interleukin-1 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-1 is a type of cytokine. Also called IL-1.

**interleukin-1-alfa** : One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-1-alfa, one form of interleukin-1, is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. The other form of interleukin-1, interleukin-1-beta, acts the same as interleukin-1-alfa. Interleukin-1-alfa made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-1-alfa is a type of cytokine. Also called IL-1-alfa, IL-1-alpha, and interleukin-1-alpha.

**interleukin-1-alpha** : One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-1-alpha, one form of interleukin-1, is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. The other form of interleukin-1, interleukin-1-beta, acts the same as interleukin-1-alpha. Interleukin-1-alpha made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-1-alpha is a type of cytokine. Also called IL-1-alfa, IL-1-alpha, and interleukin-1-alfa.

**interleukin-1-beta** : One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-1-beta, one form of interleukin-1, is made mainly by one type of white blood cell, the macrophage, and helps another type of white blood cell, the lymphocyte, fight infections. It also helps leukocytes pass through blood vessel walls to sites of infection and causes fever by affecting areas of the brain that control body temperature. The other form of interleukin-1, interleukin-1-alpha, acts the same as interleukin-1-beta. Interleukin-1-beta made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-1-beta is a type of cytokine. Also called IL-1-beta and IL-1B.

**interleukin-10** : One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-10 is made by activated macrophages and by some T lymphocytes. It reduces

inflammation by blocking production of cytokines by immune cells. Interleukin-10 also increases antibody production by plasma cells and helps them live longer. Interleukin-10 made in the laboratory is used as a biological response modifier to boost the immune system. It is a type of cytokine. Also called IL-10.

**interleukin-11 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-11 is made by support cells in the bone marrow. It causes the growth of several types of blood cells. Oprelvekin (interleukin-11 made in the laboratory) is used as a biological response modifier to increase the number of platelets, especially in patients receiving chemotherapy for cancer. Interleukin-11 is a type of cytokine. Also called IL-11.

**interleukin-12 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-12 is made mainly by B lymphocytes and macrophages. It causes other immune cells to make cytokines and increases the growth of T lymphocytes. It may also block the growth of new blood vessels. Interleukin-12 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-12 is a type of cytokine. Also called IL-12.

**interleukin-12 gene:** The DNA sequence that encodes the protein cytokine interleukin-12 (IL-12). When introduced as the complementary DNA (cDNA) form into tumor cells by, for example, a genetically engineered adenovirus vector, the transfected IL-12 cDNA expresses IL-12 which activates antitumoral natural killer (NK) cells and CD8<sup>+</sup> T-cells and stimulates the secretion of interferon-gamma (IFN-gamma), potentially inhibiting tumor cell metastasis. This gene therapy may also result in IL-12-mediated inhibition of vascular endothelial growth factor (VEGF) and enhancement of matrix metalloproteinases (MMPs). Check for active clinical trials using this agent.

**interleukin-13 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-13 is made by a type of T lymphocyte. It reduces inflammation by blocking production of cytokines by macrophages. It also increases the number and activity of B lymphocytes. Interleukin-13 made in the laboratory is used as a biological

response modifier to boost the immune system in cancer therapy. It is a type of cytokine. Also called IL-13.

**interleukin-13 PE38QQR immunotoxin :** A substance being studied in the treatment of cancer. It is made by combining interleukin-13 with a toxin from Pseudomonas bacteria. It is a type of recombinant chimeric protein.

**interleukin-2 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-2 is made by a type of T lymphocyte. It increases the growth and activity of other T lymphocytes and B lymphocytes, and affects the development of the immune system. Aldesleukin (interleukin-2 made in the laboratory) is being used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-2 is a type of cytokine. Also called IL-2.

**interleukin-2 gene:** The DNA sequence that encodes the protein cytokine interleukin-2 (IL-2). When introduced as the complementary DNA (cDNA) form into tumor cells by, for example, a genetically engineered adenovirus vector, the transfected IL-2 cDNA expresses IL-2 which may activate antitumoral natural killer cells and elicit an antitumoral cytotoxic T-cell response, resulting in an inhibition of tumor progression.

**interleukin-3 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-3 is made mainly by a type of T lymphocyte. It increases the number of blood cells made by the bone marrow. Interleukin-3 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-3 is a type of cytokine. Also called IL-3.

**interleukin-4 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-4 is made by a type of T lymphocyte. It causes B lymphocytes to increase and to make antibodies and also increases the production of T lymphocytes. Interleukin-4 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-4 is a type of cytokine. Also called IL-4.

**interleukin-4 PE38KDEL cytotoxin :** A substance being studied in the treatment of cancer. It is made by combining interleukin-4 with a bacterial toxin. Interleukin-4 PE38KDEL cytotoxin is a type of recombinant chimeric protein. Also called interleukin-4 PE38KDEL immunotoxin and NBI-3001.

**interleukin-4 PE38KDEL immunotoxin :** A substance being studied in the treatment of cancer. It is made by combining interleukin-4 with a bacterial toxin. Interleukin-4 PE38KDEL immunotoxin is a type of recombinant chimeric protein. Also called interleukin-4 PE38KDEL cytotoxin and NBI-3001.

**interleukin-5 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-5 is made mainly by some T lymphocytes. It causes B lymphocytes to make more antibodies and increases the number of eosinophils. Interleukin-5 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. It is a type of cytokine. Also called IL-5.

**interleukin-6 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-6 is made mainly by some T lymphocytes. It causes B lymphocytes to make more antibodies and also causes fever by affecting areas of the brain that control body temperature. Interleukin-6 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-6 is a type of cytokine. Also called IL-6.

**interleukin-7 :** One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Interleukin-7 is made by cells that cover and support organs, glands, and other structures in the body. It causes the growth of T lymphocytes and B lymphocytes. Interleukin-7 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Interleukin-7 is a type of cytokine. Also called IL-7 and lymphopoietin-1.

**Interlocking Looped Edge :** A retaining edge formed extending ends of straight wire connectors or reinforcing wires into interlocking loop design at prescribed angle to belt.

**Interlocking Plate :** A retaining edge consisting of a series of formed plates which "interlock" with each other to form a guard edge.

**intermediary metabolism:** In cells, the enzyme-catalyzed reactions that extract chemical energy from nutrient molecules and utilize it to synthesize and assemble cell components.

**Intermediate:** Any chemical compound that is primarily of interest as one of the steps between the starting material and the final product. It is usually best to design chemical processes so that intermediates do not need to be

transported from place or stored in large quantities. Methyl isocyanate, an intermediate in the manufacture of certain pesticides, is a good example. For the horrific consequences of inappropriate and entirely unnecessary storage of this highly toxic intermediate, have a look at: OR a species that forms in one step of a multistep mechanism; intermediates are unstable and cannot be isolated. OR A highly reactive substance that forms and then reacts further during the conversion of reactants to products in a chemical reaction. Intermediates never appear as products in the chemical equation for a net chemical reaction.

**Intermediate filaments:** Filaments ranging from approximately 7 to 10 nm in diameter that can be components of the cell cytoskeleton in epithelial cells; keratins are intermediate filaments.

**intermediate grade :** A term used to describe how abnormal cancer cells look under a microscope. Intermediate-grade cancer cells look more abnormal than low-grade cancer cells but not as abnormal as high-grade cancer cells. They also tend to grow and spread more quickly than low-grade cancer cells but not as quickly as high-grade cancer cells. Cancer cell grade, along with cancer type and stage, may be used to help plan treatment and determine prognosis.

**intermediate rock:** a general term for rock between mafic and felsic classifications.

**intermediate-affinity interleukin-2 receptor agonist ALKS 4230:** A selective effector cell activator protein and agonist of the intermediate-affinity interleukin-2 (IL-2) receptor with potential immunostimulating and antineoplastic activity. Upon administration, intermediate-affinity interleukin-2 receptor agonist ALKS 4230 binds to and signals through the intermediate-affinity IL-2 receptor complex; this may selectively stimulate and activate natural killer (NK) cells and memory CD8 T cells, leading to tumor cell elimination, while circumventing the activation of immunosuppressive cells that may prevent the anti-tumor response. IL-2 is a cytokine signaling molecule that plays a critical role in the immune response.

**intermediate-grade lymphoma :** A type of lymphoma that grows and spreads quickly and has severe symptoms. Also called aggressive lymphoma and high-grade lymphoma.

**intermolecular:** Between molecules. Intermolecular forces are those forces between molecules. OR Contacts between adjacent molecules in a crystal. These contacts define the crystal packing. OR An attraction or repulsion between molecules. Intermolecular forces are much weaker than chemical bonds. Hydrogen bonds, dipole-dipole interactions, and London forces are examples of intermolecular forces.

**intermolecular forces:** Forces between molecules. OR Intermolecular forces (or bonds) are the forces between molecules.

**Intermolecular interactions:** Interactions that occur between molecules.

**internal coordinates:** Bond lengths, bond angles, and dihedral (torsional) angles; sometimes called "natural coordinates."

**internal energy:** Internal energy ( $U$ ) is defined so that changes in internal energy ( $U$ ) are equal to the heat absorbed or released by a process running at constant volume. While changes in internal energy can be measured using calorimetry, absolute values of internal energy usually cannot be determined. Changes in internal energy are equal to the heat transferred plus the work done for any process.

**Internal energy ( $U$ ):** The total energy possessed by the individual molecules in a system (as opposed to the kinetic and potential energies of the system as a whole).  $U$  is a strong function of temperature, phase, and molecular structure, and a weak function of pressure (it is independent of pressure for ideal gasses). Its absolute value cannot be determined, so it is always expressed relative to a reference state at which it is defined to be zero.

**internal exam :** A physical exam of the vagina, cervix, uterus, fallopian tubes, ovaries, and rectum. First, the area outside the vagina is checked for signs of disease. A speculum is then inserted into the vagina to widen it so the vagina and cervix can be checked for signs of disease. Cell samples may be taken for a Pap test, or to test for sexually transmitted diseases or other infections. The doctor or nurse then inserts one or two lubricated, gloved fingers of one hand into the vagina and presses on the lower abdomen with the other hand to feel for lumps and check the size, shape, and position of the uterus and ovaries. The rectum may also be checked for lumps or abnormal areas. Also called pelvic exam.

**Internal filling solution (of an ISE):** an aqueous electrolyte solution, which may be gelled, containing a fixed concentration of the ion to which

the inner reference electrode is reversible; usually the chloride ion in the case of silver/silver chloride electrodes. This forms the electrolytic conductor, which transfers the charge from the detected ion in the ionselective membrane to the electrical conductor (silver wire) which conducts the charge to the measuring system. Not present in allsolidstate electrodes.

**internal medicine :** A branch of medicine that specializes in preventing, diagnosing, and treating diseases in adults, without using surgery. An internal medicine doctor is often a person's main health care provider and may coordinate treatment given by other specialists.

**Internal Pigtails :** Secure the rod position within the overlay spirals. They are recommended for applications with a soft or wet product. Internal pigtailed may be added to any Omni-Tough overlay at the time of fabrication. Minimum belt width for this feature is 12 inches (305 mm) nominal.

**internal radiation therapy :** A type of radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called brachytherapy, implant radiation therapy, and radiation brachytherapy.

**Internal reference electrode (of an ISE):** part of the electrode, which is electrically, connected to the screened cable which connects to the measuring instrument. Usually a chloridised silver wire immersed in the silver chloride/potassium chloride filling solution or gel. In the case of allsolidstate electrodes, the material of the reference electrode is deposited directly on to the internal surface of the ionselective membrane and the internal filling solution is not necessary.

**Internally Lubricated Rubber:** A silicone rubber formulation containing lubricating materials incompatible with the silicone rubber structure causing it to leach out as a lubricant

**International Atomic Energy Agency (IAEA):** The center of worldwide cooperation in the nuclear field, through which member countries and multiple international partners work together to promote the safe, secure, and peaceful use of nuclear technologies. The United Nations established the IAEA in 1957 as "Atoms for Peace."

**International Date Line:** the longitude line measuring 180° where the day changes.

**International Nuclear Regulators Association (INRA):** An association established in January 1997 to give international nuclear regulators a forum to discuss nuclear safety. Countries represented include Canada, France, Japan, Spain, South Korea, Sweden, the United Kingdom, and the United States.

**International Unit :** A unit used to measure the activity of many vitamins, hormones, enzymes, and drugs. An International Unit is the amount of a substance that has a certain biological effect. For each substance there is an international agreement on the biological effect that is expected for 1 International Unit. Also called IU.

**interneuron:** a type of neuron that connects sensory and motor neurons and carries stimuli in the brain and spinal cord.

**internist :** A doctor who has special training in internal medicine. An internist works with adult patients to prevent, diagnose, and treat diseases without using surgery.

**interphase:** the cell division cycle phase in which the cell spends most of its time; includes G1, S phase (DNA replication), and G2.

**interpretation of data:** The evaluation of all the facts available from a given investigation or study with a view to their significance for health (IRPTC, 1982).

**interrogative pronoun:** (who, whom, whose, which, what) introduce questions.

**Interrupted decoupling:** A brief delay (20–50  $\mu\text{s}$ ) in the  $1\text{H}$ – $13\text{C}$  contact time during which the magnetization of the carbons directly attached to protons rapidly dephase, with the exception of methyl carbons. The result is an enhancement of nonprotonated carbons, methyl groups, and sometimes highly-mobile methylenes. Also known as NQS (non-quaternary suppression).

**intersecting lines:** lines that meet at a point.

**interstitial cell-stimulating hormone :** A hormone made in the pituitary gland. In females, it acts on the ovaries to make follicles release their eggs and to make hormones that get the uterus ready for a fertilized egg to be implanted. In males, it acts on the testes to cause cells to grow and make testosterone. Also called LH, luteinizing hormone, and lutropin.

**interstitial fluid :** Fluid found in the spaces around cells. It comes from substances that leak out of blood capillaries (the smallest type of blood vessel). It helps bring oxygen and nutrients to cells and to remove waste products from them. As new interstitial fluid is made, it replaces older fluid, which drains towards lymph vessels. When it enters the lymph vessels, it is called lymph. Also called tissue fluid.

**interstitial radiation therapy :** A type of internal radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into a tumor or body tissue.

**Intertropical Convergence Zone:** area along the Equator where trade winds from the Northern and Southern hemispheres meet, forming thunderstorms.

**intervention :** In medicine, a treatment or action taken to prevent or treat disease, or improve health in other ways.

**intervention group :** The group in a clinical research study that receives the drug, vaccine, or other intervention being tested. Interventions may also include medical procedures (such as radiation therapy and surgery), medical devices, behavior changes (such as diet and exercise), education programs, and counseling. Also called experimental group and investigational group.

**intervention study:** An epidemiologic investigation designed to test a hypothesized cause-effect relationship by modifying a supposed causal factor in a population (Last, 1988).

**Interwoven Weave :** A fabric consisting of two conventional weaves in which one is woven into the other and sometimes reinforced by straight rods through the hinging points of the spirals.

**intestinal :** Having to do with the intestines.

**intestinal flora :** Bacteria and other organisms that live inside the intestines. They help digest food. Vitamins such as biotin and vitamin K are made by intestinal flora. Also called gut flora, gut microflora, intestinal microflora, and microflora.

**intestinal microflora :** Bacteria and other organisms that live inside the intestines. They help digest food. Vitamins such as biotin and vitamin K are made by intestinal microflora. Also called gut flora, gut microflora, intestinal flora, and microflora.

**intestinal obstruction :** A partial or complete block of the small or large intestine that keeps food, liquid, gas, and stool from moving through the intestines in a normal way. Intestinal obstructions may be caused by a twist in the intestines, hernias, inflammation, scar tissue from surgery, and certain types of cancer, such as cancers of the stomach, colon, and ovary. They may also be caused by conditions that affect the muscles of the intestine, such as paralysis. Signs and symptoms may include pain and swelling in the abdomen, constipation, diarrhea, vomiting, and problems passing gas. Most intestinal obstructions occur in the small intestine. Also called bowel obstruction.

**intestinal reabsorption:** Absorption further down the intestinal tract of material that has been absorbed before and subsequently excreted into the intestinal tract, usually through the bile (WHO, 1979).

**intestinal villi :** Tiny hair-like projections that line the inside of the small intestine. They contain blood vessels and help absorb nutrients.

**intestine :** The long, tube-shaped organ in the abdomen that completes the process of digestion. The intestine has two parts, the small intestine and the large intestine. Also called bowel.

**intetumumab:** A pan alpha-v human monoclonal antibody that recognizes alpha-v beta-1, alpha-v beta-3, alpha-v beta-5, and alpha-v beta-6 integrins with antiangiogenic and antitumor activities. Intetumumab competitively binds to and blocks both alpha-v beta-3 and alpha-v beta-5 integrins, resulting in inhibition of integrin-mediated tumor angiogenesis and tumor growth. Integrins facilitate the adhesion of stimulated endothelial cells to the extracellular matrix (ECM); trigger the secretion of ECM-rearranging proteases; and propagate signaling events that promote the survival and differentiation of cells in newly formed vasculature.

**intoplicine :** A substance that has been studied in the treatment of some types of cancer. Intoplicine blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of topoisomerase inhibitor.

**intoxicating pepper :** An herb native to islands in the South Pacific. Substances taken from the root have been used in some cultures to relieve stress, anxiety, tension, sleeplessness, and problems of menopause. Intoxicating pepper may increase the effect of alcohol and of certain drugs used to treat anxiety and depression. The U.S. Food and Drug

Administration advises users that intoxicating pepper may cause severe liver damage. The scientific name is *Piper methysticum*. Also called kava kava, rauschpfeffer, tonga, and yangona.

**intra-arterial** : Within an artery (blood vessel that carries blood from the heart to tissues and organs in the body).

**intra-arterial brachytherapy** : A type of radiation therapy used to treat liver cancer that is advanced or has come back. Tiny beads that hold the radioisotope yttrium Y 90 are injected into the hepatic artery (the main blood vessel that carries blood to the liver). The beads collect in the tumor and the yttrium Y 90 gives off radiation. This destroys the blood vessels that the tumor needs to grow and kills the cancer cells. Intra-arterial brachytherapy is a type of selective internal radiation therapy (SIRT). Also called radioembolization.

**intracarotid infusion** : The introduction of fluids and drugs directly into the carotid artery, the main artery in the neck that carries blood from the heart to the brain.

**intracavitary** : Within a cavity or space, such as the abdomen, pelvis, or chest.

**intracavitary radiation therapy** : A type of internal radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into a body cavity such as the chest cavity or the vagina.

**intracellular** : Inside a cell.

**intracolonic** : Within the colon.

**intracranial tumor** : A tumor that occurs in the brain.

**intracutaneous** : Within the skin. Also called intradermal.

**intradermal** : Within the skin. Also called intracutaneous.

**IntraDose**: (Other name for: cisplatin-e therapeutic implant)

**intraductal breast papilloma** : A benign (not cancer), wart-like growth in a milk duct of the breast. It is usually found close to the nipple and may cause a discharge from the nipple. It may also cause pain and a lump in the breast that can be felt. It usually affects women aged 35-55 years. Having a single papilloma does not increase the risk of breast cancer. When there are multiple intraductal breast papillomas, they are usually found farther from the nipple. There may not be a nipple discharge and the papillomas may not

be felt. Having multiple intraductal breast papillomas may increase the risk of breast cancer. Also called intraductal papilloma.

**intraductal carcinoma :** A noninvasive condition in which abnormal cells are found in the lining of a breast duct. The abnormal cells have not spread outside the duct to other tissues in the breast. In some cases, intraductal carcinoma may become invasive cancer and spread to other tissues. At this time, there is no way to know which lesions could become invasive. Also called DCIS and ductal carcinoma in situ.

**intraductal papilloma :** A benign (not cancer), wart-like growth in a milk duct of the breast. It is usually found close to the nipple and may cause a discharge from the nipple. It may also cause pain and a lump in the breast that can be felt. It usually affects women aged 35-55 years. Having a single papilloma does not increase the risk of breast cancer. When there are multiple intraductal papillomas, they are usually found farther from the nipple. There may not be a nipple discharge and the papillomas may not be felt. Having multiple intraductal papillomas may increase the risk of breast cancer. Also called intraductal breast papilloma.

**intraepithelial :** Within the layer of cells that form the surface or lining of an organ.

**intrahepatic :** Within the liver.

**intrahepatic bile duct :** A bile duct that passes through and drains bile from the liver.

**intrahepatic bile duct cancer :** A rare cancer that forms in the bile ducts inside the liver. A bile duct is a tube that carries bile (fluid made by the liver) between the liver and gallbladder and the small intestine. Only a small number of bile duct cancers are intrahepatic.

**intrahepatic infusion :** The delivery of anticancer drugs directly to the blood vessels of the liver.

**intralesional :** Within an area of cancer, for example, within a tumor in the skin.

**Intralipid:** (Other name for: fat emulsion)

**intraluminal intubation and dilation :** A procedure in which a plastic or metal tube is inserted through the mouth into the esophagus (the tube that carries food to the stomach) to keep it open. This procedure may be used during radiation therapy for esophageal cancer.

**intramolecular:** Refers to a characteristic within one molecule or ion, referring only to the atoms in the molecule or ion.

**Intramolecular contacts:** Non-covalent contacts between atoms in the same molecule within a crystal.

**intramolecular forces:** Forces within molecules. Forces caused by the attraction and repulsion of charged particles.

**Intramolecular interactions:** Interactions that occur within a molecule.

**intramuscular :** Within or into muscle. Also called IM.

**intramuscular injection :** Injection into muscle.

**intranasal ketamine:** An intranasal formulation of the synthetic cyclohexanone ketamine with analgesic and anesthetic activities. Although its mechanism of action is not well understood, ketamine appears to non-competitively block N-methyl-D-aspartate (NMDA) receptors and agonistically bind to and activate opioid mu and sigma receptors, thereby reducing pain perception, inducing sedation, and producing dissociative anesthesia.

**intransitive verb:** verbs that do not take an object.

**intraocular :** Within the eyeball.

**intraocular melanoma :** A rare cancer of melanocytes (cells that produce the pigment melanin) found in the eye. Also called ocular melanoma.

**intraoperative radiation therapy :** Radiation treatment aimed directly at a tumor during surgery. Also called IORT.

**intraoperative ultrasound :** A procedure that uses ultrasound (high-energy sound waves that are bounced off internal tissues and organs) during surgery. Sonograms (pictures made by ultrasound) of the inside of the body are viewed on a computer to help a surgeon find tumors or other problems during the operation. Also called IOUS.

**intrapelvic :** Within the pelvis, the lower part of the abdomen between the hip bones.

**intrapertoneal :** Within the peritoneal cavity (the area that contains the abdominal organs). Also called IP.

**intrapertoneal chemotherapy :** Treatment in which anticancer drugs are put directly into the abdominal cavity through a thin tube.

**intraperitoneal infusion** : A method of delivering fluids and drugs directly into the abdominal cavity through a thin tube. Also called peritoneal infusion.

**intraperitoneal radiation therapy** : Treatment in which a radioactive liquid is put directly into the abdomen through a thin tube.

**intrapleural** : Within the pleural cavity.

**intraspinal** : Within the spine (backbone).

**intrathecal** : Describes the fluid-filled space between the thin layers of tissue that cover the brain and spinal cord. Drugs can be injected into the fluid or a sample of the fluid can be removed for testing.

**intrathecal chemotherapy** : Treatment in which anticancer drugs are injected into the fluid-filled space between the thin layers of tissue that cover the brain and spinal cord.

**intratumoral** : Within a tumor.

**intrauterine** : Inside the uterus (the small, hollow, pear-shaped organ in a woman's pelvis in which a fetus develops).

**intrauterine device** : A small, plastic T-shaped device that is placed inside the uterus (the small, hollow, pear-shaped organ in a woman's pelvis in which a fetus develops) to prevent pregnancy. Intrauterine devices prevent sperm from fertilizing an egg, and prevent fertilized eggs from implanting in the uterus. The use of intrauterine devices is also being studied in the prevention and treatment of endometrial cancer and other conditions. Also called IUD.

**intravaginal** : Having to do with the inside of the vagina (the birth canal).

**intravasation** : The movement of a cell or a foreign substance through the wall of a blood or lymph vessel into the vessel itself. In cancer, this is how cancer cells pass through a vessel wall and enter the blood or lymph systems. It is one way that cancer spreads in the body.

**intravenous**: Into or inside the vein

**intravenous** : Into or within a vein. Intravenous usually refers to a way of giving a drug or other substance through a needle or tube inserted into a vein. Also called IV.

**intravenous chemotherapy** : Treatment in which anticancer drugs are given through a needle or tube inserted into a vein. The anticancer drugs

travel through the blood to kill cancer cells in the body.

**intravenous infusion :** A method of putting fluids, including drugs, into the bloodstream. Also called infusion.

**intravenous injection :** Injection into a vein.

**intravenous pyelogram :** An x-ray image of the kidneys, ureters, and bladder. It is made after a substance that shows up on x-rays is injected into a blood vessel. The substance outlines the kidneys, ureters, and bladder as it flows through the system and collects in the urine. An intravenous pyelogram is usually made to look for a block in the flow of urine.

**intravenous pyelography :** A procedure in which x-ray images of the kidneys, ureters, and bladder are taken at regular times after a substance that shows up on x-rays is injected into a blood vessel. The substance outlines the kidneys, ureters, and bladder as it flows through the system and collects in the urine. Intravenous pyelography is usually done to look for a block in the flow of urine. Also called IVP.

**intraventricular infusion :** The delivery of a drug into a fluid-filled cavity within the heart or brain.

**intravesical :** Within the bladder.

**intravitreal chemotherapy :** Treatment in which anticancer drugs are injected directly into the vitreous humor (gel-like fluid inside the eye). Intravitreal chemotherapy is used to treat retinoblastoma that has spread to the vitreous humor and has come back or has not gotten better after other treatment.

**Intrinsic clotting pathway:** The-blood clotting cascade of enzyme activities that is initiated by the activation of factor XII through contact of activating proteins (kininogen and kallikrein) with abnormal cell surfaces produced by injury; at least six proteins are activated in the pathway to thrombin formation and the continuing sequence that leads to a blood clot.

**Intrinsic dissolution:** A method of measuring dissolution that eliminates the effect of surface area.

**Intrinsic dissolution rate (IDR):** The rate of dissolution measured in an intrinsic dissolution apparatus. The intrinsic dissolution rate is independent of surface area.

**Intrinsic factor:** A glycoprotein secreted into the gut to bind vitamin B12 and assist in its absorption into the intestinal epithelium.

**Intrinsic Viscosity:** The intrinsic viscosity of a polymer is the limiting value of infinite dilution of the ratio at the specific viscosity of the polymer solution to its concentration in moles per liter.

**INTRINSIC VISCOSITY (IV):** The limiting value of viscosity (at infinite dilution) of a polymer in a solution, which is used in the determination of an average molecular weight. The viscosity average molecular weight lies between the weight average and number average molecular weight (see also MOLECULAR WEIGHT).

**introduction:** beginnings of essays that establish the purpose and tone; introductions should attract the reader's attention and guide the reader naturally into the rest of the paper.

**Intron:** A segment of the nascent transcript that is removed by splicing. Also refers to the corresponding region in the DNA. Synonymous with intervening sequence.

**intron :** The sequence of DNA in between exons that is initially copied into RNA but is cut out of the final RNA transcript and therefore does not change the amino acid code. Some intronic sequences are known to affect gene expression.

**intron (intervening sequence):** A sequence of nucleotides in a gene that is transcribed but excised before the gene is translated.

**Intron A :** A drug used to treat AIDS-related Kaposi sarcoma in certain patients, hairy cell leukemia, and melanoma that has been removed by surgery. It is also used with other anticancer drugs to treat a certain type of non-Hodgkin lymphoma. Intron A is also used to treat some infections caused by viruses, such as the hepatitis C virus. It is being studied in the treatment of other types of cancer and other conditions. Intron A is a form of interferon alfa (a substance normally made by cells in the immune system) and is made in the laboratory. It is a type of cytokine and a type of biological response modifier. Also called IFN alpha-2B, interferon alfa-2b, and recombinant interferon alfa-2b.

**Introns:** Regions of the primary transcript that are removed in the mature mRNA. Also called intervening sequences.

**intrusion:** magma that crosses through other rock layers, cooling and hardening before reaching the surface.

**intrusive:** rock that forms below the Earth's surface (plutonic).

**intrusive igneous rock:** igneous rock that formed from magmas that moved upward into cracks and voids deep in the crust and that never reached the surface.

**intrusive thought :** An unpleasant memory or idea that occurs often in a person's everyday thoughts and keeps him or her from thinking about other things. Interfering thoughts can make sleep difficult and make a person unable to carry out daily activities. Also called interfering thought.

**Intumescence:** A mechanism whereby fire-retardant paints protect the substrates to which they are applied. An intumescent paint puffs up when exposed to high temperatures, forming an insulating, protective layer over the substrate. OR To swell enlarge or expand when exposed to heat. Many fire retardant materials have this property.

**inulin:** A naturally occurring, indigestible and non-absorbable oligosaccharide produced by certain plants with prebiotic and potential anticancer activity. Inulin stimulates the growth of beneficial bacteria in the colon, including Bifidobacteria and Lactobacilli, thereby modulating the composition of microflora. This creates an environment that protects against pathogens, toxins and carcinogens, which can cause inflammation and cancer. In addition, fermentation of inulin leads to an increase in short-chain fatty acids and lactic acid production, thereby reducing colonic pH, which may further control pathogenic bacteria growth and may contribute to inulin's cancer protective properties. Check for active clinical trials using this agent.

**Invanz:** (Other name for: ertapenem sodium)

**invasive breast cancer :** Cancer that has spread from where it began in the breast to surrounding normal tissue. The most common type of invasive breast cancer is invasive ductal carcinoma, which begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple). Another type is invasive lobular carcinoma, which begins in the lobules (milk glands) of the breast. Invasive breast cancer can spread through the blood and lymph systems to other parts of the body. Also called infiltrating breast cancer.

**invasive cancer :** Cancer that has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues. Also called infiltrating cancer.

**invasive cervical cancer :** Cancer that has spread from the surface of the cervix to tissue deeper in the cervix or to other parts of the body.

**invasive ductal carcinoma :** The most common type of invasive breast cancer. It begins in the lining of the milk ducts (thin tubes that carry milk from the lobules of the breast to the nipple) and spreads outside the ducts to surrounding normal tissue. Invasive ductal carcinoma can also spread through the blood and lymph systems to other parts of the body. Also called infiltrating ductal carcinoma.

**invasive hydatidiform mole :** A type of cancer that grows into the muscular wall of the uterus. It is formed after conception (fertilization of an egg by a sperm). It may spread to other parts of the body, such as the vagina, vulva, and lung. Also called chorioadenoma destruens.

**invasive lobular carcinoma :** A type of invasive breast cancer that begins in the lobules (milk glands) of the breast and spreads to surrounding normal tissue. It can also spread through the blood and lymph systems to other parts of the body. Also called infiltrating lobular carcinoma.

**invasive procedure :** A medical procedure that invades (enters) the body, usually by cutting or puncturing the skin or by inserting instruments into the body.

**inverse:** A math property which states:  $A+(-A)=0$  and  $A*(1/A)=1$

**inverse relationship or proportion:** When one quantity decreases as a result of the other increasing or vice versa. For example, density is inversely related to volume for constant mass.

**inversion:** an atmospheric condition where warm air is on top of cold air. OR An anomaly in the normal positive lapse rate; usually refers to a thermal inversion, in which temperature increases rather than decreases with height. OR A nucleotide sequence whose normal order is reversed in a gene or in a chromosome. OR A chromosomal defect in which a segment of the chromosome breaks off and reattaches in the reverse direction.

**invertebrates:** the most primitive of the chordates; lack a backbone.

**inverted papilloma :** A type of tumor in which surface epithelial cells grow downward into the underlying supportive tissue. It may occur in the nose and/or sinuses or in the urinary tract (bladder, renal pelvis, ureter, urethra). When it occurs in the nose or sinuses, it may cause symptoms

similar to those caused by sinusitis, such as nasal congestion. When it occurs in the urinary tract, it may cause blood in the urine.

**Inverted region:** Refers to the optimal rate of electron transfer as a function of free energy of the driving force; the rate of electron transfer increases toward the inverted region as the free energy of the driving force increases but then decreases with further increases in driving force.

**Inverted repeat:** A chromosome segment that is identical to another segment on the same chromosome except that it is oriented in the opposite direction.

**Inverted terminal repeats:** Sequences of 20 or so base pairs at opposite ends of a bacterial insertion sequence.

**investigational :** In clinical trials, refers to a drug (including a new drug, dose, combination, or route of administration) or procedure that has undergone basic laboratory testing and received approval from the U.S. Food and Drug Administration (FDA) to be tested in human subjects. A drug or procedure may be approved by the FDA for use in one disease or condition, but be considered investigational in other diseases or conditions. Also called experimental.

**investigational agent :** A substance that has been tested in the laboratory and has been approved by the U.S. Food and Drug Administration (FDA) for testing in people. Clinical trials test how well investigational agents work and whether they are safe to use. An investigational agent may be approved by the FDA for use in one disease or condition but still be considered investigational in other diseases or conditions. Also called experimental drug, IND, investigational drug, and investigational new drug.

**investigational drug :** A substance that has been tested in the laboratory and has been approved by the U.S. Food and Drug Administration (FDA) for testing in people. Clinical trials test how well investigational drugs work and whether they are safe to use. An investigational drug may be approved by the FDA for use in one disease or condition but still be considered investigational in other diseases or conditions. Also called experimental drug, IND, investigational agent, and investigational new drug.

**investigational group :** The group in a clinical research study that receives the drug, vaccine, or other intervention being tested. Interventions may also include medical procedures (such as radiation therapy and surgery), medical

devices, behavior changes (such as diet and exercise), education programs, and counseling. Also called experimental group and intervention group.

**investigational new drug** : A substance that has been tested in the laboratory and has been approved by the U.S. Food and Drug Administration (FDA) for testing in people. Clinical trials test how well investigational new drugs work and whether they are safe to use. An investigational new drug may be approved by the FDA for use in one disease or condition but still be considered investigational in other diseases or conditions. Also called experimental drug, IND, investigational agent, and investigational drug.

**investigator** : A researcher in a clinical trial or clinical study.

**investment problems**: Word problems that involve investing money at a simple interest rate.

**inviable** : Not able to survive.

**Invirase**: (Other name for: saquinavir mesylate)

**involuntary** : An action that is not made by choice. In the body, involuntary actions (such as blushing) occur automatically, and cannot be controlled by choice.

**involuntary nervous system** : The part of the nervous system that controls muscles of internal organs (such as the heart, blood vessels, lungs, stomach, and intestines) and glands (such as salivary glands and sweat glands). One part of the involuntary nervous system helps the body rest, relax, and digest food and another part helps a person fight or take flight in an emergency. Also called ANS and autonomic nervous system.

**INxin**: (Other name for: IL4-Pseudomonas exotoxin fusion protein PRX321)

**iobenguane I 123** : A drug containing a form of radioactive iodine called I 123 that is used to detect certain types of tumors, including pheochromocytomas and neuroblastomas. Radiation from the I 123 may help show where cancer cells are in the body. Iobenguane I 123 is a type of radioimaging agent and a type of radioconjugate. Also called 123I-MIBG, AdreView, and iodine I 123 metaiodobenzylguanidine.

**iobenguane I 131**: An I 131 radioiodinated synthetic analogue of the neurotransmitter norepinephrine. Iobenguane localizes to adrenergic tissue and, in radioiodinated forms, may be used to image or eradicate tumor cells

that take up and metabolize norepinephrine. Check for active clinical trials using this agent. or A drug containing a form of radioactive iodine called I 131 that is used to find or treat certain types of tumors, including pheochromocytomas and neuroblastomas. It is also used to relieve pain caused by cancer that has spread to the bones. Radiation from the I 131 may help kill cancer cells or show where they are in the body. Iobenguane I 131 is a type of radioimaging agent and a type of radioconjugate. Also called 131I-MIBG and iodine I 131 metaiodobenzylguanidine.

**iobenguane scan :** A procedure used to find neuroendocrine tumors, such as neuroblastomas and pheochromocytomas. A small amount of a substance called radioactive iobenguane is injected into a vein and travels through the bloodstream. Neuroendocrine tumor cells take up the radioactive iobenguane and are detected by a scanner. Also called metaiodobenzylguanidine scan and MIBG scan.

**iobitridol:** A water-soluble, tri-iodinated, non-ionic monomeric benzoate derivative and contrast medium used in diagnostic radiography. Upon administration, iobitridol is distributed through the vascular system and interstitial space. Like other organic iodine compounds, this agent blocks x-rays and appears opaque on x-ray film thus, enhancing the visibility of body parts containing this agent. Iobitridol is rapidly removed by the kidneys in an unchanged form, and in cases of renal failure, heterotropic excretion occurs via the biliary route. Check for active clinical trials using this agent.

**iodinated contrast dye:** A contrast agent containing an iodine-based dye used in many diagnostic imaging examinations, including computed tomography, angiography, and myelography. Check for active clinical trials using this agent.

**Iodine:** Symbol:"I" Atomic Number:"53" Atomic Mass: 126.90amu. Iodine is member of the halogen family. Iodine is a bluish black solid but can quickly become a bluish gas. It is less reactive than other halogens. The element is used as an ingredient in medicine, as a dye, and as an essential element in your diet. Without iodine, you could get a goiter (swelling of your thyroid).

**iodine :** An element that is necessary for the body to make thyroid hormone. It is found in shellfish and iodized salt.

**iodine 131-6-beta-iodomethyl-19-norcholesterol:** A radioiodine-labeled cholesterol analogue with radioisotopic activity. Iodine 131-1-6-beta-

iodomethyl-19-norcholesterol accumulates in tissues where steroid hormones are produced, including the adrenal cortex and, to a lesser extent, the ovaries and the testes. After binding to low-density lipoprotein (LDL) receptors in the adrenal cortex, this agent is internalized, permitting scintigraphic localization of areas of adrenocortical glucocorticoid, mineralocorticoid and androgen secretion, and the scintigraphic assessment of adrenocortical function.

**iodine I 123:** A radioactive isotope of iodine, a nonmetallic element of the halogen group with an atomic mass of 123 and a half-life of 13.2 hours with radioisotopic activity. Selectively accumulating in the thyroid tissue, iodine I 123 emits gamma rays that can be detected with gamma scintigraphy, allowing localization of thyroid tissue. This agent may be used as a tracer in whole body scintigraphy (WBS) to localize thyroid carcinoma metastases.

**iodine I 123 ADAM:** A radiopharmaceutical containing the serotonin transporter (SERT) ligand ADAM [2-((2-((dimethylamino)methyl)phenyl)thio)-5-iodophenylamine] labeled with the radioisotope iodine I 123, with SERT-binding and radioisotope activities. Upon administration, iodine I 123 ADAM selectively binds to SERT-expressing cells; subsequently, SERT-expressing tissues may be visualized using single photon emission computed tomography (SPECT). SERT is a monamine transporter protein found in the membranes of neurons and platelets; in neurons it transports the neurotransmitter serotonin from synaptic spaces into presynaptic neurons, terminating serotonin's function.

**iodine I 123 anti-CEA recombinant diabody T84.66:** A radioimmunoconjugate comprised of a recombinant scFv dimer diabody of a monoclonal antibody against human carcinoembryonic antigen (CEA) labeled with iodine I 123 (I-123) with potential radioimmunolocalization applications. The antibody moiety of iodine I 123 anti-CEA recombinant diabody T84.66 binds to cells expressing CEA, selectively delivering I-123 upon cellular internalization and allowing the scintigraphic imaging of CEA-expressing tumor cells. CEA, a tumor associated antigen, is overexpressed in many cancer types, including gastrointestinal, breast, non-small cell lung, and thyroid cancers. Compared to whole monoclonal antibodies, diabody fragments offer the advantages of rapid tumor targeting, rapid blood clearance, more uniform tumor distribution, and a lower potential for eliciting an immune response.

**iodine I 123 iodobenzamide:** A radiopharmaceutical containing the dopamine D2/D3 receptor agonist iodobenzamide (IBZM) labeled with the radionuclide iodine I 123 with dopamine receptor-binding and radioisotopic activities. Upon administration, iodine I 123 iodobenzamide binds to dopamine D2/D3 receptors; subsequently, tissues expressing these receptors can be visualized using single photon emission computed tomography (SPECT). Dopamine receptors are a class of metabotropic G protein-coupled receptors found in the central nervous system (CNS) and neuroendocrine tumors such as pheochromocytoma and paraganglioma.

**iodine I 123 iodometomidate:** An iodine I-123 conjugate of metomidate (MTO) with potential application in adrenal imaging. Metomidate is a potent and selective inhibitor of the cytochrome P-450 enzymes, especially CYP11B1 (11 beta-hydroxylase) and CYP11B2 (aldosterone synthase). Because both CYP11B1 and CYP11B2 are expressed exclusively in the adrenal cortex, I-123 iodometomidate can be used as a radiotracer for adrenal scintigraphy.

**iodine I 123 metaiodobenzylguanidine :** A drug containing a form of radioactive iodine called I 123 that is used to detect certain types of tumors, including pheochromocytomas and neuroblastomas. Radiation from the I 123 may help show where cancer cells are in the body. Iodine I 123 metaiodobenzylguanidine is a type of radioimaging agent and a type of radioconjugate. Also called 123I-MIBG, AdreView, and iobenguane I 123.

**iodine I 124:** A radioactive isotope of iodine, a nonmetallic element of the halogen group, with an atomic mass of 124 and a half-life of 4.18 days with radioisotopic activity. Selectively accumulating in thyroid tissue, iodine I 124 emits positrons that can be detected by positron emission tomography (PET), allowing localization of thyroid tissue. This radiosotope also emits gamma rays.

**iodine I 124 CPD-1028:** A radioconjugate composed of the insulin-like growth factor 1 receptor (IGF-1R) binding agent CPD-1028 and conjugated to the radionuclide iodine I 124, with potential tumor imaging properties upon positron emission tomography/computed tomography (PET/CT). Upon administration, iodine I 124 CPD-1028 targets and binds to IGF-1R-expressing tumor cells. Upon PET/CT imaging, the iodine I 124 moiety can be visualized and the quantity of IGF-1R-expressing tumor cells can be assessed. IGF-1R, a receptor tyrosine kinase overexpressed in a variety of

human cancers, plays a significant role in the stimulation of cellular proliferation, oncogenic transformation, and the suppression of apoptosis.

**iodine I 124 FIAU:** A radioconjugate containing the nucleoside analog 2'-fluoro-2'-deoxy-1beta-D-arabinofuranosyl-5-iodouracil (FIAU) labeled with the radioisotope iodine I 124 with positron-emitting activity.

Chemotherapeutic agents such as bortezomib may induce viral thymidine kinase expression in EBV- and Kaposi's sarcoma herpesvirus (KSHV)-associated tumors. Subsequent to chemotherapy induction of viral TK in these tumors, administered iodine I 124 FIAU is phosphorylated by expressed viral TK, becoming selectively trapped within TK-expressing tumor cells; these cells can then be visualized with positron emission tomography (PET). Viral TK is either not expressed or is expressed at very low levels in EBV- and Kaposi's sarcoma herpesvirus (KSHV)-associated tumors and may be activated by certain chemotherapeutic agents.

**iodine I 124 iobenguane:** A radioconjugate composed of the positron-emitting radioisotope iodine I 124 labeled to iobenguane, the synthetic aralkylguanidine analogue of the neurotransmitter norepinephrine (NE), with potential diagnostic imaging applications upon positron emitting tomography (PET) or computed tomography (CT). Upon administration, iodine I 124 iobenguane is taken up and accumulates in the granules of adrenal medullary chromaffin cells and in the pre-synaptic granules of adrenergic neurons in a manner almost identical with that of NE. In turn, tumor cells can be imaged upon PET or CT.

**iodine I 124 iodo-azomycin galactopyranoside:** A diagnostic radiopharmaceutical comprised of iodo-azomycin galactopyranoside (IAZGP) labeled with the positron-emitting radioisotope iodine I 124 and used as an imaging agent. Iodine I 124 iodo-azomycin galactopyranoside (I-124 IAZGP) is reduced under hypoxic conditions, covalently binding to macromolecules in hypoxic cells. After incorporation into hypoxic tumor cell DNA, I-124 IAZGP can be localized and quantified using positron emission tomography (PET), allowing a quantitative assessment of hypoxic tumor burden. IAZGP appears to have a higher water solubility and faster clearance from normal tissue than traditional imidazole tracers.

**iodine I 124 iododeoxyuridine:** A radiopharmaceutical comprised of the thymidine analog, 5-iodo-2-deoxyuridine (idoxuridine), labeled with the positron emitter iodine I 124. After incorporation into tumor cell DNA,

positron emission tomography (PET) is used to image iodine I 124 localized to tumor cells for determining and monitoring tumor burden. Check for active clinical trials using this agent.

**iodine I 124 monoclonal antibody 3F8:** A radioimmunoconjugate consisting of 3F8, a murine anti-GD2 ganglioside monoclonal antibody labeled with iodine I 124 (I-124), with radioimaging activity using positron emission tomography (PET). Upon intravenous administration of iodine I 124 monoclonal antibody 3F8, the 3F8 moiety binds to GD2 expressed on tumor cells. This binding enables both PET imaging via iodine I 124 and the visualization of GD2-expressing tumor cells. GD2 is a ganglioside overexpressed in a variety of cancer cells, including neuroblastoma cells.

**iodine I 124 monoclonal antibody 8H9:** A radioimmunoconjugate consisting of the iodine I 124-radiolabeled murine IgG1 monoclonal antibody (MoAb) 8H9 directed against the cell surface glycoprotein CD276 (4Ig-B7-H3) with potential for radioimaging using positron emission tomography (PET). Through convection enhanced delivery, iodine I 124 monoclonal antibody 8H9 binds to the 4Ig domain of CD276, in turn CD276 expressing tumor cells may be visualized upon PET imaging of the iodine I 124 moiety. CD276, a tumor associated antigen and member of the B7 family of co-stimulatory proteins, suppresses natural killer (NK) cell and cytotoxic T-lymphocyte activation; it is expressed on the cell membranes of a wide variety of tumors of neuroectodermal, mesenchymal and epithelial origin and its expression is associated with increased aggressiveness, poor prognosis and resistance. Check for active clinical trials using this agent.

**iodine I 124 monoclonal antibody A33:** A radioimmunoconjugate of a humanized monoclonal antibody (MoAb) A33 labelled with iodine 124 (I-124). MoAb A33 recognizes A33 antigen, a 43 KDa transmembrane glycoprotein of the immunoglobulin superfamily, highly and homogeneously expressed in 95% of colorectal cancer metastases, with only restricted expression in normal colonic mucosa. I-124 MoAb A33 delivers beta particle emitting I-124 nuclide directly to metastatic colorectal tissues, thereby this agent could be used in kinetics studies or radioimmunotherapy.

**iodine I 124 NM404:** A phospholipid ether analog labeled with iodine I 124, with a potential imaging property upon positron emission tomography (PET). Upon administration, iodine I 124 NM404 selectively accumulates

in and is retained within tumor cells for a prolonged period of time due to the decreased activity of a phospholipase D (PLD), most likely isoform 1 of PLD, in tumor cells compared to normal cells. As tumor cells are unable to metabolize and eliminate MN404, tumor cells can be visualized upon PET imaging. In addition, iodine I 124 NM404 may provide a more accurate image of the tumor than imaging with the current standard. PLD is an enzyme found in the cell membrane of normal cells that degrades phospholipids. Check for active clinical trials using this agent.

**iodine I 124 phospholipid ether analogue CLR1404:** A small molecule radiopharmaceutical composed of the radioisotope iodine I 124 covalently attached to a proprietary alkylphospholipid ether (PLE) analogue, with potential imaging activity upon positron emission tomography (PET). Iodine I 124 phospholipid ether analogue CLR1404 is selectively taken up by tumor cells via membrane lipid rafts and accumulates in tumor cells. The accumulation of this agent is due to a decreased ability of tumor cells to metabolize PLEs because certain tumor cells have lower levels of the enzyme phospholipase-D, in comparison to normal cells. This facilitates imaging of cancer cells by PET. Lipid rafts, specialized microdomains of plasma membrane, are overexpressed in cancer cells compared to normal cells. In addition, the radioiodine moiety of this agent is resistant to deiodination.

**iodine I 124 PU-AD:** A radioconjugate composed of PU-AD, a synthetic purine-scaffold inhibitor of the molecular chaperone heat shock protein 90 (Hsp90), conjugated to the radioisotope iodine I 124, with potential imaging activity upon positron emission tomography (PET). Upon administration of iodine I 124 PU-AD, the PU-AD moiety selectively binds to cancer cells expressing stress-induced Hsp90 (stress Hsp90). Upon PET, Hsp90-overexpressing cancer cells can be visualized and patients who may benefit from PU-AD therapy can be identified. This radioconjugate may also be used to determine the pharmacokinetics of the therapeutic agent PU-AD. PU-AD is able to cross the blood-brain-barrier (BBB) and specifically targets stress Hsp90, as seen in certain conditions, such as cancer and neurodegenerative diseases, while normal housekeeping Hsp90 complexes are not targeted by PU-AD at dose levels administered for imaging. Additionally, housekeeping Hsp90 complexes are only targeted at doses that are much larger than that are needed to exert an anticancer effect. Check for active clinical trials using this agent.

**iodine I 124-labeled anti-phosphatidylserine monoclonal antibody**

**PGN650:** A radioimmunoconjugate composed of the F(ab')<sub>2</sub> fragment of human monoclonal antibody PGN650 against phosphatidylserine (PS) labeled with the radioisotope iodine I 124, with potential imaging activity upon positron-emission tomography (PET). Upon administration, the MoAb moiety of PGN650 binds to exposed PS on tumor cells, thereby allowing for the visualization of tumors upon PET. This may facilitate the assessment of the effectiveness of antitumor agents. The phospholipid PS is normally located on the inner leaflet of the plasma membrane of healthy cells but is flipped to the outer leaflet in the endothelial lining of the tumor vasculature and other tumor cells in response to chemo- or radio- treatments in addition to oxidative stress.

**iodine I 124-labeled anti-PSCA A11 minibody:** A radioconjugate composed of an affinity-matured antibody fragment, the A11 minibody, directed against human prostate stem cell antigen (PSCA), and conjugated with the radioisotope iodine I 124, that can potentially be used as an imaging agent for positron emission tomography (PET)/computed tomography (CT). The minibody moiety of iodine I 124-labeled anti-PSCA A11 minibody selectively targets and binds to PSCA. The PSCA-expressing tumor cells can then be visualized using PET/CT. PSCA, a cell surface antigen expressed in normal human prostate and bladder, is overexpressed in a variety of cancers, including bladder, pancreatic, and prostate cancer. The A11 minibody is formed by the fusion of a single chain Fv fragment with the immunoglobulin G1 CH3 domain. Check for active clinical trials using this agent.

**iodine I 124-labeled HSP90 inhibitor PUH71:** A radioconjugate containing the purine scaffold heat shock protein 90 (Hsp90) inhibitor PUH71 labeled with the radioisotope iodine I 124, with positron emitting activity. Hsp90 inhibitor PUH71 is thought to bind to cytosolic Hsp90 and the endoplasmic reticulum paralogue gp96 (HSP90B1), thereby inhibiting its molecular chaperone function and promoting the degradation of the oncogenic signaling proteins. This induces caspase-dependent apoptosis. The iodine I 124 moiety can be visualized using positron emission tomography (PET) imaging, thereby allowing an assessment of the accumulation of PUH71 in vivo, particularly in tumors. Hsp90, a chaperone protein upregulated in a variety of tumor cells, regulates the folding, stability and degradation of many oncogenic signaling proteins.

**iodine I 125:** A radioactive isotope of iodine, a nonmetallic element of the halogen group. With a half-life of 60 days, iodine 125 occurs naturally and can be produced artificially. This agent has both therapeutic and diagnostic uses, particularly in thyroid disease.

**iodine I 125 anti-EGFR-425 monoclonal antibody:** A radioimmunoconjugate consisting of a murine IgG2a monoclonal antibody directed against the human epidermal growth factor receptor (EGFR) labeled with iodine I 125 with potential antineoplastic activity. Iodine I 125 anti-EGFR-425 monoclonal antibody binds specifically to the epidermal growth factor receptor (EGFR). Upon binding to EGFR-expressing tumor cells, this agent is internalized, selectively delivering a potentially cytotoxic dose of gamma radiation. EGFR is a receptor tyrosine kinase that may be overexpressed on the cell surfaces of various solid tumors. Check for active clinical trials using this agent.

**iodine I 131:** A radioactive isotope of iodine with an atomic mass of 131, a half life of eight days, and potential antineoplastic activity. Selectively accumulating in the thyroid gland, iodine I 131 emits beta and gamma particles, thereby killing thyroid cells and decreasing thyroid hormone production.

**iodine I 131 anti-fibronectin antibody fragment L19-SIP:** An iodine 131 radioimmunoconjugate of a small immunoprotein (SIP), derived from the variable region fragment of human monoclonal antibody L19, that is directed against the extra-domain B (ED-B) of fibronectin, with potential radioimmunotherapeutic activity. The SIP moiety of iodine I 131 anti-fibronectin antibody fragment L19-SIP binds to the ED-B domain of fibronectin on tumor cells in the tumor neovasculature. Upon internalization, the I 131 radionuclide may selectively detect or deliver cytotoxic radiation to fibronectin-expressing tumor cells. ED-B of fibronectin, a naturally occurring marker of tissue remodeling and angiogenesis, is expressed in the majority of aggressive solid human tumors, whereas it is not detectable in normal vessels and tissues.

**iodine I 131 chimeric monoclonal antibody G-250:** A radioimmunoconjugate comprised of the chimeric monoclonal antibody G-250 conjugated with iodine I 131 with potential antineoplastic activity. The antibody moiety of iodine I 131 chimeric monoclonal antibody G-250 binds

to G-250, a renal-cell carcinoma-associated antigen, delivering cytotoxic iodine I 131 specifically to renal cell carcinoma cells that express G-250.

**iodine I 131 ethiodized oil:** A cytotoxic radioconjugate consisting of ethiodized oil, an iodinated ethyl ester derived from poppy seed oil, labeled with iodine 131 (I-131). Iodine I 131 ethiodized oil accumulates in hepatocellular carcinoma and hepatoblastoma tumor cells, resulting in targeted cytotoxicity to tumor cells while sparing surrounding normal cells and tissues. Check for active clinical trials using this agent. or A radioactive substance being studied in the treatment of liver cancer. It is a form of poppy seed oil that contains iodine, some of which is the radioactive substance iodine I 131. It builds up in the blood and lymph vessels in the liver and may kill cancer cells. It is a type of radiopharmaceutical. Also called iodine I 131 Lipiodol.

**iodine I 131 Lipiodol :** A radioactive substance being studied in the treatment of liver cancer. It is a form of poppy seed oil that contains iodine, some of which is the radioactive substance iodine I 131. It builds up in the blood and lymph vessels in the liver and may kill cancer cells. It is a type of radiopharmaceutical. Also called iodine I 131 ethiodized oil.

**iodine I 131 metaiodobenzylguanidine :** A drug containing a form of radioactive iodine called I 131 that is used to find or treat certain types of tumors, including pheochromocytomas and neuroblastomas. It is also used to relieve pain caused by cancer that has spread to the bones. Radiation from the I 131 may help kill cancer cells or show where they are in the body. Iodine I 131 metaiodobenzylguanidine is a type of radioimaging agent and a type of radioconjugate. Also called 131I-MIBG and iobenguane I 131.

**iodine I 131 monoclonal antibody 3F8:** A radioimmunoconjugate consisting of 3F8, a murine anti-GD2 ganglioside monoclonal antibody labeled with iodine 131 (I-131), with radioimaging and radioimmunotherapeutic properties. Using monoclonal antibody 3F8 as a carrier for I-131 results in the targeted imaging and/or destruction of cells expressing GD2. GD2 is a ganglioside which is overexpressed in malignant melanoma, neuroblastoma, and small cell carcinoma of the lung.

**iodine I 131 monoclonal antibody 81C6:** A radioimmunoconjugate consisting of 81C6, a murine IgG2 anti-tenascin monoclonal antibody labeled with iodine 131 (I-131), with radioimaging and

radioimmunotherapeutic activities. Using monoclonal antibody 81C6 as a carrier for I-131 results in the targeted imaging and/or destruction of cells expressing tenascin. Tenascin is an extracellular matrix protein which is overexpressed in gliomas and other cancers. Check for active clinical trials using this agent.

**iodine I 131 monoclonal antibody 8H9:** A radioimmunoconjugate consisting of the iodine 131-radiolabeled murine IgG1 monoclonal antibody 8H9 directed against the surface immunomodulatory glycoprotein 4Ig-B7-H3 with potential radioimaging and radioimmunotherapeutic uses. Iodine I 131 monoclonal antibody 8H9 binds to 4Ig-B7-H3 (human B7-H3 with 4 Ig-like domains) and may be used to radioimage and/or destroy tumor cells that express tenascin. 4Ig-B7-H3 inhibits T-cell activation and the production of effector cytokines such as interferon-gamma and interleukin-4; it is expressed on the cell membranes of a wide variety of tumors of neuroectodermal, mesenchymal and epithelial origin and is highly expressed on monocyte-derived dendritic cells (mdDCs). In vitro, it has been shown that monoclonal antibody-mediated masking of 4Ig-B7-H3 on neuroblastoma cells resulted in the enhancement of natural killer (NK)-mediated lysis of target cells.

**iodine I 131 monoclonal antibody BC8:** A radioimmunoconjugate consisting of BC8, a murine IgG1 anti-CD45 monoclonal antibody labeled with iodine 131 (I-131), with radioimmunotherapeutic properties. Using monoclonal antibody BC8 as a carrier for I-131 results in the targeted destruction of cells expressing CD45. CD45 is tyrosine phosphatase expressed on virtually all leukocytes, including myeloid and lymphoid precursors in bone marrow and mature lymphocytes in lymph nodes; it is also expressed on most myeloid and lymphoid leukemic cells, but not on mature erythrocytes or platelets. or A substance being studied in the treatment of some types of leukemia and lymphoma. BC8 is a monoclonal antibody that binds to a protein called CD45, which is found on most white blood cells and some types of leukemia and lymphoma cells. It is linked to a radioactive substance called iodine I 131, which may help kill cancer cells. Iodine I 131 monoclonal antibody BC8 is a type of radioimmunoconjugate.

**iodine I 131 monoclonal antibody CC49-deltaCH2:** A radioimmunoconjugate consisting of the humanized CH2 domain-deleted

monoclonal antibody CC49 and iodine I 131 with antineoplastic activity. Monoclonal antibody CC49-deltaCH2 targets the tumor-associated glycoprotein 72 (TAG-72) that is expressed by a wide range of human neoplasms including colorectal, gastric, pancreatic, ovarian, endometrial, breast, non-small cell lung, and prostate cancers. Iodine I 131 monoclonal antibody CC49-deltaCH2 binds to tumor cells expressing TAG-72, selectively delivering a cytotoxic dose of beta and gamma radiation.

**iodine I 131 monoclonal antibody F16SIP:** A fully human monoclonal antibody (MoAb) against human A1 domain of tenascin-C, in small immunoprotein (SIP) format conjugated with iodine 131 with potential antineoplastic activity. Iodine I 131 MoAb F16SIP binds to tenascin-C on the vascular tissues and delivers cytotoxic radiation to the tumors, thereby minimizing systemic radiotoxicity. Tenascin-C is a glycoprotein of the extracellular matrix, and the large isoform of this matrix protein is expressed and restricted around vascular structures in the tumor stroma of a variety of different tumors.

**iodine I 131 monoclonal antibody TNT-1/B:** An iodine 131 labeled radioimmunoconjugate of monoclonal antibody (MOAB) TNT-1/B with radioimaging and antineoplastic properties. MOAB TNT-1/B was developed for radioimmunotherapy of solid tumors, designated as Tumor Necrosis Treatment (TNT). TNT exploits the presence of degenerating and necrotic cells within tumors by utilizing MOABs directed against universal, intracellular nucleosomal determinants consisting of histone H1 and DNA. This MOAB was conjugated with biotin (B) molecules, which increase pharmacokinetic performance of the monoclonal antibody. MOAB TNT-1/B delivers I 131 to tumor cells and results in the targeted imaging and/or destruction of cells with exposed necrotic antigens.

**iodine I 131 NM404:** A phospholipid ether analog labeled with iodine I 131, with potential radiotherapeutic and radioimaging potential upon positron emission tomography (PET). Upon administration, iodine I 131 NM404 selectively accumulates in and is retained within tumor cells for a prolonged period of time due to the decreased activity of a phospholipase D (PLD), most likely isoform 1 of PLD, in tumor cells compared to normal cells. As tumor cells are unable to metabolize and eliminate MN404, tumor cells can be visualized upon PET imaging. In addition, iodine I 131 NM404 selectively delivers a cytotoxic dose of iodine I 131 to the tumor cells. PLD

is an enzyme found in the cell membrane of normal cells that degrades phospholipids.

**iodine I 131 phospholipid ether analogue CLR1404:** A small-molecule radiopharmaceutical consisting of the beta-emitting radioisotope iodine I 131 attached to a phospholipid ether (PLE) analogue, comprised of a linear 18 carbon backbone, with potential antineoplastic activity. Iodine I 131 phospholipid ether analogue CLR1404 selectively accumulates in tumor cells, thereby delivering a cytotoxic dose of radiation to cancer cells. Compared to normal cells, tumor cells are unable to metabolize and eliminate PLEs possibly due to deficiency of the enzyme phospholipase-D. In addition, the radioiodine moiety of this agent is resistant to de-iodination.

**iodine I 131 rituximab:** A radioimmunoconjugate comprised of rituximab, a recombinant chimeric monoclonal antibody directed against the CD20 antigen, and labeled with iodine I 131 with potential antineoplastic activity. The antibody moiety of iodine I 131 rituximab binds to the CD20 antigen thereby delivering cytotoxic iodine I 131 specifically to cancer cells expressing CD20. The CD20 antigen, a hydrophobic transmembrane protein, is expressed on normal pre-B and mature B lymphocytes.

**iodine I 131 SGMIB-anti-HER2 VHH1:** A monoclonal antibody (MoAb) directed against the human epidermal growth factor receptor 2 (HER2; ERBB2) labeled with iodine I 131 using the residualizing radio-iodinating reagent N-succinimidyl 4-guanidinomethyl 3-iodobenzoate (SGMIB), with potential radiotherapeutic and radioimaging activities upon positron emission tomography (PET). Upon administration of iodine I 131 SGMIB-anti-HER2 VHH1, the HER2 MoAb moiety selectively targets and binds to HER2-expressing tumor cells. Upon PET imaging, tumor cells can be visualized. In addition, the iodine I 131 moiety of VHH1 selectively delivers a cytotoxic dose of iodine I 131 to the tumor cells. HER2, a tyrosine kinase receptor, is overexpressed by many cancer cell types. SGMIB improves tumor retention of radioactivity and decreases exocytosis.

**iodine I 131 tenatumomab:** A radioimmunoconjugate of tenatumomab, a murine monoclonal antibody targeting the tumor-associated antigen (TAA) tenascin-C (TNC), labeled with iodine I 131, with potential antineoplastic activity. The antibody moiety of iodine I 131 tenatumomab binds to TNC, thereby delivering a cytotoxic dose of iodine I 131 specifically to tumors expressing TNC. TNC, an extracellular matrix protein, is upregulated in a

variety of tumor cell types; it plays a key role in invasion, tumor cell proliferation and immune evasion. or A monoclonal antibody directed against the CD20 protein expressed on the surface of B-lymphocytes and radiolabeled with the radioisotope iodine I 131 with potential antineoplastic activity. Iodine I 131 tositumomab binds to and selectively delivers cytotoxic radiation to CD20-expressing B-lymphocytes, thereby minimizing systemic radiotoxicity. or A drug used with another drug to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of cancer. Iodine I 131 tositumomab is a form of the monoclonal antibody tositumomab that is linked to the radioactive substance iodine I 131. It is a type of radioimmunoconjugate.

**iodine I 131-labeled anti-CEA/anti-HSG bispecific monoclonal antibody TF2:** A tri-Fab bispecific monoclonal antibody (BiMoAb) divalent for the carcinoembryonic antigen (CEA) and monovalent for histamine-succinyl-glycine (HSG) peptide-hapten radiolabeled with iodine I 131 (I131) with antigen-binding and radioisotopic activities. Iodine I 131-labeled anti-CEA/anti-HSG bispecific monoclonal antibody TF2 binds to the tumor-associated antigen (TAA) CEA on CEA-expressing tumor cells; these cells may then be radioimaged scintigraphically.

**iodine I-124 girentuximab:** A radioimmunoconjugate comprised of the chimeric monoclonal antibody G250 conjugated with the positron emitter iodine I 124. The antibody moiety of iodine I 124 girentuximab may bind to renal cell carcinoma (RCC) cells that express the RCC-associated antigen G250, allowing detection of tumor-localized iodine I 124 with positron emission tomography (PET). G250 is a cell surface tumor-associated antigen (TAA) that is found in the majority of renal cell carcinomas.

**Iodine spiking factor:** The magnitude of a rapid, short-term increase in the appearance rate of radioiodine in the reactor coolant system. This increase is generally caused by a reactor transient that results in a rapid drop in reactor coolant system pressure relative to the fuel rod internal pressure.

**iodine-123 metaiodobenzylguanidine:** The neurotransmitter analogue 3-nitrobenzylguanidine conjugated to iodine I 123 and used as a gamma-emitting imaging agent. The adrenergic tissue uptake and storage of I-123 metaiodobenzylguanidine (I-123 MIBG) mimics that of norepinephrine (NE). The distribution of this agent enables the scintigraphic imaging of neural crest tumors, such as neuroblastoma and pheochromocytoma.

**iodixanol:** A dimeric iso-osmolar, non-ionic, hydrophilic iodinated radiocontrast agent used in diagnostic imaging. Upon intravascular administration and during computed tomography (CT) imaging, iodixanol blocks x-rays and appears opaque on x-ray images. This allows body structures that absorb iodine to be visualized. The degree of opacity produced by iodixanol is directly proportional to the total amount of the iodinated contrast agent in the path of the x-rays. The visualization of body structures is dependent upon the distribution and elimination of iodixanol. Compared to other iodinated contrast agents, iodixanol appears to exhibit less nephrotoxicity.

**iodized oil :** A form of poppy seed oil that contains iodine. Iodized oil is given by injection and builds up in the blood and lymph vessels in tumors. It is used for imaging (taking pictures) of the salivary glands and the lymph system. It is also being studied in the imaging of other organs such as the liver, lung, stomach, and thyroid. It is a type of diagnostic imaging agent. Also called ethiodized oil, Ethiodol, and Lipiodol.

**iododoxorubicin :** A substance that is being studied as a treatment for cancer and for primary systemic amyloidosis (a disease in which proteins are deposited in specific organs). It is a type of anthracycline antitumor antibiotic.

**Iodotope:** (Other name for: iodine I 131)

**ioflubenzamide I-131:** An iodine 131-radiolabeled small-molecule benzamide compound with potential antineoplastic activity. The benzamide moiety of ioflubenzamide I-131 binds to melanin, selectively delivering a cytotoxic dose of gamma and beta radiation to melanin-expressing tumor cells. Melanin pigments, polymer derivatives of the amino acid tyrosine, are over-expressed in approximately 40% of melanomas.

**iofolastat I123:** An iodine 123-radiolabeled small molecule that exhibits high affinity for prostate-specific membrane antigen (PSMA) with potential use in molecular imaging. Iofolastat I123, a radiolabeled glutamate-urea-lysine analogue, selectively binds PSMA, which allows imaging of PSMA-expressing prostate cancer cells with gamma scintigraph. PSMA is a transmembrane glycoprotein highly expressed by malignant prostate epithelial cells and vascular endothelial cells of various solid tumors.

**iohexol:** An X-ray contrast medium containing iohexol in various concentrations, from 140 to 350 milligrams of iodine per milliliter.

**ion:** an isolated electron or positron; an atom or molecule which by loss or gain of one or more electrons has acquired a net electric charge. OR Removing or adding electrons to an atom creates an ion (a charged object very similar to an atom). OR An electrically charged particle formed by the gain or loss of electrons. OR is a charged atom or group of atoms. Ionization is caused by a gain or loss of electrons. A loss leaves a positive charge, a gain leaves a negative charge. OR An ion is a charged particle made when an atom (or group of atoms) loses or gains one or more electrons, e.g.  $\text{Na}^+$  and  $\text{Cl}^-$ . OR a charged atom; an atom that has either lost or gained electrons. OR An electrically charged atom OR an atom or group of atoms that have a net electrical charge OR An atom or group of atoms that has gained or lost one or more electrons. OR (1) An atom that has too many or too few electrons, causing it to have an electrical charge, and therefore, be chemically active. (2) An electron that is not associated (in orbit) with a nucleus. OR An atom or molecule that has acquired a charge by either gaining or losing electrons. An atom or molecule with missing electrons has a net positive charge and is called a cation; one with extra electrons has a net negative charge and is called an anion.

**ion :** An atom or a molecule that has a positive or negative electrical charge. Examples are sodium, potassium, calcium, chloride, and phosphate. These ions help move nutrients into cells, help move waste out of cells, and help nerves, muscles, the heart, and the brain work the way they should.

**ion channel:** An integral membrane protein that provides for the regulated transport of a specific ion, or ions, across a membrane. OR Passive transport systems for ions capable of very high transport rates; ion channels often display a high degree of specificity for the transported ion.

**ion exchange:** a chemical reaction in which mobile hydrated ions of a solid are exchanged, equivalent for equivalent, for ions of like charge in solution. The process can be used to remove ionic pollutants from wastewater. OR Ion exchange is a method of separating ions from a solution by reversibly binding them onto a resin that has charged sites on its surface. Ion exchangers are used to remove metal ions from drinking water.

**Ion meter:** a sophisticated pH/milivolt meter containing a microprocessor, which allows for the processing of ISE signals to permit electrode calibration and direct reading of sample concentrations.

**ion product of water (K<sub>w</sub>):** The product of the concentrations of H<sup>+</sup> and OH<sup>-</sup> in pure water:  $KW = [H^+][OH^-] = 1 \times 10^{-14}$  at 25 °C.

**ion-dipole forces:** Intermolecular force that exists between charged particles and partially charged molecules.

**Ion-dipole Interactions:** Intermolecular interactions between a charged species and a dipole.

**Ion-exchange:** A common method for concentrating uranium from a solution. The uranium solution is passed through a resin bed where the uranium-carbonate complex ions are transferred to the resin by exchange with a negative ion like chloride. After build-up of the uranium complex on the resin, the uranium is eluted with a salt solution and the uranium is precipitated in another process.

**Ion-exchange chromatography:** A protein purification technique that relies on the charge of proteins. Proteins are applied to an inert matrix to which is attached a charged moiety (e.g., a carboxylate group). Proteins will bind to the matrix with an affinity proportional to their content of the counterion (i.e., positive charges in regard to the carboxylate matrix).

**Ion-exchange resin:** A polymeric resinous substance, usually in bead form, that contains fixed groups with positive or negative charge. An anion exchange resin has positively-charged groups and is therefore useful in exchanging the anionic groups in a test sample; a cation exchange resin is itself negatively charged, and has the opposite application. The resin is usually used in a column chromatographic procedure. OR A polymeric resin that contains fixed charged groups; used in chromatographic columns to separate ionic compounds.

**ion-exchanger:** A resin capable of removing unwanted ions and replacing them with more desirable ones. For example, Ca<sup>2+</sup> or Mg<sup>2+</sup>, which interfere with the action of soap or detergent can be replaced by Na<sup>+</sup>, which does not.

**Ionic additives (lipophilic salt) :** additional component of an ionselective polymeric membrane required to obtain theoretical sensor performances. The Nernstian response of the potentiometric sensor is measured if the presence of lipophilic counter ions maintains the constant concentration of the free target ions in the membrane, due to the ion buffering mechanism of the ionophore. This buffering mechanism establishes a constant ratio between the concentration of the ionionophore complex and the free

ionophore in the membrane. The presence of ionic sites in the membrane is also necessary to improve the selectivity of the potentiometric sensors. In cationselective electrodes with neutral receptors, tetraphenylborate salts are added to the membrane composition (tetraalkylammonium salts for anionselective membranes containing neutral ionophore). Recently, it has been shown that the presence of ionic sites is also required in the case of ionselective membranes with charged ionophores.

**Ionic Agglomerate:** An ionic agglomerate is a group of atoms which are held together by electrovalent bonds.

**Ionic Bond:** A chemical bond between two atoms where one or more electrons are passed from one atom to another. When they give up electrons, each of the atoms should have a filled shell. A good example of an ionic bond is the sodium chloride bond. You may also hear the term electrovalent bond. OR A bond in which the predominant forces are ionic in nature. OR atoms linked together by the attraction of unlike charges. OR a bond formed by the transfer of electrons between atoms, resulting in the formation of ions of opposite charge. The electrostatic attraction between these ions is the ionic bond. OR A force that holds together two electrically charged atoms (called ions) OR An attraction between ions of opposite charge. Potassium bromide consists of potassium ions ( $K^+$ ) ionically bound to bromide ions ( $Br^-$ ). Unlike covalent bonds, ionic bond formation involves transfer of electrons, and ionic bonding is not directional.

**ionic compound:** A ionic compound is a compound made up of oppositely charged ions bonded to each other in a giant lattice. OR A compound made of distinguishable cations and anions, held together by electrostatic forces.

**Ionic crystal:** A crystal composed of ions in which each ion of a given charge is equidistant from a small number of ions of opposite charge (e.g., sodium chloride).

**ionic dissociation:** When ionic substances dissolve, their ions are surrounded by solvent molecules and separated from each other. This phenomena is also called ionization.

**ionic equation:** An ionic equation is one which shows the atoms and ions that actually change in a reaction, e.g.  $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$ . OR An ionic equation is a balanced chemical equation in which strong electrolytes are written as dissociated ions. For example,  $Ag^+$

(aq) + NO<sub>3</sub><sup>-</sup>(aq) + Na<sup>+</sup>(aq) + Cl<sup>-</sup>(aq) = AgCl(s) + Na<sup>+</sup>(aq) + NO<sub>3</sub><sup>-</sup>(aq) is an ionic equation; AgNO<sub>3</sub>(aq) + NaCl(aq) = AgCl(s) + NaNO<sub>3</sub>(aq) is not.

**Ionic Interactions:** Often refers to attractive interactions between oppositely charged ions.

**ionic radius:** The radii of anions and cations in crystalline ionic compounds, as determined by consistently partitioning the center-to-center distance of ions in those compounds.

**ionic silver-impregnated sodium carboxymethyl cellulose antimicrobial dressing:** A textile fiber dressing composed of ionic silver-impregnated sodium carboxymethylcellulose with potential wound-healing and antimicrobial activities. Ionic silver-impregnated sodium carboxymethylcellulose antimicrobial dressing inhibits microbial growth and promotes wound healing while protecting the wound site from external factors that may cause pain, promote infection, or slow the natural wound healing process. Ionic silver has a high affinity for negatively charged side groups on microbial cell proteins. Upon binding, ionic silver alters the molecular structure of proteins with a role in normal microbial cell functions thereby interfering with cell wall synthesis, transcription, translation, electron transport across membranes and protein folding, resulting in microbial cell death.

**Ionic strength:** this is a measure of the effective concentration of ions in solution. It is calculated according to the following formula: Ionic strength =  $\frac{1}{2} \sum C_x Z_x^2$  (where: C<sub>x</sub> = the concentration of ion x; Z<sub>x</sub> = the charge of ion x). The ionic strength determines the activity coefficient of each ion in the solution. Conductivity measurements give an estimate of ionic strength.

**Ionic strength adjustment buffer (ISAB):** a solution of high ionic strength used to dilute samples and standard solutions. The ISAB minimizes differences in ion strength from solution to solution, making the activity coefficient of the ion approximately the same in all solutions. Multipurpose ISAB's may contain pH adjustors, decomplexing agents or species that remove interferences. Examples of such solutions are Total Ionic Strength Adjustment Buffer (TISAB) for fluoride measurements and Sulphide AntiOxidant Buffer (SAOB) for sulphide measurement.

**ionization:** adding or subtracting electrons from an atom; alternatively, the dissociation of a solute into ions. OR The process of adding one or more electrons to, or removing one or more electrons from, atoms or molecules,

thereby creating ions. High temperatures, electrical discharges, or nuclear radiations can cause ionization.

**ionization:** a process by which a neutral atom or molecule loses or gains electrons, thereby acquiring a net charge and becoming an ion; occurs as the result of the dissociation of the atoms of a molecule in solution or of a gas in an electric field.

**Ionization chamber:** An instrument that detects and measures ionizing radiation by measuring the electrical current that flows when radiation ionizes gas in a chamber, making the gas a conductor of electricity.

**IONIZATION ENERGIES SUNSEQUENT:** remove more electrons. The factors that determine the ionization energies are: distance from the nucleus (inverse square law) whether the orbital is filled or half-filled whether there is a noble gas structure the shielding effect of electrons in lower orbitals the ratio of protons to remaining electrons (guards to prisoners ratio)

**ionization energy:** the energy needed to remove an electron from an atom. OR (IE,IP) ionization potential. Compare with adiabatic ionization energy, vertical ionization energy, electronegativity, and electron affinity. The energy needed to remove an electron from a gaseous atom or ion.

**ionization energy:** Energy required to remove an electron from a specific atom.

**IONIZATION ENERGY:** is the minimum energy needed to remove an electron from an atom.

**IONIZATION ENERGY FIRST:** takes off the first (outermost) electron.

**ionizes:** When a substance breaks into its ionic components.

**Ionizing radiation:** A form of radiation, which includes alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions.

Compared to non-ionizing radiation, such as radio- or microwaves, or visible, infrared, or ultraviolet light, ionizing radiation is considerably more energetic. When ionizing radiation passes through material such as air, water, or living tissue, it deposits enough energy to produce ions by breaking molecular bonds and displace (or remove) electrons from atoms or molecules. This electron displacement may lead to changes in living cells.

Given this ability, ionizing radiation has a number of beneficial uses, including treating cancer or sterilizing medical equipment. However, ionizing radiation is potentially harmful if not used correctly, and high doses may result in severe skin or tissue damage. It is for this reason that the NRC strictly regulates commercial and institutional uses of the various types of ionizing radiation. Radiation, as used in 10 CFR Part 20, does not include non-ionizing radiation (see also 10 CFR 20.1003). OR A type of radiation, such as x rays, that causes loss of electrons from some organic molecules, thus making them more reactive. OR A type of high-energy radiation that has enough energy to remove an electron (negative particle) from an atom or molecule, causing it to become ionized. Ionizing radiation can cause chemical changes in cells and damage DNA. This may increase the risk of developing certain health conditions, such as cancer. Ionizing radiation can come from natural sources, such as radon and cosmic rays (rays that enter the earth's atmosphere from outer space). It may also come from medical imaging equipment, such as x-ray, CT scan, or PET scan machines. Nuclear power plant accidents and atomic weapons also release high levels of ionizing radiation. Being exposed to very high doses of ionizing radiation can cause immediate damage to a person's body, including severe skin or tissue damage, acute radiation sickness, and death.

**Ionomer:** Copolymers of ethylene and acrylic acids that have been neutralized to some degree to form metal salts.

**Ionomer Resins:** A polymer which has ethylene as its major component, but containing both covalent and ionic bonds. The polymer exhibits very strong interaction ionic forces. The anions hang from the hydrocarbon chain and the reactions are metallic – sodium, potassium, magnesium. These resins have many of the same features as polyethylene plus high transparency, tenacity, resilience, and increased resistance to oils, greases and solvents. Fabrication is carried out as with polyethylene.

**ionomycin :** An antibiotic drug used to treat infection.

**Ionophore:** a lipophilic charged or neutral organic molecule, which has an affinity for a particular ionic species in solution (i.e. forms selectively reversible complexes with a particular ionic species). For ionselective electrodes, there are introduced into a polymeric membrane, which forms a barrier between the test solution and the electrode. The detected ion is passed from one ionophore molecule to the next by diffusion under a

concentration gradient and hence is selectively transferred across the membrane and causes a build up of electrical charge on the inside of the membrane. OR A compound that binds one or more metal ions and is capable of diffusing across a membrane, carrying the bound ion.

**IONS NEGATIVE:** are those which have gained electrons and therefore have more negative charges than positive charges (protons).

**Ionselective electrode (ISE):** an electrode which responds selectively to the ions of a particular species in solution.

**Ionselective membrane :** the principal component (receptor part) of the membrane chemical sensor, which generally determines its performances i.e. selectivity, sensitivity and stability. Ionselective membrane is based on membrane matrix containing appropriate active components (i.e. the ionophore, ionic sites).

**iopromide:** A contrast medium.

**IORT:** Radiation treatment aimed directly at a tumor during surgery. Also called intraoperative radiation therapy.

**IOUS:** A procedure that uses ultrasound (high-energy sound waves that are bounced off internal tissues and organs) during surgery. Sonograms (pictures made by ultrasound) of the inside of the body are viewed on a computer to help a surgeon find tumors or other problems during the operation. Also called intraoperative ultrasound.

**IP:** Internet Protocol. OR Within the peritoneal cavity (the area that contains the abdominal organs). Also called intraperitoneal.

**IP6:** A substance found in many foods that come from plants, including corn, wheat, rice, and soybeans, and in large amounts in cereals and legumes. It is being studied in the prevention of cancer. Also called inositol hexaphosphate and phytic acid.

**ipafricept:** A proprietary fusion protein comprised of the cysteine-rich domain of frizzled family receptor 8 (Fzd8) fused to the human immunoglobulin Fc domain with potential antineoplastic activity. Upon intravenous administration, ipafricept competes with the membrane-bound Fzd8 receptor for its ligand, Wnt proteins, thereby antagonizing Wnt signaling. This may result in the inhibition of Wnt-driven tumor growth. Fzd8, a member of the Frizzled family of G protein-coupled receptors, is

one of the components in the Wnt/beta-catenin signaling pathway that plays key roles in embryogenesis and cancer growth.

**ipamorelin:** A pentapeptide (Aib-His-D-2-Nal-D-Phe-Lys-NH<sub>2</sub>) and a ghrelin mimetic with growth hormone (GH) releasing activity. Ipamorelin mimics ghrelin and binds to the ghrelin receptor (or GH secretagogue receptor, GHSR) in the brain, thereby selectively stimulating the release of GH from the pituitary gland. This results in increased plasma GH levels, which would affect many biological processes. Besides its presence in the brain, GHSR can also be found in the gastrointestinal tract, heart, lung, liver, kidney, pancreas, adipose tissue and immune cells. Unlike other GH releasing peptides, ipamorelin only stimulates GH release in a manner very similar to that of growth hormone releasing hormone.

**ipatasertib:** An orally bioavailable inhibitor of the serine/threonine protein kinase Akt (protein kinase B) with potential antineoplastic activity. Ipatasertib binds to and inhibits the activity of Akt in a non-ATP-competitive manner, which may result in the inhibition of the PI3K/Akt signaling pathway and tumor cell proliferation and the induction of tumor cell apoptosis. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**ipilimumab:** A recombinant human immunoglobulin (Ig) G1 monoclonal antibody directed against the human T-cell receptor cytotoxic T-lymphocyte-associated antigen 4 (CTLA4), with immune checkpoint inhibitory and antineoplastic activities. Ipilimumab binds to CTLA4 expressed on T-cells and inhibits the CTLA4-mediated downregulation of T-cell activation. This leads to a cytotoxic T-lymphocyte (CTL)-mediated immune response against cancer cells. CTLA4, an inhibitory receptor and member of the immunoglobulin superfamily, plays a key role in the downregulation of the immune system.

**ipilimumab :** A drug used to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is also used as adjuvant therapy to treat melanoma in the skin and lymph nodes in patients who have already had surgery. Ipilimumab is also being studied in the treatment of other types of cancer. Ipilimumab binds to a substance called CTLA-4, which is found on T cells (a type of white blood cell). Ipilimumab may block CTLA-4 and help the immune system kill cancer cells. It is a type of

monoclonal antibody and a type of immune checkpoint inhibitor. Also called MDX-010 and Yervoy.

**IPOL:** (Other name for: inactivated poliovirus vaccine)

**ipomeanol:** A natural toxic furan isolated from a fungus-infected sweet potato (*Ipomoea batatas*) with potential antineoplastic activity. Ipomeanol is activated by mixed function oxidases in vivo to its epoxide form, an alkylating agent that covalently binds cell macromolecules. This agent causes cell death by a p53-independent mechanism. Check for active clinical trials using this agent.

**iproplatin:** A synthetic second-generation platinum-containing compound related to cisplatin. Iproplatin binds to and forms DNA crosslinks and platinum-DNA adducts, resulting in DNA replication failure and cell death. Although less prone to glutathione inactivation compared to cisplatin, resistance to this agent has been observed in vitro due to repair of platination damage by tumor cells.

**ipsilateral :** On the same side of the body as another structure or a given point.

**iq'mik :** A type of smokeless tobacco that is made by mixing cured tobacco leaves with ashes from a certain type of fungus. It is used mainly in Alaska and is chewed. It contains nicotine and many harmful, cancer-causing chemicals. Using iq'mik can lead to nicotine addiction and can cause cancer of the mouth and other health problems.

**iratumumab:** A monoclonal antibody with potential antineoplastic activity. Iratumumab is a fully humanized antibody that targets CD30, a member of the tumor necrosis factor receptor superfamily found on activated lymphocytes. CD30 is over-expressed in various lymphoproliferative disorders, Hodgkin's disease and other lymphomas, and other cancers.

**IRB:** A group of scientists, doctors, clergy, and patient advocates that reviews and approves the detailed plan for every clinical trial. IRBs are meant to protect the people who take part in a clinical trial. They check to see that the trial is well designed, legal, ethical, does not involve unneeded risks, and includes a safety plan for patients. There is an IRB at every health care facility that does clinical research. Also called Institutional Review Board.

**IRC:** Intrinsic reaction coordinate. An optimized reaction path that is followed downhill, starting from a transition state, to approximate the course (mechanism) of an elementary reaction step.

**IRE (iron-response amount)-binding protein:** An iron-sensitive protein that regulates the translational capability of ferritin mRNA and the stability of transferrin receptor mRNA by binding to a stem-loop structure called an iron-response element in the mRNA molecule.

**Iressa:** (Other name for: gefitinib)

**Iressa :** A drug that is used to treat certain types of non-small cell lung cancer and is being studied in the treatment of other types of cancer. It is a type of epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor. Also called gefitinib and ZD1839.

**Iridium:** Symbol:"Ir" Atomic Number:"77" Atomic Mass: 192.22amu. Iridium is one of the transition elements. Iridium is another member of the platinum family of metals. You might find it in alloys and in materials that need to withstand very high temperatures.

**iridium Ir 192:** A radioactive isotope of iridium. Iridium-192 emits gamma rays and has a half-life of 74 days. A high dose rate of this radioisotope can be used in brachytherapy to treat tumors by selectively delivering a cytotoxic dose of radiation to the tumor site.

**irinotecan :** The active ingredient in a drug used alone or with other drugs to treat colon cancer or rectal cancer that has spread to other parts of the body or has come back after treatment with fluorouracil. It is also being studied in the treatment of other types of cancer. Irinotecan blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of topoisomerase inhibitor and a type of camptothecin analog.

**irinotecan hydrochloride:** The hydrochloride salt of a semisynthetic derivative of camptothecin, a cytotoxic, quinoline-based alkaloid extracted from the Asian tree *Camptotheca acuminata*. Irinotecan, a prodrug, is converted to a biologically active metabolite 7-ethyl-10-hydroxy-camptothecin (SN-38) by a carboxylesterase-converting enzyme. One thousand-fold more potent than its parent compound irinotecan, SN-38 inhibits topoisomerase I activity by stabilizing the cleavable complex between topoisomerase I and DNA, resulting in DNA breaks that inhibit DNA replication and trigger apoptotic cell death. Because ongoing DNA

synthesis is necessary for irinotecan to exert its cytotoxic effects, it is classified as an S-phase-specific agent.

**irinotecan hydrochloride :** A drug used alone or with other drugs to treat colon cancer or rectal cancer that has spread to other parts of the body or has come back after treatment with fluorouracil. It is also being studied in the treatment of other types of cancer. Irinotecan hydrochloride blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. It is a type of topoisomerase inhibitor and a type of camptothecin analog. Also called Camptosar and CPT 11.

**irinotecan hydrochloride liposome:** A liposomal formulation of the hydrochloride salt of the semisynthetic camptothecin analogue irinotecan with potential antineoplastic activity. During the S phase of the cell cycle, irinotecan selectively stabilizes topoisomerase I-DNA covalent complexes, inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing lethal double-strand DNA breaks when complexes are encountered by the DNA replication machinery. Liposome encapsulation of this agent promotes efficient drug delivery into the cytosol from the endosome compartment of the cell.

**irinotecan hydrochloride liposome :** A form of the anticancer drug irinotecan hydrochloride that is contained in very tiny, fat-like particles. Irinotecan hydrochloride liposome is used together with fluorouracil and leucovorin to treat a certain type of pancreatic cancer that has spread to other parts of the body and has gotten worse after treatment with gemcitabine anticancer therapy. It is also being studied in the treatment of other types of cancer. Irinotecan hydrochloride blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. Irinotecan hydrochloride liposome may have fewer side effects and work better than irinotecan hydrochloride. It is a type of topoisomerase inhibitor and a type of camptothecin analog. Also called liposome-encapsulated irinotecan hydrochloride PEP02, Onivyde, and PEP02.

**irinotecan-eluting beads:** Microporous hydrospheres of polyvinylalcohol (PVA) impregnated with irinotecan with potential antineoplastic activity. In transarterial chemoembolization (TACE), irinotecan-eluting beads are administered into blood vessels that feed the tumor, occluding tumor blood vessels and inducing ischemic tumor necrosis while simultaneously delivering high-dose chemotherapy locally. Irinotecan, a semisynthetic

derivative of camptothecin, inhibits topoisomerase I activity by stabilizing the cleavable complex between topoisomerase I and DNA, resulting in DNA breaks that inhibit DNA replication and trigger apoptotic cell death.

**irinotecan/P-glycoprotein inhibitor HM30181AK combination tablet:**

An orally bioavailable combination tablet containing the semisynthetic camptothecin derivative irinotecan and the multidrug resistance (MDR) efflux pump P-glycoprotein (P-gp) inhibitor HM30181AK, with potential antineoplastic activity. HM30181A binds to P-gp and prevents the P-gp-mediated efflux of irinotecan from tumor cells, which may result in greater intracellular concentrations of irinotecan and enhanced cytotoxicity.

Retained intracellularly, the prodrug irinotecan is converted, by a carboxylesterase-converting enzyme, to the biologically active metabolite 7-ethyl-10-hydroxy-camptothecin (SN-38). SN-38 inhibits topoisomerase I activity by stabilizing the cleavable complex between topoisomerase I and DNA, resulting in DNA breaks that inhibit DNA replication and trigger apoptotic cell death. P-gp, encoded by the MDR-1 gene, is a member of the ATP-binding cassette (ABC) superfamily of transmembrane transporters and is overexpressed by some MDR tumors, preventing the intracellular accumulation of various cytotoxic agents.

**iris :** The colored tissue at the front of the eye that contains the pupil in the center. The iris helps control the size of the pupil to let more or less light into the eye.

**irofulven:** A semisynthetic sesquiterpene derivative of illudin S, a natural toxin isolated from the fungus *Omphalotus illudens*. Irofulven alkylates DNA and protein macromolecules, forms adducts, and arrests cells in the S-phase of the cell cycle. This agent requires NADPH-dependent metabolism by alkenal/one oxidoreductase for activity. Irofulven is more active in vitro against tumor cells of epithelial origin and is more resistant to deactivation by p53 loss and MDR1 than other alkylating agents.

**irofulven :** A substance being studied in the treatment of some types of cancer. Irofulven attaches to the cell's DNA and may block cancer cell growth. It is a type of alkylating agent. Also called 6-hydroxymethylacylfulvene.

**iron:** An element with atomic symbol Fe, atomic number 26, and atomic weight 55.85. Check for active clinical trials using this agent.

**Iron:** Symbol:"Fe" Atomic Number:"26" Atomic Mass: 55.85amu. Iron is one of the transition metals. You can find it in steel, meteorites, and the core of the Earth. Iron is everywhere in the universe.

**iron :** An important mineral the body needs to make hemoglobin, a substance in the blood that carries oxygen from the lungs to tissues throughout the body. Iron is also an important part of many other proteins and enzymes needed by the body for normal growth and development. It is found in red meat, fish, poultry, lentils, beans, and foods with iron added, such as cereal.

**iron dextran complex:** A colloidal solution containing ferric oxyhydroxide complexed with polymerized dextran, used as a form of parenteral iron-replacement therapy. Upon administration and absorption, the iron dextran complex is removed from plasma by the reticuloendothelial system which cleaves it into the components iron and dextran; ferric iron subsequently binds to transferrin or is stored as hemosiderin or ferritin. Transferrin-bound iron is transported in the plasma to the liver, spleen and bone marrow, where it is incorporated into hemoglobin (Hgb) and to muscle where it is incorporated into myoglobin (Mb). Use of this agent circumvents the gastrointestinal adverse effects commonly encountered with the use of orally administered iron salt preparations. Because of cross-reactivity with antibodies targeted against polysaccharides similar to dextran, anaphylactic reactions may occur with this type of iron formulation.

**iron isomaltoside 1000:** An intravenous colloidal solution containing trivalent iron ( $Fe^{3+}$ ) chelated to isomaltosides, used as iron replacement. The iron in iron isomaltoside 1000 is strongly bound to the carbohydrate particles; each particle contains a trivalent iron core and a carbohydrate shell of isomaltosides which protects and stabilizes the iron core. This results in low levels of free iron and decreases inorganic, unbound iron-related toxicities thereby allowing for administration of higher doses of iron as compared to other iron-containing formulations. Upon parenteral administration and degradation of the carbohydrate shell, the iron in iron isomaltoside 1000 is released and replenishes iron stores. Check for active clinical trials using this agent.

**iron overload :** A condition in which the body takes up and stores more iron than it needs. The extra iron is stored in the liver, heart, and pancreas,

which may cause liver disease, heart problems, organ failure, and cancer. It may also cause bronze skin, diabetes, pain in the joints and abdomen, tiredness, and impotence. Iron overload may be inherited, or it may be caused by blood transfusions. Also called hemochromatosis.

**iron sucrose injection:** A sterile aqueous complex of polynuclear iron (III)-hydroxide in sucrose for intravenous use. Following intravenous administration, iron sucrose is dissociated by the reticuloendothelial system into iron and sucrose; the sucrose component is eliminated mainly by urinary excretion. Iron sucrose can be administered with or without erythropoietin to raise hemoglobin levels and may be used in cases of oral iron therapy intolerance or ineffectiveness. Hypersensitivity reactions are less common with iron sucrose compared to other parenteral iron products, such as iron dextran.

**Iron-response element (IRE):** A stem-loop structure found in the mRNAs for ferritin and transferrin receptor that interacts with the IRE-binding protein and regulates the translation of the mRNAs.

**iron-sulfur center:** A prosthetic group of certain redox proteins involved in electron transfers;  $\text{Fe}^{2+}$  or  $\text{Fe}^{3+}$  is bound to inorganic sulfur and to Cys groups in the protein.

**Iron-sulfur proteins:** Proteins that contain clusters of iron and sulfur that play a role in electron transfer reactions; iron cycles between the  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  state. Also called nonheme iron proteins.

**irradiance:** The total radiant flux received on a unit area of a given real or imaginary surface. Also called the radiant flux density.

**irradiated :** Treated with radiation.

**Irradiation:** Exposure to ionizing radiation. Irradiation may be intentional, such as in cancer treatments or in sterilizing medical instruments.

Irradiation may also be accidental, such as being exposed to an unshielded source. Irradiation does not usually result in radioactive contamination, but damage can occur, depending on the dose received.

**irradiation :** The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy or brachytherapy).

Systemic irradiation uses a radioactive substance, such as a radiolabeled monoclonal antibody, that travels in the blood to tissues throughout the body. Also called radiation therapy and radiotherapy.

**irregular verb:** verbs that form the past tense and past participle in a variety of ways, but not by adding -d or -ed as regular verbs do.

**irreversible enzyme inhibitor :** A substance that permanently blocks the action of an enzyme. In cancer treatment, irreversible enzyme inhibitors may block certain enzymes that cancer cells need to grow and may kill cancer cells. They are being studied in the treatment of some types of cancer.

**Irreversible inhibitor:** An inhibitor that binds very tightly to its target enzyme, either covalently or noncovalently; such an inhibitor dissociates very slowly from the enzyme.

**irreversible toxicity :** Side effects that are caused by toxic substances or something harmful to the body and do not go away.

**irrigation :** In medicine, washing out an organ (such as the stomach or colon), a body cavity, or a wound by flushing it with a fluid. Also called lavage.

**irritable bowel syndrome :** A disorder of the intestines commonly marked by abdominal pain, bloating, and changes in a person's bowel habits. This may include diarrhea or constipation, or both, with one occurring after the other. Also called IBS, irritable colon, mucus colitis, and spastic colon.

**irritable colon :** A disorder of the intestines commonly marked by abdominal pain, bloating, and changes in a person's bowel habits. This may include diarrhea or constipation, or both, with one occurring after the other. Also called IBS, irritable bowel syndrome, mucus colitis, and spastic colon.

**irritant:** Applied to any substance causing inflammation following immediate, prolonged or repeated contact with skin or mucous membranes.

**IRX-2:** A cell-free mixture comprised of a variety of naturally-derived cytokines obtained from normal, unrelated donor lymphocytes with potential immunostimulatory activity. The cytokines in IRX-2, including interleukin (IL)-1, -2, -6, -8, -10, -12, tumor necrosis factor alpha (TNF-a), interferon-gamma (IFN-g) and colony stimulating factors (CSFs), play vital roles in regulating cellular immunity and may synergistically stimulate a cellular immune response against tumor cells.

**Isaac syndrome :** A rare nerve disorder that causes constant muscle activity that cannot be controlled, even during sleep. It often affects the muscles in the arms and legs, but may affect the whole body. Symptoms include muscle twitching, weakness, stiffness, and cramping; increased skin temperature, sweating, and heart rate; and problems with chewing, swallowing, speech, and breathing. The disorder often gets worse over time. Isaac syndrome usually occurs in people aged 15 to 60 years. It may occur with certain types of cancer and is sometimes inherited. Also called neuromyotonia.

**isavuconazole:** A water-soluble triazole prodrug with broad-spectrum antifungal activity. Administered intravenously or orally with high oral bioavailability, isavuconazole is hydrolyzed to the active moiety BAL4815 by plasma esterases. BAL4815 inhibits fungal cytochrome P450 lanosterol 14-alpha-demethylase (CYP51), which catalyzes the conversion of lanosterol to ergosterol, an important component of the fungal cell membrane. CYP51 inhibition by this agent leads to a decrease in ergosterol pool, thus disturbing synthesis of the fungal cell membrane; increasing fungal cell membrane permeability; promoting the loss of essential intracellular elements; and resulting in fungal cell lysis and death.

**Iscar:** (Other name for: mistletoe extract)

**ischemia :** Lack of blood supply to a part of the body. Ischemia may cause tissue damage due to the lack of oxygen and nutrients.

**ischemic necrosis :** A condition in which there is a loss of blood flow to bone tissue, which causes the bone to die. It is most common in the hips, knees, shoulders, and ankles. It may be caused by long-term use of steroid medicines, alcohol abuse, joint injuries, and certain diseases, such as cancer and arthritis. It may also occur at some point in time after cancer treatment that included methotrexate, bisphosphonates, or corticosteroids. Also called aseptic necrosis, avascular necrosis, and osteonecrosis.

**Iscomatrix:** (Other name for: saponin-cholesterol-phospholipid adjuvant)

**iseganan hydrochloride :** A substance being studied in the treatment of oral mucositis (painful mouth sores) caused by cancer therapy and other conditions. Iseganan hydrochloride kills certain bacteria, fungi, and viruses by making holes in their outer membranes and causing them to burst. It is a type of synthetic antimicrobial peptide and a type of synthetic protegrin analog.

**Isentress:** (Other name for: raltegravir potassium)

**ISFET (ionsensitive FET) :** an electrochemical microsensor based on FET (field effect transistor) transducer. Ionsensitive FET is generally selective to H<sup>+</sup> ions. This selectivity arises from acid/base properties of the inorganic oxide (gate material) contacting the electrolyte. Examples of the inorganic oxides used are SiO<sub>2</sub>, Si<sub>3</sub>N<sub>4</sub>, Al<sub>2</sub>O<sub>3</sub> and Ta<sub>2</sub>O<sub>5</sub>.

**ISIS 2503:** A synthetic oligodeoxynucleotide. Functioning as an anti-sense agent, it hybridizes to the translation initiation region of the human mRNA for the oncogene H-Ras. ISIS 2503 selectively inhibits the expression of H-Ras, and may inhibit the growth of some Ras-dependent tumor cells. or A substance that is being studied in the treatment of cancer.

**ISIS 3521:** A synthetic phosphorothioate oligodeoxynucleotide. As an antisense molecule, ISIS 3521 hybridizes to the 3-untranslated region of the human protein kinase C (PKC-alpha) mRNA, thereby inhibiting PKC-alpha expression and growth of PKC-alpha-dependent tumor cells. or A substance that is being studied in the treatment of cancer.

**ISIS 5132:** A synthetic, 20-base antisense oligodeoxynucleotide that hybridizes to c-raf kinase messenger RNA. ISIS 5132 has been shown to specifically suppress Raf-1 expression both in vitro and in vivo. Raf-1 serine/threonine kinase functions as a critical effector of Ras-mediated signal transduction; constitutive activation of this pathway directly contributes to malignant transformation. or A substance that is being studied in the treatment of cancer.

**ISIS-STAT3rx:** (Other name for: STAT3 antisense oligonucleotide ISIS 481464)

**island arc:** a curved chain of islands that develops between an oceanic trench and a continental landmass.

**islet cell :** A pancreatic cell that produces hormones (e.g., insulin and glucagon) that are secreted into the bloodstream. These hormones help control the level of glucose (sugar) in the blood. Also called endocrine pancreas cell and islet of Langerhans cell.

**islet cell carcinoma :** A rare cancer that forms in islet cells (hormone-making cells) of the pancreas. Islet cells make several different hormones that affect body functions, including controlling the amount of glucose (sugar) in the blood and helping digest food in the stomach. Functional islet

cell carcinomas make extra amounts of these hormones, which can cause symptoms. Nonfunctional islet cell carcinomas do not make extra amounts of hormones, but they may cause symptoms as they grow and spread. Also called pancreatic endocrine cancer.

**islet cell tumor :** A tumor that forms in islet cells (hormone-making cells) of the pancreas. Islet cell tumors may be benign (not cancer) or malignant (cancer). Islet cells make several different hormones that affect body functions, including controlling the amount of glucose (sugar) in the blood and helping digest food in the stomach. Functional islet cell tumors make extra amounts of these hormones, which can cause symptoms.

Nonfunctional islet cell tumors do not make extra amounts of hormones, but they may cause symptoms as they grow and spread. Also called pancreatic endocrine tumor and pancreatic neuroendocrine tumor.

**islet of Langerhans cell :** A pancreatic cell that produces hormones (e.g., insulin and glucagon) that are secreted into the bloodstream. These hormones help control the level of glucose (sugar) in the blood. Also called endocrine pancreas cell and islet cell.

**islets of Langerhans:** clusters of cells that make up the endocrine portion of the pancreas.

**ISO:** The International Organization for Standardization, a worldwide federation of national standards bodies from some 140 countries.

Equivalent to ASTM.

**ISO 9000:** Family of standards concerned with "quality management". This means what the organization does to enhance customer satisfaction by meeting customer and applicable regulatory requirements.

**ISO Certification:** The International Organization for Standardization (ISO) is an international standard-setting body composed of representatives from various national standards organizations. This organization promotes worldwide proprietary, industrial and commercial standards for business.

**Iso-Butanol:** Iso-butanol is an oxo-alcohol with various uses as a direct process solvent, although is mainly used in the production of various acetates, glycol ethers and amines. It is used as a precursor for isobutyl acetate (a solvent) as a partial replacement for n-butanol in some applications. Iso-Butanol is a propylene derivative, and is produced by catalytically hydrogenated n-butyraldehyde from propylene oxonation (the

hydroformulation of propylene with syngas in an oxo-process). Iso-Butanol is produced in all regions.

**iso-fludelone:** A third-generation epothilone B analogue with potential anti-mitotic and antineoplastic activities. Iso-fludelone binds to tubulin and induces microtubule polymerization and stabilizes microtubules against depolymerization, which may result in the inhibition of cell division, the induction of G2/M arrest, and apoptosis. Compared to other generations of epothilones, iso-fludelone exhibits increased stability, water solubility, potency, duration of action, tumor penetration as well as reduced toxicity. In addition, this agent is not a substrate of the P-glycoprotein (P-gp), a multidrug resistance pump often overexpressed in cancer cells.

**isobar:** line connecting areas of equal pressure on a map. OR 1. A contour line that corresponds to values measured at identical pressures. For example, curves on a plot of gas volumes measured at different temperatures in an open container are isobars. 2. Nuclides that have the same isotopic mass but different atomic number. OR a line of equal pressure. Any point along an isobar sees the same cavity pressure as any other point along the same isobar.

**isobaric:** Having constant pressure.

**isochore:** A contour line that corresponds to values measured at identical volumes. For example, a curve on a plot of gas pressure measured at different temperatures in a rigid container is an isochore.

**isochoric:** Having constant volume.

**Isochrone :** a line of equal time. Any point along an isochrone is filled at the same time as any other point along the same isochrone.

**Isocitrate dehydrogenase:** An enzyme that catalyzes the oxidative decarboxylation of isocitrate to form  $\alpha$ -ketoglutarate; plays a role in controlling the rate of the citric acid cycle.

**Isocitrate lyase:** An enzyme of the glyoxylate cycle, isocitrate lyase cleaves isocitrate into succinate and glyoxylate.

**isoclinal fold:** a fold that has undergone stress great enough to compress its limbs tightly together.

**isodesmic:** Refers to a chemical reaction that conserves types of chemical bond. Due to better cancellation of systematic errors, energy changes computed using such reactions are expected to be more accurate than those

computed using reactions that do not conserve bond types. Example:  $\text{CH}_3\text{CH}_2\text{F} + \text{CH}_4 = \text{CH}_3\text{CH}_3 + \text{CH}_3\text{F}$  for computing the C-F bond strength in fluoroethane.

**Isoelectric focusing:** A technique for separating proteins. A mixture of proteins undergoes electrophoresis in a pH gradient; each protein will migrate in the electrical field until it reaches its isoelectric point. OR An electrophoretic method for separating macromolecules on the basis of their isoelectric pH.

**isoelectric pH (isoelectric point):** The pH at which a solute has no net electric charge and thus does not move in an electric field.

**Isoelectric point (p<sub>i</sub>):** The pH of a protein at which its net charge is equal to zero.

**Isoelectric point or pH:** The pH at which a protein has no net charge.

**isoelectronic:** refers to several dissimilar atoms or ions with identical electronic configurations. OR having the same number of electrons. For example, a sodium atom that is lacking one electron is isoelectronic with neon, an inert gas. OR Refers to a group of atoms or ions having the same number of electrons. For example, F<sup>-</sup>, Ne, and Na<sup>+</sup> are isoelectronic.

**isoenzymes:** See isozymes.

**isoflavone :** An estrogen-like substance made by some plants, including the soy plant. Soy isoflavones are being studied in the prevention of cancer, hot flashes that occur with menopause, and osteoporosis (loss of bone density).

**Isoflo:** (Other name for: isoflurane)

**isoflurane:** A fluorinated ether with general anesthetic and muscle relaxant activities. Although the exact mechanism of action has not been established, inhaled isoflurane, appears to act on the lipid matrix of the neuronal cell membrane, which results in disruption of neuronal transmission. This agent enhances the release of the inhibitory neurotransmitter gamma-aminobutyric acid (GABA), thereby increasing the activity of the inhibitory neurotransmitter on synaptic transmission. Isoflurane may inhibit glutamatergic excitatory transmission by increasing glutamate re-uptake and it may potentiate glycine receptor activity, which decreases motor function. In addition, isoflurane may alter certain pro- and anti-inflammatory cytokines, including interleukin-6 and -10 (IL-6, IL-10),

possibly through the activation of the nuclear factor kappa B (NF- $\kappa$ B) pathway, which may affect immune responses during surgery.

**isogyric:** Refers to a chemical reaction that conserves net spin. Due to better cancellation of systematic errors, energy changes computed using such reactions are expected to be more accurate than those computed using reactions that do not conserve spin. Example:  $\text{CH}_3\text{CH}_2\text{F} + \text{H} = \text{CH}_3\text{CH}_2 + \text{HF}$  for computing the C-F bond strength in fluoroethane.

**isointense :** Having the same intensity as another object. Used to describe the results of imaging tests, such as x-rays, MRIs, or CT scans.

**isolated double bond:** a double bond that is more than one single bond away from another double bond in a diene.

**isolated hepatic perfusion :** A procedure in which a catheter is placed into the artery that provides blood to the liver. A second catheter is placed into the vein that takes blood away from the liver. This temporarily separates the liver's blood supply from blood circulating throughout the rest of the body and allows high doses of anticancer drugs to be directed to the liver only.

**isolated limb infusion :** A procedure used to deliver anticancer drugs directly to an arm or leg but not to the rest of the body. The flow of blood to and from the limb is temporarily stopped with a tourniquet (a tight band around the limb). Catheters (small, flexible tubes) attached to a pump are put into an artery and a vein in the limb so that blood can be circulated through the pump into the limb. Anticancer drugs are injected into the catheters. Wrapping the limb in a heated blanket or warming the drugs or blood may help the drugs work better.

**isolated limb perfusion :** A procedure that may be used to deliver anticancer drugs directly to an arm or leg. The flow of blood to and from the limb is temporarily stopped with a tourniquet (a tight band around the limb), and anticancer drugs are put directly into the blood of the limb. This allows the person to receive a high dose of drugs in the area where the cancer occurred. Also called limb perfusion. or A surgical procedure during which the circulation of blood to the lungs is separated from the circulation of blood through the rest of the body, and a drug is delivered directly into the lung circulation. This allows a higher concentration of chemotherapy to reach tumors in the lungs.

**isolation :** State of being separated from others. Isolation is sometimes used to prevent disease from spreading.

**isoleucine**: A naturally occurring amino acid with a nonpolar side chain.

**isoline**: line that connects equal values.

**isomer**: cis a stereoisomer in which substituents are located on the same side of a double bond. (Compare with "trans isomer.") OR chemical compound that has the same number, and kinds of atoms as another compound, but a different structural arrangement of the atoms. OR An isomer is a molecule or compound that has the same number of atoms as another but a different structure. Two molecules with the same chemical structure but have different structures are structural isomers. When atoms are arranged, bonds can be created in different directions. Glucose and fructose are good examples of structural isomers. OR Generally, any two chemicals with the same chemical formula but a different structure. For example, hexane (C<sub>6</sub>H<sub>14</sub>) could be n-hexane, 2-methylpentane, 3-methylpentane, 2,3-dimethylbutane, 2,2-dimethylbutane: OR compounds that have the same molecular formula but different structural formulas. OR Molecules with identical molecular formulas but different structural formulas. OR one of two or more compounds, radicals or ions that contain the same number of atoms of the same elements by differ in structural arrangement and properties.

**isomer** : One of two or more compounds that have the same chemical formula but different arrangements of the atoms within the molecules and that may have different physical/chemical properties.

**Isomerase**: An enzyme that catalyzes an intramolecular rearrangement. OR An enzyme that catalyzes the interconversion of isomeric forms of a compound. OR Enzymes that catalyze the transformation of compounds into their positional isomers.

**Isomerization**: Rearrangement of atomic groups within the same molecule without any loss or gain of atoms. OR A chemical change that involves a rearrangement of atoms and bonds within a molecule, without changing the molecular formula.

**Isomerization reaction**: A reaction in which particular atoms within a molecule are rearranged.

**isomers**: Compounds with the same molecular formulas but different arrangements of atoms. OR Isomers are molecules that have the same chemical formula but different arrangements of atoms. For example OR several molecules with the same composition but different structures. OR

compounds that have the same molecular formula but different structural formulas. OR Any two molecules with the same molecular formula but a different arrangement of molecular groups.

**Isomorphous replacement method:** A method of determining crystal structure used for proteins. This method involves replacing heavy atoms in a crystal with different heavy atoms.

**isoniazid:** A synthetic derivative of nicotinic acid with anti-mycobacterial properties. Although its mechanism of action is still unclear, isoniazid appears to block the synthesis of mycolic acids, major components of the mycobacterial cell wall. This agent is only active against actively growing mycobacteria because, as a pro-drug, it requires activation in susceptible mycobacterial species. Isoniazid also interferes with mycobacterial metabolism of vitamin B6. Resistance occurs due to decreased bacterial wall penetration.

**Isopentenyl pyrophosphate:** Activated isoprene; the basic building block of cholesterol.

**Isopotential point:** the activity of a sample at which the electrode potential does not vary with temperature. For some types of electrode this point is within the range of the calibration curve, but for most it lies below this range. The temperature effect on electrode potential increases with increasing divergence of the sample activity from the isopotential point.

**Isoprene:** Monomer sometimes used in chain polymerisation. Natural rubber is poly(isoprene), although it generated in nature from the somewhat more complicated building block mevalonic acid phosphate. Here is a picture: OR The hydrocarbon 2-methyl-1,3-butadiene, a recurring structural unit of the terpenoid biomolecules.

**Isoprene-acrylonitrile Rubber:** A low-plasticity copolymer with around 34 per cent ACN.

**Isopropanol (IPA):** Iso-propanol (IPA) is a solvent with various applications including printing inks, coatings, de-icer and the manufacture of isopropyl amines, an intermediate to fertilizers. High purity IPA is used in medical and IT solvent applications. It is produced directly by sulphuric acid oxidation of propylene or indirectly by the hydrogenation of acetone. Isopropanol production is widespread globally.

**Isopropylthiogalactoside (IPTG):** An inducer of the lac operon; IPTG binds to the lac repressor and reduces the repressor's affinity for the operator DNA, which permits transcription to take place.

**isopynic:** A line on a chart that connects all points of equal or constant density.

**isoquercetin:** An orally bioavailable, glucoside derivative of the flavonoid quercetin and protein disulfide isomerase (PDI) inhibitor, with antioxidant and potential antithrombotic activity. As an antioxidant, isoquercetin scavenges free radicals and inhibits oxidative damage to cells. As a PDI inhibitor, this agent blocks PDI-mediated platelet activation, and fibrin generation, which prevents thrombus formation after vascular injury. In addition, isoquercetin is an alpha-glucosidase inhibitor. PDI, an oxidoreductase secreted by activated endothelial cells and platelets, plays a key role in the initiation of the coagulation cascade. Cancer, in addition to other thrombotic disorders, increases the risk of thrombus formation.

**isosceles right triangle:** a triangle having two equal sides, two equal angles, and one  $90^\circ$  angle. Its sides are always in the ratio 1, 1,  $\sqrt{2}$ .

**isosceles triangle:** a triangle having two equal sides (and thus two equal angles across from those sides). OR A triangle with two sides of equal length.

**isostasy:** the equilibrium, or balance, between adjacent blocks of crust overlying the mantle.

**isostatic adjustment (isostatic compensation):** The process whereby lateral transport at the Earth's surface from erosion or deposition is compensated for by movements in a subcrustal layer to maintain equilibrium among units of varying masses and densities.

**isosteric:** Having identical valence electron configurations.

**isosulfan blue:** A synthetic visual lymphatic imaging agent. Injected into the periphery of the tumor site, isosulfan blue localizes to the lymphatic system and aids in the surgical identification of tumor sentinel nodes which stain blue. or A dye made in the laboratory that helps identify the sentinel lymph node (the first lymph node that cancer spreads to from a primary tumor). Isosulfan blue is injected at the edge of a tumor and travels through the lymph fluid to lymph nodes near the tumor. The sentinel lymph node is

identified by removing lymph nodes that are stained with the blue dye and looking for cancer cells under a microscope.

**isosurface:** three-dimensional diagram showing surfaces connecting equal values.

**Isotactic:** having a stereochemical regularity of structure in the repeating units of a polymer.

**isotherm:** line connecting areas of equal temperature on a map.

**isotherm:** A contour line that corresponds to values measured at identical temperatures. For example, curves on a plot of gas pressure measured at different volumes in a constant temperature bath are isotherms. OR a line of equal temperature. Any point along an isotherm is at the same temperature as any other point along the same isotherm.

**isotherm:** A line on a chart that connects all points of equal or constant temperature.

**isothermal:** Having constant temperature. OR Occurring at constant temperature.

**Isothermal mode:** A thermogravimetric analysis technique in which the temperature of the sample is held constant.

**isotone:** One of a group of atoms or ions with nuclei that contain the same number of neutrons but different numbers of protons.

**isotonic:** Refers to solutions that have equal osmotic pressure.

**Isotope:** Isotopes are atoms of the same element that have different atomic masses. The change in mass occurs because the atoms have different numbers of neutrons. Their charges are all the same but their masses are different. Atomic masses are not even numbers because they represent the average mass of the atoms. The atomic mass includes the mass of isotopes and normal atoms. OR Isotopes are atoms of the same element with different numbers of neutrons. They have the same atomic number but different mass numbers. OR a variety of an element characterized by a specific number of neutrons in the nucleus. OR an atom of an element that contains a different number of neutrons in its nuclei than does another atom of that element. OR atoms with the same number of protons, but different numbers of neutrons. OR One of two or more atoms that have the same atomic number (i.e., the same number of protons in their nuclei) but have different mass numbers. OR Two or more forms (or atomic configurations)

of a given element that have identical atomic numbers (the same number of protons in their nuclei) and the same or very similar chemical properties but different atomic masses (different numbers of neutrons in their nuclei) and distinct physical properties. Thus, carbon-12, carbon-13, and carbon-14 are isotopes of the element carbon, and the numbers denote the approximate atomic masses. Among their distinct physical properties, some isotopes (known as radioisotopes) are radioactive because their nuclei emit radiation as they strive toward a more stable nuclear configuration. For example, carbon-12 and carbon-13 are stable, but carbon-14 is unstable and radioactive. OR Atoms or ions of an element with different numbers of neutrons in their atomic nucleus. Isotopes have the same atomic number but different mass number. Isotopes have very similar chemical properties but sometimes differ greatly in nuclear stability.

**isotope :** A form of a chemical element in which the atoms have the same number of protons (part of the nucleus of an atom) but with a different number of neutrons (part of the nucleus of an atom). For example, carbon 12, carbon 13, and carbon 14 are isotopes of carbon. They all have six protons in the nucleus, but each has different number of neutrons. Isotopes may be used in certain medical tests and procedures.

**Isotope separation:** The process of separating isotopes from one another, or changing their relative abundances, as by gaseous diffusion or electromagnetic separation. Isotope separation is a step in the isotopic enrichment process.

**isotopes:** Atoms of the same element with differing numbers of neutrons. OR are the same elements with different mass numbers. This is caused by having a different number of neutrons in the nucleus. OR two elements that have the same atomic number but different atomic masses. OR Stable or radioactive forms of an element that differ in atomic weight but are otherwise chemically identical to the naturally abundant form of the element; used as tracers. OR Elements with the same number of protons but have different numbers of neutrons, and thus different masses.

**isotopic abundance:** The fraction of atoms of a given isotope in a sample of an element.

**Isotopic enrichment:** A process by which the relative abundance of the isotopes of a given element are altered, thus producing a form of the

element that has been enriched in one particular isotope and depleted in its other isotopic forms.

**isotopic mass:** The mass of a single atom of a given isotope, usually given in daltons.

**isotretinoin:** A naturally-occurring retinoic acid with potential antineoplastic activity. Isotretinoin binds to and activates nuclear retinoic acid receptors (RARs); activated RARs serve as transcription factors that promote cell differentiation and apoptosis. This agent also exhibits immunomodulatory and anti-inflammatory responses and inhibits ornithine decarboxylase, thereby decreasing polyamine synthesis and keratinization. or A drug that is used in the treatment of acne and psoriasis and is being studied in cancer prevention. It is a type of retinoid. Also called 13-cis retinoic acid.

**Isotropic:** Having identical properties in all directions.

**Isotropic shrinkage:** Shrinkage that occurs equally in all directions See anisotropic shrinkage.

**ISOTROPY:** The situation where properties are independent of the direction in which they are measured.

**Isovorin:** (Other name for: L-leucovorin)

**isozymes:** Multiple forms of an enzyme that catalyze the same reaction but differ from each other in their amino acid sequence, substrate affinity,  $V_{max}$ , and/or regulatory properties; also called isoenzymes. OR Multiple forms of an enzyme that differ from one another in one or more of the properties. OR Enzymes in an organism that catalyze the same reaction but differ in structure; these differences may range from one to several amino acid residues. Also called isoenzymes.

**ispinesib:** A synthetic small molecule, derived from quinazolinone, with antineoplastic properties. Ispinesib selectively inhibits the mitotic motor protein, kinesin spindle protein (KSP), resulting in inhibition of mitotic spindle assembly, induction of cell cycle arrest during the mitotic phase, and cell death in tumor cells that are actively dividing. Because KSP is not involved in nonmitotic processes, such as neuronal transport, ispinesib may be less likely to cause the peripheral neuropathy often associated with the tubulin-targeting agents. or A substance being studied in the treatment of

cancer. Ispinesib blocks a protein that tumor cells need to divide. It is a type of mitotic inhibitor. Also called SB-715992.

**ISS 1018 CpG oligodeoxynucleotide:** A short, synthetic, unmethylated CpG motif-based oligodeoxynucleotide (CpG ODN) with immunostimulatory activity. As an immunostimulatory sequence (ISS) that signals through Toll-like receptor 9 (TLR9), ISS 1018 CpG ODN induces the production of immunoglobulin by B cells and interferon (IFN) -alpha, IFN-beta, interleukin (IL) -12, and tumor necrosis factor (TNF) -alpha by plasmacytoid dendritic cells (pDC). In turn, pDC, through cell-cell contact and secretion of and IFN-alpha and -beta induce natural killer (NK) cell proliferation, NK cell production of IFN-gamma, and NK cell-mediated cytotoxicity; secreted IFNs also stimulate bystander T cell activation and differentiation of naive CD4+ T cells into T-helper 1 cells on specific antigen challenge. In addition, ISS 1018 CpG ODN promotes antigen presentation and co-stimulatory molecule expression. Unmethylated CpG motifs are regions of genomic DNA containing the cytosine-guanine dinucleotide in which cytosine remains unmethylated, especially in prokaryotic DNA.

**isthmus :** A narrow part inside the body that connects two larger structures.

**Istodax :** A drug used to treat cutaneous T-cell lymphoma in patients who have been treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Istodax blocks certain enzymes, which may help kill cancer cells. It is a type of depsipeptide and a type of histone deacetylase inhibitor. Also called FR901228 and romidepsin.

**ITP:** A condition in which platelets (blood cells that cause blood clots to form) are destroyed by the immune system. The low platelet count causes easy bruising and bleeding, which may be seen as purple areas in the skin, mucous membranes, and outer linings of organs. Also called idiopathic thrombocytopenic purpura and immune thrombocytopenic purpura.

**itraconazole:** A synthetic triazole agent with antimycotic properties. Formulated for both topical and systemic use, itraconazole preferentially inhibits fungal cytochrome P450 enzymes, resulting in a decrease in fungal ergosterol synthesis. Because of its low toxicity profile, this agent can be used for long-term maintenance treatment of chronic fungal infections. Check for active clinical trials using this agent.

**itraconazole :** A drug used to prevent or treat fungal infections. It belongs to the family of drugs called antifungal agents.

**itraconazole dispersion in polymer matrix:** A proprietary oral formulation composed of the poorly soluble, synthetic triazole agent, itraconazole, dispersed in a polymer matrix, with antifungal and potential anti-angiogenic activities. Upon oral administration, itraconazole inhibits the enzyme cytochrome P450 lanosterol 14 alpha-demethylase, resulting in a decrease in fungal ergosterol synthesis. Although the exact mechanism through which itraconazole inhibits angiogenesis has yet to be fully elucidated, this agent appears to inhibit the Hedgehog (Hh) signaling pathway, cholesterol synthesis and mammalian target of rapamycin (mTOR) signaling in endothelial cells. This agent may also prevent the activation of and signaling by various angiogenic growth factors. By decreasing the tumor vasculature and nutrient supply, itraconazole ultimately inhibits tumor cell growth. The solid dispersion of itraconazole in the polymer matrix enhances dissolution of itraconazole in the gastrointestinal tract and increases its bioavailability; this allows for the administration of a much lower dose compared to itraconazole alone.

**IU :** A unit used to measure the activity of many vitamins, hormones, enzymes, and drugs. An IU is the amount of a substance that has a certain biological effect. For each substance there is an international agreement on the biological effect that is expected for 1 IU. Also called International Unit.

**IUD:** A small, plastic T-shaped device that is placed inside the uterus (the small, hollow, pear-shaped organ in a woman's pelvis in which a fetus develops) to prevent pregnancy. IUDs prevent sperm from fertilizing an egg, and prevent fertilized eggs from implanting in the uterus. The use of IUDs is also being studied in the prevention and treatment of endometrial cancer and other conditions. Also called intrauterine device.

**IUPAC:** Short for International Union of Pure and Applied Chemistry. OR The International Union of Pure and Applied Chemists. IUPAC is involved in setting consistent nomenclature, symbols and names of elements, mathematical variables.... Some people think IUPAC is a bunch of funny old men with nothing better to do than meddle with the perfectly good ways of spelling things chemists have used since Paracelsus was a boy, but we polymer scientists know better. OR International Union of Pure and

Applied Chemistry, an organization which sets international standards for chemical nomenclature, atomic weights, and the names of newly discovered elements.

**IUPAC nomenclature:** a systematic method for naming molecules based on a series of rules developed by the International Union of Pure and Applied Chemistry. IUPAC nomenclature is not the only system in use, but it is the most common.

**IV:** Into or within a vein. IV usually refers to a way of giving a drug or other substance through a needle or tube inserted into a vein. Also called intravenous.

**IVAC mutanome vaccine:** An individualized, poly-neo-epitopic encoding, ribonucleic acid (RNA)-based cancer vaccine that targets a variety of patient-specific, immunogenic mutant epitopes, with potential immunostimulatory and antineoplastic activities. Upon intranodal administration, the RNA in the individualized mutanome vaccine is translated by antigen presenting cells (APCs) and the expressed protein is presented via major histocompatibility complex (MHC) molecules on the surface of the APCs. This leads to an induction of both cytotoxic T-lymphocyte (CTL) and memory T-cell immune responses against the patient-specific neoantigens.

**Iveegam EN:** (Other name for: therapeutic immune globulin)

**IVP:** A procedure in which x-ray images of the kidneys, ureters, and bladder are taken at regular times after a substance that shows up on x-rays is injected into a blood vessel. The substance outlines the kidneys, ureters, and bladder as it flows through the system and collects in the urine. IVP is usually done to look for a block in the flow of urine. Also called intravenous pyelography.

**ixabepilone:** An orally bioavailable semisynthetic analogue of epothilone B with antineoplastic activity. Ixabepilone binds to tubulin and promotes tubulin polymerization and microtubule stabilization, thereby arresting cells in the G2-M phase of the cell cycle and inducing tumor cell apoptosis. This agent demonstrates antineoplastic activity against taxane-resistant cell lines.

**ixabepilone :** A drug used to treat metastatic or locally advanced breast cancer that has not improved after treatment with certain other anticancer drugs. It is also being studied in the treatment of other types of cancer.

Ixabepilone stops the growth of tumor cells by blocking cell division. It is a type of epothilone analog. Also called BMS-247550 and Ixempra.

**ixabepilone (oral):** An enteric-coated formulation of ixabepilone, a semisynthetic analogue of epothilone B and a non-taxane tubulin inhibitor, with antineoplastic activity. Ixabepilone binds to and stabilizes tubulin molecules, thereby interfering with the dynamics of microtubule assembly/disassembly. This results in cell cycle arrest at the G2-M phase and leads to apoptosis within fast growing tumor cells. This agent demonstrates antineoplastic activity against taxane-resistant cell lines. Compared to intravenously administered ixabepilone, the oral formulation provides a more manageable way to administer this agent. Check for active clinical trials using this agent.

**ixazomib citrate:** An orally bioavailable second generation proteasome inhibitor (PI) with potential antineoplastic activity. Ixazomib inhibits the activity of the proteasome, blocking the targeted proteolysis normally performed by the proteasome, which results in an accumulation of unwanted or misfolded proteins; disruption of various cell signaling pathways may follow, resulting in the induction of apoptosis. Compared to first generation PIs, second generation PIs may have an improved pharmacokinetic profile with increased potency and less toxicity. Proteasomes are large protease complexes that degrade unneeded or damaged proteins that have been ubiquitinated. Check for active clinical trials using this agent.

**ixazomib citrate :** A drug used with lenalidomide and dexamethasone to treat multiple myeloma. It is used in patients who received at least one other anticancer treatment. It is also being studied in the treatment of other types of cancer. Ixazomib citrate blocks enzymes called proteasomes, which may help keep cancer cells from growing and may kill them. It is a type of proteasome inhibitor. Also called Ninlaro.

**Ixempra :** A drug used to treat metastatic or locally advanced breast cancer that has not improved after treatment with certain other anticancer drugs. It is also being studied in the treatment of other types of cancer. Ixempra stops the growth of tumor cells by blocking cell division. It is a type of epothilone analog. Also called BMS-247550 and ixabepilone.

**Ixoten:** (Other name for: trofosfamide)

**Izod Impact Strength :** A measure of impact strength determined by the difference in energy of a swinging pendulum before and after it breaks a notched specimen held vertically as a cantilever beam.

**Izod Impact Test:** A test designed to determine the resistance of a plastics material to a shock loading. It involves the notching of a specimen, which is then placed in the jaws of the machine and struck with a weighted pendulum. See also Impact Strength.

**Izod, Notched, LT :** The energy required to break specimens in which there is a v-notch to create an initial stress point but measured at low temperature (minus 40°C).

**Izod, Notched, RT:** The energy required to break specimens in which there is a v-notched to create an initial stress point.

**J SHEET:** Similar to center fold, j-sheet is folded on one edge of the roll and slit in the machine direction on the other side allowing the film to be unfolded. The difference is that the fold is not directly in the center of the film, so the width of the film on either side of the fold is asymmetrical when opened.

**J-107088:** A substance being studied in the treatment of cancer. It is a type of topoisomerase I inhibitor. Also called edotecarin.

**J-cap finish:** (also called hinge-guard) - flexible (i.e., living) hinge used in joining the cover to the main body of a flip top dispensing closure.

Consumers open a j-cap closure by removing a strip of plastic holding the top of the closure to the base of the closure, leaving a hinged, snap-top closure mechanism. This type of closure can also provide tamper evidence.

**J-pouch coloanal anastomosis :** A surgical procedure in which the colon is attached to the anus after the rectum has been removed. A 2-4 inch section of the colon is formed into a J-shaped pouch in order to replace the function of the rectum and store stool until it can be eliminated. This procedure is similar to the side-to-end coloanal anastomosis but a larger pouch is formed.

**Jacket:** A tough sheath made of plastic material used to protect an insulated wire or cable, or to permanently group two or more insulated wires or cables.

**Jacketed Tubing:** Jacketed tubing allows color coding of a variety of tubing, wire or other materials by wrapping tubing in a neat

bundle.

**jackson turbidity unit (JTU):** a measure of the turbidity of water, proportional to the ppm silica, where 100 ppm silica equals 21.5 JTU. This method was the standard for turbidity for many years; it applied the use of a candle, measuring tube, and the human eye for determining the value. This method has since been replaced by the use of a known turbidity standard, Formazin, and the use of analytical instruments that will detect forward-scattered light and light scattered at 90 degrees.

**JAK inhibitor INCB047986:** An orally bioavailable inhibitor of Janus-associated kinases (JAK), with potential antineoplastic activity. Upon oral administration, INCB047986 specifically binds to and inhibits the phosphorylation of JAK, which affects JAK-dependent signaling and may lead to an inhibition of cellular proliferation in JAK-overexpressing tumor cells. The JAK-STAT (signal transducer and activator of transcription) pathway plays a key role in the signaling of many cytokines and growth factors and is involved in cellular proliferation, growth, hematopoiesis, and the immune response; JAK kinases may be upregulated in inflammatory diseases, myeloproliferative disorders, and various malignancies. Check for active clinical trials using this agent.

**JAK1 inhibitor INCB039110:** An orally bioavailable inhibitor of Janus-associated kinase 1 (JAK1) with potential antineoplastic activity. Upon oral administration of JAK1 inhibitor INCB039110, this agent selectively inhibits the phosphorylation and activity of JAK1, which may result in inhibition of JAK1-mediated signaling, induction of apoptosis, and reduction of cell proliferation in JAK1-expressing tumor cells. JAK1 is overexpressed in a variety of tumor cell types and plays a key role in tumor cell proliferation.

**JAK1 inhibitor INCB052793:** An orally bioavailable inhibitor of Janus-associated kinase 1 (JAK1), with potential antineoplastic activity. Upon oral administration, INCB052793 specifically binds to and inhibits the phosphorylation of JAK1, which interferes with JAK-dependent signaling and may lead to an inhibition of cellular proliferation in JAK1-overexpressing tumor cells. The JAK-STAT (signal transducer and activator of transcription) signaling pathway is a major mediator of cytokine activity and is often dysregulated in a variety of tumor cell types.

**JAK2 gene :** A gene that makes a protein called JAK2, which sends signals in cells that promote cell growth. This protein helps control the number of red blood cells, white blood cells, and platelets that are made in the bone marrow. Mutated (changed) forms of the JAK gene have been found in some types of blood conditions, including polycythemia vera, essential thrombocythemia, and primary myelofibrosis. These changes may cause the body to make too many blood cells.

**JAK2 inhibitor AZD1480:** An orally bioavailable inhibitor of Janus-associated kinase 2 (JAK2) with potential antineoplastic activity. JAK2 inhibitor AZD1480 inhibits JAK2 activation, leading to the inhibition of the JAK/STAT (signal transducer and activator of transcription) signaling including activation of STAT3. This may lead to induction of tumor cell apoptosis and a decrease in cellular proliferation. JAK2, often upregulated or mutated in a variety of cancer cells, mediates STAT3 activation and plays a key role in tumor cell proliferation and survival.

**JAK2 inhibitor BMS-911543:** An orally available small molecule targeting a subset of Janus-associated kinase (JAK) with potential antineoplastic activity. JAK2 inhibitor BMS-911543 selectively inhibits JAK2, thereby preventing the JAK/STAT (signal transducer and activator of transcription) signaling cascade, including activation of STAT3. This may lead to an induction of tumor cell apoptosis and a decrease in cellular proliferation. JAK2, often upregulated or mutated in a variety of cancer cells, mediates STAT3 activation and plays a key role in tumor cell proliferation and survival.

**JAK2 inhibitor TG101348:** An orally bioavailable, small-molecule, ATP-competitive inhibitor of Janus-associated kinase 2 (JAK2) with potential antineoplastic activity. JAK2 inhibitor TG101348 competes with JAK2 as well as the mutated form AK2V617F for ATP binding, which may result in inhibition of JAK2 activation, inhibition of the JAK-STAT signaling pathway, and the induction of tumor cell apoptosis. JAK2 is the most common mutated gene in bcr-abl-negative myeloproliferative disorders (MPDs); the mutated form JAK2V617F has a valine-to-phenylalanine modification at position 617 and plays a key role in tumor cell proliferation and survival.

**JAK2 inhibitor WP1066:** An orally bioavailable inhibitor of Janus-associated kinase 2 (JAK2) with potential antineoplastic activity. Upon oral

administration, WP1066 specifically binds to both JAK2 and its mutated form, JAK2 V617F, and inhibits their phosphorylation and activation. In addition, this agent degrades JAK2 protein. This results in the inhibition of the JAK- signal transducer and activator of transcription (STAT) and phosphoinositide-3-kinase (PI3K)/AKT signaling pathways, resulting in the induction of apoptosis in tumor cells overexpressing JAK2. JAK2, a tyrosine kinase, is overexpressed in a variety of tumor cells and is correlated with increased tumor cell proliferation and survival. The mutated form JAK2 V617F has a valine-to-phenylalanine modification at position 617 and plays a key role in tumor cell proliferation and survival. Check for active clinical trials using this agent.

**JAK2 inhibitor XL019:** An orally bioavailable inhibitor of Janus-associated kinase 2 (JAK2) with potential antineoplastic activity. XL019 inhibits the activation of JAK2 as well as the mutated form JAK2V617F, which may result in the inhibition of the JAK-STAT signaling pathway and may induce apoptosis. The JAK2 mutated form JAK2V617F has a valine-to-phenylalanine modification at position 617 and plays a key role in tumor cell proliferation and survival.

**JAK2/Src inhibitor NS-018:** An orally bioavailable, small molecule inhibitor of Janus-associated kinase 2 (JAK2) and Src-family kinases, with potential antineoplastic activity. JAK2/Src inhibitor NS-018 competes with ATP for binding to JAK2 as well as the mutated form JAK2V617F, thereby inhibiting the activation of JAK2 and downstream molecules in the JAK2/STAT3 (signal transducer and activator of transcription 3) signaling pathway that plays an important role in normal development, particularly hematopoiesis. In addition, NS-018 inhibits the Src family tyrosine kinases. This eventually leads to the induction of tumor cell apoptosis. JAK2 is the most common mutated gene in bcr-abl-negative myeloproliferative disorders (MPDs); JAK2V617F is a constitutively activated kinase that activates the JAK/STAT signaling pathway and dysregulates cell growth and function, and its expression transforms hematopoietic cells to cytokine-independent growth.

**Jakafi :** A drug used to treat polycythemia vera in patients who cannot be treated with or have not gotten better with hydroxyurea. It is also used to treat certain types of myelofibrosis. It is being studied in the treatment of other blood diseases and some types of cancer. Jakafi blocks a protein

called JAK, which may help keep abnormal blood cells or cancer cells from growing. It is a type of tyrosine kinase inhibitor. Also called ruxolitinib phosphate.

**Jamb:** The sides or vertical side posts of a door window or other opening.

**Jamshidi needle :** A long, hollow needle with a tapered cutting edge on one end and a handle with a place to attach a syringe on the other end. It is used to remove a sample of tissue from the bone marrow. The needle is inserted through the bone into the bone marrow and the syringe is attached to the top to remove the sample or to deliver drugs or fluid into the bone. A Jamshidi needle is a type of bone marrow needle.

**Jander equation:** A simplified version of the three-dimensional diffusion kinetic equation.

**Japan:** An abbreviation of 'Japanning' which is the process of finishing with a stoving black called Japanners' Black or Black Japan. Hence also Japanners' gold size or Japan gold size.

**jargon:** the specialized language of a field or profession.

**jaundice :** A condition in which the skin and the whites of the eyes become yellow, urine darkens, and the color of stool becomes lighter than normal. Jaundice occurs when the liver is not working properly or when a bile duct is blocked.

**Javior :** A substance being studied in the treatment of bladder cancer, lung cancer, and other types of cancer. Also called vinflunine.

**JEB:** An abbreviation for a chemotherapy combination used to treat childhood ovarian and testicular germ cell cancers that have spread. It includes the drugs carboplatin (JM8), etoposide phosphate, and bleomycin sulfate. Also called JEB regimen.

**JEB regimen:** A chemotherapy regimen consisting of carboplatin (JM8), etoposide and bleomycin used for the treatment of childhood extracranial germ cell tumors. Or An abbreviation for a chemotherapy combination used to treat childhood ovarian and testicular germ cell cancers that have spread. It includes the drugs carboplatin (JM8), etoposide phosphate, and bleomycin sulfate. Also called JEB.

**jejunostomy :** Surgery to create an opening into the jejunum (part of the small intestine) from the outside of the body. A jejunostomy allows a feeding tube to be put into the small intestine.

**jejunum:** the second 10 inches of the small intestine. OR The middle part of the small intestine. It is between the duodenum (first part of the small intestine) and the ileum (last part of the small intestine). The jejunum helps to further digest food coming from the stomach. It absorbs nutrients (vitamins, minerals, carbohydrates, fats, proteins) and water from food so they can be used by the body.

**Jelly:** Sometimes, when thinking about solids, liquids and gases, you come across substances that don't fit one particular category.

**Jet molding:** Processing technique characterized by the fact that most of the heat is applied to the material as it passes through the nozzle or jet, rather than in a heating cylinder as is done in conventional processes.

**jet stream:** band of fast-moving air in the upper troposphere.

**JETTING:** Turbulent flow of resin from an undersized gate or thin section into a thicker mold section, as opposed to laminar flow of material progressing radially from a gate to the extremities of the cavity. OR A turbulent flow of plastic or silicone rubber accelerating the speed of the melt can be caused by undersized gate or bad mold design OR A turbulent flow in the melt caused by an undersized gate or where a thin section rapidly becomes thicker.

**jetty:** a wall that is built on both sides of a harbor and that extends into the ocean to protect the harbor from sedimentation and destructive waves.

**Jevtana :** A drug used with prednisone to treat hormone-resistant prostate cancer that has spread and that had been treated with docetaxel. It is also being studied in the treatment of other types of cancer. Jevtana blocks cell growth by stopping cell division and may kill cancer cells. It is a type of antimitotic agent. Also called cabazitaxel and taxoid XRP6258.

**Jewett staging system :** A staging system for prostate cancer that uses ABCD. "A" and "B" refer to cancer that is confined to the prostate. "C" refers to cancer that has grown out of the prostate but has not spread to lymph nodes or other places in the body. "D" refers to cancer that has spread to lymph nodes or to other places in the body. Also called ABCD rating and Whitmore-Jewett staging system.

**jiang huang :** An East Indian plant that is a member of the ginger family and is used as a spice and food color. The underground stems are used in some cultures to treat certain stomach problems. The substance in jiang

huang that gives it a yellow color (curcumin) is being studied in the treatment of cancer, Alzheimer disease, cystic fibrosis, and psoriasis. The scientific name is *Curcuma longa*. Also called Indian saffron and turmeric.

**Jig:** A tool for holding parts of an assembly during the manufacturing process. OR Means of holding a part and guiding the tool during machining or assembly operation.

**Jim's Juice :** A liquid that has been promoted as a treatment for a wide range of diseases, including cancer. The ingredients thought to be in Jim's Juice have been tested, and none of them have been shown to be effective in treating any form of cancer. Jim's Juice is not available in the United States. Also called 126-F, Cancell, Cantron, JS-101, JS-114, Protocol, and Sheridan's Formula.

**Jin Fu Kang:** A traditional Chinese herbal medicine derived from the plant *Astragalus membranaceus* with potential immunopotential activity. Jin Fu Kang may stimulate anti-tumor macrophage and natural killer cell activity and may enhance immune recognition of tumor cells by inhibiting the production of T-helper cell type 2 (Th2) cytokines such as interleukin-4 (IL-4) and interleukin-10 (IL-10).

**JM 216:** A substance being studied in the treatment of prostate and other types of cancer. It contains the metal platinum and may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called BMS-182751 and satraplatin.

**JMML:** A rare form of childhood leukemia in which cancer cells often spread into tissues such as the skin, lung, and intestines. Also called juvenile myelomonocytic leukemia.

**johimbe :** A tree native to West Africa. The bark is used as a supplement for bodybuilding and to enhance male sexual performance. It contains the chemical yohimbine, which is being studied in the treatment of sexual dysfunction. It may interact with certain drugs used to treat depression, high blood pressure, and high blood sugar. The scientific name is *Pausinystalia yohimbe*. Also called yohimbe.

**joint:** an opening in a rock along which the rock exhibits no displacement; generally an equilibrium response to cooling or unloading.

**joint :** In medicine, the place where two or more bones are connected. Examples include the shoulder, elbow, knee, and jaw.

**joint set:** a series of roughly parallel joints that occur in one direction.

**Joists:** Horizontal timbers or metal girders to which floors and ceilings are attached.

**joule:** Unit of energy. OR A derived unit of energy, work, or amount of heat in the International System of Units. OR a unit of energy equal to 0.239 calorie. OR The amount of energy needed to apply a 1-newton force over a distance of 1 meter; a kilojoule (kj) is equal to 1000 J, or to 0.239 kcal.

**Jovian planet:** outer planet (Jupiter, Saturn, Uranus, and Neptune) consisting of a gaseous surface. OR those outer planets that have densities of less than 2 g/cm<sup>3</sup>: Saturn, Jupiter, Uranus, Neptune, and Pluto.

**JS-101:** A liquid that has been promoted as a treatment for a wide range of diseases, including cancer. The ingredients thought to be in JS-101 have been tested, and none of them have been shown to be effective in treating any form of cancer. JS-101 is not available in the United States. Also called 126-F, Cancell, Cantron, Jim's Juice, JS-114, Protocel, and Sheridan's Formula.

**JS-114:** A liquid that has been promoted as a treatment for a wide range of diseases, including cancer. The ingredients thought to be in JS-114 have been tested, and none of them have been shown to be effective in treating any form of cancer. JS-114 is not available in the United States. Also called 126-F, Cancell, Cantron, Jim's Juice, JS-101, Protocel, and Sheridan's Formula.

**JTU:** see jackson turbidity unit.

**Juice Plus:** (Other name for: fruit and vegetable extracts)

**Junction potential:** the portion of the total observed potential developed between the sensing and reference electrodes that are formed at the liquid/liquid junction between the reference electrode filling solution and the sample solution. For accuracy, the junction potential should be as low and as constant as possible.

**junctional nevus :** A type of nevus (mole) found at the junction (border) between the epidermis (outer) and the dermis (inner) layers of the skin. These moles may be colored and slightly raised.

**JUNOVAN:** (Other name for: mifamurtide)

**Juven:** An orally bioavailable nutritional supplement. Juven contains the amino acids glutamine and arginine in addition to beta-hydroxy-beta-methylbutyrate (HMB). This agent may promote muscle protein synthesis and increase muscle mass. Check for active clinical trials using this agent.

**juvenile myelomonocytic leukemia :** A rare form of childhood leukemia in which cancer cells often spread into tissues such as the skin, lung, and intestines. Also called JMML.

**juvenile nasopharyngeal angiofibroma :** A benign (not cancer) tumor that is made up of blood vessels and fibrous (connective) tissue. Juvenile nasopharyngeal angiofibromas form in the back of the nose and may spread to the upper part of the throat, the sinuses around the nose, the bone around the eyes, and rarely, to the brain. Signs and symptoms may include runny nose, nosebleeds, problems breathing through the nose, hearing loss, and easy bruising. Juvenile nasopharyngeal angiofibromas are most common in young men. They are a type of vascular tumor.

**juvenile pilocytic astrocytoma :** A slow-growing type of central nervous system tumor that forms from glial (supportive) tissue of the brain and spinal cord. Juvenile pilocytic astrocytoma usually occurs in children and young adults. It forms in the brain more often than the spinal cord.

**juvenile rickets :** A condition in children in which bones become soft and deformed because they don't have enough calcium and phosphorus. It is caused by not having enough vitamin D in the diet or by not getting enough sunlight. In adults, this condition is called osteomalacia. Also called infantile rickets, rachitis, and rickets.

**K:** Although not part of GCSE, you may see this if you look at data about weak acids. A large value of  $K_a$  means that although the acid is weak (only partly dissociated in water) it is one of the stronger weak acids. OR Potassium !

**K-Factor:** A term sometimes used for thermal insulation value or coefficient of thermal conductivity.

**K-ras gene :** A gene that may cause cancer when it is mutated (changed). The K-ras gene makes the KRAS protein, which is involved in cell signaling pathways, cell growth, and apoptosis (cell death). Agents that block the activity of the mutated K-ras gene or its protein may stop the growth of cancer. Also called Kras gene.

**K-Resin:** By virtue of its sparkling clarity, high gloss, and impact resistance, K-Resin is ideally suited to a wide variety of packaging applications. K-Resin, a styrene derivative, is a relatively expensive material which is processed and produced on polyethylene equipment. This material is similar to polystyrene in clarity and rigidity, but lacks significant barrier properties. K-Resin is suitable for packaging aqueous and dry products but is specifically not compatible with fats and unsaturated oils or solvents. This material is frequently used for display packaging for items such as candy, beef jerky, etc.

**K-VALUE OF PVC:** A measure of the molecular weight of PVC based on measurements of viscosity of a PVC solution. It ranges usually between 35 and 80. Low K-values imply low molecular weight (which is easy to process but has inferior properties) and high K-values imply high molecular weight, (which is difficult to process, but has outstanding properties).

**Kadcyla :** A drug used to treat HER2-positive breast cancer that has spread to other parts of the body. It is used in patients who have already been treated with the anticancer drug called trastuzumab and a type of drug called a taxane. It may also be used in patients whose cancer has recurred (come back) after adjuvant therapy with these drugs. It is also being studied in the treatment of other types of cancer. Kadcyla contains a monoclonal antibody called trastuzumab that binds to a protein called HER2, which is found on some breast cancer cells. It also contains an anticancer drug called DM1, which may help kill cancer cells. Kadcyla is a type of antibody-drug conjugate. Also called ado-trastuzumab emtansine and T-DM1.

**Kadian:** (Other name for: morphine sulfate)

**Kahler disease :** A type of cancer that begins in plasma cells (white blood cells that produce antibodies). Also called multiple myeloma, myelomatosis, and plasma cell myeloma.

**Kaletra :** A combination of the drugs ritonavir and lopinavir. It is used to treat infection with HIV (the virus that causes AIDS). It is also being studied in the treatment of some types of cancer. Kaletra blocks the ability of HIV to make copies of itself and may help other anticancer drugs work better or may block the growth of cancer cells. Ritonavir blocks the breakdown of lopinavir. Kaletra is a type of anti-HIV agent and a type of protease inhibitor. Also called lopinavir/ritonavir.

**kame:** a steep-sided mound of stratified till that was deposited by meltwater in depressions or openings in the ice or as short-lived deltas or fans at the mouths of meltwater streams.

**kanglaite:** An injectable microemulsion of a purified oil extracted from the seeds of the traditional Chinese medicinal herb *Coix lacryma-jobi* (Job's tears), with potential antineoplastic activity. Although the exact mechanism of action is unknown, kanglaite exhibits an antineoplastic effect, potentially via interfering with the cell cycle and halting tumor cells in the G2/M phase, which may eventually inhibit mitosis and proliferation of cancer cells.

**Kaposi sarcoma :** A type of cancer in which lesions (abnormal areas) grow in the skin, lymph nodes, lining of the mouth, nose, and throat, and other tissues of the body. The lesions are usually purple and are made of cancer cells, new blood vessels, and blood cells. They may begin in more than one place in the body at the same time. Kaposi sarcoma is caused by Kaposi sarcoma-associated herpesvirus (KSHV). In the United States, it usually occurs in people who have a weak immune system caused by AIDS or by drugs used in organ transplants. It is also seen in older men of Jewish or Mediterranean descent, or in young men in Africa.

**Kaposi sarcoma-associated herpesvirus :** A type of virus that causes Kaposi sarcoma (a rare cancer in which lesions grow in the skin, lymph nodes, lining of the mouth, nose, and throat, and other tissues of the body). Kaposi sarcoma-associated herpesvirus also causes certain types of lymphoma (cancer that begins in cells of the immune system). Also called HHV8, human herpesvirus 8, and KSHV.

**kaposiform hemangioendothelioma :** A rare blood vessel tumor that usually forms on the skin of the arms and legs, but may also form in deeper tissues, such as muscle and bone. Kaposiform hemangioendotheliomas may sometimes form in the lymph nodes, chest, abdomen, or bones. They are fast growing and can spread to nearby tissue, but usually do not spread to other parts of the body. Signs and symptoms may include firm, painful areas of skin that look bruised; purple or brownish-red areas on the skin; easy bruising; anemia; and abnormal bleeding. Kaposiform hemangioendotheliomas are most common in infants and young children. They are a type of vascular tumor.

**karenitecin:** A synthetic silicon-containing agent related to camptothecin with antineoplastic properties. Cositecan stabilizes the cleavable complex between topoisomerase I and DNA, resulting in DNA breaks and consequently triggering apoptosis. Because it is lipophilic, karenitecin exhibits enhanced tissue penetration and bio-availability compared to water-soluble camptothecins. or A drug being studied in the treatment of cancer. It is a type of topoisomerase inhibitor. It is related to the anticancer drug camptothecin.

**Karl Ziegler:** Nobel prize winning chemist (1898-1973) who did a vast quantity of work on the catalysts allowing high density poly(ethene) and poly(propene) to be produced. Most of his work was done at the Max Planck Institute for Coal Research in Müllheim, Germany, and had nothing to do with coal, showing the economic benefits of pure research. Like Giulio Natta, he was a keen mountain climber. A quote: "My only motivation has always been just to do what was fun." (quoted in "The Chain Straighteners," by F. McMillan)

**Karnofsky Performance Status :** A standard way of measuring the ability of cancer patients to perform ordinary tasks. The Karnofsky Performance Status scores range from 0 to 100. A higher score means the patient is better able to carry out daily activities. Karnofsky Performance Status may be used to determine a patient's prognosis, to measure changes in a patient's ability to function, or to decide if a patient could be included in a clinical trial. Also called KPS.

**karst topography:** an irregular land surface dotted with numerous sinkholes and depressions related to underlying cave systems.

**Kasabach-Merritt syndrome :** A rare condition in which the blood is not able to clot and serious bleeding may occur. It occurs in some patients who have blood vessel tumors called tufted angiomas and kaposiform hemangioendotheliomas. These tumors usually form on the skin but may also form in deeper tissues, such as muscle and bone. The tumors may grow quickly and trap and destroy platelets, which are needed to form clots and stop bleeding. Kasabach-Merritt syndrome is most common in infants and young children.

**Kassebaum Kennedy Act :** A 1996 U.S. law that allows workers and their families to keep their health insurance when they change or lose their jobs. The law also includes standards for setting up secure electronic health

records and to protect the privacy of a person's health information and to keep it from being misused. Also called Health Insurance Portability and Accountability Act and HIPAA.

**kava kava :** An herb native to islands in the South Pacific. Substances taken from the root have been used in some cultures to relieve stress, anxiety, tension, sleeplessness, and problems of menopause. Kava kava may increase the effect of alcohol and of certain drugs used to treat anxiety and depression. The U.S. Food and Drug Administration advises users that kava kava may cause severe liver damage. The scientific name is *Piper methysticum*. Also called intoxicating pepper, rauschpfeffer, tonga, and yangona.

**Kava-based supplement:** A Kava supplement derived from *Piper methysticum*, with potential cancer preventative activity. Upon oral administration, the kava-based supplement may affect the metabolism of certain carcinogens, presumably because of the kavalactones present in this product.

**Keenes cement:** A quick-setting, hard wall plaster, slower in set than plaster of Paris and normally used to produce hard, well-trowelled surfaces.

**Keep alive/keep open:** Refers to the condition of a paint which has been applied for a short while but is still in a sufficiently liquid condition to be successfully joined up and to dry without showing the lap.

**Keflex:** (Other name for: cephalexin)

**Kefzol:** (Other name for: cefazolin sodium)

**Kekulé structure:** the structure for benzene in which there are three alternating double and single bonds in a six-membered ring of carbon atoms.

**keloid :** A thick, irregular scar caused by excessive tissue growth at the site of an incision or wound.

**kelp :** A type of seaweed. The stem-like parts of this plant have been used in some cultures to treat certain medical problems. It may have immunostimulatory and anticancer effects. The scientific name is *Laminaria digitata*.

**Kelvin:** The SI Unit of temperature. It is the temperature in degrees Celsius plus 273.15. OR A unit of measurement for temperature. Uses absolute zero as its null point. OR The SI base unit of temperature, defined by assigning

273.16 K to the temperature at which steam, ice, and water are at equilibrium (called the triple point of water). The freezing point of water is 273.15 K. OR the absolute temperature scale (metric).  $K = ^\circ C + 273$ . OR The Kelvin scale is a thermodynamic temperature scale (metric). OR The temperature scale that begins with absolute zero as 0 K.

**Kemstro** : A drug that is used to treat certain types of muscle spasms and is being studied in the treatment of liver cancer. Kemstro relaxes muscles by blocking certain nerve receptors in the spinal cord. It is a type of antispasmodic. Also called baclofen and Lioresal.

**Kenalog**: (Other name for: triamcinolone acetate)

**Keoxifene hydrochloride**: (Other name for: raloxifene hydrochloride)

**Kepivance** : A form of keratinocyte growth factor (KGF) that is made in the laboratory. KGF stimulates the growth of cells that line the surface of the mouth and intestinal tract. Kepivance is used to prevent and treat oral mucositis (mouth sores) caused by high-dose chemotherapy and radiation therapy in leukemia and lymphoma. It is also being studied in the prevention and treatment of oral mucositis and dysphagia (difficulty swallowing) in other types of cancer. Kepivance is a type of recombinant human keratinocyte growth factor. Also called palifermin.

**Kepler, Johannes**: astronomer who developed three laws of planetary motion: planets move in elliptical orbits; planets sweep out equal area in equal time; the period of revolution is proportional to the distance to the Sun.

**Keppra** : A drug used to treat seizures (involuntary muscle movements) caused by epilepsy (a group of brain disorders). Keppra is being studied in the treatment of seizures in patients with cancer that has spread to the brain. It is a type of anticonvulsant. Also called levetiracetam.

**KeraStat**: (Other name for: topical keratin)

**keratan sulfate** : A glycosaminoglycan (a type of polysaccharide) found in cartilage and in the cornea of the eye.

**keratin** : A type of protein found on epithelial cells, which line the inside and outside surfaces of the body. Keratins help form the tissues of the hair, nails, and the outer layer of the skin. They are also found on cells in the lining of organs, glands, and other parts of the body. Certain keratins may be found in higher than normal amounts in patients with different types of

epithelial cell cancers, including lung, breast, colorectal, bladder, and head and neck cancers. Measuring the amount of specific keratins in the blood may help to plan cancer treatment or find out how well treatment is working or if cancer has come back. A keratin is a type of tumor marker. Also called cytokeratin.

**keratinocyte growth factor :** A natural substance that stimulates the growth of epithelial cells in the skin and in the lining of the mouth, stomach, and intestines. A form of keratinocyte growth factor made in the laboratory is called recombinant human keratinocyte growth factor. Also called KGF.

**keratins:** Insoluble protective or structural proteins consisting of parallel polypeptide chains in  $\alpha$ -helical or  $\beta$  conformations.

**keratoacanthoma :** A rapidly growing, dome-shaped skin tumor that usually occurs on sun-exposed areas of the body, especially around the head and neck. Keratoacanthoma occurs more often in males. Although in most patients it goes away on its own, in a few patients it comes back. Rarely, it may spread to other parts of the body.

**kernicterus:** this is bilirubin encephalopathy which is characterized by yellow discoloration of the basal ganglia in babies with intense jaundice

**Kerosene:** Kerosene was one of the original fuels to be extracted by distillation from crude oil. It is a light to middle distillate and is used in heating, cooking and lighting systems. In its broader definition kerosene includes the fuels used in commercial and military jet engines.

**ketal:** the product formed by the reaction of a ketone with an alcohol. The general structure of a ketal is:

**Ketalar :** A drug used to cause a loss of feeling and awareness and to induce sleep in patients having surgery. It is also being studied in the treatment of nerve pain caused by chemotherapy. Ketalar blocks pathways to the brain that are involved in sensing pain. It is a type of general anesthetic. Also called ketamine and ketamine hydrochloride.

**ketamine :** A drug used to cause a loss of feeling and awareness and to induce sleep in patients having surgery. It is also being studied in the treatment of nerve pain caused by chemotherapy. Ketamine blocks pathways to the brain that are involved in sensing pain. It is a type of general anesthetic. Also called Ketalar and ketamine hydrochloride.

**ketamine hydrochloride:** The hydrochloride salt of a synthetic derivative of cyclohexanone with analgesic and anesthetic activities. Although its mechanism of action is not well understood, ketamine appears to non-competitively block N-methyl-D-aspartate (NMDA) receptors and may interact with opioid mu receptors and sigma receptors, thereby reducing pain perception, inducing sedation, and producing dissociative anesthesia. Check for active clinical trials using this agent. or A drug used to cause a loss of feeling and awareness and to induce sleep in patients having surgery. It is also being studied in the treatment of nerve pain caused by chemotherapy. Ketamine hydrochloride blocks pathways to the brain that are involved in sensing pain. It is a type of general anesthetic. Also called Ketalar and ketamine.

**ketamine/amitriptyline NP-H cream:** A topical preparation containing the antidepressant amitriptyline and the excitatory amino acid antagonist ketamine with potential topical analgesic activity. In addition to activating adenosine A1 receptors and inhibiting the neuronal reuptake of norepinephrine and serotonin, amitriptyline produces antinociceptive effects, which appear to be mediated through the modulation of multiple subtypes of glutamate receptors including the N-methyl D-aspartate (NMDA) receptor. Ketamine inhibits biogenic amine uptake, agonistically binds to mu-opioid receptors, and inhibits NMDA receptors. NMDA receptor antagonists such as amitriptyline and ketamine interfere with the role of NMDA receptors in the process of central sensitization in which NMDA receptors on spinal dorsal horn neurons are activated, resulting in an increase in synaptic efficacy and so an amplification of the response to sensory input.

**keto-enol tautomerization:** the process by which an enol equilibrates with its corresponding aldehyde or ketone.

**ketoconazole:** A synthetic derivative of phenylpiperazine with broad antifungal properties and potential antineoplastic activity. Ketoconazole inhibits sterol 14- $\alpha$ -dimethylase, a microsomal cytochrome P450-dependent enzyme, thereby disrupting synthesis of ergosterol, an important component of the fungal cell wall. or A drug that treats infection caused by a fungus. It is also used as a treatment for prostate cancer because it can block the production of male sex hormones.

**Ketogenic:** Describing amino acids that are metabolized to acetoacetate and acetate.

**Ketogenic amino acids:** Amino acids whose carbon skeletons, entirely or in part, are degraded into acetyl coa or acetoacetyl coa; only leucine and lysine are solely ketogenic. OR Amino acids with carbon skeletons that can serve as precursors of the ketone bodies.

**ketogenic diet :** A diet high in fat and low in carbohydrates (sugars) that causes the body to break down fat into molecules called ketones. Ketones circulate in the blood and become the main source of energy for many cells in the body. A ketogenic diet is used to treat some types of epilepsy and is being studied in the treatment of some types of cancer.

**ketone:** An organic compound that contains a carbonyl group. For example, methyl ethyl ketone is  $\text{CH}_3\text{COCH}_2\text{CH}_3$  is used in some adhesives. OR An organic compound containing a carbonyl group bonded to two carbon atoms. OR An alkanone or ketone is any carbon compound containing the C-C(O)-C group. Acetone is the simplest ketone and is a common solvent found, for example, in fingernail polish remover. OR a compound in which an oxygen atom is bonded to a carbon atom, which is itself bonded to two more carbon atoms. Water addition to nonterminal alkynes forms ketones. OR a compound in which an oxygen atom is bonded via a double bond to a carbon atom, which is itself bonded to two more carbon atoms. OR A functional group of an organic compound in which a carbon atom is double-bonded to an oxygen. Neither of the other substituents attached to the carbon is a hydrogen. Otherwise the group would be called an aldehyde.

**ketone :** A type of chemical substance used in perfumes, paints, solvents, and found in essential oils (scented liquid taken from plants). Ketones are also made by the body when there is not enough insulin.

**ketone bodies:** Acetoacetate, D- $\beta$ hydroxybutyrate, and acetone; watersoluble fuels normally exported by the liver but overproduced during fasting or in untreated diabetes mellitus.

**Ketone bodies:** Refers to acetoacetate, acetone, and  $\beta$ -hydroxybutyrate made from acetyl-CoA in the liver and used for energy in nonhepatic tissue.

**Ketone body:** Refers to acetoacetate,  $\beta$ -hydroxybutyrate, and acetone, produced when acetyl coa is diverted from the citric acid cycle to the

formation of acetoacetyl coa in the liver; subsequent reactions generate the three compounds, known as ketone bodies.

**ketoprofen:** A propionic acid derivate and nonsteroidal anti-inflammatory drug (NSAID) with anti-inflammatory, analgesic and antipyretic effects. Ketoprofen inhibits the activity of the enzymes cyclo-oxygenase I and II, resulting in a decreased formation of precursors of prostaglandins and thromboxanes. The resulting decrease in prostaglandin synthesis, by prostaglandin synthase, is responsible for the therapeutic effects of ibuprofen. Ketoprofen also causes a decrease in the formation of thromboxane A<sub>2</sub> synthesis, by thromboxane synthase, thereby inhibiting platelet aggregation. Check for active clinical trials using this agent. or A drug used to treat mild pain. It is also used to treat menstrual cramps, fever, and symptoms of arthritis, such as pain, tenderness, swelling, and stiffness. Ketoprofen stops the body from making substances that cause pain and inflammation. It is a type of nonsteroidal anti-inflammatory drug (NSAID).

**ketorolac:** A synthetic pyrrolizine carboxylic acid derivative with anti-inflammatory, analgesic, and antipyretic activities. Ketorolac non-selective inhibits the enzymes cyclooxygenase 1 (COX-1) and COX-2. The inhibition of COX-2, up-regulated at sites of inflammation, prevents conversion of arachidonic acid to pro-inflammatory prostaglandins. The inhibition of COX-1 by this agent prevents the normal steady-state production of prostaglandins that play housekeeping roles in the protection of the gastrointestinal tract, the regulation of renal blood flow, and platelet aggregation. As a result, the inhibition of COX-1 may be associated with gastrointestinal toxicity, nephrotoxicity, and the inhibition of platelet aggregation.

**ketorolac :** A drug that belongs to a family of drugs called nonsteroidal anti-inflammatory agents. It is being studied in cancer prevention.

**ketorolac tromethamine:** The tromethamine salt of ketorolac, a synthetic pyrrolizine carboxylic acid derivative with anti-inflammatory, analgesic and antipyretic properties. Ketorolac tromethamine, a non-selective inhibitor of the cyclooxygenases (COX), inhibits both COX-1 and COX-2 enzymes. This agent exerts its anti-inflammatory effect by preventing conversion of arachidonic acid to prostaglandins at inflammation site mediated through inhibition of COX-2, which is undetectable in most tissues but is up-regulated at the inflammation sites. Since COX-1 is expressed virtually in

all tissues, inhibition of COX-1 enzyme by this agent prevents normal state production of prostaglandins, which plays housekeeping roles in the protection of the gastrointestinal tract, regulating renal blood flow, and functioning in platelet aggregation. As a result, inhibition of COX-1 is usually associated with adverse effects such as gastrointestinal toxicity and nephrotoxicity.

**Ketose:** A monosaccharide that has a ketone group as its most oxidized carbon.

**ketose:** A simple monosaccharide in which the carbonyl group is a ketone.

**ketose:** A simple sugar that has the reactions of a ketone.

**Ketosis:** A condition in which the concentration of ketone bodies in the blood, tissues, and urine is abnormally high. OR A condition in which the concentration of ketone bodies in the blood or urine is unusually high.

**kettle:** a depression in glacial till that results when a buried block of glacial ice melts. OR a steep-sided pond created by a glacier when a block of ice is left behind as the glacier retreats.

**kettle lake:** a body of water occupying a kettle.

**Kevetrin:** (Other name for: thioureidobutyronitrile)

**Kevlar :** This material is manufactured for use in bulletproof vests and many other applications because it is strong.

**Key:** As a paint term this refers to the slight roughness of a surface which enables a coat of paint to achieve good mechanical adhesion to the surface.

**key bed:** a layer in the rock record showing an event that occurred quickly and over a widespread area; is used like an index fossil.

**Key Centre for Polymer Colloids:** The Key Centre for Polymer Colloids (KCPC) is a research centre at the University of Sydney, established and supported under the Australian Research Council's Research Centres Programme. The KCPC is involved in a range of research projects including the use of polymers in rice production and developing a better understanding of paint systems. See our website:

**keyhole limpet hemocyanin:** A natural protein isolated from the marine mollusc keyhole limpet. Keyhole limpet hemocyanin is an immunogenic carrier protein that, in vivo, increases antigenic immune responses to haptens and other weak antigens such as idio-type proteins. Or A substance taken from a marine organism that may be linked to a specific antigen to

boost the immune response to that antigen. Keyhole limpet hemocyanin is being studied as a way to increase the immune response to cancer vaccines. It is a type of immune modulator. Also called KLH.

**Keystone:** The central locking stone in an arch.

**Keytruda :** A drug used to treat squamous cell cancer of the head and neck that has recurred (come back) or spread to other parts of the body. It is used in patients whose disease got worse during or after treatment. It is also used to treat certain types of non-small cell lung cancer that have spread to other parts of the body and got worse during or after treatment. Keytruda is also used to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Keytruda binds to a protein called PD-1, which is found on T cells (a type of white blood cell). Keytruda may block PD-1 and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called pembrolizumab.

**keywords:** Words that indicate a mathematical operation.

**KGF:** A natural substance that stimulates the growth of epithelial cells in the skin and in the lining of the mouth, stomach, and intestines. A form of KGF made in the laboratory is called recombinant human keratinocyte growth factor. Also called keratinocyte growth factor.

**kidney :** One of a pair of organs in the abdomen. The kidneys remove waste and extra water from the blood (as urine) and help keep chemicals (such as sodium, potassium, and calcium) balanced in the body. The kidneys also make hormones that help control blood pressure and stimulate bone marrow to make red blood cells.

**kidney cancer :** Cancer that forms in tissues of the kidneys. The most common type of kidney cancer in adults is renal cell carcinoma. It forms in the lining of very small tubes in the kidney that filter the blood and remove waste products. Transitional cell cancer of the renal pelvis is kidney cancer that forms in the center of the kidney where urine collects. Wilms tumor is a type of kidney cancer that usually develops in children under the age of 5.

**kidney failure :** A condition in which the kidneys stop working and are not able to remove waste and extra water from the blood or keep body chemicals in balance. Acute or severe kidney failure happens suddenly (for example, after an injury) and may be treated and cured. Chronic kidney failure develops over many years, may be caused by conditions like high

blood pressure or diabetes, and cannot be cured. Chronic kidney failure may lead to total and long-lasting kidney failure, called end-stage renal disease (ESRD). A person in ESRD needs dialysis (the process of cleaning the blood by passing it through a membrane or filter) or a kidney transplant. Also called renal failure.

**kidney function :** A term used to describe how well the kidneys work. The kidneys remove waste and extra water from the blood (as urine) and help keep chemicals (such as sodium, potassium, and calcium) balanced in the body. They also make hormones that help control blood pressure and stimulate bone marrow to make red blood cells. Also called renal function.

**kidney function test :** A test in which blood or urine samples are checked for the amounts of certain substances released by the kidneys. A higher- or lower-than-normal amount of a substance can be a sign that the kidneys are not working the way they should. Also called renal function test.

**killer T cell :** A type of immune cell that can kill certain cells, including foreign cells, cancer cells, and cells infected with a virus. Killer T cells can be separated from other blood cells, grown in the laboratory, and then given to a patient to kill cancer cells. A killer T cell is a type of white blood cell and a type of lymphocyte. Also called cytotoxic T cell and cytotoxic T lymphocyte.

**Kilo-:** A Greek prefix meaning "tho OR Prefix meaning 1000.usand" in the nomenclature of the metric system. This prefix multiplies a unit by 1000. or Prefix used in the SI system meaning "one thousand of". For example 1 km means "one thousand meters"; 2.8 kg could also be written " $2.8 \times 10^3$  g" or "2800 g".

**Kilobase:** One thousand bases in a DNA molecule. OR A unit of length equal to 1000 base pairs of a double-stranded nucleic acid molecule or to 1000 bases of a single-stranded molecule. OR A unit of length equal to 1000 base pairs of a double-stranded nucleic acid molecule or to 1000 bases of a single-stranded molecule.

**Kilocalorie (kcal):** A unit of energy equal to 1000 calories, or 4.184 joules.

**kilogram:** Base unit for mass in metric system. OR The kilogram (kg) is the base unit of mass in the SI system of units. The standard kilogram is a 1 kg corrosion resistant platinum/iridium cylinder, carefully preserved in the suburbs of Paris (with a backup copy kept in Gaithersburg, Maryland.)

Efforts are underway to replace these artifacts by redefining the kilogram as the mass of a certain number of silicon atoms. OR A measure of weight. A kilogram is equal to 2.2 pounds.

**Kilovolt:** The unit of electrical potential equal to 1000 volts.

**Kilowatt (KW):** A unit of power equivalent to one thousand watts.

**Kinaret :** A substance that is used to treat rheumatoid arthritis, and is being studied in the treatment of cancer. Kinaret blocks the action of interleukin 1 (IL-1). It is a type of interleukin receptor antagonist. Also called anakinra.

**Kinase:** An enzyme that catalyzes the attachment of a phosphoryl group to a substrate by using ATP as a phosphoryl donor. OR An enzyme catalyzing phosphorylation of an acceptor molecule, usually with ATP serving as the phosphate (phosphoryl) donor.

**kinase :** A type of enzyme (a protein that speeds up chemical reactions in the body) that adds chemicals called phosphates to other molecules, such as sugars or proteins. This may cause other molecules in the cell to become either active or inactive. Kinases are a part of many cell processes. Some cancer treatments target certain kinases that are linked to cancer.

**kinase inhibitor :** A substance that blocks a type of enzyme called a kinase. Human cells have many different kinases, and they help control important functions, such as cell signaling, metabolism, division, and survival. Certain kinases are more active in some types of cancer cells and blocking them may help keep the cancer cells from growing. Kinase inhibitors may also block the growth of new blood vessels that tumors need to grow. Some kinase inhibitors are used to treat cancer.

**kinases:** Enzymes that catalyze the phosphorylation of certain molecules by ATP.

**kindred :** An extended family.

**Kineret:** (Other name for: anakinra)

**Kinesin:** A protein with atpase activity that moves cellular organelles along microtubule tracks in anterograde transport.

**Kinetic:** The word 'kinetic' comes from the greek word for 'motion'. In chemistry, kinetics is the study of how fast reactions occur. In many chemical reactions where there are a number of possible products, the first one formed may be the one that is formed most quickly, not necessarily the one that is most stable; if you leave the reaction going, you should

eventually form the product that involves the greatest change in bond energy - the thermodynamic product. Try this dodgy example.

**kinetic control:** reactions that have a major product that forms the fastest are under kinetic control. These reactions follow the lowest activation-energy pathway.

**kinetic energy:** Energy an object has because of its mass and velocity. Objects that not moving have no kinetic energy. (Kinetic Energy= $0.5 \times \text{mass} \times \text{velocity}^2$ ). OR The energy something possesses due to its motion, depending on mass and velocity. OR Kinetic energy is energy in motion. Potential energy is the opposite of kinetic energy. OR The energy that a body possesses by virtue of its mass and velocity. Also called the energy of motion. OR The energy an object possesses by virtue of its motion. An object of mass  $m$  moving at velocity  $v$  has a kinetic energy of  $\frac{1}{2}mv^2$ .

**kinetic-molecular theory:** A theory of the behavior of matter.

**kinetically controlled reaction:** a reaction in which the rate of formation of the competing products accounts for the major product.

**kinetics:** The study of reaction rates.

**kinetochore:** a region of DNA that has remained undivided during prophase of mitosis; binds to the spindle fibers that eventually pull apart the sister chromatids. OR A structure that attaches laterally to the centromere of a chromosome; it is the site of chromosome tubule attachment.

**kingdom:** the largest and broadest category of the classification system.

**KIRKSITE:** An alloy of aluminum and zinc used for the construction of blow molds; it imparts high degree of heat conductivity to the mold.

**Kiss-roll Coating:** This roll arrangement carries a metered film of coating to the web; at the line of web contact, it is split with part remaining on the roll, the remainder of the coating adhering to the web.

**kit ligand :** A substance that causes blood stem cells (cells from which other types of cells develop) to change into different types of blood cells and increases the number and actions of these cells in the blood. Kit ligand is a type of cytokine and a type of growth factor. Also called SCF and stem cell factor.

**KIT/PDGFR inhibitor DCC-2618:** An orally bioavailable switch pocket control inhibitor of wild-type and mutated forms of the tumor-associated antigens (TAA) mast/stem cell factor receptor (SCFR) KIT and platelet-

derived growth factor receptor alpha (PDGFR-alpha; PDGFRa), with potential antineoplastic activity. Upon oral administration, DCC-2618 targets and binds to both wild-type and mutant forms of KIT and PDGFRa specifically at their switch pocket binding sites, thereby preventing the switch from inactive to active conformations of these kinases and inactivating their wild-type and mutant forms. This abrogates KIT/PDGFRa-mediated tumor cell signaling and prevents proliferation in KIT/PDGFRa-driven cancers. DCC-2618 also inhibits several other kinases, including vascular endothelial growth factor receptor type 2 (VEGFR2; KDR), angiopoietin-1 receptor (TIE2; TEK), PDGFR-beta and macrophage colony-stimulating factor 1 receptor (FMS; CSF1R), thereby further inhibiting tumor cell growth. KIT and PDGFRa are tyrosine kinase receptors that are upregulated or mutated in a variety of cancer cell types; mutated forms play a key role in the regulation of tumor cell proliferation and resistance to chemotherapy.

**Klatskin tumor :** Cancer that develops in cells that line the bile ducts in the liver, where the right and left ducts meet. It is a type of cholangiocarcinoma.

**Klebsiella :** A bacterium that frequently causes lung, urinary tract, intestinal, and wound infections.

**Klenow fragment:** A proteolytic digestion product of DNA polymerase I that retains the polymerase and 3'- to 5'-exonuclease activity.

**KLETT:** A unit of color density. Measured by the light absorption of a clear solution using a Klett-Summerson photoelectric colorimeter. (see RFF 705.10.52 - COLOR).

**KLH:** A substance taken from a marine organism that may be linked to a specific antigen to boost the immune response to that antigen. KLH is being studied as a way to increase the immune response to cancer vaccines. It is a type of immune modulator. Also called keyhole limpet hemocyanin.

**KLH-FITC:** A conjugate consisting of keyhole-limpet hemocyanin (KLH) and fluorescein isothiocyanate (FITC) with potential immunostimulating activity. Vaccination with KLH-FITC may elicit an immune response against fluorescein and the production of anti-fluorescein IgG antibodies. KLH, a natural protein isolated from the marine mollusk keyhole limpet, is an immunostimulant carrier protein.

**Klinefelter syndrome :** A genetic disorder in males caused by having one or more extra X chromosomes. Males with this disorder may have larger than normal breasts, a lack of facial and body hair, a rounded body type, and small testicles. They may learn to speak much later than other children and may have difficulty learning to read and write. Klinefelter syndrome increases the risk of developing extragonadal germ cell tumors and breast cancer.

**Knit Line:** Place or line where two or more flow fronts come together after going around a flow restriction or post OR Where melted material flows together to form a line or lines that may cause weakening or breaking of the component.

**Knit lines:** Also known as “stitch lines” or “weld lines,” and when multiple gates are present, “meld lines.” These are imperfections in the part where separated flows of cooling material meet and rejoin, often resulting in incomplete bonds and/or a visible line.

**Knock Out (Ejector) Plate:** A plate in a plastic or liquid silicone rubber injection mold connects and drives the ejector pins in the plastic or silicone mold

**Knockout Pin:** A pin that ejects a molded article from the mold. OR A pin that ejects a molded article from the mold. Land Area The area of surfaces of a mold which contact each other when the mold is closed.

**Knottling:** A solution of shellac in methylated spirit used for treating knots and resinous timber to prevent stains from the timber discolouring the paint. It cannot be expected to hold back resinous exudation.

**Known addition:** a method for determining the concentration of an ion by adding a known volume of standard to the sample. The electrode potentials of the sample before and after addition are compared.

**Knuckled and Welded Edge :** An edge finish which is knuckled with ends of the wire forming the knuckle loop, and tack welded or brazed to the spiral to prevent opening of loops.

**Knuckled Edge :** An edge finish which is complete without welding. The edge is finished by bending back the ends of the spirals to form a loop, generally permitting each individual spiral to flex as a single link in the belt.

**komatiite:** a typical ultramafic extrusive rock that is mostly olivine and pyroxene, with lesser feldspar.

**Komed HC:** (Other name for: therapeutic hydrocortisone)

**Koopmans:** His theorem for approximate ionization energies (see HOMO) and poor electron affinities (see LUMO).

**Korean acupuncture :** A type of acupuncture based on a form of Oriental medicine in which treatment is based on a person's constitution. According to this type of medicine, the constitution is the specific way a person's organs affect health and how he or she looks, thinks, behaves, and responds to treatment. Also called constitutional acupuncture.

**KOS-862:** A substance being studied in the treatment of cancer. It is a type of mitotic inhibitor and epothilone. Also called epothilone D.

**KOS-953:** (Other name for: tanespimycin)

**Kostmann disease :** An inherited disorder in which there is a lower-than-normal number of neutrophils (a type of white blood cell that is important in fighting infections). Infants with the disorder get infections caused by bacteria, and are at an increased risk of acute myelogenous leukemia (AML) or myelodysplasia (a bone marrow disorder). Also called congenital neutropenia, genetic infantile agranulocytosis, infantile genetic agranulocytosis, Kostmann neutropenia, and Kostmann syndrome.

**Kostmann neutropenia :** An inherited disorder in which there is a lower-than-normal number of neutrophils (a type of white blood cell that is important in fighting infections). Infants with the disorder get infections caused by bacteria, and are at an increased risk of acute myelogenous leukemia (AML) or myelodysplasia (a bone marrow disorder). Also called congenital neutropenia, genetic infantile agranulocytosis, infantile genetic agranulocytosis, Kostmann disease, and Kostmann syndrome.

**Kostmann syndrome :** An inherited disorder in which there is a lower-than-normal number of neutrophils (a type of white blood cell that is important in fighting infections). Infants with the disorder get infections caused by bacteria, and are at an increased risk of acute myelogenous leukemia (AML) or myelodysplasia (a bone marrow disorder). Also called congenital neutropenia, genetic infantile agranulocytosis, infantile genetic agranulocytosis, Kostmann disease, and Kostmann neutropenia.

**KPS:** A standard way of measuring the ability of cancer patients to perform ordinary tasks. The KPS scores range from 0 to 100. A higher score means the patient is better able to carry out daily activities. KPS may be used to determine a patient's prognosis, to measure changes in a patient's ability to function, or to decide if a patient could be included in a clinical trial. Also called Karnofsky Performance Status.

**KRAFFT POINT:** The temperature at which the solubility of an ionic surfactant becomes equal to the critical micelle concentration. (see RFF 705.10.55 - KRAFFT POINT).

**Kraft Paper:** 1) Relatively heavy, high strength sulfate paper used for electrical insulating material. 2) Paper made from sulfate wood pulp, chiefly pinewood chips by digestion with a mixture of caustic soda.

**Krakatoa (Krakatau):** Active volcano 2667 ft (813 m) high in West Indonesia. It forms an island between Java and Sumatra. Its eruption in 1883, which was one of the most violent in modern times, scattered debris and darkened skies over vast areas. Additional eruptions occurred in late 1927 and in the 1960s.

**Kras gene :** A gene that may cause cancer when it is mutated (changed). The Kras gene makes the KRAS protein, which is involved in cell signaling pathways, cell growth, and apoptosis (cell death). Agents that block the activity of the mutated Kras gene or its protein may stop the growth of cancer. Also called K-ras gene.

**Krebs cycle:** the subdivision of cellular respiration in which pyruvic acid is broken down and the energy in its molecules is used to form high-energy compounds. OR Krebs cycle. See tricarboxylic acid (TCA) cycle. OR See citric acid cycle.

**kretek :** A type of cigarette that is made in Indonesia. It is made using a mixture of tobacco, cloves, and other ingredients. Kreteks contain nicotine and many cancer-causing chemicals that are harmful to both smokers and nonsmokers. Smoking kreteks can lead to nicotine addiction and can cause lung cancer and other lung conditions. Also called clove cigarette.

**KRN5500:** A semisynthetic derivative of the nucleoside-like antineoplastic antibiotic spicamycin, originally isolated from the bacterium *Streptomyces alanosinicus*. KRN 5500 inhibits protein synthesis by interfering with endoplasmic reticulum and Golgi apparatus functions. This agent also induces cell differentiation and caspase-dependent apoptosis. Check

for active clinical trials using this agent. or An anticancer drug that is a type of antitumor antibiotic. It is an anthracycline.

**KRN7000:** A drug being studied in the treatment of cancer. It is a biological response modifier that is a type of glycosphingolipid or agelasphin.

**Kroll process:** The Kroll process is a method of extracting titanium metal, using magnesium as the reducing agent.

**Krukenberg tumor :** A tumor in the ovary caused by the spread of stomach cancer.

**Krypton:** Symbol:"Kr" Atomic Number:"36" Atomic Mass: 83.80amu. It is one of the noble or inert gases. A non-reactive element, krypton actually makes some compounds. It has been used in flash photography and lasers.

**KSHV:** A type of virus that causes Kaposi sarcoma (a rare cancer in which lesions grow in the skin, lymph nodes, lining of the mouth, nose, and throat, and other tissues of the body). KSHV also causes certain types of lymphoma (cancer that begins in cells of the immune system). Also called HHV8, human herpesvirus 8, and Kaposi sarcoma-associated herpesvirus.

**KSP inhibitor ARRY-520:** A synthetic, small molecule targeting the kinesin spindle protein (KSP) with potential antineoplastic activity. KSP inhibitor ARRY-520 specifically inhibits KSP (kinesin-5 or Eg5), resulting in activation of the spindle assembly checkpoint, induction of cell cycle arrest during the mitotic phase, and consequently cell death in tumor cells that are actively dividing. Because KSP is not involved in postmitotic processes, such as neuronal transport, this agent does not cause the peripheral neuropathy that is often associated with tubulin-targeting agents. KSP is an ATP-dependent microtubule motor protein that is essential for the formation of bipolar spindles and the proper segregation of sister chromatids during mitosis.

**KSP inhibitor AZD4877:** A synthetic kinesin spindle protein (KSP) inhibitor with potential antineoplastic activity. KSP inhibitor AZD4877 selectively inhibits microtubule motor protein KSP (also called kinesin-5 or Eg5), which may result in the inhibition of mitotic spindle assembly; activation of the spindle assembly checkpoint; induction of cell cycle arrest during the mitotic phase; and cell death in tumor cells that are actively dividing. Because KSP is not involved in postmitotic processes, such as neuronal transport, this agent may be less likely to cause the peripheral

neuropathy often associated with the tubulin-targeting agents. Eg5 is essential for the formation of bipolar spindles and the proper segregation of sister chromatids during mitosis.

**KSP/VEGF siRNAs ALN-VSP02:** A lipid nanoparticle formulation containing two small interfering RNAs (siRNAs) for kinesin spindle protein (KSP) and vascular endothelial growth factor (VEGF) with potential antitumor activity. Upon intravenous administration, the siRNAs in KSP/VEGF siRNAs ALN-VSP02ALN bind to both KSP and VEGF messenger RNAs (mRNAs), preventing translation of KSP and VEGF proteins; this may result in growth inhibition of tumor cells that overexpress KSP and VEGF. VEGF and KSP are upregulated in many tumor cells and play an important role in tumor proliferation and survival.

**kunecatechins ointment:** A topical ointment containing a green tea polyphenol mixture (kunecatechins) with potential antiviral, antibacterial, antioxidant, and chemopreventive activities. Kunecatechins is a partially purified fraction of the aqueous extract of green tea leaves from *Camellia sinensis* and contains catechins and other green tea components. Catechins, polyphenolic antioxidant plant metabolites or flavonoids, comprise most of the drug substance in kunecatechins with epigallocatechin gallate (EGCG) present as the primary catechin. Catechins may inhibit basic functions of human papillomavirus (HPV), counteract specific changes in tumor cells, affect cell signaling, and stimulate the immune system. Topical application of kunecatechins ointment has been reported to reduce HPV-induced genital and anal warts through a not yet fully understood mechanism, which may involve anti-oxidative activity.

**KW-2149:** A semisynthetic water-soluble disulfide derivative of the antineoplastic antibiotic mitomycin C. Activated by serum and glutathione, KW-2149 causes interstrand DNA cross-links and DNA-protein cross-links, resulting in single-strand DNA breaks and inhibition of DNA synthesis.

**KW2189:** A semisynthetic anticancer drug that is a type of antitumor antibiotic.

**kwashiorkor:** a form of malnutrition that occurs when there is not enough protein in the diet

**KX2-391:** A substance being studied in the treatment of cancer. KX2-391 blocks an enzyme needed for growth of cells and may kill cancer cells. It is a type of Src kinase inhibitor.

**Kynacyte:** (Other name for: safingol)

**Kynar:** Kynar tubing is an economic alternative to Teflon® tubing when heat resistance is not needed.

**kyphoscoliosis:** an abnormal curvature of the spine in both the coronal and sagittal planes, a term combined from kyphosis and scoliosis

**kyphosis :** A condition marked by a humpback-like rounding or outward curve of the upper backbone. It may be present at birth or it may be caused by growth problems, arthritis, osteoporosis, tumors, or certain other disorders. It may also occur at some point in time after radiation therapy to the backbone.

**Kyprolis:** (Other name for: carfilzomib)

**Kyprolis :** A drug used alone or with other drugs to treat multiple myeloma that has gotten worse or come back after treatment with other anticancer therapy. It is also being studied in the treatment of other types of cancer. Kyprolis blocks the action of enzymes called proteasomes, which may help keep cancer cells from growing and may kill them. It is a type of proteasome inhibitor. Also called carfilzomib.

**Kytril :** A drug used to prevent nausea and vomiting caused by chemotherapy and radiation therapy. It is also used to prevent nausea and vomiting after surgery. Kytril blocks the action of the chemical serotonin, which binds to certain nerves and may trigger nausea and vomiting. Blocking serotonin may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called granisetron hydrochloride.

**L-:** Prefix used to designate a levorotatory enantiomer. OR A measure of volume for a liquid, using the metric system. One L is equal to 1,000 cubic centimeters (cc), 1,000 milliliters (ml), or 1.0567 quarts (qt). Also called liter.

**L-3,5,5'-tetraiodothyronine :** A hormone that is made by the thyroid gland and contains iodine. L-3,5,5'-tetraiodothyronine increases the rate of chemical reactions in cells and helps control growth and development. L-3,5,5'-tetraiodothyronine can also be made in the laboratory and is used to treat thyroid disorders. Also called T4, thyroxin, and thyroxine.

**L-377,202:** A prodrug in which a peptide is covalently conjugated with the anthracycline antineoplastic antibiotic doxorubicin. This complex is

hydrolyzed by the enzyme prostate-specific antigen (PSA), resulting in the formation of doxorubicin and leucine-doxorubicin. Selective targeting of these drugs to prostate tumor cells occurs because the hydrolyzing PSA enzyme is localized to the prostate gland. Doxorubicin and leucine-doxorubicin intercalate into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. These agents also produce toxic free-radical intermediates and interact with cell membrane lipids causing lipid peroxidation.

**L-377,202:** A substance that is being studied in the treatment of cancer.

**L-778,123:** An anticancer drug that belongs to the family of drugs called enzyme inhibitors. It may inhibit the transformation of normal cells into cancer cells.

**L-alanosine:** An amino acid analogue and antibiotic derived from the bacterium *Streptomyces alanosinicus* with antimetabolite and potential antineoplastic activities. L-alanosine inhibits adenylosuccinate synthetase, which converts inosine monophosphate (IMP) into adenylosuccinate, an intermediate in purine metabolism. L-alanosine-induced disruption of de novo purine biosynthesis is potentiated by methylthioadenosine phosphorylase (MTAP) deficiency. The clinical use of this agent may be limited by its toxicity profile. MTAP is a key enzyme in the adenine and methionine salvage pathways.

**L-arginine :** One of the twenty common amino acids (building blocks of proteins). L-arginine is being studied as a nutritional supplement in the treatment and prevention of cancer and other conditions. Also called arginine.

**L-arginine/Korean ginseng/ Ginkgo biloba/damiana-based supplement:** An amino acid and herbal supplement with libido-enhancing activity. L-arginine/korean ginseng/Ginkgo biloba/damiana-based supplement contains a blend of the amino acid L-arginine and the herbs Korean ginseng, Ginkgo biloba, and damiana (*Turnera aphrodisiaca*) in addition to 14 other vitamins and minerals. The semi-essential amino acid L-arginine is a precursor for nitric oxide (NO); Korean ginseng may enhance the conversion of L-arginine into NO by NO synthase; and Ginkgo biloba may promote microvascular circulation. This agent may increase NO production, resulting in vasodilatation and an enhanced circulation critical

to sexual function and arousal. The damiana component may exert an anxiolytic effect and stimulate sexual behavior.

**L-Asnase:** (Other name for: asparaginase)

**L-asparaginase :** A drug that is used to treat acute lymphoblastic leukemia (ALL) and is being studied in the treatment of some other types of cancer. It is an enzyme taken from the bacterium *Escherichia coli* (*E. coli*). It breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. Also called asparaginase and Elspar.

**L-Carnipure L-Carnitine L-Tartrate:** (Other name for: L-carnitine L-tartrate)

**L-carnitine :** A form of carnitine, which is a substance made in muscle and liver tissue and found in certain foods, such as meat, poultry, fish, and some dairy products. L-carnitine is also a drug that is used to treat patients who do not make enough carnitine and is being studied as a way to prevent tissue damage caused by chemotherapy. Carnitine is a type of dietary supplement. Also called Carnitor and levocarnitine.

**L-carnitine L-tartrate:** A dietary supplement containing the levo-enantiomers of carnitine and tartrate with potential chemoprotective and antioxidant activities. L-carnitine L-tartrate increases fatty acid oxidation and reduces purine catabolism and free radical formation, which may prevent exercise fatigue, muscle weakness, chemotherapy-induced peripheral neuropathy, and hyperlipoproteinemia. L-carnitine, the biologically active form of carnitine, is a carrier molecule that transports activated long-chain fatty acids (LCFAs) from the cytosol to mitochondria where fatty acids are oxidized, resulting in ATP production. L-tartrate, a salt of tartaric acid, is a potent antioxidant.

**L-citrulline:** A non-essential amino acid. In hepatocytes, L-citrulline is synthesized in the urea cycle by the addition of carbon dioxide and ammonia to ornithine. L-citrulline is converted into L-arginine by the enzymes argininosuccinate synthetase and argininosuccinate lyase in the presence of L-aspartate and ATP. Subsequently, L-arginine is converted to nitric oxide by nitric oxide synthase and L-citrulline is regenerated as a by-product.

**L-glutamic acid :** One of twenty amino acids (molecules that join together to form proteins). L-glutamic acid may help nerve cells send and receive information from other cells. It is being studied for its ability to decrease or

prevent nerve damage caused by anticancer drugs. Also called glutamic acid.

**L-gossypol:** The levo-enantiomer of an orally bioavailable polyphenolic aldehyde, derived primarily from unrefined cottonseed oil, with potential antineoplastic activity. Mimicking the inhibitory BH3 (Bcl-2 homology 3) domain of endogenous antagonists of Bcl-2, L-gossypol binds to and inhibits various anti-apoptotic Bcl-2 proteins, which may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. This agent has greater affinity for Bcl-2 proteins than racemic gossypol. Check for active clinical trials using this agent.

**L-leucovorin:** The active l-isomer of the racemic mixture of the 5-formyl derivative of tetrahydrofolic acid. Metabolically active, l-leucovorin, also known levoleucovorin, does not require bioactivation by dihydrofolate reductase, an enzyme inhibited by folic acid antagonists. This agent may enhance the effects of fluoropyrimidines by stabilizing their binding to the enzyme thymidylate synthase.

**L-leucyl-L-leucine methyl ester:** A 2-amino acid compound with immunomodulatory activity. L-leucyl-L-leucine methyl ester (LLME) is a lysosomotropic agent entering cells via receptor-mediated endocytosis. LLME undergoes a condensation process catalyzed by dipeptidyl peptidase I (DPPI) in lysosomes. Condensation of LLME leads to lysosomal rupture and DNA fragmentation in DPPI-expressing immune cells such as cytotoxic T-cells and natural killer cells. Therefore, this agent may be able to decrease the incidence of graft versus host disease (GVHD) via cytotoxic T-cell depletion. Furthermore, LLME has the potential for augmenting antibody production when used in pretreatment of peripheral blood mononuclear cells (PBMCs), possibly by interfering with gene expression of inflammatory factors.

**L-lysine:** A nutritional supplement containing the biologically active L-isomer of the essential amino acid lysine, with potential anti-mucositis activity. Upon oral intake, L-lysine promotes healthy tissue function, growth and healing and improves the immune system. L-Lysine promotes calcium uptake, is essential for carnitine production and collagen formation. As collagen is essential for connective tissue maintenance, this agent may also help heal mucosal wounds. This may help decrease and prevent mucositis induced by radiation or chemotherapy.

**L-menthol preparation NPO-11:** A preparation containing L-menthol with potential anti-peristaltic activity. Upon spraying directly onto the gastric mucosa, L-menthol preparation NPO-11 may relax gastrointestinal smooth muscle. This may result in a suppression of gastric peristalsis and may be beneficial during upper GI endoscopic procedures.

**L-methylfolate:** A nutritional supplement containing the biologically active form of the B9 vitamin folate, 5-methyltetrahydrofolate (L-methylfolate), with potential antineoplastic activity. Upon administration, L-methylfolate is able to provide methyl groups allowing an increase in the level of DNA methylation in the promoter regions of certain tumor-promoting genes, thereby reversing the DNA hypomethylation of these genes and inactivating them. This may result in a decrease of both tumor cell proliferation and tumor progression. In addition, administration of L-methylfolate may sensitize tumor cells to the cytotoxic effects of other chemotherapeutic agents. Unlike folic acid, L-methylfolate is able to cross the blood brain barrier and could be beneficial in the treatment of brain tumors. DNA hypomethylation of certain genes leads to chromosome instability and contributes to tumor development.

**L-MTP-PE:** A drug being studied in the treatment of young adults with bone cancer that has gotten worse or come back. L-MTP-PE activates certain types of white blood cells and helps the immune system kill cancer cells. It is a type of immunostimulant. Also called MEPACT, mifamurtide, and muramyl tripeptide phosphatidylethanolamine.

**L-norgestrel :** A form of the hormone progesterone that is made in the laboratory and used to prevent pregnancy. It is being studied in the prevention of ovarian and endometrial cancer, and in the treatment of other conditions. L-norgestrel is a type of oral contraceptive. Also called levonorgestrel and Plan B.

**L-threo-dihydrospingosine :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called protein kinase inhibitors. Also called safinol.

**L-wave:** longitudinal wave created by the P-wave and S-waves of an earthquake at the surface of the Earth; these are the slowest and move outward like ripples on a pond.

**L/D Ratio:** A term used to define an extrusion screw which denotes the ratio of the screw length to the screw diameter. OR The length over

diameter ratio defining a silicone rubber injection or plastic screw

**L/D Ratio Extrusion :** Barrel length divided by the diameter of the barrel

**L19-IL2 monoclonal antibody-cytokine fusion protein:** An immunoconjugate consisting of the recombinant form of the cytokine interleukin-2 (IL-2) fused to a human single-chain Fv (scFv) antibody fragment directed against the extra-domain B (ED-B) of fibronectin (L19), with potential immunopotentiating and antineoplastic activities. The L19 moiety of L19-IL2 monoclonal antibody-cytokine fusion protein binds to the ED-B domain of fibronectin on tumor cells in the tumor neovasculature. In turn, the IL-2 moiety may locally activate natural killer (NK) cells and macrophages, and may induce T cell cytotoxic immune responses against ED-B fibronectin-expressing tumor cells. This may specifically decrease the proliferation of ED-B-expressing tumor cells. ED-B is predominantly expressed during angiogenesis and tumor growth.

**lab-on-a-chip :** An instrument that uses very small amounts of fluid on a microchip to do certain laboratory tests. A lab-on-a-chip may use body fluids or solutions containing cells or cell parts to diagnose diseases. Also called microfluidic device.

**Label panel:** the flat area of the bottle's body where a label can be applied. Some of B&C Plastics Ltd.'s bottles feature indented label panels.

**labetuzumab-SN-38 immunoconjugate IMMU-130:** An antibody-drug conjugate (ADC) containing labetuzumab, a mildly reduced, anti-CEACAM5 humanized monoclonal antibody, conjugated to the potent topoisomerase I inhibitor SN-38, with antineoplastic activity. The monoclonal antibody moiety of antibody-drug conjugate IMMU-130 selectively binds to carcinoembryonic cell adhesion molecule 5 (CEACAM5), which is abundantly expressed on the surface of a majority of solid tumors. Upon internalization and proteolytic cleavage, SN-38, the active metabolite of irinotecan, inhibits the activity of topoisomerase I in the tumor cells, eventually inhibiting both DNA replication and transcription and leading to tumor cell apoptosis.

**labial mucosa :** The inner lining of the lips.

**LaBID:** (Other name for: theophylline)

**laboratory study :** Research done in a laboratory. A laboratory study may use special equipment and cells or animals to find out if a drug, procedure,

or treatment is likely to be useful in humans. It may also be a part of a clinical trial, such as when blood or other samples are collected. These may be used to measure the effect of a drug, procedure, or treatment on the body.

**laboratory test :** A medical procedure that involves testing a sample of blood, urine, or other substance from the body. Laboratory tests can help determine a diagnosis, plan treatment, check to see if treatment is working, or monitor the disease over time.

**laccolith:** an intrusive feature similar to a sill but formed from a more viscous magma that creates a lens-shaped mass between sedimentary layers, arching the overlying strata upward.

**lacosamide:** A functionalized amino acid compound specifically synthesized as an anticonvulsive drug to use as add-on therapy for partial-onset seizures with antinociceptive and neuroprotective activities. Lacosamide selectively enhances slow inactivation of voltage-gated sodium channels without affecting fast inactivation, thereby stabilizing hyperexcitable neuronal membranes. Furthermore, this agent binds to collapsin response mediator protein 2 (CRMP2; DPYSL2), a cytosolic phosphoprotein expressed in most tissues. In the nervous system, CRMP2 acts as a mediator of growth cone collapse and modifies axon number, length, and neuronal polarity.

**Lacquer:** A fast-drying usually clear coating that is highly flammable and dries by solvent evaporation only. Can be reconstituted after drying by adding solvent. OR A term usually applied to coatings that dry entirely by evaporation of the solvent. OR A fast-drying clear pigmented coating that dries by solvent evaporation.

**lacrimal gland :** A gland that secretes tears. The lacrimal glands are found in the upper, outer part of each eye socket.

**lactase :** An enzyme that breaks down lactose, a type of sugar found in milk and milk products.

**lactate dehydrogenase :** One of a group of enzymes found in the blood and other body tissues and involved in energy production in cells. An increased amount of lactate dehydrogenase in the blood may be a sign of tissue damage and some types of cancer or other diseases. Also called lactic acid dehydrogenase and LDH.

**lactic acid :** A substance made from sugars in milk, by the action of certain enzymes. It is used in skin care products to reduce wrinkles and soften the skin. It is also being studied in the treatment of hand-foot syndrome (a condition marked by pain, swelling, numbness, tingling, or redness of the hands or feet) in patients receiving chemotherapy. Lactic acid is also made in muscles in the body and is used in many chemical processes in the body. It is a type of alpha hydroxyl acid.

**lactic acid dehydrogenase :** One of a group of enzymes found in the blood and other body tissues, and involved in energy production in cells. An increased amount in the blood may be a sign of tissue damage and some types of cancer or other diseases. Also called lactate dehydrogenase and LDH.

**Lactic acid fermentation:** The anaerobic metabolism of glucose to yield lactic acid with the concomitant production of ATP.

**lactobacillus :** A type of bacterium that makes lactic acid (a substance that is made from sugars found in milk and is also made in the body). Lactobacilli usually do not cause disease, but may cause tooth decay. They are normally found in the mouth, gastrointestinal tract, and vagina. They are being studied in the prevention of infections in patients having donor stem cell transplants and in other conditions.

**Lactobacillus acidophilus probiotic:** A probiotic containing the bacterium *Lactobacillus acidophilus* with potential antimicrobial and immunomodulatory activities. As a dietary supplement, *Lactobacillus acidophilus* (*L. acidophilus*), a naturally-occurring bacteria, may improve digestion and help maintain adequate colonization of the gastrointestinal (GI) tract by modulating the composition of the normal microflora. Because it produces lactic acid and hydrogen peroxide and other substances during fermentation, this bacterium creates an acidic environment unfavorable to pathogens such as *Candida albicans*. In addition, during colonization of the GI tract, *L. acidophilus* may form a protective barrier, preventing attachment of pathogens. Dietary supplementation with this bacterium has been shown to enhance natural and acquired immunity in mice.

**Lactobacillus acidophilus/estriol vaginal tablet:** A vaginal tablet containing a low dose of the estrogen hormone estriol and lyophilized *Lactobacillus acidophilus*, with hormone replacement and vaginal flora restoring activity. Upon vaginal application, estriol may restore estrogen

levels locally and may relieve symptoms caused by estrogen deficiency; the *Lactobacillus acidophilus* may be able to restore the vaginal *Lactobacillus* flora. Check for active clinical trials using this agent.

***Lactobacillus acidophilus*/Streptococcus thermophilus/Bifidobacterium lactis/L. rhamnosus/B. longum/B. bifidum-based probiotic**

**supplement:** A nutritional supplement containing probiotic cultures of *Lactobacillus acidophilus* (*L. acidophilus*), *L. rhamnosus* *Streptococcus thermophilus*, *Bifidobacterium lactis*, (*B. lactis*), *B. longum* and *B. bifidum*, with gastrointestinal (GI) protective and immunomodulating activities. Upon oral administration, the bacteria in this probiotic supplement help maintain adequate colonization of the GI tract and modulate the composition of the normal microflora. Upon colonization of the GI tract, the probiotic bacteria form a protective barrier that helps maintain the integrity of the epithelial barrier. This will interfere with the attachment of pathogenic bacteria and other harmful substances, prevent inflammation and improve GI function. Check for active clinical trials using this agent.

***Lactobacillus brevis* CD2 lozenge:** A lozenge containing an extract from the *Lactobacillus brevis* (*L. brevis*) with potential anti-inflammatory activity. As *L. brevis* CD2 contains high levels of arginine deiminase, which catalyzes the conversion of arginine to citrulline and ammonia, administration of this lozenge leads to hydrolysis of arginine in the oral cavity. The growth of bacteria, which depends on arginine, is halted, polyamine biosynthesis is reduced and the production of nitric oxide (NO) is reduced. The reduction in NO generation may further prevent inflammation in the oral cavity. Therefore, this agent may be able to reduce chemo- and radiotherapy-induced mucositis.

***lactobacillus fermented extract:*** A proprietary dietary supplement. *Lactobacillus* fermented extract is made from soymilk fermented by several strains of *lactobacillus* and yeast via a symbiotic co-culturing technology. The composition of the agent includes amino acids, vitamins, minerals, fatty acids, isoflavones, and saponins. *Lactobacillus* fermented extract may support healthy intestinal function.

***Lactobacillus plantarum* 299v/*Lactobacillus***

***acidophilus*/Bifidobacterium lactis probiotic supplement:** A powder-based, probiotic supplement drink containing the non-pathogenic microorganisms *Lactobacillus plantarum* 299v, *Lactobacillus acidophilus*,

and *Bifidobacterium lactis*, with potential immunomodulating and protective activities. Upon oral ingestion, the naturally-occurring bacterial components in this dietary supplement may improve digestion and help maintain adequate colonization of the gastrointestinal (GI) tract by modulating the composition of the normal microflora. During colonization in the GI tract, the bacteria may form a protective intestinal barrier which may prevent damage to the mucosal epithelia caused by toxins and attachment of potential pathogens, thereby protecting against infections. In addition, this agent may reduce the secretion of proinflammatory cytokines and may potentiate natural and acquired immunity. Check for active clinical trials using this agent.

**Lactobacillus plantarum strain 299:** A nutritional supplement containing the probiotic bacterium *Lactobacillus plantarum* 299 (Lp 299) with potential antimicrobial, immune-boosting, and anti-inflammatory activities. Upon oral ingestion, Lp 299 adheres to the intestinal mucosa, modulates the composition of the normal microflora, helps maintain adequate colonization of the gastrointestinal (GI) tract and improves digestion and metabolism. Upon colonization of the GI tract, the probiotic may form a protective barrier, thereby preventing attachment of pathogens, protecting against infections and boosting the immune system. In addition, Lp 299 stimulates the secretion of protective mucin and produces lactic acid and hydrogen peroxide as well as other substances, thereby creating an acidic environment which prevents growth of pathogens.

**Lactobacillus plantarum strain 299v:** A nutritional supplement containing a strain of the probiotic bacterium *Lactobacillus plantarum* 299v (Lp 299v) with potential antimicrobial, immune-boosting, and anti-inflammatory activities. Upon oral ingestion, *L. plantarum* strain 299v adheres to the intestinal mucosa, modulates the composition of the normal microflora, helps maintain adequate colonization of the gastrointestinal (GI) tract and improves digestion and metabolism. Upon colonization of the GI tract, the probiotic may form a protective barrier, thereby preventing attachment of pathogens, protecting against infections and boosting the immune system. In addition, Lp 299v stimulates the secretion of protective mucin and produces lactic acid and hydrogen peroxide as well as other substances, thereby creating an acidic environment which prevents growth of pathogens. Check for active clinical trials using this agent.

**Lactobacillus rhamnosus GG:** A live specific strain of the species, *Lactobacillus rhamnosus* (a subspecies of *Lactobacillus casei*) with probiotic activity. When administered orally, *Lactobacillus rhamnosus* GG adheres to the mucous membrane of the intestine and may help to restore the balance of the GI microflora; promote gut-barrier functions; diminish the production of carcinogenic compounds by other intestinal bacteria; and activate the innate immune response and enhance adaptive immunity, especially during infections. Check for active clinical trials using this agent. or A live form of a bacterium that makes lactic acid (a substance that is made from sugars found in milk and is also made in the body).

*Lactobacillus rhamnosus* GG is given to help with digestion and normal bowel function. It may also help keep the gastrointestinal (GI) tract healthy. It is being studied in the prevention of infections in patients having donor stem cell transplants and in other conditions. Also called Culturelle.

**Lactobacillus rhamnosus/L. jensenii/L. crispatus/L. gasseri oral supplement:** A nutritional supplement containing the probiotic *Lactobacillus* strains *L. rhamnosus*, *L. jensenii*, *L. crispatus* and *L. gasseri* with protective and immunomodulating activities. The bacteria in this probiotic supplement colonize the vaginal tract and help to maintain as well as restore the composition of the normal, healthy vaginal flora. The four *Lactobacillus* species form a protective barrier that helps both to maintain the integrity of the vaginal tract and prevent the attachment of pathogenic bacteria and other harmful substances, thereby protecting against genitourinary infections.

**Lactobacillus-based probiotic capsule:** A capsule containing a strain of the probiotic bacterium *Lactobacillus* with potential antimicrobial and immunomodulatory activities. As a dietary supplement, *Lactobacillus*, a naturally-occurring bacterium, may improve digestion and help maintain adequate colonization of the gastrointestinal (GI) tract by modulating the composition of the normal microflora. Because it produces lactic acid and hydrogen peroxide and other substances during fermentation, this bacterium creates an acidic environment that is unfavorable for pathogens. In addition, during colonization of the GI tract, this bacterium adheres to human epithelial cells and forms a protective barrier, thereby preventing the attachment of pathogens. Dietary supplementation with this bacterium has been shown to enhance innate and acquired immunity.

**lactoferrin** : A protein that is found in milk, tears, mucus, bile, and some white blood cells and is being studied in the treatment and prevention of cancer. It is involved in fighting against infection and inflammation and it acts as an antioxidant.

**lactoferrin-derived lytic peptide LTX-315**: A peptide derived from human lactoferrin, with potential lytic and immunostimulating activities. Upon transdermal injection directly into the tumor, LTX315 may bind to the tumor cell membranes and subsequently lyse tumor cells, thereby inducing tumor cell necrosis. In turn, presentation of the tumor antigens to the immune system may induce systemic innate and adaptive immune responses mediated by anti-tumor natural killer (NK) cells, cytotoxic T lymphocytes, and natural killer T (NKT) cells. This may trigger an immune response against tumor associated antigens on tumors distant from the primary tumor. Human lactoferrin, a 692 amino acid glycoprotein, belongs to the transferrin family of metal-binding proteins.

**lactose** : A type of sugar found in milk and milk products.

**lactose intolerance** : The inability to digest or absorb lactose, a type of sugar found in milk and other dairy products.

**Ladder Edge** : An edge finish formed by extending reinforcing wires or connectors beyond the spiral finish, and creating an edge in the appearance of ladder chain.

**Ladder Edge, Welded** : An edge finish similar to Ladder Edge with loops tack welded or brazed.

**laetrile**: Originally, the name laetrile was the contraction of laevo-mandelonitrile glucoside, a cyanogenic glycoside found naturally in some plants. Over the years the meaning of laetrile has changed. There are now preparations called Laetrile where amygdalin is the major constituent. Laetrile and amygdalin are often used interchangeably, but are different agents. Cyanide and benzaldehyde are metabolites of both laetrile and amygdalin. Both metabolites may possess antineoplastic properties. Laetrile has been used as an anticancer treatment in humans worldwide, but scientific evidence does not support its effectiveness. It is not approved for use in the United States. or A substance found in the pits of many fruits such as apricots and papayas, and in other foods. It has been tried in some countries as a treatment for cancer, but it has not been shown to work in

clinical studies. Laetrile is not approved for use in the United States. Also called amygdalin.

**Lagging:** The process of covering vessels or pipes with a non-conducting material to prevent loss or ingress of heat.

**Lagging strand:** A newly synthesized strand of DNA at the replication fork that is initially synthesized as Okazaki fragments. OR The DNA strand that, during replication, must be synthesized in the direction opposite to that in which the replication fork moves.

**lagoon:** in wastewater treatment, a shallow pond where sunlight, bacterial action, and oxygen interact to restore wastewater to a reasonable state of purity.

**lahar:** a mudflow originating on a volcanic slope.

**Laitance:** A milky type deposit from newly applied concrete.

**LAK cell :** A white blood cell that is stimulated in a laboratory to kill tumor cells. Also called lymphokine-activated killer cell.

**Lambert's law:** The intensity of radiation passing through a material decays exponentially with path length  $b$ .

**lamellar body mimetic mouth spray LMS-611:** A suspension-based oral spray containing multilamellar lipid vesicles in which the lipids mimic the lipidic composition of endogenous extra-alveolar lamellar bodies, with muco-restorative and protective activity against radiotherapy (RT)-induced xerostomia (RIX). Upon sublingual administration of the lamellar body mimetic LMS-611 using a spray, the lipids in this agent mimic the natural secretions of endogenous lamellar bodies. This makes mucus more fluid and may prevent dryness of the mouth. This restores saliva functions and makes it easier to chew, swallow and talk, and also prevents xerostomia-induced infections, tooth decay and tooth enamel decay. RT decreases saliva secretion by causing the destruction of the parotid and submandibular serous salivary glands and lamellar bodies. This results in thicker and more visco-adhesive saliva, which causes various xerostomia-induced symptoms; intact lamellar bodies maintain the fluidity of mucus and lubricate the mouth.

**Lamictal:** (Other name for: lamotrigine)

**lamina propria :** A type of connective tissue found under the thin layer of tissues covering a mucous membrane.

**Laminar Flow:** Laminar flow of thermoplastic resins in a mold is accomplished by solidification of the layer in contact with the mold surface that acts as an insulating shell through which molten material flows to fill the remainder of the cavity. OR Laminar flow of thermoplastic resins in a mold is accompanied by solidification of the layer in contact with the mold surface that acts as an insulating tube through which material flows to fill the remainder of the cavity. This type of flow is essential to duplication of the mold surface.

**Laminate:** 1) (v) – To build up to desired shape or thickness. 2) (n) – A material composed of successive layers of material, usually bonded together under heat and pressure. OR object composed of two or more sheets or shells of material utilized by means of a bonding agent.

**LAMINATED PLASTICS (Synthetic resin-bonded laminate, laminate):** A plastics material consisting of superimposed layers of a synthetic resin-impregnated or -coated filler which have been bonded together, usually by means of heat and pressure, to form a single piece.

**lamivudine:** A synthetic nucleoside analogue with activity against hepatitis B virus (HBV) and HIV. Intracellularly, lamivudine is phosphorylated to its active metabolites, lamiduvine triphosphate (L-TP) and lamiduvine monophosphate (L-MP). In HIV, L-TP inhibits HIV-1 reverse transcriptase (RT) via DNA chain termination after incorporation of the nucleoside analogue into viral DNA. In HBV, incorporation of L-MP into viral DNA by HBV polymerase results in DNA chain termination. L-TP is a weak inhibitor of mammalian DNA polymerases alpha and beta, and mitochondrial DNA polymerase. or A drug used to treat infection caused by viruses.

**lamotrigine:** A synthetic phenyltriazine with antiepileptic and analgesic properties. Lamotrigine enhances the action of gamma-aminobutyric acid, an inhibitory neurotransmitter, which may result in a reduction of pain-related transmission of signals along nerve fibers. This agent may also inhibit voltage-gated sodium channels, suppress glutamate release, and inhibit serotonin reuptake. or A drug that is used to help control some types of seizures. It is being studied in the prevention of peripheral neuropathy caused by some chemotherapy drugs. It belongs to the family of drugs called anticonvulsants.

**Lampbrush chromosome:** Giant diplotene chromosome found in the oocyte nucleus. The loops that are observed are the sites of extensive gene expression.

**LAND:** 1. The bearing surface along the top of the flights of a screw in a screw extruder. 2. The surface of an extrusion die parallel to the direction of melt flow. OR (1) The horizontal bearing surface of a semi positive or flash mold by which excess material escapes. See Cut-off. (2) The bearing surface along the top of the flights of a screw in a screw extruder. (3) The surface of an extrusion die parallel to the direction of melt flow. OR A term used to describe the area in which the gate, or vent, resides. It can also be thought of as the "length" dimension in the "l, w, h" terminology used for describing the dimensions of the gate or vent. See also shutoff land.

**Land (Gate Area):** Gate dimension parallel to the direction of melt flow.

**Land Area:** The area of surfaces of a mold which contact each other when the mold is closed.

**land breeze:** local wind that forms at night along a beach due to uneven cooling rates of land and water, wind moves from land to water.

**landslide:** a destructive, rapid mass-wasting event.

**Lane Dividers :** Detachable plates assembled into the belt's width to create product lanes. Spiral wire lane dividers can also be manufactured.

**Langerhans cell histiocytosis :** A group of rare disorders in which too many Langerhans cells (a type of white blood cell) grow in certain tissues and organs including the bones, skin, and lungs, and damage them. Langerhans cell histiocytosis may also affect the pituitary gland (which makes hormones that control other glands and many body functions, especially growth). Langerhans cell histiocytosis is most common in children and young adults. Also called LCH.

**lanolin :** An oily substance taken from sheep's wool. Lanolin is used in moisturizing creams and lotions to treat dry, itchy skin.

**Lanoxin :** A drug used to treat irregular heartbeat and some types of heart failure. It is also being studied in the treatment of some types of cancer. Lanoxin helps the heart work normally by controlling the amount of calcium that goes into the heart muscle. It also may kill cancer cells and make them more sensitive to anticancer drugs. It is a type of cardiac glycoside. Also called digoxin.

**lanreotide acetate:** The acetate salt of a synthetic cyclic octapeptide analogue of somatostatin. Lanreotide binds to somatostatin receptors (SSTR), specifically SSTR-2 and also to SSTR-5 with a lesser affinity. However, compared to octreotide, this agent is less potent in inhibiting the release of growth hormone from the pituitary gland. Furthermore, lanreotide has an acute effect on decreasing circulating total and free insulin-like growth factor 1 (IGF-I). This agent is usually given as a prolonged-release microparticle or Autogel formulation for the treatment of acromegaly and to relieve the symptoms of neuroendocrine tumors.

**lanreotide acetate :** A drug used to treat gastroenteropancreatic neuroendocrine tumors that are advanced or have spread to other parts of the body. These tumors form in the stomach, small and large intestines, rectum, and pancreas. Lanreotide acetate is used for tumors that cannot be removed by surgery. It is also used to treat some patients with acromegaly (a condition in which the pituitary gland makes too much growth hormone). Lanreotide acetate is like somatostatin (a hormone made by the body), and may help stop the body from making extra amounts of certain hormones, including growth hormone, insulin, glucagon, and hormones that affect digestion. It may also help keep certain types of tumor cells from growing. Lanreotide acetate is a type of somatostatin analog. Also called Somatuline Depot.

**lanreotide acetate copolymer microparticles:** A prolonged-release depot suspension of microparticles containing the acetate salt of lanreotide, a synthetic peptide analog of the naturally occurring somatostatin, and copolymers. Lanreotide inhibits the secretion of growth hormone (GH) by binding to pituitary somatostatin receptors, and may inhibit various other hormones, including thyroid stimulating hormone (TSH) and the gastroenteropancreatic hormones insulin, glucagon and gastrin. This agent has a much longer duration of action than natural somatostatin and is selective towards the inhibition of growth hormone.

**lanreotide long-acting aqueous gel:** A long-acting aqueous gel preparation of lanreotide, a synthetic cyclic octapeptide analogue of somatostatin. Lanreotide inhibits the secretion of growth hormone (GH) by binding to pituitary somatostatin receptors, and may inhibit the release of various other hormones, including thyroid stimulating hormone (TSH) and the gastroenteropancreatic hormones insulin, glucagon and gastrin. This

agent also decreases circulating total and free insulin-like growth factor 1 (IGF-I). Lanreotide exhibits a high binding affinity for somatostatin receptor 2 (SSTR-2) and a lesser binding affinity for SSTR-5. However, compared to octreotide, this agent is less potent in inhibiting the release of growth hormone from the pituitary gland.

**lansoprazole :** A drug that reduces the amount of acid made in the stomach. It is used to treat stomach ulcers, gastroesophageal reflux disease (a condition in which acid from the stomach causes heartburn), and conditions in which the stomach makes too much acid. Lansoprazole is a type of proton pump inhibitor (PPI). Also called Prevacid.

**Lantern light:** A rectangular projection on a flat roof, usually with vertical sides and wholly or partly glazed to admit light and air to the building beneath.

**lanthanide:** Elements 57-70 are called lanthanides. Electrons added during the Aufbau construction of lanthanide atoms go into the 4f subshell.

**lanthanide contraction:** An effect that causes sixth period elements with filled 4f subshells to be smaller than otherwise expected. The intervention of the lanthanides increases the effective nuclear charge, which offsets the size increase expected from filling the  $n=6$  valence shell. As a consequence, sixth period transition metals are about the same size as their fifth period counterparts.

**Lanthanide Series:** The lanthanide series is one of two sets of inner transition elements. Elements 57 through 71 are a part of this series. The elements include cerium, europium, and holmium.

**lanthanides:** the row of elements beneath the periodic table, from cerium to lutetium; also called rare earths.

**Lanthanides:** The series of f-block elements between lanthanum and hafnium.

**Lanthanum:** Symbol:"La" Atomic Number:"57" Atomic Mass: 138.91amu. Lanthanum is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. It is the first element in the lanthanide series. It is a metallic element found in many minerals of the Earth's crust. You may also find it in catalytic converters and special types of glass (like lenses).

**Lantus :** A drug used to control the amount of sugar in the blood of patients with diabetes. It is a form of the hormone insulin that is made in the laboratory. Lantus controls blood sugar longer than insulin does. It is a type of therapeutic insulin. Also called insulin glargine and insulin glargine recombinant.

**Lap:** In painting, the expression 'to lap' refers to the joining up of a section of painting to a previously painted, but still wet, section. Normally it is important for the previously painted edges to be 'kept alive' so that the paint can be well worked into the previously painted section and subsequently dry without the lap showing.

**laparoscope :** A thin, tube-like instrument used to look at tissues and organs inside the abdomen. A laparoscope has a light and a lens for viewing and may have a tool to remove tissue.

**laparoscopic prostatectomy :** Surgery to remove all or part of the prostate with the aid of a laparoscope. A laparoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**laparoscopic surgery :** Surgery done with the aid of a laparoscope. A laparoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called laparoscopic-assisted resection.

**laparoscopic-assisted colectomy :** Surgery done with the aid of a laparoscope to remove all or part of the colon through several small incisions made in the wall of the abdomen. A laparoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. The laparoscope is inserted through one opening to guide the surgery. Surgical instruments are inserted through the other openings to perform the surgery. When only part of the colon is removed, it is called a partial colectomy.

**laparoscopic-assisted resection :** Surgery done with the aid of a laparoscope. A laparoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called laparoscopic surgery.

**laparoscopy :** A procedure that uses a laparoscope, inserted through the abdominal wall, to examine the inside of the abdomen. A laparoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also

have a tool to remove tissue to be checked under a microscope for signs of disease.

**laparotomy** : A surgical incision made in the wall of the abdomen.

**lapatinib** : A drug used with another anticancer drug to treat breast cancer that is HER2 positive and has advanced or metastasized (spread to other parts of the body) after treatment with other drugs. Lapatinib is also being studied in the treatment of other types of cancer. It is a type of ErbB-2 and EGFR dual tyrosine kinase inhibitor. Also called GW572016, lapatinib ditosylate, and Tykerb.

**lapatinib ditosylate**: The ditosylate salt of lapatinib, a synthetic, orally-active quinazoline with potential antineoplastic activity. Lapatinib reversibly blocks phosphorylation of the epidermal growth factor receptor (EGFR), ErbB2, and the Erk-1 and-2 and AKT kinases; it also inhibits cyclin D protein levels in human tumor cell lines and xenografts. EGFR and ErbB2 have been implicated in the growth of various tumor types. or A drug used with another anticancer drug to treat breast cancer that is HER2 positive and has advanced or metastasized (spread to other parts of the body) after treatment with other drugs. Lapatinib ditosylate is also being studied in the treatment of other types of cancer. It is a type of ErbB-2 and EGFR dual tyrosine kinase inhibitor. Also called GW572016, lapatinib, and Tykerb.

**lappa** : A plant whose seeds and root have been used in some cultures to treat certain medical problems. It may have antioxidant effects. The scientific name is *Arctium lappa*. Also called burdock and happy major.

**lapse rate**: The rapidity with which temperature decreases with altitude. The normal lapse rate is defined to be 3.6 degrees F per 1000 feet change in altitude. The dry adiabatic lapse rate is about 5.5 degrees F per 1000 feet, and the wet adiabatic lapse rate varies between 2 and 5 degrees F per 1000 feet.

**lapuleucel-T**: A cell-based vaccine targets tumors expressing the HER2/neu marker. HER-2/neu is a growth factor receptor, and its overexpression has been associated with a number of cancers including breast, ovarian, colon and lung cancers. APC8024 comprise of autologous antigen-presenting peripheral blood mononuclear cells (APCs) that have been exposed to HER2/neu protein and can be administered to the patient.

These cells may stimulate an antitumor T-cell response to cancer cells expressing HER2/neu. Check for active clinical trials using this agent.

**Laradopa:** (Other name for: levodopa)

**large cell carcinoma :** Lung cancer in which the cells are large and look abnormal when viewed under a microscope.

**large granular lymphocyte :** A type of white blood cell that contains granules with enzymes that can kill tumor cells or microbial cells.

**large intestine :** The long, tube-like organ that is connected to the small intestine at one end and the anus at the other. The large intestine has four parts: cecum, colon, rectum, and anal canal. Partly digested food moves through the cecum into the colon, where water and some nutrients and electrolytes are removed. The remaining material, solid waste called stool, moves through the colon, is stored in the rectum, and leaves the body through the anal canal and anus.

**largetrifoliolious bugbane rhizome supplement:** A proprietary tablet formulation containing an extract from Largetrifoliolious Bugbane rhizome (Shengma), the dried root of *Cimicifuga* sp., with potential use for relieving menopausal symptoms. The Largetrifoliolious bugbane rhizome supplement contains total saponins, including phytoestrogens that can modulate estrogen receptor signaling. This supplement is used to reduce disease symptoms, such as sweating, toothache, headache, ulcers, and insomnia. In women, this supplement may be used to reduce symptoms related to menopause.

**Largeware:** A term given to containers that are over one gallon in capacity.

**Larmor frequency:** The frequency of precession of a nucleus in a magnetic field.

**Larodopa:** (Other name for: levodopa)

**laromustine:** A sulfonyl hydrazine prodrug with antineoplastic activity. Laromustine releases the DNA chloroethylating agent 90CE after entering the blood stream; 90CE chloroethylates alkylates the O6 position of guanine, resulting in DNA crosslinking, strand breaks, chromosomal aberrations, and disruption of DNA synthesis. Intracellular metabolism of this agent also releases methyl isocyanate which inhibits O6-alkyl-guanine transferase, an enzyme involved with DNA repair.

**laromustine :** A drug used to treat acute myelogenous leukemia (AML). It is also being studied in the treatment of several other types of cancer. It blocks cell growth by damaging the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called Cloretazine and Onrigin.

**larotaxel:** A semi-synthetic derivative of the taxane 10-deacetylbaccatin III with potential antineoplastic activities. Larotaxel binds to tubulin, promoting microtubule assembly and stabilization and preventing microtubule depolymerization, thereby inhibiting cell proliferation. As it represents poor substrate for P-glycoprotein-related drug resistance mechanisms, this agent may be useful for treating multi-drug resistant tumors. Larotaxel penetrates the blood brain barrier.

**laryngeal :** Having to do with the larynx.

**laryngeal cancer :** Cancer that forms in tissues of the larynx (area of the throat that contains the vocal cords and is used for breathing, swallowing, and talking). Most laryngeal cancers are squamous cell carcinomas (cancer that begins in flat cells lining the larynx).

**laryngectomee :** A person whose larynx (voice box) has been removed.

**laryngectomy :** An operation to remove all or part of the larynx (voice box).

**laryngitis :** Inflammation of the larynx.

**laryngoscope :** A thin, tube-like instrument used to examine the larynx (voice box). A laryngoscope has a light and a lens for viewing and may have a tool to remove tissue.

**laryngoscopy :** Examination of the larynx (voice box) with a mirror (indirect laryngoscopy) or with a laryngoscope (direct laryngoscopy).

**larynx:** the voicebox of mammals, formed from several folds of cartilage at the upper end of the trachea. OR The area of the throat containing the vocal cords and used for breathing, swallowing, and talking. Also called voice box.

**laser:** Acronym for light amplification by stimulated emission of radiation. A laser is an intense source of light with a very narrow range of wavelengths. The intense light is given off when many ions are stimulated and simultaneously emit a photon at the same wavelength.

**laser :** A device that forms light into intense, narrow beams that may be used to cut or destroy tissue, such as cancer tissue. It may also be used to

reduce lymphedema (swelling caused by a buildup of lymph fluid in tissue) after breast cancer surgery. Lasers are used in microsurgery, photodynamic therapy, and many other procedures to diagnose and treat disease.

**laser acupuncture :** The use of a low-level laser beam instead of an acupuncture needle to stimulate an acupuncture point.

**Laser light scattering:** Various particle-size distribution analyses that examine the optical response of a suspended powder to illumination by a laser (cf. Fraunhofer diffraction, time-domain and image analysis).

**laser surgery :** A surgical procedure that uses the cutting power of a laser beam to make bloodless cuts in tissue or to remove a surface lesion such as a tumor.

**laser therapy :** Treatment that uses intense, narrow beams of light to cut and destroy tissue, such as cancer tissue. Laser therapy may also be used to reduce lymphedema (swelling caused by a buildup of lymph fluid in tissue) after breast cancer surgery.

**Lasix:** (Other name for: furosemide)

**lassitude :** A feeling of tiredness, weakness, and lack of interest in daily activities.

**late effect :** A health problem that occurs months or years after a disease is diagnosed or after treatment has ended. Late effects may be caused by cancer or cancer treatment. They may include physical, mental, and social problems and second cancers.

**late or variable onset :** The state in which a genetic trait is expressed later in life or is expressed at no fixed time in a life history.

**late-stage cancer :** A term used to describe cancer that is far along in its growth, and has spread to the lymph nodes or other places in the body.

**latency period :** The time that passes between being exposed to something that can cause disease (such as radiation or a virus) and having symptoms.

**latent :** Describes a condition that is present but not active or causing symptoms.

**Latent cancer fatality (LCF):** Death resulting from cancer that became active after a latent period following exposure to radiation.

**latent heat:** Energy transferred from the earth's surface to the atmosphere through the evaporation and condensation processes. OR Heat that is

absorbed without causing a rise in temperature. For example, "latent heat of vaporization" refers to the amount of heat required to convert a liquid to vapor at a particular temperature.

**latent period :** Delay between exposure to a disease-causing agent and the appearance of manifestations of the disease. After exposure to ionizing radiation, for instance, there is a latent period of five years, on average, before development of leukemia, and more than 20 years before development of certain other malignant conditions. The term "latent period" is often used as synonym with "induction period", that is, the period between exposure to a disease-causing agent and the appearance of manifestations of the disease. It has also been defined as the period from disease initiation to disease detection (Last, 1988).

**Lateral diffusion:** The ability of lipid and protein molecules to move laterally in the membrane rapidly and spontaneously.

**lateral erosion:** erosion that occurs when a stream meanders or braids back and forth across its valley floor or channel, undercutting and eroding its banks.

**lateral moraine:** a moraine consisting of rock debris and sediment that have worked loose from the walls beside a valley glacier and have accumulated in ridges along the sides of the glacier. OR the pile of rocks that accumulate along the edges of a glacier.

**laterite:** a typically bright red, highly leached, residual soil that forms in tropical regions.

**lateritic weathering:** weathering that results in residual deposits that become enriched through the chemical breakdown and removal of more reactive elements of a rock.

**Latex:** A latex (plural latices, or latexes for the Americans!) is a dispersion of water-insoluble polymer in water. The dispersion is usually of particles (not single molecules) that are around 100 nm (10<sup>-4</sup> mm) in size. The particles are kept suspended in the water by thermal convection (which keeps them from settling out) and surfactants (which keep them from sticking together to form bigger and bigger lumps). Another word for latex is polymer colloid.

**LATEX:** A water-thinned paint, such as a polyvinyl acetate, styrene butadiene or acrylic.

**Latex paint:** Water-based paint made with synthetic binders such as 100% acrylic vinyl, acrylic terpolymer or styrene acrylic. Latex paint dries fast, flows smoothly and cleans up easily with water.

**Latex-based Paint:** General term used for water-based emulsion paints made with synthetic binders such as 100% acrylic, vinyl acrylic, terpolymer or styrene acrylic. A stable emulsion of polymers and pigment in water.

**Lath and plaster:** Describes a form of ceiling or wall construction in which narrow strips of wood are fixed to the framing or joists over which plaster coatings are spread.

**Latin America:** The region between Tijuana and Tierra del Fuego containing a few major petroleum producing countries such as Mexico and Venezuela. So-called because the inhabitants speak badly mispronounced and grammatically incorrect provincial Latin.

**Latisse :** The drug bimatoprost used to increase the length, thickness, and darkness of eyelashes. It is being studied as a way to increase the growth of eyelashes and eyebrows in patients given chemotherapy for cancer. A sterile brush is used to apply Latisse on the upper and lower margins of the eyelids once a day.

**latissimus dorsi flap :** A type of surgery used to rebuild the shape of the breast after a mastectomy. A muscle in the back called the latissimus dorsi, along with skin, fat, and blood vessels, is moved from the back to the chest to form a new breast mound or to form a pocket for a breast implant. This is usually done by passing the muscle tissue and blood vessels through a tunnel under the skin to the chest. A latissimus dorsi flap is a type of breast reconstruction.

**latitude:** coordinate lines for locating a position on Earth that run east and west and are parallel to each other, running from 0° to 90° (angle from the equator).

**lattice:** A regular array of ions or atoms. OR A regular arrangement of points in space in 3 dimensions. OR In a crystal, some arrangement of atoms is repeated in a regular way. If we put an imaginary point at the centre of each repeating unit and mentally throw the rest away, the positions of these points will define a crystal lattice. For example, if the points define the corners of a cube, the crystal is a primitive cubic lattice; if they define the corners and a point in the centre of each face (like a die with a one on

every side), the crystal is a face-centred cubic lattice, etc. There are 14 basic types of crystal lattice.

**Lattice Pattern:** In reinforced plastics, a pattern of filament winding with a fixed arrangement of open voids.

**Laudicon:** (Other name for: hydromorphone hydrochloride)

**laughter therapy :** A type of therapy that uses humor to help relieve pain and stress and improve a person's sense of well-being. It may be used to help people cope with a serious disease, such as cancer. Laughter therapy may include laughter exercises, clowns, and comedy movies, books, games, and puzzles. It is a type of complementary therapy. Also called humor therapy.

**Laurasia:** the paleocontinent that once included the present-day landmasses of North America and Eurasia.

**lava:** Lava is molten rock that has erupted from the surface of the Earth. OR liquid rock on the surface of the Earth. OR magma that is extruded at the earth's surface, as from a volcano. OR This is molten rock that is on the surface of the Earth. It flows from volcanoes. Molten rock inside the Earth is called magma.

**lava flood:** nonvolcanic lava that vents from deep cracks in the continental crust.

**lavage :** In medicine, washing out an organ (such as the stomach or colon), a body cavity, or a wound by flushing it with a fluid. Also called irrigation.

**lavender :** A plant with aromatic leaves and flowers that is a member of the mint family. Oil from the flowers has been used in some cultures to treat certain medical problems, to keep insects away, and to wash in. It is also used in aromatherapy. Perillyl alcohol, a substance found in lavender, is being studied in cancer prevention and treatment. The scientific name is *Lavandula angustifolia*. Also called English lavender and true lavender.

**law:** Mathematical statement of a relationship that is always the same. OR Natural laws summarize patterns that recur in a large amount of data. Unlike human laws, natural laws don't forbid or permit; they describe.

**law of combining volumes:** When gases react, they do so in a definite proportion by volume, if the volumes are measured at the same pressure and temperature. For example, in the reaction  $\text{N}_2(\text{g}) + 3 \text{H}_2(\text{g}) = 2 \text{NH}_3(\text{g})$ , 3

liters of hydrogen will react with 1 liter of nitrogen to give 2 liters of ammonia if all volumes are measured at the same temperature and pressure.

**LAW of CONSERVATION of ENERGY:** states that energy cannot be destroyed nor created, but only changed in form. Ex. heat --> electricity --> light, etc.

**law of conservation of mass:** There is no change in total mass during a chemical change. The demonstration of conservation of mass by Antoine Lavoisier in the late 18th century was a milestone in the development of modern chemistry.

**LAW of CONSERVATION of MATTER:** states that matter cannot be created nor destroyed, but only changed in form. For example matter and mass can be interchanged.

**law of definite proportions:** When two pure substances react to form a compound, they do so in a definite proportion by mass. For example, when water is formed from the reaction between hydrogen and oxygen, the 'definite proportion' is 1 g of H for every 8 g of O.

**law of faunal succession:** a law that states that fossil species succeed one another in undisturbed rocks in a definite and recognizable order around the world.

**Law of mass action:** The finding that the rate of a chemical reaction is a function of the product of the concentrations of the reacting species.

**law of mass action:** The law stating that the rate of any given chemical reaction is proportional to the product of the activities (or concentrations) of the reactants.

**LAW of MULTIPLE PROPORTIONS:** shows that some compounds have formulas that are whole number multiples of atoms Ex.  $\text{NO}_2$ ,  $\text{N}_2\text{O}_4$ ;  $\text{H}_2\text{O}$ ,  $\text{H}_2\text{O}_2$ ;  $\text{FeO}$ ,  $\text{Fe}_2\text{O}_3$ .

**law of multiple proportions:** When one element can combine with another to form more than one compound, the mass ratios of the elements in the compounds are simple whole-number ratios of each other. For example, in  $\text{CO}$  and in  $\text{CO}_2$ , the oxygen-to-carbon ratios are 16:12 and 32:12, respectively. Note that the second ratio is exactly twice the first, because there are exactly twice as many oxygens in  $\text{CO}_2$  per carbon as there are in  $\text{CO}$ .

**law of original horizontality:** a law that states that most sedimentary rocks formed as nearly horizontal layers.

**Law of Partition:** A situation that enables a solute to dissolve in solvents based on the solubility of those solvents. If you mix oil in water and add sugar, the sugar will dissolve more readily in the water because there is a higher solubility.

**Law of rational indices:** A rule stating that the major faces on a crystal will generally be related to the principle dimensions of the unit cell and will have Miller indices with low integer values [(100), (101), (210), etc.]

**law of superposition:** a law that states that in an undisturbed sequence of sedimentary rocks or lava flows the overlying rock is younger than the underlying rock.

**Lawrencium:** Symbol:"Lr" Atomic Number:"103" Atomic Mass: (260)amu. Lawrencium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. It is a radioactive and unstable element and you will not find it in use anywhere.

**laxative :** A substance that promotes bowel movements.

**Lay Flat:** Flexible polyethylene tubing which has been pressed flat.

**Lay-up:** A resin-impregnated reinforcement in the mould, prior to polymerisation.

**Layer thickness:** The precise thickness of a single additive layer that can reach as small as microns thin. Often, parts will contain thousands of layers.

**Layflat:** Measurement of the transverse/cross direction of film, also known as film width.

**Laying off:** The final brush strokes on any surface during a painting operation. These strokes are made after the paint has been spread evenly over the surface.

**Laylight:** A window fixed horizontally in a ceiling to admit light (natural or artificial).

**Lazanda:** (Other name for: fentanyl citrate pectin-based nasal spray)

**LBH589:** A drug used with bortezomib and dexamethasone to treat multiple myeloma. It is used in patients who have already been treated with bortezomib and an immunomodulating agent. It is also being studied in the treatment of other types of cancer. LBH589 blocks certain enzymes needed

for cells to grow and divide and may kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of histone deacetylase inhibitor and a type of antiangiogenesis agent. Also called Farydak and panobinostat.

**LC50:** This abbreviation is used for the exposure concentration of a toxic substance lethal to 50% of a test population. See median lethal concentration.

**LCH:** A group of rare disorders in which too many Langerhans cells (a type of white blood cell) grow in certain tissues and organs including the bones, skin, and lungs, and damage them. LCH may also affect the pituitary gland (which makes hormones that control other glands and many body functions, especially growth). LCH is most common in children and young adults. Also called Langerhans cell histiocytosis.

**LCIS:** A condition in which abnormal cells are found in the lobules of the breast. This condition seldom becomes invasive cancer. However, having LCIS in one breast increases the risk of developing breast cancer in either breast. Also called lobular carcinoma in situ.

**LCP:** Liquid crystal polymer

**LD:** Where alleles (DNA markers) occur together more often than can be accounted for by chance because of their physical proximity on a chromosome. Also called linkage disequilibrium.

**LD50:** This abbreviation is used for the dose of a toxic substance lethal to 50% of a test population. See median lethal dose.

**LDA:** see LSDA.

**LDE225:** A drug used to treat locally advanced basal cell carcinoma (BCC) that has come back after surgery or radiation therapy. It is also used in patients who cannot be treated with surgery or radiation therapy. LDE225 is also being studied in the treatment of other types of cancer. LDE225 blocks a type of protein involved in tissue growth and repair and may block the growth of cancer cells. It is a type of hedgehog signaling pathway antagonist. Also called erismodegib, Odomzo, and sonidegib.

**LDH:** One of a group of enzymes found in the blood and other body tissues, and involved in energy production in cells. An increased amount in the blood may be a sign of tissue damage and some types of cancer or other diseases. Also called lactate dehydrogenase and lactic acid dehydrogenase.

**LDPE (Low Density Polyethylene):** This resin was used with older can liner technology. The resin has good clarity but weak film strength. Today it is used primarily for Food and Utility bags. A plastic used predominantly in film applications due to its toughness, flexibility and relative transparency. LDPE has a low melting point, making it popular for use in applications where heat sealing is necessary. Typically, LDPE is used to manufacture flexible films such as those used for plastic retail bags and garment dry cleaning and grocery bags. LDPE is also used to manufacture some flexible lids and bottles, and it is widely used in wire and cable applications for its stable electrical properties and processing characteristics. (Adapted from Modern Plastics Encyclopedia 1995)

**LDPE Tubing:** LDPE Tubing: Low Density Polyethylene Tubing

**Le Chatelier's principle:** a system that in equilibrium is disturbed adjusts so as to minimize the disturbance. OR When an external force is applied to an equilibrium system, the system adjusts to minimize the effect of the force. OR Le Chatelier's principle predicts that when a stress is applied to an equilibrium mixture, the equilibrium will shift to relieve the stress. Stresses include temperature changes, pressure changes, and changes in the concentrations of species in the mixture. For example, increasing the concentration of a reactant drives the reaction forward; increasing the concentration of a product drives it backward.

**Le Chatelier's principle:** States that a system at equilibrium will oppose any change in the equilibrium conditions.

**Leach:** To extract a soluble component from a mixture by the process of percolation.

**leachate:** The solution produced by passing a liquid through a solid, often containing chemicals that have dissolved from the solid to the liquid. As rainwater passes through landfills and associated sediments, various chemical substances may dissolve in the water and penetrate the aquifer and contaminate ground water.

**Lead:** Symbol:"Pb" Atomic Number:"82" Atomic Mass: 207.20amu. It is classified as a basic metal. Lead is a bluish metal found as an element and in many minerals. It has been used in several alloys, radiation shielding, and even insecticides. Lead is toxic to living organisms.

**LEAD CHROME PIGMENTS:** A series of inorganic pigments including yellows, oranges, and greens, used in polyolefins and other plastics.

**Lead Compound:** Compounds that could serve as a starting point for the development of a clinically useful drug.

**lead compound :** In medicine, a chemical compound that shows promise as a treatment for a disease and may lead to the development of a new drug. Thousands of compounds are tested in the laboratory to find a lead (“leading”) compound that may act on specific genes or proteins involved in a disease. Once a lead compound has been found, the chemical structure is used as a starting point to make a drug that has the most benefits and the least harms. Finding a lead compound is the first step in making a new drug to treat a disease.

**Lead Discovery:** The process of discovering and identifying chemical entities that could serve as a starting point for the development of a clinically useful drug.

**Lead Optimisation:** Drug design techniques employed on lead compounds to improve pharmacokinetic and pharmacodynamic profiles.

**Lead paint:** Usually refers to a paint based on white lead or red lead but more widely can mean any paint containing a lead pigment.

**lead Pb 212 TCMC-trastuzumab:** A radioimmunoconjugate containing the recombinant humanized monoclonal antibody trastuzumab conjugated with the bifunctional chelating agent TCMC ((1,4,7,10-Tetra-(2-Carbamoyl Methyl)-Cyclododecane), and radiolabeled with the alpha-emitting isotope lead Pb 212, with potential anti-tumor activity. Upon administration, the antibody moiety of lead Pb 212 TCMC-trastuzumab binds with high affinity to the extracellular domain of human epidermal growth factor receptor 2 (HER2); after internalization, the radioisotope moiety delivers a cytotoxic dose of alpha radiation to the HER2-expressing tumor cells. HER2, a tyrosine kinase receptor, is overexpressed on the cell surface of a variety of cancer cell types.

**leader:** A short sequence near the amino terminus of a protein or the 5' end of an RNA that has a specialized targeting or regulatory function.

**Leader pins:** A group of pins (usually circular) that normally travel in bushings to provide alignment of two unattached components, such as the two halves of an injection mold. Also called guide pins.

**Leader region:** The region of an mRNA between the 5' end and the initiation codon for translation of the first polypeptide chain.

**Leader sequence:** An N-terminal signal sequence that directs secretion and processing of proteins.

**leading keywords:** If the first word in an English phrase indicates an operation, it is a leading keyword; it "leads" the expression.

**Leading strand:** A newly synthesized strand of DNA at the replication fork that is synthesized continuously. See also . OR The DNA strand that, during replication, is synthesized in the same direction in which the replication fork moves.

**Leafing:** Certain metallic pigments such as aluminium in the form of thin, flat flakes (as distinct from the granular form) which float to the surface of a paint coating and slightly overlap each other, forming a 'barrier' to help prevent staining from previous coatings or substrate.

**Leak rate:** the rate at which the outer filling solution of the reference electrode enters the sample solution. Low or irregular leak rates may cause variations in the liquid junction potential, resulting in erroneous or unstable readings. This is not a significant factor in modern gelfilled electrodes.

**LEAKAGE FLOW:** The flow through the clearance between the flight lands and the barrel wall.

**leaky mutant:** A mutant gene that gives rise to a product with a detectable level of biological activity.

**least common denominator:** The least common multiple of all the denominators in the problem.

**least common multiple:** The smallest of the common multiples of more than one number. For example, 12 and 24 are both multiples of 3 and 4. 12 is the least common multiple of 3 and 4.

**leaving group:** the negatively charged group that departs from a molecule, which is undergoing a nucleophilic substitution reaction. OR The departing or displaced molecular group in a unimolecular elimination or a bimolecular substitution reaction.

**Leber's hereditary optic neuropathy:** A maternally inherited form of blindness due to mutations in NADH-Q reductase; one of a number of mitochondrial diseases.

**lectin :** A complex molecule that has both protein and sugars. Lectins are able to bind to the outside of a cell and cause biochemical changes in it. Lectins are made by both animals and plants.

**Lectins:** Agglutinating proteins usually extracted from plants. OR Plant proteins with a high affinity for specific sugar residues; as such, they are important probes of carbohydrate-containing molecules.

**LED :** LightEmitting Diode.

**LED therapy :** Treatment with drugs that become active and may kill cancer cells when exposed to light. LED therapy is a type of photodynamic therapy, which uses a special type of light to activate the drug. Also called light-emitting diode therapy.

**LEEP :** A technique that uses electric current passed through a thin wire loop to remove abnormal tissue. Also called loop electrosurgical excision procedure and loop excision.

**leeward:** the side opposite from the prevailing wind direction.

**leflunomide:** A derivative of isoxazole used for its immunosuppressive and anti-inflammatory properties. As a prodrug, leflunomide is converted to an active metabolite, A77 1726, which blocks dihydroorotate dehydrogenase, a key enzyme of de novo pyrimidine synthesis, thereby preventing the expansion of activated T lymphocytes. This agent also inhibits various protein tyrosine kinases, such as protein kinase C (PKC), thereby inhibiting cell proliferation. or An anticancer drug that works by inhibiting a cancer cell growth factor. Also called SU101.

**left atrium:** the chamber of the human heart that receives oxygen-rich blood via the pulmonary vein.

**left ventricle:** the chamber of the human heart in which oxygen-rich blood enters through the bicuspid valve that leads into the aorta.

**left-lateral strike-slip fault:** a strike-slip fault in which the block across the fault appears to have moved to the left.

**legal aid organization :** A group or agency that gives legal help to people with low incomes. Health legal aid workers help people with issues related to getting good healthcare, and getting insurance to cover certain patients and conditions.

**Legged and braced door:** A door formed of boards fixed to a frame with diagonal bracing pieces.

**Leghemoglobin:** A homolog of hemoglobin found in leguminous plants that also harbor symbiotic nitrogen-fixing bacteria; leghemoglobin binds oxygen, thereby protecting nitrogenase from inactivation.

**legs:** in a right triangle, the two sides forming the 90° angle. In a trapezoid, the nonparallel sides.

**Lehr Mesh :** A balanced weave wire mesh fabric consisting of alternating right and left hand flattened spirals fully seated into specifically formed crimped connector rods - commonly used in glass processing systems.

**leiomyoma :** A benign smooth muscle tumor, usually in the uterus or gastrointestinal tract. Also called fibroid.

**leiomyosarcoma :** A malignant (cancer) tumor of smooth muscle cells that can arise almost anywhere in the body, but is most common in the uterus, abdomen, or pelvis.

**lemon :** A small, yellow citrus fruit that is a source of citric acid and ascorbic acid (vitamin C). The juice is used to flavor food and drink and to prevent scurvy. Lemon oil (scented liquid taken from the peel) is used in aromatherapy. The scientific name of the lemon tree is Citrus limon.

**lenalidomide:** A thalidomide analog with potential antineoplastic activity. Lenalidomide inhibits TNF-alpha production, stimulates T cells, reduces serum levels of the cytokines vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (bFGF), and inhibits angiogenesis. This agent also promotes G1 cell cycle arrest and apoptosis of malignant cells. or A drug that is similar to thalidomide, and is used to treat multiple myeloma and certain types of anemia. It is also used to treat mantle cell lymphoma that has come back or has not gotten better after other treatment. It is being studied in the treatment of other conditions and types of cancer. Lenalidomide may help the immune system kill abnormal blood cells or cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of immunomodulating agent. Also called CC-5013 and Revlimid.

**lenapenem:** A broad-spectrum, carbapenem antibiotic with bactericidal activity. Lenapenem binds to penicillin binding proteins (PBPs) located on the bacterial cell wall, thereby inhibiting the final transpeptidation step in the synthesis of peptidoglycan, an essential component of the bacterial cell wall. This inhibition weakens the bacterial cell wall and leads to lytic cell death in a wide range of Gram-positive and Gram-negative aerobic and anaerobic pathogens.

**Length-to-diameter ratio (L/D ratio) -:** Effective screw length divided by the screw diameter and commonly expressed as a ratio to unity.

**lenograstim:** A glycosylated form of a recombinant therapeutic agent which is chemically identical to or similar to an endogenous human granulocyte colony-stimulating factor (G-CSF). Produced endogenously by monocytes, fibroblasts, and endothelial cells, G-CSF binds to and activates specific cell surface receptors, stimulating neutrophil progenitor proliferation and differentiation and selected neutrophil functions.

**lens:** the portion of the eye that focuses the light on the retina. OR A clear disk that focuses light, as in a camera or microscope. In the eye, the lens is a clear, curved structure at the front of the eye behind the pupil. It focuses light rays that enter the eye through the pupil, making an image on the retina (light-sensitive layers of nerve tissue at the back of the eye).

**Lens Dose Equivalent:** The external exposure dose equivalent to the lens of the eye at a tissue depth of 0.3 centimeters (300 mg/cm<sup>2</sup>).

**LENSING:** A term which refers to a film defect that causes undesirable elongated thin voids in an extruded film. Sometimes referred to as windows or air pockets.

**Lenti-D/ABCD1-transduced autologous hematopoietic stem cells:** Autologous CD34<sup>+</sup> hematopoietic stem cells transduced with Lenti-D lentiviral vector encoding the human ATP-binding cassette, sub-family D, member 1 (ABCD1) cDNA, for the potential treatment of childhood cerebral adrenoleukodystrophy (CCALD). Upon administration of the lenti-D/ABCD1-transduced autologous hematopoietic stem cells, the cells proliferate, and some travel to the brain and differentiate into microglial cells. The expressed ABCD1 restores the function of ALD protein (ALDP) and aids in the treatment of CCALD. In CCALD, the ABCD1 gene is mutated, leading to the inability of patients to metabolize very long chain fatty acids in cells of the brain. Check for active clinical trials using this agent.

**LentiGlobin BB305 Drug Product:** (Other name for: autologous beta-A(T87Q)-globin gene-transduced CD34-positive cells)

**lentinan :** A beta-glucan (a type of polysaccharide) from the mushroom *Lentinus edodes* (shiitake mushroom). It has been studied in Japan as a treatment for cancer.

**lentivirus vector CCR5 shRNA/TRIM5alpha/TAR decoy-transduced autologous CD34-positive hematopoietic progenitor cells:** Autologous, CD34-positive hematopoietic progenitor cells (HPCs) transduced with a

lentiviral vector encoding three anti-human immunodeficiency virus (HIV) genes: a short hairpin RNA (shRNA) that targets human chemokine receptor 5 (CCR5), a human/rhesus macaque chimeric tripartite motif-containing protein 5 alpha isoform (TRIM5alpha), and a TAT activation response (TAR) decoy, as well as a pre-selective cell-surface marker, which is a truncated and mutated form of human CD25, used to potentially provide resistance against human immunodeficiency virus (HIV) infection. Human autologous CD34-positive HPCs are isolated and transduced ex vivo with the lentiviral vector. Upon pre-selection, purification using CD25 immunomagnetic separation, and subsequent administration of effectively transduced HPCs, the HPCs display 3 separate mechanisms of action against HIV infection: CCR5 shRNA binds to CCR5 mRNA and inhibits the expression of CCR5, a HIV-1 co-receptor that mediates HIV attachment and host cell entry; TRIM5alpha prevents HIV genome integration upon cell entry; and the TAR decoy binds to the HIV TAT protein and prevents TAT-dependent viral gene transcription, thereby preventing HIV replication. Upon transfer of the lentivirus vector CCR5 shRNA/TRIM5alpha/TAR decoy-transduced autologous CD34-positive HPCs into the patient, the HPCs are resistant to HIV entry and replication and could provide long-term protection against both HIV infection and HIV-associated cancers.

**lentivirus vector rHIV7-shI-TAR-CCR5RZ-transduced hematopoietic progenitor cells:** Autologous, CD34-positive hematopoietic progenitor cells (HPCs) transduced with rHIV7-shI-TAR-CCR5RZ, a lentiviral vector encoding three anti-human immunodeficiency virus (HIV) RNA genes, with potential antineoplastic activity. The 3 RNA products produced by the lentivirus are: a short hairpin RNA (shRNA) targeted to an exon of the HIV-1 genes *tat/rev*, designated as shI; a decoy for the HIV TAT reactive element, designated as TAR; a ribozyme targeting the host cells CCR5 chemokine receptor, designated as CCR5RZ. Upon administration, lentivirus vector rHIV7-shI-TAR-CCR5RZ-transduced hematopoietic progenitor cells expressing the 3 species of RNAs display 3 separate mechanisms of action: the shRNA blocks the transcription of *tat/rev*, the TAR decoy binds to the TAT protein that is essential for HIV replication, and CCR5RZ catalyzes CCR5 which is needed for viral attachment and entry into the host cells. Altogether, infusion of these HPCs may ultimately inhibit HIV replication and suppress HIV infection. Check for active clinical trials using this agent.

**lenvatinib mesylate:** A synthetic, orally available inhibitor of vascular endothelial growth factor receptor 2 (VEGFR2, also known as KDR/FLK-1) tyrosine kinase with potential antineoplastic activity. Lenvatinib mesylate blocks VEGFR2 activation by VEGF, resulting in inhibition of the VEGF receptor signal transduction pathway, decreased vascular endothelial cell migration and proliferation, and vascular endothelial cell apoptosis. or A drug used with everolimus to treat advanced renal cell carcinoma (a type of kidney cancer) that was treated with antiangiogenesis therapy (a type of anticancer therapy). It is also used alone to treat thyroid cancer in certain patients with progressive, recurrent, or metastatic disease that does not respond to treatment with radioactive iodine. It is also being studied in the treatment of other types of cancer. Lenvatinib mesylate blocks certain proteins needed for cells to grow and may kill cancer cells. It is a type of tyrosine kinase inhibitor. Also called Lenvima.

**Lenvima :** A drug used with everolimus to treat advanced renal cell carcinoma (a type of kidney cancer) that was treated with antiangiogenesis therapy (a type of anticancer therapy). It is also used alone to treat thyroid cancer in certain patients with progressive, recurrent, or metastatic disease that does not respond to treatment with radioactive iodine. It is also being studied in the treatment of other types of cancer. Lenvima blocks certain proteins needed for cells to grow and may kill cancer cells. It is a type of tyrosine kinase inhibitor. Also called lenvatinib mesylate.

**lenzilumab:** A recombinant monoclonal antibody against the cytokine granulocyte macrophage colony-stimulating factor (GM-CSF), with potential immunomodulating activity. Upon administration, lenzilumab binds to and neutralizes GM-CSF. This prevents GM-CSF binding to the GM-CSF receptor, which is a heterodimeric protein expressed on myeloid progenitor cells, and prevents GM-CSF-mediated signaling. This may induce apoptosis in and inhibit proliferation of cancer cells that overproduce GM-CSF. GM-CSF plays a key role in the differentiation and proliferation of monocytes, macrophages and granulocytes; elevated levels of GM-CSF are associated with certain autoimmune diseases, inflammatory diseases, and cancers.

**LEP-ETU:** A form of the anticancer drug paclitaxel that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of several types of

cancer. LEP-ETU blocks the ability of cells to divide and may kill cancer cells. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called liposomal paclitaxel, LipoTaxen, paclitaxel liposome, and PNU-93914.

**lepirudin:** A yeast cell-derived recombinant polypeptide related to the naturally occurring, leech-derived anticoagulant hirudin. Lepirudin directly binds to and inactivates thrombin, producing dose-dependent increases in the activated partial thromboplastin time (aPTT) and prothrombin time (PT). The mechanism of action of this agent is independent of antithrombin III and is not inhibited by platelet factor 4. Natural hirudin, a family of highly homologous isopolypeptides, is produced in trace amounts by the leech *Hirudo medicinalis*. or A drug that inhibits blood clotting. It is being studied in cancer treatment.

**Leptin:** A polypeptide hormone, secreted by the adipocytes in direct proportion to fat mass, that generates satiation signals. OR A hormone made by fat cells that helps control the feeling of hunger, the amount of fat stored in the body, and body weight.

**leptomeningeal :** Having to do with the two innermost meninges (thin layers of tissue that cover and protect the brain and spinal cord).

**leptomeningeal carcinoma :** A serious problem that may occur in cancer in which cancer cells spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). It can happen in many types of cancer, but is the most common in melanoma, breast, lung, and gastrointestinal cancer. The cancer may cause the meninges to be inflamed. Also called carcinomatous meningitis, leptomeningeal carcinomatosis, leptomeningeal metastasis, meningeal carcinomatosis, meningeal metastasis, and neoplastic meningitis.

**leptomeningeal carcinomatosis :** A serious problem that may occur in cancer in which cancer cells spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). It can happen in many types of cancer, but is the most common in melanoma, breast, lung, and gastrointestinal cancer. The cancer may cause the meninges to be inflamed. Also called carcinomatous meningitis, leptomeningeal carcinoma, leptomeningeal metastasis, meningeal carcinomatosis, meningeal metastasis, and neoplastic meningitis.

**leptomeningeal metastasis :** A serious problem that may occur in cancer in which cancer cells spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). It can happen in many types of cancer, but is the most common in melanoma, breast, lung, and gastrointestinal cancer. The cancer may cause the meninges to be inflamed. Also called carcinomatous meningitis, leptomeningeal carcinoma, leptomeningeal carcinomatosis, meningeal carcinomatosis, meningeal metastasis, and neoplastic meningitis.

**leridistim:** A recombinant chimeric dual G-CSF and IL-3 receptor agonist. Leridistim binds with high affinity to both the interleukin-3 (IL-3) and granulocyte colony-stimulating factor (G-CSF) receptors, thereby stimulating the production and maturation of neutrophils, platelets, and lymphocytes after chemotherapy. or A substance being studied for its ability to stimulate the production of blood cells during chemotherapy. It is a type of colony-stimulating factor. Also called SC-70935.

**lerisetron:** The hydrochloride salt of a 2-piperazinylbenzimidazole-derivative serotonin type 3 (5-HT<sub>3</sub>) receptor antagonist with antiemetic activity. Lerisetron specifically binds to 5-HT<sub>3</sub> receptors, located peripherally on vagus nerve terminals and centrally in the chemoreceptor trigger zone (CTZ) of the area postrema, which may result in suppression of chemotherapy-induced nausea and vomiting.

**Lesch-Nyhan syndrome:** A disease resulting from the loss of a single enzyme in the salvage pathway for purines; marked by mental retardation, extreme hostility, and self-mutilation.

**Lescol:** (Other name for: fluvastatin sodium)

**lesion :** An area of abnormal tissue. A lesion may be benign (not cancer) or malignant (cancer).

**lestaurtinib:** An orally bioavailable indolocarbazole derivative with antineoplastic properties. Lestaurtinib inhibits autophosphorylation of FMS-like tyrosine kinase 3 (FLT3), resulting in inhibition of FLT3 activity and induction of apoptosis in tumor cells that overexpress FLT3. or A drug being studied in the treatment of acute leukemias and some other types of cancer. It binds to a protein that is present on the surface of some types of cancer cells and stops them from dividing. Lestaurtinib is a type of receptor tyrosine kinase inhibitor and a type of indolocarbazole alkaloid. Also called CEP-701.

**Let down:** To dilute a material usually to improve application properties.

**letermovir:** An orally bioavailable, non-nucleoside, 3,4-dihydroquinazolinyl acetic acid and inhibitor of the pUL56 subunit of the viral terminase complex of cytomegalovirus (CMV), with potential CMV-specific antiviral activity. Upon oral administration, letermovir binds to the pUL56 subunit of the viral terminase complex of CMV and prevents the cleavage of concatemeric DNA into monomeric genome length DNA. As this agent interferes with viral DNA processing and subsequent viral DNA packaging into procapsids, CMV replication is blocked and CMV infection is prevented.

**Lethal dose (LD):** The dose of radiation expected to cause death to 50 percent of an exposed population within 30 days (LD 50/30). Typically, the LD 50/30 is in the range from 400 to 450 rem (4 to 5 sieverts) received over a very short period.

**lethal mutation:** A mutation that inactivates a biological function essential to the life of the cell or organism.

**lethargy :** A condition marked by drowsiness and an unusual lack of energy and mental alertness. It can be caused by many things, including illness, injury, or drugs.

**letrozole:** A nonsteroidal inhibitor of estrogen synthesis with antineoplastic activity. As a third-generation aromatase inhibitor, letrozole selectively and reversibly inhibits aromatase, which may result in growth inhibition of estrogen-dependent breast cancer cells. Aromatase, a cytochrome P-450 enzyme localized to the endoplasmic reticulum of the cell and found in many tissues including those of the premenopausal ovary, liver, and breast, catalyzes the aromatization of androstenedione and testosterone into estrone and estradiol, the final step in estrogen biosynthesis. or A drug used to treat certain types of breast cancer in postmenopausal women. It is also being studied in the treatment of other types of cancer. Letrozole lowers the amount of estrogen made by the body. This may stop the growth of cancer cells that need estrogen to grow. Letrozole is a type of aromatase inhibitor. Also called Femara.

**leucine zipper:** A protein structural motif involved in protein-protein interactions in many eukaryotic regulatory proteins; consists of two interacting  $\alpha$  helices in which Leu residues in every seventh position are a prominent feature of the interacting surfaces.

**leucine-enhanced essential amino acid dietary supplement:** An orally bioavailable leucine enriched essential amino acid dietary supplement with potential anti-cachexia activity. Leucine-enhanced essential amino acid nutritional supplement may stimulate the mammalian target of rapamycin (mTOR) signaling pathway, which may promote protein synthesis in muscle cells. Although the exact mechanism by which leucine and other essential amino acids stimulate mTOR has yet to be fully elucidated, leucine may stimulate mTOR by inhibiting adenosine monophosphate protein kinase (AMPK), which negatively controls mTOR signaling. Check for active clinical trials using this agent.

**leucine**: A naturally occurring aliphatic amino acid with a nonpolar side chain.

**leucovorin** : The active ingredient in a drug used to lessen the toxic effects of substances that block the action of folic acid, especially the anticancer drug methotrexate. Leucovorin is used to treat some types of anemia and is also used with fluorouracil to treat colorectal cancer. It is also being studied in the treatment of other types of cancer and other conditions. Leucovorin is a form of folic acid. It is a type of chemoprotective agent and a type of chemosensitizing agent. Also called folinic acid.

**leucovorin calcium:** An active metabolite of folic acid (also called folinic acid and citrovorum factor), which does not require metabolism by dihydrofolate reductase, the molecular target of folate antagonist-type chemotherapeutic drugs. Leucovorin calcium counteracts the toxic effects of these medications, 'rescuing' the patient while permitting the antitumor activity of the folate antagonist. This agent also potentiates the effects of fluorouracil and its derivatives by stabilizing the binding of the drug's metabolite to its target enzyme, thus prolonging drug activity. or A drug used to lessen the toxic effects of substances that block the action of folic acid, especially the anticancer drug methotrexate. Leucovorin calcium is used to treat some types of anemia and is also used with fluorouracil to treat colorectal cancer. It is also being studied in the treatment of other types of cancer and other conditions. Leucovorin calcium is a form of folic acid. It is a type of chemoprotective agent and a type of chemosensitizing agent. Also called calcium levoleucovorin, citrovorum factor, and Wellcovorin.

**leukapheresis** : Removal of the blood to collect specific blood cells. The remaining blood is returned to the body.

**leukemia** : Cancer that starts in blood-forming tissue, such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the bloodstream.

**leukemic apoptotic corpse-pulsed autologous dendritic cells**: A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with corpses of apoptotic leukemic cells, with potential immunostimulatory and antineoplastic activities. Upon vaccination, autologous dendritic cells pulsed with leukemic apoptotic corpse may activate the immune system to mount an anti-tumoral cytotoxic T-lymphocyte (CTL) response against leukemic cells expressing leukemia-associated antigens, which may result in leukemic cell lysis and inhibition of tumor cell growth. Apoptotic tumor cell corpses contain an array of tumor associated antigens (TAAs). Check for active clinical trials using this agent.

**leukemic leptomeningitis** : A serious problem that may occur in leukemia. In leukemic leptomeningitis, cancer cells have spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). The cancer may cause the meninges to be inflamed. Also called leukemic meningitis and meningeal leukemia.

**leukemic meningitis** : A serious problem that may occur in leukemia. In leukemic meningitis, cancer cells have spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). The cancer may cause the meninges to be inflamed. Also called leukemic leptomeningitis and meningeal leukemia.

**Leukeran** : A drug used to treat several types of leukemias and lymphomas. It blocks cell growth by damaging the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called chlorambucil.

**Leukine**: (Other name for: sargramostim)

**leukocyte** : A type of blood cell that is made in the bone marrow and found in the blood and lymph tissue. Leukocytes are part of the body's immune system. They help the body fight infection and other diseases. Types of leukocytes are granulocytes (neutrophils, eosinophils, and basophils), monocytes, and lymphocytes (T cells and B cells). Checking the number of leukocytes in the blood is usually part of a complete blood cell (CBC) test. It may be used to look for conditions such as infection, inflammation, allergies, and leukemia. Also called WBC and white blood cell.

**leukocytes:** the white blood cells produced in the bone marrow that have various functions in the body, such as immune reaction.

**leukopenia:** decreased white blood cell count OR A condition in which there is a lower-than-normal number of leukocytes (white blood cells) in the blood.

**leukoplakia :** An abnormal patch of white tissue that forms on mucous membranes in the mouth and other areas of the body. It may become cancer. Tobacco (smoking and chewing) and alcohol may increase the risk of leukoplakia in the mouth.

**leukotrienes:** A family of molecules derived from arachidonate; muscle contractants that constrict air passages in the lungs and are involved in asthma.

**leuprolide acetate:** The acetate salt of a synthetic nonapeptide analogue of gonadotropin-releasing hormone. Leuprolide binds to and activates gonadotropin-releasing hormone (GnRH) receptors. Continuous, prolonged administration of leuprolide in males results in pituitary GnRH receptor desensitization and inhibition of pituitary secretion of follicle stimulating hormone (FSH) and luteinizing hormone (LH), leading to a significant decline in testosterone production; in females, prolonged administration results in a decrease in estradiol production. This agent reduces testosterone production to castration levels and may inhibit androgen receptor-positive tumor progression. Check for active clinical trials using this agent. or A drug used to treat advanced prostate cancer. Under the brand name Lupron, it is also used to treat early puberty in children and certain gynecologic conditions. Leuprolide acetate is also being studied in the treatment of other types of cancer. It blocks the testicles from making testosterone (a male hormone) and the ovaries from making estrogen and progesterone (female hormones). It may stop the growth of prostate cancer cells that need testosterone to grow. Leuprolide acetate is a type of gonadotropin-releasing hormone (GnRH) agonist. Also called Eligard, Lupron, and Viadur.

**Leustatin:** (Other name for: cladribine)

**leuvectin :** An agent that delivers the gene for interleukin-2 (IL-2) into cells to increase production of IL-2 by the cells.

**levamisole :** An antiparasitic drug that is also being studied in cancer therapy with fluorouracil.

**levamisole hydrochloride:** The orally bioavailable hydrochloride salt of the synthetic imidazothiazole derivative levamisole with anthelmintic and immunostimulating activities. In immunosuppressed states, levamisole may restore immune function by: 1) stimulating antibody formation, 2) stimulating T-cell activation and proliferation, 3) potentiating monocyte and macrophage phagocytosis and chemotaxis and 4) increasing neutrophil mobility, adherence, and chemotaxis.

**Levaquin:** (Other name for: levofloxacin)

**LEVELING:** Ability of a film to flow out free from ripples, pockmarks and brush marks after application. OR The ability of a coating to form a smooth film without brush marks appearing.

**levels of evidence :** A ranking system used to describe the strength of the results measured in a clinical trial or research study. The design of the study (such as a case report for an individual patient or a randomized double-blinded controlled clinical trial) and the endpoints measured (such as survival or quality of life) affect the strength of the evidence.

**Lever arm:** A long helix that protrudes from the S1 fragment of myosin to bind the light chains; amplifies small structural changes at the nucleotide-binding site of myosin to achieve 110-Å movement along an actin filament.

**levetiracetam:** A pyrrolidine with antiepileptic activity. The exact mechanism through which levetiracetam exerts its effects is unknown but does not involve inhibitory and excitatory neurotransmitter activity. Stereoselective binding of levetiracetam was confined to synaptic plasma membranes in the central nervous system with no binding occurring in peripheral tissue. Levetiracetam inhibits burst firing without affecting normal neuronal excitability, which suggests that it may selectively prevent hyper-synchronization of epileptiform burst firing and propagation of seizure activity. or A drug used to treat seizures (involuntary muscle movements) caused by epilepsy (a group of brain disorders). Levetiracetam is being studied in the treatment of seizures in patients with cancer that has spread to the brain. It is a type of anticonvulsant. Also called Keppra.

**Levitra:** (Other name for: vardenafil hydrochloride)

**levobupivacaine hydrochloride:** The hydrochloride salt of levobupivacaine, an amide derivative with anesthetic property. Levobupivacaine reversibly binds voltage-gated sodium channels to modulate ionic flux and prevent the initiation and transmission of nerve

impulses (stabilizing neuronal membrane), thereby resulting in analgesia and anesthesia. In comparison with racemic bupivacaine, levobupivacaine is associated with less vasodilation and has a longer duration of action.

**levocarnitine:** An amino acid derivative. Levocarnitine facilitates long-chain fatty acid entry into mitochondria, delivering substrate for oxidation and subsequent energy production. Fatty acids are utilized as an energy substrate in all tissues except the brain. Or A form of carnitine, which is a substance made in muscle and liver tissue and found in certain foods, such as meat, poultry, fish, and some dairy products. Levocarnitine is also a drug that is used to treat patients who do not make enough carnitine and is being studied as a way to prevent tissue damage caused by chemotherapy. Carnitine is a type of dietary supplement. Also called Carnitor and L-carnitine.

**levocetirizine dihydrochloride:** The dihydrochloride salt form of the active levorotatory enantiomer of cetirizine, levocetirizine; a third generation, non-sedating, selective histamine H1 receptor antagonist, with antihistamine, anti-inflammatory and potential anti-angiogenic activities. Levocetirizine competes with endogenous histamine for binding at peripheral H1-receptor sites on the effector cell surface. This prevents the negative symptoms associated with histamine release and an allergic reaction. In addition, as histamine plays an important role in angiogenesis during an allergic inflammatory reaction, blocking the action of histamine may modulate the expression of proangiogenic factors and thus may prevent angiogenesis. As a third-generation histamine H1 receptor antagonist, levocetirizine has fewer side effects than most second-generation antihistamines.

**levodopa:** An amino acid precursor of dopamine with antiparkinsonian properties. Levodopa is a prodrug that is converted to dopamine by DOPA decarboxylase and can cross the blood-brain barrier. When in the brain, levodopa is decarboxylated to dopamine and stimulates the dopaminergic receptors, thereby compensating for the depleted supply of endogenous dopamine seen in Parkinson's disease. To assure that adequate concentrations of levodopa reach the central nervous system, it is administered with carbidopa, a decarboxylase inhibitor that does not cross the blood-brain barrier, thereby diminishing the decarboxylation and

inactivation of levodopa in peripheral tissues and increasing the delivery of dopamine to the CNS.

**levofloxacin:** A broad-spectrum, third-generation fluoroquinolone antibiotic and optically active L-isomer of ofloxacin with antibacterial activity. Levofloxacin diffuses through the bacterial cell wall and acts by inhibiting DNA gyrase (bacterial topoisomerase II), an enzyme required for DNA replication, RNA transcription, and repair of bacterial DNA. Inhibition of DNA gyrase activity leads to blockage of bacterial cell growth. Check for active clinical trials using this agent. or A substance used to treat bacterial infections. It belongs to the family of drugs called quinolone antibiotics.

**levoleucovorin calcium:** A levo isoform of leucovorin calcium with antineoplastic activity. Levoleucovorin is an active metabolite of folic acid, which does not require metabolism by dihydrofolate reductase. This agent counteracts the toxic effects of other folic acid derivative agents, rescuing the patient while permitting the antitumor activity of the folate antagonist. This agent also potentiates the effects of fluorouracil and its derivatives by stabilizing the binding of the drug's metabolite to its target enzyme, thus prolonging drug activity.

**levonantradol:** A synthetic cannabinoid analogue of delta (9)-tetrahydrocannabinol (delta(9)-THC) with antiemetic and anti-analgesic properties. Although its precise mechanism of action is unknown, levonantradol appears to bind and activate the cannabinoid receptors CB1 and/or CB2.

**levonorgestrel:** The levorotatory form of norgestrel and synthetic progestogen with progestational and androgenic activity. Levonorgestrel binds to the progesterone receptor in the nucleus of target cells, thereby stimulating the resulting hormone-receptor complex, initiating transcription, and increasing the synthesis of certain proteins. This results in a suppression of luteinizing hormone (LH) activity and an inhibition of ovulation, as well as an alteration in the cervical mucus and endometrium. or A form of the hormone progesterone that is made in the laboratory and used to prevent pregnancy. It is being studied in the prevention of ovarian and endometrial cancer, and in the treatment of other conditions. Levonorgestrel is a type of oral contraceptive. Also called L-norgestrel and Plan B.

**levonorgestrel-releasing intrauterine system:** A long-acting, hormone-releasing, intrauterine device consisting of a small, T-shaped, polyethylene frame and a reservoired synthetic progesterone with progestational and potential antineoplastic activities. After insertion of this system into the uterus, the device slowly and gradually releases the hormone.

Levonorgestrel acts by binding to the progesterone receptor in the nuclei of target cells, resulting in transcription activation and an alteration in protein synthesis. Subsequently, luteinizing hormone (LH) activity and ovulation are suppressed. Levonorgestrel may also exhibit antiproliferative activity in endometrial tissue.

**Levopa:** (Other name for: levodopa)

**levorotatory:** Able to rotate plane-polarized light in a counterclockwise fashion. OR describes the counterclockwise rotation of plane-polarized light (from Latin, levo, "to the left"). A lowercase "l" or "-" is the notation used before an isomer's name to indicate it is levorotatory; for example, l-2-butanol. (Compare with "dextrorotatory.") OR Having the property of rotating plane-polarized light counterclockwise.

**levorotatory isomer:** A stereoisomer that rotates the plane of plane-polarized light counterclockwise.

**levothyroxine sodium:** The sodium salt of levothyroxine, a synthetic levoisomer of thyroxine (T4) that is similar to the endogenous hormone produced by the thyroid gland. In peripheral tissues, levothyroxine is deiodinated by 5'-deiodinase to form triiodothyronine (T3). T3 enters the cell and binds to nuclear thyroid hormone receptors; the activated hormone-receptor complex in turn triggers gene expression and produces proteins required in the regulation of cellular respiration; thermogenesis; cellular growth and differentiation; and the metabolism of proteins, carbohydrates and lipids. T3 also exhibits cardiostimulatory effects. Check for active clinical trials using this agent.

**Levoxyl:** (Other name for: levothyroxine sodium)

**Levulan:** (Other name for: aminolevulinic acid hydrochloride)

**Levulan :** A drug used to treat actinic keratosis (a skin condition that may become cancer). The drug is also being studied in the treatment of squamous cell and basal cell skin cancers and other types of cancer. When Levulan is taken up by cells, including cancer cells, and then exposed to certain types of light, it becomes active and kills the cells. It is a type of

photosensitizing agent. Also called aminolevulinic acid hydrochloride and Levulan Kerastick.

**Levulan Kerastick :** A drug used to treat actinic keratosis (a skin condition that may become cancer). The drug is also being studied in the treatment of squamous cell and basal cell skin cancers and other types of cancer. When Levulan Kerastick is taken up by cells, including cancer cells, and then exposed to certain types of light, it becomes active and kills the cells. It is a type of photosensitizing agent. Also called aminolevulinic acid hydrochloride and Levulan.

**Lewis structure:** A model pioneered by Gilbert N. Lewis and Irving Langmuir that represents the electronic structure of a molecule by writing the valence electrons of atoms as dots. Pairs of dots (or lines) wedged between atoms represent bonds; dots drawn elsewhere represent nonbonding electrons. OR A way of representing molecular structures based on valence electrons.

**Lewis theory of acids and bases:** a Lewis acid is a compound capable of accepting an electron pair, and a Lewis base is capable of donating an electron pair.

**Lexapro :** A drug used to treat depression and certain anxiety disorders. It belongs to the family of drugs called selective serotonin reuptake inhibitors (SSRIs). Also called escitalopram.

**lexatumumab:** A fully human monoclonal agonistic antibody directed against tumor necrosis factor-alpha (TNF-alpha)-related apoptosis-inducing ligand receptor-2 (TRAIL-R2) with potential antitumor activity. Mimicking the natural ligand TRAIL, lexatumumab binds to and activates TRAIL-R2, which may trigger apoptosis in and inhibit the growth of TRAIL-R2-expressing tumor cells. TRAIL-R2, also known as death receptor 5 (DR5), is a member of the TNF receptor family and is expressed on many malignant cell types. or A substance being studied in the treatment of some types of cancer. It binds to a protein called TRAIL-R2 on the surface of some tumor cells, which may kill the tumor cells. Lexatumumab is a type of monoclonal antibody. Also called anti-TRAIL R2 mAb HGS-ETR2 and HGS-ETR2.

**lexibulin:** An orally bioavailable small-molecule with tubulin-inhibiting, vascular-disrupting, and potential antineoplastic activities. Lexibulin inhibits tubulin polymerization in tumor blood vessel endothelial cells and

tumor cells, blocking the formation of the mitotic spindle and leading to cell cycle arrest at the G2/M phase; this may result in disruption of the tumor vasculature and tumor blood flow, and tumor cell death. Check for active clinical trials using this agent.

**Lexiscan:** (Other name for: regadenoson)

**LGD1069:** A drug used to treat skin problems caused by cutaneous T-cell lymphoma that have not gotten better after other treatment. It is also being studied in the treatment of other types of cancer. LGD1069 is a type of retinoid. Also called bexarotene and Targretin.

**LH:** A hormone made in the pituitary gland. In females, it acts on the ovaries to make follicles release their eggs and to make hormones that get the uterus ready for a fertilized egg to be implanted. In males, it acts on the testes to cause cells to grow and make testosterone. Also called interstitial cell-stimulating hormone, luteinizing hormone, and lutropin.

**LH-RH:** A hormone made by a part of the brain called the hypothalamus. LH-RH causes the pituitary gland in the brain to make and secrete the hormones luteinizing hormone (LH) and follicle-stimulating hormone (FSH). In men, these hormones cause the testicles to make testosterone. In women, they cause the ovaries to make estrogen and progesterone. Also called GnRH, gonadotropin-releasing hormone, LHRH, and luteinizing hormone-releasing hormone.

**LH-RH agonist :** A substance that keeps the testicles and ovaries from making sex hormones by blocking other hormones that are needed to make them. In men, LH-RH agonists cause the testicles to stop making testosterone. In women, they cause the ovaries to stop making estrogen and progesterone. Some LH-RH agonists are used to treat prostate cancer. Also called GnRH agonist, gonadotropin-releasing hormone agonist, and luteinizing hormone-releasing hormone agonist.

**LH-RH antagonist :** A substance that blocks the pituitary gland from making hormones called follicle-stimulating hormone (FSH) and luteinizing hormone (LH). In men, this causes the testicles to stop making testosterone. In women, this causes the ovaries to stop making estrogen and progesterone. Some LH-RH antagonists are used to treat advanced prostate cancer. They are also used to treat certain gynecologic conditions and are being studied in the treatment of hormone-sensitive breast cancer. Also

called GnRH antagonist, gonadotropin-releasing hormone antagonist, and luteinizing hormone-releasing hormone antagonist.

**Lhermitte's sign :** A sensation similar to an electrical shock radiating from the back of the head down the spine as the neck is bent forward.

**LHRH:** A hormone made by a part of the brain called the hypothalamus. LHRH causes the pituitary gland in the brain to make and secrete the hormones luteinizing hormone (LH) and follicle-stimulating hormone (FSH). In men, these hormones cause the testicles to make testosterone. In women, they cause the ovaries to make estrogen and progesterone. Also called GnRH, gonadotropin-releasing hormone, LH-RH, and luteinizing hormone-releasing hormone.

**Li-Fraumeni syndrome :** A rare, inherited predisposition to multiple cancers, caused by an alteration in the p53 tumor suppressor gene.

**Lialda:** (Other name for: mesalamine)

**liarozole :** An anticancer drug that promotes differentiation by increasing the levels of retinoic acid within the tumor.

**liarozole fumarate:** The orally active fumarate salt of the benzimidazole derivative liarozole with potential antineoplastic activity. As a retinoic acid metabolism blocking agent (RAMBA), liarozole inhibits cytochrome P450-dependent all-trans-retinoic acid (ATRA)-4-hydroxylase, resulting in an increase in endogenous ATRA production, inhibition of cell proliferation, and induction of cell differentiation. This agent also inhibits aromatase, the enzyme that catalyzes the final, rate-limiting step in estrogen biosynthesis. Check for active clinical trials using this agent.

**Liazal:** (Other name for: liarozole fumarate)

**libido :** Sexual desire or the mental energy or emotion related to sex.

**licartin:** An immunoradioconjugate containing metuximab, an antibody fragment targeting the hepatocellular cancer (HCC)-associated antigen HAb18G/CD147, that is conjugated to the radioisotope iodine I 131, with potential antineoplastic activity. Upon administration, the metuximab moiety of licartin targets and binds to HAb18G/CD147 on HCC cells; upon internalization, the radioisotope I 131 delivers a cytotoxic dose of gamma radiation, thereby causing selective destruction of HAb18G/CD147-expressing cells. HAb18G/CD147, a member of CD147 family, is

overexpressed in HCC and fibroblasts and its expression is associated with cancer cell progression and increased adhesion, invasion and metastasis.

**Licensed material:** Source material, byproduct material, or special nuclear material that is received, possessed, used, transferred, or disposed of under a general license or specific license issued by the NRC or Agreement States.

**Licensee:** A company, organization, institution, or other entity to which the NRC or an Agreement State has granted a general license or specific license to construct or operate a nuclear facility, or to receive, possess, use, transfer, or dispose of source material, byproduct material, or special nuclear material.

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**lichens:** associations between the cyanobacteria and the fungi.

**licorice root extract:** An herbal extract derived from the root of the plant *Glycyrrhiza glabra* with potential anti-inflammatory, antioxidant, and antineoplastic activities. Licorice root extract contains glycoside glycyrrhizinic acid and numerous flavonoids. Glycyrrhizinic acid in licorice root extract is hydrolyzed to glycyrrhetic acid (GA); GA inhibits 11 beta-hydroxysteroid dehydrogenase, resulting in inhibition of the conversion of cortisol to the inactive steroid cortisone and elevated cortisol levels. In addition, GA inhibits 17,20-lyase and 17 beta-hydroxysteroid dehydrogenase, resulting in decreased conversions of 17-hydroxyprogesterone to androstenedione and androstenedione to testosterone. The primary antioxidant found in licorice root, the flavonoid glabridin, may inactivate or inhibit the activities of some cytochrome P450 enzymes. In tumor cells, beta-hydroxy-DHP, another flavonoid, may induce Bcl-2 phosphorylation, apoptosis, and G2/M cell cycle arrest. or A substance prepared from dried roots of the plant *Glycyrrhiza glabra*. It is used as a flavoring in medicines, drinks, and sweets, and it is being studied in the treatment of cancer. Licorice root extract contains several compounds that reduce inflammation, kill certain bacteria and viruses, act like estrogen

and other hormones, and may cause cancer cells to die. It is a type of antioxidant.

**Lidex:** (Other name for: fluocinonide cream)

**lidocaine:** A synthetic aminoethylamide with local anesthetic and antiarrhythmic properties. Lidocaine stabilizes the neuronal membrane by binding to and inhibiting voltage-gated sodium channels, thereby inhibiting the ionic fluxes required for the initiation and conduction of impulses and effecting local anesthesia.

**lidocaine :** A substance used to relieve pain by blocking signals at the nerve endings in skin. It can also be given intravenously to stop heart arrhythmias. It is a type of local anesthetic and antiarrhythmic.

**lidocaine patch 5%:** A transdermal patch containing a 5 percent aqueous base solution of the synthetic amide-type anesthetic lidocaine with analgesic activity. Upon topical application and transdermal delivery, the active ingredient lidocaine binds to and blocks voltage-gated sodium channels in the neuronal cell membrane; lidocaine-mediated stabilization of neuronal membranes inhibits the initiation and conduction of nerve impulses and produces a reversible local anesthesia.

**Lidoderm:** (Other name for: lidocaine patch 5%)

**Lidothesin:** (Other name for: lidocaine)

**life zone:** A climatically-defined class that can be associated with regions of soil and biota with a high uniformity in species composition and environmental adaptation. See Holdridge life zone.

**Lifetime :** the usable period of the sensor. It must be specified whether "shelf" or "inuse".

**lifetime risk:** A measure of the risk that a certain event will happen during a person's lifetime. In cancer research, it is usually given as the likelihood that a person who is free of a certain type of cancer will develop or die from that type of cancer during his or her lifetime. For example, a woman with no known risk factors for breast cancer has a lifetime risk of developing breast cancer of about 12%. This means one out of every eight women will develop breast cancer during her lifetime.

**Lifting:** The softening and disturbing of an existing coat of paint when a further coat is applied over it and usually causing a wrinkled effect to develop. OR A new coat of paint can sometimes soften the previous coat

and cause wrinkling or 'lifting'. This can be the result of using a different type of new coating over the existing paint, or by applying a second coat before the first coat is fully dried. To solve the problem, thorough clean down the surfaces to remove all dirt, grease and surface contaminants. Scrape back all poorly adhering or defective coatings to a firm edge and rub down to 'feather' broken edges. Dust off an apply new coat. OR The softening and penetration of a previous film by solvents in the paint being applied over it, resulting in raising and wrinkling.

**lifting condensation level:** formula used to find the height at which clouds can form.

**ligaments:** the tough, fibrous tissues that link bones to one another.

**ligand:** A molecule or ion bonded to a central metal atom or ion in a coordination compound. OR In medicinal chemistry, ligands refer to molecules that are able to bind to a binding site. In coordination chemistry, ligands are ions, molecules, or functional groups that bind to a central metal atom, forming a coordination complex. OR A (usually small) molecule that binds to another, such as oxygen when it binds to myoglobin. OR A small molecule that binds to a protein, inducing a specific structural change. For instance, a steroid is a ligand for a steroid-hormone receptor. OR 1. In inorganic chemistry, a molecule or ion that binds to a metal cation to form a complex. 2. In biochemistry, a molecule that binds to a receptor, having a biological effect. OR A small molecule that binds specifically to a larger one; for example, a hormone is the ligand for its specific protein receptor.

**Ligand-gated channel:** A transmembrane channel that is opened by the binding of a one or more molecules to a ligand-binding domain of the channel protein.

**Ligase:** An enzyme that catalyzes the joining of two molecules together. In DNA it joins 5'-OH to 3' phosphates.

**ligation :** The process of tying off blood vessels so that blood cannot flow to a part of the body or to a tumor.

**Ligation reactions:** Reactions that form bonds by using the energy of ATP hydrolysis.

**LIGHT:** has both wave and particle properties. OR Any glazed opening, window, etc. is termed a light. OR visible electromagnetic radiation

**Light (L) chain:** A 25-kd polypeptide that is one of two types of chains found in immunoglobulin G. Each L chain consists of a variable region and a constant region, and each chain is linked by a disulfide bond to a heavy chain.

**light cigarette :** A type of cigarette that is claimed to give off less tobacco tar than a regular cigarette when smoked. Light cigarettes have been shown to be no safer than regular cigarettes, and smoking them does not lower the risk of cancer or other diseases. A person smoking a light cigarette can inhale the same amount of tobacco tar, nicotine, and harmful, cancer-causing chemicals as in a regular cigarette, depending on how the cigarette is smoked. Cigarettes are no longer allowed to be labeled or advertised as light cigarettes. Also called low tar cigarette.

**Light Crude:** Light Crude is a term used to define crude oils with a higher fraction of lower boiling point components and low wax content. Some definitions have Light Crude defined as a crude with an specific gravity index greater than 28 API, although more commonly this range would include Medium and Light crudes.

**Light fastness:** The degree of resistance to colour fading of pigments in paint on exposure to light.

**Light initiator:** A compound which starts a reaction by being activated by light.

**Light meromyosin (LMM):** Along with heavy meromyosin, one of the tryptic digestion products of myosin; forms filaments but has no atpase or actin-binding activity.

**light microscope :** A microscope (device to magnify small objects) in which objects are lit directly by white light.

**Light reactions:** In chloroplasts, the reactions in which light is used to create reducing potential and to generate oxygen. OR The reactions of photosynthesis that require light and cannot occur in the dark; also known as the light-dependent reactions.

**Light resistance:** the ability of a plastic material to withstand exposure to light, usually sunlight or the ultraviolet part of the light spectrum, without change of color or loss of physical and/or chemical properties.

**Light Stability:** ability of a plastic to retain its original color and physical properties upon exposure to sun or artificial light.

**light therapy :** The treatment of disease with certain types of light. Light therapy can use lasers, LED, fluorescent lamps, and ultraviolet or infrared radiation. Also called phototherapy.

**Light Transmission:** the amount of light that a plastic will allow to pass.

**Light water:** Ordinary water as distinguished from heavy water.

**Light water reactor:** A term used to describe reactors using ordinary water as coolant, including boiling water reactors (BWRs) and pressurized water reactors (PWRs), the most common types used in the United States.

**light year:** the distance that light travels in one year, about 9.5 trillion kilometers.

**light-emitting diode therapy :** Treatment with drugs that become active and may kill cancer cells when exposed to light. Light-emitting diode therapy is type of photodynamic therapy which uses a special type of light to activate the drug. Also called LED therapy.

**light-emitting oncolytic vaccinia virus GL-ONC1:** An attenuated oncolytic vaccinia virus encoding the light-emitting fusion protein Renilla luciferase-Aequorea green fluorescent protein (RUC-GFP) with potential bioluminescent and antineoplastic activities. Upon administration, light-emitting oncolytic vaccinia virus GL-ONC1 specifically enters tumor cells due to the permeable nature of the tumor vasculature. Once inside the cell, the virus replicates, resulting in tumor cell lysis and the release of mature viral particles into the tumor microenvironment. Released viral particles may then infect and destroy neighboring tumor cells. In addition, the release of tumor-associated antigens (TAAs) by lysed tumor cells into the bloodstream may activate the immune system to mount a cytotoxic T lymphocyte (CTL) response against the tumor. The expression of RUC-GFP by this agent allows for both detection and monitoring of virally infected tumor cells in vivo and vitro with luciferase-mediated bioluminescence imaging and fluorescence imaging techniques.

**Light-harvesting complex:** A complex of light-absorbing pigments and protein that completely surround the reaction center of photosynthesis; funnels the energy of absorbed light to the reaction center.

**Light-resistance:** The ability of a plastics material to resist fading after exposure to sunlight or ultra-violet light. Nearly all plastics tend to darken

under these conditions. OR The ability of a plastics material to resist fading after exposure to sunlight or ultraviolet light.

**Light, UV Stabilizers:** Additives that increase the ability of the material to withstand the negative effect of light and ultra violet (UV) exposure. This increases the service life of the plastic extrusions and other plastic profiles.

**Light, UV Stabilizers & Absorbers:** These additives increase the ability of the material to withstand the negative effects of light and UV exposure, thus increasing the service life of the material.

**lightning:** electricity generated by a thunderstorm.

**lignan :** A member of a group of substances found in plants that have shown estrogenic and anticancer effects. Lignans have been used in some cultures to treat certain medical problems.

**Lignin:** The cross-linked polymer of linked benzene rings that makes hardwood hard. It is an important structural material for most land plants, and is usually found mixed in with cellulose. Partial digestion of lignin by enzymes (completely different from the ones that break down cellulose) gives complex materials called humic and fulvic acids. These are the substances that give Adelaide water its unique colour and flavour!

**lignite:** a soft, brown coal produced by increasing temperature and pressure on peat.

**like terms:** Terms with the same variables raised to the same powers.

**LIM:** Liquid injection molding is injection molding silicone rubber, Casco Bay Molding's specialty

**limb:** one side of a fold.

**limb perfusion :** A procedure that may be used to deliver anticancer drugs directly to an arm or leg. The flow of blood to and from the limb is temporarily stopped with a tourniquet (a tight band around the limb), and anticancer drugs are put directly into the blood of the limb. This allows the person to receive a high dose of drugs in the area where the cancer occurred. Also called isolated limb perfusion.

**limb-salvage surgery :** Surgery to remove a tumor in a limb (arm or leg) without removing the whole limb. The bone and tissue around the tumor may also be removed, and an implant may be used to replace the part of the limb removed. Limb-salvage surgery is done to help save the use and

appearance of the limb. It is used to treat cancers of the bone and soft tissue. Also called limb-sparing surgery.

**limbic system:** a collection of structures that ring the edge of the brain and apparently function as centers of emotion. OR A network of structures in the brain involved in memory and emotions.

**lime:** any of a family of chemicals consisting essentially of calcium hydroxide made from limestone (calcite) which is composed mostly of calcium carbonate or a mixture of calcium carbonate and magnesium carbonate.

**Limestone** : A form of sedimentary rock. It is made from the compacted bony remains of dead sea creatures. It is mostly calcium carbonate.

**Limewash:** A white or pale coloured coating for brickwork, stucco, cob, walls, etc. which is made from freshly slaked quicklime to which a binding agent such as tallow has been stirred in while still hot. Pale colours are obtained by tinting with lime-fast dry pigment.

**limewater:** Common name for a solution of calcium hydroxide.

**Limewater:** This is known mainly as the test for carbon dioxide gas. Limewater is a clear (not cloudy), colourless (not coloured) solution of calcium hydroxide. If carbon dioxide is present, the limewater forms a white precipitate of calcium carbonate.

**limit of detection:** (i) The smallest amount, or lowest concentration, of a given substance that a given procedure will detect (WHO, 1980); (ii) for a pesticide residue it is the lowest concentration that can be qualitatively detected in a specified commodity (WHO, 1976).

**limit of determination (pesticide residue):** The limit of determination of a method of analysis is the lowest concentration of a pesticide residue that can be quantitatively measured in the specified commodity with an acceptable degree of certainty (WHO, 1976).

**limit of quantitation:** The smallest detectable concentration an analytical instrument can determine at a given confidence level. IUPAC defines the quantitative detection limit as  $C_{ld} = ks/m$ , where  $k$  is 10,  $s$  is the standard deviation of instrument readings taken on a "blank" (a solution with zero concentration of analyte), and  $m$  is the slope of a plot of instrument response vs. concentration, as calculated by linear regression.

**Limit Switches :** Switches that are installed to sound an alarm or stop the system if the position of the take-up roll goes too high or too low. Limit switches can detect high tension and prevent some jam-ups.

**limited-stage small cell lung cancer :** Cancer is found in one lung, the tissues between the lungs, and nearby lymph nodes only.

**Limiting condition for operation:** The section of Technical Specifications that identifies the lowest functional capability or performance level of equipment required for safe operation of the facility.

**Limiting Oxygen Index:** The concentration of oxygen required to maintain burning. See ASTM Procedure D2863-74.

**Limiting Reactant:** A limiting reactant is the limiting factor or element in a chemical reaction. If you have eight million hydrogen atoms and only one oxygen atom, you can only make one molecule of water. Oxygen would be your limiting reactant.

**limiting reactant:** The reactant that limits the amount of product produced in a chemical reaction. For example, mixing one mole of  $H_2(g)$  with one mole of  $O_2$  produces one mole of steam ( $H_2O(g)$ ), with half a mole of  $O_2(g)$  remaining. The hydrogen gas limits the amount of steam produced in this case.

**limiting reagent:** The reactant that will be exhausted first.

**Limiting safety system settings:** Settings for automatic protective devices related to those variables having significant safety functions. Where a limiting safety system setting is specified for a variable on which a safety limit has been placed, the setting will ensure that automatic protective action will correct the abnormal situation before a safety limit is exceeded.

**limnology:** the study of the physical, chemical, meteorological and biological aspects of fresh water.

**limonene:** An oral dietary supplement containing a natural cyclic monoterpene and major component of the oil extracted from citrus peels with potential chemopreventive and antitumor activities. Although the mechanism of action has yet to be fully elucidated, limonene and its metabolites perillic acid, dihydroperillic acid, uroterpenol and limonene 1,2-diol may inhibit tumor growth through inhibition of p21-dependent signaling and may induce apoptosis via the induction of the transforming growth factor beta-signaling pathway. In addition, they inhibit post-

translational modification of signal transduction proteins, resulting in G1 cell cycle arrest as well as differential expression of cell cycle- and apoptosis-related genes.

**LIN:** A condition in which abnormal cells are found in the lobules (glands that make milk) of the breast. This condition rarely becomes cancer. However, having LIN in one breast increases the risk of breast cancer in either breast. Types of LIN include atypical lobular hyperplasia and lobular carcinoma in situ (LCIS). Also called lobular intraepithelial neoplasia and lobular neoplasia.

**linac :** A machine that uses electricity to form a stream of fast-moving subatomic particles. This creates high-energy radiation that may be used to treat cancer. Also called linear accelerator, mega-voltage linear accelerator, and MeV linear accelerator.

**linaclotide acetate:** The acetate salt form of linaclotide, a synthetic, fourteen amino acid peptide and agonist of intestinal guanylate cyclase type C (GC-C), which is structurally related to the guanylin peptide family, with secretagogue, analgesic and laxative activities. Upon oral administration, linaclotide binds to and activates GC-C receptors located on the luminal surface of the intestinal epithelium. This increases the concentration of intracellular cyclic guanosine monophosphate (cGMP), which is derived from guanosine triphosphate (GTP). cGMP activates the cystic fibrosis transmembrane conductance regulator (CFTR) and stimulates the secretion of chloride and bicarbonate into the intestinal lumen. This promotes sodium excretion into the lumen and results in increased intestinal fluid secretion. This ultimately accelerates GI transit of intestinal contents, improves bowel movement and relieves constipation. Increased extracellular cGMP levels may also exert an antinociceptive effect, through an as of yet not fully elucidated mechanism, that may involve modulation of nociceptors found on colonic afferent pain fibers. Linaclotide is minimally absorbed from the GI tract.

**Lindlar catalyst:** a particular poisoned catalyst used in alkyne reactions; it is finely divided palladium coated with quinoline and absorbed on barium sulfate.

**line graph:** points plotted on a coordinate system and connected with a line.

**line segment:** a part of a line; has two endpoints

**line spectra:** Spectra generated by excited substances. Consists of radiation with only specific wavelengths.

**line spectrum:** A emission spectrum that contains very sharp peaks, corresponding to transitions between states in free atoms. For example, the line spectrum of hydrogen contains 4 sharp lines in the visible part of the spectrum.

**line-bond structure:** a representation of a molecule that shows covalent bonds as lines between atoms.

**linear:** the shape of a molecule with sp hybrid orbitals; an alkyne.

**linear accelerator :** A machine that uses electricity to form a stream of fast-moving subatomic particles. This creates high-energy radiation that may be used to treat cancer. Also called linac, mega-voltage linear accelerator, and MeV linear accelerator.

**Linear Alkyl Benzene (LAB):** Linear alkyl benzene (LAB) is the dominant detergent intermediate. It is mainly produced by the dehydrogenation of n-paraffins to internal olefins followed by alkylation with benzene using hydrofluoric acid catalyst. Almost all LAB is converted to linear alkyl sulfonates, a major surfactant in household cleaning products.

**Linear Alpha Olefins (LAO):** Linear alpha olefins (LAO) are produced by two families of processes - full-range and on-purpose. LAOs are produced by the oligomerization of ethylene in full-range processes. On-purpose technologies are used to produce butene-1 (extractive distillation, hydrogenation/fractionation and ethylene dimerization), hexene-1 (fischer-tropsch and ethylene trimerization) and octene-1 (fischer-tropsch). Alpha olefins cover a wide range of products used in diverse applications. The lighter components (butene-1, hexene-1 and octene-1) are used as comonomers in polyethylene production. Decene-1 is principally used to manufacture polyalpha olefins for the production of high performance lubricants. Higher alpha olefins in the C12/C14 range are consumed in the production of detergent alcohols, while those in the C16/C18 range are predominately used in the oilfield chemicals sector and paper industry, and the higher fractions (C20+) are used to manufacture lubricant additives and specialty waxes.

**linear combination of atomic orbitals:** the process of combining atomic orbitals to form new orbitals. Linear combination can occur between

orbitals in a single atom, creating hybrid atomic orbitals, or between the orbitals of two atoms, creating molecular orbitals. In either case, the number of orbitals always remains constant.

**linear equation:** An equation that can be put in the form  $Ax + By + C = 0$ .

**Linear heat generation rate:** The heat generation rate per unit length of fuel rod, commonly expressed in kilowatts per foot (kw/ft) of fuel rod.

**LINEAR LOW DENSITY POLYETHYLENE:** See Linear Polymer. Includes polyethylenes ranging in density from 0.915 to 0.935.

**Linear Low Density Polyethylene (LLDPE):** Linear low density polyethylene (LDPE) is a relatively new polyethylene that shares many of the performance characteristics of LDPE. LLDPE is most commonly used in film applications. It is produced by the low pressure catalysed reaction of ethylene with small quantities of higher alpha-olefin (most commonly butene-1). This low pressure technology provides LLDPE with a cost advantage over LDPE, although this advantage is partly surrendered as it is a more difficult polymer to process than LDPE.

**Linear Low Density Polyethylene (LLDPE):** Polyethylene which has more crystallinity than LDPE. Can be produced with butene, hexene or octene comonomer for a wide variety of properties usually stronger than conventional LDPE.

**Linear Mold Shrinkage:** The difference between the size of the part and the size of the mold cavity. Values given are often the average of a range.

**Linear Molecule:** A long chain molecule as contrasted to one having many side chains or branches.

**LINEAR POLYMER:** A polymer in which the monomeric units are linked together in linear fashion with little or no long chain branching. Examples are linear low density polyethylene and high density polyethylene. OR Polymers can be classified as linear or branched. In linear polymers the monomeric units are linked together, linearly, with little or no long chain branching. In branched polymers, side chains are attached to the backbone of the molecular chain. High density polyethylene (HDPE) is linear while low density polyethylene (LDPE) is branched. Linear LDPE (LLDPE) is "stiffer" than LDPE in shear but "softer" in extension. In extension the LLDPE chains slide by without getting entangled (since the chain branches are very short).

**Linear range:** the range of concentration (or activity) over which the measured sensor signal can be fitted by straight line.

**Linear Thermal Expansion:** The fractional change in length of a material for a unit change in temperature.

**Linerless closure:** A closure that has been engineered to function in specific applications without the use of an additional liner.

**Lineweaver-Burk equation:** An algebraic transform of the Michaelis-Menten equation, allowing determination of  $V_{max}$  and  $K_m$  by extrapolation of  $[S]$  to infinity.

**linezolid:** A synthetic oxazolidinone derivative, linezolid selectively inhibits an early step in bacterial protein synthesis and affects blood pressure through monoamine oxidase inhibition. It is effective against Gram-positive organisms, including methicillin-resistant *Staphylococcus aureus* strains, coagulase-negative *Staphylococci*, vancomycin-resistant *Enterococci*, and penicillin-resistant *Streptococcus pneumoniae* strains.

**Linfolizin:** (Other name for: chlorambucil)

**linifanib:** An orally bioavailable, small-molecule receptor tyrosine kinase (RTK) inhibitor with potential antineoplastic activity. Linifanib inhibits members of the vascular endothelial growth factor (VEGF) and platelet-derived growth factor (PDGF) receptor families; it exhibits much less activity against unrelated RTKs, soluble tyrosine kinases, or serine/threonine kinases. This agent does not have a general antiproliferative effect due to its high dose requirement. However, linifanib may exhibit potent antiproliferative and apoptotic effects on tumor cells whose proliferation is dependent on mutant kinases, such as *fms*-related tyrosine kinase receptor-3 (FLT3).

**Lining paper:** A plain 'wallpaper' for use as a ground for painting or wall hangings. Usually white or creamy white in colour and generally used for high quality work and to disguise surface defects in plaster which cannot be overcome by normal preparation.

**linitis plastica :** A rare type of stomach cancer that begins in the lining of the stomach and spreads to the muscles of the stomach wall. This causes the wall of the stomach to become thick, hard, and rubbery, which leads to trouble digesting food. Also called gastric scirrhous carcinoma.

**Linkage:** The tendency of markers to be inherited together. Linkage of two markers is an indication that they are close to one another in the genome.

**linkage :** The tendency for genes or segments of DNA closely positioned along a chromosome to segregate together at meiosis, and therefore be inherited together.

**linkage analysis :** A gene-hunting technique that traces patterns of disease in high-risk families. It attempts to locate a disease-causing gene by identifying genetic markers of known chromosomal location that are co-inherited with the trait of interest.

**linkage disequilibrium :** Where alleles (DNA markers) occur together more often than can be accounted for by chance because of their physical proximity on a chromosome. Also called LD.

**Linkers:** Short oligonucleotides that can be ligated (connected) to larger DNA fragments, then cleaved (cut) to yield overlapping cohesive (sticky) ends, suitable for ligation to other DNAs that contain comparable cohesive ends.

**Linking number:** A topological property of circular DNA, equal to the number of times a strand of DNA winds around the helix axis.

**Linking number:** The net number of times one polynucleotide chain crosses over another polynucleotide chain. By convention, right-handed crossovers are given a plus designation.

**linking number:** The number of times one closed circular DNA strand is wound about another; the number of topological links holding the circles together.

**linking verb:** verbs that do not convey action but help complete statements about the subject by describing or identifying it.

**linoleyl carbonate-paclitaxel:** A formulation of the 6-omega fatty acid derivative 2'-linoleyl carbonate (LOC) conjugated to paclitaxel, a taxane compound extracted from the Pacific yew tree *Taxus brevifolia*, with potential antineoplastic activity. Paclitaxel binds to and stabilizes tubulin, thereby interfering with the dynamics of microtubule assembly/disassembly and resulting in the inhibition of cell division. LOC enhances the uptake of paclitaxel by tumor cells, thereby concentrating this agent in tumor cells compared to normal cells, and may decrease its toxicity profile; fatty acids

serve as energy sources and biochemical precursors for the fast growing tumor cells.

**Linomide:** (Other name for: roquinimex)

**linseed :** The seed of the flax plant. It is a rich source of omega-3 fatty acid, fiber, and a compound called lignin. It is being studied in the prevention of several types of cancer. Also called flaxseed.

**Linseed oil:** An oil obtained by crushing flax seed. Its drying properties make it suitable as a paint medium but it is now used mainly for modifying synthetic resins.

**linsitinib:** An orally bioavailable small molecule inhibitor of the insulin-like growth factor 1 receptor (IGF-1R) with potential antineoplastic activity. Linsitinib selectively inhibits IGF-1R, which may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis.

Overexpressed in a variety of human cancers, IGF-1 stimulates cell proliferation, enables oncogenic transformation, and suppresses apoptosis. Check for active clinical trials using this agent.

**lintuzumab:** A humanized recombinant monoclonal antibody directed against CD33, a cell surface antigen found on myeloid leukemia blasts and early hematopoietic progenitor cells. Lintuzumab stimulates antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells expressing CD33, resulting in a decrease in tumor burden. The humanized version of this monoclonal antibody exhibits less immunogenicity and improved binding affinity compared to its murine counterpart. or A substance being studied in the treatment of myelodysplastic syndromes and some types of leukemia. It binds to CD33, a protein on the surface of certain normal blood stem cells and some abnormal blood cells. It causes the immune system to kill these cells. Lintuzumab is a type of monoclonal antibody. Also called MoAb HuM195 and monoclonal antibody HuM195.

**Linzess:** (Other name for: linaclotide acetate)

**Lioresal :** A drug that is used to treat certain types of muscle spasms and is being studied in the treatment of liver cancer. Lioresal relaxes muscles by blocking certain nerve receptors in the spinal cord. It is a type of antispasmodic. Also called baclofen and Kemstro.

**liothyronine sodium:** The sodium salt form of liothyronine, a synthetic form of the levorotatory isomer of the naturally occurring thyroid hormone

triiodothyronine (T3). Liothyronine sodium binds to nuclear thyroid receptors which then bind to thyroid hormone response elements of target genes. As a result, liothyronine sodium induces gene expression that is required for normal growth and development. Liothyronine sodium is more potent and has a more rapid action than thyroxine (T4). or A drug that is used to treat certain thyroid (a gland located near the voice box) conditions. It is also being studied in the treatment of thyroid cancer. Liothyronine sodium is made in the laboratory and is a form of the thyroid hormone triiodothyronine (T3). Also called Cytomel and Triostat.

**lipases:** Enzymes that catalyze the hydrolysis of triacylglycerols.

**lipegfilgrastim:** A long acting glyco-pegylated recombinant form of human granulocyte colony-stimulating factor (G-CSF), with hematopoietic activity. Similar to G-CSF, lipegfilgrastim binds to and activates specific cell surface receptors, and stimulates neutrophil progenitor proliferation and differentiation. Therefore, this agent may prevent the duration and incidence of chemotherapy-induced neutropenia. Compared to filgrastim, lipegfilgrastim has a prolonged plasma half-life.

**lipid:** A fatty, waxy or oily non-polar organic compound that is characteristically insoluble in water but readily soluble in organic solvents. OR an organic molecule used to form cellular and organelle membranes, the sheaths surrounding nerve fibers, and certain hormones; includes fats as an energy source. OR A fatty, waxy, or oily compound that will not dissolve in water; it contains hydrogen, carbon, and oxygen, but proportionally far less oxygen than carbohydrates OR A biological molecule that is soluble in organic solvents Lipids include steroids, fatty acids, prostaglandins, terpenes, and waxes. OR A diverse group of organic molecules that contain long hydrocarbon chains or rings and are hydrophobic. Examples are fats, oils, waxes, and steroids. OR A small water-insoluble biomolecule generally containing fatty acids, sterols, or isoprenoid compounds.

**lipid :** Fat.

**Lipid bilayer:** Model for the structure of the cell membrane based on the interaction between the hydrophobic regions of phospholipids. OR A bimolecular sheet formed by amphipathic molecules in which the hydrophobic moieties are on the inside of the sheet and the hydrophilic ones are on the aqueous outside.

**Lipinski's Rule of Five:** A set of rules that are obeyed by many orally active drugs. Often used as a guide during drug design. Not all orally active drugs obey the rule.

**Lipiodol :** A form of poppy seed oil that contains iodine. Lipiodol is given by injection and builds up in the blood and lymph vessels in tumors. It is used for imaging (taking pictures) of the salivary glands and the lymph system. It is also being studied in the imaging of other organs such as the liver, lung, stomach, and thyroid. It is a type of diagnostic imaging agent. Also called ethiodized oil, Ethiodol, and iodized oil.

**Lipitor :** A drug used to lower the amount of cholesterol in the blood and to prevent stroke, heart attack, and angina (chest pain). It is also being studied in the prevention and treatment of some types of cancer and other conditions. Lipitor blocks an enzyme that helps make cholesterol in the body. It also causes an increase in the breakdown of cholesterol. It is a type of HMG-CoA reductase inhibitor and a type of statin. Also called atorvastatin calcium.

**Lipo-:** A prefix meaning "lipid," or fat

**Lipo-Lutin:** (Other name for: therapeutic progesterone)

**lipoate (lipoic acid):** A vitamin for some microorganisms; an intermediate carrier of hydrogen atoms and acyl groups in  $\alpha$ -keto acid dehydrogenases.

**LipoDox :** A form of the anticancer drug doxorubicin that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than doxorubicin. LipoDox is used to treat ovarian cancer, AIDS-related Kaposi sarcoma, and multiple myeloma in patients whose disease has not gotten better after treatment with other anticancer drugs. It may be used together with other anticancer drugs. It is also being studied in the treatment of other types of cancer. LipoDox is a type of anthracycline antitumor antibiotic. Also called Dox-SL, Doxil, doxorubicin hydrochloride liposome, Evacet, and liposomal doxorubicin hydrochloride.

**Lipoic acid (6, 8-dithiooctanoic acid):** An acyl group carrier that functions as a cofactor in dehydrogenase enzymes; linked covalently to specific lysine residues in enzyme proteins, it can exist as the reduced open-chain form or the closed-ring disulfide form, undergoing interconversion in a catalytic cycle.

**Lipolysis:** The enzymatic hydrolysis of triacylglycerols to free fatty acids and glycerol.

**lipoma :** A benign (not cancer) tumor made of fat cells.

**Lipophilic:** A compound is said to be lipophilic if it has high solubility in fat. OR Refers to a substance's solubility in fat. Lipophilicity can be measured by shaking the substance with a two-phase mixture of water and 1-octanol and observing the final concentrations of the substance in the two layers. Lipophilic substances will move into the 1-octanol layer, while hydrophilic substances stay in the water.

**lipophilic :** Able to dissolve, be dissolved in, or absorb lipids (fats).

**Lipophilic salt:** (see ionic additives).

**Lipopolysaccharide:** Usually refers to a unique glycolipid found in Gram negative bacteria. OR An endotoxin and biologically active component of the Gram-negative bacterial cell wall that is a Toll-like receptor 4 (TLR4) agonist with potential immunostimulatory activity. Upon internalization, lipopolysaccharide (LPS) activates TLR4 which in turn activates the NFkappaB pathway, in addition to mitogen-activated protein kinases signaling pathways. This leads to the release of proinflammatory cytokines and stimulates an innate immune response against vaccine antigens.

**lipoprotein:** A lipid-protein aggregate that serves to carry water-insoluble lipids in the blood. The protein component alone is an apolipoprotein.

**Lipoprotein particles:** Particles, consisting of a core of hydrophobic lipids surrounded by a shell of polar lipids and specific proteins, that play a role in the transport of cholesterol and triacylglycerols.

**liposarcoma :** A rare cancer of the fat cells.

**liposomal :** A drug preparation that contains the active drug inside very tiny, fat-like particles. This form is easier for the body to absorb and allows more drug to get to the target area of the body, such as a tumor. Liposomal drugs may have fewer side effects and work better than other forms of the drug.

**liposomal amphotericin B:** A liposome-encapsulated formulation of the polyene antifungal antibiotic amphotericin B produced by the bacterium *Streptomyces nodosus* with antifungal activity. Amphotericin B binds to ergosterol, an essential component of the fungal cell membrane, and alters cell membrane integrity, resulting in leakage of intracellular components

and cell rupture. This agent may also induce oxidative damage in fungal cells and has been reported to stimulate host immune cells. Compared to amphotericin B alone, liposomal delivery of amphotericin B allows for a greater drug concentration in target tissues while decreasing systemic side effects.

**liposomal annamycin:** A liposome-encapsulated form of the semi-synthetic doxorubicin analogue annamycin with antineoplastic activity. Annamycin intercalates into DNA and inhibits topoisomerase II, resulting in the inhibition of DNA replication and repair and RNA and protein synthesis. This agent circumvents multidrug-resistance (MDR) transporters, including P-glycoprotein (P-gp). Liposomal annamycin is less toxic and shows improved antitumor activity compared to annamycin.

**liposomal belotecan:** A sterically stabilized, pegylated liposomal formulation containing CKD602, a semi-synthetic analogue of camptothecin with potential antitumor activity. CKD602 inhibits the action of topoisomerase I, an enzyme that produces reversible single-strand breaks in DNA during DNA replication. CKD602 stabilizes the topoisomerase I and DNA complex, resulting in the inhibition of religation of DNA breaks, inhibition of DNA replication, and apoptotic cell death. The polyethylene glycol coating of liposomal belotecan allows for greater plasma circulation time, thus enhancing the concentration of CKD602 at the tumor site. Encapsulation of CKD602 preserves the active lactone form, resulting in an increased cytotoxic effect of CKD602.

**liposomal c-raf antisense oligonucleotide:** The liposomal formulation of a c-raf-1 antisense oligonucleotide, with potential antineoplastic activity. Liposomal c-raf antisense oligonucleotide targets the translation initiation site of human c-raf-1 mRNA, thereby blocking the expression and production of Raf-1 protein and thus inhibits tumor cell growth and development. Raf-1 plays a key role in the RAF/MEK/ERK signaling pathway, which regulates mammalian cell proliferation and growth. The liposomal formulation increases the solubility of the c-raf antisense oligonucleotide, thus improving its pharmacodynamic profile. Check for active clinical trials using this agent.

**liposomal cisplatin:** A synthetic formulation in which the antineoplastic agent cisplatin is encapsulated in lipids. Liposomal cisplatin consists of small aggregates of cisplatin covered by a single lipid bilayer. Encasement

in liposomes improves cisplatin's tumor bioavailability and toxicity profile. Liposomal encapsulation does not affect the pharmacological properties of cisplatin directly. Cisplatin forms highly reactive, charged, platinum complexes which bind to nucleophilic groups such as GC-rich sites in DNA, inducing intrastrand and interstrand DNA cross-links, as well as DNA-protein cross-links. These cross-links result in apoptosis and cell growth inhibition.

**liposomal curcumin:** A liposomal formulation containing curcumin, a poorly water-soluble polyphenol pigment isolated from the plant *Curcuma longa*, with potential antineoplastic, chemopreventive, antioxidant, anti-angiogenic and anti-inflammatory activities. Upon intravenous administration of liposomal curcumin, this agent blocks the formation of reactive-oxygen species, neutralizes free radicals, and exhibits anti-inflammatory properties as a result of inhibition of cyclooxygenases (COX) and other enzymes involved in inflammation. In addition, curcumin disrupts various cell signal transduction pathways involved in carcinogenesis, inhibits the activity of nuclear factor-kappa B (NF- $\kappa$ B), SRC, and annexin A2 (ANXA2), and reduces the expression of both matrix metalloproteinase-9 (MMP-9) and vascular endothelial growth factor receptor 2 (VEGFR2). This prevents and/or inhibits tumor cell formation and proliferation. Liposome encapsulation of curcumin improves its efficacy, when compared to the administration of unencapsulated curcumin. Check for active clinical trials using this agent.

**liposomal cytarabine :** A form of the anticancer drug cytarabine that is contained inside very tiny, fat-like particles. It may have fewer side effects and work better than cytarabine. It is used to treat lymphoma that has spread to the meninges (three thin layers of tissue that cover and protect the brain and spinal cord). It is also being studied in the treatment of other types of cancer. It is a type of antimetabolite. Also called cytarabine liposome and Depo-Cyt.

**liposomal cytarabine-daunorubicin CPX-351:** A liposomal formulation containing a fixed combination of the antineoplastic agents cytarabine and daunorubicin in a 5:1 molar ratio. Liposomal cytarabine-daunorubicin CPX-351 has been designed to provide optimal delivery of a specific ratio of cytarabine to daunorubicin, one that has been shown to be synergistic in vitro. The antimetabolite cytarabine competes with cytidine for

incorporation into DNA, inhibiting DNA synthesis. This agent also inhibits DNA polymerase, resulting in a decrease in DNA replication and repair. Daunorubicin, an intercalator and a topoisomerase II inhibitor, prevents DNA replication and inhibits protein synthesis. This agent also generates oxygen free radicals, resulting in the cytotoxic lipid peroxidation of cell membrane lipids.

**liposomal daunorubicin citrate:** A liposome-encapsulated form of the citrate salt of the anthracycline antineoplastic antibiotic daunorubicin. Daunorubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. Liposomal delivery of doxorubicin citrate improves drug penetration into tumors and decreases drug clearance, thereby increasing the duration of therapeutic drug effects.

**liposomal docetaxel:** A formulation of the poorly soluble, semi-synthetic, second-generation taxane docetaxel encapsulated within liposomes, with antineoplastic activity. Upon intravenous administration, docetaxel binds to and stabilizes tubulin, thereby inhibiting microtubule disassembly which results in cell-cycle arrest at the G2/M phase and cell death. This liposomal formulation solubilizes docetaxel without the use of toxic solvents such as Tween 80, permitting the administration of larger doses of docetaxel while avoiding solvent-associated toxicity, including hypersensitivity reactions. In addition, liposomal delivery of docetaxel improves drug penetration into tumors and decreases drug clearance, thereby increasing the duration of therapeutic drug effects while lowering the toxicity profile.

**liposomal doxorubicin hydrochloride :** A form of the anticancer drug doxorubicin that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than doxorubicin. Liposomal doxorubicin hydrochloride is used to treat ovarian cancer, AIDS-related Kaposi sarcoma, and multiple myeloma in patients whose disease has not gotten better after treatment with other anticancer drugs. It may be used together with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Liposomal doxorubicin hydrochloride is a type of anthracycline antitumor antibiotic. Also called Dox-SL, Doxil, doxorubicin hydrochloride liposome, Evacet, and LipoDox.

**liposomal eribulin mesylate:** A liposome-encapsulated formulation of the mesylate salt form of eribulin, a synthetic, macrocyclic ketone analogue of

halichondrin B, a substance derived from the marine sponge genus *Halichondria*, with potential antineoplastic activity. Eribulin binds to the vinca domain of tubulin and inhibits both the polymerization of tubulin and the assembly of microtubules. This results in the inhibition of mitotic spindle assembly, the induction of cell cycle arrest at G2/M phase, as well as tumor cell apoptosis. Compared to the administration of eribulin alone, liposomal delivery of eribulin allows for a longer half-life, which allows increased drug concentration in target tissues while decreasing systemic toxicity.

**liposomal HPV-16 E6/E7 multi-peptide vaccine PDS0101:** A liposomal nanoparticle-based therapeutic vaccine composed of the cationic lipid R-DOTAP (R-enantiomer of 1,2-dioleoyl-3-trimethylammonium-propane chloride) encapsulating six human papillomavirus 16 (HPV-16) E6 and E7 peptides, with potential immunostimulating activity. Upon subcutaneous administration of the liposomal HPV-16 E6 and E7 multi-peptide vaccine, the nanoparticles are taken up by antigen presenting cells (APCs), specifically dendritic cells (DCs), which may stimulate the immune system to induce a cytotoxic T-lymphocyte response (CTL) against HPV-16 E6 and E7-expressing tumor cells. HPV-16 E6 and E7 are oncoproteins that play a key role in the tumorigenesis of a variety of cancers. Check for active clinical trials using this agent.

**liposomal interleukin-2:** A formulation in which liposomes are loaded with the cytokine interleukin-2 (IL-2). By activating cytotoxic T lymphocytes, such as lymphokine-activated killer cells, and increasing levels of the cytotoxic cytokines interferon-gamma (IFN-gamma) and transforming growth factor-beta (TGF-beta), IL-2 may exhibit antitumoral activity. Liposomal formulations of IL-2 may promote entry of the cytokine into target tumor cells and may be used as an immunoadjuvant in cancer vaccine therapy.

**liposomal lurtotecan:** A liposome-encapsulated formulation of lurtotecan with antineoplastic activity. Lurtotecan, a semisynthetic analogue of camptothecin, selectively stabilizes the topoisomerase I-DNA covalent complex and forms an enzyme-drug-DNA ternary complex during S phase of the cell cycle, thereby inhibiting religation of topoisomerase I-mediated single-stranded DNA breaks. This ultimately results in an inhibition of DNA replication, inducing double-stranded DNA breakages, obstruction of

RNA and protein synthesis and triggering apoptosis. Furthermore, this agent also stimulates degradation of topoisomerase I, likely mediated through ubiquitin-proteasomal pathway. Liposomal delivery of lurtotecan improves its penetration and delivery into tumors while lowering systemic side effects.

**liposomal mitoxantrone hydrochloride:** A formulation composed of the hydrochloride salt form of the anthracenedione antibiotic mitoxantrone encapsulated within liposomes, with potential antineoplastic activity. Upon intravenous administration, mitoxantrone intercalates into and forms crosslinks with DNA, thereby disrupting DNA and RNA replication. This agent also binds to topoisomerase II, which both results in DNA strand breaks and prevents DNA synthesis. This leads to the induction of apoptosis in the rapidly dividing cancer cells. The liposomal delivery of mitoxantrone improves drug penetration into tumors and decreases drug clearance, thereby increasing drug circulation and therapeutic efficacy while lowering the toxic effects.

**liposomal MUC1/PET-lipid A vaccine:** A cancer vaccine comprised of a 43 amino acid epitope from glycoprotein MUC1 (mucin 1) and the synthetic Toll-like receptor 4 (TLR-4) agonist PET lipid A encapsulated in cholesterol/dipalmitoylphosphatidylcholine (DPPC)/dimyristoylphosphatidylglycerol (DMPG) liposomes, with potential immunostimulatory and antineoplastic activities. The MUC1 epitope is composed of two 20 amino glycosylated VNTR (various number tandem repeats) from human MUC1A and including 6 glycosylated sites modified by Tn (alpha-N-acetyl-D-galactosamine). Immunization of liposomal MUC1/PET-lipid A vaccine results in an antibody as well as a cytotoxic T-lymphocyte (CTL) response against hypoglycosylated MUC1 expressing tumor cells. The tumor associated antigen MUC1, a type I transmembrane protein, is overexpressed and aberrantly glycosylated in a variety of tumor cells. As a vaccine adjuvant, PET lipid A, also known as penta erythritol lipid A, stimulates both cellular and humoral responses to the vaccine antigen. Check for active clinical trials using this agent.

**liposomal NDDP:** A synthetic liposomal formulation of bis-neodecanoate diaminocyclohexane platinum (NDDP), a third-generation platinum complex analogue of cisplatin, with potential antineoplastic activity. After displacement of the 2 long-chain aliphatic leaving groups (neodecanoic

acid), platinum diaminocyclohexane (DACH) complexes become highly reactive and alkylate macromolecules, forming both inter- and intra-strand DNA crosslinks and inhibiting DNA synthesis, which results in tumor cell cytotoxicity. Because DNA mismatch-repair (MMR) complexes do not recognize DACH–platinum adducts, DNA repair mechanisms are inhibited, overcoming limitations observed with other platinum-based agents. In addition, the liposomal encapsulation improves the bioavailability of NDDP and reduces its toxicity profile.

**liposomal oxaliplatin:** A liposomal formulation of the prodrug oxaliplatin, an organoplatinum complex in which the platinum atom is complexed with 1,2-diaminocyclohexane (DACH) and with an oxalate ligand as a 'leaving group', with antineoplastic activity. After displacement of the labile oxalate ligand leaving group, the active oxaliplatin derivatives monoquo and diaquo DACH platinum alkylate macromolecules, and form both inter- and intra-strand platinum-DNA crosslinks; inhibition of DNA replication and transcription and cell-cycle nonspecific cytotoxicity ensue. The DACH side chain appears to inhibit alkylating-agent resistance. A leaving group is an atom or a group of atoms that is displaced as a stable species taking with it its bonding electrons.

**liposomal paclitaxel:** A liposome-encapsulated formulation of paclitaxel, a taxoid compound extracted from the Pacific yew tree *Taxus brevifolia*, with antineoplastic property. Paclitaxel binds to tubulin and interferes with the assembly/disassembly dynamics of microtubules, thereby resulting in the inhibition of cell division. This agent also induces apoptosis via inactivation of the apoptosis inhibitor, B-cell Leukemia 2 (Bcl-2) protein. Paclitaxel liposome formulation potentially enhances delivery of higher doses of paclitaxel to the target tissues and exhibits lower systemic toxicity. or A form of the anticancer drug paclitaxel that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of several types of cancer. Liposomal paclitaxel blocks the ability of cells to divide and may kill cancer cells. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called LEP-ETU, LipoTaxen, paclitaxel liposome, and PNU-93914.

**liposomal rhenium Re 186:** A therapeutic preparation consisting of the beta-emitting radioisotope rhenium Re 186 encapsulated in a nanoliposome, with potential antineoplastic activity. Upon intratumoral infusion of

liposomal rhenium Re 186, the radioisotope releases radiation, which directly kills the tumor cells. The nanoliposomes facilitate the retention of the radioisotope by the tumor cells and localize the radiocytotoxicity to the tumor while sparing surrounding normal, healthy cells. Re-186 has a short half-life and a short path length, which contributes further to limiting the radiotoxicity to the tumor cells.

**liposomal SN-38:** The liposomal formulation of SN-38 (7-ethyl-10-hydroxy-camptothecin), a biologically active metabolite of the prodrug irinotecan, with potential antineoplastic activity. SN-38 binds to and inhibits topoisomerase I by stabilizing the cleavable complex between topoisomerase I and DNA, resulting in DNA breaks, inhibition of DNA replication, and apoptosis. SN-38 has been reported to exhibit up to 1,000-fold more cytotoxic activity against various cancer cells in vitro than irinotecan. The liposomal formulation of SN-38 increases the solubility of SN-38, which is a relatively insoluble compound, and improves the pharmacodynamic profile as compared to SN-38 alone. or A form of the anticancer drug irinotecan that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than irinotecan alone. Liposomal SN-38 is being studied in the treatment of advanced colorectal cancer and other types of cancer. Liposomal SN-38 blocks the ability of cells to divide and grow. It may stop the growth of tumor cells. It is a type of topoisomerase inhibitor and a type of irinotecan (CPT-11) derivative. Also called SN-38 liposome.

**liposomal T4N5 lotion:** A topical lotion that contains the enzyme T4-bacteriophage endonuclease V encapsulated within liposomes. With topical liposomal delivery, the DNA repair enzyme T4-bacteriophage endonuclease V is transported into skin cells, where the enzyme enters cell nuclei and binds to and incises pyrimidine dimers, thereby catalyzing the first reaction step of the cellular excision repair pathway for removing DNA replication-inhibiting pyrimidine dimers produced within duplex DNA through exposure to ultraviolet (UV) irradiation. In vitro and in vivo studies indicate that T4N5 liposomes increases repair of DNA damage caused by UV irradiation.

**liposomal topotecan hydrochloride:** The hydrochloride salt of a semisynthetic derivative of camptothecin mixed with sphingomyelin/cholesterol and sonicated to form small unilamellar vesicles

containing topotecan, with potential antineoplastic activity. Liposomal topotecan hydrochloride mediates efficient drug delivery of topotecan into the cytosol from the endosome compartment. During the S phase of the cell cycle, topotecan selectively stabilizes topoisomerase I-DNA covalent complexes, inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when complexes are encountered by the DNA replication machinery. Check for active clinical trials using this agent.

**liposomal tretinoin:** An intravenous formulation of tretinoin (vitamin A acid or all-trans retinoic acid) encased in liposomes. Tretinoin is a naturally occurring retinoic acid agent that binds to and activates retinoic acid receptors (RAR), effecting changes in gene expression that lead to cell differentiation, decreased cell proliferation, and inhibition of carcinogenesis. This agent also inhibits telomerase, leading to telomere shortening and eventual apoptosis of certain tumor cell types. Liposome encapsulation extends the half-life of intravenously administered tretinoin.

**liposomal vincristine sulfate :** A form of the anticancer drug vincristine sulfate that is contained inside very tiny, fat-like particles. It may have fewer side effects and work better than vincristine. Liposomal vincristine sulfate is used to treat adults with acute lymphoblastic leukemia that is Philadelphia chromosome negative and has come back or has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. It is a type of vinca alkaloid and a type of antimetabolic agent. Also called Marqibo and vincristine sulfate liposome.

**liposome :** A very tiny, fat-like particle that is made in the laboratory. In medicine, liposomes containing drugs or other substances are used in the treatment of cancer and other diseases. Drugs given in liposomes may have fewer side effects and work better than the same drugs given alone.

**liposome-encapsulated doxorubicin citrate:** A formulation of the citrate salt of the antineoplastic anthracycline antibiotic doxorubicin, encapsulated within liposomes, with antitumor activity. Doxorubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and RNA synthesis. This agent also interacts with cell membrane lipids causing lipid peroxidation. Liposomal delivery of doxorubicin improves drug penetration into tumors and decreases drug

clearance, thereby increasing the duration of therapeutic drug effects while lowering the toxicity profile.

**liposome-encapsulated doxorubicin citrate :** A form of the anticancer drug doxorubicin citrate that is contained inside very tiny, fat-like particles. It is being studied in the treatment of breast cancer that has spread and in the treatment of other types of cancer. Doxorubicin citrate damages DNA and may kill cancer cells. Liposomal-encapsulated doxorubicin citrate may have fewer side effects and may work better than doxorubicin citrate.

**liposome-encapsulated irinotecan hydrochloride PEP02 :** A form of the anticancer drug irinotecan hydrochloride that is contained in very tiny, fat-like particles. Liposome-encapsulated irinotecan hydrochloride PEP02 is used together with fluorouracil and leucovorin to treat a certain type of pancreatic cancer that has spread to other parts of the body and has gotten worse after treatment with gemcitabine anticancer therapy. It is also being studied in the treatment of other types of cancer. Irinotecan hydrochloride blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. Liposome-encapsulated irinotecan hydrochloride PEP02 may have fewer side effects and work better than irinotecan hydrochloride. It is a type of topoisomerase inhibitor and a type of camptothecin analog. Also called irinotecan hydrochloride liposome, Onivyde, and PEP02.

**liposome-encapsulated miR-34 mimic MRX34:** A liposomal formulation containing a nucleotide that mimics the human tumor suppressor microRNA (miRNA) miR-34, with potential antineoplastic activity. Upon administration, liposome-encapsulated MRX34 mimics miR-34 by inhibiting the expression of a variety of oncogenes including MYC, MET, BCL2, and beta-catenin. This induces cell cycle arrest, senescence and apoptosis in susceptible tumor cells. miR-34 is downregulated in most solid and hematologic malignancies and regulates the expression of a variety of genes. This miRNA plays an important role in the inhibition of cancer cell stemness, metastasis and cancer cell survival. Check for active clinical trials using this agent.

**liposome-encapsulated RB94 plasmid DNA gene therapy agent SGT-94:** A systemic gene therapy anti-cancer agent composed of cationic liposomes, which encapsulates plasmid DNA encoding for the tumor suppressor gene RB94 and is complexed with anti-transferrin receptor single chain antibody fragment (TfRscFv), with potential antineoplastic

activity. Upon systemic administration of liposome-encapsulated RB94 plasmid DNA gene therapy agent SGT-94, the TfRscFv portion of this agent selectively targets the tumor cells expressing transferrin receptors. TfRscFv binding to the transferrin receptor allows receptor-mediated endocytosis and transfection, followed by the expression of RB94 gene. This induces tumor cell apoptosis through an as-of-yet unknown pathway. RB94 is a modified, N-terminal truncated form of the full-length protein retinoblastoma gene RB110, and exerts enhanced antitumor activity. The transferrin receptor (TfR) functions in cellular iron uptake through its interaction with transferrin, and is overexpressed in a variety of tumor types.

**liposome-encapsulated recombinant human enzyme Cu/Zn superoxide-dismutase:** A topical hydrophilic gel containing a recombinant form of the human Cu/Zn superoxide dismutase (SOD1), a cytoplasmic antioxidant enzyme, encapsulated in liposomes with potential anti-inflammatory and adjuvant activities. Upon application of liposome-encapsulated recombinant human Cu/Zn SOD as a thin film on the irradiated area, the recombinant SOD1 is released and scavenges free oxygen radicals, thereby protecting cells from oxidative stress. This may prevent radiation-induced dermatitis as well as other types of skin reactions. Check for active clinical trials using this agent.

**liposome-incorporated Grb2 antisense oligodeoxynucleotide:** A liposomal formulation containing the antisense oligodeoxynucleotide (ODN) growth factor receptor-bound protein 2 (Grb2), with potential antineoplastic activity. Upon administration, liposome-incorporated Grb2 antisense oligodeoxynucleotide binds directly to and blocks Grb2 mRNA, thereby preventing Grb2 protein synthesis, leading to inhibition of cell proliferation of cancer cells overexpressing Grb2. Grb2, an adaptor protein involved in growth signaling pathways, is upregulated in certain tumor cells.

**Liposomes:** Lipid vesicles having an aqueous region enclosed by a lipid bilayer

**LipoTaxen :** A form of the anticancer drug paclitaxel that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of several types of cancer. LipoTaxen blocks the ability of cells to divide and may kill cancer

cells. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called LEP-ETU, liposomal paclitaxel, paclitaxel liposome, and PNU-93914.

**Lipotecan:** (Other name for: camptothecin analogue TLC388)

**lipoxin:** anti-inflammatory eicosanoids synthesized through lipoxygenase interactions, hence the derivation of the name

**Liquamar:** (Other name for: phenprocoumon)

**liquefaction:** of a landslide, an occurrence in which water-saturated soil moves downslope like a liquid.

**Liquefaction:** A process that increases the pressure on a gas until it becomes a liquid. This process happens at room temperature.

**liquid:** The phase of matter in which a substance has a definite volume but no definite shape. OR Liquids are an in-between phase of matter, between solids and gases. One characteristic of a liquid is that it fills the shape of any container. Liquids usually have a flat surface because of gravity pulling down on the molecules. OR a state of matter in which the molecules are touching, fluid, incompressible. OR A state of matter that has a high density and is incompressible compared to a gas. Liquids take the shape of their container but do not expand to fill the container as gases do.

Liquids diffuse much more slowly than gases. OR A state of matter. It has a fixed volume but no fixed shape.

**liquid biopsy :** A test done on a sample of blood to look for cancer cells from a tumor that are circulating in the blood or for pieces of DNA from tumor cells that are in the blood. A liquid biopsy may be used to help find cancer at an early stage. It may also be used to help plan treatment or to find out how well treatment is working or if cancer has come back. Being able to take multiple samples of blood over time may also help doctors understand what kind of molecular changes are taking place in a tumor.

**Liquid Driers:** Solution of soluble driers in organic solvents.

**Liquid Injection:** The process that involves an integrated system for proportioning, mixing, and dispensing two component liquid resin formulations and directly injecting the resultant mix into a mold which is clamped under pressure.

**Liquid Injection Molding (LIM):** The process that involves an integrated system for proportioning, mixing, and dispensing two component liquid

resin formulations and directly injecting the resultant mix into a mold which is clamped under pressure.

**Liquid junction potential:** the potential formed at the interface between any two electrolyte solutions of different compositions. In ISE measurements, the most important liquid junction is that between the reference electrode filling solution and the sample solution. Ideally, this potential should be as low and as constant as possible, despite variations in the external solution. Reference electrode filling solutions are chosen to minimize this potential.

**liquid-based Pap test :** A type of Pap test. A Pap test is a procedure in which cells are scraped from the cervix for examination under a microscope. It is used to detect cancer or changes that may lead to cancer. A Pap test can also show conditions that are not cancer, such as infection or inflammation. In a liquid-based Pap test, the cells are rinsed into a small container of liquid. The cells are then placed onto slides by a special machine and examined under a microscope to see if the cells are abnormal.

**liquie:** a state of matter that has a definite size or volume but not a definite shape.

**liraglutide:** A long-acting, fatty acylated glucagon-like peptide-1 (GLP-1) analog administered subcutaneously, with antihyperglycemic activity. Liraglutide's prolonged action and half-life of 11-15 hours are attributed to the attachment of the fatty acid palmitic acid to GLP-1 that reversibly binds to albumin. Albumin binding protects liraglutide from immediate degradation and elimination and causes GLP-1 to be released from albumin in a slow and consistent manner. This agent may cause thyroid C-cell tumors and increases the risk of acute pancreatitis.

**lirilumab:** A fully humanized monoclonal antibody against killer-cell immunoglobulin-like receptors (KIR), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, lirilumab binds to KIR, thereby preventing the binding of KIR ligands to KIR on natural killer (NK) cells. By blocking these inhibitory receptors, NK cells become activated and attack cancer cells leading to tumor cell death. KIR, a member of the immunoglobulin superfamily, is expressed on the surface of NK cells.

**lisdexamphetamine dimesylate:** The dimesylate form and prodrug of the d-isomer of amphetamine, a non-catecholamine sympathomimetic amine with

central nervous system (CNS) stimulating activity. Upon administration, lisdexamphetamine is converted to dextroamphetamine through cleavage of the lysine group. Dextroamphetamine acts by facilitating the release of catecholamines, particularly noradrenaline and dopamine, from its storage sites in nerve terminals in the CNS, and inhibits their uptake within the mesocorticolimbic system, a major component of the brain reward system, resulting in measurable behavioral changes such as euphoria, mental alertness and excitement and appetite suppression. As a CNS stimulant, this agent may increase blood pressure.

**lisinopril:** An orally bioavailable, long-acting angiotensin-converting enzyme (ACE) inhibitor with antihypertensive activity. Lisinopril, a synthetic peptide derivative, specifically and competitively inhibits ACE, which results in a decrease in the production of the potent vasoconstrictor angiotensin II and, so, diminished vasopressor activity. In addition, angiotensin II-stimulated aldosterone secretion by the adrenal cortex is decreased which results in a decrease in sodium and water retention and an increase in serum potassium. or A drug used to treat high blood pressure and certain heart conditions. It is also being studied in the prevention and treatment of side effects caused by some anticancer drugs. It blocks certain enzymes that cause blood vessels to constrict (narrow). It is a type of angiotensin-converting enzyme (ACE) inhibitor. Also called Prinivil and Zestril.

**lisofylline :** A drug that may protect healthy cells from chemotherapy and radiation without inhibiting the effects of these therapies on tumor cells.

**listeria monocytogenes-LLO-PSA ADXS31-142:** A cancer vaccine containing a live-attenuated strain of the Gram-positive bacterium *Listeria monocytogenes* (Lm) encoding a fusion protein composed of the tumor-associated antigen (TAA) human prostate-specific antigen (PSA) fused to a fragment of the immunostimulant listeriolysin O (LLO) protein, with potential immunostimulatory and antineoplastic activities. Upon administration of the Lm-LLO-PSA vaccine ADXS31-142, the expressed LLO-PSA is processed by antigen presenting cells (APCs), presented to the immune system by both major histocompatibility complex (MHC) I and II molecules, and activates the immune system to exert both an innate and adaptive immune response involving the recruitment and activation of T-lymphocytes against PSA-expressing tumor cells as well as the inhibition of

tumor-infiltrating T regulatory cells (T regs) and myeloid-derived suppressor cells (MDSCs). This eventually results in tumor cell lysis. Check for active clinical trials using this agent.

**liter:** Unit of volume in the metric system, slightly larger than 1 quart, since 1 liter is 33.2 ounces, or 1 quart is 0.946 liters, to three significant figures. OR A liter is a metric unit of measure for volume. One liter is equal to one thousand milliliters. OR A measure of volume for a liquid, using the metric system. One liter is equal to 1,000 cubic centimeters (cc), 1,000 milliliters (ml), or 1.0567 quarts (qt). Also called L.

**Lithane:** (Other name for: lithium carbonate)

**lithification:** the hardening of sediment into a rock.

**Lithium:** Symbol:"Li" Atomic Number:"3" Atomic Mass: 6.94amu. It is one member of the alkali metal family. Lithium is a very light metal, so light that it can float on water. Lithium can be found in batteries, medicine, mineral water, nuclear reactors, and air conditioning. OR Element 3, atomic weight 6.939. The lightest alkali metal, used in special-purpose metal alloys and other industrial applications.

**lithium :** A soft metal. Lithium salts are used to treat certain mental disorders, especially bipolar (manic depressive) disorder. Lithium salts include lithium carbonate and lithium citrate.

**lithium carbonate:** The carbonate salt of lithium, a soft alkali metal, with antimanic and hematopoietic activities. Lithium interferes with transmembrane sodium exchange in nerve cells by affecting sodium, potassium-stimulated adenosine triphosphatase (Na<sup>+</sup>, K<sup>+</sup>-ATPase); alters the release of neurotransmitters; affects cyclic adenosine monophosphate (cAMP) concentrations; and blocks inositol metabolism resulting in depletion of cellular inositol and inhibition of phospholipase C-mediated signal transduction. The exact mechanism through which lithium exerts its mood-stabilizing effect has not been established. In addition, lithium stimulates granulocytopoiesis and appears to increase the level of pluripotent hematopoietic stem cells by stimulating the release of hematopoietic cytokines and/or directly acting on hematopoietic stem cells.

**Lithobid:** (Other name for: lithium carbonate)

**Lithonate:** (Other name for: lithium carbonate)

**lithosphere:** The lithosphere is the Earth's crust and uppermost part of the mantle. OR the rock layer on the outer edge of the Earth. OR The component of the Earth's surface comprising the rock, soil, and sediments. It is a relatively passive component of the climate system, and its physical characteristics are treated as fixed elements in the determination of climate.

**Lithotabs:** (Other name for: lithium carbonate)

**litmus:** Plant pigment commonly used as an acid base indicator. Litmus is red (or pink) in an acid, and blue in a base. OR an indicator that turns red in acid and blue in alkaline solution. OR A mixture of pigments extracted from certain lichens that turns blue in basic solution and red in acidic solution.

**litmus paper:** Paper impregnated with litmus, usually cut in narrow strips. Dipping red litmus paper into a basic solution turns it blue; dipping blue litmus paper into an acidic solution turns it red.

**litronesib:** An inhibitor of the kinesin-related motor protein Eg5 with potential antineoplastic activity. Litronesib selectively inhibits the activity of Eg5, which may result in mitotic disruption, apoptosis and consequently cell death in tumor cells that are actively dividing. The ATP-dependent Eg5 kinesin-related motor protein (also known as KIF11 or kinesin spindle protein-5) is a plus-end directed kinesin motor protein that plays an essential role during mitosis, particularly in the regulation of spindle dynamics, including assembly and maintenance.

**litter:** Undecomposed plant residues on the soil surface.

**Little Ice Age:** A cold period that lasted from about A.D. 1550 to about A.D. 1850 in Europe, North America, and Asia. This period was marked by rapid expansion of mountain glaciers, especially in the Alps, Norway, Ireland, and Alaska. There were three maxima, beginning about 1650, about 1770, and 1850, each separated by slight warming intervals.

**live attenuated measles virus vaccine:** A live, attenuated measles vaccine with potential antineoplastic activity. Upon subcutaneous administration, live attenuated measles virus vaccine may activate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against measles-positive tumor cells. Measles virus has been shown to be present in some non-small cell lung cancers.

**Live edge:** During the process of painting large areas some edges of the wet paint will have to be left for a period while the remainder of the work is brought level. If these edges are still capable of being joined without a lap showing they are said to be 'live'. The art of the painter is to coat the whole surface keeping any such edges 'alive' so that the finished work shows no joints or laps.

**live freeze-dried lactic acid bacteria probiotic:** A probiotic containing live, cultivated, freeze-dried lactic acid bacteria with gastrointestinal (GI) protective, anti-inflammatory, immunomodulating and potential antitumor properties. Oral administration of probiotic bacteria help maintain adequate colonization of the GI tract and modulate the composition of the normal microflora. Upon colonization of the GI tract, the probiotic bacteria form a protective barrier, interfere with the attachment of pathogenic bacteria and other harmful substances and may bind to and degrade carcinogens. This may prevent inflammation and possibly cancer. In addition, these bacteria produce lactic acid, thereby creating an acidic environment that is unfavorable for pathogens.

**Live tooling:** Mill-like machining actions in a lathe where a rotating tool removes material from stock. This allows for the creation of features like flats, grooves, slots, and axial or radial holes to be created within the lathe.

**live virus vaccine :** A vaccine made from a virus that has been weakened so it does not cause the disease the virus usually causes. A live virus vaccine helps the body's immune system recognize and fight infections caused by the non-weakened form of the virus. Examples of live virus vaccines are the chickenpox vaccine and the measles, mumps, and rubella (MMR) vaccine. It is not safe for pregnant women or people with weak immune systems to receive a live virus vaccine.

**live-attenuated double-deleted Listeria monocytogenes bacteria JNJ-64041809:** A proprietary, live-attenuated, double-deleted (LADD) strain of the Gram-positive bacterium *Listeria monocytogenes* (Lm) encoding multiple, as of yet undisclosed, tumor-associated antigens (TAAs), with potential immunostimulatory and antineoplastic activities. Upon intravenous administration, live-attenuated double-deleted *Listeria monocytogenes* bacteria JNJ-64041809 is taken up by antigen-presenting cells (APCs), including dendritic cells (DCs). The TAAs are subsequently expressed by the APCs and then processed and presented to the immune

system by both major histocompatibility complex (MHC) class I and II molecules. This activates the immune system and leads to the recruitment and activation of cytotoxic T lymphocytes (CTLs) against the TAA-expressing tumor cells, eventually resulting in tumor cell lysis. Two genes contributing to the virulence of Lm have been removed to minimize the risk of infection.

**live-attenuated *Listeria monocytogenes* cancer vaccine ADXS11-001:** A cancer vaccine containing a live-attenuated strain of the bacterium *Listeria monocytogenes* (Lm) encoding human papillomavirus (HPV) type 16 E7 fused to a non-hemolytic listeriolysin O protein with potential immunostimulatory and antineoplastic activities. Upon vaccination, *Listeria* expresses the HPV 16 E7 antigen and activates the immune system to mount a cytotoxic T-lymphocyte (CTL) response against cancer cells expressing HPV 16 E7. This may result in tumor cell lysis. In addition, the *Listeria* vector itself may induce a potent immune response. HPV 16 E7, a cell surface glycoprotein and tumor associated antigen, is overexpressed in the majority of cervical cancer cells.

**live-attenuated *Listeria monocytogenes* encoding EGFRvIII-mesothelin vaccine JNJ-64041757:** A proprietary, live-attenuated, double-deleted (LADD) strain of the Gram-positive bacterium *Listeria monocytogenes* (Lm) encoding the tumor-associated antigens (TAAs) epidermal growth factor receptor mutant form EGFRvIII and human mesothelin, with potential immunostimulatory and antineoplastic activities. Upon intravenous administration, the live-attenuated *Listeria monocytogenes* encoding EGFRvIII-mesothelin vaccine JNJ-64041757 is taken up by antigen-presenting cells (APCs), including dendritic cells (DCs). EGFRvIII and mesothelin are subsequently expressed by the APCs and then processed and presented to the immune system by both major histocompatibility complex (MHC) class I and II molecules. This activates the immune system and leads to the recruitment and activation of cytotoxic T-lymphocytes (CTLs) against EGFRvIII- and mesothelin-expressing tumor cells, eventually resulting in tumor cell lysis. EGFRvIII and mesothelin are overexpressed in many types of cancer. Two genes contributing to the virulence of Lm have been removed to minimize the risk of infection.

**live-attenuated *Listeria monocytogenes* encoding EGFRvIII-NY-ESO-1 vaccine ADU-623:** A live-attenuated, double-deleted strain of the Gram-

positive bacterium *Listeria monocytogenes* (Lm) encoding a mutant form of the tumor-associated antigens, epidermal growth factor receptor (EGFRvIII) and the cancer/testis antigen NY-ESO-1, with potential immunostimulatory and antineoplastic activities. Upon intravenous administration, live-attenuated *Listeria monocytogenes* encoding EGFRvIII-NY-ESO-1 vaccine targets dendritic cells and expresses EGFRvIII and NY-ESO-1. This promotes both a potent innate immune response and an adaptive immune response involving the recruitment and activation of T lymphocytes against EGFRvIII and NY-ESO-1-expressing tumor cells, which results in tumor cell lysis.

**live-attenuated, double-deleted *Listeria monocytogenes* CRS-207:** A recombinant *Listeria*-based cancer vaccine containing a live-attenuated strain of the facultative intracellular bacterium *Listeria monocytogenes* (Lm) expressing human mesothelin with potential immunostimulatory and antineoplastic activities. Upon administration of this vaccine, *Listeria* invade professional phagocytes within the immune system and express mesothelin, which may activate a cytotoxic T-lymphocyte (CTL) response against mesothelin-expressing tumor cells, resulting in tumor cell lysis. In addition, the *Listeria* vector itself may induce a potent innate and adaptive immunity unrelated to mesothelin expression. Mesothelin is a cell surface glycoprotein involved in cell adhesion and is overexpressed in many epithelial-derived cancers, including pancreatic, ovarian and lung cancers, and malignant mesotheliomas.

**liver:** the organ that helps to process the products of human digestion and removes excess glucose from the bloodstream, converting it to a polymer called glycogen for storage.

**liver :** A large organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile.

**liver and bile duct cancer :** Primary liver cancer is cancer that forms in the tissues of the liver. The most common type of primary liver cancer is hepatocellular carcinoma, which occurs in the tissue of the liver. When cancer starts in other parts of the body and spreads to the liver, it is called liver metastasis. Bile duct cancer forms in the small ducts (tubes) that carry bile (fluid made by the liver that helps digest fat) between the liver and gallbladder and the intestine. Bile duct cancer is also called

cholangiocarcinoma. Intrahepatic bile duct cancer is found inside the liver. Extrahepatic bile duct cancer is found outside the liver.

**liver cancer :** Primary liver cancer is cancer that forms in the tissues of the liver. Secondary liver cancer is cancer that spreads to the liver from another part of the body.

**liver function test :** A blood test to measure the blood levels of certain substances released by the liver. A high or low level of certain substances can be a sign of liver disease.

**liver metastasis :** Cancer that has spread from the original (primary) tumor to the liver.

**liver X receptor alpha pathway :** Describes a group of proteins in a cell that work together to help control how certain genes are expressed and how cholesterol, lipids (fats), bile acids, and steroid hormones are made in the body. Changes in the liver X receptor alpha pathway may lead to diseases such as heart disease and cancer. Drugs or substances that affect this pathway are being studied in the prevention and treatment of cancer and other diseases. Also called LXR alpha pathway.

**liver-spleen scan :** A procedure used to check for abnormal areas in the liver or spleen. A very small amount of a radioactive substance is injected into a vein and travels through the blood to the liver and spleen. It is detected by a scanner linked to a computer, which forms an image of the areas where the radioactive substance collects. A liver-spleen scan may be used to help find cancer in the liver or spleen, cirrhosis, hepatitis, and other liver or spleen problems.

**Living Hinge:** A thin flexible hinge made from the same material as the two rigid pieces it connects. It is typically thinned to allow the rigid pieces to bend along the line of the hinge to allow them to open and close. They require careful design and gate placement. A typical application would be the top and bottom of a box.

**living will :** A type of legal advance directive in which a person describes specific treatment guidelines that are to be followed by health care providers if he or she becomes terminally ill and cannot communicate. A living will usually has instructions about whether to use aggressive medical treatment to keep a person alive (such as CPR, artificial nutrition, use of a respirator).

**Lixiviant:** A liquid medium used to selectively extract (or leach) uranium from ore bodies where they are normally found underground (in other words, in situ). This liquid medium, which typically contains an oxidant such as oxygen and/or hydrogen peroxide mixed with sodium carbonate or carbon dioxide, is injected through wells into the ore body in a confined aquifer to dissolve the uranium. The resulting solution is then pumped via other wells to the surface, where the uranium is recovered from it in a concentrated form for processing. For additional detail, see In Situ Recovery Facilities.

**LLDPE:** Linear low-density polyethylene

**LLDPE (Linear Low Density Polyethylene):** This is the primary type of resin used in modern can liner manufacturing technology. Bags made from LLDPE film provide excellent combination of film strength, puncture resistance and tear resistance. This is a plastic that is used predominantly in film applications due to its toughness, flexibility and relative transparency. LLDPE is the preferred resin for injection molding because of its superior toughness and is used in items such as grocery bags, garbage bags and landfill liners. (Adapted from Modern Plastics Encyclopedia 1995; Plastic Packaging Opportunities and Challenges, February 1992).

**LLDPE Tubing:** LLDPE Tubing: Linear Low Density Polyethylene Tubing. More durable than LDPE.

**LMB-1 immunotoxin:** A chimeric protein consisting of the Fv portion of a monoclonal antibody attached to a fragment of Pseudomonas exotoxin A without its cell-binding region. LMB-1 immunotoxin targets B3, a Lewis Y-related carbohydrate epitope found on some solid tumors. The antibody attaches to the tumor cell and the exotoxin stops protein synthesis by inactivating elongation factor 2. or A toxic substance linked to an antibody that attaches to tumor cells and kills them.

**LMB-2 immunotoxin:** A fusion protein consisting of the Fv portion of a monoclonal antibody attached to a 38-kDa fragment of the Pseudomonas exotoxin A (with amino acids 365-380 deleted). LMB-2 immunotoxin targets the interleukin 2 receptor (also known as IL-2R or CD25) which is expressed on activated normal T and B cells and macrophages and on the cells of various hematologic malignancies. The antibody attaches to the IL-2R on the cell membrane, facilitating the entry of the exotoxin. The exotoxin moiety induces caspase-mediated apoptosis of tumor cells via a

mechanism involving mitochondrial damage; it also catalyzes the transfer of ADP ribose from nicotinamide adenine dinucleotide (NAD) to elongation factor-2 in eukaryotic cells, thereby inactivating elongation factor 2 and inhibiting protein synthesis. or A toxic substance linked to an antibody that attaches to tumor cells and kills them.

**LMB-7 immunotoxin:** A single chain chimeric protein consisting of a monoclonal antibody fragment attached to a portion of the *Pseudomonas* exotoxin A. LMB-7 immunotoxin attaches to B3, a Lewis Y-related carbohydrate epitope on some solid tumor cells. The antibody attaches to the cell and the exotoxin inhibits protein synthesis by inactivating elongation factor 2. Check for active clinical trials using this agent. or A toxic substance linked to an antibody that attaches to tumor cells and kills them.

**LMB-9 immunotoxin:** A recombinant disulfide stabilized anti-Lewis Y IgG immunotoxin containing a 38 KD toxic element derived from the *Pseudomonas aeruginosa* exotoxin A and a monoclonal antibody fragment, designed to target adenocarcinomas expressing Lewis Y. LMB-9 immunotoxin attaches to tumor cells, facilitating the entry of the exotoxin. The exotoxin moiety induces caspase-mediated apoptosis of tumor cells via a mechanism involving mitochondrial damage; it also catalyzes the transfer of ADP ribose from nicotinamide adenine dinucleotide (NAD) to elongation factor-2 in eukaryotic cells, thereby inactivating elongation factor 2 and inhibiting protein synthesis. or A toxic substance linked to an antibody that attaches to tumor cells and kills them.

**LmddA-LLO-chHER2 fusion protein-secreting live-attenuated *Listeria* cancer vaccine ADXS31-164:** A cancer vaccine containing a live, highly attenuated strain of the Gram-positive bacterium *Listeria monocytogenes* (LmddA) encoding a fusion protein composed of a chimeric peptide comprised of three highly immunogenic epitopes of the human tumor-associated antigen (TAA) HER2/neu (chHER2) fused to a non-hemolytic fragment of the immunostimulant listeriolysin O (LLO) protein, with potential immunostimulatory and antineoplastic activities. Upon administration of the LmddA-LLO-chHER2 vaccine ADXS31-142, the LmddA is taken up by phagocytic cells; then the listeriolysin portion of the expressed LLO-chHER2 can form pores in the phagolysosomes and the fusion protein can escape into the cytosol. In turn, the LLO-chHER2 is

processed and presented to the immune system by the major histocompatibility complex (MHC) I on the phagocytic cells. Antigen presentation activates the immune system to exert an immune response involving the recruitment and activation of T lymphocytes against HER2-expressing tumor cells, and inhibits tumor-infiltrating T regulatory cells (Tregs) and myeloid-derived suppressor cells (MDSCs). This eventually results in tumor cell lysis. HER2/neu, a tyrosine kinase receptor belonging to the epidermal growth factor receptor (EGFR) family, is overexpressed in various tumor cell types.

**LMP-2:340-349 peptide vaccine:** A peptide cancer vaccine containing amino acid residues 340-349 of the Epstein-Barr virus (EBV) latent membrane protein-2 (LMP-2) with potential immunostimulating and antineoplastic activities. Vaccination with LMP-2:340-349 peptide may boost the immune system to mount a specific cytotoxic T-lymphocyte (CTL) response against LMP-2-expressing tumor cells, resulting in cell lysis and inhibition of tumor cell proliferation. LMP-2, an EBV transmembrane protein, is expressed in various malignancies including nasopharyngeal cancer and EBV-positive Hodgkin disease. Check for active clinical trials using this agent.

**LMP-2:419-427 peptide vaccine:** A peptide cancer vaccine containing amino acid residues 419-427 of the latent membrane protein-2 (LMP-2) of the Epstein-Barr virus (EBV) with potential immunostimulating and antineoplastic activities. Vaccination with the LMP-2:49-427 peptide vaccine may boost the immune system to mount a specific cytotoxic T-lymphocyte response against LMP-2-expressing tumor cells, resulting in cell lysis and inhibition of tumor cell proliferation. LMP-2, an EBV transmembrane protein, is expressed in various malignancies including nasopharyngeal cancer and EBV-positive Hodgkin disease. Check for active clinical trials using this agent.

**LMP/BARF1/ EBNA1-specific cytotoxic T lymphocytes:** A preparation of allogeneic cytotoxic T-lymphocytes (CTL) made specifically reactive to three Epstein-Barr virus (EBV) proteins, latent membrane protein (LMP) 1, BamH1-A rightward frame-1 (BARF1) and EBV nuclear antigen 1 (EBNA1), with potential antineoplastic activity. Administration of LMP1/BARF1/ EBNA1-specific CTLs to patients with LMP1/BARF1/EBNA1-positive tumors may result in a specific CTL

response against the tumor cells expressing these antigens, which can result in both cell lysis and the inhibition of tumor cell proliferation. LMP1, BARF1 and EBNA1 are expressed in various, EBV-associated malignancies, including nasopharyngeal cancer and EBV-positive Hodgkin lymphoma.

**LMP2a-specific cytotoxic T-lymphocytes:** A preparation of cytotoxic T-lymphocytes (CTL), specifically reactive to Epstein-Barr virus (EBV) latent membrane protein-2A (LMP2A), with potential antineoplastic activity. T-lymphocytes are exposed *ex vivo* to dendritic cells (DCs) transfected with a replication-deficient adenovirus encoding EBV LMP2A. Subsequently, LMP2A-specific CTLs are exposed to EBV infected cells transfected with adenovirus encoding LMP2A, thereby further stimulating CTLs. Administered to patients with EBV-positive tumors, LMP2A-specific CTLs target LMP2A-positive cells, resulting in cell lysis and inhibition of cancer cell proliferation. EBV LMP2A may be expressed in various malignancies, including nasopharyngeal carcinoma and Hodgkin and non-Hodgkin lymphomas.

**LMP400:** A substance being studied in the treatment of cancer. It blocks certain enzymes that break and rejoin DNA strands. These enzymes are needed for cells to divide and grow. Blocking them may cause cancer cells to die. LMP400 also helps anticancer drugs kill cancers that are resistant to some other drugs. LMP400 is a type of indenoisoquinoline and a type of topoisomerase inhibitor.

**LMP776:** A substance being studied in the treatment of cancer. It blocks certain enzymes that break and rejoin DNA strands. These enzymes are needed for cells to divide and grow. Blocking them may cause cancer cells to die. LMP776 also helps anticancer drugs kill cancers that are resistant to some other drugs. LMP776 is a type of indenoisoquinoline and a type of topoisomerase inhibitor.

**LMW:** Low molecular weight

**LNA-based anti-miR-155 MRG-106:** A locked nucleic acid (LNA)-based oligonucleotide inhibitor of microRNA (miRNA) 155 (miR-155), with potential antineoplastic activity. Upon administration, LNA-based anti-miR-155 MRG-106 targets, binds to and inhibits miR-155. This silences miR-155 and prevents the translation of certain tumor promoting genes, which leads to the induction of cancer cell apoptosis and the inhibition of

tumor cell growth. miR-155, an oncogenic single-stranded, non-coding RNA that is critical to the regulation of gene expression, is overexpressed in certain tumor cell types. Up-regulation of miR-155 plays a key role in increased tumor cell proliferation and survival. The LNA is an RNA analog in which the ribose ring is locked in a particular confirmation that increases stability. Compared to the unmodified oligonucleotide, the LNA-modified oligonucleotide shows increased affinity for its target miR-155.

**loam:** soil that contains about equal amounts of sand, silt, and clay as well as abundant organic matter. OR A type of soil. It is a good mixture of sand, clay and humus. Gardeners try to make their soil a good loam so that their plants grow well.

**lobaplatin:** A third-generation, water-soluble platinum compound with potential antineoplastic activity. Lobaplatin forms highly reactive, charged, platinum complexes that bind to nucleophilic groups such as GC- and AG-rich sites in DNA, inducing intrastrand DNA cross-links. These cross-links will ultimately result in induction of apoptosis and cell growth inhibition. Compared to first and second generation platinum compounds, lobaplatin appears to be more stable, less toxic, have a better therapeutic index and may overcome tumor resistance. or A substance that contains the metal platinum and may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent.

**lobe :** A portion of an organ, such as the liver, lung, breast, thyroid, or brain.

**lobectomy :** Surgery to remove a whole lobe (section) of an organ (such as the lungs, liver, brain, or thyroid gland).

**lobeline :** A substance that comes from a plant known as Indian tobacco, which is different from the tobacco used to make smoking products. It has been studied as a way to help people stop smoking. It is a type of alkaloid.

**lobradimil:** A synthetic analog of bradykinin. Lobradimil is a potent, specific bradykinin B-2 receptor agonist that stimulates B-2 receptors expressed on the surface of brain capillary endothelial cells, thereby reversibly increasing the permeability of the blood-brain barrier (BBB). Compared to bradykinin, this agent possesses enhanced receptor selectivity, greater plasma stability, and a longer half-life. or A substance that is being studied for its ability to help other drugs reach the brain. It belongs to the family of drugs called bradykinin agonists. Also called RMP-7.

**lobular capillary hemangioma :** A benign (not cancer) blood vessel tumor that usually forms on the skin. It may also form on mucous membranes and inside capillaries (small blood vessels) or other places on the body. Lobular capillary hemangiomas usually appear as raised, bright red lesions that may grow quickly and bleed a lot. The lesions are sometimes caused by injury or use of certain medicines and often come back after treatment. They usually occur in older children and young adults but may occur at any age. Lobular capillary hemangiomas are a type of vascular tumor. Also called pyogenic granuloma.

**lobular carcinoma :** Cancer that begins in the lobules (milk glands) of the breast. Lobular carcinoma may be either lobular carcinoma in situ (LCIS) or invasive lobular carcinoma. LCIS is a noninvasive condition in which abnormal cells are found in the lobules of the breast. LCIS rarely becomes invasive cancer, but having LCIS in one breast increases the risk of developing invasive cancer in either breast. In invasive lobular carcinoma, cancer has spread from the lobules to surrounding normal tissue. It can also spread through the blood and lymph systems to other parts of the body.

**lobular carcinoma in situ :** A condition in which abnormal cells are found in the lobules of the breast. This condition seldom becomes invasive cancer. However, having lobular carcinoma in situ in one breast increases the risk of developing breast cancer in either breast. Also called LCIS.

**lobular intraepithelial neoplasia :** A condition in which abnormal cells are found in the lobules (glands that make milk) of the breast. This condition rarely becomes cancer. However, having lobular intraepithelial neoplasia in one breast increases the risk of breast cancer in either breast. Types of lobular intraepithelial neoplasia include atypical lobular hyperplasia and lobular carcinoma in situ (LCIS). Also called LIN and lobular neoplasia.

**lobular neoplasia :** A condition in which abnormal cells are found in the lobules (glands that make milk) of the breast. This condition rarely becomes cancer. However, having lobular neoplasia in one breast increases the risk of breast cancer in either breast. Types of lobular neoplasia include atypical lobular hyperplasia and lobular carcinoma in situ (LCIS). Also called LIN and lobular intraepithelial neoplasia.

**lobule :** A small lobe or a subdivision of a lobe.

**local:** In DFT, a functional that depends only upon the value of the density,  $f[\rho]$ . This is the simplest and least expensive type of functional.

**local anesthesia :** A temporary loss of feeling in one small area of the body caused by special drugs called anesthetics. The patient stays awake but has no feeling in the area of the body treated with the anesthetic. Local anesthetics may be injected or put on the skin to lessen pain during medical, surgical, or dental procedures. Some are available over-the-counter (without a doctor's order) and may help lessen local pain, irritation, and itching caused by conditions such as cold sores, sunburn, poison ivy, and minor cuts.

**local cancer :** An invasive malignant cancer confined entirely to the organ where the cancer began.

**local noon:** occurs when the Sun is at its highest point for the day.

**local therapy :** Treatment that is directed to a specific organ or limited area of the body, such as the breast or an abnormal growth on the skin. Examples of local therapy used in cancer are surgery, radiation therapy, cryotherapy, laser therapy, and topical therapy (medicine in a lotion or cream that is applied to the skin).

**localization :** The process of determining or marking the location or site of a lesion or disease. May also refer to the process of keeping a lesion or disease in a specific location or site.

**localized :** In medicine, describes disease that is limited to a certain part of the body. For example, localized cancer is usually found only in the tissue or organ where it began, and has not spread to nearby lymph nodes or to other parts of the body. Some localized cancers can be completely removed by surgery.

**localized gallbladder cancer :** Cancer found only in the tissues that make up the wall of the gallbladder. Localized gallbladder cancer can be removed completely in an operation.

**locally advanced cancer :** Cancer that has spread from where it started to nearby tissue or lymph nodes.

**locally recurrent cancer :** Cancer that has recurred (come back) at or near the same place as the original (primary) tumor, usually after a period of time during which the cancer could not be detected.

**lock and key model:** A model that explains the role of enzymes in chemical reactions by assuming that the reactants fit into the enzyme like a key fits into a lock.

**Lock rail:** The horizontal member or rail of a door in which the lock or latch is fixed.

**locus :** The physical site or location of a specific gene on a chromosome. Or Specific place where something is located or occurs. It may refer to a specific place on the body (such as an acupuncture point) or the place on a chromosome where a specific gene is found.

**locus heterogeneity :** The same phenotype is caused by mutations in genes at different chromosomal loci.

**LOD score :** A statistical estimate of whether two genetic loci are physically near enough to each other (or "linked") on a particular chromosome that they are likely to be inherited together. A LOD score of 3 or higher is generally understood to mean that two genes are located close to each other on the chromosome. In terms of significance, a LOD score of 3 means the odds are 1,000:1 that the two genes are linked and therefore inherited together. Also called logarithm of the odds score.

**Lodine:** (Other name for: etodolac)

**loess:** silt and clay deposited by wind and weakly cemented by calcite. OR A buff-colored, wind-blown deposit of fine silt, which is frequently exposed in bluffs with steep faces. The thickness can range from 6 to 30 m. The loess of the USA and Europe is thought to be the fine materials first transported and deposited by the waters of melting ice sheets during the glacial period. It was later blown considerable distances with, in some cases, deposition in lakes. The origin of Asiatic loess, however, is apparently wind-blown dust from central Asian deserts.

**Lofibra :** A drug used to treat high levels of cholesterol and triglycerides in the blood. Lofibra is being studied in the treatment of advanced cancers in young patients and in the treatment of other conditions. It is a type of antilipidemic agent. Also called fenofibrate and TriCor.

**logarithm of the odds score :** A statistical estimate of whether two genetic loci are physically near enough to each other (or "linked") on a particular chromosome that they are likely to be inherited together. A logarithm of the odds score of 3 or higher is generally understood to mean that two genes are

located close to each other on the chromosome. In terms of significance, a logarithm of the odds score of 3 means the odds are 1,000:1 that the two genes are linked and therefore inherited together. Also called LOD score.

**LOH:** If there is one normal and one abnormal allele at a particular locus, as might be seen in an inherited autosomal dominant cancer susceptibility disorder, loss of the normal allele produces a locus with no normal function. When the loss of heterozygosity involves the normal allele, it creates a cell that is more likely to show malignant growth if the altered gene is a tumor suppressor gene. Also called loss of heterozygosity.

**lometrexol:** A folate analog antimetabolite with antineoplastic activity. As the 6R diastereomer of 5,10-dideazatetrahydrofolate, lometrexol inhibits glycinamide ribonucleotide formyltransferase (GARFT), the enzyme that catalyzes the first step in the de novo purine biosynthetic pathway, thereby inhibiting DNA synthesis, arresting cells in the S phase of the cell cycle, and inhibiting tumor cell proliferation. The agent has been shown to be active against tumors that are resistant to the folate antagonist methotrexate. or A substance that is being studied as a treatment for cancer. It belongs to the family of drugs called antifolates.

**lomustine:** A nitrosourea with antineoplastic activity. Lomustine alkylates and crosslinks DNA, thereby inhibiting DNA and RNA synthesis. This agent also carbamoylates DNA and proteins, resulting in inhibition of DNA and RNA synthesis and disruption of RNA processing. Lomustine is lipophilic and crosses the blood-brain barrier. Check for active clinical trials using this agent. or A drug used to treat brain tumors that have already been treated with surgery or radiation therapy. It is also used to treat Hodgkin lymphoma that has not gotten better with other types of treatment or has come back. It is being studied in the treatment of other types of cancer. Lomustine damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called CCNU and Gleostine.

**lonafarnib:** A synthetic tricyclic derivative of carboxamide with antineoplastic properties. Lonafarnib binds to and inhibits farnesyl transferase, an enzyme involved in the post-translational modification and activation of Ras proteins. Ras proteins participate in numerous signalling pathways (proliferation, cytoskeletal organization), and play an important role in oncogenesis. Mutated ras proteins have been found in a wide range

of human cancers. or An anticancer drug that belongs to the family of drugs called enzyme inhibitors. Also called SCH 66336.

**lonaprisan:** An orally bioavailable pentafluoroethyl derivative of a mifepristone-related steroid with antiprogestagenic activity. Lonaprisan is a pure, highly receptor-selective progesterone receptor (PR) antagonist; binding of this agent to PRs inhibits PR activation and the associated proliferative effects. Unlike many other antiprogestins such as mifepristone, this agent does not appear to convert to an agonist in the presence of protein kinase A (PKA) activators and shows high antiprogestagenic activity on both progesterone receptor (PR) isoforms PR-A and PR-B.

**London force:** An intermolecular attractive force that arises from a cooperative oscillation of electron clouds on a collection of molecules at close range.

**lone pair:** Electrons that are not involved in bonding.

**lone-pair electrons:** a nonbonding pair of electrons, which occupy the valence orbitals.

**Long oil:** Term used to denote the properties of oil and resin in a varnish. A long oil varnish should contain not less than 70% drying oil. Terms for other proportions: short oil for 45-50% drying oil; medium oil for 50-70% drying oil.

**long peptide vaccine 7:** A peptide vaccine consisting of a combination of seven synthetic long peptides (SLPs), which are each about 30 amino acids in size, and derived from cancer-testis antigens (CTA) and melanocytic differentiation proteins (MDP), with potential immunostimulating and antitumor activities. Upon administration, long peptide vaccine 7 may stimulate the host immune system to mount a cytotoxic T-cell lymphocyte (CTL) response against tumor cells expressing these peptides. CTA and MDP are overexpressed in a variety of cancer cell types.

**Long terminal repeat:** A sequence that is repeated at either end of a retroviral DNA molecule.

**long-acting granulocyte colony-stimulating factor receptor SPI-2012:** A long-acting, recombinant analog of the endogenous human granulocyte colony-stimulating factor (G-CSF) with hematopoietic activity. Similar to G-CSF, long-acting G-CSF analog SPI-2012 binds to and activates specific cell surface receptors and stimulates neutrophil progenitor proliferation and

differentiation, as well as selected neutrophil functions. Therefore, this agent may decrease the duration and incidence of chemotherapy-induced neutropenia. The long-acting G-CSF analog SPI-2012 extends the half-life of G-CSF, allowing for administration once every 3 weeks.

**long-acting release pasireotide:** A long-acting release (LAR) formulation containing pasireotide, a synthetic long-acting cyclohexapeptide, with somatostatin-like activity. Upon intramuscular administration of the LAR formulation of pasireotide, this somatostatin analog strongly binds to and activates somatostatin receptor (SSTR) subtypes 1, 2, 3, and 5. This leads to an inhibition in the secretion of human growth hormone (hGH) and results in decreased production of insulin-like growth factor (IGF-1), which may inhibit IGF-1-mediated cell signaling pathways. This may lead to an inhibition in tumor cell growth and an increase in apoptosis in IGF-1-overexpressing tumor cells. In addition, this agent causes a reduction in adrenocorticotrophic hormone (ACTH), which leads to an inhibition of cortisol secretion. ACTH-producing tumors cause hypersecretion of cortisol which results in many unwanted symptoms. This agent may also block other key survival pathways such as the phosphatidylinositol 3-kinase (PI3K) and the mitogen-activated protein kinase (MAPK) signaling pathways. Pasireotide also inhibits vascular endothelial growth factor (VEGF) secretion, thereby decreasing angiogenesis and tumor cell growth in VEGF-overexpressing tumor cells. The long-acting form of pasireotide allows for less frequent administration as compared to the original form of this agent. SSTRs are overexpressed by some neuroendocrine and non-neuroendocrine tumor cells.

**long-term side effect :** A problem that is caused by a disease or treatment of a disease and may continue for months or years. Long-term side effects of cancer treatment include heart, lung, kidney, or gastrointestinal tract problems; pain, numbness, tingling, loss of feeling, or heat or cold sensitivity in the hands or feet; fatigue; hearing loss; cataracts; and dry eyes or dry mouth.

**longitude:** coordinate lines for locating position on Earth that run north and south through the poles, are farthest apart at the Equator, run from 0° to 180°, are equal in length, and are measured from the Prime Meridian.

**longitudinal dune:** a large, symmetrical ridge of sand that parallels the wind direction; it can be over 100 meters high and over 100 kilometers

long.

**Longitudinal Stress:** the stress imposed on the long axis of any shape. It can be wither a compressive or tensile stress.

**longshore current:** a strong current resulting from water being pushed parallel to the shore by repeated wave action; primary transporter of sand in the shoreline environment. OR a current moving parallel to the coast.

**longshore drift:** the movement of sediment parallel to the shore by wave action.

**longwave radiation:** The radiation emitted in the spectral wavelength greater than 4 micrometers corresponding to the radiation emitted from the Earth and atmosphere. It is sometimes referred to as terrestrial radiation or infrared radiation, although somewhat imprecisely.

**Lonsurf :** A combination of two drugs used to treat colorectal cancer that has spread to other parts of the body and has already been treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. It is a combination of trifluridine and tipiracil hydrochloride. Lonsurf stops cells from making DNA, which may help keep cancer cells from growing and may kill them. Also called trifluridine and tipiracil hydrochloride.

**Loop:** In a pressurized water reactor, the coolant flow path through piping from the reactor pressure vessel to the steam generator, to the reactor coolant pump, and back to the reactor pressure vessel. Large PWRs may have as many as four separate loops.

**Loop :** One complete turn within a spiral.

**loop electrosurgical excision procedure :** A technique that uses electric current passed through a thin wire loop to remove abnormal tissue. Also called LEEP and loop excision.

**loop excision :** A technique that uses electric current passed through a thin wire loop to remove abnormal tissue. Also called LEEP and loop electrosurgical excision procedure.

**loop of Henle:** the segment of the human kidney after the proximal tubule.

**Looped Edge (Wicket) :** A retaining edge formed by extending pairs of connectors or rod reinforcements, and turning them up at prescribed angles and spacing.

**Loosening:** See Molecular loosening.

**loperamide hydrochloride:** The hydrochloride salt form of loperamide, a synthetic, piperidine derivative and opioid agonist with antidiarrheal activity. Loperamide acts on the mu-receptors in the intestinal mucosa. This leads to a decrease in gastrointestinal motility by decreasing the circular and longitudinal smooth muscle activity of the intestinal wall. This slows intestinal transit and allows for more water and electrolyte absorption from the intestines. Loperamide is not significantly absorbed from the gut and does not cross the blood-brain barrier. Therefore it has no central nervous system effects.

**Lopid:** (Other name for: gemfibrozil)

**lopinavir:** A protease inhibitor used against human immunodeficiency virus (HIV). Lopinavir competitively inhibits the HIV-1 protease, an enzyme that mediates the cleavage of Gag, Gag-Pol and Nef precursor polypeptides into their mature proteins, including protease, reverse transcriptase, and integrase. Inhibition of HIV-1 protease prevents cleavage of the viral polyprotein precursor and results in the release of immature, noninfectious virions. or A drug used with another drug, called ritonavir, to treat infection with HIV (the virus that causes AIDS). It is also being studied in the treatment of some types of cancer. Lopinavir blocks the ability of HIV to make copies of itself and may help some anticancer drugs work better. It is a type of anti-HIV agent and a type of protease inhibitor.

**lopinavir/ritonavir :** A combination of the drugs ritonavir and lopinavir. It is used to treat infection with HIV (the virus that causes AIDS). It is also being studied in the treatment of some types of cancer. Lopinavir/ritonavir blocks the ability of HIV to make copies of itself and may help other anticancer drugs work better or may block the growth of cancer cells. Ritonavir blocks the breakdown of lopinavir. Lopinavir/ritonavir is a type of anti-HIV agent and a type of protease inhibitor. Also called Kaletra.

**Loprox Lotion:** (Other name for: ciclopirox olamine lotion)

**Lopurin:** (Other name for: allopurinol)

**loratadine:** A piperidine histamine H1-receptor antagonist with anti-allergic properties and without sedative effects. Loratadine blocks the H1 histamine receptor and prevents the symptoms that are caused by histamine activity on capillaries, bronchial smooth muscle, and gastrointestinal smooth muscle, including vasodilatation, increased capillary permeability, bronchoconstriction, and spasmodic contraction of gastrointestinal smooth

muscle. Loratadine does not cross the blood-brain barrier and does not cause central nervous system effects. Check for active clinical trials using this agent.

**lorazepam:** A benzodiazepine with anxiolytic, anti-anxiety, anticonvulsant, anti-emetic and sedative properties. Lorazepam enhances the effect of the inhibitory neurotransmitter gamma-aminobutyric acid on the GABA receptors by binding to a site that is distinct from the GABA binding site in the central nervous system. This leads to an increase in chloride channel opening events, a facilitation of chloride ion conductance, membrane hyperpolarization, and eventually inhibition of the transmission of nerve signals, thereby decreasing nervous excitation.

**lorazepam :** A drug that is used to treat anxiety and certain seizure disorders (such as epilepsy), and to prevent nausea and vomiting caused by chemotherapy. It belongs to the families of drugs called antiemetics and benzodiazepines.

**Lorcet:** (Other name for: hydrocodone/acetaminophen)

**lorvotuzumab mertansine:** An immunoconjugate of a humanized murine monoclonal antibody (huN-901) and DMI, a semi-synthetic derivative of the plant-derived ansa macrolide maytansine. The antibody moiety of lorvotuzumab mertansine selectively attaches to CD56 antigen, a neural cell adhesion molecule (NCAM)) expressed on the surface of cells of small cell lung cancer (SCLC) and other neuroendocrine (NE) tumors. Thus, the DMI conjugate is targeted specifically to CD56-expressing tumor cells, where it inhibits tubulin polymerization and assembly, resulting in inhibition of mitosis and cell cycle arrest in the S phase. Check for active clinical trials using this agent.

**losartan :** A drug used to treat high blood pressure. Losartan blocks the action of chemicals that make blood vessels constrict (get narrower). It is a type of angiotensin II receptor antagonist. Also called Cozaar and losartan potassium.

**losartan potassium:** The potassium salt of losartan, a non-peptide angiotensin II receptor antagonist with antihypertensive activity. Losartan selectively and competitively binds to the angiotensin II receptor (type AT1) and blocks the binding of angiotensin II to the receptor, thus promoting vasodilatation and counteracting the effects of aldosterone. Converted from angiotensin I by angiotensin-converting enzyme (ACE),

angiotensin II stimulates the adrenal cortex to synthesize and secrete aldosterone, decreasing sodium excretion and increasing potassium excretion, and acts as a vasoconstrictor in vascular smooth muscle. or A drug used to treat high blood pressure. Losartan potassium blocks the action of chemicals that make blood vessels constrict (get narrower). It is a type of angiotensin II receptor antagonist. Also called Cozaar and losartan.

**losing stream:** a stream whose channel lies above the water table and loses water into the unsaturated zone through which it is flowing.

**losoxantrone :** An anticancer drug that belongs to the family of drugs called antipyrazoles.

**Loss Factor:** The product of the power factor and the dielectric constant of a dielectric material.

**LOSS MODULUS (denoted as G'')**: An indirect measure of polymer viscosity using a cone-and-plate instrument subjected to dynamic (sinusoidal) deformation (see also STORAGE MODULUS).

**Loss of coolant accident (LOCA):** Those postulated accidents that result in a loss of reactor coolant at a rate in excess of the capability of the reactor makeup system from breaks in the reactor coolant pressure boundary, up to and including a break equivalent in size to the double-ended rupture of the largest pipe of thereactor coolant system.

**loss of heterozygosity :** If there is one normal and one abnormal allele at a particular locus, as might be seen in an inherited autosomal dominant cancer susceptibility disorder, loss of the normal allele produces a locus with no normal function. When the loss of heterozygosity involves the normal allele, it creates a cell that is more likely to show malignant growth if the altered gene is a tumor suppressor gene. Also called LOH.

**Lotensin:** (Other name for: benazepril hydrochloride)

**Lotrimin:** (Other name for: clotrimazole)

**Lotus effect:** A self-cleaning effect of superhydrophobic surfaces, whereby water droplets on the coating retain a high water contact angle, that is, stay spherical and bead off the surface. Named after the self-cleaning property of lotus flowers which have a waxy coating.

**Lovastatin:** A competitive inhibitor of HMG-coa reductase, the key regulatory enzyme in cholesterol biosynthesis; used therapeutically to lower cholesterol levels. Also called mevinolin. OR A lactone metabolite isolated

from the fungus *Aspergillus terreus* with cholesterol-lowering and potential antineoplastic activities. Lovastatin is hydrolyzed to the active beta-hydroxyacid form, which competitively inhibits 3-hydroxy-3-methylglutarylcoenzyme A (HMG-CoA) reductase, an enzyme involved in cholesterol biosynthesis. In addition, this agent may induce tumor cell apoptosis and inhibit tumor cell invasiveness, possibly by inhibiting protein farnesylation and protein geranylgeranylation, and may arrest cells in the G1 phase of the cell cycle. The latter effect sensitizes tumor cells to the cytotoxic effects of ionizing radiation. or A drug used to lower the amount of cholesterol in the blood. It is also being studied in the prevention and treatment of some types of cancer. Lovastatin is a type of HMG-CoA reductase inhibitor (statin). Also called Mevacor.

**Lovaxin C:** (Other name for: live-attenuated *Listeria monocytogenes* cancer vaccine ADXS11-001)

**Lovenox:** (Other name for: enoxaparin)

**low birth weight :** A term used to describe an infant born weighing 5.5 pounds (2500 grams) or less. A low birth weight may occur when an infant is born too early (premature). These infants may have an increased risk of serious health problems. Smoking cigarettes, being exposed to secondhand tobacco smoke, drinking alcohol, and taking certain drugs during pregnancy can increase the risk of having an infant with a low birth weight.

**Low boiling point :** A substance with a low boiling point has only weak forces between its particles. It turns into a gas at fairly low temperatures. Remember that its boiling point might be so low that it boils below room temperature.

**Low Density Poly-ethylene (LDPE) - Autoclave:** There are two basic processes used for the manufacture of LDPE, autoclave and tubular. ICI developed the first LDPE technology as a stirred autoclave process in the late 1930s. The autoclave process is adiabatic, in that there is no significant heat removal from the reactor during the process. The modern stirred autoclave reactor may have a volume of 3 000 litres and four to six zones, each running at a different temperature, thus enabling direct control of the mix of molecular species and degree of long chain branching. The high-pressure polymerisation of ethylene is a free radical promoted reaction and the autoclave operators almost always use organic peroxides as initiators.

**Low Density Poly-ethylene (LDPE) - Tubular:** There are two basic processes used for the manufacture of LDPE, autoclave and tubular. The tubular reactor process was originally developed by BASF. In the tubular design, the reactants are cooled along the long jacketed tube reactor. Tubular reactors can have several zones where fresh ethylene and initiator are added. The addition of fresh ethylene both cools the reactants and agitates the mixture so that the molecular weight distribution can be varied.

**LOW DENSITY POLYETHYLENE:** This term is generally considered to include polyethylenes ranging in density from about 0.915 to 0.925. In low density polyethylenes, the ethylene monomeric units are linked in random fashion, with the main chains having long and short side branches. This branching prevents the formation of a closely knit pattern, resulting in material that is relatively soft, flexible, and tough, and which will withstand moderate heat.

**Low Density Polyethylene (LDPE):** Low density polyethylene (LDPE) was the first polyethylene to be produced and is a member of the polyolefin family. LDPE is used in a wide range of applications, the most common being consumer plastic bags. LDPE goods are commonly marked with a 4 following the recycling codes developed by the American Society of the Plastics Industry. LDPE demand is under pressure from more modern and lower cost polymers including its fellow polyethylene LLDPE. LDPE is formed by the high pressure catalysed reaction of ethylene monomers in either tubular or autoclave reactors.

**Low Density Polyethylene (LDPE):** Polyethylene of a density ranging from .915 to .929 grams/cc.

**low grade :** A term used to describe cells and tissue that look almost normal under a microscope. Low-grade cancer cells look more like normal cells and tend to grow and spread more slowly than high-grade cancer cells. Cancer grade may be used to help plan treatment and determine prognosis. Low-grade cancers usually have a better prognosis than high-grade cancers and may not need treatment right away.

**Low melting point :** A substance with a low melting point has only weak forces between its particles. It turns into a liquid at fairly low temperatures. Remember that its melting point might be so low that it melts below room temperature.

**Low population zone (LPZ):** An area of low population density often required around a nuclear installation before it's built. The number and density of residents is of concern in emergency planning so that certain protective measures (such as notification and instructions to residents) can be accomplished in a timely manner.

**Low Pressure Laminates:** Laminates molded and cured in the range of pressures up to 400 psi

**low spin complex:** A metal-ligand complex with fewer unpaired electrons than the uncomplexed metal ion. When a strong ligand complexes the metal ion, the crystal field splitting is large and some electrons pair rather than occupying the higher energy d orbitals

**low tar cigarette :** A type of cigarette that is claimed to give off less tobacco tar than a regular cigarette when smoked. Low tar cigarettes have been shown to be no safer than regular cigarettes, and smoking them does not lower the risk of cancer or other diseases. A person smoking a low tar cigarette can inhale the same amount of tobacco tar, nicotine, and harmful, cancer-causing chemicals as in a regular cigarette, depending on how the cigarette is smoked. Cigarettes are no longer allowed to be labeled or advertised as low tar cigarettes. Also called light cigarette.

**Low Temperature Flexibility:** The ability of a plastic to be bent without fracture at reduced temperatures.

**Low-alloy steel :** Some steels contain only a small amount of other elements (<5%) but it is enough to modify the properties to fit the requirement.

**Low-density lipoprotein (LDL):** The major carrier of cholesterol in the blood; consists of a core of esterified cholesterol molecules surrounded by a shell of phospholipids, unesterified cholesterol, and apoprotein B-100; primary source of cholesterol for cells other than the liver or intestine.

**Low-Density Polyethylene (LDPE):** LDPE is defined by a density range of 0.910–0.940 g/cm<sup>3</sup>. This plastic material is relatively soft, flexible and tough but breakable, and will withstand temperatures of 80 °C continuously and 95 °C for a short time. It is made in translucent or opaque variations. LDPE is widely used for the manufacture of various containers, dispensing bottles, wash bottles, tubing, plastic bags for computer components, and various moulded laboratory equipment. Its most common use is in plastic

bags. Linear low density polyethylene (LLDPE) is a new type of low density polythene.

**low-energy phosphate compound:** A phosphorylated compound with a relatively small standard free energy of hydrolysis.

**low-grade lymphoma :** A type of lymphoma that tends to grow and spread slowly, and has few symptoms. Also called indolent lymphoma.

**low-grade squamous intraepithelial lesion :** Slightly abnormal cells are found on the surface of the cervix. Low-grade squamous intraepithelial lesion is caused by certain types of human papillomavirus (HPV) and is a common abnormal finding on a Pap test. It usually goes away on its own without treatment but sometimes the abnormal cells become cancer and spread to nearby normal tissue. Low-grade squamous intraepithelial lesion is sometimes called mild dysplasia. Also called LSIL.

**Low-level radioactive waste (LLW):** A general term for a wide range of items that have become contaminated with radioactive material or have become radioactive through exposure to neutron radiation. A variety of industries, hospitals and medical institutions, educational and research institutions, private or government laboratories, and nuclear fuel cycle facilities generate LLW as part of their day-to-day use of radioactive materials. Some examples include radioactively contaminated protective shoe covers and clothing; cleaning rags, mops, filters, and reactor water treatment residues; equipment and tools; medical tubes, swabs, and hypodermic syringes; and carcasses and tissues from laboratory animals. The radioactivity in these wastes can range from just above natural background levels to much higher levels, such as seen in parts from inside the reactor vessel in a nuclear power plant. Low-level waste is typically stored onsite by licensees, either until it has decayed away and can be disposed of as ordinary trash, or until the accumulated amount becomes large enough to warrant shipment to a low-level waste disposal site. For further information, see Low-Level Waste.

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include radioactively contaminated protective shoe covers and clothing; cleaning rags, mops, filters, and reactor water treatment residues; equipment and tools; medical tubes, swabs, and hypodermic syringes; and carcasses and tissues from laboratory animals. The radioactivity in these wastes can range from just above natural background levels to much higher levels, such as seen in parts from inside the reactor vessel in a nuclear power plant. Low-level waste is typically stored onsite by licensees, either until it has decayed away and can be disposed of as ordinary trash, or until the accumulated amount becomes large enough to warrant shipment to a low-level waste disposal site. For further information, see Low-Level Waste.

**low-pressure center:** counterclockwise circulation center, formed along a stationary front in the Northern Hemisphere.

**low-risk HPV :** A type of human papilloma virus (HPV) that can cause skin warts, such as skin warts on the hands, feet, and skin around the genitals and anus. It may also cause respiratory papillomatosis, a condition in which warts form on the larynx or other areas of the respiratory tract and cause breathing problems. Low-risk HPV infections do not cause cancer, and many go away on their own without treatment. Also called low-risk human papillomavirus.

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**lower explosive limit (LEL):** The lower limit of flammability of a gas or vapour at normal ambient temperatures expressed as percentage of the gas or vapour in air by volume. This limit is assumed constant for temperatures up to 130°C.

**lower extremity :** The part of the body that includes the leg, ankle, and foot.

**lower GI series :** X-rays of the colon and rectum that are taken after a person is given a barium enema.

**Lozanoc:** (Other name for: itraconazole)

**LPHL:** A rare type of Hodgkin lymphoma (a cancer of the immune system). It is marked by the presence of lymphocyte-predominant cells, which used to be called popcorn cells. These cells are different from the typical Reed-Sternberg cells found in classical Hodgkin lymphoma. LPHL may change into diffuse large B-cell lymphoma. Also called lymphocyte-predominant Hodgkin lymphoma, NLPHL, and nodular lymphocyte-predominant Hodgkin lymphoma.

**LRP-1-targeted peptide-drug conjugate GRN1005:** A peptide-drug conjugate containing the taxane paclitaxel covalently linked to the proprietary 19 amino acid peptide angiopep-2, in a 3:1 ratio, with potential antineoplastic activity. Upon administration, LRP-1-targeted peptide-drug conjugate GRN1005, via angiopep-2 moiety, binds to LRP-1 (low density lipoprotein receptor-related protein 1), which is highly expressed in blood brain barrier (BBB) and glioma cells. This binding allows the transcytosis of the agent across the BBB and the delivery of the cytotoxic agent paclitaxel. Compared to paclitaxel alone, GRN1005 is able to increase the concentration of paclitaxel in the brain and is also able to specifically deliver paclitaxel to LRP-1-overexpressing tumor cells, both in the brain and in the periphery.

**LSD1 inhibitor GSK2879552:** An orally available, irreversible, inhibitor of lysine specific demethylase 1 (LSD1), with potential antineoplastic activity. Upon administration, GSK2879552 binds to and inhibits LSD1, a demethylase that suppresses the expression of target genes by converting the dimethylated form of lysine at position 4 of histone H3 (H3K4) to mono- and unmethylated H3K4. LSD1 inhibition enhances H3K4 methylation and increases the expression of tumor-suppressor genes. This may lead to an inhibition of cell growth in LSD1-overexpressing tumor cells. LSD1, overexpressed in certain tumor cells, plays a key role in tumor cell growth and survival.

**LSDA:** Local spin-density approximation. A DFT method involving only local functionals (i.e., no dependence upon the gradient of the electron density). In the Gaussian programs "LSDA" is equivalent to the "SVWN" keyword.

**LSIL:** Slightly abnormal cells are found on the surface of the cervix. LSIL is caused by certain types of human papillomavirus (HPV) and is a common abnormal finding on a Pap test. It usually goes away on its own without

treatment but sometimes the abnormal cells become cancer and spread to nearby normal tissue. LSIL is sometimes called mild dysplasia. Also called low-grade squamous intraepithelial lesion.

**LSR:** Liquid silicone rubber is generally a platinum cured, two-component, low viscosity, heat-curable silicone rubber system delivered in a closed drums or buckets. Casco Bay Molding's specialty

**LST:** Linear synchronous transit. An interpolative method used to guess a transition state structure given the structures of the products and of the reactants.

**LU 79553:** An anticancer drug that kills cancer cells by affecting DNA synthesis.

**LU-103793:** An anticancer drug that reduces the risk of tumor cell growth and reproduction.

**lubiprostone:** A bicyclic fatty acid derived from prostaglandin E1 and a chloride channel activator with laxative activity. Upon intake, lubiprostone specifically binds to and activates the type 2 chloride channel (ClC-2) in the apical membrane of the gastrointestinal epithelium. This produces an efflux of chloride ions, thereby drawing water into the gastrointestinal lumen. The resulting increased amounts of intestinal fluid soften the stool, increase motility, and improve bowel movements.

**Lubricant:** An oily or slippery substance. OR Internal lubricants, without affecting the fusion properties of a compound, promotes resin flow. External lubricants promote release from metals which aids in the smooth flow of melt over die surfaces. OR Internal lubricants, without affecting the fusion properties of a compound, promotes resin flow. External lubricants promote release from metals which aids in the smooth flow of melt over die surfaces. Values given are often the average of a range.

**Lucanix:** (Other name for: belagenpumatucel-L)

**lucanthone:** An orally available thioxanthone-based DNA intercalator and inhibitor of the DNA repair enzyme apurinic-apyrimidinic endonuclease 1 (APEX1 or APE1), with anti-schistosomal and potential antineoplastic activity. Lucanthone intercalates DNA and interferes with the activity of topoisomerases I and II during replication and transcription, thereby inhibiting the synthesis of macromolecules. In addition, this agent specifically inhibits the endonuclease activity of APE1, without affecting its

redox activity, resulting in unrepaired DNA strand breaks which may induce apoptosis. Therefore, lucanthone may sensitize tumor cells to radiation and chemotherapy. Furthermore, lucanthone inhibits autophagy through the disruption of lysosomal function. The multifunctional nuclease APE1 is a key component for DNA repair; its expression is often correlated with tumor cell resistance to radio- and chemotherapy.

**lucatumumab:** A monoclonal antibody directed against the B-cell surface antigen CD40 with potential antineoplastic activity. Lucatumumab binds to and inhibits CD40, thereby inhibiting CD40 ligand-induced cell proliferation and triggering cell lysis via antibody-dependent cellular cytotoxicity (ADCC) in cells overexpressing CD40. CD40, an integral membrane protein found on the surface of B lymphocytes, is a member of the tumor necrosis factor receptor superfamily and is highly expressed in a number of B-cell malignancies.

**Lucentis:** (Other name for: ranibizumab)

**lucitanib:** A novel dual inhibitor targeting human vascular endothelial growth factor receptors (VEGFRs) and fibroblast growth factor receptors (FGFRs) with antiangiogenic activity. Lucitanib inhibits VEGFR-1, -2, -3 and FGFR-1, -2 kinases in the nM range, which may result in the inhibition of tumor angiogenesis and tumor cell proliferation, and the induction of tumor cell death. Both VEGFRs and FGFRs belong to the family of receptor tyrosine kinases that may be upregulated in various tumor cell types.

**Lucorteum Sol:** (Other name for: therapeutic progesterone)

**Lug closure:** a screw-type closure where the thread is interrupted rather than continuous. The closure is affected by a short camming action. One advantage is that application is very fast, since the closure needs only a few degrees of rotation. In contrast, a normal continuous thread closure might require 360 degrees or more of rotation to affect a seal.

**Lug pail cover:** A type of cover usually used on open end 5 gallon steel pails. The pail cover is lined with a "cushiony" compound that seats on the top rim of the pail. The seal is "activated" by clinching the lugs (an integral part of the cover) to the pail rim.

**Lugol's solution:** A solution composed of iodine and potassium iodide, which can be used as a reagent and antiseptic, with potential use in cancer diagnosis. The iodine in Lugol's solution selectively binds to alpha-1,4

glucans found in polysaccharides, such as glycogen. Lugol's solution reacts with glycogen in normal, healthy non-keratinized, squamous epithelium and the iodine-glucan complex stains the glycogen-containing cells dark brown. Cancer cells are devoid of glycogen, so these cells will stay unstained. The presence of cancer cells can be detected by the degree of staining and the neoplastic cells can be surgically removed. High-grade intraepithelial neoplasia has almost no glycogen-containing epithelium.

**lumbar lordosis:** excessive inward curvature of the lower spine

**lumbar puncture :** A procedure in which a thin needle called a spinal needle is put into the lower part of the spinal column to collect cerebrospinal fluid or to give drugs. Also called spinal tap.

**lumen :** The cavity or channel within a tube or tubular organ such as a blood vessel or the intestine.

**Lumigan :** The drug bimatoprost used to treat glaucoma (a build-up of fluid in the eye). It lowers pressure in the eye by increasing the flow of natural eye fluids out of the eye. One drop of Lumigan is put directly in the eye once a day.

**Luminescent Pigments:** Special pigments available to produce striking effects in the dark. Basically there are two types: one is activated by ultraviolet radiation, producing very strong luminescence and, consequently, very eye-catching effects; the other type, known as phosphorescent pigments, does not require any separate source of radiation.

**luminosity:** actual brightness of a star.

**Luminous paint:** A paint containing a phosphorescent pigment which glows in the dark after exposure to light.

**Luminous Transmittance:** The ratio of the luminous flux transmitted by a body of the flux incident upon it.

**Lumirem:** (Other name for: ferumoxsil oral suspension)

**Lumitene:** (Other name for: beta carotene)

**LUMO:** Lowest unoccupied molecular orbital. The energy of this orbital is sometimes used to approximate the electron affinity of the molecule, but this usually works badly.

**lumpectomy :** An operation to remove the cancer and some normal tissue around it, but not the breast itself. Some lymph nodes under the arm may be removed for biopsy. Part of the chest wall lining may also be removed if the

cancer is near it. Also called breast-conserving surgery, breast-sparing surgery, partial mastectomy, quadrantectomy, and segmental mastectomy.

**lunar eclipse:** the Moon goes out of view as it moves into the Earth's shadow; occurs during the Full Moon phase.

**Lunesta:** (Other name for: eszopiclone)

**Lunette:** Properly a small vault in a larger vault, but commonly used to describe a semi-circular panel or light.

**lung :** One of a pair of organs in the chest that supplies the body with oxygen, and removes carbon dioxide from the body.

**lung biopsy :** The removal of a small piece of lung tissue to be checked by a pathologist for cancer or other diseases. The tissue may be removed using a bronchoscope (a thin, lighted, tube-like instrument that is inserted through the trachea and into the lung). It may also be removed using a fine needle inserted through the chest wall, by surgery guided by a video camera inserted through the chest wall, or by an open biopsy. In an open biopsy, a doctor makes an incision between the ribs, removes a sample of lung tissue, and closes the wound with stitches.

**lung cancer :** Cancer that forms in tissues of the lung, usually in the cells lining air passages. The two main types are small cell lung cancer and non-small cell lung cancer. These types are diagnosed based on how the cells look under a microscope.

**lung disorder :** A type of disease that affects the lungs and other parts of the respiratory system. Lung disorders may be caused by infection, by smoking tobacco, or by breathing in secondhand tobacco smoke, radon, asbestos, or other forms of air pollution. Lung disorders include asthma, chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, pneumonia, and lung cancer. Also called pulmonary disease and respiratory disease.

**lung function :** A term used to describe how well the lungs work in helping a person breathe. During breathing, oxygen is taken into the lungs, where it passes into the blood and travels to the body's tissues. Carbon dioxide, a waste product made by the body's tissues, is carried to the lungs, where it is breathed out. There are different tests to measure lung function. Also called pulmonary function.

**lung function test :** A test used to measure how well the lungs work. It measures how much air the lungs can hold and how quickly air is moved into and out of the lungs. It also measures how much oxygen is used and how much carbon dioxide is given off during breathing. A lung function test can be used to diagnose a lung disease and to see how well treatment for the disease is working. Also called PFT and pulmonary function test.

**lung metastasis :** Cancer that has spread from the original (primary) tumor to the lung.

**lung tumor-associated antigen:** A tumor-associated antigen derived from the cell surface antigen of lung cancer cells. Lung tumor-associated antigen could be used as a diagnostic marker or as a form of immunotherapy targeted against lung cancer cells.

**lung-targeted immunomodulator QBKPN:** A proprietary, lung-targeted, site specific immunomodulator (SSI), with potential immunostimulating and antineoplastic activities. Although the exact type and composition of the lung-targeted immunomodulator QBKPN has yet to be fully disclosed, upon subcutaneous administration, this agent is able to activate a local innate immune response in the lung tissue. This results in an increased number of M1 macrophages, which induces a shift from M2 to M1 macrophage dominance in the tumor microenvironment, and stimulates the recruitment of other immune cells. The M1 macrophages exert antitumor activity and eradicate lung cancer cells through phagocytosis. QBKPN does not induce a systemic immune response or affect other organs or tissues. Altogether, this SSI may decrease tumor cell growth in the lungs. SSIs contain specific, inactivated components of pathogens, such as bacteria and/or viruses, which normally cause an acute infection in the specific organ or tissue of interest.

**lungs:** the organ where oxygen diffuses into the blood to join with hemoglobin in the red blood cells.

**Lupron:** (Other name for: leuprolide acetate)

**Lupron :** A drug used to treat advanced prostate cancer. It is also used to treat early puberty in children and certain gynecologic conditions. It is being studied in the treatment of other types of cancer. Lupron blocks the testicles from making testosterone (a male hormone) and the ovaries from making estrogen and progesterone (female hormones). It may stop the growth of prostate cancer cells that need testosterone to grow. Lupron is a

type of gonadotropin-releasing hormone (GnRH) agonist. Also called Eligard, leuprolide acetate, and Viadur.

**Lupron Depot:** (Other name for: leuprolide acetate)

**Lupron Depot-3 Month:** (Other name for: leuprolide acetate)

**Lupron Depot-4 Month:** (Other name for: leuprolide acetate)

**Lupron Depot-Ped:** (Other name for: leuprolide acetate)

**lupus :** A chronic, inflammatory, connective tissue disease that can affect the joints and many organs, including the skin, heart, lungs, kidneys, and nervous system. It can cause many different symptoms; however, not everyone with lupus has all of the symptoms. Also called SLE and systemic lupus erythematosus.

**lurbinectedin:** A synthetic tetrahydropyrrolo [4, 3, 2-de]quinolin-8(1H)-one alkaloid analogue with potential antineoplastic activity. Lurbinectedin covalently binds to residues lying in the minor groove of DNA, which may result in delayed progression through S phase, cell cycle arrest in the G2/M phase and cell death.

**lurtotecan:** A semisynthetic analogue of camptothecin with antineoplastic activity. Lurtotecan selectively stabilizes the topoisomerase I-DNA covalent complex and forms an enzyme-drug-DNA ternary complex. As a consequence of the formation of this complex, both the initial cleavage reaction and religation steps are inhibited and subsequent collision of the replication fork with the cleaved strand of DNA results in inhibition of DNA replication, double strand DNA breakage and triggering of apoptosis. Independent from DNA replication inhibition, lurtotecan also inhibits RNA synthesis, multi-ubiquitination and degradation of topoisomerase I and chromatin reorganization.

**lurtotecan :** An anticancer drug that belongs to the family of drugs called topoisomerase inhibitors.

**luster:** the appearance or quality of light reflected from a mineral's surface. OR the way a mineral shines in reflected light. OR A term used to describe a particular degree of gloss, e.g. an eggshell or low gloss finish.

**luteinizing hormone :** A hormone made in the pituitary gland. In females, it acts on the ovaries to make follicles release their eggs and to make hormones that get the uterus ready for a fertilized egg to be implanted. In

males, it acts on the testes to cause cells to grow and make testosterone. Also called interstitial cell-stimulating hormone, LH, and lutropin.

**luteinizing hormone-releasing hormone :** A hormone made by a part of the brain called the hypothalamus. Luteinizing hormone-releasing hormone causes the pituitary gland in the brain to make and secrete the hormones luteinizing hormone (LH) and follicle-stimulating hormone (FSH). In men, these hormones cause the testicles to make testosterone. In women, they cause the ovaries to make estrogen and progesterone. Also called GnRH, gonadotropin-releasing hormone, LH-RH, and LHRH.

**luteinizing hormone-releasing hormone agonist :** A substance that keeps the testicles and ovaries from making sex hormones by blocking other hormones that are needed to make them. In men, luteinizing hormone-releasing hormone agonists cause the testicles to stop making testosterone. In women, they cause the ovaries to stop making estrogen and progesterone. Some luteinizing hormone-releasing hormone agonists are used to treat prostate cancer. Also called GnRH agonist, gonadotropin-releasing hormone agonist, and LH-RH agonist.

**luteinizing hormone-releasing hormone antagonist :** A substance that blocks the pituitary gland from making hormones called follicle-stimulating hormone (FSH) and luteinizing hormone (LH). In men, this causes the testicles to stop making testosterone. In women, this causes the ovaries to stop making estrogen and progesterone. Some luteinizing hormone-releasing hormone antagonists are used to treat advanced prostate cancer. They are also used to treat certain gynecologic conditions and are being studied in the treatment of hormone-sensitive breast cancer. Also called GnRH antagonist, gonadotropin-releasing hormone antagonist, and LH-RH antagonist.

**Luteohormone:** (Other name for: therapeutic progesterone)

**Lutetium:** Symbol:"Lu" Atomic Number:"71" Atomic Mass: 174.97amu. Lutetium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. You will find this element used in oil refineries.

**lutetium Lu 177 DOTA-biotin:** A radioconjugate of biotin conjugated with the bifunctional, macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and labeled with the beta-emitting isotope lutetium Lu 177 (Lu-177) that can be used for

radioimmunotherapeutic purposes. Lutetium Lu 177 DOTA-biotin could be used in pre-targeting radioimmunotherapy, which pretreats the lesion with oxidized avidin that binds to protein amino groups on cells. As avidin binds to biotin, the radioisotope can be selectively delivered to cancer cells leading to tumor cell eradication.

**lutetium Lu 177 DOTA-JR11:** A radioconjugate consisting of the somatostatin antagonistic peptide JR11 that is linked, via the chelating agent dodecanetetraacetic acid (DOTA), to the beta-emitting radioisotope lutetium Lu 177, with potential antineoplastic activity and imaging activity during positron emission tomography/computed tomography (PET/CT). Upon administration, lutetium Lu 177-DOTA-JR11 binds to somatostatin receptors (SSTRs), with high affinity for SSTR2, present on the cell membranes of many types of neuroendocrine tumor (NET) cells. Upon binding and internalization, this radioconjugate specifically delivers a cytotoxic dose of beta radiation to SSTR-positive cells. SSTRs have been shown to be present in large numbers on NETs and their metastases, while most normal tissues express low levels of SSTRs.

**lutetium Lu 177 DOTA-tetulomab:** A radioimmunoconjugate, which consists of a monoclonal antibody against the cell-surface antigen CD37 covalently linked, via the bifunctional, macrocyclic chelating agent tetraazacyclododecanetetra-acetic acid (DOTA), to the beta-emitting radioisotope lutetium Lu 177, with potential antineoplastic activity. The antibody moiety of lutetium Lu 177 DOTA-tetulomab binds to CD37 on tumor B-cells. Upon internalization, the radioisotope moiety delivers a cytotoxic dose of beta radiation to CD37-expressing tumor cells. CD37, a transmembrane glycoprotein, is overexpressed in B-cell malignancies.

**lutetium Lu 177 monoclonal antibody J591:** A radioimmunoconjugate consisting of a humanized monoclonal antibody directed against the extracellular domain of prostate-specific membrane antigen linked to a beta-emitting radioisotope (lutetium-177). This radioimmunoconjugate binds to tumor cells that express the extracellular domain of prostate-specific membrane antigen, delivering beta particle radiation selectively to tumor cells expressing this antigen and so limiting the exposure of normal tissues to ionizing radiation.

**lutetium Lu 177 PP-F11N:** A radioconjugate composed of PP-F11N, a gastrin analog, conjugated to the beta-emitting radioisotope lutetium Lu

177, with potential antineoplastic activity and potential use as an imaging agent for scintigraphy. Following intravenous administration, the PP-F11N moiety binds to the cholecystinin-2 (CCK-2) receptor. Subsequently, the CCK-2 receptor-expressing tumor cells can be visualized scintigraphically. In addition, the radioisotope moiety delivers a cytotoxic dose of beta radiation to CCK-2 receptor-expressing tumor cells. CCK-2 receptors are expressed on a variety of tumor cell types.

**lutetium Lu 177-capromab:** A radioimmunoconjugate consisting of capromab linked to lutetium Lu 177 via the bifunctional macrocyclic chelator methoxy-tetraazacyclododecane-tetraacetic acid (MeO-DOTA) with potential antineoplastic activity. Lutetium Lu 177-capromab binds to human prostate specific membrane antigen (PSMA) expressed on tumor cell surfaces via its capromab moiety and, upon internalization, delivers cytotoxic beta radiation directly to PSMA-expressing tumor cells. PSMA is a cell surface glycoprotein abundantly expressed by prostate epithelium and is typically overexpressed by prostate cancer cells.

**lutetium Lu 177-DOTA-di-HSG peptide IMP-288:** A radiolabeled divalent histamine-succinyl-glycine (HSG) hapten-peptide linked with the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) to the radionuclide lutetium (Lu) 177. After pretargeting with a bispecific monoclonal antibody (BiMoAB) directed against both a tumor associated antigen (TAA) and the HSG hapten-peptide, the HSG portion of administered Lu-177-labeled di-HSG-DOTA peptide IMP-288 binds the anti-HSG portion of the BiMoAB; Lu-177 radioisotopic activity localized to tumor cells bearing the TAA can then be visualized scintigraphically. Check for active clinical trials using this agent.

**lutetium Lu 177-DOTA-octreotate:** A radioconjugate consisting of the somatostatin analog octreotate labeled with lutetium Lu 177 with receptor ligand, beta-emitting radioisotope, and potential antineoplastic activities. Lutetium Lu 177-DOTA-octreotate binds to somatostatin receptors (SSTRs), especially type 2 receptors, present on the cell membranes of many types of neuroendocrine tumor cells. Upon binding and internalization, this radioconjugate specifically delivers a cytotoxic dose of beta radiation to SSTR-positive cells. Lutetium Lu 177-DOTA-octreotate is produced by substituting the natural amino acid Thr for the alcohol Thr(ol)

at the C terminus of the somatostatin analog octreotide and chelating the octreotate to Lu 177 via dodecanetetraacetic acid (DOTA).

**lutetium Lu 177-DOTA-TATE:** A radioconjugate consisting of the tyrosine-containing somatostatin analog Tyr3-octreotate (TATE) conjugated with the bifunctional, macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and radiolabeled with the beta-emitting radioisotope lutetium Lu 177 with potential antineoplastic activities. Lutetium Lu 177-DOTA-TATE binds to somatostatin receptors (SSTRs), with high affinity to type 2 SSTR, present on the cell membranes of many types of neuroendocrine tumor (NET) cells. Upon binding and internalization, this radioconjugate specifically delivers a cytotoxic dose of beta radiation to SSTR-positive cells. Tyr3-octreotate (TATE) is an octreotide derivative in which phenylalanine at position 3 is substituted by tyrosine and position 8 threoninol is replaced with threonine. SSTRs have been shown to be present in large numbers on NET and their metastases, while most other normal tissues express low levels of SSTRs.

**lutetium LU 177-edotreotide:** A radioconjugate consisting of the somatostatin analogue edotreotide labeled with lutetium Lu 177 with potential antineoplastic activities. Lutetium Lu 177-edotreotide binds to somatostatin receptors (SSTRs), with high affinity to type 2 SSTR, present on the cell membranes of many types of neuroendocrine tumor cells. Upon binding and internalization, this radioconjugate specifically delivers a cytotoxic dose of beta radiation to SSTR-positive cells. Edotreotide is produced by substituting tyrosine for phenylalanine at the 3 position of the somatostatin analogue octreotide (Tyr3-octreotide or TOC) and chelated by the bifunctional, macrocyclic chelating agent dodecanetetraacetic acid (DOTA).

**lutetium Lu-177 girentuximab:** A radioimmunoconjugate consisting of the chimeric monoclonal antibody cG250 linked to the low energy beta-emitting radioisotope Lutetium 177, via the bifunctional macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA), with potential antineoplastic activity. The antibody moiety of lutetium Lu-177 girentuximab binds to renal cell carcinoma (RCC) cells expressing the RCC-associated antigen G250; a cytotoxic dose of beta radiation is selectively delivered to G250-expressing RCC cells upon internalization of the radioimmunoconjugate.

**lutetium texaphyrin** : A substance that is being studied in the treatment of cancer using photodynamic therapy. It belongs to the family of drugs called metallotexaphyrins. Also called motexafin lutetium.

**Lutex:** (Other name for: motexafin lutetium)

**Lutrin:** (Other name for: motexafin lutetium)

**lutropin** : A hormone made in the pituitary gland. In females, it acts on the ovaries to make follicles release their eggs and to make hormones that get the uterus ready for a fertilized egg to be implanted. In males, it acts on the testes to cause cells to grow and make testosterone. Also called interstitial cell-stimulating hormone, LH, and luteinizing hormone.

**Luvox** : A drug used to treat obsessive-compulsive disorder. It is a type of antidepressant agent and selective serotonin reuptake inhibitor (SSRI). Also called fluvoxamine.

**LV.II-2/B7.1-transduced AML blast vaccine:** A whole-cell cancer vaccine, containing human acute myeloid leukemic (AML) blasts that have been genetically engineered to express a B7.1/IL-2 fusion protein encoded by a self-inactivating lentiviral vector (LV), with potential antineoplastic and immunomodulating activities. Upon administration, LV.II-2/B7.1-transduced AML blast vaccine may stimulate a host cytotoxic T lymphocyte (CTL) response against AML cells. The single fusion protein encoded by the LV is postsynthetically cleaved to produce biologically active membrane-anchored B7.1 and secreted IL-2 in AML blasts; combined expression of IL-2 and the co-stimulatory molecule B7.1 by AML blasts may increase stimulation of both allogeneic and autologous cytotoxic T cells.

**LXR alpha pathway** : Describes a group of proteins in a cell that work together to help control how certain genes are expressed and how cholesterol, lipids (fats), bile acids, and steroid hormones are made in the body. Changes in the LXR alpha pathway may lead to diseases such as heart disease and cancer. Drugs or substances that affect this pathway are being studied in the prevention and treatment of cancer and other diseases. Also called liver X receptor alpha pathway.

**LY231514:** A drug used alone or with another drug to treat certain types of non-small cell lung cancer and malignant pleural mesothelioma. It is being studied in the treatment of other types of cancer. LY231514 blocks DNA

synthesis and may kill cancer cells. It is a type of folate antagonist. Also called Alimta and pemetrexed disodium.

**LY293111:** A substance that is being studied as a treatment for cancer. It belongs to the family of drugs called leukotriene B4 receptor antagonists.

**LY317615:** A substance being studied in the treatment of certain types of cancer, including non-Hodgkin lymphoma, breast, colon, lung, ovarian, and prostate. LY317615 blocks certain cell signaling pathways, and may prevent the growth of new blood vessels that tumors need to grow. It is a type of serine threonine kinase inhibitor and a type of antiangiogenesis agent. Also called enzastaurin and enzastaurin hydrochloride.

**LY335979:** A substance being studied in the treatment of cancer. LY335979 may help kill cancer cells that are resistant to anticancer drugs. Also called zosuquidar trihydrochloride.

**LY353381 hydrochloride :** A substance being studied in the treatment of osteoporosis and breast cancer. LY353381 hydrochloride is made in the laboratory and binds to estrogen receptors in the body. It is a type of selective estrogen receptor modulator (SERM). Also called arzoxifene hydrochloride.

**LY6K/VEGFR1/VEGFR2 multipeptide vaccine:** A multipeptide vaccine consisting of peptides derived from lymphocyte antigen 6 complex locus K (LY6K) and type I and II vascular endothelial growth factor receptors (VEGFRs) with potential antineoplastic activity. Upon administration, LY6K/VEGFR1/VEGFR2 multipeptide vaccine may elicit an antitumor cytotoxic T-lymphocyte (CTL) immune response against LY6K-expressing tumor cells and/or VEGFR-expressing vascular endothelial cells involved in tumor angiogenesis. LY6K is a tumor-associated antigen (TAA) that occurs singly in glycosylphosphatidyl-inositol (GPI)-linked cell-surface glycoproteins or as three-fold repeated domain in the urokinase-type plasminogen activator receptor; VEGFRs are cell surface receptors that stimulate endothelial cell proliferation, invasion, angiogenesis, and vasculogenesis upon ligand binding and receptor activation. Check for active clinical trials using this agent.

**Lyase:** An enzyme that catalyzes the removal of a group to form a double bond, or the reverse reaction. OR Enzymes that catalyze the removal of a group from a molecule to form a double bond, or the addition of a group to a double bond.

**Lyc-O-Mato:** (Other name for: lycopene)

**lycopene:** A linear, unsaturated hydrocarbon carotenoid, the major red pigment in fruits such as tomatoes, pink grapefruit, apricots, red oranges, watermelon, rosehips, and guava. As a class, carotenoids are pigment compounds found in photosynthetic organisms (plants, algae, and some types of fungus), and are chemically characterized by a large polyene chain containing 35-40 carbon atoms; some carotenoid polyene chains are terminated by two 6-carbon rings. In animals, carotenoids such as lycopene may possess antioxidant properties which may retard ageing and many degenerative diseases. As an essential nutrient, lycopene is required in the animal diet.

**lycopene :** A red pigment found in tomatoes and some fruits. It is an antioxidant and may help prevent some types of cancer.

**lye:** Common name for solution of sodium hydroxide.

**lymph:** a watery fluid derived from plasma that seeps out of the blood system capillaries and mingles with the cells.

**lymph :** The clear fluid that travels through the lymphatic system and carries cells that help fight infections and other diseases. Also called lymphatic fluid.

**lymph gland :** A small bean-shaped structure that is part of the body's immune system. Lymph glands filter substances that travel through the lymphatic fluid, and they contain lymphocytes (white blood cells) that help the body fight infection and disease. There are hundreds of lymph glands found throughout the body. They are connected to one another by lymph vessels. Clusters of lymph glands are found in the neck, axilla (underarm), chest, abdomen, and groin. For example, there are about 20-40 lymph glands in the axilla. Also called lymph node.

**lymph node :** A small bean-shaped structure that is part of the body's immune system. Lymph nodes filter substances that travel through the lymphatic fluid, and they contain lymphocytes (white blood cells) that help the body fight infection and disease. There are hundreds of lymph nodes found throughout the body. They are connected to one another by lymph vessels. Clusters of lymph nodes are found in the neck, axilla (underarm), chest, abdomen, and groin. For example, there are about 20-40 lymph nodes in the axilla. Also called lymph gland.

**lymph node dissection :** A surgical procedure in which the lymph nodes are removed and a sample of tissue is checked under a microscope for signs of cancer. For a regional lymph node dissection, some of the lymph nodes in the tumor area are removed; for a radical lymph node dissection, most or all of the lymph nodes in the tumor area are removed. Also called lymphadenectomy.

**lymph node drainage :** The flow of lymph from an area of tissue into a particular lymph node.

**lymph node mapping :** The use of dyes and radioactive substances to identify lymph nodes that may contain tumor cells. Also called lymphatic mapping.

**lymph nodes:** capsule-like bodies that contain cells that filter the lymph and phagocytize foreign particles.

**lymph vessel :** A thin tube that carries lymph (lymphatic fluid) and white blood cells through the lymphatic system. Also called lymphatic vessel.

**lymphadenectomy :** A surgical procedure in which the lymph nodes are removed and a sample of tissue is checked under a microscope for signs of cancer. For a regional lymphadenectomy, some of the lymph nodes in the tumor area are removed; for a radical lymphadenectomy, most or all of the lymph nodes in the tumor area are removed. Also called lymph node dissection.

**lymphadenopathy :** Disease or swelling of the lymph nodes.

**lymphangiogram :** An x-ray of the lymphatic system. A dye is injected into a lymphatic vessel and travels throughout the lymphatic system. The dye outlines the lymphatic vessels and organs on the x-ray.

**lymphangiography :** An x-ray study of the lymphatic system. A dye is injected into a lymphatic vessel and travels throughout the lymphatic system. The dye outlines the lymphatic vessels and organs on the x-ray.

**lymphangiosarcoma :** A type of cancer that begins in the cells that line lymph vessels.

**lymphangitic carcinomatosis :** A condition in which cancer cells spread from the original (primary) tumor and invade lymph vessels (thin tubes that carry lymph and white blood cells through the body's lymph system). The invaded lymph vessels then fill up with cancer cells and become blocked. Although lymphangitic carcinomatosis can occur anywhere in the body, it

commonly happens in the lungs. It can happen in many types of cancer but is most common in breast, lung, colon, stomach, pancreatic, and prostate cancer. Also called carcinomatous lymphangitis.

**lymphatic basin :** A group of lymph nodes that receives and filters lymph that flows from a certain area of the body. Special dyes may be used to stain and identify the lymphatic basin in the tissues around a tumor, so that lymph nodes that may contain cancer can be removed and checked by a pathologist.

**lymphatic fluid :** The clear fluid that travels through the lymphatic system and carries cells that help fight infections and other diseases. Also called lymph.

**lymphatic mapping :** The use of dyes and radioactive substances to identify lymph nodes that may contain tumor cells. Also called lymph node mapping.

**lymphatic system:** the extension of the circulatory system consisting of capillaries called lymph vessels, a fluid called lymph, and structures called lymph nodes.

**lymphatic system :** The tissues and organs that produce, store, and carry white blood cells that fight infections and other diseases. This system includes the bone marrow, spleen, thymus, lymph nodes, and lymphatic vessels (a network of thin tubes that carry lymph and white blood cells). Lymphatic vessels branch, like blood vessels, into all the tissues of the body.

**lymphatic vessel :** A thin tube that carries lymph (lymphatic fluid) and white blood cells through the lymphatic system. Also called lymph vessel.  
OR a series of vessels that return the lymph fluid to the circulatory system.

**Lymphazurin:** (Other name for: isosulfan blue)

**lymphedema :** A condition in which extra lymph fluid builds up in tissues and causes swelling. It may occur in an arm or leg if lymph vessels are blocked, damaged, or removed by surgery.

**lymphoblast :** A lymphocyte that has gotten larger after being stimulated by an antigen. Lymphoblast also refers to an immature cell that can develop into a mature lymphocyte.

**lymphoblastic :** Refers to lymphoblasts (a type of immature white blood cell).

**lymphoblastic lymphoma :** An aggressive (fast-growing) type of non-Hodgkin lymphoma in which too many lymphoblasts (immature white blood cells) are found in the lymph nodes and the thymus gland. These lymphoblasts may spread to other places in the body. It is most common in teenagers and young adults and affects more males than females. It may be a T or B cell type. Also called precursor lymphoblastic lymphoma.

**LymphoCide:** (Other name for: epratuzumab)

**lymphocyte :** A type of immune cell that is made in the bone marrow and is found in the blood and in lymph tissue. The two main types of lymphocytes are B lymphocytes and T lymphocytes. B lymphocytes make antibodies, and T lymphocytes help kill tumor cells and help control immune responses. A lymphocyte is a type of white blood cell.

**lymphocyte-predominant Hodgkin lymphoma :** A rare type of Hodgkin lymphoma (a cancer of the immune system). It is marked by the presence of lymphocyte-predominant cells, which used to be called popcorn cells. These cells are different from the typical Reed-Sternberg cells found in classical Hodgkin lymphoma. Lymphocyte-predominant Hodgkin lymphoma may change into diffuse large B-cell lymphoma. Also called LPHL, NLPHL, and nodular lymphocyte-predominant Hodgkin lymphoma.

**lymphocytes:** the white blood cells that are essential components of the immune system. OR A subclass of leukocytes involved in the immune response. B lymphocytes synthesize and secrete antibodies; T lymphocytes either play a regulatory role in immunity or kill foreign and virus-infected cells.

**lymphocytic :** Refers to lymphocytes (a type of white blood cell).

**lymphocytic leukemia :** A type of cancer in which the bone marrow makes too many lymphocytes (white blood cells).

**lymphocytic leukopenia :** A condition in which there is a lower-than-normal number of lymphocytes (a type of white blood cell) in the blood. Also called lymphocytopenia and lymphopenia.

**lymphocytopenia :** A condition in which there is a lower-than-normal number of lymphocytes (a type of white blood cell) in the blood. Also called lymphocytic leukopenia and lymphopenia.

**lymphoepithelioma :** A type of cancer that begins in the tissues covering the nasopharynx (the upper part of the throat behind the nose).

**lymphography** : An x-ray study of lymph nodes and lymphatic vessels made visible by the injection of a special dye.

**lymphoid** : Referring to lymphocytes, a type of white blood cell. Also refers to tissue in which lymphocytes develop.

**lymphokine-activated killer cell** : A white blood cell that is stimulated in a laboratory to kill tumor cells. Also called LAK cell.

**lymphokine-activated killer cells**: Killer cell lymphocytes activated in the presence of interleukin-2 (IL-2). Lymphokine-activated killer cells (LAKs) are cytotoxic effector cells with an exceptionally wide target cell spectrum including normal and malignant cells of different origins. LAK cells exhibit a profound heterogeneity with regard to phenotype surface marker expression; it remains to be determined if they represent a unique cell lineage.

**lymphoma** : Cancer that begins in cells of the immune system. There are two basic categories of lymphomas. One kind is Hodgkin lymphoma, which is marked by the presence of a type of cell called the Reed-Sternberg cell. The other category is non-Hodgkin lymphomas, which includes a large, diverse group of cancers of immune system cells. Non-Hodgkin lymphomas can be further divided into cancers that have an indolent (slow-growing) course and those that have an aggressive (fast-growing) course. These subtypes behave and respond to treatment differently. Both Hodgkin and non-Hodgkin lymphomas can occur in children and adults, and prognosis and treatment depend on the stage and the type of cancer.

**lymphoma TAA-specific cytotoxic T lymphocytes**: A population of autologous cytotoxic T lymphocytes (CTLs) with potential immunomodulating and antitumor activities. White blood cells are grown ex-vivo and are exposed to dendritic cells (DCs) loaded with lymphoma tumor associated antigens (TAAs); the TAA-specific CTLs are further expanded ex-vivo before being introduced into the patient. Upon infusion with TAA-specific CTLs, these CTLs may help activate tumor-specific CTL responses in the patient, thereby specifically killing TAA-expressing cancer cells and eventually inhibiting tumor cell proliferation. Check for active clinical trials using this agent.

**lymphomatoid granulomatosis** : Destructive growth of lymph cells, usually involving the lungs, skin, kidneys, and central nervous system.

Grades I and II are not considered cancer, but grade III is considered a lymphoma.

**lymphomatous leptomeningitis** : A serious problem that may occur in lymphoma. In lymphomatous leptomeningitis, cancer cells have spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). The cancer may cause the meninges to be inflamed. Also called lymphomatous meningitis.

**lymphomatous meningitis** : A serious problem that may occur in lymphoma. In lymphomatous meningitis, cancer cells have spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). The cancer may cause the meninges to be inflamed. Also called lymphomatous leptomeningitis.

**lymphopenia** : A condition in which there is a lower-than-normal number of lymphocytes (a type of white blood cell) in the blood. Also called lymphocytic leukopenia and lymphocytopenia.

**lymphoplasmacytic lymphoma** : An indolent (slow-growing) type of non-Hodgkin lymphoma marked by abnormal levels of IgM antibodies in the blood and an enlarged liver, spleen, or lymph nodes. Also called Waldenström macroglobulinemia.

**lymphopoietin-1** : One of a group of related proteins made by leukocytes (white blood cells) and other cells in the body. Lymphopoietin-1 is made by cells that cover and support organs, glands, and other structures in the body. It causes the growth of T lymphocytes and B lymphocytes. Lymphopoietin-1 made in the laboratory is used as a biological response modifier to boost the immune system in cancer therapy. Lymphopoietin-1 is a type of cytokine. Also called IL-7 and interleukin-7.

**lymphoproliferative disorder** : A disease in which cells of the lymphatic system grow excessively. Lymphoproliferative disorders are often treated like cancer.

**lymphosarcoma** : An obsolete term for a malignant tumor of lymphatic tissue.

**lymphoscintigraphy** : A method used to check the lymph system for disease. A radioactive substance that flows through the lymph ducts and can be taken up by lymph nodes is injected into the body. A scanner or probe is used to follow the movement of this substance on a computer screen.

Lymphoscintigraphy is used to find the sentinel lymph node (the first node to receive lymph from a tumor), which may be removed and checked for tumor cells. Lymphoscintigraphy is also used to diagnose certain diseases or conditions, such as lymphoma or lymphedema.

**Lymphoseek:** (Other name for: technetium Tc 99m-labeled tilmanocept)

**LymphoStat-B antibody:** (Other name for: belimumab)

**lymphostatic elephantiasis :** A condition in which tissue or a limb becomes very swollen and thick, and changes color. It is caused by a block in the flow of lymph and a buildup of fluid in tissues. Also called stage III lymphedema.

**Lynch syndrome :** An inherited disorder in which affected individuals have a higher-than-normal chance of developing colorectal cancer and certain other types of cancer, often before the age of 50. Also called hereditary nonpolyposis colon cancer and HNPCC.

**Lynparza :** A drug used to treat advanced ovarian cancer caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is used in patients who have already received other anticancer drugs. It is also being studied in the treatment of other types of cancer. Lynparza blocks an enzyme involved in many cell functions, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. Lynparza may cause cancer cells to die. It is a type of targeted therapy agent and a type of poly (ADP-ribose) polymerase inhibitor. Also called AZD2281, olaparib, and PARP inhibitor AZD2281.

**LYOPHILE:** A material having an affinity for, attracting, adsorbing or absorbing oil. The opposite of lyophobic.

**lyophilized black raspberry lozenge:** A lozenge containing lyophilized black raspberry with potential antioxidant, pro-apoptotic and chemopreventive activities. In addition to vitamins, minerals, and phytosterols, black raspberries are rich in flavonols. Of the flavonols present in this agent, the anthocyanins appear to contribute significantly to this agent's chemopreventive effects by inhibiting the activation of several signal transduction pathways, including the mitogen-activated protein kinase-mediated pathways, and certain transcription factors, such as nuclear factor kappa B (NF-kB), activator protein-1 (AP-1) complex, and nuclear factor in activated T-cells (NFAT). This in turn modulates the expression of downstream target genes that are upregulated in a variety of cancer cell

types, including inducible nitric oxide synthase, cyclooxygenase-2, vascular endothelial growth factor and the anti-apoptotic protein survivin.

**lyophilized black raspberry saliva substitute:** A saliva substitute (or artificial saliva) containing lyophilized black raspberry with potential antioxidant, pro-apoptotic and chemopreventive activities. In addition to vitamins, minerals and phytosterols, black raspberries are rich in flavonols of which the anthocyanins appear to contribute significantly to this agent's chemopreventive effects. Anthocyanins inhibit the activation of several signal transduction pathways, including the mitogen-activated protein kinase-mediated pathways, and certain transcription factors, such as nuclear factor kappa B (NF- $\kappa$ B), activator protein-1 (AP-1) complex, and nuclear factor in activated T-cells (NFAT). This in turn modulates the expression of downstream target genes that are upregulated in a variety of cancer cell types, including inducible nitric oxide synthase, cyclooxygenase-2, vascular endothelial growth factor and the anti-apoptotic protein survivin.

**LYOPHOBE:** A material lacking affinity for, repelling, failing to adsorb or absorb oil. The opposite of lyophile.

**Lyrica :** A drug used to treat nerve pain caused by diabetes or herpes zoster infection and certain types of seizures. It is being studied in the prevention and treatment of nerve pain in the hands and feet of cancer patients given chemotherapy. Lyrica is a type of anticonvulsant. Also called pregabalin.

**lysine-specific demethylase 1 inhibitor INCB059872:** An orally available inhibitor of lysine-specific demethylase 1 (LSD1; lysine-specific histone demethylase 1A; KDM1A), with potential antineoplastic activity. Upon administration, INCB059872 binds to and inhibits LSD1, a demethylase that suppresses the expression of target genes by converting the di- and mono-methylated forms of lysine at position 4 of histone H3 (H3K4) to mono- and unmethylated H3K4, respectively, through amine oxidation. LSD1 inhibition enhances H3K4 methylation and increases the expression of tumor-suppressor genes. In addition, LSD1 demethylates mono- or dimethylated H3K9 which increases gene expression of tumor promoting genes; inhibition of LSD1 promotes H3K9 methylation and decreases transcription of these genes. Altogether, this may lead to an inhibition of cell growth in LSD1-overexpressing tumor cells. LSD1, an enzyme belonging to the flavin adenine dinucleotide (FAD)-dependent amine

oxidase family, is overexpressed in certain tumor cells and plays a key role in the regulation of gene expression and in tumor cell growth and survival.

**lysis:** Destruction of a cell's plasma membrane or of a bacterial cell wall, releasing the cellular contents and killing the cell. OR In biology, lysis refers to the breakdown of a cell caused by damage to its plasma (outer) membrane. It can be caused by chemical or physical means (for example, strong detergents or high-energy sound waves) or by infection with a strain virus that can lyse cells.

**lyso-thermosensitive liposomal doxorubicin:** A temperature-sensitive liposomal formulation of the anthracycline antibiotic doxorubicin with potential antineoplastic activity. Upon intravenous administration, circulating thermosensitive liposomes are activated locally by increasing the tumor temperature to 40-41 degrees Celsius using an external heat source. The elevated temperature causes compositional changes in the liposomes, creating openings that allow for the release of encapsulated doxorubicin. Compared to non-thermosensitive liposomes, lyso-thermosensitive liposomes deliver higher concentrations of a cytotoxic agent to a heat-treated tumor site while sparing normal tissues unexposed to heat treatment. Check for active clinical trials using this agent.

**Lysodren:** (Other name for: mitotane)

**Lysogenic bacteriophage:** A phage whose DNA is integrated into the host cell by site-specific recombination and whose expression is repressed.

**Lysogenic bacterium:** A bacterial cell whose chromosome contains a prophage.

**Lysogenic virus:** A virus that can adopt an inactive (lysogenic) state, in which it maintains its genome within a cell instead of entering the lytic cycle. The circumstances that determine whether a lysogenic (temperate) virus will adopt an inactive state or an active lytic state are often subtle and depend upon the physiologic state of the infected cell.

**lysogeny:** One of two outcomes of the infection of a host cell by a temperate phage. It occurs when the phage genome becomes repressed and is replicated as part of the host DNA; infrequently it may be induced, and the phage particles so produced cause the host cell to lyse.

**lysosome:** an organelle within eukaryotic cells; a droplet-like sac filled with enzymes used for digestion within the cell. OR A membrane-bounded

organelle in the cytoplasm of eukaryotic cells; it contains many hydrolytic enzymes and serves as a degrading and recycling center for unneeded components. OR An organelle that contains hydrolytic enzymes designed to break down proteins that are targeted to that organelle. OR A sac-like compartment inside a cell that has enzymes that can break down cellular components that need to be destroyed.

**lytic :** Having to do with lysis. In biology, lysis refers to the disintegration of a cell by disruption of its plasma membrane. Lysis can be caused by chemical or physical means (e.g., high-energy sound waves) or by a virus infection.

**Lytic bacteriophage:** A phage that replicates in its host and then lyses, or destroys, it.

**Lytic infection:** A virus infection that leads to the lysis of the host cell, yielding progeny virus particles.

**lytic lesion :** Destruction of an area of bone due to a disease process, such as cancer.

**M phase:** That period of the cell cycle when mitosis takes place.

**M protein :** An antibody found in unusually large amounts in the blood or urine of people with multiple myeloma and other types of plasma cell tumors. Also called monoclonal protein.

**m-azidopyrimethamine:** An antifolate derived from diaminopyrimidine with cytotoxic properties. With a mechanism of action similar to that of methotrexate (MTX), m-azidopyrimethamine blocks tetrahydrofolate synthesis, resulting in depletion of nucleotide precursors and inhibition of DNA, RNA and protein synthesis. This agent is more lipophilic but less potent than MTX.

**M-EDTA:** A substance being studied in the prevention of bacterial infections that occur in catheters (thin tubes that carry fluids into or out of the body). It is a combination of minocycline, an antibiotic that blocks the growth of bacteria, and EDTA, a substance that keeps blood clots from forming. M-EDTA removes metals that bacteria use to form biofilms (thin layers stuck to surfaces). Also called minocycline-EDTA.

**M/S:** Abbreviation for mild steel.

**M200:** A monoclonal antibody that is being studied in the treatment of some types of cancer. Monoclonal antibodies are made in the laboratory and

can locate and bind to substances in the body, including cancer cells. M200 binds to a protein that is found on cells that line some tumor blood vessels. It is a type of angiogenesis inhibitor. Also called volociximab.

**M87o-transduced CD34+ peripheral blood stem cells:** Peripheral blood stem cells (PBSCs) transduced with the retroviral vector M87o encoding for the HIV-1-entry inhibitor peptide membrane-anchored antiviral peptide C46 (maC46). Expression of C46 by M87o-transduced CD34+ peripheral blood stem cells may prevent the fusion of viral and cellular membranes, thereby inhibiting HIV-1 entry. C46 is a membrane-anchored peptide encoding amino acids 628 to 673 of the HIV-1 entry inhibitory transmembrane glycoprotein gp41.

**ma huang :** A shrub native to China and India. The stems and roots are used in traditional medicine as a diuretic and for asthma, bronchitis, and cough. It has also been promoted as a decongestant, a weight loss aid, and as a supplement to increase energy. Ma huang may cause high blood pressure, increased heart rate, or death if used with certain drugs, and may reduce the effects of certain drugs used to treat cancer and other diseases. The U.S. Food and Drug Administration has banned the sale of dietary supplements that contain ma huang. The scientific name is *Ephedra sinica*. Also called ephedra.

**Maalox suspension:** (Other name for: magnesium hydroxide/aluminum hydroxide/simethicone suspension)

**Machine Direction:** Direction the film is being pulled through a machine.

**Machine Shot Capacity:** Refers to the maximum volume of thermoplastic resin which can be displaced or injected by the injection ram in a single stroke. OR The maximum volume of resin which can be injected in a single stroke.

**Machining :** Any of a number of processes, such as drilling, turning, sanding, etc., which may be performed on a piece of plastic.

**macimorelin:** An orally available synthetic mimetic of the growth hormone (GH) secretagogue ghrelin with potential anti-cachexia activity. Upon oral administration, macimorelin mimics endogenous ghrelin by stimulating appetite and binds to the growth hormone secretagogue receptor GHSR in the central nervous system, thereby mimicking the GH-releasing effects of ghrelin from the pituitary gland. Stimulation of GH secretion increases insulin-like growth factor-I (IGF-I) levels which may further

stimulate protein synthesis. In addition, ghrelin reduces the production of pro-inflammatory cytokines, which may play a direct role in cancer-related loss of appetite.

**macitentan:** An orally available dual endothelin receptor (ETR) antagonist with potential antihypertensive and antineoplastic activity. Upon administration, macitentan and its metabolites block the binding of endothelin isoform 1 (ET-1) to type-A and type-B ETR on both the tumor cells and the endothelial cells in the tumor vasculature. This prevents ET-1 mediated signaling transduction which may decrease tumor cell proliferation, progression, and angiogenesis in tumor tissue. ET-1, a potent vasoconstrictor that plays an important role in inflammation and tissue repair, is, together with its receptors, overexpressed varyingly in many tumor cell types.

**macrocalcification :** A small deposit of calcium in the breast that cannot be felt but can be seen on a mammogram. It is usually caused by aging, an old injury, or inflamed tissue and is usually not related to cancer.

**macrocephaly:** refers to a head circumference greater than two standard deviations above the mean for age, sex, race and gestation

**macroglobulinemia :** A condition in which the blood contains high levels of large proteins and is too thick to flow through small blood vessels. One type is Waldenström macroglobulinemia, which is a type of cancer.

**macroglossia:** enlarged tongue

**macrogol 3350-based oral osmotic laxative:** An isotonic solution containing macrogol 3350 and electrolytes with laxative activity. Macrogol 3350-based oral osmotic laxative promotes the retention of water in the bowel, thereby increasing the water content of stool, which results in increased gastrointestinal motility and stool transit time and evacuation of colonic contents. Macrogol 3350 is also known as polyethylene glycol (PEG) 3350.

**Macromolecule:** Large molecules with relatively high molecular weights typically generated through polymerisation of smaller subunits. OR A molecule having a molecular weight in the range of a few thousand to many millions. OR Name given to a very large, and in most cases biologically important molecule. Molar mass certain to be in the thousands of grams, at least.

**macroorchidism:** large testicles

**macrophage :** A type of white blood cell that surrounds and kills microorganisms, removes dead cells, and stimulates the action of other immune system cells.

**Macroscopic:** Once we had the word 'microscopic', it was only a matter of time before we needed 'macroscopic'; anything big enough to be seen with the naked eye is macroscopic in size.

**macular degeneration :** A condition in which there is a slow breakdown of cells in the center of the retina (the light-sensitive layers of nerve tissue at the back of the eye). This blocks vision in the center of the eye and can cause problems with activities such as reading and driving. Macular degeneration is most often seen in people who are over the age of 50. Also called age-related macular degeneration, AMD, and ARMD.

**mafic:** magma that is iron or magnesium-based, darker in color, and more dense than felsic magma.

**mafic rock:** an igneous rock containing approximately 50 percent silica and relatively high percentages of iron, magnesium, and calcium.

**mafosfamide:** A synthetic oxazaphosphorine derivative with antineoplastic properties. Mafosfamide alkylates DNA, forming DNA cross-links and inhibiting DNA synthesis. Although closely related to cyclophosphamide, mafosfamide, unlike cyclophosphamide, does not require hepatic activation to generate its active metabolite 4-hydroxy-cyclophosphamide; accordingly, mafosfamide is potentially useful in the intrathecal treatment of neoplastic meningitis. A form of cyclophosphamide that can be administered as an intrathecal infusion. Mafosfamide is being studied as an anticancer drug. It belongs to the family of drugs called alkylating agents.

**MAG-Tn3/AS15 vaccine:** A vaccine containing synthetic multiple antigenic glycopeptide (MAG) composed of tri Tn glycotope (MAG-Tn3), which comprises a dendrimeric, nonimmunogenic lysine core linked to a tetravalent peptidic CD4<sup>+</sup> T-cell epitope backbone and each attached to three Tn antigens (tri-Tn cluster), combined with the immunoadjuvant AS15, with potential antineoplastic activity. Upon administration of the MAG-Tn3/AS15 vaccine, MAG-Tn3 induces the production of tumor-specific anti-Tn glycosidic antibodies, which results in antibody-dependent cell cytotoxicity (ADCC) against Tn-expressing tumor cells. The Tn carbohydrate antigen, a tumor-associated antigen (TAA), is overexpressed

in a number of tumor cell types. The tri-Tn clusters mimic carbohydrate structures found on tumor cells. The T-cell epitope stimulates effective T-cell responses. AS15, a potent adjuvant liposomal formulation that contains CpG 7909, monophosphoryl lipid (MPL), and QS-21, increases the immune response against the Tn antigens.

**MAGE-10.A2:** A synthetic nonapeptide derived from a melanoma-associated antigen. Vaccination with MAGE-10.A2 may stimulate a host cytotoxic T-cell response against tumor cells that express the melanoma-associated antigen, resulting in tumor cell lysis.

**MAGE-3 antigen :** A protein found in many types of tumors but not in most normal tissues. Vaccines using pieces of the MAGE-3 protein are being studied for their ability to boost the immune response to cancer cells in patients with cancer.

**MAGE-3.A1 peptide vaccine:** A synthetic peptide cancer vaccine consisting of human leukocyte antigen HLA-A1-restricted peptide derived from human melanoma antigen 3 (MAGE-3) with potential immunostimulating and antineoplastic activities. Upon administration, MAGE-3.A1 peptide vaccine may stimulate the immune system to mount a cytotoxic T-cell (CTL) response against tumor cells expressing MAGE-3, resulting in tumor cell lysis. MAGE-3, a tumor-associated antigen (TAA), is overexpressed by a variety of cancer cell types.

**MAGE-A1, Her-2/neu, FBP peptides ovarian cancer vaccine:** A cancer vaccine containing multiple synthetic antigen peptides derived from MAGE-A1, Her-2/neu, and folate binding protein (FBP) with potential immunostimulating and antineoplastic properties. MAGE-A1, Her-2/neu, FBP peptides cancer vaccine includes the antigen peptides MAGE-A1:161-169, FBP:191-199, Her-2/neu:369-377, MAGE-A1:96-104, and Her-2/neu:754-762. Upon administration, this cancer vaccine may stimulate the immune system to mount a cytotoxic T-cell (CTL) response against tumor cells expressing these antigen peptides, resulting in tumor cell lysis. MAGE-A1, Her-2/neu, and FBP proteins may be over-expressed in various cancer cell types, such as epithelial ovarian cancer cells.

**MAGE-A1, MAGE-A3, NY-ESO-1 peptides vaccine:** A cancer vaccine comprised of synthetic peptides derived from human melanoma antigen A1 (MAGE-A1), human melanoma antigen A3 (MAGE-A3) and cancer-testis antigen NY-ESO-1 with potential immunostimulating and antineoplastic

activities. Upon administration, MAGE-A1/MAGE-A3/NY-ESO-1 peptides vaccine may stimulate the immune system to mount a cytotoxic T-cell (CTL) response against tumor cells expressing MAGE-A1, MAGE-A3 and NY-ESO-1, resulting in tumor cell lysis. The MAGE-A1, MAGE-A3, and NY-ESO-1 tumor-associated antigens (TAAS) are overexpressed by a variety of cancer cell types. Check for active clinical trials using this agent.

**MAGE-A3 peptide vaccine:** A peptide cancer vaccine comprised of a peptide derived from the human melanoma antigen A3 (MAGE-A3), with potential immunostimulating and antineoplastic activities. Upon administration, MAGE-A3 peptide vaccine may stimulate the immune system to mount a cytotoxic T-cell (CTL) response against tumor cells expressing MAGE-A3, resulting in tumor cell lysis. MAGE-A3, a tumor-associated antigen (TAA), is overexpressed by a variety of cancer cell types.

**MAGE-A3 reactive T cell receptor-transduced autologous T cells:**

Human autologous T-lymphocytes transduced with a retroviral vector encoding a T cell receptor (TCR) specific for the human melanoma antigen A3 (MAGE-A3), with potential antineoplastic activity. Upon isolation, transduction, expansion ex vivo, and reintroduction into the patient, the MAGE-A3 reactive TCR-transduced autologous T cells bind to tumor cells expressing MAGE-A3, which may halt the growth of MAGE-A3-expressing cancer cells; the TCR is specific for MAGE-A3:168-176.

**MAGE-A3-expressing adenovirus type 5 vaccine:** An oncolytic adenoviral vaccine composed of a replication-defective, E1- and E3-deleted adenovirus serotype 5 (Ad5) with a transgene encoding the human melanoma antigen A3 (MAGE-A3), with potential antineoplastic activity. Upon administration, MAGE-A3-expressing adenovirus type 5 vaccine selectively replicates in cancer cells and expresses MAGE-A3. This induces an immune response against tumor cells expressing the MAGE-A3 antigen, which leads to tumor cell death. The tumor-associated antigen MAGE-A3 is overexpressed by a variety of cancer cell types.

**MAGE-A3/HPV 16 peptide vaccine:** A multi-epitope "Trojan antigen" ("TA") construct vaccine consisting of human melanoma antigen A3 (MAGE-A3) and human papillomavirus (HPV) 16 peptide epitopes linked by the furin-sensitive linker peptide RVKR (arginine-serine-lysine-arginine) with immunostimulatory and antitumor activities. The TA construct enters

the cytoplasm of antigen-presenting cells (APC) and is processed by the endoplasmic reticulum (ER) and the trans-Golgi network (TGN), where the endopeptidase furin releases the epitopes from the RVKR linker peptide and, together with various exopeptidases, generates MHC class I-binding peptides. Expressed on the cell surfaces of APC, these MHC class I-binding peptides stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells that display the same peptide epitopes on their cell surfaces.

**MAGE-A4-specific TCR gene-transduced T lymphocytes TBI-1201:**

Autologous human T lymphocytes transduced with a retroviral vector encoding a T-cell receptor (TCR) specific for the human melanoma antigen A4 (MAGE-A4), with potential immunostimulatory and antineoplastic activities. Upon isolation, transduction, expansion *ex vivo*, and reintroduction into the patient, MAGE-A4-specific TCR gene-transduced T lymphocytes TBI-1201 binds to tumor cells expressing MAGE-A4. This may result in both an inhibition of growth and increased cell death for MAGE-A4-expressing tumor cells. The tumor-associated antigen MAGE-A4 is overexpressed by a variety of cancer cell types.

**Magic angle:** The angle ( $54^{\circ} 44'$ ) at which solid samples are often spun in solid-state NMR spectroscopy. This spinning removes the effect of the random orientation of the powdered solid with respect to the magnetic field.

**Magic-angle spinning:** A solid-state NMR technique involving spinning the sample at an angle of  $54^{\circ}44'$  to reduce the anisotropic chemical shifts in a solid.

**magma:** liquid rock below the Earth's surface. OR molten rock that forms below the surface of the earth, usually at depths of 100 kilometers or greater. OR Molten rock beneath the surface of the Earth. When magma spills onto the surface of the Earth (maybe from a volcano) it is called lava. OR Magma is the name given to molten rocks beneath the Earth's surface.

**magmatic arc:** a general term for belts of andesitic island arcs or inland andesitic mountain ranges (volcanic arcs) that develop along continental edges.

**magmatic deposit:** of metallic ore, the result when the minerals settle to the bottom of an intrusive body and form thin, high-grade layers.

**magmatic water:** water derived from magmas.

**Magnesium:** Symbol:"Mg" Atomic Number:"12" Atomic Mass: 24.31amu. Magnesium is a member of the alkaline metals family. Magnesium is a very light metallic element. It is also a trace element, needed by both plants and animals. You will also find magnesium in medicines and flash bulbs.

**magnesium :** In medicine, a mineral used by the body to help maintain muscles, nerves, and bones. It is also used in energy metabolism and protein synthesis.

**magnesium citrate:** The citrate salt of the element magnesium with cathartic activity. The cathartic action of magnesium cations appears to result, in part, from osmotically mediated water retention, which subsequently stimulates peristalsis. In addition, magnesium ions may also stimulate the activity of nitric oxide (NO) synthase and increase the biosynthesis of the phospholipid proinflammatory mediator platelet activating factor (PAF) in the gut. NO may stimulate intestinal secretion via prostglandin- and cyclic GMP-dependent mechanisms while PAF produces significant stimulation of colonic secretion and gastrointestinal motility.

**magnesium hydroxide:** A solution of magnesium hydroxide with antacid and laxative properties. Milk of magnesium exerts its antacid activity in low doses such that all hydroxide ions that enter the stomach are used to neutralize stomach acid. This agent exerts its laxative effect in higher doses so that hydroxide ions are able to move from the stomach to the intestines where they attract and retain water, thereby increasing intestinal movement (peristalsis) and inducing the urge to defecate.

**magnesium hydroxide/aluminum hydroxide/simethicone suspension:** An oral suspension containing magnesium hydroxide, aluminum hydroxide and simethicone with antacid activity. Both magnesium hydroxide and aluminum hydroxide react with excess acid in the stomach thereby neutralizing gastric acid. Simethicone, a mixture of polydimethylsiloxane and silica gel, reduces the surface tension of gas bubbles, promoting gas bubble coalescence and so intestinal gas transit and evacuation. Check for active clinical trials using this agent.

**magnesium isoglycyrrhizinate:** The magnesium salt form of the saponin, isoglycyrrhizinate, a derivative of glycyrrhizic acid extracted from the roots of the plant *Glycyrrhiza glabra*, with potential anti-inflammatory, antioxidant and hepatoprotective activities. Although the exact mechanism

of action remains to be fully elucidated, magnesium isoglycyrrhizinate may prevent or reduce hepatotoxicity through the scavenging of free radicals. This agent also modulates the activity of hepatic enzymes such as alanine aminotransferase (ALT), aspartate aminotransferase (AST), superoxide dismutase (SOD) and glutathione peroxidase.

**magnesium L-threonate:** A nutritional supplement containing the L-threonate form of magnesium (Mg) that can be used to normalize Mg levels in the body. Upon administration, Mg is utilized by the body for many biochemical functions and reactions including: bone and muscle function, protein and fatty acid formation, activation of B vitamins, blood clotting, insulin secretion, and ATP formation. Mg also serves as a catalyst for many enzymes throughout the body. In addition, magnesium improves the functioning of the immune system by enhancing the expression of natural killer activating receptor NKG2D in cytotoxic T-lymphocytes and natural killer (NK) cells. This increases their anti-viral and anti-tumor cytotoxic effects.

**magnesium oxide:** A thickening agent for polyester resins. OR The oxide salt of magnesium with antacid, laxative and vascular smooth muscle relaxant activities. Magnesium combines with water to form magnesium hydroxide which reacts chemically to neutralize or buffer existing quantities of stomach acid; stomach-content and intra-esophageal pH rise, resulting in a decrease in pepsin activity. This agent's laxative effect is the result, in part, of osmotically mediated water retention, which subsequently stimulates peristalsis. In addition, magnesium ions may behave as calcium antagonists in vascular smooth muscle.

**magnesium sulfate :** A drug used to treat pre-eclampsia and eclampsia (serious complications of pregnancy). Magnesium sulfate is also being studied for its ability to prevent the toxic side effects of certain drugs used to treat colorectal cancer. It is a type of anticonvulsant agent.

**magnesium valproate:** The magnesium salt of valproic acid (2-propylpentanoic acid) with antiepileptic and potential antineoplastic activities. Magnesium valproate dissociates in the gastrointestinal tract and is absorbed into the circulation as magnesium ions and valproic acid ions; valproic acid may inhibit histone deacetylases, inducing tumor cell differentiation, apoptosis, and growth arrest. In addition, valproic acid exerts an antiepileptic effect, likely by inhibiting enzymes that catabolize

the inhibitory neurotransmitter gamma-aminobutyric acid (GABA) catabolism and so increasing concentrations of GABA in the central nervous system (CNS). The presence of the magnesium in this agent may contribute to its anticonvulsant activity and sedative properties.

**magnetic anomaly:** an area of magnetism that is either higher or lower than the average magnetic field for that region.

**magnetic declination:** the number of degrees that a compass needle is pulled away from True North to point toward Magnetic North.

**magnetic field:** of a planet, a magnetic force that surrounds the planet and probably originates from its metallic core.

**Magnetic North:** the area near Hudson Bay, Canada, where the Earth's magnetic field is strongest in the Northern Hemisphere (location changes over time).

**magnetic pole:** a locality at which magnetic lines of force converge to create the strongest point in the magnetic field.

**magnetic quantum number:** Quantum number that labels different orbitals within a subshell.  $m$  can take on values from  $-l$  to  $+l$ . The number of orbitals in a subshell is the same as the number of possible  $m$  values.

**magnetic quantum number ( $m$ ):**  $m$  the third number in Schrödinger's electron wave equation, which tells the orientation of the orbital in space.

**magnetic resonance angiography :** A procedure that uses radio waves and a powerful magnet linked to a computer to create detailed pictures of the blood vessels and blood flow inside the body. A dye may be injected into a vein to make the blood vessels and blood flow easier to see. Magnetic resonance angiography may be used to check for aneurysms (a bulge in the blood vessel wall), blockages in the arteries, blood clots, and other blood vessel problems. Also called MRA.

**magnetic resonance imaging :** A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. Magnetic resonance imaging makes better images of organs and soft tissue than other scanning techniques, such as computed tomography (CT) or x-ray. Magnetic resonance imaging is especially useful for imaging the brain, the spine, the soft tissue of joints,

and the inside of bones. Also called MRI, NMRI, and nuclear magnetic resonance imaging.

**magnetic resonance perfusion imaging** : A special type of magnetic resonance imaging (MRI) that uses an injected dye in order to see blood flow through tissues. Also called perfusion magnetic resonance imaging.

**magnetic resonance spectroscopic imaging** : A noninvasive imaging method that provides information about cellular activity (metabolic information). It is used along with magnetic resonance imaging (MRI) which provides information about the shape and size of the tumor (spatial information). Also called  $^1\text{H}$ -nuclear magnetic resonance spectroscopic imaging, MRSI, and proton magnetic resonance spectroscopic imaging.

**Magnetic stripes** : Tectonic plates move around the Earth. It is believed that the ocean floors are spreading so that the continents are moving further apart. Measurements of magnetic properties along the ocean floor show that the rock has been formed at different times.

**magnetic-targeted carrier** : A tiny bead made from particles of iron and carbon that can be attached to an anticancer drug. A magnet applied from outside the body then can direct the drug to the tumor site. This can keep a larger dose of the drug at the tumor site for a longer period of time, and help protect healthy tissue from the side effects of chemotherapy.

**magnetometer**: a device for measuring the intensity of the magnetic field at the earth's surface. OR Chains of intracellular small particles containing the magnetic ore magnetite ( $\text{Fe}_3\text{O}_4$ ) found in some bacteria that enable the bacteria to detect Earth's magnetic field.

**Magnevist** : A substance used in magnetic resonance imaging (MRI) to help make clear pictures of the brain, spine, heart, soft tissue of joints, and inside bones. Magnevist is being studied in the diagnosis of cancer. It is a type of contrast agent. Also called gadopentetate dimeglumine and Gd-DTPA.

**maidenhair tree** : A tree native to China. Substances taken from the leaves and seeds have been used in some cultures to treat certain medical problems. Maidenhair tree has been studied in the prevention and treatment of Alzheimer disease, dementia, certain blood vessel diseases, and memory loss. It may cause bleeding or high blood pressure when used with certain drugs. Also called ginkgo and ginkgo biloba.

**Main chain:** The regularly repeating part of the primary structure of a polypeptide; each unit of the chain includes the  $\alpha$ -carbon atom as well as the CO and NH groups of an amino acid residue.

**Main Drive :** The motor, reducer, and other power transmission devices that turn the cage or drum of a spiral system. Also known as the cage drive.

**main group elements:** Elements of the s and p blocks.

**Main olfactory epithelium:** A specific region of the nose, containing approximately 1 million sensory neurons, that detects odorants.

**main sequence star:** star that falls into broad band along the H-R diagram.

**mainstream medicine :** A system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. Also called allopathic medicine, biomedicine, conventional medicine, orthodox medicine, and Western medicine.

**mainstream smoke :** Tobacco smoke that is exhaled by smokers. Mainstream smoke can be a form of secondhand smoke. It contains nicotine and many harmful, cancer-causing chemicals. Inhaling mainstream smoke increases the risk of lung cancer and may increase the risk of other types of cancer. Inhaling it also increases the risk of other health problems, such as heart disease and lung disease.

**mainstream smoke (tobacco smoking):** The smoke that is inhaled.

**maintenance therapy :** Treatment that is given to help keep cancer from coming back after it has disappeared following the initial therapy. It may include treatment with drugs, vaccines, or antibodies that kill cancer cells, and it may be given for a long time.

**Maitake mushroom extract:** An extract of the edible mushroom Maitaki, *Grifola frondosa*, rich in glucan polysaccharides, with potential immunostimulating activity. Upon oral ingestion, Maitaki mushroom extract may promote dendritic cell (DC) maturation, increase interferon gamma (IFN-gamma) and tumor necrosis factor alpha (TNF-alpha) production, and may enhance natural killer (NK) cell activity, thereby amplifying both innate and T cell-mediated immune responses against cancer cells. In addition, this extract may stimulate the production of

granulocyte colony stimulating factor (GCSF) and promote hematopoiesis, and may improve the neutrophil count.

**Major groove:** A 12-Å-wide, 8.5-Å-deep groove in B-DNA resulting from the fact that the glycosidic bonds of a base pair are not diametrically opposite each other.

**Major histocompatibility complex (MHC):** Integral membrane proteins that bind and display on a cell's surface peptides derived from the digestion of proteins from the cytosol (class I MHC proteins) or from endosomal compartments (class II MHC proteins). Foreign peptides bound to class I MHC proteins mark them for destruction by killer T cells, whereas those bound to class II MHC proteins provide a signal for helper T cells, which can in turn stimulate B-lymphocyte production.

**major product:** the product that forms in the greatest amount in a reaction.

**Makarol:** (Other name for: diethylstilbestrol)

**Making good:** Carrying out the requisite repairs to a surface to provide a sound surface for painting.

**malabsorption syndrome :** A group of symptoms such as gas, bloating, abdominal pain, and diarrhea resulting from the body's inability to properly absorb nutrients.

**Malate synthase:** An enzyme of the glyoxylate cycle that catalyzes the formation of oxaloacetate from glyoxylate and acetyl coa.

**Malate-aspartate shuttle:** A reversible shuttle, found in the liver and heart, used to transport electrons from cytoplasmic NADH to mitochondrial NAD<sup>+</sup>.

**Malaysian Oleochemicals Manufacturing Group (MOMG):** Formed in January of 1984 to help support the manufacturers in Peninsular Malaysia responsible for the production of basic oleochemicals, including fatty acids, methyl esters, glycerin, and fatty alcohols.

**Maldex:** (Other name for: maltodextrin)

**Maldrin:** (Other name for: maltodextrin)

**male breast cancer :** Cancer that forms in tissues of the breast in men. Most male breast cancer begins in cells lining the ducts. It is very rare and usually affects older men.

**Maleic Anhydride:** Maleic anhydride has traditionally been produced by the oxidation of benzene, but more recently, n-butane has replaced benzene as the main feedstock. Maleic anhydride is a versatile molecule that lends itself to many applications requiring multi-functionality. The main applications for refined Maleic anhydride are unsaturated polyester resins and fine chemicals (alkenyl succinic anhydrides, fumaric acid, polyaspartic acid). OR An unsaturated dicarboxylic acid anhydride used primarily in the formation of unsaturated polyester resins.

**malignancy :** A term for diseases in which abnormal cells divide without control and can invade nearby tissues. Malignant cells can also spread to other parts of the body through the blood and lymph systems. There are several main types of malignancy. Carcinoma is a malignancy that begins in the skin or in tissues that line or cover internal organs. Sarcoma is a malignancy that begins in bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue. Leukemia is a malignancy that starts in blood-forming tissue, such as the bone marrow, and causes large numbers of abnormal blood cells to be produced and enter the blood. Lymphoma and multiple myeloma are malignancies that begin in the cells of the immune system. Central nervous system cancers are malignancies that begin in the tissues of the brain and spinal cord. Also called cancer.

**malignant:** Adjective describing cells in a cancerous growth. See tumour.

**malignant :** Cancerous. Malignant cells can invade and destroy nearby tissue and spread to other parts of the body.

**malignant ascites :** A condition in which fluid containing cancer cells collects in the abdomen.

**malignant ectomesenchymoma :** A rare, fast-growing tumor of the nervous system or soft tissue that occurs in children and young adults. Malignant ectomesenchymomas may form in the head and neck, abdomen, perineum, scrotum, or limbs. Also called ectomesenchymoma.

**malignant fibrous cytoma :** A soft tissue sarcoma that usually occurs in the limbs, most commonly the legs, and may also occur in the abdomen. Also called malignant fibrous histiocytoma.

**malignant fibrous histiocytoma :** A soft tissue sarcoma that usually occurs in the limbs, most commonly the legs, and may also occur in the abdomen. Also called malignant fibrous cytoma.

**malignant glioma tumor lysate-pulsed autologous dendritic cell**

**vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with lysates from malignant glioma cells with potential immunostimulatory and antineoplastic activities. Upon administration, malignant glioma tumor lysate-pulsed autologous dendritic cell vaccine exposes the immune system to undefined malignant glioma tumor-associated antigens (TAAs), which may result in anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against glioma cells and glioma cell lysis.

**malignant meningioma :** A rare, fast-growing tumor that forms in one of the inner layers of the meninges (thin layers of tissue that cover and protect the brain and spinal cord). Malignant meningioma often spreads to other areas of the body.

**malignant mesothelioma :** A rare type of cancer in which malignant cells are found in the lining of the chest or abdomen. Exposure to airborne asbestos particles increases one's risk of developing malignant mesothelioma.

**malignant mixed Müllerian tumor :** A rare type of tumor that is a mixture of carcinoma and sarcoma cells. MMMT usually occurs in the uterus. Also called MMMT.

**malignant pericardial effusion :** A condition in which cancer causes extra fluid to collect inside the sac around the heart. The extra fluid causes pressure on the heart, which keeps it from pumping blood normally. Lymph vessels may be blocked, which can cause infection. Malignant pericardial effusions are most often caused by lung cancer, breast cancer, melanoma, lymphoma, and leukemia.

**malignant peripheral nerve sheath tumor :** A type of soft tissue sarcoma that develops in cells that form a protective sheath (covering) around peripheral nerves, which are nerves that are outside of the central nervous system (brain and spinal cord). Also called MPNST.

**malignant peritoneal effusion :** A condition in which cancer causes extra fluid to collect between the thin layers of the peritoneum (tissue that lines the abdomen and covers most of the organs in the abdomen). Signs and symptoms may include pain or swelling in the abdomen, trouble breathing, chest pain, weight gain, nausea, loss of appetite, and fatigue. Malignant

peritoneal effusions are most often caused by cancers of the ovary, uterus, breast, colon, lung, pancreas, and liver.

**malignant pleural effusion :** A condition in which cancer causes an abnormal amount of fluid to collect between the thin layers of tissue (pleura) lining the outside of the lung and the wall of the chest cavity. Lung cancer, breast cancer, lymphoma, and leukemia cause most malignant pleural effusions.

**malleability:** the property of a metal that allows it to be hammered, rolled, pressed or forged.

**malleable:** A malleable material can be hammered into different shapes. OR Capable of being hammered into sheets. Metals are typically malleable materials.

**malnourished :** Describes a condition caused by not getting enough calories or the right amount of key nutrients needed for health. Key nutrients include vitamins and minerals.

**malnutrition :** A condition caused by not getting enough calories or the right amount of key nutrients, such as vitamins and minerals, that are needed for health. Malnutrition may occur when there is a lack of nutrients in the diet or when the body cannot absorb nutrients from food. Cancer and cancer treatment may cause malnutrition.

**malondialdehyde :** A byproduct of lipid (fat) metabolism in the body. It is also found in many foods and can be present in high amounts in rancid food.

**MALT lymphoma :** A type of cancer that arises in cells in mucosal tissue that are involved in antibody production. Also called mucosa-associated lymphoid tissue lymphoma.

**maltodextrin:** An oligosaccharide derived from starch that is used as a food additive and as a carbohydrate supplement. As a supplement, maltodextrin is used to provide and sustain energy levels during endurance-oriented workouts or sports, to help build muscle mass and support weight gain.

**maltose:** A disaccharide consisting of two glucose units linked through an alpha-1,4 glycosidic bond.

**mammaglobin-A DNA vaccine:** A cancer vaccine containing a plasmid encoding the mammaglobin-A gene with potential immunostimulating and

antineoplastic activities. Upon administration, mammaglobin-A DNA vaccine may induce both humoral and cytotoxic T lymphocyte (CTL) immune responses against tumor cells that express mammaglobin-A, which may result in decreased tumor growth. The 10 kiloDalton (kD) glycoprotein mammaglobin-A is expressed in over 80% of human breast cancers.

**mammalian target of rapamycin :** A protein that helps control several cell functions, including cell division and survival, and binds to rapamycin and other drugs. Mammalian target of rapamycin may be more active in some types of cancer cells than it is in normal cells. Blocking mammalian target of rapamycin may cause the cancer cells to die. It is a type of serine/threonine protein kinase. Also called mechanistic target of rapamycin and mTOR.

**mammals:** milk-producing animals.

**MammaPrint :** A test that is used to help predict whether breast cancer has spread to other parts of the body or come back. The test looks at the activity of 70 different genes in breast cancer tissue of women who have early-stage breast cancer that has not spread to the lymph nodes. If there is a high risk that the cancer will spread or come back, it may be used to help plan treatment with anticancer drugs. Also called 70-gene signature.

**mammary :** Having to do with the breast.

**mammary dysplasia :** A group of conditions marked by changes in breast tissue that are benign (not cancer). There are different types of mammary dysplasia, including some types caused by an increase in the number of cells or by the growth of abnormal cells in the breast ducts or lobes. Signs and symptoms of mammary dysplasia include irregular lumps or cysts, breast swelling or discomfort, skin redness or thickening, and nipple discharge. Most benign breast conditions do not increase the risk of breast cancer. Also called benign breast disease.

**mammary gland :** Glandular organ located on the chest. The mammary gland is made up of connective tissue, fat, and tissue that contains the glands that can make milk. Also called breast.

**mammogram :** An x-ray of the breast.

**mammography :** The use of film or a computer to create a picture of the breast.

**MammoSite :** A system used to deliver internal radiation therapy to breast cancer patients after surgery to remove their cancer. MammoSite targets only the part of the breast where the cancer was found. After a patient has had a lumpectomy to remove the cancer, a small balloon on the end of a catheter (thin tube) is inserted into the empty space left by the surgery. The balloon is then filled with liquid and left in place. Using the catheter, radioactive seeds are put into the balloon twice a day for five days and removed each time. Once treatment has ended, the catheter and balloon are removed. MammoSite is a type of intracavitary brachytherapy and partial breast irradiation therapy (PBRT). Also called balloon catheter radiation.

**MAMMOTOME :** A device that uses a computer-guided probe to perform breast biopsies. A biopsy procedure using the MAMMOTOME device can be done on an outpatient basis with a local anesthetic, removes only a small amount of healthy tissue, and doesn't require sutures (stitches) because the incision is very small. MAMMOTOME is a registered trademark of Devicor Medical Products, Inc.

**MANDREL:** 1. Core around which fiberglass impregnated with plastic resin is wound, as in filament winding. 2. The portion of an extrusion die that forms the hollow center in an extruded tube.

**mangafodipir trisodium:** The trisodium salt of mangafodipir with potential antioxidant and chemoprotective activities. Consisting of manganese (II) ions chelated to fodipir (dipyridoxyl diphosphate or DPDP), mangafodipir scavenges oxygen free radicals such as superoxide anion, hydrogen peroxide, and hydroxyl radical, potentially preventing oxygen free radical damage to macromolecules such as DNA and minimizing oxygen free radical-related chemotoxicity in normal tissues. However, this agent may potentiate the chemotherapy-induced generation of oxygen free radicals in tumor cells, resulting in the potentiation of chemotherapy-induced cytotoxicity; tumor cells, with higher levels of reactive oxygen species than normal cells, possess a lower threshold for oxygen free radical-mediated cytotoxicity. Mangafodipir is traditionally used as an imaging agent in magnetic resonance imaging (MRI).

**Manganese:** Symbol:"Mn" Atomic Number:"25" Atomic Mass: 54.94amu. This element is one of the transition elements. Manganese can be found in many minerals and small round nodules at the bottom of the ocean. It is also used in many alloys and the creation of some types of glass.

**Manganese center:** The site of oxygen generation in photosynthesis in green plants. The center is a complex, which includes four manganese ions, that donates electrons to positively charged P680. After donating four electrons, the manganese center oxidizes two molecules of water to replenish its electrons and thus forms a single molecule of molecular oxygen and four protons.

**Manifold:** A term used mainly with reference to blow molding and sometimes with injection molding equipment. It refers to the distribution or piping system which takes the single channel flow output of the extruder or injection cylinder and divides it to feed several blow molding heads or injection nozzles.

**MANIFOLD:** See HOT RUNNER.

**manipulative and body-based practice :** A type of therapy in which the therapist moves or manipulates one or more parts of the patient's body. It may be used to treat pain, stress, anxiety, and depression, and for general well-being. Examples include chiropractic treatments, physical therapy, and massage therapy. Also called manual healing and physical touch methods.

**mannitol:** A naturally occurring alcohol found in fruits and vegetables and used as an osmotic diuretic. Mannitol is freely filtered by the glomerulus and poorly reabsorbed from the renal tubule, thereby causing an increase in osmolarity of the glomerular filtrate. An increase in osmolarity limits tubular reabsorption of water and inhibits the renal tubular reabsorption of sodium, chloride, and other solutes, thereby promoting diuresis. In addition, mannitol elevates blood plasma osmolarity, resulting in enhanced flow of water from tissues into interstitial fluid and plasma. or A drug used to decrease swelling of the brain and to treat kidney failure. Mannitol can also be used to open the blood-brain barrier, which allows anticancer medicines to enter the brain and treat brain tumors.

**manometer:** an instrument for measuring pressure liquids and gasses. It usually consists of a U-shaped tube containing a liquid, the surface of which is in one end of the tube; moves proportionally with changes in pressure on the liquid in the other end. Also, a tube type differential pressure gauge. OR Device used for measuring small pressures. OR An instrument for measuring gas pressures. A mercury or oil manometer measures gas pressure as the height of a fluid column the gas sample is able to support. Open manometers measure gas pressure relative to atmospheric pressure.

**mantle:** The mantle is the region inside the Earth that lies between the outer crust and the core. OR the layer below the crust; about 2,900 km thick; contains rocks rich in iron, magnesium, and silicon. OR the middle zone of the earth, between the core and the crust. OR The layer of the Earth immediately below the crust. Beneath the mantle is the core.

**mantle cell lymphoma :** An aggressive (fast-growing) type of B-cell non-Hodgkin lymphoma that usually occurs in middle-aged or older adults. It is marked by small- to medium-size cancer cells that may be in the lymph nodes, spleen, bone marrow, blood, and gastrointestinal system.

**mantle field :** The area of the neck, chest, and lymph nodes in the armpit that are exposed to radiation.

**mantle plume:** a "hot spot" in the crust where hot mantle material has ascended along deep penetrating cracks in the crust.

**manual healing :** A type of therapy in which the therapist moves or manipulates one or more parts of the patient's body. It may be used to treat pain, stress, anxiety, and depression, and for general well-being. Examples include chiropractic treatments, physical therapy, and massage therapy. Also called manipulative and body-based practice and physical touch methods.

**Manual operation:** The term used to define the mode in which a molding machine is operating when there is a need for an operator to start and finish each phase of the total cycle.

**Manuka honey:** A monofloral honey with potential wound repair and antibacterial activities. Manuka honey is produced by bees fed on the flowers of the New Zealand Manuka bush (*Leptospermum scoparium*). Manuka honey contains a significant higher concentration of the 1,2-dicarbonyl compound methylglyoxal, which may account for its antibacterial activity; this agent may release small amounts of hydrogen peroxide which may also contribute to its antibacterial activity. Manuka honey has been reported to stimulate the formation of new blood capillaries and the growth of fibroblasts and epithelial cells when applied topically to wounds.

**MAO inhibitor :** A type of drug used to treat depression. It stops the breakdown of certain chemicals in the brain that help improve a person's mood. A MAO inhibitor is a type of antidepressant. Also called monoamine oxidase inhibitor.

**mapatumumab:** A fully human agonistic monoclonal antibody to tumor necrosis factor-related apoptosis-inducing ligand receptor-1 (TRAIL-R1) with apoptosis promoting and potential antitumor activities. TRAIL-R1 is a cell surface receptor expressed on many malignant cell types.

Mapatumumab selectively binds to and activates the TRAIL cell receptor, thereby inducing apoptosis and reducing tumor growth. or A substance being studied in the treatment of some types of cancer. It binds to a protein called TRAIL R1 on the surface of some tumor cells. This may kill the tumor cells. Mapatumumab is a type of monoclonal antibody. Also called anti-TRAIL R1-mAb and HGS-ETR1.

**Maple syrup disease:** A disease resulting from the inability to oxidatively decarboxylate branch-chain amino acids, characterized by mental and physical retardation and urine that smells like maple syrup.

**Mar Resistance:** The resistance of glossy plastic surfaces to abrasive action.

**maraviroc:** A C-C chemokine receptor type 5 (CCR5) antagonist with activity against human immunodeficiency virus (HIV). Maraviroc inhibits HIV-1 entry via CCR5 coreceptor interaction.

**Marcaine :** A drug used to relieve pain by blocking signals at nerve endings. It is being studied in the relief of pain following surgery for cancer. It is a type of local anesthetic. Also called bupivacaine, bupivacaine hydrochloride, and Sensorcaine.

**marcellomycin:** An antineoplastic oligosaccharide anthracycline antineoplastic antibiotic isolated from the bacterium *Actinosporangium bohemicum*. Marcellomycin intercalates into DNA and induces DNA crosslinks, thereby inhibiting DNA replication and repair and RNA and protein synthesis. This agent also induces differentiation in HL-60 promyelocytic leukemia cells by interfering with glycoprotein synthesis.

**margetuximab:** A Fc-domain optimized IgG monoclonal antibody directed against the human epidermal growth factor receptor 2 (HER2) with potential immunomodulating and antineoplastic activities. After binding to HER2 on the tumor cell surface, margetuximab may induce an antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells overexpressing HER2. HER2, a tyrosine kinase receptor, is overexpressed by many cancer cell types. Compared to other anti-HER2 monoclonal antibodies, the Fc domain of MGAH22 is optimized with increased binding

to the activating Fcγ receptor IIIA (CD16A), expressed on cells such as natural killer (NK) cells and macrophages, thereby mediating an enhanced ADCC; the Fc domain also shows decreased binding to the inhibitory Fcγ receptor IIB (CD32B).

**margin :** The edge or border of the tissue removed in cancer surgery. The margin is described as negative or clean when the pathologist finds no cancer cells at the edge of the tissue, suggesting that all of the cancer has been removed. The margin is described as positive or involved when the pathologist finds cancer cells at the edge of the tissue, suggesting that all of the cancer has not been removed.

**marginal zone B-cell lymphoma :** An indolent (slow-growing) type of B-cell non-Hodgkin lymphoma that begins forming in certain areas (the marginal zones) of lymph tissue. There are three types based on whether it forms in the spleen, lymph nodes, or other lymphoid tissue that contains a lot of B cells (a type of white blood cell). Also called marginal zone lymphoma and MZL.

**marginal zone lymphoma :** An indolent (slow-growing) type of B-cell non-Hodgkin lymphoma that begins forming in certain areas (the marginal zones) of lymph tissue. There are three types based on whether it forms in the spleen, lymph nodes, or other lymphoid tissue that contains a lot of B cells (a type of white blood cell). Also called marginal zone B-cell lymphoma and MZL.

**maria:** large, flat areas on the Moon.

**Marianas Trench:** deepest trench in the world; lies off the coast of Japan.

**maribavir :** A substance that blocks the ability of viruses to make new viruses and infect cells. It is being studied in the prevention of cytomegalovirus infection in cancer patients who have had a donor stem cell transplant. It is a type of antiviral agent.

**marijuana:** Any part of, or extract from, the female hemp plant *Cannabis sativa*. Marijuana contains cannabinoids, substances with hallucinogenic, psychoactive, and addictive properties. This agent has potential use for treating cancer pain and cachexia. Check for active clinical trials using this agent. or The dried leaves and flowering tops of the *Cannabis sativa* or *Cannabis indica* plant. Marijuana contains active chemicals called cannabinoids that cause drug-like effects all through the body, including the central nervous system and the immune system. Marijuana may help treat

the symptoms of cancer or the side effects of cancer treatment, such as nausea and vomiting, pain, and cachexia (loss of body weight and muscle mass). Also called Cannabis.

**marimastat** : An anticancer drug that belongs to the family of drugs called angiogenesis inhibitors. Marimastat is a matrix metalloproteinase inhibitor. or An orally-active synthetic hydroxamate with potential antineoplastic activity. Marimastat covalently binds to the zinc(II) ion in the active site of matrix metalloproteinases (MMPs), thereby inhibiting the action of MMPs, inducing extracellular matrix degradation, and inhibiting angiogenesis, tumor growth and invasion, and metastasis. This agent may also inhibit tumor necrosis factor-alpha converting enzyme (TACE), an enzyme involved in tumor necrosis factor alpha (TNF-alpha) production that may play a role in some malignancies as well as in the development of arthritis and sepsis.

**Marine Paint:** Coating specially designed for immersion in water and exposure to marine atmosphere (See also Anti-fouling Paint).

**marine terrace:** a broad, gently sloping platform offshore from a beach face.

**MARINE VARNISH:** Varnish specially designed for immersion in water and exposure to marine atmosphere.

**Marinol:** (Other name for: dronabinol)

**marizomib:** A naturally-occurring salinosporamide, isolated from the marine actinomycete *Salinospora tropica*, with potential antineoplastic activity. Marizomib irreversibly binds to and inhibits the 20S catalytic core subunit of the proteasome by covalently modifying its active site threonine residues; inhibition of ubiquitin-proteasome mediated proteolysis results in an accumulation of poly-ubiquitinated proteins, which may result in the disruption of cellular processes, cell cycle arrest, the induction of apoptosis, and the inhibition of tumor growth and angiogenesis. This agent may be more potent and selective than the proteasome inhibitor bortezomib.

**Marker:** A "landmark" that can be localized to a specific region of the genome.

**marker** : A diagnostic indication that disease may develop.

**marker beds:** those distinctive layers in a sedimentary sequence that allow exposures in different areas to be definitely correlated, or linked.

**Marketing:** Getting people to give you money for goods or services. The relative importance of marketing and research to the wellbeing of society can be measured by the amounts of money spent on each activity.

**Markovnikov rule:** states that the positive part of a reagent (a hydrogen atom, for example) adds to the carbon of the double bond that already has more hydrogen atoms attached to it. The negative part adds to the other carbon of the double bond. Such an arrangement leads to the formation of the more stable carbocation over other less-stable intermediates.

**Marqibo:** (Other name for: vincristine sulfate liposome)

**Marqibo :** A form of the anticancer drug vincristine sulfate that is contained inside very tiny, fat-like particles. It may have fewer side effects and work better than vincristine. Marqibo is used to treat adults with acute lymphoblastic leukemia that is Philadelphia chromosome negative and has come back or has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. It is a type of vinca alkaloid and a type of antimitotic agent. Also called liposomal vincristine sulfate and vincristine sulfate liposome.

**marsh:** A type of wetland that does not accumulate appreciable peat deposits and is dominated by herbaceous vegetation. Marshes may be fresh- or saltwater, tidal or nontidal.

**marsupials:** the mammals whose embryos develop within the mother's uterus for a short period of time before birth.

**MART-1 antigen:** A tumor-associated melanocytic differentiation antigen. Vaccination with MART-1 antigen may stimulate a host cytotoxic T-cell response against tumor cells expressing the melanocytic differentiation antigen, resulting in tumor cell lysis. Or A protein found on normal melanocytes (cells that make the pigment melanin) in the skin and in the retina. It is also found on most melanomas (cancers that begin in melanocytes). Vaccines using pieces of the MART-1 antigen are being studied for their ability to boost the immune response to cancer cells in patients with melanoma. Also called Melan-A protein and Melanoma Antigen Recognized by T cells 1.

**MART-1 reactive CD8+ lymphocytes:** Human CD8-positive T-lymphocytes that are engineered to recognize melanoma tumor-associated antigen MART-1 (Melanoma Antigen Recognized by T cells, also called Melan-A) in a human leukocyte antigen (HLA)-A2-restricted manner, with

potential antineoplastic activity. Human peripheral blood lymphocytes (PBLs) are isolated from a melanoma patient, exposed to the MART-1:27-35(27L) peptide and MART-1 specific T-lymphocytes are isolated and expanded. Upon infusion, these lymphocytes recognize and exert a cytotoxic T-cell-mediated immune response against MART-1-expressing melanoma cells. The synthetic MART-1:27-35 HLA-A2-restricted peptide has an amino acid substitution, leucine to alanine at position 27, to increase its immunogenicity. Check for active clinical trials using this agent.

**MART-1:26-35(27L) peptide vaccine:** A peptide-based cancer vaccine consisting of amino acid residues 26 through 35 of MART-1 (melanoma antigen recognized by T-cells-1) with a leucine substitution at amino acid position 27 to improve immunogenicity. Upon administration, MART-1:26-35(27L) peptide vaccine may induce a cytotoxic T-lymphocyte (CTL) response against MART-1-expressing tumor cells, resulting in decreased tumor growth. The tumor-associated antigen (TAA) MART-1 may be overexpressed on melanoma cancer cells. Check for active clinical trials using this agent.

**MART-1:27-35 peptide vaccine:** A natural or synthetic peptide cancer vaccine consisting of amino acid residues 27 through 35 of the melanoma-associated antigen MART-1 with potential antineoplastic activity. Vaccination with MART-1:27-35 peptide may induce cytotoxic host immune responses against melanoma cells that express this peptide.

**MART-1/gp100/Tyrosinase/MAGE-A3 peptides-loaded irradiated allogeneic plasmacytoid dendritic cells:** Irradiated allogeneic, HLA-A\*0201 positive, plasmacytoid dendritic cells (pDCs) loaded with 4 melanoma peptides derived from the tumor-associated antigens (TAAs) MelA/MART-1, gp100/pmell17, tyrosinase, and MAGE-A3, with potential immunostimulating and antineoplastic activities. Upon subcutaneous administration, the irradiated allogeneic pDCs may trigger functional multi-specific T cells from peripheral blood mononuclear cells and tumor-infiltrating lymphocytes, and activate the immune system to mount a cytotoxic T-lymphocyte response against HLA-A\*0201-positive melanoma cancer cells expressing the TAAs MelA/MART-1, gp100/pmell17, tyrosinase, and MAGE-A3. These TAAs are upregulated in a variety of tumor cells. The pDCs are derived from a distinct subset of dendritic cells (DCs) with a plasma cell-like morphology and express a characteristic set

of surface markers and may increase the anti-tumor immune responses. Check for active clinical trials using this agent.

**masitinib mesylate:** The orally bioavailable mesylate salt of masitinib, a multi-targeted protein tyrosine kinase inhibitor with potential antineoplastic activity. Masitinib selectively binds to and inhibits both the wild-type and mutated forms of the stem cell factor receptor (c-Kit; SCFR); platelet-derived growth factor receptor (PDGFR); fibroblast growth factor receptor 3 (FGFR3); and, to a lesser extent, focal adhesion kinase (FAK). As a consequence, tumor cell proliferation may be inhibited in cancer cell types that overexpress these receptor tyrosine kinases (RTKs).

**MASKING:** Temporary covering of areas not to be painted.

**MASKING TAPE:** A strip of paper or cloth similar to adhesive tape, which can be easily removed, used to temporarily cover areas that are not to be painted.

**masoprocol:** A naturally occurring antioxidant dicatechol originally derived from the creosote bush *Larrea divaricata* with antipromoter, anti-inflammatory, and antineoplastic activities. Masoprocol directly inhibits activation of two receptor tyrosine kinases (RTKs), the insulin-like growth factor receptor (IGF-1R) and the c-erbB2/HER2/neu receptor, resulting in decreased proliferation of susceptible tumor cell populations. This agent may induce apoptosis in susceptible tumor cell populations as a result of disruption of the actin cytoskeleton in association with the activation of stress activated protein kinases (SAPKs). In addition, NDGA inhibits arachidonic acid 5-lipoxygenase (5LOX), resulting in diminished synthesis of inflammatory mediators such as prostaglandins and leukotrienes; it may prevent leukocyte infiltration into tissues and the release of reactive oxygen species and, at higher concentrations, may also inhibit cyclooxygenase. or A drug put on the skin to treat growths caused by sun exposure. A form of masoprocol that is taken by mouth is being studied in the treatment of prostate cancer. Masoprocol is an antioxidant, and it may block certain enzymes needed for tumor growth. Also called Actinex, NDGA, and nordihydroguaiaretic acid.

**mass:** the quantity of matter in a body as measured by its resistance to a change in acceleration; different but proportional to weight. OR Mass is a measure of the tendency of an object to resist acceleration. It's harder to roll a tractor trailer than a roller skate; the tractor trailer has a far greater mass.

**mass :** In medicine, a lump in the body. It may be caused by the abnormal growth of cells, a cyst, hormonal changes, or an immune reaction. A mass may be benign (not cancer) or malignant (cancer).

**mass balance:** The application of the principle of the conservation of matter. For example, the mass of a glacier is not destroyed or created; the mass of a glacier and all its constitutive components remains the same despite alterations in their physical states. The mass balance of a glacier is calculated with the input/output relationships of ice, firn, and snow, usually measured in water equivalent. Output includes all ablative processes of surface melting, basal melting, evaporation, wind deflation, calving, and internal melting. Input includes direct precipitation, avalanching, and the growth of superimposed ice.

**mass mean diameter:** The diameter of a particle with a mass equal to the mean mass of all the particles in the population (IAEA, 1978).

**mass median diameter:** The diameter of a particle with the median mass (IAEA, 1978).

**mass number:** the total number of protons and neutrons in an atomic nucleus. OR The number of protons and neutrons in an atom. OR is the relative mass of the isotopes compared to that of Carbon-12 whose mass is 12.0000 g/mol. It is not shown on the periodic chart. It is also equal to the sum of protons + neutrons inasmuch as protons and neutrons each have an atomic mass of 1 g/mol (amu - atomic mass unit). OR The mass number is the number of protons plus neutrons in the nucleus of an atom. OR the total number of protons and neutrons in an atom. OR The number of nucleons (neutrons and protons) in the nucleus of an atom. Also known as the atomic weight. OR The total number of protons and neutrons in an atom or ion. In nuclide symbols the mass number is given as a leading superscript. In isotope names (e. g. carbon-14, sodium-23) the mass number is the number following the element name.

**MASS OF AN ELECTRON:** and ions were determined by using the charge/mass ratio and the actual charge (Millikan). The electron's mass is  $10^{-31}$ kg.

**mass percentage:** Mass percentages express the concentration of a component in a mixture or an element in a compound. For example, household bleach is 5.25% NaOCl by mass, meaning that every 100 g of bleach contains 5.25 g of NaOCl. Mass percentage can be calculated as

100% times the mass of a component divided by the mass of the mixture containing the component.

**mass spectrometry:** (of elements) A method for experimentally determining isotopic masses and isotopic abundances. A sample of an element is converted into a stream of ions and passed through an electromagnetic field. Ions with different charge-to-mass ratios are deflected by different amounts, and strike different spots on a film plate or other detector. From the position of the spots, the mass of the ions can be determined; from the intensity of the spot, the relative number of ions (the isotopic abundance) can be determined. OR A technique used to determine the composition and abundance of the atoms in a molecular substance, starting with a very small amount of sample OR An instrument that measures the masses and relative abundances of a sample that has been vaporized and ionized. OR is a refined Sir JJ Tube in which the masses of particles, ions, and isotopes are measured. It separates isotopes according to charge and mass.

**mass spectrum:** A plot showing the results of a mass spectrometry experiment, which shows the presence of particles with different masses as a series of sharp, separate peaks. The position of the peaks on the x-axis indicates the mass of the particles; the peak heights indicate the relative abundance of the particles.

**mass wasting:** the process of erosion whereby rock, soil, and other earth materials move down a slope because of gravitational forces.

**Mass-energy equation:** The equation developed by Albert Einstein, which is usually given as  $E = mc^2$ , showing that, when the energy of a body changes by an amount  $E$  (no matter what form the energy takes), the mass ( $m$ ) of the body will change by an amount equal to  $E/c^2$ . The factor  $c$  squared, the speed of light in a vacuum ( $3 \times 10$  to the eighth power), may be regarded as the conversion factor relating units of mass and energy. The equation predicted the possibility of releasing enormous amounts of energy by the conversion of mass to energy. It is also called the Einstein equation.

**massage therapy :** A treatment in which the soft tissues of the body are kneaded, rubbed, tapped, and stroked. Massage therapy may help people relax, relieve stress and pain, lower blood pressure, and improve circulation. It is being studied in the treatment of cancer symptoms such as lack of energy, pain, swelling, and depression.

**Massive Habit:** This is a large crystal with no definite shape. Sulfur is often found in this form.

**massively parallel sequencing :** A high-throughput method used to determine a portion of the nucleotide sequence of an individual's genome. This technique utilizes DNA sequencing technologies that are capable of processing multiple DNA sequences in parallel. Also called next-generation sequencing and NGS.

**mast cell :** A type of white blood cell.

**mast cell stabilizer TF002:** A small molecule with mast cell stabilizing activity. Mast cell stabilizer TF002 inhibits the formation of lipid rafts of mast cell membranes that contain the signaling machinery which triggers the release of mast cell allergic and inflammatory mediators. Inhibition of lipid raft assembly by this agent results in mast cell stabilization, preventing mast cell degranulation and the release of the inflammatory mediators involved in type I allergic reactions (histamine, leukotrienes, prostaglandins, and cytokines). The assembly of the signaling machinery in mast cell lipid rafts, specialized membrane microdomains rich in cholesterol and sphingolipids, is initiated by IgE binding to its receptor on the mast cell surface; subsequently, allergens crosslink with the IgE/receptor complex and other proteins and lipids are recruited into the signaling machinery.

**mast cell tumor :** A growth or lump of mast cells (a type of white blood cell). Mast cell tumors can involve the skin, subcutaneous tissue, and muscle tissue. Also called mastocytoma.

**mastectomy :** Surgery to remove part or all of the breast. There are different types of mastectomy that differ in the amount of tissue and lymph nodes removed.

**Masterbatch:** A concentration of a substance (an additive, pigment, filler, etc.) in a base polymer. OR A compounded resin or additive already optimally dispersed in concentration and is compatible with the main resin in the process flow. OR A concentrated blend of pigment, additives, filler, etc. in a base polymer. Masterbatch is added in similar amounts to large volumes of material (the same as or compatible with the base polymer) to produce the desired formulation.

**mastitis :** A condition in which breast tissue is inflamed. It is usually caused by an infection and is most often seen in nursing mothers.

**mastocytoma :** A growth or lump of mast cells (a type of white blood cell). Mast cell tumors can involve the skin, subcutaneous tissue, and muscle tissue. Also called mast cell tumor.

**Mat:** 1) A randomly distributed felt of fibers, usually glass, used in reinforced plastics. 2) A nonwoven fabric of fibrous material used as a plastic reinforcement.

**Match boarding:** Boards jointed at their sides with a tongued and grooved joint.

**Material Database:** The file of the information on each material acceptably tested for use in MOLDFLOW analyses.

**Material Safety Data Sheets:** Documentation regarding the toxicity or hazards associated with contact with some substances. Polymer manufacturers have to provide these data sheets.

**maternal :** Having to do with the mother, coming from the mother, or related through the mother.

**mathematical model:** an equation representing an idea.

**Matricaria recutita gel:** A gel-based formulation containing an extract of the herb *Matricaria chamomilla* (*M. recutita* or German chamomile), which is native to eastern and southern Europe, belongs to the Asteraceae family and is high in flavonoids, with potential anti-inflammatory, skin protective, moisturizing, anti-bacterial, anti-oxidant and calming activities. *M. recutita* extract contains flavonoids, including apigenin, luteolin and quercetin, as well as coumarins, herniarin, umbelliferone, anthemide acid, anthemidine, tannin and matricarin. Upon topical application of the *Matricaria recutita* gel, the active ingredients in the chamomile may exert anti-inflammatory, calming and anti-oxidant effects on the skin and may protect the skin against radiotherapy-induced dermatitis. Check for active clinical trials using this agent.

**Matricaria recutita topical infusion:** A gel-based formulation containing an extract of the herb *Matricaria chamomilla* (*M. recutita* or German chamomile), which is native to eastern and southern Europe, belongs to the Asteraceae family and is high in flavonoids, with potential anti-inflammatory, skin protective, moisturizing, anti-bacterial, anti-oxidant and calming activities. *M. recutita* extract contains flavonoids, including apigenin, luteolin and quercetin, as well as coumarins, herniarin,

umbelliferone, anthemic acid, anthemidine, tannin and matricarin. Upon topical application of the *Matricaria recutita* infusion, the active ingredients in the chamomile may exert anti-inflammatory, calming and anti-oxidant effects on the skin and may protect the skin against radiotherapy-induced dermatitis. Check for active clinical trials using this agent.

**matrix:** The aqueous contents of a cell or organelle (the mitochondrion, for example) with dissolved solutes.

**Matrix coating:** One in which some ingredients, such as the lubricant (PTFE), which is soft, are enveloped in others (the matrix, such as harder, more wear-resistant binders). Also referred to as "resin bonded coating."

**matrix metalloproteinase :** A member of a group of enzymes that can break down proteins, such as collagen, that are normally found in the spaces between cells in tissues (i.e., extracellular matrix proteins). Because these enzymes need zinc or calcium atoms to work properly, they are called metalloproteinases. Matrix metalloproteinases are involved in wound healing, angiogenesis, and tumor cell metastasis.

**Matrix-assisted laser desorption-ionization time of flight spectrometry (MALDI-TOF):** A technique for determining a protein's mass. A protein sample is embedded in a matrix and ionized by the application of a laser beam. An electric field accelerates the ions through a flight tube toward a detector, with the lightest ions arriving first.

**Matt finish:** A flat finish with little or no sheen. OR A type of dull non-reflective finish. See SURFACE FINISH. OR A type of dull, non-reflective finish. See Surface Finish. Mold Flow Analysis: Moldflow has two core products: Moldflow Adviser providing manufacturability guidance and directional feedback for standard part and mold design and Moldflow Insight which provides definitive results for flow, cooling, and warpage along with support for specialized molding processes. In addition, Autodesk produces Moldflow Design, Moldflow CAD Doctor, Moldflow Magics STL Expert, and Moldflow Structural Alliance that serve as connectivity tools for other CAD and CAE software.

**matter:** Anything that has mass and takes up space. OR anything that has mass and takes up space. OR Matter is anything that has mass. Air, water, coffee, fire, human beings, and stars are matter. Light, X-rays, photons, gravitons, information, and love aren't matter.

**Matting:** The process of rendering a polished surface uniformly dull.

**Matulane :** A drug that is used to treat advanced Hodgkin lymphoma and is being studied in the treatment of other types of cancer. Matulane blocks cells from making proteins and damages DNA. It may kill cancer cells. It is a type of antineoplastic agent and a type of alkylating agent. Also called procarbazine hydrochloride.

**mature T-cell lymphoma :** One of a group of aggressive (fast-growing) non-Hodgkin lymphomas that begin in mature T lymphocytes (T cells that have matured in the thymus gland and gone to other lymphatic sites in the body, including lymph nodes, bone marrow, and spleen.) Also called peripheral T-cell lymphoma.

**mature teratoma :** A type of benign (not cancer) germ cell tumor (type of tumor that begins in the cells that give rise to sperm or eggs) that often contains several different types of tissue such as hair, muscle, and bone. Also called dermoid cyst.

**matuzumab:** A humanized monoclonal antibody with antineoplastic activity. Matuzumab binds the epidermal growth factor receptor (EGFR) with high affinity, competitively blocking natural ligand binding and blocking receptor-mediated downstream signalling, resulting in impaired tumor cell proliferation.

**Mauna Loa:** An intermittently active volcano 13,680 ft (4,170 m) high in Hawaii. Last eruption was in 1984. Also see Mauna Loa record.

**Mauna Loa record:** The record of measurements of atmospheric carbon dioxide concentrations taken at the Mauna Loa Observatory, Mauna Loa, Hawaii, since March 1958. The Mauna Loa record is the longest reliable daily record of atmospheric carbon dioxide measurements in the world.

**Maunder minimum:** The period from 1654 to 1714 when it was believed that there were no sunspots. It is now thought that there were some sunspots during that time but less than the numbers counted after 1800.

**Maxalt:** (Other name for: rizatriptan benzoate)

**Maxamine :** A substance being studied in the treatment of some types of cancer and other conditions. When used together with interleukin-2, Maxamine may help some immune cells find and kill tumor cells. It is a type of biological response modifier. Also called histamine dihydrochloride.

**maxillary sinus :** A type of paranasal sinus (a hollow space in the bones around the nose). There are two large maxillary sinuses, one in each of the

maxillary bones, which are in the cheek area next to the nose. The maxillary sinuses are lined with cells that make mucus to keep the nose from drying out.

**Maximal velocity:** The highest rate of an enzyme-catalyzed reaction, under conditions of constant enzyme concentration and saturating amounts of substrate.

**maximum allowable concentration (MAC):** Exposure concentration not to be exceeded under any circumstances.

**Maximum dependable capacity (gross):** The maximum amount of electricity that the main generating unit of a nuclear power reactor can reliably produce during the summer or winter (usually summer, but whichever represents the most restrictive seasonal conditions, with the least electrical output). The dependable capacity varies during the year because temperature variations in cooling water affect the unit's efficiency. Thus, this is the gross electrical output as measured (in watts unless otherwise noted) at the output terminals of the turbine generator.

**Maximum dependable capacity (net):** The gross maximum dependable capacity of the main generating unit in a nuclear power reactor, minus the amount used to operate the station. Net maximum dependable capacity is measured in watts unless otherwise noted.

**maximum inspiratory pressure test :** A test that measures the strength of the muscles used in breathing. A person inhales and exhales through a device called a manometer, and the pressures are recorded by a computer. Also called MIP test.

**maximum residue limit:** The maximum concentration of a pesticide residue resulting from the use of a pesticide according to good agricultural practice directly or indirectly for the production and/or protection of the commodity for which the limit is recommended. The maximum residue limit should be legally recognized. It is expressed in milligrams of the residue per kilogram of the commodity (WHO, 1976).

**Maximum Shot Capacity of Machine:** In machine specification it is given in terms of weight for PS. For other polymers the density of polymers at moulding temperature should be multiplied to the maximum swept volume of the machine barrel to get the weight for the given polymer.

**maximum tolerated dose :** The highest dose of a drug or treatment that does not cause unacceptable side effects. The maximum tolerated dose is determined in clinical trials by testing increasing doses on different groups of people until the highest dose with acceptable side effects is found. Also called MTD.

**Maxipime:** (Other name for: cefepime hydrochloride)

**Mayo Clinic regimen :** A chemotherapy combination used to treat colorectal cancer. It is also used with radiation therapy to treat esophageal cancer and stomach cancer. It includes the drugs fluorouracil and leucovorin calcium.

**maytansine:** An ansamycin antibiotic originally isolated from the Ethiopian shrub *Maytenus serrata*. Maytansine binds to tubulin at the rhizoxin binding site, thereby inhibiting microtubule assembly, inducing microtubule disassembly, and disrupting mitosis. Maytansine exhibits cytotoxicity against many tumor cell lines and may inhibit tumor growth in vivo. Check for active clinical trials using this agent.

**maytansinoid DM4-conjugated humanized monoclonal antibody huC242 :** A substance being studied in the treatment of some types of cancer. It is made by linking the monoclonal antibody huC242 to a toxic substance called maytansinoid DM4. The monoclonal antibody binds to the surfaces of cancer cells and the maytansinoid DM4 enters the cells and blocks their growth. It is a type of immunotoxin. Also called huC242-DM4.

**MBL:** A condition in which a higher-than-normal number of identical B cells are found in the blood. People with MBL may develop other B-cell diseases, such as chronic lymphocytic leukemia (CLL). Also called monoclonal B-cell lymphocytosis.

**MBPT:** Many-body perturbation theory. Synonymous with MP (Moller-Plesset) perturbation theory.

**MBS:** Methacrylate-butadiene-styrene

**MBS:** Minimal basis set. Only enough basis functions are supplied to put all the electrons somewhere; the number of basis functions is equal to the number of orbitals. The most common of these is "STO-3G". Qualitative results at best.

**MC-Glucan:** (Other name for: sizofiran)

**MC1R:** A protein found in skin and eye cells that make melanin (a pigment that gives color to the skin and helps protect it from damage by ultraviolet light). People with certain changes in the gene for MC1R have a higher risk of developing melanoma (skin cancer that begins in melanocytes). Also called melanocortin 1 receptor and melanotropin receptor.

**MC5-A scrambler therapy :** A type of treatment for nerve pain that uses electrodes placed on the skin. Electricity is carried from the electrodes through the skin and blocks the pain. The pain may be caused by physical injury, infection, toxic substances, and certain diseases or drugs, including anticancer drugs.

**Mcardle disease:** A disease caused by a lack of muscle glycogen phosphorylase; the glycogen is present in increased amounts but normal structure; clinical characteristics include an inability to perform strenuous exercise.

**MCL-1 Inhibitor AMG 176:** An inhibitor of induced myeloid leukemia cell differentiation protein MCL-1 (myeloid cell leukemia-1), with potential pro-apoptotic and antineoplastic activities. Upon administration, AMG 176 binds to and inhibits the activity of MCL-1. This disrupts the formation of MCL-1/Bcl-2-like protein 11 (BCL2L11; BIM) complexes and induces apoptosis in tumor cells. MCL-1, an anti-apoptotic protein belonging to the Bcl-2 family of proteins, is upregulated in cancer cells and promotes tumor cell survival. Check for active clinical trials using this agent.

**MCPF:** Modified coupled-pair functional. Pretty high-level theory.

**MCPyV TAg-specific polyclonal autologous CD8-positive T cell vaccine:** A preparation of polyclonal autologous CD8 positive T-lymphocytes specific for the Merkel cell polyomavirus (MCPyV) T antigen (TAg) with potential antineoplastic activity. Peripheral blood lymphocytes from a Merkel cell carcinoma (MCC) patient were obtained and antigen-specific CD8<sup>+</sup> T cells targeting a specific MCPyV TAg epitope were derived and expanded *ex vivo*. Upon infusion of the MCPyV TAg-specific polyclonal autologous CD8-positive T cell vaccine, the T cells recognize the MCPyV antigen and exert a cytotoxic T-lymphocyte response against the MCPyV TAg-expressing MCC cells. MCPyV is expressed in about 80% of MCC and is not expressed in normal, human tissue; the MCPyV TAg oncoprotein plays a key role in MCC survival and tumor cell proliferation.

**MCSCF:** Multi-configuration self-consistent field. More than one configuration (Hartree-Fock-type determinant) is used to describe the wavefunction. Both the coefficients of the configurations and the orbital coefficients are optimized. This is a limited type of CI (configuration interaction), with the added feature of orbital optimization. See CASSCF.

**MCT/LCT lipid emulsion:** A nutritional lipid emulsion consisting of both coconut oil-derived medium chain triglycerides (MCTs) and soybean oil-derived long chain triglycerides (LCTs). The LCTs in the MCT/LCT lipid emulsion supply the body with essential omega-6 fatty acids, which are needed as components of phospholipids in cell membranes and as precursors of eicosanoids. The MCTs mainly provide calories for energy. In addition to LCTs and MCTs, this lipid emulsion contains egg yolk lecithin, glycerol, and the antioxidant alpha-tocopherol (vitamin E).

**MCT/LCT/fish oil omega-3 fatty triglyceride lipid emulsion:** A nutritional lipid emulsion consisting of coconut oil-derived medium chain triglycerides (MCTs), soybean oil-derived long chain triglycerides (LCT), and the fish oil-derived polyunsaturated omega-3 fatty acids. This lipid emulsion supplies essential fatty acids and calories for energy. Omega-3 fatty acids may decrease the production of certain pro-inflammatory cytokines, including interleukin 1 (IL-1), IL-6 and tumor necrosis factor (TNF). The MCTs mainly provide calories for energy. In addition to LCTs, MCTs, and omega-3 fatty acids, this lipid emulsion contains egg yolk lecithin, glycerol, and the antioxidant alpha-tocopherol (vitamin E).

**MDL 101,731:** A drug that belongs to a family of drugs called ribonucleotide reductase inhibitors.

**MDM2 antagonist RO5045337:** An MDM2 (human homolog of double minutes-2; HDM2) antagonist with potential antineoplastic activity. RO5045337 binds to MDM2, thereby preventing the binding of the MDM2 protein to the transcriptional activation domain of the tumor suppressor protein p53. By preventing this MDM2-p53 interaction, the proteasome-mediated enzymatic degradation of p53 is inhibited and the transcriptional activity of p53 is restored, which may result in the restoration of p53 signaling and thus the p53-mediated induction of tumor cell apoptosis. MDM2, a zinc finger protein, is a negative regulator of the p53 pathway; often overexpressed in cancer cells, it has been implicated in cancer cell proliferation and survival.

**MDM2 antagonist RO6839921:** An MDM2 (human homolog of murine double minute-2; HDM2) antagonist with potential antineoplastic activity. Upon intravenous administration, RO6839921 binds to MDM2 and prevents the binding of the MDM2 protein to the transcriptional activation domain of the tumor suppressor protein p53. By preventing MDM2-p53 interaction, the proteasome-mediated enzymatic degradation of p53 is inhibited and the transcriptional activity of p53 is restored. This may result in the restoration of p53 signaling, followed by p53-mediated induction of tumor cell apoptosis. MDM2, a zinc finger protein, is a negative regulator of the p53 pathway and is often overexpressed in cancer cells; p53 inhibition has been implicated in cancer cell proliferation and survival.

**MDM2 inhibitor AMG 232:** An orally available, piperidinone inhibitor of MDM2 (murine double minute 2), with potential antineoplastic activity. Upon oral administration, MDM2 inhibitor AMG-232 binds to MDM2 protein and prevents its binding to the transcriptional activation domain of the tumor suppressor protein p53. By preventing this MDM2-p53 interaction, the transcriptional activity of p53 is restored. This leads to p53-mediated induction of tumor cell apoptosis. MDM2, a zinc finger protein and a negative regulator of the p53 pathway, is overexpressed in cancer cells; it plays a key role in cancer cell proliferation and survival.

**MDM2 inhibitor DS-3032b:** An orally available MDM2 (murine double minute 2) antagonist with potential antineoplastic activity. Upon oral administration, MDM2 inhibitor DS-3032b binds to, and prevents the binding of MDM2 protein to the transcriptional activation domain of the tumor suppressor protein p53. By preventing this MDM2-p53 interaction, the proteasome-mediated enzymatic degradation of p53 is inhibited and the transcriptional activity of p53 is restored. This results in the restoration of p53 signaling and leads to the p53-mediated induction of tumor cell apoptosis. MDM2, a zinc finger protein and a negative regulator of the p53 pathway, is overexpressed in cancer cells; it has been implicated in cancer cell proliferation and survival.

**MDM2/MDMX inhibitor ALRN-6924:** An orally available inhibitor of both murine double minute 2 (MDM2) and murine double minute X (MDMX), with potential antineoplastic activity. Upon oral administration, ALRN-6924 binds to both MDM2 and MDMX and interferes with their interaction with the transcriptional activation domain of the tumor

suppressor protein p53. By preventing MDM2-p53 and MDMX-p53 interactions, p53 activity is restored, which leads to p53-mediated induction of tumor cell apoptosis. MDM2 and MDMX, negative regulators of p53 function, are often overexpressed in cancer cells.

**MDPE:** Medium-density polyethylene

**MDR modulator CBT-1:** A naturally-occurring, orally bioavailable bisbenzylisoquinoline plant alkaloid with potential chemosensitization activity. MDR modulator CBT-1 binds to and inhibits the MDR efflux pump P-glycoprotein (P-gp), which may inhibit the efflux of various chemotherapeutic agents from tumor cells and reverse P-gp-mediated tumor cell MDR. P-gp is a transmembrane ATP-binding cassette (ABC) transporter and is overexpressed by some multidrug resistant tumors. or A substance taken from plants that is being studied in the treatment of cancer. It may help drugs kill tumor cells that have become resistant to drugs. It is a type of multidrug resistance inhibitor and a type of P-glycoprotein antagonist. Also called CBT-1.

**MDS:** A type of cancer in which the bone marrow does not make enough healthy blood cells (white blood cells, red blood cells, and platelets) and there are abnormal cells in the blood and/or bone marrow. When there are fewer healthy blood cells, infection, anemia, or bleeding may occur. Sometimes, MDS becomes acute myeloid leukemia (AML). Also called myelodysplastic syndrome.

**MDX-010:** A drug used to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is also used as adjuvant therapy to treat melanoma in the skin and lymph nodes in patients who have already had surgery. MDX-010 is also being studied in the treatment of other types of cancer. MDX-010 binds to a substance called CTLA-4, which is found on T cells (a type of white blood cell). MDX-010 may block CTLA-4 and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called ipilimumab and Yervoy.

**MDX-060:** A monoclonal antibody that is being studied in the treatment of some lymphomas. Monoclonal antibodies are produced in the laboratory and can locate and bind to cancer cells.

**Me-too Drugs:** Drugs that are structurally related to existing drugs. Me-too drugs are often developed by rival pharmaceutical companies in order to

gain a foothold in the same area of the market.

**mean :** A statistics term. The average value in a set of measurements. The mean is the sum of a set of numbers divided by how many numbers are in the set.

**mean life (mean time, turnover time):** The average lifetime of an atomic or nuclear system in a specified state. For an exponentially decaying system, it is the average time for the number of atoms or nuclei in a specified state to decrease by a factor of  $e$  (ISO, 1972).

**mean sea level:** The average height of the sea surface, based upon hourly observation of the tide height on the open coast or in adjacent waters that have free access to the sea. In the United States, it is defined as the average height of the sea surface for all stages of the tide over a nineteen year period. Mean sea level, commonly abbreviated as MSL and referred to simply as sea level, serves as the reference surface for all altitudes in upper atmospheric studies.

**mean survival :** The average length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that patients diagnosed with the disease are still alive. In a clinical trial, measuring mean survival is one way to see how well a new treatment works.

**meander:** a hairpinlike feature of a stream caused by erosion on the outside of a curve and deposition on the inside.

**measles virus :** The virus that causes measles (a highly contagious disease marked by fever, cough, and raised red spots on the skin). The measles virus usually affects children, and is spread by coughing or contact with fluid from the nose or mouth of someone who has been infected.

**measles/mumps/rubella vaccine:** A trivalent vaccine containing live attenuated viruses that can cause measles, mumps and rubella. It is an injection administered subcutaneously in two separate doses. Check for active clinical trials using this agent.

**measurable disease :** A tumor that can be accurately measured in size. This information can be used to judge response to treatment.

**Measurand :** particular quantity subject to measurement.

**Measurement:** set of operations having the object of determining the value of a quantity. OR Measurement is the collection of quantitative data. Measurement involves comparison of the quantity of interest with a

standard called a unit. The comparison is never perfect. As a result, measurements always include error. You must consider the reliability of the measurement when using it to make decisions or estimate other quantities.

**Measurin:** (Other name for: acetylsalicylic acid)

**mebendazole:** A synthetic benzimidazole derivative and anthelmintic agent. Mebendazole interferes with the reproduction and survival of helminths by inhibiting the formation of their cytoplasmic microtubules, thereby selectively and irreversibly blocking glucose uptake. This results in a depletion of glycogen stores and leads to reduced formation of ATP required for survival and reproduction of the helminth. This eventually causes the helminths death. Check for active clinical trials using this agent.

**Mechanical Bond:** A method of physically bonding liquid silicone rubber to inserts through the use of holes, depressions or projections in the insert

**Mechanical forming:** Uses matching positive and negative molds that are brought together against the heated plastic sheet, forcing it to assume the shape of the custom plastic packaging. In the pure mechanical forming method, air pressure (positive or negative) is not used at all.

**mechanical model:** a physical model with moving parts.

**Mechanical Properties:** Things you can measure while you push, twist, bend, tear, fold, spindle, or mutilate something - the simplest example is probably putting a known force (stress) on a piece of something and measuring how far it stretches (strain). Millions of pages have been written about stress-strain curves. OR Properties of plastics which are classified as mechanical include abrasion resistance, creep, ductility, friction resistance, elasticity hardness, impact resistance, stiffness and strength.

**mechanical weathering:** the physical breaking down of rock, changing only its size (smaller); examples are ice wedging, plant action, and pressure unloading. OR the process by which rocks are physically broken down into smaller pieces by external conditions, such as the freezing and thawing of water in cracks in the rock.

**mechanism:** the series of steps that reactants go through during their conversion into products.

**mechanistic target of rapamycin :** A protein that helps control several cell functions, including cell division and survival, and binds to rapamycin and other drugs. Mechanic target of rapamycin may be more active in some

types of cancer cells than it is in normal cells. Blocking mechanistic target of rapamycin may cause the cancer cells to die. It is a type of serine/threonine protein kinase. Also called mammalian target of rapamycin and mTOR.

**mechlorethamine hydrochloride:** The hydrochloride salt of mechlorethamine, a nitrogen mustard and an analogue of sulfur mustard, with antineoplastic and immunosuppressive activities. Mechlorethamine is metabolized to an unstable, highly reactive ethyleniminium intermediate that alkylates DNA, particularly the 7 nitrogen of guanine residues, resulting in DNA base pair mismatching, DNA interstrand crosslinking, the inhibition of DNA repair and synthesis, cell-cycle arrest, and apoptosis. This agent also exhibits lympholytic properties.

**mechlorethamine hydrochloride :** A drug used to treat non-Hodgkin lymphoma, advanced Hodgkin lymphoma, chronic leukemia, mycosis fungoides, and a type of lung cancer called bronchogenic carcinoma. It is also being studied in the treatment of other types of cancer. Mechlorethamine hydrochloride damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called Mustargen and mustine.

**mechlorethamine hydrochloride gel:** A gel formulation composed of the hydrochloride salt form of mechlorethamine, which is a nitrogen mustard alkylating agent and an analog of sulfur mustard, with antineoplastic and immunosuppressive activities. Upon topical application, mechlorethamine is metabolized to an unstable, highly reactive ethyleniminium intermediate that binds to and alkylates DNA, with a high affinity to the N7 nitrogen of guanine residues. This results in DNA base pair mismatching, DNA interstrand crosslinking, the inhibition of DNA repair and synthesis, cell-cycle arrest, and apoptosis.

**Meclan:** (Other name for: meclocycline sulfosalicylate)

**meclocycline sulfosalicylate:** The sulfosalicylate salt form of meclocycline, a tetracycline antibiotic with broad-spectrum antibacterial and antiprotozoal activity. Meclocycline sulfosalicylate is bacteriostatic and inhibits bacterial protein synthesis by binding to the 30S ribosomal subunit, thereby preventing the addition of amino acids to the growing peptide chain. This tetracycline is active against a wide range of gram-positive and gram-negative bacteria.

**meclofenamate sodium:** The sodium salt form of meclufenamate, an anthranilic acid and non-steroidal anti-inflammatory drug (NSAID) with anti-inflammatory, antipyretic and analgesic activities. Meclofenamate sodium inhibits the activity of the enzymes cyclo-oxygenase I and II, resulting in decreased formation of precursors of prostaglandins and thromboxanes. The resulting decrease in prostaglandin synthesis, by prostaglandin synthase, is responsible for the therapeutic effects of meclufenamate sodium. Meclofenamate sodium also causes a decrease in the formation of thromboxane A<sub>2</sub> synthesis, by thromboxane synthase, thereby inhibiting platelet aggregation.

**Meclomen:** (Other name for: meclufenamate sodium)

**MEDI-507:** A substance being studied in the treatment of certain types of T-cell lymphoma. It is also being studied in the prevention of organ or tissue rejection after a kidney and/or bone marrow transplant. MEDI-507 binds to a protein called CD2, which is found on some types of immune cells and cancer cells. This may help suppress the body's immune response and it may help kill cancer cells. MEDI-507 is a type of monoclonal antibody. Also called siplizumab.

**MEDI-522:** A substance being studied in the treatment of some types of cancer and other conditions. MEDI-522 binds to a protein on the surface of blood vessels and may prevent the growth of new blood vessels that tumors need to grow. It may also prevent the spread of cancer. It is a type of antiangiogenesis agent, a type of metastasis inhibitor, and a type of monoclonal antibody. Also called Abegrin, etaracizumab, and humanized monoclonal antibody MEDI-522.

**medial moraine:** a long ridge of till that results when lateral moraines join as two tributary glaciers merge to form a single glacier. OR the moraine created when two glaciers meet and their lateral moraines merge.

**medial supraclavicular lymph node :** A lymph node located above the collar bone and between the center of the body and a line drawn through the nipple to the shoulder.

**median:** in a trapezoid, a line segment parallel to the bases and bisecting the legs. OR in a triangle, a line segment drawn from a vertex to the midpoint of the opposite side.

**median :** A statistics term. The middle value in a set of measurements.

**median lethal concentration:** Statistically derived concentration of a chemical in water solution that can be expected to cause death in 50% of given population of organism under defined set of experimental conditions.

**median lethal dose:** Statistically derived single dose of a chemical that can be expected to cause death in 50% of given population of organism under defined set of experimental conditions (for example oral administration, rat).

**median overall survival :** The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that half of the patients in a group of patients diagnosed with the disease are still alive. In a clinical trial, measuring the median overall survival is one way to see how well a new treatment works. Also called median survival.

**median survival :** The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that half of the patients in a group of patients diagnosed with the disease are still alive. In a clinical trial, measuring the median survival is one way to see how well a new treatment works. Also called median overall survival.

**median umbilical ligament :** A fibrous cord that connects the urinary bladder to the umbilicus (navel). The median umbilical ligament is formed as the allantoic stalk during fetal development and lasts through life. Also called urachus.

**mediastinal pleura :** The thin membrane that lines the chest cavity in the area between the lungs.

**mediastinoscope :** A thin, tube-like instrument used to examine the tissues and lymph nodes in the area between the lungs. These tissues include the heart and its large blood vessels, trachea, esophagus, and bronchi. The mediastinoscope has a light and a lens for viewing and may also have a tool to remove tissue. It is inserted into the chest through a cut above the breastbone.

**mediastinoscopy :** A procedure in which a mediastinoscope is used to examine the organs in the area between the lungs and nearby lymph nodes. A mediastinoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. The mediastinoscope is inserted into the chest through an incision above the breastbone. This procedure is usually

done to get a tissue sample from the lymph nodes on the right side of the chest.

**mediastinum :** The area between the lungs. The organs in this area include the heart and its large blood vessels, the trachea, the esophagus, the thymus, and lymph nodes but not the lungs.

**Medicaid :** A health insurance program for people who cannot afford regular medical care. The program is run by U.S. federal, state, and local governments. People who receive Medicaid may have to pay a small amount for the services they get.

**medical castration :** Refers to the use of drugs to suppress the function of the ovaries or testicles.

**medical device :** An instrument, tool, machine, test kit, or implant that is used to prevent, diagnose, or treat disease or other conditions. Medical devices range from tongue depressors to heart pacemakers and medical imaging equipment.

**Medical grade:** Resin that may be suitable for use in certain medical applications.

**medical history :** A record of information about a person's health. A personal medical history may include information about allergies, illnesses, surgeries, immunizations, and results of physical exams and tests. It may also include information about medicines taken and health habits, such as diet and exercise. A family medical history includes health information about a person's close family members (parents, grandparents, children, brothers, and sisters). This includes their current and past illnesses. A family medical history may show a pattern of certain diseases in a family.

**medical nutrition therapy :** Treatment based on nutrition. It includes checking a person's nutrition status, and giving the right foods or nutrients to treat conditions such as those caused by diabetes, heart disease, and cancer. It may involve simple changes in a person's diet, or intravenous or tube feeding. Medical nutrition therapy may help patients recover more quickly and spend less time in the hospital. Also called nutrition therapy.

**medical oncologist :** A doctor who has special training in diagnosing and treating cancer using chemotherapy, hormonal therapy, biological therapy, and targeted therapy. A medical oncologist often is the main health care

provider for someone who has cancer. A medical oncologist also gives supportive care and may coordinate treatment given by other specialists.

**Medicare :** A U.S. federal health insurance program for people aged 65 years or older and people with certain disabilities. Medicare pays for hospital stays, medical services, and some prescription drugs but people who receive Medicare must pay part of their healthcare costs.

**medicated urethral system for erection :** A method used to treat impotence (inability to have an erection). A suppository, in the form of a very small pellet, is inserted through the tip of the penis into the urethra. The suppository contains the drug alprostadil, which increases the flow of blood to the penis and causes an erection. Also called MUSE.

**medication :** A legal drug that is used to prevent, treat, or relieve symptoms of a disease or abnormal condition.

**Medicinal Chemistry:** A branch of chemistry that incorporates aspects of organic chemistry, physical chemistry, computational chemistry, analytical chemistry, pharmacology, and the biological sciences to design, develop, and synthesise drugs. OR An area of study involved with designing, making and developing medicines for use in humans and animals OR A branch of chemistry concerned with the discovery, design, synthesis, and investigation of biologically active compounds and reactions that these compounds undergo in living things.

**medicine :** Refers to the practices and procedures used for the prevention, treatment, or relief of symptoms of a diseases or abnormal conditions. This term may also refer to a legal drug used for the same purpose.

**Medihoney™:** (Other name for: Manuka honey)

**meditation :** A mind-body practice in which a person focuses his or her attention on something, such as an object, word, phrase, or breathing, in order to minimize distracting or stressful thoughts or feelings. Meditation may help relax the body and mind and improve overall health and well-being. It may be used to help relieve stress, pain, anxiety, and depression and to help with symptoms related to disease, such as cancer and AIDS. It is a type of complementary and alternative medicine (CAM).

**Mediterranean-Himalayan belt:** a zone that runs through the Mediterranean region eastward through Asia and to the East Indies marked by frequent earthquake and volcanic activity.

**Medium:** A liquid component of paint in which pigments are dispersed and which forms part of the dry paint film.

**Medium Crude:** Medium Crude is a term used to define a crude oil part way between Light Crude and Heavy crude.

**Medium Density Polyethylene (MDPE):** Polyethylene having a density ranging from .929 to .940 grams/cc.

**Medlone 21:** (Other name for: methylprednisolone)

**Medrol:** (Other name for: methylprednisolone)

**medroxyprogesterone:** A synthetic derivative of progesterone administered as an acetate salt (medroxyprogesterone acetate) with antiestrogenic activity. As a do all progestins, medroxyprogesterone binds to and activates nuclear receptors which subsequently bind to and activate target genes for transcription. As an antiestrogen, this agent may inhibit the growth-stimulating effects of estrogen on estrogen-sensitive tumor cells.

**medroxyprogesterone :** A hormonal anticancer drug that is also used in cancer prevention. It belongs to the family of drugs called progestins.

**medroxyprogesterone acetate :** A drug used to prevent endometrial cancer. It is also used to treat menstrual disorders and as a form of birth control. It is a form of the female hormone progesterone and belongs to the family of drugs called progestins.

**medulla:** the inner portion of the adrenal glands; a swelling at the tip of the hindbrain that serves as the passageway for nerves extending to and from the brain.

**medullary breast carcinoma :** A rare type of breast cancer that often can be treated successfully. It is marked by lymphocytes (a type of white blood cell) in and around the tumor that can be seen when viewed under a microscope.

**medullary thyroid cancer :** Cancer that develops in C cells of the thyroid. The C cells make a hormone (calcitonin) that helps maintain a healthy level of calcium in the blood.

**medulloblastoma :** A malignant brain tumor that begins in the lower part of the brain and that can spread to the spine or to other parts of the body. Medulloblastomas are a type of primitive neuroectodermal tumor (PNET).

**mefloquine:** A quinolinemethanol derivative with antimalarial, anti-inflammatory, and potential chemosensitization and radiosensitization

activities. Although the exact mechanism remains to be elucidated, mefloquine, a weak base, preferentially accumulates in lysosomes and disrupts lysosomal function and integrity, thereby leading to host cell death. Similar to chloroquine, the chemosensitizing and radiosensitizing activities of this agent may be related to its inhibition of autophagocytosis, a cellular mechanism involving lysosomal degradation that minimizes the production of reactive oxygen species (ROS) related to tumor reoxygenation and tumor exposure to chemotherapeutic agents and radiation. Compared to chloroquine, mefloquine has better blood-brain-barrier (BBB) penetration.

**Mega-**: A prefix that multiplies a basic unit by 1,000,000 (10 to the sixth power). OR SI prefix meaning "multiply by 10<sup>6</sup>". For example, 3.2 MJ is 3200000 J.

**mega-voltage linear accelerator** : A machine that uses electricity to form a stream of fast-moving subatomic particles. This creates high-energy radiation that may be used to treat cancer. Also called linac, linear accelerator, and MeV linear accelerator.

**Megacurie**: One million curies.

**Megasynthases**: A class of large, multifunctional enzymes, including fatty acid synthase, that participate in step-by-step synthetic pathways.

**Megawatt (MW)**: A unit of power equivalent to one million watts.

**Megawatthour (MWh)**: One million watthours.

**megestrol acetate**: The acetate salt of megestrol, a synthetic derivative of the naturally occurring female sex hormone progesterone, with progestogenic, antiestrogenic, and antineoplastic activities. Mimicking the action of progesterone, megestrol binds to and activates nuclear progesterone receptors (PRs) in the reproductive system and pituitary; ligand-receptor complexes are translocated to the nucleus where they bind to progesterone response elements (PREs) located on target genes.

Megestrol's antineoplastic activity against estrogen-responsive tumors may be due, in part, to the suppression of pituitary gonadotrophin production and the resultant decrease in ovarian estrogen secretion; interference with the estrogen receptor complex in its interaction with genes and; as part of the progesterone receptor complex, direct interaction with the genome and downregulation of specific estrogen-responsive genes. This agent may also directly kill tumor cells.

**megestrol acetate** : A drug used to treat advanced breast and endometrial cancer. It is also being studied in the treatment of anorexia and cachexia in patients with cancer and in other types of cancer or other conditions.

Megestrol acetate blocks the effects of the hormone estrogen in the body, which may help keep some cancer cells from growing. It may also improve appetite. Megestrol acetate is a type of progestin.

**meiosis**: the process by which the chromosome number is halved during gamete formation. OR Process in which diploid cells undergo division to form haploid sex cells. OR A type of cell division in which diploid cells give rise to haploid cells destined to become gametes. OR A special form of cell division in which each daughter cell receives half the amount of DNA as the parent cell. Meiosis occurs during formation of egg and sperm cells in mammals.

**Meitnerium**: Symbol:"Mt" Atomic Number:"109" Atomic Mass: (266)amu. Meitnerium is one of the postactinide elements. Scientists have created these in labs and may have found only a few atoms of the element. You will not find these in use anywhere.

**MEK 1/2 inhibitor AS703988/MSK2015103B**: An orally bioavailable small-molecule inhibitor of mitogen-activated protein kinase kinase (MAP2K, MAPK/ERK kinase, or MEK) 1 and 2 with potential antineoplastic activity. MEK 1/2 inhibitor AS703988/MSK2015103B selectively binds to and inhibits the activity of MEK1/2, preventing the activation of MEK1/2-dependent effector proteins and transcription factors, which may result in the inhibition of growth factor-mediated cell signaling and tumor cell proliferation. MEK1 and MEK2 are dual-specificity threonine/tyrosine kinases that play key roles in the activation of the RAS/RAF/MEK/ERK pathway that regulates cell growth and are often upregulated in a variety of tumor cell types.

**MEK inhibitor AZD6244** : A substance being studied in the treatment of several types of cancer. MEK inhibitor AZD6244 blocks proteins needed for cell growth and may kill cancer cells. It is a type of protein kinase inhibitor. Also called AZD6244 and selumetinib.

**MEK inhibitor AZD8330**: An orally active, selective MEK inhibitor with potential antineoplastic activity. MEK inhibitor AZD8330 specifically inhibits mitogen-activated protein kinase kinase 1 (MEK or MAP/ERK kinase1), resulting in inhibition of growth factor-mediated cell signaling

and tumor cell proliferation. MEK is a key component of the RAS/RAF/MEK/ERK signaling pathway that regulates cell growth; constitutive activation of this pathway has been implicated in many cancers.

**MEK inhibitor GDC-0623:** An orally active, selective MEK inhibitor with potential antineoplastic activity. MEK inhibitor GDC-0623 specifically inhibits mitogen-activated protein kinase kinase (MEK or MAP/ERK kinase), resulting in inhibition of growth factor-mediated cell signaling and tumor cell proliferation. MEK is a key component of the RAS/RAF/MEK/ERK signaling pathway that regulates cell growth; constitutive activation of this pathway has been implicated in many cancers.

**MEK inhibitor RO4987655:** An orally active small molecule, targeting mitogen-activated protein kinase kinase 1 (MAP2K1 or MEK1), with potential antineoplastic activity. MEK inhibitor RO4987655 binds to and inhibits MEK, which may result in the inhibition of MEK-dependent cell signaling and the inhibition of tumor cell proliferation. MEK, a dual specificity threonine/tyrosine kinase, is a key component of the RAS/RAF/MEK/ERK signaling pathway that regulates cell growth; constitutive activation of this pathway has been implicated in many cancers. Check for active clinical trials using this agent.

**MEK inhibitor TAK-733:** An orally bioavailable small-molecule inhibitor of MEK1 and MEK2 (MEK1/2) with potential antineoplastic activity. MEK inhibitor TAK-733 selectively binds to and inhibits the activity of MEK1/2, preventing the activation of MEK1/2-dependent effector proteins and transcription factors, which may result in the inhibition of growth factor-mediated cell signaling and tumor cell proliferation. MEK1/2 (MAP2K1/K2) are dual-specificity threonine/tyrosine kinases that play key roles in the activation of the RAS/RAF/MEK/ERK pathway and are often upregulated in a variety of tumor cell types.

**MEK inhibitor WX-554:** An orally available small molecule mitogen-activated protein kinase kinase (MAP2K, MAPK/ERK kinase, or MEK) inhibitor, with potential antineoplastic activity. MEK inhibitor WX-554 selectively binds to and inhibits the activity of MEK, thereby preventing the activation of MEK-dependent effector proteins including some transcription factors, which may result in the inhibition of growth factor-mediated cell signaling and tumor cell proliferation. MEK, a dual-specificity threonine/tyrosine kinase that plays a key role in the activation of the

RAS/RAF/MEK/ERK signaling pathway, is frequently upregulated in a variety of tumor cell types.

**MEK-1/MEKK-1 inhibitor E6201:** A synthetic, fungal metabolite analogue inhibitor of mitogen-activated protein kinase kinase 1 (MEK-1) and mitogen-activated protein kinase kinase kinase 1 (MEKK-1) with potential antipsoriatic and antineoplastic activities. MEK-1/MEKK-1 inhibitor E6201 specifically binds to and inhibits the activities of MEK-1 and MEKK-1, which may result in the inhibition of tumor cell proliferation. MEK-1 and MEKK-1 are key components in the RAS/RAF/MEK/MAPK signaling pathway, which regulates cell proliferation and is frequently activated in human cancers.

**MEK/Aurora kinase dual inhibitor BI 847325:** An orally available dual inhibitor of mitogen-activated protein kinase kinase (MEK) and Aurora kinases, with potential antineoplastic activity. Upon oral administration, MEK/Aurora kinase inhibitor BI 847325 selectively binds to and inhibits the activity of MEK, which both prevents the activation of MEK-dependent effector proteins and inhibits growth factor-mediated cell signaling. BI 847325 also binds to and inhibits the activity of the Aurora kinases A, B and C which may disrupt the assembly of the mitotic spindle apparatus, prevent chromosome segregation, and inhibit both cellular division and proliferation in Aurora kinase-overexpressing tumor cells. Altogether, this leads to the inhibition of cell proliferation and tumor growth as well as the induction of tumor regression. MEK, a dual-specificity threonine/tyrosine kinase that plays a key role in the activation of the RAS/RAF/MEK/ERK signaling pathway, is frequently upregulated in a variety of tumor cell types. Aurora kinases are serine-threonine kinases that play essential roles in mitotic checkpoint control and are overexpressed by a wide variety of cancer cell types.

**Mekinist:** (Other name for: trametinib)

**Mekinist :** A drug used alone or with dabrafenib to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is used in patients with a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. Mekinist blocks certain proteins, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor and a type of targeted therapy. Also called trametinib.

**Melamine:** Melamine is a white crystalline solid produced by the reaction of ammonia and urea over a catalyst. It is typically shipped in bags and is used mainly as a raw material in the production of melamine formaldehyde resins. These resins are used to produce wood laminates, in textile and paper treatment and as leather tanning agents. Melamine itself also finds applications in flame retardants, speciality fertilizers, ion exchange resins and as a concrete additive.

**Melamine Plastics:** Thermosetting plastics made from melamine and formaldehyde resins.

**Melan-A protein :** A protein found on normal melanocytes (cells that make the pigment melanin) in the skin and in the retina. It is also found on most melanomas (cancers that begin in melanocytes). Vaccines using pieces of the Melan-A protein are being studied for their ability to boost the immune response to cancer cells in patients with melanoma. Also called MART-1 antigen and Melanoma Antigen Recognized by T cells 1.

**Melan-A VLP vaccine:** A vaccine consisting of the melanocyte differentiation antigen Melan A (also called MART-1) encapsulated in noninfectious virus-like particles (VLPs) with potential immunostimulating and antineoplastic activities. Upon administration, Melan-A VLP vaccine may stimulate the immune system to exert a specific cytotoxic T lymphocyte (CTL) response against tumor cells expressing the Melan A antigen, resulting in tumor cell lysis. Melan A is upregulated in most melanomas. VLPs stimulate the immune system and promotes the CTL response.

**Melan-A/MAGE-3.DP4 peptide vaccine:** A cancer vaccine consisting of a peptide derived from the melanocyte differentiation antigen Melan-A (or MART-1) and the human leukocyte antigen HLA-DP4-restricted human melanoma antigen 3 (MAGE-3.DP4), with potential immunostimulating and antineoplastic activities. Upon administration, Melan-A/MAGE-3.DP4 peptide vaccine may stimulate the immune system to mount a cytotoxic T-cell (CTL) response against tumor cells expressing Melan-A and MAGE-3, resulting in tumor cell lysis. The tumor associated antigens Melan-A and MAGE-3 are overexpressed in a variety of cancer cell types. Check for active clinical trials using this agent.

**melanin :** A pigment that gives color to skin and eyes and helps protect it from damage by ultraviolet light.

**melanocortin 1 receptor :** A protein found in skin and eye cells that make melanin (a pigment that gives color to the skin and helps protect it from damage by ultraviolet light). People with certain changes in the gene for melanocortin 1 receptor have a higher risk of developing melanoma (skin cancer that begins in melanocytes). Also called MC1R and melanotropin receptor.

**melanocyte :** A cell in the skin and eyes that produces and contains the pigment called melanin.

**melanoma :** A form of cancer that begins in melanocytes (cells that make the pigment melanin). It may begin in a mole (skin melanoma), but can also begin in other pigmented tissues, such as in the eye or in the intestines.

**Melanoma Antigen Recognized by T cells 1 :** A protein found on normal melanocytes (cells that make the pigment melanin) in the skin and in the retina. It is also found on most melanomas (cancers that begin in melanocytes). Vaccines using pieces of the Melanoma Antigen Recognized by T cells 1 are being studied for their ability to boost the immune response to cancer cells in patients with melanoma. Also called MART-1 antigen and Melan-A protein.

**melanoma helper peptide vaccine:** A multivalent vaccine consisting of peptides derived from melanoma-associated antigens and an adjuvant peptide derived from tetanus toxoid. Vaccination with this agent may stimulate a host cytotoxic T-cell response against tumor cells expressing melanoma-associated antigens, resulting in tumor cell lysis.

**melanoma in situ :** Abnormal melanocytes (cells that make melanin, the pigment that gives skin its color) are found in the epidermis (outer layer of the skin). These abnormal melanocytes may become cancer and spread into nearby normal tissue. Also called stage 0 melanoma.

**melanoma TRP2 CTL epitope vaccine SCIB1:** A proprietary DNA-based cancer vaccine that encodes a melanoma antigen tyrosinase-related protein 2 (TRP2) cytotoxic T-lymphocyte (CTL) epitope and a modified monoclonal antibody, a chimera of human IgG1/murine IgG2a with T cell mimotopes expressed within the complementarity-determining regions (CDR) of the antibodies, with potential immunostimulating and antineoplastic activities. Upon intramuscular injection and electroporation, melanoma TRP2 CTL epitope vaccine SCIB1 expresses the modified antibody. Subsequently, the Fc component of the engineered antibody

targets and binds to the CD64 receptor on the dendritic cells (DCs); upon processing by DCs, the cellular immune system may be activated to induce helper T-cell and CTL immune responses against tumor cells expressing the TRP2 antigen.

**melanoma vaccine :** A cancer vaccine prepared from human melanoma cancer cells. It can be used alone or with other therapy in treating melanoma.

**melanotropin receptor :** A protein found in skin and eye cells that make melanin (a pigment that gives color to the skin and helps protect it from damage by ultraviolet light). People with certain changes in the gene for melanotropin receptor have a higher risk of developing melanoma (skin cancer that begins in melanocytes). Also called MC1R and melanocortin 1 receptor.

**melatonin :** A hormone made by the pineal gland (tiny organ near the center of the brain). Melatonin helps control the body's sleep cycle, and is an antioxidant. It is also made in the laboratory and sold as a supplement.

**Meld lines:** Occurs when multiple gates are present. These are imperfections in the part where separated flows of cooling material meet and rejoin, often resulting in incomplete bonds and/or a visible line.

**MELITAC 12.1 peptide vaccine:** A peptide cancer vaccine consisting of an emulsion of a mixture of 12 class I MHC-restricted melanoma peptides and a class II MHC-restricted tetanus toxoid helper peptide, with potential immunostimulating and antineoplastic activities. Upon administration, the MELITAC 12.1 peptide vaccine may stimulate the host immune system to mount a cytotoxic T-cell response against tumor cells expressing the melanoma peptide antigens, resulting in tumor cell lysis. The melanoma peptides contained in the vaccine are upregulated in melanoma cancer cells.

**MELK inhibitor OTS167:** An orally available inhibitor of maternal embryonic leucine zipper kinase (MELK) with potential antineoplastic activity. Upon administration, OTS167 binds to MELK, which prevents both MELK phosphorylation and activation; thus inhibiting the phosphorylation of downstream MELK substrates. This may lead to an inhibition of both cell proliferation and survival in MELK-expressing tumor cells. MELK, a serine/threonine kinase, is involved in cancer cell survival, invasiveness and cancer-stem cell formation and maintenance; it is highly

upregulated in various types of cancer cells and absent in normal, healthy cells.

**Mellaril:** (Other name for: thioridazine hydrochloride)

**meloxicam:** An oxicam derivative and a non-steroidal anti-inflammatory drug (NSAID) with anti-inflammatory, antipyretic and analgesic activities. Unlike traditional nonselective NSAIDs, meloxicam preferentially inhibits the activity of cyclo-oxygenase II (COX-II), resulting in a decreased conversion of arachidonic acid into prostaglandin precursors. The resulting decrease in prostaglandin synthesis is responsible for the therapeutic effects of meloxicam. or A phenylalanine derivative of nitrogen mustard with antineoplastic activity. Melphalan alkylates DNA at the N7 position of guanine and induces DNA inter-strand cross-linkages, resulting in the inhibition of DNA and RNA synthesis and cytotoxicity against both dividing and non-dividing tumor cells.

**melphalan :** A drug used to treat multiple myeloma. It is also used to treat ovarian epithelial cancer that cannot be removed by surgery. It is also being studied in the treatment of other types of cancer. Melphalan may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called Alkeran Tablets.

**melphalan hydrochloride:** A bifunctional alkylating agent and phenylalanine derivative of nitrogen mustard. Melphalan hydrochloride is converted into highly reactive ethylenimmonium intermediates that induce covalent guanine N7-N7 intra- and inter-crosslinks and alkylation of adenine N3 of DNA. This agent also alkylates RNA and protein structures. As a result RNA transcription and protein synthesis are inhibited, ultimately leading to cell growth arrest and/or death. or A drug used to treat multiple myeloma in patients who cannot take melphalan by mouth. It is also being studied in the treatment of other types of cancer. Melphalan hydrochloride may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called Alkeran for Injection and Evomela.

**melphalan hydrochloride/sulfobutyl ether beta-cyclodextrin complex:** A propylene glycol-free intravenous formulation containing the hydrochloride salt of the nitrogen mustard phenylalanine derivative melphalan complexed with polyanionic sulfobutyl ether beta-cyclodextrin (SBE-CD) with potential antineoplastic activity. Upon administration,

melphalan is converted into highly reactive ethylenimmonium intermediates that induce covalent guanine N7-N7 intra- and inter-crosslinks and alkylation of adenine N3 of DNA; RNA and proteins may also be alkylated. Subsequently, RNA transcription and protein synthesis are inhibited, resulting in cell growth arrest. The addition of sulfobutyl ether beta-cyclodextrin to the formulation improves the solubility, stability and ease of use of melphalan; cyclodextrins are cyclic dextrans derived from starch.

**melphalan-flufenamide prodrug:** A melphalan prodrug in which the alkylating agent melphalan is bound to flufenamide, with potential antineoplastic and anti-angiogenic activities. Upon administration, the dipeptide bond in the melphalan-flufenamide compound is hydrolyzed by peptidases, which are overexpressed by certain cancer cells. This results in the specific release and accumulation of the active metabolite melphalan in cancer cells. Melphalan alkylates DNA at the N7 position of guanine residues and induces DNA intra- and inter-strand cross-linkages. This results in the inhibition of DNA and RNA synthesis and the induction of apoptosis, thereby inhibiting tumor cell proliferation. The administration of the melphalan-flufenamide prodrug allows for enhanced efficacy and reduced toxicity compared to melphalan alone.

**Melt:** A term given to describe the physical condition of molten plastic prior to injection into a mold. A proper melt has the consistency of warm honey.

**Melt Accumulator :** Also referred to as a plunger. A large capacity holding area for molten resin. The area of a structural foam molding machine that determines the shot size.

**MELT BLOCKAGE:** The sudden drop of output rate of an extruder due to insufficient forward transport of the solid packed bed in the feeding zone of the machine.

**Melt Conveying:** Also called Metering zone. This zone, in which channel depth is the same throughout the zone, melts the last plastic resin particles and mixes to a uniform temperature and composition.

**Melt expansion:** During the injection stroke melt is compressed by about 5 to 15%. After melt enters the mould it gets the chance to relax and expand.

**Melt Flow:** Rate of extrusion of molten resin through a die of specified length and diameter. The conditions of the test (e.g. temperature and load)

should be given. Frequently, however, the manufacturer's data lists only the value, not the condition as well. OR Rate of extrusion of molten resin through a die of specified length and diameter.

**Melt Flow :** Rate of extrusion of molten resin through a die of specified length and diameter. The conditions of the test (e.g. temperature and load) should be given. Frequently, however, the manufacturer's data lists only the value, not the condition as well.

**Melt Flow Index:** Measure of viscosity or the amount of polymer which exits the die in ten minutes and is measured in grams.

**MELT FLOW INDEX (also called MELT INDEX or MELT FLOW RATE):** The number of grams of polymer that can be pushed out of a capillary die of standard dimensions (Diameter 2.095 mm, Length 8.0 mm) under the action of standard weight (2.16 kg for PE, at 190°C). in 10 minutes (ASTM Standard 1238). The usual melt index range is from less than 1.0 (called fractional) to more than 25 (up to 100 for injection molding). For PP it is usually called MELT FLOW RATE and the standard temperature is 230°C.

**Melt Flow Rate :** A measure of the molten viscosity of a polymer determined by the weight of polymer extruded through an orifice under specified conditions of pressure and temperature. Particular conditions are dependent upon the type of polymer being tested.

**MELT FRACTURE:** At higher throughput rates, extrudates usually become highly distorted and the head pressure shows significant fluctuations. This phenomenon is known as gross MELT FRACTURE. It is possible with some polymers to obtain grossly melt fractured extrudates without sharkskin, i.e. the surface remains smooth and glossy but overall the extrudate is distorted (see also SHARKSKIN). OR A phenomenon of melt extrudate in which the surface appears rough or wavy upon exit from the die. Melt fracture may appear uniformly or in certain sections only. OR Is a phenomenon of melt extrudate in which the surface of plastic appears rough or wavy upon exit from the die. Melt fracture may appear uniformly or only in certain sections of plastic material.

**Melt Fracture:** An instability in the melt flow through a die starting at the entry to the die. It leads to surface irregularities on the finished article like a regular helix or irregularly-spaced ripples. OR Extrudate or film having a

surface that appears rough and wavy. Melt fracture may be evenly distributed throughout the film or concentrated in some areas only.

**Melt Front:** As the mould is filling, the melt at the leading edge of flow is called the melt front or stream.

**Melt Front Velocity:** It is not same as injection piston (screw velocity) velocity. As melt enters mould it spreads in all direction depending on the resistance to flow in each direction. Melt front velocity is determined by the area of flow, which does not remain constant with time.

**Melt Index:** The amount, in grams, of a thermoplastic resin which can be forced through a 0.0825 inch orifice when subjected to 2160 grams. forced in 10 minutes at 190 degrees C. OR The amount of a thermoplastic resin, measured in grams, which can be forced through a specified orifice within ten minutes when subjected to a specified force. (ASTM D-1238) OR Grams of a thermoplastic resin which can be forced through a 0.0825 inch orifice by 2160 grams of force in 10 minutes at 190°C.

**MELT INSTABILITY:** An instability in the melt flow through a die that causes irregularities in the finished part.

**Melt point:** The temperature at which a polymer particle will begin to melt and flow.

**MELT STRENGTH:** A measure of the extensional viscosity of polymer melts. It represents the maximum tension that can be applied to the melt without rupture or tearing. Usually a capillary viscometer is used to extrude a polymer strand and the strand is pulled till rupture by a pair of rollers. OR The strength of the plastic while in a molten state. This is an important factor in the process of plastic extrusion, blow moulding and drawing molten plastic resin from the die.

**Melt Temperature :** The melt temperature or  $T_m$  is the temperature, measured under specified conditions, at which crystallinity disappears in a semi-crystalline polymer. Semi-crystalline materials have a clearly defined melt temperature. Amorphous materials soften over a wide temperature range above their glass transition temperature. They do not have a specific  $T_m$ , but a melting range. Melt temperature should be measured from a purge shot having the same residence time as in the production process. OR Melt temperature is the actual temperature of the melt during processing. The melt temperature is constantly changing. It varies with time and will not be the same at different locations in the mould.

**Melt-back:** A phenomena that occurs during lyophilization (freeze drying) where the solid melts to form a crust.

**MELTING AND BOILING TEMPERATURES:** are caused by the van der waals interaction. Solids melt and liquids evaporate when the van der waals forces between molecules are broken.

**Melting Behavior:** Phenomena accompanying the softening of a material under the influence of heat: can be shrinking, dripping and burning of molten material. Melt drip: falling droplets of molten material, either burning or not.

**Melting Point:** The melting point is the temperature at which a substance changes state from solid to liquid. Ice has its melting point at zero degrees Celsius. The solid melts.

**Melting Point:** The temperature at which a solid turns into a liquid. As temperature is a measure of the kinetic energy of molecules (how much they are moving around), this means that the molecules are moving too much to stay in one place anymore. OR the temperature at which a solid changes to a liquid. OR the temperature at which a substance changes from a solid to a liquid. OR The temperature at which the structure of a crystalline polymer is destroyed to yield a liquid. For HDPE it is about 135°C, for LDPE it is about 110°C. It is not scientifically correct to talk about the melting point of an amorphous polymer like PS, because it has no crystalline structure. However, in extrusion practice it is often practical to use the glass transition temperature plus 50°C to define an equivalent melting point of such amorphous polymers. For PS this would be 100°C + 50°C = 150°C (see GLASS TRANSITION). OR The temperature at which a solid turns into a liquid.

**Melting temperature:** The temperature at which secondary or higher structures of a biological molecule are lost; for a nucleic acid, the melting temperature is defined as the temperature at which half the helical structure is lost.

**Melting zone:** Also called the transition or compression zone. Most of the plastic resin is melted in this section, and the channel depth gets progressively smaller.

**memantine hydrochloride:** The hydrochloride salt of memantine, a low-affinity, voltage-dependent, noncompetitive N-methyl-D-aspartate (NMDA) receptor antagonist. Memantine binds to and inhibits cation channels of

glutamanergic NMDA receptors located in the central nervous system (CNS), preventing the prolonged influx of calcium ions and the associated neuronal excitotoxicity, and thereby potentially enhancing cognitive function. Memantine is also a 5-hydroxytryptamine type 3 (5HT3) receptor and nicotinic receptor antagonist. Check for active clinical trials using this agent. or A drug used to treat dementia caused by Alzheimer disease. It is also being studied in the treatment of side effects from whole-brain radiation therapy for cancer and other conditions. Memantine hydrochloride blocks the uptake of calcium by certain brain cells and decreases their activity. It is a type of N-methyl-D-aspartate (NMDA) receptor antagonist. Also called Namenda.

**member:** a distinctive rock layer that is part of a larger rock formation.

**Membrane:** a thin or liquid film through which one or more species in a process stream can permeate. OR a continuous layer covering a structure or separating two electrolytic solutions. The membrane of an ISE is responsible for the potential response and the selectivity of the electrode. OR A sheet-like composite of protein and lipid that is the boundary of cells and organelles.

**membrane :** A very thin layer of tissue that covers a surface.

**Membrane asymmetry:** Refers to the fact that the two phases of biologically important membranes differ from each other.

**membrane cell:** A membrane cell is an electrolytic cell in which brine is electrolysed producing chlorine, hydrogen and forming sodium hydroxide solution (an alkali).

**Membrane protein:** A protein that is associated with a membrane, rather than found free in the cell. A membrane protein may be integral (embedded or buried) in the membrane, or peripheral (attached more loosely, by interactions with either lipid or integral membrane proteins).

**Membrane transport:** The facilitated transport of a molecule across a membrane. OR Movement of a polar solute across a membrane via a specific membrane protein (a transporter).

**membrane-disrupting peptide EP-100:** A water-soluble, positively charged fusion protein consisting of a luteinizing hormone releasing hormone (LHRH) receptor-targeting ligand conjugated to the membrane-disrupting peptide CLIP 71 with membrane-disrupting and potential

antineoplastic activities. The LHRH ligand moiety of membrane-disrupting peptide EP-100 specifically binds to LHRH receptors, which are upregulated on a variety of human cancer cell types. Subsequently, the positively charged CLIP 71 moiety of this agent interacts with the negatively charged membrane on the cancer cell surface, which may result in cell membrane disruption and cell lysis.

**Membranes:** Sheetlike structures composed of lipids and proteins, usually only a few molecules thick, that form closed boundaries between different compartments; membranes separate aqueous environments

**Memory:** MemoryThe tendency a particular plastic has to go back to its original shape after being stretched or bent.Polyurethane tubing is described as having excellent memory.

**MEN syndrome :** An inherited condition that may result in the development of cancers of the endocrine system. There are several types of MEN syndrome, and patients with each type may develop different types of cancer. The altered genes that cause each type can be detected with a blood test. Also called multiple endocrine neoplasia syndrome.

**MEN-10755:** An anticancer drug that belongs to the family of drugs called antitumor antibiotics.

**MEN1 syndrome :** A rare, inherited disorder that affects the endocrine glands and can cause tumors in the parathyroid and pituitary glands and the pancreas. These tumors are usually benign (not cancer). They cause the glands to secrete high levels of hormones, which can lead to other medical problems, such as kidney stones, fertility problems, and severe ulcers. In some cases, tumors inside the pancreas can become malignant (cancer). Also called multiple endocrine adenomatosis, multiple endocrine neoplasia type 1 syndrome, and Wermer syndrome.

**MEN2:** A rare, genetic disorder that affects the endocrine glands and can cause tumors in the thyroid gland, parathyroid glands, and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. MEN2 is caused by a mutation (change) in a gene called RET, and is divided into three subtypes (MEN2A, MEN2B, and FMTC). People with all subtypes of MEN2 have an increased risk of medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. Also called MEN2

syndrome, multiple endocrine adenomatosis type 2, and multiple endocrine neoplasia type 2 syndrome.

**MEN2 syndrome :** A rare, genetic disorder that affects the endocrine glands and can cause tumors in the thyroid gland, parathyroid glands, and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. MEN2 syndrome is caused by a mutation (change) in a gene called RET, and is divided into three subtypes (MEN2A, MEN2B, and FMTC). People with all subtypes of MEN2 syndrome have an increased risk of medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. Also called MEN2, multiple endocrine adenomatosis type 2, and multiple endocrine neoplasia type 2 syndrome.

**MEN2A:** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the parathyroid glands and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. An itchy skin condition may also occur. MEN2A is caused by a mutation (change) in a gene called RET. Also called MEN2A syndrome, multiple endocrine adenomatosis type 2A, multiple endocrine neoplasia type 2A syndrome, and Sipple syndrome.

**MEN2A syndrome :** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the parathyroid glands and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. An itchy skin condition may also occur. MEN2A syndrome is caused by a mutation (change) in a gene called RET. Also called MEN2A, multiple endocrine adenomatosis type 2A, multiple endocrine neoplasia type 2A syndrome, and Sipple syndrome.

**MEN2B:** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the adrenal glands and growths around the nerves

in the lips, tongue, lining of the mouth, and eyelids. Gastrointestinal symptoms and trouble with the spine or bones in the feet and thighs may also occur. MEN2B is caused by a mutation (change) in a gene called RET. Also called MEN2B syndrome, multiple endocrine adenomatosis type 2B, and multiple endocrine neoplasia type 2B syndrome.

**MEN2B syndrome :** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the adrenal glands and growths around the nerves in the lips, tongue, lining of the mouth, and eyelids. Gastrointestinal symptoms and trouble with the spine or bones in the feet and thighs may also occur. MEN2B syndrome is caused by a mutation (change) in a gene called RET. Also called MEN2B, multiple endocrine adenomatosis type 2B, and multiple endocrine neoplasia type 2B syndrome.

**menadione topical lotion:** A topical lotion containing the small organic molecule protein tyrosine phosphatase (PTP) inhibitor menadione (vitamin K3) with potential EGFR- and ErbB2/HER2-activating activities. Upon topical administration, menadione binds to and inhibits the activity of PTPs that dephosphorylate and inactivate EGFR and ErbB2 in human keratinocytes; local reversal of EGFR and ErbB2 inhibition associated with the systemic administration of EGFR inhibitors may help alleviate EGFR inhibitor-mediated skin toxicity. EGFR (epidermal growth factor receptor) and ErbB2/HER2 (erythroblastic leukemia viral oncogene homolog 2/human epidermal growth factor receptor 2) are cell surface receptors that are upregulated in a number of cancer cells types and play important roles in the growth and maintenance of normal epithelial tissues.

**menatetrenone:** A menaquinone compound and form of vitamin K2 with potential antineoplastic activity. Menatetrenone may act by modulating the signalling of certain tyrosine kinases, thereby affecting several transcription factors including c-myc and c-fos. This agent inhibits tumor cell growth by inducing apoptosis and cell cycle arrest.

**Mendelevium:** Symbol:"Md" Atomic Number:"101" Atomic Mass: (258)amu. This is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element.

**Ménétrier disease :** A condition marked by inflammation and ulcers (breaks on the skin or on the surface of an organ) of the mucosa (inner

lining) of the stomach and by overgrowth of the cells that make up the mucosa. Symptoms include vomiting, diarrhea, and weight loss. Patients with Ménétrier disease may be at a higher risk of stomach cancer. Also called gastric mucosal hypertrophy and giant hypertrophic gastritis.

**meningeal** : Having to do with the meninges (three thin layers of tissue that cover and protect the brain and spinal cord).

**meningeal carcinomatosis** : A serious problem that may occur in cancer in which cancer cells spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). It can happen in many types of cancer, but is the most common in melanoma, breast, lung, and gastrointestinal cancer. The cancer may cause the meninges to be inflamed. Also called carcinomatous meningitis, leptomeningeal carcinoma, leptomeningeal carcinomatosis, leptomeningeal metastasis, meningeal metastasis, and neoplastic meningitis.

**meningeal leukemia** : A serious problem that may occur in leukemia. In meningeal leukemia, cancer cells have spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). The cancer may cause the meninges to be inflamed. Also called leukemic leptomeningitis and leukemic meningitis.

**meningeal metastasis** : A serious problem that may occur in cancer in which cancer cells spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). It can happen in many types of cancer, but is the most common in melanoma, breast, lung, and gastrointestinal cancer. The cancer may cause the meninges to be inflamed. Also called carcinomatous meningitis, leptomeningeal carcinoma, leptomeningeal carcinomatosis, leptomeningeal metastasis, meningeal carcinomatosis, and neoplastic meningitis.

**meningeal syndrome** : A condition marked by headache, fever, and a stiff neck, which is caused when the meninges (three thin layers of tissue that cover and protect the brain and spinal cord) become irritated. Meningeal syndrome may be caused by blood, cancer cells, or substances from the breakdown of cancer cells that get into the cerebrospinal fluid (CSF). It may also be caused by infection with a bacterium, virus, or fungus.

**meninges** : The three thin layers of tissue that cover and protect the brain and spinal cord.

**meningioma** : A type of slow-growing tumor that forms in the meninges (thin layers of tissue that cover and protect the brain and spinal cord). Meningiomas usually occur in adults.

**meningitis** : Inflammation of the meninges (three thin layers of tissue that cover and protect the brain and spinal cord). Meningitis is usually caused by a bacterial or viral infection, but sometimes is caused by cancer, drug allergies, or inflammatory diseases.

**meniscus**: the curved upper surface of a non-turbulent liquid in a container; it is concave (curves upward) if it wets the container walls, and convex (curves downward) if it does not. For accurate measurements, readings should be taken at the flat center of the meniscus. OR Curved surface of a liquid in a container. OR A phase boundary that is curved because of surface tension. OR The free surface of a liquid in a container, for example, water in contact with air confined in a capillary tube.

**menogaril**: A semisynthetic derivative of the anthracycline antineoplastic antibiotic nogalamycin. Menogaril intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. This agent is less cardiotoxic than doxorubicin.

**Menogarol**: (Other name for: menogaril)

**menopause** : The time of life when a woman's ovaries stop producing hormones and menstrual periods stop. Natural menopause usually occurs around age 50. A woman is said to be in menopause when she hasn't had a period for 12 months in a row. Symptoms of menopause include hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility.

**menorrhagia**: an abnormally heavy and prolonged menstrual period at regular intervals OR Abnormally heavy menstrual bleeding.

**menstrual cycle** : The monthly cycle of hormonal changes from the beginning of one menstrual period to the beginning of the next.

**menstrual period** : The periodic discharge of blood and tissue from the uterus. From puberty until menopause, menstruation occurs about every 28 days, but does not occur during pregnancy.

**menstruation**: the process by which the endometrium is released in females. OR Periodic discharge of blood and tissue from the uterus. From

puberty until menopause, menstruation occurs about every 28 days when a woman is not pregnant.

**mental health :** A person's overall psychological and emotional condition. Good mental health is a state of well-being in which a person is able to cope with everyday events, think clearly, be responsible, meet challenges, and have good relationships with others.

**mental health counselor :** A specialist who talks to patients and their families about emotional and personal matters, and can help them make decisions. Also called counselor.

**mental model:** an idea or model that exists in your mind.

**menthol :** A substance that comes from mint oils or is made in the laboratory. It is used to relieve itching and to treat problems in the upper respiratory tract. Menthol causes a cooling sensation when eaten or put on the skin and it acts as a mild pain killer. It is found in nasal sprays, cough drops, inhalers, creams, and lotions. It is also used as a flavor in many food and oral hygiene products.

**MEPACT:** A drug being studied in the treatment of young adults with bone cancer that has gotten worse or come back. MEPACT activates certain types of white blood cells and helps the immune system kill cancer cells. It is a type of immunostimulant. Also called L-MTP-PE, mifamurtide, and muramyl tripeptide phosphatidylethanolamine.

**meperidine hydrochloride:** The hydrochloride salt of a synthetic piperidine ester with opioid analgesic activity. Meperidine mimics the actions of endogenous neuropeptides via opioid receptors such as the mu-opioid receptor, thereby producing characteristic morphine-like effects including analgesia, euphoria, sedation, respiratory depression, miosis, bradycardia and physical dependence. or A drug used to treat moderate to severe pain. It binds to opioid receptors in the central nervous system. Meperidine hydrochloride is a type of analgesic agent and a type of opioid. Also called Demerol.

**mepivacaine hydrochloride:** The hydrochloride salt form of mepivacaine, an amide-type local anesthetic agent. At the injection site, mepivacaine binds to specific voltage-gated sodium ion channels in neuronal cell membranes, which inhibits both sodium influx and membrane depolarization. This leads to a blockage of nerve impulse initiation and conduction and results in a reversible loss of sensation. Compared to other

local anesthetics, this agent has a more rapid onset and moderate duration of action.

**Meprolone:** (Other name for: methylprednisolone)

**Mer:** The repeating structural unit in any high polymer.

**Mercalli Scale:** scale for measuring earthquakes based on observations.

**mercaptopurine:** A thiopurine-derivative antimetabolite with antineoplastic and immunosuppressive activities. Produced through the metabolism of mercaptopurine by hypoxanthine-guanine phosphoribosyltransferase (HGPRT), mercaptopurine metabolites 6-thioguanosine-5'-phosphate (6-thioGMP) and 6-thioinosine (T-IMP) inhibit nucleotide interconversions and de novo purine synthesis, thereby blocking the formation of purine nucleotides and inhibiting DNA synthesis. This agent is also incorporated into DNA in the form of deoxythioguanosine, which results in the disruption of DNA replication. In addition, mercaptopurine is converted to 6-methylmercaptopurine ribonucleoside (MMPR) by 6-thiopurine methyltransferase; MMPRs are also potent inhibitors of de novo purine synthesis.

**mercaptopurine :** A drug used to treat acute lymphoblastic leukemia. It may also be used to treat certain other conditions, such as Crohn disease and ulcerative colitis. Mercaptopurine stops cells from dividing and may kill cancer cells. It is a type of antimetabolite. Also called Purinethol and Purixan.

**mercaptopurine oral suspension:** An oral suspension containing the thiopurine-derivative antimetabolite 6-mercaptopurine, with potential antineoplastic activity. Upon oral administration, mercaptopurine is metabolized by hypoxanthine-guanine phosphoribosyltransferase (HGPRTase) to its active metabolite 6-thioinosine monophosphate (TIMP); TIMP inhibits nucleotide interconversions and de novo purine ribonucleotide synthesis, which both blocks the formation of purine nucleotides and inhibits DNA synthesis. This agent is also incorporated into DNA in the form of deoxythioguanosine, which results in the disruption of DNA replication. By blocking DNA synthesis and replication, cancer cells are unable to proliferate. Compared to the tablet formulation, the liquid is easier to swallow and offers more flexibility and accuracy in dosing, which is beneficial for use in pediatric patients.

**mercaptopurine tablet:** The anhydrous form of mercaptopurine, a thiopurine-derivative antimetabolite with antineoplastic and immunosuppressive activities. Produced through the metabolism of mercaptopurine by hypoxanthine-guanine phosphoribosyltransferase (HGPRT), mercaptopurine metabolites 6-thioguanosine-5'-phosphate (6-thioGMP) and 6-thioinosine monophosphate (T-IMP) inhibit nucleotide interconversions and de novo purine synthesis, thereby blocking the formation of purine nucleotides and inhibiting DNA synthesis. This agent is also incorporated into DNA in the form of deoxythioguanosine, which results in the disruption of DNA replication. In addition, mercaptopurine is converted to 6-methylmercaptopurine ribonucleoside (MMPR) by 6-thiopurine methyltransferase; MMPRs are also potent inhibitors of de novo purine synthesis.

**Mercury:** Symbol:"Hg" Atomic Number:"80" Atomic Mass: 200.59amu. Mercury is one of many transition elements. Mercury is one of the few elements that exist as a liquid at room temperature. This silvery metal is very toxic but still has many uses in alloys (amalgams). You will find it used in pesticides, lamps, electronics, explosives, and even dentistry. OR A silver-white, poisonous metal that is a liquid at ordinary temperatures. It is commonly used in thermometers and amalgams, and has been used as an ingredient in some homeopathic medicines and in very small amounts as a preservative in viral vaccines.

**mercy killing :** An easy or painless death, or the intentional ending of the life of a person suffering from an incurable or painful disease at his or her request. Also called euthanasia.

**merestinib:** An orally available, small molecule inhibitor of the proto-oncogene c-Met (hepatocyte growth factor receptor [HGFR]) with potential antineoplastic activity. Merestinib selectively binds to c-Met, thereby inhibiting c-Met phosphorylation and disrupting c-Met signal transduction pathways. This may induce cell death in tumor cells overexpressing c-Met protein or expressing constitutively activated c-Met protein. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays key roles in tumor cell proliferation, survival, invasion, metastasis, and tumor angiogenesis.

**meridian:** line of longitude. OR In traditional Chinese medicine, one of 20 channels that form a network through which qi (the body's vital energy)

flows and that connect the body's acupuncture sites.

**meristematic tissue:** the growth tissue; the location of most cell division of vascular plants.

**Merkel cell :** A special type of cell found right below the epidermis (top layer of skin). These cells are very close to the nerve endings that receive the sensation of touch and may be involved in touch. The cells also contain substances that may act as hormones.

**Merkel cell cancer :** A rare type of cancer that forms on or just beneath the skin, usually in parts of the body that have been exposed to the sun. It is most common in older people and in people with weakened immune systems. Also called Merkel cell carcinoma, neuroendocrine carcinoma of the skin, and trabecular cancer.

**Merkel cell carcinoma :** A rare type of cancer that forms on or just beneath the skin, usually in parts of the body that have been exposed to the sun. It is most common in older people and in people with weakened immune systems. Also called Merkel cell cancer, neuroendocrine carcinoma of the skin, and trabecular cancer.

**Merodiploid:** An organism that is diploid for some but not all of its genes.

**meropenem:** A broad-spectrum carbapenem with antibacterial properties, synthetic Meropenem inhibits cell wall synthesis in gram-positive and gram-negative bacteria. It penetrates cell walls and binds to penicillin-binding protein targets. Meropenem acts against aerobes and anaerobes including Klebsiella, E. coli, Enterococcus, Clostridium sp..

**Merrem I.V.:** (Other name for: meropenem)

**mesa:** a remnant flat-topped tower or column resulting from the weathering and erosion of a plateau's slopes.

**mesalamine:** An agent derived from sulfasalazine, an antiinflammatory agent. Mesalamine may reduce inflammation through inhibition of cyclooxygenase and prostaglandin production. Following rectal or oral administration, only a small amount of mesalamine is absorbed; the remainder, acting topically, reduces bowel inflammation, diarrhea, rectal bleeding and stomach pain. Check for active clinical trials using this agent.

**mesenchymal :** Refers to cells that develop into connective tissue, blood vessels, and lymphatic tissue.

**mesenteric membrane :** The peritoneal membrane that attaches the intestines to the abdominal wall near the back.

**Mesh :** Woven wire surface on which the product rests.

**Mesh Designation (Flat Wire) :** Flat wire belts are constructed in specific mesh designations or opening sizes such as 1x1, 1/2x1, 1/2x1/2, with other modifications which may vary according to belt width.

**Mesh Designation (Woven) :** Woven mesh is designated with a letter (B,C,U) and 3 numbers to describe mesh construction.

**mesic environment:** A habitat with a moderate amount of water.

**mesna:** A sulfhydryl compound that is used to reduce the incidence of hemorrhagic cystitis associated with certain chemotherapeutic agents. Mesna is converted to a free thiol compound in the kidney, where it binds to and inactivates acrolein and other urotoxic metabolites of ifosfamide and cyclophosphamide, thereby reducing their toxic effects on the urinary tract during urinary excretion. or A drug that helps protect the kidneys and bladder from the toxic effects of anticancer drugs such as ifosfamide and cyclophosphamide.

**Mesnex:** (Other name for: mesna)

**meso compound:** meso a compound that has a stereogenic center but is optically inactive because it also has a plane of symmetry.

**mesoderm:** one of three germ layers that develops to become the muscles and other internal organs.

**mesonephroma :** A rare type of tumor, usually of the female genital tract, in which the insides of the cells look clear when viewed under a microscope. Also called clear cell adenocarcinoma and clear cell carcinoma.

**mesopause:** region between the mesosphere and the thermosphere.

**mesoscale eddies (mode eddies):** In the ocean, dense and irregularly-oval high- and low- pressure centers about 400 km in diameter. The intensities of currents in these centers are about 10 times greater than the local means.

**Mesosome:** An invagination of the bacterial cell membrane.

**mesosphere:** part of the atmosphere between the stratosphere and the thermosphere; temperatures decrease with altitude.

**mesothelin :** A protein found on the surface of certain types of normal cells and cancer cells. Mesothelin may help these cells stick together and send signals. A higher-than-normal amount of mesothelin is found on some cancer cells, including mesothelioma, pancreatic cancer, and ovarian cancer.

**mesothelin-specific chimeric antigen receptor-engineered peripheral blood lymphocytes:** A preparation of peripheral blood lymphocytes (PBLs) transduced with a retroviral vector encoding a T cell chimeric antigen receptor (CAR) specific for mesothelin with potential immunostimulatory and antineoplastic activities. After transduction, expansion in culture, and reintroduction into the patient, the mesothelin-specific chimeric antigen receptor-engineered PBLs bind to tumor cells expressing mesothelin. This may stimulate the secretion of cytokines and result in cell lysis of mesothelin-expressing cancer cells. Mesothelin, a cell surface glycoprotein involved in cell adhesion, is overexpressed in many epithelial-derived cancers.

**mesothelioma:** Malignant spreading tumour in mesothelium of pleura, pericardium or peritoneum arising as a result of the presence of asbestos fibres, after exposure to asbestos. OR A benign (not cancer) or malignant (cancer) tumor affecting the lining of the chest or abdomen. Exposure to asbestos particles in the air increases the risk of developing malignant mesothelioma.

**mesothelioma tumor lysate-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine consisting of autologous dendritic cells (DCs) pulsed with mesothelioma tumor lysate with potential immunostimulating and antineoplastic activities. Upon administration, mesothelioma tumor lysate-pulsed autologous dendritic cell vaccine may stimulate the host immune system to mount a specific cytotoxic T lymphocyte (CTL) response against mesothelioma tumor cells, resulting in tumor cell lysis.

**messenger RNA :** A type of RNA found in cells. Messenger RNA molecules carry the genetic information needed to make proteins. They carry the information from the DNA in the nucleus of the cell to the cytoplasm where the proteins are made. Also called mRNA.

**Messenger RNA (mRNA):** The template RNA carrying the message for protein synthesis. OR A class of RNA molecules, each of which is complementary to one strand of DNA; carries the genetic message from the

chromosome to the ribosomes. OR Template for protein synthesis; the base sequence of mrna is complementary to that of a gene in DNA.

**MET receptor tyrosine kinase inhibitor SGX523:** An orally bioavailable small molecule, belonging to the class of c-Met/hepatocyte growth factor receptor (HGFR) tyrosine kinase inhibitors, with potential antineoplastic activity. MET receptor tyrosine kinase inhibitor SGX523 specifically binds to c-Met protein, or hepatocyte growth factor receptor (HGFR), preventing binding of hepatocyte growth factor (HGF) and disrupting the MET signaling pathway; this agent may induce cell death in tumor cells expressing c-Met. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays an important role in tumor cell proliferation, survival, invasion, and metastasis, and in tumor angiogenesis.

**Met tyrosine kinase inhibitor BMS-777607:** An inhibitor of MET tyrosine kinase with potential antineoplastic activity. MET tyrosine kinase inhibitor BMS-777607 binds to c-Met protein, or hepatocyte growth factor receptor (HGFR), preventing binding of hepatocyte growth factor (HGF) and disrupting the MET signaling pathway; this agent may induce cell death in tumor cells expressing c-Met. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays an important role in tumor cell proliferation, survival, invasion, and metastasis, and in tumor angiogenesis.

**MET tyrosine kinase inhibitor EMD 1204831:** An inhibitor of the receptor tyrosine kinase MET (hepatocyte growth factor receptor) with potential antineoplastic activity. MET inhibitor EMD 1204831 selectively binds to MET tyrosine kinase, thereby disrupting MET-mediated signal transduction pathways. This may induce cell death in tumor cells overexpressing this kinase. MET is overexpressed or mutated in many tumor cell types, and plays key roles in tumor cell proliferation, survival, invasion, and metastasis, and tumor angiogenesis.

**MET tyrosine kinase inhibitor EMD 1214063:** An inhibitor of MET tyrosine kinase with potential antineoplastic activity. MET tyrosine kinase inhibitor EMD 1214063 selectively binds to MET tyrosine kinase and disrupts MET signal transduction pathways, which may induce apoptosis in tumor cells overexpressing this kinase. The receptor tyrosine kinase MET (also known as hepatocyte growth factor receptor or HGFR), is the product of the proto-oncogene c-Met and is overexpressed or mutated in many

tumor cell types; this protein plays key roles in tumor cell proliferation, survival, invasion, and metastasis, and tumor angiogenesis. Check for active clinical trials using this agent.

**MET tyrosine kinase inhibitor PF-02341066 :** A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of the anaplastic lymphoma kinase (ALK) gene or the ROS1 gene. It is also being studied in the treatment of other types of cancer. MET tyrosine kinase inhibitor PF-02341066 blocks the proteins made by the mutated ALK and ROS1 genes. Blocking these proteins may stop the growth and spread of cancer cells. MET tyrosine kinase inhibitor PF-02341066 may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called crizotinib, PF-02341066, and Xalkori.

**MET tyrosine kinase inhibitor PF-04217903:** An orally bioavailable, small-molecule tyrosine kinase inhibitor of the proto-oncogene c-Met (hepatocyte growth factor receptor [HGFR]) with potential antineoplastic activity. c-Met inhibitor PF-04217903 selectively binds to and inhibits c-Met, disrupting the c-Met signaling pathway, which may result in the inhibition of tumor cell growth, migration and invasion of tumor cells, and the induction of death in tumor cells expressing c-Met. c-Met, a receptor tyrosine kinase overexpressed or mutated in many tumor cell types, plays key roles in tumor cell proliferation, survival, invasion, metastasis, and tumor angiogenesis. Check for active clinical trials using this agent.

**MET tyrosine kinase inhibitor SAR125844:** An inhibitor of the proto-oncogene c-Met (also known as hepatocyte growth factor receptor [HGFR]) with potential antineoplastic activity. Upon intravenous administration, c-Met inhibitor SAR125844 binds to c-Met, thereby disrupting c-Met-mediated signal transduction pathways. This may result in cell growth inhibition in tumors that overexpress c-Met. c-Met, a receptor tyrosine kinase overexpressed or mutated in a variety of cancers, plays an important role in tumor cell proliferation, survival, invasion, metastasis and tumor angiogenesis.

**MET/VEGFR-2 inhibitor GSK1363089 :** A substance being studied in the treatment of cancer. MET/VEGFR-2 inhibitor GSK1363089 blocks enzymes involved in the growth and spread of tumor cells. It may also

prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called foretinib and XL880.

**Meta:** Three really cool little greek words that we use to describe where things are attached to phenyl rings. Let's say we have one functional group attached to a phenyl ring - a carboxylic acid group, to give us benzoic acid. If we now attach a single amino group to the phenyl ring, there are three possible products: The third of these, para-amino benzoic acid, is known by its acronym PABA and is an ingredient in sunscreens. Ortho and meta are also used to distinguish between two acids whose molecular formulas are identical except for the amounts of hydrogen and oxygen. IUPAC is gradually cracking down on this sort of thing.

**meta-analysis :** A process that analyzes data from different studies done about the same subject. The results of a meta-analysis are usually stronger than the results of any study by itself.

**meta-fluorine F 18 fluorobenzylguanidine:** A radioconjugate composed of the positron-emitting radioisotope fluorine F 18-labeled benzylguanidine, a synthetic analogue of the adrenergic neurotransmitter norepinephrine (NE), with potential use in the diagnostic imaging of human norepinephrine transporter (hNET)-expressing cells by either positron emitting tomography (PET) or computed tomography (CT). Upon administration, meta-fluorine F 18 fluorobenzylguanidine (MFBG) is taken up by and accumulates in both the granules of adrenal medullary chromaffin cells and the pre-synaptic granules of adrenergic neurons in a manner almost identical to that of NE. In turn, hNET-expressing tumor cells can be imaged by PET or CT. hNET, a transmembrane protein and regulator of catecholamine uptake normally restricted to the central and peripheral sympathetic nervous system, is overexpressed in certain tumor cell types.

**metabolic :** Having to do with metabolism (the total of all chemical changes that take place in a cell or an organism to produce energy and basic materials needed for important life processes).

**metabolic acidosis:** a disturbance in the body's acid-base balance that results in excessive acidity of the blood; due to increased production of H<sup>+</sup> by the body or the inability of the body to form bicarbonate; usually causes rapid breathing, confusion or lethargy may also occur

**metabolic acidosis :** A condition in which the blood is too acidic. It may be caused by severe illness or sepsis (bacteria in the bloodstream).

**metabolic activation:** Biotransformation of relatively inert chemicals to biologically reactive metabolites (compounds). See biotransformation.

**metabolic alkalosis:** a disturbance in the body's acid-base balance that results in excessive alkalinity of the blood caused by an elevation in plasma bicarbonate ( $\text{HCO}_3^-$ ) concentration; in most cases, metabolic alkalosis is caused by loss of hydrochloric acid (HCl) through the kidney or GI tract, especially due to vomiting

**Metabolic Blockers:** Chemical groups added to a drug that slow down or block metabolism at that part of the drug.

**metabolic disorder :** A condition in which normal metabolic processes are disrupted, usually because of a missing enzyme.

**Metabolic engineering:** The targeted and purposeful alteration (using genetic engineering techniques) of an organism's metabolic pathways in order to better understand how the pathways work or to redesign them to produce a different set of products

**metabolic half-life :** The time required for one half of the quantity of the compound in the body to be metabolically transformed into a modified chemical compound (WHO, 1979).

**metabolic model:** An analysis and theoretical reconstruction of the way in which the body deals with a specific substance, showing the proportion of the intake that is absorbed, the proportion that is stored and in what tissues, the proportion and rate of breakdown in the body and the subsequent fate of the metabolic products, and the proportion of the substance and the rate at which it is eliminated by different organs (WHO, 1979).

**metabolic syndrome :** A condition marked by extra fat around the abdomen, high levels of blood glucose (sugar) when not eating, high levels of triglycerides (a type of fat) in the blood, low levels of high-density lipoproteins (a type of protein that carries fats) in the blood, and high blood pressure. People with metabolic syndrome are at increased risk of diabetes mellitus and diseases of the heart and blood vessels. Also called metabolic syndrome X.

**metabolic syndrome X :** A condition marked by extra fat around the abdomen, high levels of blood glucose (sugar) when not eating, high levels

of triglycerides (a type of fat) in the blood, low levels of high-density lipoproteins (a type of protein that carries fats) in the blood, and high blood pressure. People with metabolic syndrome X are at increased risk of diabetes mellitus and diseases of the heart and blood vessels. Also called metabolic syndrome.

**metabolic therapy :** Treatment to correct changes in metabolism that can be caused by disease.

**metabolic transformation :** The chemical transformation of substances that takes place within an organism (WHO, 1979).

**Metabolic turnover:** A measure of the rate at which already existing molecules of the given species are replaced by newly-synthesized molecules of the same type. Usually isotopic labeling is required to measure turnover.

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**metabolic type :** In alternative medicine, a theory that people fall into one of three groups (protein, carbohydrate, or mixed type) based on the main type of food that their bodies need to stay healthy.

**Metabolism:** In general, the sum total of all physical and chemical processes that take place within an organism; in a narrower sense, the physical and chemical changes that take place in a given chemical substance within an organism. It includes the uptake and distribution within the body of chemical compounds, the changes (biotransformations) undergone by such substances, and the elimination of the compounds and of their metabolites (WHO, 1979). OR the rapid turnover of chemical materials; involves the release or use of chemical energy. OR A set of enzyme-catalyzed reactions in a living organism that builds and breaks down organic molecules, producing or consuming energy in the process OR A highly integrated network of chemical pathways that enables a cell to extract energy from the environment and use this energy for biosynthetic purposes. OR A sequence of biochemical reactions that converts fuel molecules into energy used to drive other biological processes. Also refers to the sequence of transformations foreign compounds undergo inside a living cell. OR The entire set of enzyme-catalyzed transformations of

organic molecules in living cells; the sum of anabolism and catabolism. OR The sum total of the enzyme-catalyzed reactions that occur in a living organism.

**metabolism** : The chemical changes that take place in a cell or an organism. These changes make energy and the materials cells and organisms need to grow, reproduce, and stay healthy. Metabolism also helps get rid of toxic substances.

**Metabolite**: A chemical intermediate in metabolic reactions OR A chemical product of metabolism. OR A substance resulting from chemical transformation in an organism (WHO, 1979). OR A compound produced by metabolic reactions. OR A chemical intermediate in the enzyme-catalyzed reactions of metabolism.

**metabolite** : A substance made or used when the body breaks down food, drugs or chemicals, or its own tissue (for example, fat or muscle tissue). This process, called metabolism, makes energy and the materials needed for growth, reproduction, and maintaining health. It also helps get rid of toxic substances.

**metabolomics** : The study of substances called metabolites in cells and tissues. Metabolites are small molecules that are made when the body breaks down food, drugs, chemicals, or its own tissue. They can be measured in blood, urine, and other body fluids. Disease and environmental factors, such as diet, drugs, and chemicals, can affect how metabolites are made and used in the body. Metabolomics may help find new ways to diagnose and treat diseases, such as cancer.

**Metabolon**: The name for large, multienzyme complexes that facilitate the channeling of substrates between active sites.

**Metabotropic glutamate receptor**: A 7TM receptor that binds the neurotransmitter glutamate; a truncated version of the same protein detects the taste, termed umami, of glutamate.

**metahexamide**: A long-acting, first-generation, cyclohexyl sulfonylurea with antihyperglycemic activity. Metahexamide has greater potency than chlorpropamide and tolbutamide. This agent may cause jaundice.

**metaiodobenzylguanidine scan** : A procedure used to find neuroendocrine tumors, such as neuroblastomas and pheochromocytomas. A small amount of a substance called radioactive metaiodobenzylguanidine is injected into a

vein and travels through the bloodstream. Neuroendocrine tumor cells take up the radioactive metaiodobenzylguanidine and are detected by a scanner. Also called iobenguane scan and MIBG scan.

**metal:** An element that tends to lose electrons, forming positive ions, and is a good electrical conductor. OR A metal is a special type of element. Scientists say something is a metal because of the way it acts in nature. Metals conduct electricity well. That's why they are used in wires. They also conduct heat well. That's why your pans are made of metal. OR A metal is a substance whose atoms are so close together that their outer shells overlap. This allows electrons to wander from atom to atom as part of a delocalised sea of electrons. This allows the metal to conduct electricity. Metals also conduct heat, are shiny, malleable and ductile, sonorous. They also (usually) have high melting points and boiling points. OR A metal is a substance that conducts heat and electricity, is shiny and reflects many colors of light, and can be hammered into sheets or drawn into wire. Metals lose electrons easily to form cations. About 80% of the known chemical elements are metals.

**Metal ion catalysis:** Catalysis in which a metal acts as an electrophilic catalyst by stabilizing a negative charge on a reaction intermediate, generates a nucleophile by increasing the acidity of nearby molecules, or increases the binding energy of the enzyme-substrate interaction by binding to substrates.

**Metal safe:** A change to the part design that requires only the removal of metal from the mold to produce the desired geometry. Typically most important when a part design is changed after the mold has been manufactured, because then the mold can be modified rather than entirely re-machined. It is also commonly called "steel safe."

**Metal spraying:** Describes the process of spraying molten zinc or aluminium on to grit-blasted steel to provide protection against corrosion.

**metallic :** Having to do with metal. Some cancer treatments may change the sense of taste and cause foods to have a metallic taste.

**metallic bond:** atoms linked together by the migration of electrons from atom to atom.

**metallic compounds:** Compounds that contain at least one metallic element.

**metallic endoprosthesis :** A device made of metal that is placed inside the body to replace a body part removed by surgery. An example is a thigh bone replaced during surgery for cancer.

**METALLICS:** A class of paints that include metal flakes in their composition.

**Metallizing:** Applying a thin coating of metal to a non-metallic surface. May be done by chemical deposition or by exposing the surface to vaporized metal in a vacuum chamber.

**Metallocene:** Latest generation of resin technology utilizing a metallocene catalyst which is basically tiny particles of positively charged metal ions sandwiched between two rings of carbon atoms that have five atoms apiece.

**METALLOCENE CATALYZED POLYMERS:** Commonly and erroneously called metallocene polymers. Most polyolefins are produced nowadays with the help of so-called Ziegler-Natta catalysts. Recent developments in metallocene catalysts give the possibility to tailor the structure in such a way as to produce polymers having significantly improved mechanical and physical properties. The better properties of blown film are apparently accompanied by the trade off of poorer processability than conventional materials.

**metalloid:** An element with both metallic and nonmetallic properties. Examples are silicon, arsenic, and germanium.

**metalloid:** An element with properties intermediate between metals and non-metals.

**metalloids:** Metalloids are elements with properties of both metals and non-metals.

**metalloprotein:** A protein having a metal ion as its prosthetic group.

**metals:** the elements in the middle and left parts of the periodic table, except for hydrogen.

**Metamerism:** An apparent change in colour under different lighting conditions.

**metamerism:** Division of the body into segments; in insects, for example.

**metamorphic:** existing rock that undergoes extreme heat or pressure and is recrystallized. OR Referring to rock types it means that the rock has been

changed by the action of heat and / or pressure. Examples include marble (which is formed from limestone).

**metamorphic grades:** the different groups of minerals that crystallize and are stable at the different pressure and temperature ranges during regional metamorphism.

**Metamorphic Rock:** This is a rock type that has been reheated and crystallized. Metamorphic rocks can be created from both sedimentary and igneous rocks. The three main types of rock are igneous, sedimentary, and metamorphic. OR Metamorphic rock is rock formed as a result of heat and/or pressure, changing the structure and/or mineral composition (without the rock melting). OR a rock created by solid-state transformation (no melting) of a rock mass into a rock of generally the same chemistry but with different textures and minerals.

**Metamorphosis:** A change of form, especially the conversion of a larval form to an adult form.

**MetAP2 inhibitor SDX-7320:** A synthetic copolymer-drug conjugate of a fumagillin-derived methionine aminopeptidase 2 (MetAP2) inhibitor conjugated to the bio-compatible polymer poly(N-(hydroxypropyl)methacrylamide) (HPMA), with potential antineoplastic activity. Upon administration of SDX-7320, the active moiety SDX7539 is released inside the tumor cells. SDX7539 binds to and inhibits MetAP2, which prevents MetAP2-mediated signal transduction pathways and results in tumor cell death. MetAP2, a member of the dimetallohydrolase family upregulated in certain tumor cell types, plays a key role in angiogenesis, proliferation and survival. Polymer conjugation reduces systemic drug exposure and increases this agent's efficacy as compared to non-polymer conjugates.

**metaphase:** the stage during mitosis in which the pairs of chromatids line up on the equatorial plate.

**Metaphase:** That stage in mitosis or meiosis when all of the chromosomes are lined up on the equator (i.e., an imaginary line that bisects the cell).

**metaphase I:** the phase during meiosis in which tetrads align on the equatorial plate (as in mitosis).

**metaphase II:** the phase during meiosis II in which the chromatid pairs gather at the center of the cell prior to separation.

**metaphyses:** the wider portion of a long bone adjacent to the epiphyseal plate; the part of the bone that grows during childhood

**metaplasia :** A change of cells to a form that does not normally occur in the tissue in which it is found.

**metaplastic carcinoma :** A general term used to describe cancer that begins in cells that have changed into another cell type (for example, a squamous cell of the esophagus changing to resemble a cell of the stomach). In some cases, metaplastic changes alone may mean there is an increased chance of cancer developing at the site.

**metasomatism:** the process by which hot-water solutions carrying ions from an outside source move through a rock mass via fractures or pore space.

**Metastable form:** A form other than the most stable form.

**metastasectomy :** Surgery to remove one or more metastases (tumors formed from cells that have spread from the primary tumor). When all metastases are removed, it is called a complete metastasectomy.

**metastasis :** The spread of cancer cells from the place where they first formed to another part of the body. In metastasis, cancer cells break away from the original (primary) tumor, travel through the blood or lymph system, and form a new tumor in other organs or tissues of the body. The new, metastatic tumor is the same type of cancer as the primary tumor. For example, if breast cancer spreads to the lung, the cancer cells in the lung are breast cancer cells, not lung cancer cells. The plural form of metastasis is metastases (meh-TAS-tuh-SEEZ).

**metastasize :** To spread from one part of the body to another. When cancer cells metastasize and form secondary tumors, the cells in the metastatic tumor are like those in the original (primary) tumor.

**Metastat:** (Other name for: incyclinide)

**metastatic :** Having to do with metastasis, which is the spread of cancer from the primary site (place where it started) to other places in the body.

**Metastron:** (Other name for: strontium chloride Sr 89)

**metasynchronous :** Occurring at nearly the same time.

**metatinib tromethamine:** An orally bioavailable tyrosine kinase inhibitor of the BCR-ABL fusion oncoprotein, with potential antineoplastic activity. Upon oral administration, metatinib tromethamine may inhibit the BCL-

ABL protein, which may lead to decreased proliferation and enhanced apoptosis in tumor cells. BCR-ABL oncoprotein is generated by a reciprocal translocation between chromosome 9 and 22 specifically t(9;22)(q34;q11). The resulting fusion gene produces proteins with constitutively active tyrosine kinase activity, which stimulate both abnormal cell division and increased cellular proliferation. This fusion is associated with both chronic myeloid leukemia and acute lymphoblastic leukemia.

**meteor:** a meteoroid that enters the Earth's atmosphere; also known as a shooting star.

**meteoric water:** water that is derived from the atmosphere as rain or snow and that moves down into the bedrock from the earth's surface.

**meteorism :** Swelling of the abdomen caused by gas in the intestines or peritoneal cavity. Also called tympanites.

**meteorite:** a meteor that reaches the surface of the Earth.

**meteorite:** A mass of stone or metal that has reached the earth from outer space.

**meteoroid:** a rock fragment orbiting in the solar system.

**meter:** The meter is the basic unit of length in the SI system of units, defined as the distance light travels through a vacuum in exactly 1/299792458 seconds. 1 m = 39.37 inches. Meters are abbreviated as "m" in measurements.-amino--methylthiobutyric%20acid">methionine. Met; -amino--methylthiobutyric acid.A naturally occurring amino acid and building block of proteins with a sulfur-containing side chain.

**meter:** Unit of length in the metric system, slightly longer than 1 yard or 36 inches.

**Metering Screw:** An extrusion screw which has a shallow constant depth, and constant pitch section over, usually, the last 3 to 4 flights.

**Metering Section:** The flighted portion of the screw at the discharge end in which the melt is forced at a controlled rate towards the die.

**Metering stroke:** It is stroke of screw that determines the quantity of melt to be injected to the mould.

**METERING ZONE:** The single screw extrusion process consists of three functional zones the SOLIDS CONVEYING ZONE where the polymer pellets or powder are compacted and transported forward, the MELTING ZONE where the polymer melts mainly under the action of shear on the

barrel wall, and the METERING ZONE (PUMPING ZONE) where the polymer is transported forward by DRAG FLOW caused by the rotating action of the screw. OR Also called melt conveying. This zone, in which channel depth is the same throughout the zone, melts the last plastic resin particles and mixes to a uniform temperature and composition. The second metering zone in a twin screw extruder is the same as the first metering zone, but with greater channel depth, and it repressurizes the melt to get it through the resistance of the screens and the die. OR The final zone of an extruder barrel, in which the melt is conveyed at a uniform rate to the breaker plate or die. OR The area of the screw at the front end that contains properly melted plastic, which is ready to inject.

**metformin** : The active ingredient in a drug used to treat diabetes mellitus (a condition in which the body cannot control the level of sugar in the blood). It is also being studied in the treatment of cancer. It decreases the amount of glucose (a type of sugar) released into the bloodstream from the liver and increases the body's use of the glucose. Metformin is a type of antidiabetic agent.

**metformin hydrochloride**: The hydrochloride salt of the biguanide metformin with antihyperglycemic and potential antineoplastic activities. Metformin inhibits complex I (NADPH:ubiquinone oxidoreductase) of the mitochondrial respiratory chain, thereby increasing the cellular AMP to ATP ratio and leading to activation of AMP-activated protein kinase (AMPK) and regulating AMPK-mediated transcription of target genes. This eventually prevents hepatic gluconeogenesis, enhances insulin sensitivity and fatty acid oxidation and ultimately leads to a decrease in glucose levels. Metformin may exert antineoplastic effects through AMPK-mediated or AMPK-independent inhibition of mammalian target of rapamycin (mTOR), which is up-regulated in many cancer tissues. Furthermore, this agent also inhibits tumor cell migration and invasion by inhibiting matrix metalloproteinase-9 (MMP-9) expression which is mediated through the suppression of transcription activator protein-1 (AP-1) activation. or A drug used to treat diabetes mellitus (a condition in which the body cannot control the level of sugar in the blood ). It is also being studied in the treatment of cancer. It decreases the amount of glucose (a type of sugar) released into the bloodstream from the liver and increases the body's use of the glucose. Metformin hydrochloride is a type of antidiabetic agent. Also called Glucophage.

**Methacrylic acid:** Unsaturated monocarboxylic acid, used in the manufacture of resins and plastics.

**methadone hydrochloride:** The hydrochloride salt of methadone, a synthetic opioid with analgesic activity. Similar to morphine and other morphine-like agents, methadone mimics the actions of endogenous peptides at CNS opioid receptors, primarily the mu-receptor, resulting in characteristic morphine-like effects including analgesia, euphoria, sedation, respiratory depression, miosis, bradycardia and physical dependence. Because of the prolonged half-life of methadone compared to other morphine-like agents such as heroin, the onset of opiate withdrawal symptoms is slower, the duration of opiate withdrawal is prolonged, and opiate withdrawal symptoms are less severe. or A drug used to treat moderate to severe pain that does not respond to other types of pain medicine. It is also used to help people who are addicted to opioid drugs such as heroin. Methadone hydrochloride binds to opioid receptors in the central nervous system. It is a type of analgesic agent and a type of opioid.

**Methadose:** (Other name for: methadone hydrochloride)

**methaemoglobin/methaemoglobinaemia:** In some poisonings, haemoglobin (the substance in the red blood cells to which the oxygen is fixed) may be transformed to methaemoglobin. Methaemoglobin lacks the ability of binding the oxygen, consequently lack of oxygen occurs in the organism. When a certain amount of haemoglobin has been transformed to methaemoglobin, mucous membranes and skin become bluish and discolored.

**Methane:** Methane is a simple hydrocarbon with one carbon and four hydrogen atoms. It is very flammable. It is a compound found in the atmosphere of many planets.

**methanogenic:** "Methane (CH<sub>4</sub>) producing"; methanogenic bacteria use hydrogen and carbon dioxide as energy sources and produce methane and water as a result.

**Methanol:** Methanol, the simplest of the alcohol compounds, is a toxic, flammable liquid with a distinctive odour. Methanol is mainly produced by the reforming of hydrocarbon feedstock syngas, which is mainly derived from natural gas, but can also be derived from coal or refinery residues. As methanol is relatively simple to ship, it provides a means to exploit natural gas reserves which are too remote to be connected to consumers by

pipeline, so called "stranded gas". For this reason most of the world's methanol is now produced in remote areas and shipped to consumers in large dedicated methanol carriers. Methanol is a bulk commodity chemical and its major derivatives are formaldehyde, methyl tertiary butyl ether (MTBE), acetic acid, methyl methacrylate (MMA), and di methyl terephthalate (DMT).

**methanol :** A type of alcohol used to make antifreeze, pesticides, windshield wiper fluid, paint thinner, certain types of fuel, and other substances. Methanol catches fire easily and is very poisonous. It is one of many harmful chemicals found in tobacco smoke. Also called methyl alcohol and wood alcohol.

**methanol extraction residue of BCG:** A cell wall fraction of bacillus Calmette-Guerin (BCG) obtained by menthol extraction with immunomodulating properties and potential use in cancer immunotherapy. Check for active clinical trials using this agent.

**methazolamide:** A sulfonamide derivate and carbonic anhydrase inhibitor with potential antineoplastic activity. Methazolamide inhibits tumor-associated carbonic anhydrase IX (CAIX), which may result in increased cell death in hypoxic tumors. As a hypoxia-inducible transmembrane glycoprotein, CAIX catalyzes the rapid interconversion of carbon dioxide and water into carbonic acid, protons, and bicarbonate ions, helping to maintain acidification of the tumor microenvironment and enhance resistance to cytotoxic therapy in some hypoxic tumors.

**Methazolastone:** (Other name for: temozolomide)

**methemoglobin :** A form of hemoglobin found in the blood in small amounts. Unlike normal hemoglobin, methemoglobin cannot carry oxygen. Injury or certain drugs, chemicals, or foods may cause a higher-than-normal amount of methemoglobin to be made. This causes a condition called methemoglobinemia.

**methemoglobinemia :** A condition in which a higher-than-normal amount of methemoglobin is found in the blood. Methemoglobin is a form of hemoglobin that cannot carry oxygen. In methemoglobinemia, tissues cannot get enough oxygen. Symptoms may include headache, dizziness, fatigue, shortness of breath, nausea, vomiting, rapid heartbeat, loss of muscle coordination, and blue-colored skin. Methemoglobinemia can be

caused by injury or being exposed to certain drugs, chemicals, or foods. It can also be an inherited condition.

**methionine C 11:** A synthetic amino acid radiolabeled with carbon-11. Acting as a methyl donor, methionine C 11 is incorporated into macromolecules, where it serves as a positron emission tomography (PET) imaging agent for detecting tumors with high rates of protein synthesis.

**methodology :** In medicine, the rules and procedures for doing research and evaluating results.

**METHODS OF IONIZATION:** include photoionization (using light energy like ultraviolet rays), thermionic emission (using high temperature to boil off electrons), and electron bombardment (kick 'em out with a stream of electrons from another source).

**Methosarb:** (Other name for: calusterone)

**Methotrexate:** A competitive inhibitor of dihydrofolate reductase, an enzyme required for the regeneration of the coenzyme tetrahydrofolate, which is necessary for the synthesis of thymidylate; methotrexate is used as a chemotherapeutic agent. Also called amethopterin. OR An antimetabolite and antifolate agent with antineoplastic and immunosuppressant activities. Methotrexate binds to and inhibits the enzyme dihydrofolate reductase, resulting in inhibition of purine nucleotide and thymidylate synthesis and, subsequently, inhibition of DNA and RNA syntheses. Methotrexate also exhibits potent immunosuppressant activity although the mechanism(s) of actions is unclear.

**methotrexate :** A drug used to treat some types of cancer, rheumatoid arthritis, and severe skin conditions, such as psoriasis. Methotrexate stops cells from making DNA and may kill cancer cells. It is a type of antimetabolite. Also called amethopterin, MTX, and Rheumatex.

**Methotrexate LPF:** (Other name for: methotrexate)

**methotrexate-e therapeutic implant:** An injectable collagen matrix gel containing the antimetabolite methotrexate and the sympathicomimetic agent epinephrine with potential antineoplastic activity. After intratumoral injection, methotrexate binds to and inhibits the enzyme dihydrofolate reductase, resulting in inhibition of purine nucleotide and thymidylate synthesis and, subsequently, inhibition of DNA and RNA syntheses. Epinephrine, a potent vasoconstrictor, is added to the gel to enhance

penetration of methotrexate into the tumor tissue and reduce dispersion to the surrounding tissues thereby enhancing the local concentration of methotrexate and increasing its anti-tumor activity. Intratumoral injection of methotrexate combined with epinephrine may potentially increase chemotherapeutic efficacy compared to systemic administration and reduce systemic toxicity and side effects.

**methotrexate-encapsulating autologous tumor-derived microparticles:**

A suspension of autologous tumor-derived microparticles (ATMP), that are harvested from a patient with malignant pleural effusion, encapsulating the antimetabolic drug methotrexate (MTX), with potential anticancer activity. Although the exact mechanism(s) of action through which this agent exerts its effect has yet to be fully elucidated, upon administration of MTX-ATMP, the MTX moiety is released and internalized by tumor cells. It then binds to and inhibits the enzyme dihydrofolate reductase. This results in the inhibition of purine nucleotide synthesis and leads to decreased synthesis of both DNA and RNA, which induces cell death. Presumably, the encapsulation of MTX by the ATMP improves its bioavailability and decreases its toxicity.

**methoxsalen:** A naturally occurring substance isolated from the seeds of the plant *Ammi majus* with photoactivating properties. As a member of the family of compounds known as psoralens or furocoumarins, methoxsalen's exact mechanism of action is unknown; upon photoactivation, methoxsalen has been observed to bind covalently to and crosslink DNA. or A drug used together with UV light to treat psoriasis, vitiligo, and skin nodules of cutaneous T-cell lymphoma. It is also being studied in the treatment of graft-versus-host disease. It belongs to the family of drugs called psoralens and furocoumarins.

**methoxy polyethylene glycol epoetin beta:** A pegylated form of recombinant human erythropoietin, a glycosylated protein naturally produced in the kidney that stimulates erythrocyte production in the bone marrow. Methoxypolyethylene glycol epoetin beta may reverse anemias induced by cancer therapy.

**methoxyamine:** An orally bioavailable small molecule inhibitor with potential adjuvant activity. Methoxyamine covalently binds to apurinic/apyrimidinic (AP) DNA damage sites and inhibits base excision repair (BER), which may result in an increase in DNA strand breaks and

apoptosis. This agent may potentiate the anti-tumor activity of alkylating agents.

**methoxyamine hydrochloride :** A substance being studied in the treatment of cancer. It blocks the ability of a cell to repair damage to its DNA and may kill cancer cells. It may also help some anticancer drugs work better. It is a type of antineoplastic agent.

**methoxyflurane:** A fluorinated isopropyl ether with anesthetic and muscle relaxant activities. Although the mechanism of action has not been fully elucidated, upon inhalation, methoxyflurane acts through multiple mechanisms of action. This agent interferes with the release and re-uptake of neurotransmitters at post-synaptic terminals, and/or alters ionic conductance following receptor activation by a neurotransmitter, thereby disrupting neuronal transmission. In addition, this agent activates the inhibitory receptor gamma-aminobutyric acid (GABA). Altogether, this results in a general anesthetic effect and induces analgesia.

**methoxypolyethylene glycol epoetin beta :** A substance being studied in the treatment of anemia in patients who are receiving chemotherapy. It is a form of erythropoietin (a substance produced in the kidneys that stimulates the production of red blood cells) that has been changed in the laboratory. Also called Ro 50-3821.

**methyl alcohol :** A type of alcohol used to make antifreeze, pesticides, windshield wiper fluid, paint thinner, certain types of fuel, and other substances. Methyl alcohol catches fire easily and is very poisonous. It is one of many harmful chemicals found in tobacco smoke. Also called methanol and wood alcohol.

**Methyl Esters:** A material formed as a reaction between fats or fatty acids and methanol.

**Methyl ethyl ketone peroxide (MEKP):** An aliphatic peroxide, widely used for curing unsaturated polyester resins.

**methyl group :** A small molecule made of one carbon and three hydrogen atoms. Methyl groups are added or removed from proteins or nucleic acids and may change the way these molecules act in the body.

**Methyl Methacrylate:** Monomer commonly used in chain-addition polymerisations.

**Methyl methacrylate:** Unsaturated carboxylic acid ester used in the manufacture of resins and plastics.

**Methyl Tertiary Butyl Ether (MTBE):** Methyl tertiary butyl ether (MTBE) is a volatile, combustible, colourless liquid that is categorised as an oxygenate due to its ability to boost the oxygen content and octane rating of gasoline. It is relatively water soluble and exhibits an unpleasant taste and odour in solution. MTBE is produced from methanol and isobutylene, as is produced both by refiners to meet their own requirements and by major export-based producers in the Middle East, Europe and the United States. MTBE has marginal outlets as a solvent in chemical and medical applications, although its dominant end-use is as a gasoline additive. It is currently being phased out of the gasoline market in the USA due to concerns over groundwater contamination.

**methyl-5-aminolevulinate :** A drug used in photodynamic therapy; it is absorbed by tumor cells and, when exposed to light, becomes active and kills the cancer cells.

**methyl-5-aminolevulinate hydrochloride cream:** A topical cream formulation containing the hydrochloride salt of methyl-5-aminolevulinate, a lipophilic methyl ester of 5-aminolevulinic acid, with photosensitizer prodrug activity. Upon topical administration, methyl-5-aminolevulinate in the cream is selectively absorbed by tumor cells where it is converted to the photosensitizer protoporphyrin IX (PpIX). Upon photoirradiation, PpIX is activated and transfers energy to oxygen, generating singlet oxygen and superoxide and hydroxyl radicals, which may result in free-radical-mediated DNA damage and cell death.

**methyl:** A group  $-CH_3$ , derived from methane. For example,  $CH_3Cl$  is "methyl chloride" (systematic name: chloromethane);  $CH_3OH$  is "methyl alcohol" (systematic name: methanol).

**methylated:** Having a methyl group ( $CH_3$ ).

**methylation :** A chemical reaction in which a small molecule called a methyl group is added to other molecules. Methylation of proteins or nucleic acids may affect how they act in the body.

**methylene blue:** A synthetic basic dye. Methylene blue stains to negatively charged cell components like nucleic acids; when administered in the lymphatic bed of a tumor during oncologic surgery, methylene blue may stain lymph nodes draining from the tumor, thereby aiding in the visual

localization of tumor sentinel lymph nodes. When administered intravenously in low doses, this agent may convert methemoglobin to hemoglobin.

**methylene dimethane sulfonate:** A member of the homologous series of dimethane sulphonic acid esters with alkylating properties. Methylene dimethane sulfonate alkylates DNA, resulting in interstrand DNA crosslinking, inhibition of DNA replication, disruption of the cell cycle, and cell death.

**methylene group:** a — CH<sub>2</sub> group.

**methylmercaptapurine riboside:** A purine derivative with antineoplastic and anti-angiogenic properties. 6-methylmercaptapurine riboside (6-MMPR) inhibits amidophosphoribosyltransferase, the first committed step in de novo purine synthesis, and inhibits fibroblast growth factor-2 (FGF2)-induced cell proliferation.

**methylnaltrexone:** A methyl derivative of noroxymorphone with selective, opioid-receptor antagonistic activity. Methylnaltrexone displaces opioids from peripheral opioid receptors in the gastrointestinal tract, the bladder, and the skin, resulting in decreases in opioid-related constipation, urinary retention, and pruritis, respectively. Methylnaltrexone does not cross the blood-brain barrier and does not affect the centrally-mediated analgesic effect of opioids.

**methylnaltrexone :** The active ingredient in a drug used to relieve certain side effects caused by treatment with opioids (pain killers similar to morphine), such as constipation (hard, dry stools), itching, and low urine flow. Methylnaltrexone binds to opioid receptors outside the brain and may block the side effects of opioid drugs without affecting their ability to relieve pain. Methylnaltrexone is a type of peripheral opioid receptor antagonist.

**methylnaltrexone bromide :** A drug used to relieve certain side effects caused by treatment with opioids (pain killers similar to morphine), such as constipation (hard, dry stools), itching, and low urine flow. Methylnaltrexone bromide binds to opioid receptors outside the brain and may block the side effects of opioid drugs without affecting their ability to relieve pain. Methylnaltrexone bromide is a type of peripheral opioid receptor antagonist. Also called Relistor.

**methylphenidate hydrochloride:** The hydrochloride salt of the synthetic central nervous system stimulant methylphenidate. Methylphenidate appears to activate the brain stem arousal system and cortex to produce its stimulant effect and, in some clinical settings, may improve cognitive function. Check for active clinical trials using this agent. or A drug used to treat certain behavior disorders, such as attention deficit hyperactivity disorder (ADHD). It is also being studied as a way to improve brain function in patients treated with anticancer drugs. Methylphenidate hydrochloride acts on certain parts of the brain. It is a type of central nervous system stimulant. Also called Concerta and Ritalin.

**methylprednisolone:** A synthetic corticosteroid with anti-inflammatory and immunomodulating properties. Methylprednisolone binds to and activates specific nuclear receptors, resulting in altered gene expression and inhibition of proinflammatory cytokine production. This agent also decreases the number of circulating lymphocytes, induces cell differentiation, and stimulates apoptosis in sensitive tumor cell populations. Check for active clinical trials using this agent.

**Meti-derm:** (Other name for: prednisolone)

**metoclopramide :** A drug that increases the motility (movements and contractions) of the stomach and upper intestine. It is used to treat certain stomach problems and nausea and vomiting caused by chemotherapy. It is a type of antiemetic and a type of motility agent. Also called Reglan.

**metoclopramide hydrochloride:** The hydrochloride salt of the substituted benzamide metoclopramide, a para-aminobenzoic acid (PABA) derivative that is structurally related to procainamide, with gastroprokinetic and antiemetic activities. Metoclopramide binds to dopamine 2 (D2) receptors in the peripheral nervous system (PNS), antagonizing dopamine-mediated relaxation of gastrointestinal smooth muscle and promoting gastroprokinesis; the pyloric sphincter and the duodenal bulb are relaxed, peristalsis of the duodenum and jejunum increase, and gastric emptying and intestinal transit accelerate. This agent may also increase the resting tone of the lower esophagus sphincter (LES), preventing acid reflux. In the central nervous system (CNS), metoclopramide antagonizes D2 dopamine receptors in the chemoreceptive trigger zone (CTZ) of the medulla, thereby preventing nausea and vomiting.

**metoprine:** A diaminopyrimidine folate antagonist with potential antineoplastic activity. Metoprine inhibits dihydrofolate reductase, resulting in decreased cellular folate metabolism and cell growth; it also inhibits histamine-N-methyltransferase, resulting in decreased histamine catabolism. Lipid-soluble metoprine is capable of crossing the blood-brain barrier.

**metoprolol:** A cardioselective competitive beta-1 adrenergic receptor antagonist with antihypertensive properties and devoid of intrinsic sympathomimetic activity. Metoprolol antagonizes beta 1-adrenergic receptors in the myocardium, thereby reducing the rate and force of myocardial contraction leading to a reduction in cardiac output. This agent may also reduce the secretion of renin with subsequent reduction in levels of angiotensin II thereby preventing vasoconstriction and aldosterone secretion.

**Metric System:** The system of measurement used in almost all of science. It is a system based on measures of tens. Measures from the metric system include meters, liters, and grams.

**Metric ton:** Approximately 2,200 pounds.

**Metro I.V.:** (Other name for: metronidazole hydrochloride)

**Metrocort:** (Other name for: methylprednisolone)

**metronidazole :** A drug that is used to treat infection and is being studied in the treatment of cancer. It is a type of antibacterial, antiprotozoal, and anthelmintic. Also called Flagyl.

**metronidazole hydrochloride:** The hydrochloride salt of a synthetic nitroimidazole derivative with antiprotozoal and antibacterial activities. Although its mechanism of action is not fully elucidated, un-ionized metronidazole is readily taken up by obligate anaerobic organisms and is subsequently reduced by low-redox potential electron-transport proteins to an active, intermediate product. Reduced metronidazole causes DNA strand breaks, thereby inhibiting DNA synthesis and bacterial cell growth.

**metronomic therapy :** Continuous or frequent treatment with low doses of anticancer drugs, often given with other methods of therapy.

**Metvixia cream:** (Other name for: methyl-5-aminolevulinate hydrochloride cream)

**Metypred:** (Other name for: methylprednisolone)

**metyrosine:** A methylated tyrosine, a catecholamine synthesis antagonist with antihypertensive property. Metyrosine competitively inhibits tyrosine 3-monooxygenase, an enzyme that activates molecular oxygen to catalyze the hydroxylation of tyrosine to dihydroxyphenylalanine (Dopa), an intermediate to catecholamine (dopamine, norepinephrine, and epinephrine) production. This agent reduces the elevated levels of catecholamines associated with pheochromocytoma, thereby preventing hypertension.

**MeV linear accelerator :** A machine that uses electricity to form a stream of fast-moving subatomic particles. This creates high-energy radiation that may be used to treat cancer. Also called linac, linear accelerator, and megavoltage linear accelerator.

**Mevacor :** A drug used to lower the amount of cholesterol in the blood. It is also being studied in the prevention and treatment of some types of cancer. Mevacor is a type of HMG-CoA reductase inhibitor (statin). Also called lovastatin.

**Mevalonate:** A precursor for the synthesis of cholesterol; its formation by HMG-coa reductase constitutes the committed step in cholesterol biosynthesis.

**mevalonate pathway :** Describes a series of reactions in which proteins work together to make molecules. These molecules are part of many processes, including making cholesterol. Changes in this pathway may lead to cancer cell growth. Drugs or substances that affect this pathway are used to treat high cholesterol, and are being studied in the prevention and treatment of cancer and other diseases.

**Mexate:** (Other name for: methotrexate)

**Mexate-AQ:** (Other name for: methotrexate)

**Mexican:** Pertaining to Mexico, one of the major crude oil producers of Latin America. Petrologists now think the asteroid impact that helped kill off the dinosaurs (which crashed into Mexico 65 million years ago) also created the right geological conditions to form Mexico's petroleum deposits. Also sometimes used in a pejorative sense when referring to inhabitants of the state of Victoria.

**Mexican valerian :** A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden heliotrope, garden

valerian, Indian valerian, Pacific valerian, valerian, *Valeriana officinalis*, and *Valerianae radix*.

**MFI:** It stands for Melt Flow Index. It is the weight of polymer melt in grams extruded in 10 minutes through a standard nozzle or die under standard load condition at a certain temperature.

**mFOLFOX-6 :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in which the three drugs are given. Also called mFOLFOX-6 regimen, modified FOLFOX-6, and modified FOLFOX-6 regimen.

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**MG 98:** A second-generation, mixed-backbone, phosphorothioate antisense oligonucleotide (ODN) with potential antitumor activity. MG 98 is a highly specific inhibitor of translation of the mRNA for human DNA (cytosine-5-)-methyltransferase 1 (DNMT1), hybridizing to the 3' untranslated region of DNMT1 mRNA. The silencing of DNMT1 translation by MG 98 may result in the prevention or reversal of abnormal methylation of tumor suppressor genes and ultimately in tumor growth inhibition or tumor regression. or A substance being studied in the treatment of cancer. It blocks the production of a protein called DNA methyltransferase, which helps control gene expression. This may kill cancer cells that need DNA methyltransferase to grow. It is a type of antisense oligonucleotide.

**MGCD0103:** A substance being studied in the treatment of several types of cancer. It blocks enzymes needed for cell division and may kill cancer cells. It is a type of histone deacetylase (HDAC) inhibitor. Also called mocetinostat.

**MGUS:** A benign condition in which there is a higher-than-normal level of a protein called M protein in the blood. Patients with MGUS are at an increased risk of developing cancer. Also called monoclonal gammopathy of undetermined significance.

**mho:** Units of conductivity that are used in the study of electricity.

**MIBG scan :** A procedure used to find neuroendocrine tumors, such as neuroblastomas and pheochromocytomas. A small amount of a substance called radioactive MIBG is injected into a vein and travels through the bloodstream. Neuroendocrine tumor cells take up the radioactive MIBG and are detected by a scanner. Also called iobenguane scan and metaiodobenzylguanidine scan.

**Mica:** Mineral silicates used in the manufacture of textured paints. OR A transparent, flaky mineral which splits into thin sheets and has excellent insulating and heat resisting properties, consisting of orthosilicates of aluminum or potassium; occurs naturally. OR Any of a group of mineral silicates crystallizing in monoclinic forms that readily separate into very thin leaves. Used as a filler for plastics molding materials.

**Micafungin:** A semi-synthetic echinocandin derived from a natural product of the fungus *Coleophoma empedri* with potent antifungal activity. Micafungin, like other cyclic lipopeptides, noncompetitively inhibits the fungal specific enzyme 1,3-beta-D-glucan synthase, an enzyme essential for fungal cell wall synthesis. Inhibition of this enzyme weakens of the cell wall, thereby leading to osmotic lysis and eventually, fungal cell death.

**micellar nanoparticle-encapsulated cisplatin NC-6004:** A nanoparticle-based prodrug formulation consisting of polymeric micelles incorporating the inorganic platinum agent cisplatin with potential antineoplastic activity. In micellar nanoparticle-encapsulated cisplatin NC-6004, cisplatin forms a polymer-metal complex with hydrophilic polyethylene glycol poly(glutamic acid) block copolymers by attaching to the micelle inner core consisting of the hydrophobic polymer polyamino acid. Upon cell entry and release from the polymer-metal complex, cisplatin forms highly reactive, charged platinum complexes that bind to nucleophilic groups such as GC-rich sites in DNA, inducing intrastrand and interstrand DNA cross-linking, DNA-protein cross-linking and, subsequently, tumor cell apoptosis and growth inhibition. Due to the hydrophilic nature of polyethylene glycol, this formulation increases the water-solubility of cisplatin and decreases the nephrotoxicity and neurotoxicity associated with the administration of cisplatin alone.

**MICELLE:** Colloidal aggregates of surfactant molecules. Micelles first form in a surfactant solution at a well-defined concentration known as the

Critical Micelle Concentration. (see RFF 705.10.03 - MICELLES). OR Organised blob of surfactant molecules with all the hydrophobic tails pointing inwards to create a tiny hydrophobic phase. If you try to dissolve surfactant molecules in water, you will succeed up to a point as more surfactant is added, and then any additional surfactant you add will form micelles. Under the same conditions, a particular surfactant will always form micelles of the same size and containing almost the same number of surfactant molecule. OR An aggregate of lipids in which the polar head groups face outward and the hydrophobic tails face inward; no solvent is trapped in the center. OR A globular structure formed by amphipathic molecules in which the hydrophilic part is exposed to water and the hydrophobic part is sequestered inside, away from the water. OR An aggregate of amphipathic molecules in water, with the nonpolar portions in the interior and the polar portions at the exterior surface, exposed to water. OR A tiny particle made of substances that are soluble in water and that come together to form a ball-like shape. These particles can carry other substances inside them. In medicine, micelles are made in the laboratory and are used to carry drugs to body tissues and cells.

**Michaelis constant:** OR The substrate concentration at which an enzyme-catalyzed reaction proceeds at one-half of the maximum velocity. The concentration of substrate at which half the active sites of an enzyme are filled; a ratio of rate constants for the reaction model.

**Michaelis-Menten constant (K<sub>m</sub>):** The substrate concentration at which an enzyme-catalyzed reaction proceeds at one-half its maximum velocity.

**Michaelis-Menten equation:** (also known as the Henri-Michaelis-Menten equation) An equation relating the reaction velocity to the substrate concentration of an enzyme. OR An equation that expresses the velocity (V) of an enzyme-catalyzed reaction in terms of maximum velocity (V<sub>max</sub>), substrate concentration (S), and the Michaelis-Menten constant (K<sub>M</sub>). The equation accounts for the hyperbolic kinetics observed when V is plotted as a function of S; the equation is  $V = V_{max} [S] / ([S] + K_M)$ .

**Michaelis-Menten equation:** The equation describing the hyperbolic dependence of the initial reaction velocity, V<sub>0</sub>, on substrate concentration, [S], in many enzyme-catalyzed reactions:

**Michaelis-Menten kinetics:** A kinetic pattern in which the initial rate of an enzyme-catalyzed reaction exhibits a hyperbolic dependence on substrate concentration.

**micro:** a prefix meaning one-millionth of a unit.

**Micro total analysis system (mTAS):** miniaturized system fabricated by the use of micromechanical technology capable of providing total chemical analysis on a microliter scale. The microdevice, fully integrated for example onto a silicon substrate (chip), performs: sample handling, reagent mixing, sample component separation and its analysis. A major area of interest has been the transfer of separation techniques such as capillary electrophoresis (CE) and high performance liquid chromatography (HPLC) to the chip format, coupled with detection systems such as spectrophotometric or conductometric detectors. MicroTAS can be also used in biochemistry for DNA chip analysis and drug discovery studies.

**Micro-:** A prefix that divides a unit into one million parts (0.000001). OR Prefix used in the SI system meaning "one millionth of". For example 1  $\mu\text{m}$  means "one millionth of a meter"; 3.1  $\mu\text{L}$  means " $3.1 \times 10^{-6}$  L".

**microarray :** A laboratory tool used to analyze large numbers of genes or proteins at one time. In a microarray, biologic molecules such as DNA, RNA, or protein are placed in a pattern onto a surface such as a glass slide. Other substances are added to these slides to detect specific patterns of molecules. Microarrays are being used to help diagnose diseases, such as cancer, and to develop treatments for them.

**microbicide :** Any substance or process that kills germs (bacteria, viruses, and other microorganisms that can cause infection and disease). Also called germicide.

**microbiome :** The collection of all the microorganisms and viruses that live in a given environment, including the human body or part of the body, such as the digestive system. The human microbiome may play a role in a person's health. Studying the human microbiome may help prevent and treat disease in the future.

**microbodies:** Cytoplasmic, membranebounded vesicles containing peroxideforming and peroxide-destroying enzymes; include lysosomes, peroxisomes, and glyoxysomes.

**microcalcification** : A tiny deposit of calcium in the breast that cannot be felt but can be detected on a mammogram. A cluster of these very small specks of calcium may indicate that cancer is present.

**microcephaly**: head circumference that is at least 2 standard deviations smaller than normal

**Microcurie**: One millionth of a curie. That amount of radioactive material that disintegrates (decays) at the rate of 37 thousand atoms per second.

**Microfilaments**: Filaments of actin approximately 7 nm in diameter; filaments (F-actin) are formed by the polymerization of G-actin monomers; a component of the cytoskeleton. OR Thin filaments composed of actin, found in the cytoplasm of eukaryotic cells; serve in structure and movement.

**microflora** : Bacteria and other organisms that live inside the intestines. They help digest food. Vitamins such as biotin and vitamin K are made by microflora. Also called gut flora, gut microflora, intestinal flora, and intestinal microflora.

**microfluidic device** : An instrument that uses very small amounts of fluid on a microchip to do certain laboratory tests. A microfluidic device may use body fluids or solutions containing cells or cell parts to diagnose diseases. Also called lab-on-a-chip.

**micrognathia**: abnormally small lower jaw

**microgram** : One millionth of a gram.

**microliter** : A measure of volume for a liquid, using the metric system. One microliter is equal to a millionth of a liter. Also called  $\mu\text{L}$ .

**micrometastasis** : Small numbers of cancer cells that have spread from the primary tumor to other parts of the body and are too few to be picked up in a screening or diagnostic test.

**micromolar**: Approximately  $1 \times 10^{-6}$  moles/liter. OR A concentration of 1/1,000,000 (one millionth) molecular weight per liter (mol/L).

**micromole** : The amount of a substance equal to a millionth of a mole (a measure of the amount of a substance). Also called  $\mu\text{M}$ .

**Micron**:  $\mu$ , one micron, one millionth of a meter. Also expressed as  $\mu\text{m}$  or micro-meter. OR A unit of length, equivalent to  $10^{-6}$  meters.

**Micronase**: (Other name for: glyburide)

**micronutrient :** A substance the body needs in tiny amounts to grow and stay healthy. Examples are vitamins and minerals.

**micronutrient-fortified probiotic yogurt:** An micronutrient-fortified fermented dairy product with potential positive immunomodulatory activity. Micronutrient-fortified probiotic yogurt contains various micronutrients in addition to beneficial microorganisms, such as strains of Lactobacillus. Probiotic Lactobacillus strains have been shown to protect against gastrointestinal and urogenital infections, to moderate diarrheal episodes, and to increase CD4 T-lymphocyte counts. In immunocompromised subjects, micronutrient supplementation may also increase CD4 T-lymphocyte counts.

**microorganism:** organisms (microbes) observable only through a microscope; larger, visible types are called macroorganisms.

**microorganism :** An organism that can be seen only through a microscope. Microorganisms include bacteria, protozoa, algae, and fungi. Although viruses are not considered living organisms, they are sometimes classified as microorganisms.

**Microporous:** A term used to describe paints which are permeable to water vapour allowing moisture to dry out through the paint coating without disruption of the paint film.

**microRNA :** A type of RNA found in cells and in blood. MicroRNAs are smaller than many other types of RNA and can bind to messenger RNAs (mRNAs) to block them from making proteins. MicroRNAs are being studied in the diagnosis and treatment of cancer. Also called miRNA.

**microsatellite :** Repetitive segments of DNA scattered throughout the genome in noncoding regions between genes or within genes (introns). They are often used as markers for linkage analysis because of their naturally occurring high variability in repeat number between individuals. These regions are inherently genetically unstable and susceptible to mutations. or A short sequence of DNA, usually 1 to 4 basepairs (a unit of DNA), that is repeated together in a row along the DNA molecule. There is variation from person to person in the number of repeats. There are hundreds of places in human DNA that contain microsatellites.

**microsatellite instability :** A characteristic of cells that contain an abnormality in DNA mismatch repair (see microsatellite). For example, the presence of MSI in colorectal tumor tissue may be used as a marker for

germline mutations in one of the DNA mismatch repair genes associated with HNPCC. MSI can also occur sporadically, and in these cases is related to gene hypermethylation. This is an issue in the differential diagnosis of HNPCC. Also called MSI. or A change that occurs in the DNA of certain cells (such as tumor cells) in which the number of repeats of microsatellites (short, repeated sequences of DNA) is different than the number of repeats that was in the DNA when it was inherited. The cause of microsatellite instability may be a defect in the ability to repair mistakes made when DNA is copied in the cell. Also called MSI.

**microscope :** An instrument that is used to look at cells and other small objects that cannot be seen with the eye alone.

**microscopic:** Seeing the situation at the particle level: atoms, molecules, or ions. OR Too small to be seen without a microscope.

**Microscopy:** Examination of crystals on a microscope by various techniques.

**microseism:** a very small seismic tremor. OR Closed vesicles formed by self-annealing fragments of the endoplasmic reticulum subsequent to following cell disruption. OR Membranous vesicles formed by fragmentation of the endoplasmic reticulum of eukaryotic cells; recovered by differential centrifugation.

**microsphere :** A very tiny, hollow, round particle made from glass, ceramic, plastic, or other materials. Microspheres injected into blood vessels that feed a tumor may kill the tumor by blocking its blood supply. They can also be filled with a substance that may help kill more tumor cells.

**microstaging :** A technique used to help determine the stage (extent) of melanoma and certain squamous cell cancers. A sample of skin that contains tumor tissue is examined under a microscope to find out how thick the tumor is and/or how deeply the tumor has grown into the skin or connective tissues.

**Microtubule:** A cytoskeleton element that is a major component of cilia, eukaryotic flagella, and the mitotic spindle; composed primarily of  $\alpha$ - and  $\beta$ -tubulin; capable of rapid assembly and disassembly. OR A narrow, hollow tube-like structure found in the cytoplasm (the fluid inside a cell) of plant and animal cells. Microtubules help support the shape of a cell. They also help chromosomes move during cell division and help small structures called cell organelles to move inside the cell. Certain anticancer drugs keep

microtubules from working the way they should. This may help keep cancer cells from dividing.

**Microtubule-organizing centers (mtocs):** Sites of the initiation of microtubule growth.

**microtubule-targeted agent BAL101553:** An orally available, highly water-soluble lysine prodrug of the synthetic small molecule BAL27862 with potential antitumor activity. Upon administration of BAL101553 and conversion into the active form BAL27862, this agent binds to tubulin at a site distinct from the vinca-alkaloid-binding site, and prevents tubulin polymerization and destabilizes microtubules, ultimately leading to cell cycle arrest, blockage of cell division and an induction of cell death in cancer cells.

**Microtubules:** Thin tubules, made from globular proteins, that serve multiple purposes in eukaryotic cells. OR Thin tubules assembled from two types of globular tubulin subunits; present in cilia, flagella, centrosomes, and other contractile or motile structures.

**microwave:** Electromagnetic radiation with wavelength between 3 mm and 30 cm.

**microwave acupuncture :** A type of acupuncture in which a microwave device is attached to an acupuncture needle to give microwave radiation at an acupuncture point.

**microwave therapy :** A type of treatment in which body tissue is exposed to high temperatures to damage and kill cancer cells or to make cancer cells more sensitive to the effects of radiation and certain anticancer drugs. Also called microwave thermotherapy.

**microwave thermotherapy :** A type of treatment in which body tissue is exposed to high temperatures to damage and kill cancer cells or to make cancer cells more sensitive to the effects of radiation and certain anticancer drugs. Also called microwave therapy.

**mid-latitude low:** low-pressure system that forms along a stationary front.

**mid-ocean ridge:** area between two diverging plates, where magma reaches the surface and causes an area of increased elevation and new crust along the ocean floor.

**midazolam :** A drug used to treat anxiety and tension and to relax muscles. It is also being studied in the treatment of nausea and vomiting caused by

some cancer treatments. It is a type of benzodiazepine. Also called midazolam hydrochloride and Versed.

**midazolam hydrochloride:** The hydrochloride salt of a short-acting benzodiazepine derivative with an imidazole structure and anxiolytic, amnestic, hypnotic, anticonvulsant and sedative properties. Midazolam binds to the benzodiazepine receptor at the gamma-aminobutyric acid (GABA) receptor-chloride ionophore complex in the central nervous system (CNS), resulting in increases in the opening of chloride channels, membrane hyperpolarization, and the inhibitory effect of GABA. This agent may also interfere with the reuptake of GABA, thereby causing accumulation of GABA in the synaptic cleft. or A drug used to treat anxiety and tension and to relax muscles. It is also being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of benzodiazepine. Also called midazolam and Versed.

**midazolam-containing buccal liquid:** An oromucosal solution containing the maleate salt form of midazolam, a short-acting benzodiazepine derivative, with anxiolytic, hypnotic, anticonvulsant and sedative activities. Upon administration of the solution into the buccal cavity, midazolam exerts its effect by binding to the benzodiazepine receptor at the gamma-aminobutyric acid (GABA) receptor-chloride ionophore complex in the central nervous system (CNS). This leads to an increase in the permeability of chloride channels, membrane hyperpolarization and enhances the inhibitory effect of GABA in the CNS. Midazolam may also interfere with the reuptake of GABA, thereby causing accumulation of GABA in the synaptic cleft. The oromucosal formulation facilitates administration to patients that are unable to swallow. The ethanol in this formulation improves the buccal absorption of midazolam.

**midbrain:** a portion of the brain that lies between the hindbrain and the forebrain that consists of a collection of crossing nerve tracts.

**Middle East:** Far North-West.

**midoceanic ridge:** a deep crustal fault on the ocean floor that separates crustal plates and generates new ocean crust.

**midostaurin:** A synthetic indolocarbazole multikinase inhibitor with potential antiangiogenic and antineoplastic activities. Midostaurin inhibits protein kinase C alpha (PKCalpha), vascular endothelial growth factor receptor 2 (VEGFR2), c-kit, platelet-derived growth factor receptor

(PDGFR) and FMS-like tyrosine kinase 3 (FLT3) tyrosine kinases, which may result in disruption of the cell cycle, inhibition of proliferation, apoptosis, and inhibition of angiogenesis in susceptible tumors. or A substance that is being studied in the treatment of leukemia. It belongs to the family of drugs called protein kinase inhibitors. Also called N-benzoyl-staurosporine and PKC412.

**midpoint:** the halfway point of a line segment, equidistant from each endpoint.

**mifamurtide:** A liposomal formulation containing a muramyl dipeptide (MDP) analogue with potential immunomodulatory and antineoplastic activities.. Muramyl tripeptide phosphatidylethanolamine (MTP-PE), a derivative of the mycobacterial cell wall component MDP, activates both monocytes and macrophages. Activated macrophages secrete cytokines and induce the recruitment and activation of other immune cells, which may result in indirect tumoricidal effects. Liposomal encapsulation of MTP-PE prolongs its half-life and enhances tissue targeting. or A drug being studied in the treatment of young adults with bone cancer that has gotten worse or come back. Mifamurtide activates certain types of white blood cells and helps the immune system kill cancer cells. It is a type of immunostimulant. Also called L-MTP-PE, MEPACT, and muramyl tripeptide phosphatidylethanolamine.

**Mifeprex :** A drug used to end early pregnancies. It is also being studied in the treatment of some types of cancer and other conditions. Mifeprex blocks the action of progesterone, a hormone that helps some cancers grow. It is a type of antiprogestone. Also called mifepristone and RU 486.

**mifepristone:** A derivative of the synthetic progestin norethindrone with antiprogestone activity. Mifepristone competitively binds to the progesterone receptor, resulting in inhibition of the effects of endogenous or exogenous progesterone. This agent also exhibits antigluocorticoid and weak antiandrogenic activities. or A drug used to end early pregnancies. It is also being studied in the treatment of some types of cancer and other conditions. Mifepristone blocks the action of progesterone, a hormone that helps some cancers grow. It is a type of antiprogestone. Also called Mifeprex and RU 486.

**miglitol:** A desoxynojirimycin derivative and inhibitor of alpha-glucosidase with antihyperglycemic activity. Miglitol binds to and inhibits

alpha-glucosidase, an enteric enzyme found in the brush border of the small intestines that hydrolyzes oligosaccharides and disaccharides into glucose and other monosaccharides. This prevents the breakdown of larger carbohydrates into glucose and decreases the rise in postprandial blood glucose levels. Compared to acarbose, miglitol is systemically absorbed. Check for active clinical trials using this agent.

**MIGRATION:** The exudation of an ingredient from one material by another material; such as the migration of a plasticizer from one material into an adjacent material with a lower plasticizer content. OR Also known as Bloom – an undesirable greasy cloud effect or white powdery deposit on the surface of a plastic product usually caused by the exudation of an additive such as lubricant, stabilizer, plasticizer, etc.

**Migration (also known as Bloom) :** An undesirable cloudy effect or whitish powdery deposit on the surface of a plastic article caused by the exudation of a compounding ingredient such as a lubricant, stabilizer pigment, plasticizer, etc.

**MiHA-loaded PD-L1/L2-silenced dendritic cell vaccine:** A dendritic cell (DC)-based vaccine composed of program death ligands 1 and 2 (PDL1/L2)-silenced DCs and loaded with the recipient's minor histocompatibility antigens (MiHA), with potential use for graft-versus-tumor (GVT) induction following allogeneic stem cell transplantation (allo-SCT). Donor DCs are electroporated ex vivo with MiHA mRNA and small interfering RNAs (siRNAs) designed to silence the expression of PD L1/L2. After allo-SCT and upon intravenous administration of the MiHA-loaded PD-L1/L2-silenced DC vaccine, the DCs induce the expansion and activation of MiHA-specific CD8-positive T-cells. These tumor antigen-reactive T-cells exert their GVT effect by killing MiHA-positive tumor cells. PD-L1/L2, co-inhibitory ligands expressed on DCs, play key roles in preventing MiHA-specific CD8-positive T-cell expansion; silencing enhances MiHA-specific CD8-positive T-cell expansion and activity and improves the GVT effect. The MiHA are human leukocyte antigen (HLA)-bound peptides and are exclusively expressed by the recipient's hematopoietic tumor cells.

**Mil:** One thousandth (0.001) of an inch (25.4 microns). Most common non-metric measurement of coating thickness. OR a unit of measurement equal to .001 inch. OR One thousandths ( 1/ 1000 ) of an inch expressed as

(001). The metric equivalent is 25.4 microns. OR a unit of measurement equal to .001 inch minimum wall a term designating the minimum thickness of the wall of a bottle.

**Milankovic period:** long term climate changes due the wobble of the Earth's revolution around the Sun.

**Milankovitch theory:** An astronomical theory formulated by the Yugoslav mathematician Milutin Milankovitch that associates climate change with fluctuations in the seasonal and geographic distribution of insolation determined by periodic variations of the Earth's eccentricity and obliquity and the longitude of the perihelion.

**milatuzumab:** A humanized monoclonal antibody directed against human CD74 with potential antineoplastic activity. Milatuzumab specifically binds to CD74 on CD74-positive cells. Although the exact mechanism through which this agent induces apoptosis is unknown, it may involve antibody-dependent cellular cytotoxicity (ADCC) or complement-mediated cytotoxicity (CMC). Alternatively, as CD74 is the cellular receptor for the cytokine migration-inhibitory factor (MIF), the cytotoxicity of this agent may be related to inhibition of CD74 activation by MIF. CD74, an integral membrane protein that functions as an MHC class II chaperone, may also be an accessory-signaling molecule; activation of CD74 may initiate cell survival mechanisms involving induction of a signaling cascade resulting in NFkB activation, entry of stimulated cells into the S phase of the cell cycle, elevation of DNA synthesis, cell division, and augmented expression of Bcl-xL. Check for active clinical trials using this agent. or A substance being studied in the treatment of multiple myeloma and several other types of cancer. It binds to CD74, a protein on the surface of myeloma cells and certain other types of cells. It may help kill cancer cells. Milatuzumab is a type of monoclonal antibody. Also called hLL1 and IMMU-110.

**milatuzumab-doxorubicin antibody-drug conjugate:** An immunoconjugate consisting of milatuzumab, a humanized monoclonal antibody against CD74, conjugated to the anthracycline antibiotic doxorubicin with potential antineoplastic activity. The milatuzumab moiety of this antibody-drug conjugate (ADC) selectively binds to CD74 on tumor cell surfaces; upon internalization, the doxorubicin moiety is released, where it intercalates between base pairs in the DNA helix and inhibits topoisomerase II, thereby preventing DNA replication and increasing

double-strand breakage. As a result, this agent may inhibit the proliferation of cancer cells that overexpress CD74. CD74, an integral membrane protein and tumor associated antigen (TAA), is overexpressed in certain cancer cells and promotes survival in rapidly proliferating tumor cells.

**MILDEW RESISTANCE:** The ability of a coating to resist the growth of molds and mildew. Mildew is particularly prevalent in moist, humid and warm climates.

**Mildewcides:** Chemical agent in quality paint that destroys mildew - a common problem in humid climates.

**Mile:** A non-metric unit of length which can be divided into 8 furlongs, 80 chains, 360 rods, 1760 yards, 5280 feet, 8000 links or 63360 inches. It is equal to 1609.344 metres, more or less.

**Milestrol:** (Other name for: diethylstilbestrol)

**milk duct :** A thin tube in the breast that carries milk from the breast lobules to the nipple. Also called breast duct.

**Milk of Magnesia:** (Other name for: magnesium hydroxide)

**milk protein-based energy drink:** An oral milk protein-based nutritional supplement. Milk protein-based energy drink is a flavored liquid that consists of milk protein, rapeseed and sunflower oils, carbohydrates, vitamins, minerals and trace-elements, providing 1.5kcal and 10 mg of protein per ml.

**milk thistle:** A substance derived from any of several Old World coarse prickly-leaved shrubs and subshrubs including the plant *Silybum marianum*. Milk thistle's active chemical component is silymarin, which is a combination of flavonoids such as silibinin, dehydrosilibinin, silychristin and silydianin. These compounds are antioxidants and may alter the membrane structure of the liver cell, thereby blocking the absorption of toxins; they may also stimulate the production of new liver cells. In addition, milk thistle may increase cellular adenosine triphosphate (ATP) levels, exhibiting dose-dependent cardiac myocyte cytoprotection against doxorubicin. The silibinin component of milk thistle has been shown to inhibit growth factor receptor-mediated mitogenic and cell survival signaling, thereby inhibiting tumor growth. (NCI04) or A plant that has been used in some cultures to treat certain medical problems, including stomach, liver, and gallbladder disorders. The active extract of milk thistle

seeds is called silymarin. It is being studied in the prevention of liver damage caused by some cancer treatments. Also called *Silybum marianum*.

**Milky Way galaxy:** the spiral galaxy that includes our solar system near its outer edge.

**Mill tailings:** Primarily, the sandy process waste material from a conventional uranium recovery facility. This naturally radioactive ore residue contains the radioactive decay products from the uranium chains (mainly the U-238 chain) and heavy metals. Although the milling process recovers about 93 percent of the uranium, the residues (known as "tailings") contain several naturally occurring radioactive elements, including uranium, thorium, radium, polonium, and radon. For further information, see Uranium Mill Tailings and the Backgrounder on Uranium Mill Tailings.

**Miller index:** A set of three integers used to designate the lattice planes of the crystal. Miller indices are used to designate: a) a set of lattice planes [e.g., the (010) plane], b) a particular member of this set, or c) a face of a macroscopic crystal [e.g., the (010) face].

**Milli-:** A prefix that divides a basic unit by 1000. OR Prefix used in the SI system meaning "one thousandth of". For example 1 mL means "one thousandth of a liter"; 1 mg means "one thousandth of a gram".

**milligram :** A measure of weight. A milligram is approximately 450,000 times smaller than a pound and 28,000 times smaller than an ounce.

**milligrams per liter (mg/l):** this is a weight per volume designation used in water and wastewater analysis.  $1\text{mg/L} = 1\text{ppm}$ .

**MILLIKAN OIL DROP EXPERIMENT:** measured the actual charge on an electron.

**milliliter :** A measure of volume in the metric system. One thousand milliliters equal one liter. Also called cc, cubic centimeter, and ml. OR A measure of length in the metric system. A millimeter is one thousandth of a meter. There are 25 millimeters in an inch.

**millimole :** The amount of a substance equal to a thousandth of a mole (a measure of the amount of a substance). Also called mM.

**Millirem:** One thousandth of a rem (0.001 rem).

**Milliroentgen (mR):** One thousandth of a roentgen (R).  $1\text{mR} = 10^{-3}\text{ R} = 0.001\text{ R}$ .

**Millscale:** Iron oxides, usually black in colour, which can be present in a complete layer on new steelwork. Although often firmly attached originally it can become loose and thus give rise to paint failure. Millscale should be completely removed prior to painting.

**milodistim:** A recombinant fusion protein derived from the coding sequences of two growth factors, interleukin-3 (IL-3) and granulocyte-macrophage colony-stimulating factor (GM-CSF). Milodistim exhibits greater receptor binding affinity and colony stimulating activity than its parent cytokines. This agent stimulates proliferation of immature hematopoietic cells and allows the stimulation and expansion of multi-lineage hematopoiesis from immature bone marrow progenitor cells.

**miltefosine:** An orally- and topically-active alkyl-phosphocholine compound with potential antineoplastic activity. Miltefosine targets cellular membranes, modulating cell membrane permeability, membrane lipid composition, phospholipid metabolism, and mitogenic signal transduction, resulting in cell differentiation and inhibition of cell growth. This agent also inhibits the anti-apoptotic mitogen-activated protein kinase (MAPK) pathway and modulates the balance between the MAPK and pro-apoptotic stress-activated protein kinase (SAPK/JNK) pathways, thereby inducing apoptosis. As an immunomodulator, miltefosine stimulates T-cells, macrophages and the expression of interleukin 3 (IL-3), granulocyte-macrophage colony stimulating factor (GM-CSF), and interferon gamma (INF-gamma).

**mimotope-P10s-PADRE peptide vaccine:** A peptide-based vaccine containing a carbohydrate mimetic peptide (CMP) P10s fused to the pan HLA DR-binding epitope (PADRE) peptide, with immunoadjuvant activity and potential antineoplastic activity. Upon injection of the mimotope-P10s-PADRE peptide vaccine, the P10s peptide, which mimics gangliosides and other tumor-associated carbohydrate antigens (TACA), both stimulates a cytotoxic T-lymphocyte (CTL) response towards cells expressing TACAs and induces the production of antibodies that are reactive with a broad set of TACAs. Additionally, the anti-TACA antibodies may interfere with cellular pathways involved in tumor cell survival and may induce antibody-dependent cellular cytotoxicity (ADCC) toward cells expressing TACAs. PADRE is a helper T-cell epitope that is able to increase the magnitude and duration of the CTL response.

**mind-body exercise** : A form of exercise that combines body movement, mental focus, and controlled breathing to improve strength, balance, flexibility, and overall health. Examples of mind-body exercises are yoga, tai chi, and qigong.

**mind-body modality** : A health practice that combines mental focus, controlled breathing, and body movements to help relax the body and mind. It may be used to help control pain, stress, anxiety, and depression, and for overall health. Examples of mind-body modalities include meditation, hypnosis, guided imagery, yoga, and tai chi. A mind-body modality is a type of complementary and alternative medicine. Also called mind-body practice.

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**mindfulness relaxation** : A type of meditation based on the concept of being “mindful,” or having increased awareness, of the present. It uses breathing methods, guided imagery, and other practices to relax the body and mind and help reduce stress.

**Mineral:** Inorganic compounds usually found in crystalline form. They are made up of pure compounds or elements. Amethyst and quartz are good examples of minerals. These substances are not carbon-based or biologically active materials. A plant is not a mineral. A protein is not a mineral. Calcium Carbonate is a mineral. Granite is made up of minerals. or A mineral is a naturally occurring solid that consists entirely of a single element or compound. Or a combination of elements that forms an inorganic, naturally occurring crystalline solid of a definite chemical composition.

**mineral** : In medicine, a mineral is a nutrient that is needed in small amounts to keep the body healthy. Mineral nutrients include the elements calcium, magnesium, and iron.

**Mineral Color:** All minerals have colors that are unique to their chemical properties. Many minerals of the same compound have different colors

because of small impurities in the mineral structure. Color is always measured in natural light (not fluorescent).

**Mineral Hardness:** Hardness is measure of mineral properties. Some minerals are harder than others are. Diamonds are the hardest and something like talc or calcium carbonate is not hard at all. The harder a mineral, the less it will scratch. Friedrich Mohs designed the hardness scale.

**Mineral Luster:** When light is reflected from a mineral, it is called luster. All minerals reflect light in a unique way. Something like talc will not reflect much light while a diamond will reflect large amounts of light (vitreous). Other elements have a metallic shine.

**mineral oil :** A type of oil that is made from petroleum (mixture of oily liquids found in the earth). Mineral oil is used in laxatives, lubricants, creams, and lotions.

**Mineral Reinforcements :** Inorganic substances used as filler for plastics. Some common examples are:clay, mica, talc.

**Mineral Streak:** Minerals are often ground down into a powder. That powder can then be wiped across a white surface and leave a color streak. It is a more accurate alternative to measuring the color of the solid crystal.

**Mineral Transparency:** Transparency is a quality of how much light you can see through a substance. A window made of glass is very transparent while a piece of coal is not transparent at all. The several measures of transparency include transparent (clear), translucent (cloudy), and opaque (no light passes).

**Mineral Vein:** A strip of pure mineral found in a rock. Gold is often found in veins deep inside mountains.

**Mineralcorticoids:** A class of steroid hormones, synthesized by the adrenal cortex and exemplified by aldosterone, that act on the kidney to increase the absorption of  $\text{Na}^+$  and the excretion of  $\text{K}^+$  and  $\text{H}^+$ .

**minerals:** types of nutrients that include phosphorus, sulfur, potassium, magnesium, and zinc. OR The chemical substances from which rocks are made.

**minimal sedation :** A level of sedation in which a person is very relaxed and may be awake. The person is able to answer questions and follow instructions. Minimal sedation is caused by special drugs and is used to help

relieve anxiety during certain medical or surgical procedures. Also called anxiolysis.

**minimally invasive surgery :** Surgery that is done using small incisions (cuts) and few stitches. During minimally invasive surgery, one or more small incisions may be made in the body. A laparoscope (thin, tube-like instrument with a light and a lens for viewing) is inserted through one opening to guide the surgery. Tiny surgical instruments are inserted through other openings to do the surgery. Minimally invasive surgery may cause less pain, scarring, and damage to healthy tissue, and the patient may have a faster recovery than with traditional surgery.

**Minimum Specification:** The minimum values, usually of mechanical properties, that compounds, plastic extrusions, or other PVC profiles must meet by Quality Assurance prior to shipment. OR The minimum values, usually of mechanical properties, that a compound must meet by Quality Assurance prior to shipment.

**Minimum wall:** a term designating the minimum thickness of the wall of a bottle.

**Minnelide:** (Other name for: triptolide analogue)

**Minocin:** (Other name for: minocycline hydrochloride)

**minocycline hydrochloride:** The hydrochloride salt of minocycline, a broad spectrum long-acting derivative of the antibiotic tetracycline, with antibacterial and anti-inflammatory activities. Minocycline binds to the bacterial 30S ribosomal subunit and interferes with the binding of tRNA to the ribosomal complex, thereby inhibiting protein translation in bacteria. In addition, minocycline inhibits the inflammatory enzyme 5-lipoxygenase (5LOX) and may impede T cell-microglia interactions; both activities may contribute to minocycline's neuroprotective effects. 5LOX catalyzes the synthesis of inflammatory mediators such as prostaglandins and leukotrienes.

**minocycline-EDTA:** A combination preparation containing the broad-spectrum, semi-synthetic tetracycline antibiotic minocycline and the chelator ethylenediaminetetraacetate (EDTA) with antimicrobial and antibiofilm activities. Minocycline exhibits bacteriostatic activity by binding to the bacterial 30S ribosomal subunit and preventing binding of aminoacyl-tRNA to the mRNA-ribosome complex during protein translation; this results in an inhibition of bacterial protein synthesis and,

consequently, an inhibition of bacterial cell growth. EDTA may cause the dispersal and killing of biofilms by chelating metal ions important to the stabilization of biofilm structure. The two agents in this combination may act synergistically to eradicate bacteria embedded in biofilms. or A substance being studied in the prevention of bacterial infections that occur in catheters (thin tubes that carry fluids into or out of the body). It is a combination of minocycline, an antibiotic that blocks the growth of bacteria, and EDTA, a substance that keeps blood clots from forming. Minocycline-EDTA removes metals that bacteria use to form biofilms (thin layers stuck to surfaces). Also called M-EDTA.

**Minor groove:** A 6-Å-wide, 7.5-Å-deep groove in B-DNA that arises because the glycosidic bonds of a base pair are not diametrically opposite one another.

**minor product:** the product that forms in the least amount in a reaction.

**Mintezol:** (Other name for: thiabendazole)

**minute:** a subdivision of an angle, one-sixtieth of a degree.

**MIP test :** A test that measures the strength of the muscles used in breathing. A person inhales and exhales through a device called a manometer, and the pressures are recorded by a computer. Also called maximum inspiratory pressure test.

**mipsagargin:** A soluble, thapsigargin prodrug containing the cytotoxic analog of thapsigargin, 8-O-(12Aminododecanoyl)-8-O deutanoylthapsigargin (12-ADT) linked, via a carboxyl group, to the targeting peptide containing aspartic acid with potential antineoplastic activity. Upon intravenous administration, the non-toxic prodrug targets prostate specific membrane antigen (PSMA), a type II membrane carboxypeptidase, which is overexpressed in prostate cancer cells and in the neovasculature of most solid tumors but not in normal blood vessels. Mipsagargin is subsequently converted, through hydrolysis, into the active cytotoxic analog of thapsigargin 12-ADT-Asp. 12-ADT binds to and blocks the Sarcoplasmic/Endoplasmic Reticulum Calcium ATPase (SERCA) pump, thereby increasing the concentration of cytosolic calcium which leads to an induction of apoptosis. By preventing nutrient supply to tumor cells, mipsagargin may be able to inhibit tumor growth. Compared to thapsigargin alone, mipsagargin is able to achieve higher concentrations of the active agents at the tumor site while avoiding systemic toxicity.

**mirabegron:** An orally bioavailable agonist of the human beta-3 adrenergic receptor (ADRB3), with muscle relaxing, neuroprotective and potential antineoplastic activities. Upon oral administration, mirabegron binds to and activates ADRB3, which leads to smooth muscle relaxation. Mirabegron also restores sympathetic stimulation in mesenchymal stem cell (MSC) niches, inhibits JAK2-mutated hematopoietic stem cell (HSC) expansion and blocks the progression of myeloproliferative neoplasms (MPNs). Lack of sympathetic stimulation of the MSC and HSC niches is associated with the development of MPNs.

**Miraluma:** (Other name for: Tc 99m sestamibi)

**Miraluma test :** A type of breast imaging test that is used to detect cancer cells in the breasts of some women who have had abnormal mammograms, or who have dense breast tissue. It is not used for screening or in place of a mammogram. In this test, a woman receives an injection of a small amount of a radioactive substance called technetium 99, which is taken up by cancer cells, and a gamma camera is used to take pictures of the breasts. Also called scintimammography and sestamibi breast imaging.

**Mirapex:** (Other name for: pramipexole dihydrochloride)

**Mircera:** (Other name for: methoxy polyethylene glycol epoetin beta)

**Mirena:** (Other name for: levonorgestrel-releasing intrauterine system)

**miRNA:** A type of RNA found in cells and in blood. miRNA are smaller than many other types of RNA and can bind to messenger RNAs (mRNAs) to block them from making proteins. miRNA are being studied in the diagnosis and treatment of cancer. Also called microRNA.

**Mirror plane:** A crystallographic plane corresponding to a reflection operation (see Table 1.1).

**mirtazapine:** A synthetic tetracyclic derivative of the piperazino-azepines with antidepressant activity. Although its mechanism of action is unknown, mirtazapine enhances central adrenergic and serotonergic transmission, possibly by acting as an antagonist at central presynaptic alpha 2 adrenergic inhibitory autoreceptors and heteroreceptors. This agent is a potent antagonist of 5-hydroxytryptamine type 2 (5-HT<sub>2</sub>), 5-HT<sub>3</sub>, and histamine 1 (H<sub>1</sub>) receptors, and a moderate antagonist of peripheral alpha 1 adrenergic and muscarinic receptors.

**mirtazapine** : A drug used to treat depression. Mirtazapine increases the levels of the chemicals serotonin and norepinephrine in the brain, which helps improve mood. It is a type of antidepressant. Also called Remeron.

**mirvetuximab soravtansine**: An immunoconjugate consisting of the humanized monoclonal antibody M9346A against folate receptor 1 (FOLR1) conjugated, via the disulfide-containing cleavable linker sulfo-SPDB, to the cytotoxic maytansinoid DM4, with potential antineoplastic activity. The anti-FOLR1 monoclonal antibody moiety of mirvetuximab soravtansine targets and binds to the cell surface antigen FOLR1. After antibody-antigen interaction and internalization, the immunoconjugate releases DM4, which binds to tubulin and disrupts microtubule assembly/disassembly dynamics, thereby inhibiting cell division and cell growth of FOLR1-expressing tumor cells. FOLR1, a member of the folate receptor family is overexpressed on a variety of epithelial-derived cancer cells. The sulfo-SPDB linker prevents cleavage in the bloodstream and may improve this agent's efficacy in multidrug resistant tumor cells.

**miscible**: Two liquids are considered "miscible" or mixable if shaking them together results in a single liquid phase, with no meniscus visible between layers of liquid.

**Mismatch**: Unequal cross-sectional match between the two mold halves, seen in silicone injection molded parts.

**Mismatch repair**: The replacement of a base in a heteroduplex structure by one that forms a Watson-Crick base pair.

**misonidazole**: A nitroimidazole with radiosensitizing and antineoplastic properties. Exhibiting high electron affinity, misonidazole induces the formation of free radicals and depletes radioprotective thiols, thereby sensitizing hypoxic cells to the cytotoxic effects of ionizing radiation. This single-strand breaks in DNA induced by this agent result in the inhibition of DNA synthesis.

**misoprostol** : A radioprotective agent that belongs to the family of drugs called prostaglandins.

**misplaced modifier**: modifiers that do not clearly relate to the word they are modifying.

**Missense mutation**: A change in which a codon for one amino acid is replaced by a codon for another amino acid.

**missense mutation :** A single base pair substitution that alters the genetic code in a way that produces an amino acid that is different from the usual amino acid at that position. Some missense mutations will alter the function of the protein.

**Misses:** Unfortunately, no. Youâ€™ll need to thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Then rub down with a suitable abrasive and dust off before applying a new coat of paint to the affected area.

**Mississippi:** Basically Queensland with rather fewer beaches. The oppressed minority population of Mississippi could not vote until the 1860s! The geological epoch known as the Carboniferous (286-360 years before present) in which many of the world's major coal deposits were deposited, is divided into the Mississippian (286-320 ybp) and Pennsylvanian (320-360 ybp) in American-speaking countries.

**Mississippi Valley-type deposit:** a concentration of lead and zinc thought to be deposited in porous limestones and sandstones by low-temperature water that was driven out of deeper sediments by compaction.

**mist:** Liquid particles 40 to 500 microns in diameter that are formed by condensation of vapor in air.

**Mist coat:** A thin and thinly applied coat of paint, usually emulsion on bare plaster, which acts as a 'sealer'.

**mistake:** A mistake is a measurement which is known to be incorrect due to carelessness, accidents, or the ineptitude of the experimenter. It's important to distinguish mistakes from errors: mistakes can be avoided. Errors can be minimized but not entirely avoided, because they are part of the process of measurement. Data that is mistaken should be discarded. Data that contains errors can be useful, if the sizes of the errors can be estimated.

**mistletoe :** A semiparasitic plant that grows on some types of trees. Mistletoe extracts are being studied as treatments for cancer.

**mistletoe extract:** An extract of the whole plant *Viscum album* (mistletoe) with potential biological response modifier (BRM) activity. Mistletoe extract may both stimulate the antitumoral functions of the immune system and have a direct toxic effect on tumor cells.

**mistletoe lectin :** A substance that comes from the mistletoe plant and that is being studied as a treatment for cancer. A lectin is a complex molecule that has both protein and sugars. Lectins are able to bind to the outside of a cell and cause biochemical changes in it. Lectins are made by both animals and plants.

**Mithracin:** (Other name for: plicamycin) OR A drug used to treat some types of testicular cancer. It is also used to treat a higher-than-normal amounts of calcium in the blood or urine. Mithracin binds to DNA and prevents cells from making RNA and proteins. It is a type of antineoplastic antibiotic. Also called mithramycin and plicamycin.

**mithramycin :** A drug used to treat some types of testicular cancer. It is also used to treat a higher-than-normal amounts of calcium in the blood or urine. Mithramycin binds to DNA and prevents cells from making RNA and proteins. It is a type of antineoplastic antibiotic. Also called Mithracin and plicamycin.

**mitigate :** To make milder or less painful.

**mitochondria :** Small structures in a cell that are found in the cytoplasm (fluid that surrounds the cell nucleus). Mitochondria make most of the energy for the cell and have their own genetic material that is different from the genetic material found in the nucleus. Many diseases are caused by mutations (changes) in the DNA of mitochondria. Mitochondria are cell organelles.

**Mitochondrial diseases:** A set of diseases resulting from mutations in mitochondrial DNA; most prevalent in tissues that depend heavily on oxidative phosphorylation, such as the heart and nervous system.

**mitochondrion:** A membrane-bound organelle that carries out oxidative phosphorylation and produces most of the ATP in eucaryotic cells. OR the organelle that is the site of energy production in eukaryotic cells. OR An organelle, found in eukaryotic cells, in which oxidative phosphorylation takes place. It contains its own genome and unique ribosomes to carry out protein synthesis of only a fraction of the proteins located in this organelle. OR An oval-shaped organelle, about 2 μm in length and 0.5 μm in diameter, that is the site of oxidative phosphorylation, the enzymes of the citric acid cycle, and the enzymes of fatty acid oxidation. OR Membrane-bounded organelle in the cytoplasm of eukaryotes; contains the enzyme

systems required for the citric acid cycle, fatty acid oxidation, electron transfer, and oxidative phosphorylation.

**MitoGel:** (Other name for: sustained-release mitomycin C hydrogel formulation)

**mitoguazone:** A guanyldihydrazone with potential antineoplastic activity. Mitoguazone competitively inhibits S-adenosyl-L-methionine decarboxylase (SAMDC), an enzyme involved in the synthesis of polyamines, resulting in decreased proliferation of tumor cells, antimitochondrial effects, and p53-independent apoptosis. Polyamines, specifically spermine and spermidine, are essential for thymidine kinase production, DNA synthesis, and cell proliferation.

**mitoguazone dihydrochloride :** A substance being studied in the treatment of some leukemias and lymphomas. It blocks the growth of cells and may cause cancer cells to die. It is a type of polyamine synthesis inhibitor.

**mitolactol:** A synthetic derivative of hexitol with antineoplastic and radiosensitizing properties. Mitolactol alkylates DNA via actual or derived epoxide groups, resulting in inhibition of DNA and RNA synthesis. Or An anticancer drug that belongs to the family of drugs called alkylating agents.

**mitomycin C:** A methylaziridinopyrroloindoleone antineoplastic antibiotic isolated from the bacterium *Streptomyces caespitosus* and other *Streptomyces* bacterial species. Bio-reduced mitomycin C generates oxygen radicals, alkylates DNA, and produces interstrand DNA cross-links, thereby inhibiting DNA synthesis. Preferentially toxic to hypoxic cells, mitomycin C also inhibits RNA and protein synthesis at high concentrations. Check for active clinical trials using this agent. or A drug used to treat advanced cancer of the stomach and pancreas that has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Mitomycin C comes from bacteria. It damages the cell's DNA and may kill cancer cells. It is a type of anticancer antibiotic. Also called Mitozytrex and Mutamycin.

**Mitosis:** The process whereby replicated chromosomes segregate equally toward opposite poles prior to cell division. OR The multistep process in eukaryotic cells that results in the replication of chromosomes and cell division. OR The process by which a single parent cell divides to make two new daughter cells. Each daughter cell receives a complete set of

chromosomes from the parent cell. This process allows the body to grow and replace cells.

**mitosis-angiogenesis inhibitor R1530:** A pyrazolobenzodiazepine small molecule with potential antiangiogenesis and antineoplastic activities. Mitosis-angiogenesis inhibitor (MAI) R1530 inhibits multiple receptor tyrosine kinases involved in angiogenesis, such as vascular endothelial growth factor receptor (VEGFR)-1, -2, -3, platelet-derived growth factor receptor (PDGFR) beta, FMS-like tyrosine kinase (Flt)-3, and fibroblast growth factor receptor (FGFR) -1, -2. In addition, this agents exhibits anti-proliferative activity by initiating mitotic arrest and inducing apoptosis.

**mitotane:** A synthetic derivative of the insecticide dichlorodiphenyl trichloroethane (DDT) with anti-adrenocorticoid properties. Following its metabolism in the adrenal cortex to a reactive acyl chloride intermediate, mitotane covalently binds to adrenal proteins, specifically inhibiting adrenal cortical hormone production. or An anticancer drug used in treating adrenocortical cancer and ACTH-producing pituitary tumors (Cushing disease).

**mitotic activity :** Having to do with the presence of dividing (proliferating) cells. Cancer tissue generally has more mitotic activity than normal tissues.

**mitotic cycle :** The process a cell goes through each time it divides. The mitotic cycle consists of a series of steps during which the chromosomes and other cell material double to make two copies. The cell then divides into two daughter cells, each receiving one copy of the doubled material. The mitotic cycle is complete when each daughter cell is surrounded by its own outer membrane. Also called cell cycle.

**mitotic index :** In a population of cells, the ratio of the number of cells undergoing mitosis (cell division) to the number of cells not undergoing mitosis.

**mitotic inhibitor :** A type of drug that blocks cell growth by stopping mitosis (cell division). They are used to treat cancer. Also called antimitotic agent.

**mitotic rate :** A measure of how fast cancer cells are dividing and growing. To find the mitotic rate, the number of cells dividing in a certain amount of cancer tissue is counted. Mitotic rate is used to help find the

stage of melanoma (a type of skin cancer) and other types of cancer. Higher mitotic rates are linked with lower survival rates. Also called MR.

**mitoxantrone hydrochloride:** The hydrochloride salt of an anthracenedione antibiotic with antineoplastic activity. Mitoxantrone intercalates into and crosslinks DNA, thereby disrupting DNA and RNA replication. This agent also binds to topoisomerase II, resulting in DNA strand breaks and inhibition of DNA repair. Mitoxantrone is less cardiotoxic compared to doxorubicin. or A drug used with other drugs to treat acute myeloid leukemia (AML) and advanced prostate cancer that did not get better with hormone therapy. It is also used to treat certain forms of multiple sclerosis (MS). It is also being studied in the treatment of other types of cancer. Mitoxantrone hydrochloride damages the cell's DNA and may kill cancer cells. It may also stop certain immune cells from causing damage to the brain and spinal cord. Mitoxantrone hydrochloride is a type of antitumor antibiotic.

**Mitozytrex :** A drug used to treat advanced cancer of the stomach and pancreas that has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Mitozytrex comes from bacteria. It damages the cell's DNA and may kill cancer cells. It is a type of anticancer antibiotic. Also called mitomycin C and Mutamycin.

**Mitre:** A joint between two pieces at an angle to one another so that the line of the joint bisects the angle.

**mivobulin isethionate:** The isethionate salt of mivobulin, a synthetic colchicine analogue with potential antineoplastic activity. Mivobulin isethionate binds to tubulin, thereby inhibiting microtubule polymerization and mitosis. or An anticancer drug that belongs to the family of drugs called mitotic inhibitors. Also called CI-980.

**mixed bacteria vaccine:** A cancer vaccine containing a mixture of killed bacteria with potential immunostimulatory and antineoplastic activities. Mixed bacteria vaccine (MBV or Coley's toxins) consists of a pyrogenic bacterial lysate derived from *Serratia marcescens* and *Streptococcus pyogenes*; the active components in the lysate may be lipopolysaccharide (LPS), a component of the Gram-negative bacterial cell wall of *Serratia*, and streptokinase, an enzyme produced by *Streptococcus pyogenes*. LPS has been shown to stimulate the host humoral immune response and induce

the release of various antitumor cytokines such as tumor necrosis factor (TNF) and interleukin-12 (IL-12).

**Mixed C4:** Mixed C4 is the term used to describe the mixture of four carbon compounds that are commonly produced from a steam cracker. Four carbon compounds differ from the shorter olefins in that they can be formed in a variety of structures, being straight or branched and with one or two double bonds. These separate chemicals can either be separated within the steam cracker, or alternatively at separate dedicated extraction units.

**mixed glioma :** A brain tumor that forms from more than one type of brain cell, usually astrocytes and oligodendrocytes.

**mixed glyceride:** A diglyceride or triglyceride that contains more than one type of fatty acid connected to glycerol via an ester linkage. Natural oils and fats usually contain several different mixed glycerides.

**Mixed oxide (MOX) fuel:** A type of nuclear reactor fuel (often called "MOX") that contains plutonium oxide mixed with either natural or depleted uranium oxide, in ceramic pellet form. (This differs from conventional nuclear fuel, which is made of pure uranium oxide.) Using plutonium reduces the amount of highly enriched uranium needed to produce a controlled reaction in commercial light-water reactors. However, plutonium exists only in trace amounts in nature and, therefore, must be produced by neutron irradiation of uranium-238 or obtained from other manufactured sources. As directed by Congress, the NRC regulates the fabrication of MOX fuel by DOE, a program that is intended to dispose of plutonium from international nuclear disarmament agreements. For further detail, see the Backgrounder on Mixed Oxide Fuel and Frequently Asked Questions About Mixed Oxide Fuel.

**mixed-function oxidases (oxygenases):** Enzymes, often flavoproteins, that use molecular oxygen (O<sub>2</sub>) to simultaneously oxidize a substrate and a cosubstrate (commonly NADH or NADPH).

**Mixed-Xylenes:** Mixed xylenes refers to a mixture of xylene isomers, meta-xylene, ortho-xylene and para-xylene, which are obtained from various sources within a refinery or steam cracker. Although they can be used in a mixture for solvents, they are usually separated and used as feedstock for a limited range of intermediates. They are one of the "aromatic" compounds, along with benzene and toluene. The largest use is para-xylene for polyester production.

**mixture:** Composed of two or more substances, but each keeps its original properties. OR A grouping together of two or more substances in which each retains its original properties. OR Mixtures are substances held together by physical, not chemical, forces. Most things you find things in nature are mixtures. Rocks, the ocean, and just about everything is a mixture. OR several substances put together that can be easily separated by physical means. OR Two or more substances loosely joined together. The substances are not chemically joined together. Mixtures can usually be separated into their components quite easily.

**mixture problems:** Word problems that involve mixing two or more items to create a new mixture. Often, these are chemistry problems, but they can include problems in which two different types of nuts are mixed to create mixed nuts, and so on.

**MK-0646:** A substance being studied in the treatment of many types of cancer. MK-0646 binds to a protein called insulin-like growth factor receptor (IGFR) on the surface of cells. This may prevent the cells from growing when IGF is present. It may also kill cancer cells. MK-0646 is a type of monoclonal antibody. Also called anti-IGF1R recombinant monoclonal antibody MK-0646.

**MK0731:** A synthetic small molecule with potential antineoplastic activity. MK0731 selectively inhibits kinesin spindle protein (KSP), which may result in the inhibition of mitotic spindle assembly, induction of cell cycle arrest during the mitotic phase, and apoptosis in tumor cells that overexpress KSP.

**MK0752:** A substance being studied in the treatment of cancer. It blocks signals between growing cells and may kill cancer cells. It is a type of signal transduction inhibitor.

**MKC-1:** An orally bioavailable, small-molecule, bisindolylmaleimide cell cycle inhibitor with potential antineoplastic activity. MKC-1 and its metabolites inhibit tubulin polymerization, blocking the formation of the mitotic spindle, which may result in cell cycle arrest at the G2/M phase and apoptosis. In addition, this agent has been shown to inhibit the activities of the oncogenic kinase Akt, the mTOR pathway, and importin-beta, a protein essential to the transport of other proteins from the cytosol into the nucleus.

**MKNK1 inhibitor BAY 1143269:** An orally bioavailable inhibitor of mitogen-activated protein kinase interacting serine/threonine-protein kinase

1 (MKNK1), with potential antineoplastic activity. Upon oral administration, MKNK1 inhibitor BAY 1143269 binds to MKNK1, thereby preventing its activation and the downstream MKNK1-mediated phosphorylation and activation of eukaryotic translation initiation factor 4E (eIF4E). As eIF4E enhances the synthesis of oncogenic proteins, preventing eIF4E activity inhibits the synthesis of tumor angiogenic factors and leads to both the inhibition of cellular proliferation and apoptosis in susceptible tumor cells. eIF4E, overexpressed in a variety of cancer cells, plays a key role in tumor cell proliferation and survival.

**ml** : A measure of volume in the metric system. One thousand mls equal one liter. Also called cc, cubic centimeter, and milliliter.

**MLN1202**: A substance being studied as a treatment for atherosclerosis (a build-up of fat in the arteries). It is also being studied in the treatment of cancers that spread to the bone. MLN1202 binds to a protein called CCR2, which is found on the surface of certain bone cells, white blood cells, and cancer cells. MLN1202 blocks the action of a substance that is involved in keeping healthy bone mass. It may help keep the cancer cells from spreading to and growing in the bone. It is a type of monoclonal antibody. Also called anti-CCR2 monoclonal antibody MLN1202.

**MLN2704**: An immunoconjugate that consists of a humanized monoclonal antibody (MLN591), directed against prostate-specific membrane antigen linked to a maytansinoid (DM1). The monoclonal antibody moiety of MLN2704 binds to tumor cells expressing prostate-specific membrane antigen; MLN274 is then internalized into the tumor cell where the DM1 maytansinoid moiety binds to tubulin and inhibits tubulin polymerization and microtubule assembly, resulting in a disruption of microtubule activity and cell division, and cell death. or A substance that is being studied in the treatment of prostate cancer. It belongs to the family of drugs called antibody drug conjugates. Also called MLN591DM1.

**MLN518**: A substance being studied in the treatment of some types of cancer. It may stop cancer cell growth by blocking certain enzymes. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called CT53518 and tandutinib.

**MLN591DM1**: A substance that is being studied in the treatment of prostate cancer. It belongs to the family of drugs called antibody drug

conjugates. Also called MLN2704.

**MLPA:** A laboratory method commonly used for the detection of unusual copy number changes (insertions or deletions) of genomic sequences. Also called multiplex ligation-dependent probe amplification.

**mM :** The amount of a substance equal to a thousandth of a mole (a measure of the amount of a substance). Also called millimole.

**MMA:** Methyl methacrylate monomer

**MMMT:** A rare type of tumor that is a mixture of carcinoma and sarcoma cells. MMMT usually occurs in the uterus. Also called malignant mixed Müllerian tumor.

**MNDO:** A semi-empirical method ("minimal neglect of differential overlap").

**MNK1/2 inhibitor eFT508:** An orally bioavailable inhibitor of mitogen-activated protein kinase (MAPK)-interacting serine/threonine-protein kinase 1 (MNK1) and 2 (MNK2), with potential antineoplastic activity. Upon oral administration, MNK1/2 inhibitor eFT508 binds to and inhibits the activity of MNK1 and 2. This prevents MNK1/2-mediated signaling, and inhibits the phosphorylation of certain regulatory proteins, including eukaryotic translation initiation factor 4E (eIF4E), that regulate the translation of messenger RNAs (mRNAs) involved in tumor cell proliferation, angiogenesis, survival and immune signaling. This inhibits tumor cell proliferation in MNK1/2-overexpressing tumor cells. MNK1/2 are overexpressed in a variety of tumor cell types and promote phosphorylation of eIF4E; eIF4E is overexpressed in many tumor cell types and contributes to tumor development, maintenance and resistance.

**MnSOD mimetic BMX-001:** A third generation, cationic, lipophilic, manganese (Mn) and porphyrin-based mimetic of the human mitochondrial manganese superoxide dismutase (MnSOD), with antioxidant and potential chemoprotective activities. Upon administration, MnSOD mimetic BMX-001 is internalized by cells and mimics the activity of MnSOD by scavenging reactive oxygen species (ROS), such as superoxide anion, hydrogen peroxide, and hydroxyl radical. This prevents oxidative damage to macromolecules such as DNA and minimizes oxygen free radical-related chemotoxicity in normal tissues. This agent was designed to be more lipophilic and less toxic than first and second generation Mn-porphyrin mimetics. Check for active clinical trials using this agent.

**MnSOD-plasmid liposomes:** A plasmid DNA encoding human manganese superoxide dismutase (MnSOD) and liposomally encapsulated with potential chemoprotective activity. When administered orally and localizing in the esophagus, MnSOD-plasmid liposomes express MnSOD, which scavenges reactive oxygen species (ROS); MnSOD scavenging of ROS may result in a reduction in ROS-mediated lipid peroxidation, apoptosis, and micro-ulceration in the epithelial lining of the esophagus.

**MO:** Molecular orbital.

**MOAB Ch14.18:** A drug used with granulocyte-macrophage colony-stimulating factor (GM-CSF), aldesleukin (IL-2), and 13-cis-retinoic acid to treat high-risk neuroblastoma. It is used in children whose disease has improved with other anticancer treatment. MOAB Ch14.18 binds to a substance called GD2, which is found on some types of cancer cells. MOAB Ch14.18 may block GD2 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called Ch14.18, dinutuximab, monoclonal antibody Ch14.18, and Unituxin.

**MoAb HuM195:** A substance being studied in the treatment of myelodysplastic syndromes and some types of leukemia. It binds to CD33, a protein on the surface of certain normal blood stem cells and some abnormal blood cells. It causes the immune system to kill these cells. MoAb HuM195 is a type of monoclonal antibody. Also called lintuzumab and monoclonal antibody HuM195.

**Mobec:** (Other name for: meloxicam)

**Mobic:** (Other name for: meloxicam)

**Mobicox:** (Other name for: meloxicam)

**Mobile genetic element:** A segment of the genome that can move as a unit from one location on the genome to another, without any requirement for sequence homology.

**Mobista:** (Other name for: recombinant flt3 ligand)

**Mobius :** Technique where return path is arranged to make the belt turn itself over each successive passes through the system.

**mocetinostat:** A rationally designed, orally available, Class 1-selective, small molecule, 2-aminobenzamide HDAC inhibitor with potential antineoplastic activity. Mocetinostat binds to and inhibits Class 1 isoforms of HDAC, specifically HDAC 1, 2 and 3, which may result in epigenetic

changes in tumor cells and so tumor cell death; although the exact mechanism has yet to be defined, tumor cell death may occur through the induction of apoptosis, differentiation, cell cycle arrest, inhibition of DNA repair, upregulation of tumor suppressors, down regulation of growth factors, oxidative stress, and autophagy, among others. Overexpression of Class I HDACs 1, 2 and 3 has been found in many tumors and has been correlated with a poor prognosis. A substance being studied in the treatment of several types of cancer. It blocks enzymes needed for cell division and may kill cancer cells. It is a type of histone deacetylase (HDAC) inhibitor. Also called MGCD0103.

**modafinil:** A synthetic central nervous system stimulant with wakefulness-promoting activity. Modafinil appears to inhibit dopamine reuptake, resulting in an increase in extracellular dopamine. This agent exhibits pronounced wakefulness-promoting activity (without sympathomimetic activity) and may improve cognitive function in certain clinical settings. or A drug that is being studied as a treatment for fatigue in patients with cancer. It belongs to the family of drugs called stimulants.

**modality :** A method of treatment. For example, surgery and chemotherapy are treatment modalities.

**mode of inheritance :** The manner in which a genetic trait or disorder is passed from one generation to the next. Autosomal dominant, autosomal recessive, X-linked dominant, X-linked recessive, multifactorial, and mitochondrial inheritance are examples. Each mode of inheritance results in a characteristic pattern of affected and unaffected family members.

**model:** a scale representation of another object or idea. OR A formalized expression of a theory or the causal situation which is regarded as having generated observed data. In statistical analyses the model is generally expressed in symbols, that is to say in a mathematical form, but diagrammatic models are also found (Kendall & Buckland, 1982).

**Model organism:** A bacterium, animal, or plant used by scientists to study basic research questions; common model organisms include yeast, flies, worms, frogs, and fish

**modeling:** An investigative technique that uses a mathematical or physical representation of a system or theory that accounts for all or some of its known properties. Models are often used to test the effects of changes of system components on the overall performance of the system.

**moderate sedation :** A level of sedation in which a person is asleep but wakes when spoken to or touched. Moderate sedation is caused by special drugs and is used to help relieve anxiety during certain medical or surgical procedures. Drugs that relieve pain may be given at the same time. Also called conscious sedation.

**Moderator:** A material, such as ordinary water, heavy water, or graphite, that is used in a reactor to slow down high-velocity neutrons, thus increasing the likelihood of fission.

**Moderator temperature coefficient of reactivity:** As the moderator (water) increases in temperature, it becomes less dense and slows down fewer neutrons, which results in a negative change of reactivity. This negative temperature coefficient acts to stabilize atomic power reactor operations.

**Modicon:** (Other name for: ethinyl estradiol/norethindrone)

**Modified:** Containing ingredients such as fillers, pigments or other additives that help to vary the physical properties of a plastics material. An example is oil modified resin.

**modified citrus pectin supplement:** A dietary supplement containing the modified citrus pectin (MCP) derived from the soluble fiber of citrus fruit peels and a galectin-3 inhibitor with potential antioxidant, hypocholesterolemic, immunostimulatory, metal chelating, and anti-metastatic activities. MCP is a low molecular weight version of pectin composed of short, slightly-branched carbohydrate chains and is modified for enhanced absorbability. The bioactive fragments, most likely the galactan-containing portion, of pectin binds to galectin-3, a carbohydrate-binding protein involved in inflammation, heart disease and is upregulated on the surface of certain types of tumor cells. Binding of MCP may result in the suppression of cancer cell aggregation, adhesion, proliferation and metastasis. In addition, MCP decreases prostate specific antigen (PSA) levels and may remove heavy metals. Also, unsaturated oligogalacturonic acids in MCP may stimulate the immune system through the activation of natural killer cells, cytotoxic T-cells, and B-cells.

**modified FOLFOX-6 :** An abbreviation for a combination chemotherapy regimen that is used to treat colorectal cancer. It includes the drugs leucovorin calcium (folinic acid), fluorouracil, and oxaliplatin. There are several different FOLFOX regimens that differ in the doses and ways in

which the three drugs are given. Also called mFOLFOX-6, mFOLFOX-6 regimen, and modified FOLFOX-6 regimen.

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**modified Mercalli scale:** a ranking system for the intensity of an earthquake, ranking it from 1 to 12 depending on the amount of resulting damage.

**modified radical hysterectomy :** Surgery to remove the uterus, cervix, upper part of the vagina, and nearby ligaments and tissues. Nearby lymph nodes may also be removed. In this type of surgery, not as many tissues and/or organs are removed as in a radical hysterectomy.

**modified radical mastectomy :** Surgery for breast cancer in which the breast, most or all of the lymph nodes under the arm, and the lining over the chest muscles are removed. Sometimes the surgeon also removes part of the chest wall muscles.

**modified radical vulvectomy :** Surgery to remove most, but not all, of the vulva (the external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina). The clitoris may not be removed. Sometimes lymph nodes in the groin area are also removed. Also called partial radical vulvectomy.

**modified vaccinia Ankara (Bavarian Nordic)-HER2 vaccine:** A cancer vaccine consisting of a proprietary, recombinant modified vaccinia Ankara (MVA) viral vector encoding an epitope of human epidermal growth factor receptor 2 (HER2) with potential antineoplastic activity. Upon administration, modified vaccinia Ankara (Bavarian Nordic)-HER2 vaccine may stimulate the host immune system to mount humoral and cytotoxic T lymphocyte responses against HER2-expressing tumor cells, resulting in tumor cell lysis. HER2, also known as ErbB-2, is a tyrosine kinase growth factor receptor and a member of the epidermal growth factor receptor family; it plays a significant role in the pathogenesis of some breast cancers.

**modified-release calcifediol capsule:** An orally available, modified-release formulation containing the calcitriol prohormone, calcifediol (25-

hydroxyvitamin D), which can potentially be used for vitamin D supplementation. Upon oral administration of the modified-release calcifediol capsule, calcifediol is slowly and gradually released in the gastrointestinal tract. Then it is taken up by the body and converted, in the kidneys, to the active form calcitriol (1,25-dihydroxyvitamin D or 1,25 D). This form increases and normalizes vitamin D plasma levels, which, in turn, regulates calcium plasma levels, and normalizes elevated parathyroid hormone (PTH) levels by suppressing both PTH synthesis, and secretion. This formulation appears to have fewer side effects than supplementation with formulations containing active 1,25 D and does not stimulate the upregulation of vitamin D 24-hydroxylase (CYP24), a cytochrome P-450 family enzyme that inactivates vitamin D. Check for active clinical trials using this agent.

**modifier:** describes or limits another word or group of words.

**Modrastane:** (Other name for: trilostane)

**modulate :** To adjust, or change.

**modulator:** A metabolite that, when bound to the allosteric site of an enzyme, alters its kinetic characteristics.

**Modulus:** Tensile stress at specific elongation, normally 100% elongation for silicone elastomers OR Derived from the Latin word meaning "small measure", modulus is the ratio of stress to strain in the linear region of the s-e curve.

**Modulus in Compression:** The ratio of compressive stress to strain within elastic limits of the material.

**Modulus in Flexure:** The ratio of the flexure stress to strain, within elastic limits of the material.

**Modulus in Shear:** The ratio of shear stress to strain within elastic limits of the material.

**Modulus of Elasticity:** One of several measurements of stiffness or resistance to deformation, but often incorrectly used to indicate specifically static tension modulus

**Modulus of Resilience :** The energy that can be absorbed per unit volume without creating a permanent distortion.

**mogamulizumab:** A humanized monoclonal antibody directed against C-C chemokine receptor 4 (CCR4) with potential anti-inflammatory and

antineoplastic activities. Mogamulizumab selectively binds to and blocks the activity of CCR4, which may inhibit CCR4-mediated signal transduction pathways and, so, chemokine-mediated cellular migration and proliferation of T cells, and chemokine-mediated angiogenesis. In addition, this agent may induce antibody-dependent cell-mediated cytotoxicity (ADCC) against CCR4-positive T cells. CCR4, a G-coupled-protein receptor for C-C chemokines such as MIP-1, RANTES, TARC and MCP-1, is expressed on the surfaces of some types of T cells, endothelial cells, and some types of neurons. CCR4, also known as CD194, may be overexpressed on adult T-cell lymphoma (ATL) and peripheral T-cell lymphoma (PTCL) cells.

**Mohorovicic discontinuity:** the first major boundary of the earth's interior; separates the crust from the underlying mantle.

**Mohs hardness scale:** a scale from 1 to 10 on which the relative hardness of minerals is measured; named after its originator, Friedrich Mohs, a German mineralogist. OR a relative scale ranging from 1 to 10, measuring whether a mineral can scratch another mineral.

**Mohs micrographic surgery :** A surgical procedure used to treat skin cancer. Individual layers of cancer tissue are removed and examined under a microscope one at a time until all cancer tissue has been removed. Also called Mohs surgery.

**Mohs Scale:** This is a scale that measures the hardness of rocks and minerals. Friedrich Mohs devised the scale in 1812. The scale goes from one to ten with ten being the hardest substance. A diamond would have a value of 10 while a quartz crystal would only have a value of 7.

**Mohs surgery :** A surgical procedure used to treat skin cancer. Individual layers of cancer tissue are removed and examined under a microscope one at a time until all cancer tissue has been removed. Also called Mohs micrographic surgery.

**moist adiabatic lapse rate:** rate at which humid air cools as it rises upward.

**Moisture Absorption:** The pick-up of moisture from the environment by a material.

**Moisture Marks or Welds:** Marks on the finished part that are caused from moisture in the resin and look like weld lines except they may be in

the wrong areas for weld lines

**Moisture Resistance:** The ability of a material to resist absorbing ambient moisture.

**Moisture Vapor Transmission:** The rate at which water vapor permeates through a plastic film or wall at a specified temperature and relative humidity.

**MOISTURE VAPOR TRANSMISSION:** The rate of permeation of water through a material at a specific temperature and relative humidity rate.

**Moisture vapor transmission rate (mvtr):** the rate at which water vapor permeates through a plastic film or bottle wall at a specified temperature and at relative humidity.

**molal:** a solution concentration having a mole of solute per 1,000 grams of solvent, usually water.

**molality:** a measure of solution concentration expressed in moles of solute per 1,000 grams of solvent. OR The number of moles of solute (the material dissolved) per kilogram of solvent (what the solute is dissolved in). OR The molal concentration, moles of solute per kilogram of solvent, usually given the symbol m. OR A measure of the number of moles of a solute compared to one thousand grams of the solvent. Scientists use 'm' when they describe the molality of a system. It is a measure of mass as opposed to volume. Volume is used in measuring molarity. OR the number of moles of solute in 1 kilogram of solvent. OR Concentration measured as moles of solute per kilogram of solvent. For example, a 1 m NaCl solution contains 1 mole of NaCl per kilogram of water. Molalities are preferred over molarities in experiments that involve temperature changes of solutions, e. g. calorimetry and freezing point depression experiments.

**molar:** a solution concentration having one mole of solute per liter of solution. OR An term expressing molarity, the number of moles of solute per liters of solution. OR The adjective derived from 'mole'. The total heat released when a mole of something burns is its molar heat of combustion; the concentration of a substance expressed in moles/litre is its molar concentration, usw. OR 1. Of or pertaining to moles. 2. An synonym for molarity; for example, a "six molar solution of hydrochloric acid" contains 6 moles of HCl per liter of solution.

**molar absorptivity:** The absorbance per centimeter of path length when the concentration of absorbing material is 1 M;  $a = A/(bc)$  where  $a$ ,  $A$ ,  $b$ , and  $c$  are the molar absorptivity, absorbance, path length in cm, and concentration in mol/L, respectively. Molar absorptivities are sometimes written as absorption cross sections by expressing the concentration in units of mol/cm<sup>3</sup>, so that the molar absorptivity takes on units of cm<sup>2</sup>/mol.

**molar heat capacity:** the amount of heat required to raise the temperature of 1 mole of substance 1 degree Celsius.

**molar heat capacity:** The heat required to raise the temperature of one mole of a substance by 1°C is called the molar heat capacity of the substance. Molar heat capacity is an intensive property with SI system units of J mol<sup>-1</sup> K<sup>-1</sup>. The molar heat capacity of elements is sometimes called the "atomic heat capacity".

**molar mass:** The mass of one mole of a material. For example, the molar mass of H<sub>2</sub>O is 18.015 g (obtained by adding twice the molar mass of hydrogen to the molar mass of oxygen).

**molar pregnancy :** A slow-growing tumor that develops from trophoblastic cells (cells that help an embryo attach to the uterus and help form the placenta) after fertilization of an egg by a sperm. A molar pregnancy contains many cysts (sacs of fluid). It is usually benign (not cancer) but it may spread to nearby tissues (invasive mole). It may also become a malignant tumor called choriocarcinoma. Molar pregnancy is the most common type of gestational trophoblastic tumor. Also called hydatidiform mole.

**molar solution:** One mole of solute dissolved in water to give a total volume of 1,000 mL.

**molar volume:** The volume occupied by one mole of a material. For example, the molar volume of an ideal gas at STP is 22.4 L/mol.

**molarity:** a measure of solution concentration expressed in moles of solute per liter of solution. OR The number of moles of solute (the material dissolved) per liter of solution. Used to express the concentration of a solution. OR The number of moles of solute per liter of aqueous solution. OR A measure of the number of moles of a solute that are dissolved in a liter of solution. As concentration increases, the molarity of the solution also increases. Scientists use the letter 'M' to describe the molarity of a solution. OR the number of moles of solute in 1 liter of solution. OR

Concentration of a solution measured as the number of moles of solute per liter of solution. For example, a 6 M HCl solution contains 6 moles of HCl per liter of solution.

**MOLCAS:** An ab initio software package that emphasizes electron correlation, esp. CASPT2 (14).

**Mold:** (v.) To shape plastic parts or finished articles by heat and pressure. (n.) (1) The cavity or matrix into which the plastic composition is placed and from which it takes its form. (2) The assembly of all the parts that function collectively in the molding process.

**Mold:** 1(n)A hollow form or matrix into which a plastic material is placed and which imparts to the material its final shape as a finished article. 2 (v)To impart shape to a plastic mass by means of a confining cavity or matrix.

**mold :** A form of fungus. Some molds can cause disease in humans.

**Mold Base:** Mold frame that holds mold cavities

**Mold Cavity:** Hollow space of the mold within which the liquid silicone rubber is injected and cured to the desired finished product form

**Mold Change :** rAn automated device for removing one mold from a machine and replacing it with another mold.

**Mold Finish:** The surface finish of the silicone injection mold which imparts the desired surface quality to the finished molded silicone product

**Mold Frame:** A series of steel plates which contain mold components, including cavities, cores, runner system, cooling system, ejection system, etc.

**Mold Marks:** Slight irregularities in the surface of molded articles caused by mold machining marks, or damage to the mold itself

**MOLD RELEASE:** A lubricant used to coat a mold cavity to prevent the molded piece from sticking to it, and thus to facilitate its removal from the mold. Also called "Release Agent."

**Mold Release:** In injection molding, a lubricant used to coat the surface of the mold to enhance ejection of the molded article or prevent it from sticking to the tool. Many resins are available with an internal mold release.

**Mold Release :** In injection molding, a lubricant used to coat the surface of the mold to enhance ejection of the molded article or prevent it from

sticking to the tool. Many resins are available with an internal mold release. OR A lubricant used to coat a mold cavity to prevent the molded piece from sticking to it, and thus to facilitate its removal from the mold. Also called Release Agent.”

**Mold Release Agent:** A lubricant used to coat a mold cavity to prevent adhesion of the molded piece when removed.

**Mold Release Problems:** Excess use of mold release may leave parts oily and weaken the material.

**Mold release spray:** A liquid applied to the mold as a spray to facilitate the ejection of parts from the B-side. It is typically used when the parts are difficult to eject because they are sticking to the mold.

**Mold Seam:** a vertical line formed at the point of contact of the mold halves. The prominence of the line depends on the accuracy with which the mating mold halves are matched. OR A line formed by mold construction such as removable members in cavity, cam slides, etc. (Not to be confused with mold parting line).

**Mold Shrinkage:** The difference in dimension, expressed in inches per inch, between a silicone part and the steel cavity in which it was injection silicone molded, when both are measured while at room temperature OR The difference in dimensions between the mold and the molded part.

**Mold Temperature :** The temperature at which the mold is maintained. Often the most important benefit of raising mold temperature is that it allows a slower injection rate without the plastic getting too cold.

**Mold Three Plate:** Integral moving plates in a conventional silicone injection mold, containing the cavities and allowing the injection point or gate to feed directly into the part

**Mold Venting:** The purpose of mold venting is to exhaust air from mold cavities to enable the inflation of the part. Drilled holes, vent bushings and continuous venting along mold seams are typical methods. If venting is needed on appearance surfaces, the vents are sometimes textured to match the part finish.

**Mold-Temperature-Control Unit :** Auxiliary equipment used to control mold temperature. Some units can both heat and cool the mold. Others, called chillers, only cool the mold.

**Moldability :** The characteristics of being easy to mold without rupturing or developing flaws due to movement of the polymer during gelation.

**Molding:** The method of forming objects from granular or powdered plastics, most often of the thermoplastic type, in which the material is fed from a hopper to a heated chamber in which it is softened, after which a ram or screw forces the material into a mold. Pressure is maintained until the mass has hardened sufficiently for removal from the mold.

**Molding Conditions:** The temperature of the mold and melt and the time required to fill the mold.

**Molding Cycle:** (1) The period of time occupied by the complete sequence of operations on a molding press requisite for the production of one set of moldings. (2) The operations necessary to produce a set of moldings without reference to the time taken. OR The period of time occupied by the complete sequence of operations on a molding press requisite for the production of one set of molded articles.

**MOLDING MATERIAL:** Plastic material in varying stages of granulation often comprising resin, filler, pigments, plasticizers and other ingredients, ready for use in the molding operation. Also called "Molding Compound" or 'Powder.'

**Molding Pressure:** The pressure applied to the ram of an injection machine or press to force the softened plastic completely to fill the mold cavities.

**Molding sensitivity :** the variability of the pressure to fill the cavity and temperature of the melt at the part as influenced by changes in injection time and barrel melt temperature.

**Molding Shrinkage:** The difference in dimensions, expressed in inches per inch, between a molding and the mold cavity in which it was molded, both the mold and the molding being at normal room temperature when measured. Also called "Mold Shrinkage," or "Shrinkage," and "Contraction.'

**Molding window:** the range of molding conditions under which a part can be successfully molded.

**mole:** an amount of a substance weighing the number of grams equal to the total atomic weight in one molecule (or atom). Equivalent to gram-atomic, gram-molecular, and gram-formula weights. OR A collection of  $6.022 \times 10^{23}$

1023 number of objects. Usually used to mean molecules. OR The amount of substance that contains the same number of elementary particles as are found in exactly 12 g of carbon-12. OR One mole is the number of carbon atoms in exactly 12 g of carbon ( $6.02 \times 10^{23}$ ). OR The mole is defined as the amount of a substance that contains as many atoms or molecules as atoms are contained in 0.012 kg of carbon-12. The easiest way to think of it is that a mole of a substance of a particular weight will weigh that many gramm. There are about  $6.02 \times 10^{23}$  particles in a mole. OR an amount of a substance equal in grams to the sum of the atomic weights. OR SI unit for amount of substance, defined as the number of atoms in exactly 12 g of carbon-12. One mole of a molecular compound contains Avogadro's number molecules and has a mass equal to the substance's molecular weight, in grams. OR The mole is the SI unit for amount of substance. 1 mole of particles is equal to the number of atoms in exactly 12 g of carbon-12. 1 mole of molecules has a mass equal to the molecular weight in grams. OR One gram molecular weight of a compound. See Avogadro's number.

**mole :** A benign (not cancer) growth on the skin that is formed by a cluster of melanocytes (cells that make a substance called melanin, which gives color to skin and eyes). A mole is usually dark and may be raised from the skin. Also called nevus.

**mole fraction:** The number of moles of a particular substance expressed as a fraction of the total number of moles. OR the fraction of moles (or molecules) of one substance in the total moles (or molecules) of all substances in the mixture. If the mole fraction of substance A is 0.1, one-tenth of all the molecules in a mixture are A molecules. OR Concentration of a substance in a mixture measured as moles of the substance per mole of mixture. For example, the mole fraction of oxygen in air is about 0.21, which means that 1 mol of air contains about 0.21 mol O<sub>2</sub>.

**Molecular change:** The second step of a hypothetical solid-state reaction. This step involves the actual chemical reaction that occurs. This step is similar to the corresponding reaction in solution.

**molecular diagnosis :** The process of identifying a disease by studying molecules, such as proteins, DNA, and RNA, in a tissue or fluid.

**molecular equation:** A molecular equation is a balanced chemical equation in which ionic compounds are written as neutral formulas rather than as ions. For example,  $\text{AgNO}_3(\text{aq}) + \text{NaCl}(\text{aq}) = \text{AgCl}(\text{s}) + \text{NaNO}_3(\text{aq})$

is a molecular equation;  $\text{Ag}^+(\text{aq}) + \text{NO}_3^-(\text{aq}) + \text{Na}^+(\text{aq}) + \text{Cl}^-(\text{aq}) = \text{AgCl}(\text{s}) + \text{Na}^+(\text{aq}) + \text{NO}_3^-(\text{aq})$  is not.

**molecular formula:** Shows the number of atoms of each element present in a molecule. OR shows the actual number of atoms in compound. Ex.  $\text{C}_2\text{H}_4$  OR The molecular formula gives the actual number of atoms of each element present in a molecule. OR describes the ratio of elements in a molecule. OR a chemical formula that shows the number and kinds of atoms in a molecule but not their arrangement; for example,  $\text{C}_2\text{H}_6$ . OR A notation that indicates the type and number of atoms in a molecule. The molecular formula of glucose is  $\text{C}_6\text{H}_{12}\text{O}_6$ , which indicates that a molecule of glucose contains 6 atoms of carbon, 12 atoms of hydrogen, and 6 atoms of oxygen. OR This shows the number of each kind of atom in a molecule. (eg  $\text{CH}_4$  has one carbon atom and four hydrogen atoms;  $\text{H}_2\text{SO}_4$  has two hydrogen atoms per molecule, one sulfur atom and four oxygen atoms per molecule)

**molecular geometry:** Shape of a molecule, based on the relative positions of the atoms. OR 1. The three-dimensional shape of a molecule. For example, methane ( $\text{CH}_4$ ) has a tetrahedral molecular geometry. 2. The study of molecular shapes.

**Molecular loosening:** The first step of a hypothetical solid-state reaction. This step allows the reacting molecules to gain enough molecular freedom to react. For solid–gas reactions, this step also involves diffusion of gases to the reaction site.

**molecular marker :** A biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease. A molecular marker may be used to see how well the body responds to a treatment for a disease or condition. Also called biomarker and signature molecule.

**Molecular Mass:** is the sum of the atomic masses of all the atoms in a molecule. OR The combined mass (as given on the periodic table) of all the elements in a compound. OR Molecular mass is another term for formula mass. You can determine the formula mass by adding the individual masses of each atom in the compound. The formula mass of  $\text{NaCl}$  is 58.44. OR The sum of the atomic masses of all atoms in a molecule, based on a scale in which the atomic masses of hydrogen, carbon, nitrogen, and oxygen are 1, 12, 14, and 16, respectively. For example, the molecular mass of water,

which has two atoms of hydrogen and one atom of oxygen, is 18 (i.e., 2 + 16). Also called molecular weight.

**molecular medicine :** A branch of medicine that develops ways to diagnose and treat disease by understanding the way genes, proteins, and other cellular molecules work. Molecular medicine is based on research that shows how certain genes, molecules, and cellular functions may become abnormal in diseases such as cancer.

**Molecular mimicry:** Refers to a protein domain, such as those found in EF-G and release factor, that mimic the structure of a trna molecule.

**molecular model:** A representation of a molecule. The model can be purely computational or it can be an actual physical object. Stick models show bonds, ball-and-stick models show bonds and atoms, and spacefilling models show relative atomic sizes.

**Molecular Modelling:** Comprises of techniques used to investigate molecular structures and their properties using computational chemistry

**molecular orbital:** an orbital formed by the linear combination of two atomic orbitals. OR  $\pi$  a molecular orbital created by the side-to-side overlap of atomic p orbitals. OR A wavefunction that describes the behavior of an electron in a molecule. Molecular orbitals are usually spread across many atoms in the molecule, and they are often described as a combination of atomic orbitals on those atoms.

**molecular pathway :** A series of actions among molecules in a cell that leads to a certain end point or cell function.

**molecular risk assessment :** A procedure in which biomarkers (for example, biological molecules or changes in tumor cell DNA) are used to estimate a person's risk for developing cancer. Specific biomarkers may be linked to particular types of cancer.

**molecular sieve:** A material that contains many small cavities interconnected with pores of precisely uniform size. Zeolites are an example. Molecular sieves adsorb molecules that are small enough to pass through their pore systems- especially water. They are often used as drying agents, and to separate large molecules from smaller ones in preparatory work and in exclusion chromatography.

**molecular test :** In medicine, a laboratory test that checks for certain genes, proteins, or other molecules in a sample of tissue, blood, or other

body fluid. Molecular tests also check for certain changes in a gene or chromosome that may cause or affect the chance of developing a specific disease or disorder, such as cancer. A molecular test may be done with other procedures, such as biopsies, to help diagnose some types of cancer. It may also be used to help plan treatment, find out how well treatment is working, or make a prognosis.

**molecular weight:** the sum of the atomic weights of all the atoms in a molecule. OR Molecules are too small to put on a scale, but if you put  $6.022 \times 10^{23}$  of them (60 220 000 000 000 000 000, Avogadro's Number) of them on a scale, they will weigh about 2 g (if they are Hydrogen molecules, H<sub>2</sub>), 128 g (if they are butyl acrylate molecules, C<sub>7</sub>O<sub>2</sub>H<sub>12</sub>) or 10 tonnes (if they are typical molecules of poly(acrylamide)). This number is their 'molecular weight'. OR The average mass of a molecule, calculated by summing the atomic weights of atoms in the molecular formula. Note that the words mass and weight are often used interchangeably in chemistry. OR The sum of the atomic masses of the elements forming the molecule. OR Polymers are composed of long chain molecules. The monomer unit is repeated many times to give average molecular weights ranging from 50,000 to 500,000 for most common polymers. Of course, not all polymer chains are of the same length, so we have a MOLECULAR WEIGHT DISTRIBUTION (MWD). Different molecular weight averages are defined to express the breadth of the distribution. The number average molecular weight,  $M_n$ , is the sum of the individual molecular weights divided by their number. The weight average molecular weight,  $M_w$ , is the sum of the squares of the weights divided by the sum of the molecular weights. The POLYDISPERSITY INDEX (PDI)  $M_w/M_n$  (weight average / number average) would be 1.0 if all chains had exactly the same length (only theoretically possible). Usual grades of polymers have PI values from 1.5 to 30. Broad distribution polymers usually have lower viscosity, but higher elasticity.

**molecular weight :** The sum of the atomic masses of all atoms in a molecule, based on a scale in which the atomic masses of hydrogen, carbon, nitrogen, and oxygen are 1, 12, 14, and 16, respectively. For example, the molecular weight of water, which has two atoms of hydrogen and one atom of oxygen, is 18 (i.e.,  $2 + 16$ ). Also called molecular mass.

**Molecular Weight Distribution:** The ratio of the weight average molecular weight to the number average molecular weight gives an indication of the distribution.

**MOLECULAR WEIGHT DISTRIBUTION (MWD):** The relative amounts of polymers of different molecular weights (MW) that make up a specific polymer.

**Molecularity of a reaction:** The number of molecules involved in a specific reaction step.

**molecularly targeted therapy :** In cancer, a type of treatment that uses drugs or other substances to target specific molecules involved in the growth and spread of cancer cells. Blocking these molecules may kill cancer cells or may keep cancer cells from growing or spreading. Molecularly targeted therapy may cause less harm to normal cells and may have fewer side effects than other types of cancer treatment.

**molecule:** the simplest structural unit of a substance that retains the properties of the substance, and is composed of one or more atoms. OR Two or more atoms chemically combined. OR The smallest unit of a compound that has all the properties of the compound. OR This is a group of atoms bonded together. A molecule is the smallest piece of a compound that can exist. You can hold a compound such water in a glass. One water molecule would be one piece of the H<sub>2</sub>O. The atoms could be all the same type (like ozone) or they could be different (like carbon dioxide). OR is the smallest particle of a chemical compound. It contains two or more atoms. OR A molecule is a group of two or more atoms bonded together. OR a group of atoms linked together by covalent bonds. OR a covalently bonded collection of atoms that has no electrostatic charge. OR a precise arrangement of atoms of different elements. OR the smallest particle of a substance that still is that substance. OR Two or more atoms joined together by a covalent bond. Molecules can be elements (eg H<sub>2</sub> , O<sub>2</sub> etc) or compounds (eg CH<sub>4</sub> , H<sub>2</sub>SO<sub>4</sub>). OR A group of atoms held together by chemical forces. A molecule is the smallest unit of a compound that can exist by itself and retain all of its chemical properties. OR The smallest particle of an element or compound that retains the chemical properties of the element or compound. A molecule is a collection of chemically bound atoms with characteristic composition and structure. Making or breaking bonds in a molecule changes it into a new molecule. Ionic

compounds are not composed of molecules, because there is no distinct collection of ions that are chemically bound in the crystal. OR The smallest unit quantity of matter which can exist by itself and retain all of the properties of the original substance.

**molecule :** The smallest particle of a substance that has all of the physical and chemical properties of that substance. Molecules are made up of one or more atoms. If they contain more than one atom, the atoms can be the same (an oxygen molecule has two oxygen atoms) or different (a water molecule has two hydrogen atoms and one oxygen atom). Biological molecules, such as proteins and DNA, can be made up of many thousands of atoms.

**molluscicide:** A chemical used to kill molluscs.

**MOLPRO:** An ab initio software package that emphasizes electron correlation, esp. very large MRCI (15).

**Molybdenum:** Symbol:"Mo" Atomic Number:"42" Atomic Mass: 95.94amu. Molybdenum is one of the transition elements. This element has been confused with lead in the past. When pure, it is a silvery white metal and can be found in many alloys, aircraft parts, and even as a trace mineral in some plants. OR An element with atomic symbol Mo, atomic number 42, and atomic weight 95.94. Check for active clinical trials using this agent.

**momelotinib:** An orally bioavailable small-molecule inhibitor of Janus kinases 1 and 2 (JAK1/2) with potential antineoplastic activity.

Momelotinib competes with JAK1/2 for ATP binding, which may result in inhibition of JAK1/2 activation, inhibition of the JAK-STAT signaling pathway, and so the induction of apoptosis and a reduction of tumor cell proliferation in JAK1/2-expressing tumor cells. JAK2 is the most common mutated gene in bcr-abl-negative myeloproliferative disorders; the JAK2V617F gain-of-function mutation involves a valine-to-phenylalanine modification at position 617. The JAK-STAT signaling pathway is a major mediator of cytokine activity and is often dysregulated in a variety of tumor cell types.

**momentum:** Momentum is a property that measures the tendency of a moving object to keep moving in the same direction. Increasing the speed of an object increases its momentum, and a heavy object will have more momentum than a lighter one moving at the same speed. For a particle with mass  $m$  and velocity  $v$ , the momentum of the particle is  $mv$ .

**mometasone** : A drug that is used in a cream to treat certain skin conditions and in a nasal spray to treat sinus problems caused by allergies. It is being studied as a way to treat inflammation of the skin caused by radiation therapy. Mometasone is a type of corticosteroid. Also called Elocon, mometasone furoate, and Nasonex.

**mometasone furoate:** The furoate salt form of mometasone, a synthetic topical glucocorticosteroid receptor agonist with anti-inflammatory, anti-pruritic and vasoconstrictive properties. Mometasone furoate exerts its effect by binding to cytoplasmic glucocorticoid receptors and subsequently activates glucocorticoid receptor mediated gene expression. This results in synthesis of certain anti-inflammatory proteins, while inhibiting the synthesis of certain inflammatory mediators.. Specifically, mometasone furoate appears to induce phospholipase A2 inhibitory proteins, thereby controlling the release of the inflammatory precursor arachidonic acid from phospholipid membrane by phospholipase A2. Check for active clinical trials using this agent. or A drug that is used in a cream to treat certain skin conditions and in a nasal spray to treat sinus problems caused by allergies. It is being studied as a way to treat inflammation of the skin caused by radiation therapy. Mometasone furoate is a type of corticosteroid. Also called Elocon, mometasone, and Nasonex.

**monalizumab:** A humanized immunoglobulin G4 (IgG4) monoclonal antibody against the human natural killer (NK) and T-lymphocyte cell checkpoint inhibitor killer cell lectin-like receptor subfamily C member 1 (NKG2A), with potential antineoplastic activity. Upon administration, monalizumab binds to NKG2A and prevents the binding of NKG2A to its ligand human leukocyte antigen-E (HLA-E), which is overexpressed on tumor cells. This blocks the HLA-E-mediated inhibition of NKG2A-positive infiltrating NK and cytotoxic T-lymphocytes (CTLs) and induces a NK and CTL-mediated immune response against the cancer cells leading to their destruction. Human NKG2A, an inhibitory cell surface receptor covalently bound to CD94, is expressed by NK cells and CTLs. Stimulation of the CD94/NKG2A complex inhibits the cytotoxic activity of these cells. HLA-E, a nonclassical HLA class Ib molecule, is often overexpressed on tumor cells and is associated with poor prognosis.

**monatomic:** A monatomic gas is one that exists as single atoms.

**Monera:** the kingdom that includes the bacteria and the cyanobacteria; prokaryotic organisms.

**money problems:** Word problems that concern money.

**monitor :** In medicine, to regularly watch and check a person or condition to see if there is any change. Also refers to a device that records and/or displays patient data, such as for an electrocardiogram (EKG).

**monitoring (for health, environmental, and associated technical purposes):** The repetitive and continued observation, measurement, and evaluation of health and/or environmental or technical data for defined purposes, according to prearranged schedules in space and time, and using comparable methods for sensing and data collection (WHO, 1980).

**Monitoring of radiation:** Periodic or continuous determination of the amount of ionizing radiation or radioactive contamination in a region. Radiation monitoring is a safety measure to protect the health and safety of the public and the environment through the use of bioassay, alpha scans, and other radiological survey methods to monitor air, surface water and ground water, soil and sediment, equipment surfaces, and personnel. For related information, see Radiation Monitoring at Nuclear Power Plants and the related fact sheets listed on that page.

**monk's pepper :** An extract made from the fruit of the chaste tree (*Vitex agnus-castus*) found in parts of Asia and Europe. It is claimed to treat infertility and to lessen symptoms that may occur before or during a woman's menstrual period, such as headaches and irregular bleeding. Monk's pepper may affect levels of reproductive hormones in the blood. It is a type of phytomedicine. Also called chaste tree berry and *Vitex*.

**Mono Ethylene Oxide (MEG):** Mono ethylene glycol (MEG) is the main constituent of anti-freeze, although consumption of MEG in the production of PET has now overtaken this as the main end-use, and MEG is therefore classed as a polyester intermediate. MEG is produced by the reaction of ethylene oxide and water, and most modern plants are combined EO/MEG units. MEG is produced in all regions, although to an increasing extent in the Middle East.

**Mono Layer:** Film comprised of a homogeneous mixture of one or more polymers blended together in a molten state and extruded through a die assembly to form a film or sheet.

**monoacetyldiglyceride EC-18:** A synthetic version of a monoacetyldiacylglyceride naturally occurring in various seed oils, bovine udder and milk fat, antlers of sika deer, with potential antineoplastic activity. Although the exact mechanism of action through which EC-18 exerts its pharmacological effect has yet to be fully identified, upon administration, EC-18 stimulates calcium influx into T-lymphocytes and increases the production of various cytokines, including interleukin (IL) -2, IL-4, IL-12, interferon-gamma (IFN-g), and granulocyte-macrophage colony-stimulating factor (GM-CSF). This stimulates the proliferation of hematopoietic stem cells, bone marrow stromal cells and immune cells, including T- and B-lymphocytes, dendritic cells (DCs) and macrophages. Therefore, EC18 may stimulate the immune system to target cancer cells. In addition, EC-18 enhances the cytolytic activity of natural killer (NK) cells and suppresses the expression of the transmembrane protein tumor cell toll-like receptor 4 (TLR-4) on cancer cells. As activation of TLR-4 enhances immunosuppression and stimulates cancer cell growth, blocking TLR-4 expression suppresses tumor cell proliferation.

**monoamine oxidase inhibitor :** A type of drug used to treat depression. It stops the breakdown of certain chemicals in the brain that help improve a person's mood. A monoamine oxidase inhibitor is a type of antidepressant. Also called MAO inhibitor.

**monobenzene:** A monobenzyl ether of hydroquinone with topical depigmentation activity. Although the exact mechanism of action of depigmentation is unknown, the metabolites of monobenzene appear to have a cytotoxic effect on melanocytes. Furthermore, the depigmentation effect might be mediated through the inhibition of tyrosinase, which is essential in the synthesis of melanin pigments, thereby causing permanent depigmentation of the skin.

**monocarboxylate transporter 1 inhibitor AZD3965:** An orally available inhibitor of monocarboxylate transporter 1 (MCT1), with potential antineoplastic activity. Upon oral administration, MCT1 inhibitor AZD3965 binds to MCT1 and prevents the transport of lactate into and out of the cell. This leads to an accumulation of lactate, intracellular acidification, and eventually cancer cell death. MCT1, a protein overexpressed on tumor cells, is responsible for the transport of monocarboxylates across the cell

membrane and plays a key role in cell metabolism. Check for active clinical trials using this agent.

**monochromatic:** Radiation that has a single wavelength.

**Monoclinic Crystal:** A crystal that has a shape like a cube but is flattened in one dimension. Think about a flattened gift box for this one.

**Monoclinic crystal class:** A crystal class containing one two-fold rotation axis along the b axis. This class consists of 13 space groups and has no restrictions on the lengths of the axes except that one angle (b by convention) is not equal to 90°.

**monoclonal antibodies:** Antibodies produced by a cloned hybridoma cell, which therefore are identical and directed against the same epitope of the antigen.

**Monoclonal antibody:** An antibody derived from a clone—a large number of cells that are all descended from the same cell and have identical properties. Normally, antigens with a common specificity are heterogeneous because they are produced by a heterogeneous group of cells. Fusion of a single antigen-producing cell with an immortal myeloma cell facilitates the production of large amounts of homogeneous antibody protein, these antibodies are valuable analytical and preparative reagents.

**monoclonal antibody :** A type of protein made in the laboratory that can bind to substances in the body, including cancer cells. There are many kinds of monoclonal antibodies. A monoclonal antibody is made so that it binds to only one substance. Monoclonal antibodies are being used to treat some types of cancer. They can be used alone or to carry drugs, toxins, or radioactive substances directly to cancer cells.

**monoclonal antibody 105AD7 anti-idiotypic vaccine:** A cancer vaccine consisting of a humanized monoclonal antibody that mimics a tumor-associated antigen 791Tgp72 (also known as CD55). Vaccination with this agent may stimulate a host cytotoxic T-cell response against tumor cells expressing CD55, resulting in tumor cell lysis.

**monoclonal antibody 11D10 anti-idiotypic vaccine:** A vaccine consisting of a monoclonal antibody (MoAB) directed against an idiotype that mimics a human milk fat globule (HMFG) membrane epitope. Vaccination with monoclonal antibody 11D10 anti-idiotypic vaccine induces anti-anti-idiotypic antibodies (Ab3) that may react with breast cancer cell lines

expressing the HMFG membrane epitope. Check for active clinical trials using this agent.

**monoclonal antibody 14G2A:** A murine monoclonal antibody directed against the ganglioside GD2 with potential antineoplastic activity. Monoclonal antibody 14G2A binds to the ganglioside GD2 and induces antibody-dependent cell mediated cytotoxicity and complement-dependent cytotoxicity against GD2-expressing tumor cells. GD2 is overexpressed in malignant melanoma, neuroblastoma, osteosarcoma, and small cell carcinoma of the lung. Check for active clinical trials using this agent.

**monoclonal antibody 3F8:** A murine monoclonal antibody directed against the cell-surface, tumor-associated antigen ganglioside GD2. Vaccination with monoclonal antibody 3F8 may stimulate a host cytotoxic immune response against tumors that express ganglioside GD2.

**monoclonal antibody 3H1 anti-idiotypic vaccine:** A recombinant monoclonal antibody in which the heavy and light chain variable domains mimic a specific epitope of the tumor-associated protein carcinoembryonic antigen (CEA). This agent is used as a cancer vaccine against tumors that express CEA.

**monoclonal antibody 4B5 anti-idiotypic vaccine:** A humanized anti-idiotypic (anti-Id) monoclonal antibody (MoAb) that mimics the disialoganglioside GD2 with potential immunostimulating and antineoplastic activities. Upon administration, monoclonal antibody 4B5 anti-idiotypic vaccine may elicit both cellular and humoral immune responses against GD2-expressing tumor cells. GD2 is a glycosphingolipid (ceramide and oligosaccharide) that may be highly expressed by melanomas and other neuroectodermal tumors, while only minimally expressed by normal tissues.

**monoclonal antibody A27.15:** A murine IgG1 monoclonal antibody directed against the human transferrin (Tf) receptor. Monoclonal antibody A27.15 binds to the Tf receptor, blocking the binding of transferrin to the receptor and resulting in decreased tumor cell growth. Check for active clinical trials using this agent.

**monoclonal antibody A33:** A humanized monoclonal antibody directed against the human A33 antigen. Monoclonal antibody A33 recognizes the human A33 antigen, a 43 KDa transmembrane glycoprotein of the immunoglobulin superfamily, which is highly and homogeneously expressed

in 95% of colorectal cancer metastases with only restricted expression in normal colonic mucosa.

**monoclonal antibody AbGn-7:** A chimeric monoclonal antibody against a Lewis-A-like glycotope (AbGn-7 antigen) with potential immunomodulating and antineoplastic activities. Monoclonal antibody AbGn-7 targets and binds to the carbohydrate AbGn-7 antigen on the cell surface of tumor cells and may induce complement-dependent cytotoxicity (CDC) and antibody-dependent cell-mediated cytotoxicity (ADCC), thereby killing AbGn-7-epitope positive tumor cells. AbGn-7 antigen is expressed on a variety of tumor cell types, including human colorectal, pancreatic and gastric tumor cells.

**monoclonal antibody CAL:** A humanized monoclonal antibody directed against parathyroid hormone-related protein (PTH-rP). As a poly-hormone with diverse biological roles, PTH-rP is expressed by normal tissues, acting in local tissue environments in a variety of ways; it is commonly overexpressed by breast, prostate, and other cancers, acting systemically by promoting bone resorption, inhibiting calcium excretion from the kidney, inducing hypercalcemia, and possibly playing a role in the formation of bony metastases. By blocking the effects of PTH-rP on calcium metabolism, monoclonal antibody CAL may inhibit cancer-related hypercalcemia.

**monoclonal antibody CC49:** A second-generation murine monoclonal antibody based on the antibody B72.3 that is directed against tumor-associated glycoprotein 72 (TAG72). TAG72 is expressed by gastric, breast, pancreatic, colorectal, and ovarian carcinoma cells. Check for active clinical trials using this agent.

**monoclonal antibody CC49-delta CH2:** A humanized CH2 domain-deleted second-generation monoclonal antibody based on the antibody B72.3 that is directed against tumor-associated glycoprotein 72 (TAG72). TAG72 is expressed by gastric, breast, pancreatic, colorectal, and ovarian carcinoma cells. Check for active clinical trials using this agent.

**monoclonal antibody CEP-37250/KHK2804:** A humanized monoclonal antibody targeting glycolipids, with potential immunomodulating and antineoplastic activity. Upon administration, monoclonal antibody CEP-37250/KHK2804 targets and binds to a specific tumor antigen, thereby stimulating the immune system to exert an antibody-dependent cellular

cytotoxicity (ADCC) against the tumor associated antigen (TAA)-expressing cancer cells. This agent has shown to be active in both wild-type and mutant K-RAS-expressing colorectal cancer cells.

**monoclonal antibody Ch14.18 :** A drug used with granulocyte-macrophage colony-stimulating factor (GM-CSF), aldesleukin (IL-2), and 13-cis-retinoic acid to treat high-risk neuroblastoma. It is used in children whose disease has improved with other anticancer treatment. Monoclonal antibody Ch14.18 binds to a substance called GD2, which is found on some types of cancer cells. Monoclonal antibody Ch14.18 may block GD2 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called Ch14.18, dinutuximab, MOAB Ch14.18, and Unituxin.

**monoclonal antibody E2.3:** A murine IgG1 monoclonal antibody directed against the human transferrin (Tf) receptor. Monoclonal antibody E2.3 binds to the Tf receptor, blocking the binding of transferrin to the receptor and resulting in decreased tumor cell growth. Check for active clinical trials using this agent.

**monoclonal antibody GD2 anti-idiotypic vaccine:** A class of vaccines that consist of anti-idiotypic monoclonal antibodies against the tumor-associated antigen disialoganglioside GD2 with potential antineoplastic activity. Vaccination with a monoclonal antibody GD2 anti-idiotypic vaccine produces an immunoglobulin response against GD2 with subsequent destruction of GD2 positive tumor cells via antibody-dependent cellular cytotoxicity (ADCC). GD2 is overexpressed in melanoma, neuroblastoma, soft tissue sarcoma, and small cell carcinoma of the lung.

**monoclonal antibody HeFi-1:** A murine monoclonal antibody with potential antineoplastic activity. Monoclonal antibody HeFi-1 binds to CD30, a cell surface antigen found on mitogen-activated B-cells and T-cells, and Reed-Sternberg cells. Monoclonal antibody HeFi-1 has been shown to arrest tumor growth and prevent metastasis in animal models.

**monoclonal antibody Hu3S193:** A humanized monoclonal antibody directed against the Lewis Y antigen, a tumor-associated epithelial antigen, with potential antineoplastic activity. Following binding, monoclonal antibody Hu3S193 triggers an antibody-dependent cell-mediated cytotoxicity in cells expressing Lewis Y antigen.

**monoclonal antibody HuAFP31:** A humanized monoclonal antibody directed against alpha fetoprotein with potential antineoplastic activity. Upon administration, monoclonal antibody HuAFP31 (mAb HuAFP31) binds to and stimulates a cytotoxic T lymphocyte (CTL) response against tumor cells that express alpha fetoprotein.

**monoclonal antibody HuHMFG1:** A humanized monoclonal antibody directed against MUC1, a mucin glycoprotein overexpressed in breast and other carcinomas. Monoclonal antibody HuHMFG1 stimulates antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells expressing MUC1, resulting in a decrease in tumor burden.

**monoclonal antibody HuM195 :** A substance being studied in the treatment of myelodysplastic syndromes and some types of leukemia. It binds to CD33, a protein on the surface of certain normal blood stem cells and some abnormal blood cells. It causes the immune system to kill these cells. Monoclonal antibody HuM195 is a type of monoclonal antibody. Also called lintuzumab and MoAb HuM195.

**monoclonal antibody HuPAM4:** A humanized monoclonal antibody directed against the pancreatic cancer antigen MUC1 with potential antineoplastic activity. Monoclonal antibody HuPAM4 (mAb HuPAM4) binds to cells expressing MUC1 antigen; mAb HuPAM4 may be useful as a carrier for radioisotopes and other antineoplastic therapeutic agents. Check for active clinical trials using this agent.

**monoclonal antibody L6:** A murine IgG2a monoclonal antibody with potential antineoplastic activity. Monoclonal antibody L6 binds to the L6 antigen, a cell surface glycoprotein overexpressed in many carcinomas, and induces antibody-dependent cell-mediated cytotoxicity and complement-dependent cytotoxicity against L6-expressing tumor cells. This agent may be conjugated with various toxins in order to target their cytotoxic activity to tumor cells expressing the L6 antigen.

**monoclonal antibody Lym-1:** A murine IgG2a monoclonal antibody directed against the HLA-Dr10 protein, a cell surface marker present on over eighty percent of lymphoma cells. When conjugated with a radioactive isotope, Lym-1 monoclonal antibody selectively transports the cytotoxic radioisotope to HLA-Dr10-expressing tumor cells, thereby sparing healthy B-cells and normal tissues. This agent also mediates antibody-dependent

cytotoxicity thereby promoting Raji B-lymphoid cell lysis by human neutrophils. Check for active clinical trials using this agent.

**monoclonal antibody m170:** A panadenocarcinoma murine monoclonal antibody with potential antineoplastic activity. Monoclonal antibody m170 may be conjugated with a radioactive element and used in radioimmunotherapy (RIT), a procedure that uses a tumor-specific monoclonal antibody to target radiation to cancer cells.

**monoclonal antibody Me1-14 F(ab')<sub>2</sub>:** The F(ab)<sub>2</sub> fragment of Me1-14, a murine IgG2a monoclonal antibody directed against proteoglycan chondroitin sulfate-associated protein expressed by gliomas and melanomas. By binding to proteoglycan chondroitin sulfate-associated protein, monoclonal antibody Me1-14 F(ab')<sub>2</sub> conjugated to a radioisotope may localize gliomas and melanomas when used as a tracer in radioimaging applications; in radioimmunotherapeutic applications, this agent conjugated to a radioisotope may be used to deliver targeted radiotoxicity to these tumors.

**monoclonal antibody MGA271:** An Fc-domain optimized, humanized monoclonal antibody directed against cancer stem cells (CSCs), with potential immunomodulating and antineoplastic activities. After binding of monoclonal antibody MGA271 to an as of yet not elucidated target expressed on CSCs and differentiated tumor cells, this agent may induce an antibody-dependent cell-mediated cytotoxicity (ADCC) against CSCs. CSCs are tumor initiating cells that are able to self-renew and are responsible for tumor cell growth and resistance. Check for active clinical trials using this agent.

**monoclonal antibody Mik-beta-1:** A murine monoclonal antibody directed against the beta subunit of the interleukin-2 receptor (IL-2R), expressed on resting T-lymphocytes, natural killer (NK) cells, and some leukemic cell types. Monoclonal antibody Mik-beta-1 prevents the binding of IL-2 to IL-2R beta, thereby inhibiting the IL-2-mediated proliferation and activation of T-cells. Check for active clinical trials using this agent.

**monoclonal antibody R24:** An IgG murine monoclonal antibody directed against the ganglioside GD3 glycolipid, located in the cell membranes of some tumor cells. Monoclonal antibody R24 binds to GD3-positive cells, thereby initiating antibody-dependent cytotoxicity against GD3-positive cells.

**monoclonal antibody RAV12:** A chimeric monoclonal antibody directed against a primate-restricted N-linked carbohydrate epitope (glycotope) expressed on various human carcinomas with potential antineoplastic activity. Following binding, monoclonal antibody RAV12 disrupts sodium channels of tumor cells expressing this glycotope, resulting in cell and organelle swelling, loss of membrane integrity, and cell death.

**monoclonal antibody SGN-30:** A genetically-engineered, chimeric mouse-human, anti-CD30 monoclonal antibody with potential antineoplastic activity. Monoclonal antibody SGN-30 specifically binds to the receptor CD-30, a member of the tumor necrosis factor receptor superfamily, which may be overexpressed on the surfaces of Hodgkin lymphoma cells and anaplastic-large cell lymphoma cells. After binding to CD30, this agent interferes with the G1 phase of the cell cycle, thereby inducing growth arrest and apoptosis in susceptible tumor cell populations.

**monoclonal B-cell lymphocytosis :** A condition in which a higher-than-normal number of identical B cells are found in the blood. People with monoclonal B-cell lymphocytosis may develop other B-cell diseases, such as chronic lymphocytic leukemia (CLL). Also called MBL.

**monoclonal gammopathy of undetermined significance :** A benign condition in which there is a higher-than-normal level of a protein called M protein in the blood. Patients with monoclonal gammopathy of undetermined significance are at an increased risk of developing cancer. Also called MGUS.

**monoclonal protein :** An antibody found in unusually large amounts in the blood or urine of people with multiple myeloma and other types of plasma cell tumors. Also called M protein.

**monoclonal T-cell receptor anti-CD3 scFv fusion protein IMCgp100:** A fusion protein containing a modified form of human T-cell receptor (TCR) specific for the gp100 antigen and fused to an anti-CD3 single-chain antibody fragment, with potential antineoplastic activity. Upon direct intratumoral administration of IMCgp100 into the melanoma lesion, the TCR moiety of this agent targets and binds to the tumor associated antigen (TAA) gp100 presented on the melanoma tumor cell; the anti-CD3 fragment moiety binds to CD3- expressing T lymphocytes, thereby selectively cross-linking tumor cells and T-lymphocytes. This may lead to the recruitment of cytotoxic T lymphocytes (CTL) to the T lymphocyte/tumor cell aggregates

and result in CTL-mediated death of gp100-expressing melanoma cancer cells.

**Monoculture:** While the farms of antiquity grew many sorts of plant and animal on the same location, modern factory farming involves the cultivation of a single species, to the exclusion of all other forms of life. This is called monoculture.

**monocyte :** A type of immune cell that is made in the bone marrow and travels through the blood to tissues in the body where it becomes a macrophage. Macrophages surround and kill microorganisms, ingest foreign material, remove dead cells, and boost immune responses. A monocyte is a type of white blood cell and a type of phagocyte.

**monocytes:** some of the white blood cells that function in phagocytosis.

**monodentate:** A ligand that has only one atom that coordinates directly to the central atom in a complex. For example, ammonia and chloride ion are monodentate ligands of copper in the complexes  $[\text{Cu}(\text{NH}_3)_6]^{2+}$  and  $[\text{CuCl}_6]^{2-}$ .

**Monofer:** (Other name for: iron isomaltoside 1000)

**Monohydrate:** A crystal form containing one mole of water per mole of compound.

**Monolayer:** A single layer of oriented lipid molecules.

**Monomer:** A molecule that can join with other identical monomers to form a larger structure called a polymer. OR A relatively simple molecular structure, usually containing carbon and of low molecular weight, which can react to form a polymer by combination with itself or with other molecules and energy. OR A monomer is the molecular unit from which polymers are prepared. A polymer is a molecular chain formed by combining many smaller molecules. Polymers are the product of a reaction called polymerization, the process of connecting many (poly) single units (mers or mono-mers) to form long chain molecules of higher molecular weight. Polymerization reactions may be controlled to produce molecules of a specific length or molecular weight. All plastic resins or materials are polymeric in nature. OR The term that most often refers to organic molecules which form synthetic polymers, such as, for example, vinyl chloride, which is used to produce the polymer polyvinyl chloride (PVC). OR A small molecule that is linked with large numbers of other small

molecules to form a chain or a network (polymer). OR One unit of a protein or other structure. OR the smallest molecule that reacts with itself to form a polymer. OR Any small molecule that can undergo a reaction in which it is incorporated into a large molecule containing many similar units.

Common monomers are vinyl acetate, styrene, butadiene and vinyl chloride. (Yes, it is appropriate to consider hydrocarbons as polymers of methylene!) OR Substance composed of low molecular weight molecules capable of reacting with like or unlike molecules to form a polymer. OR Monomers are small, reactive molecules that react together to form very large molecules called polymers. OR A simple molecule, such as styrene, which has the ability to combine with a number of like or unlike molecules to form a polymer - polystyrene or styrene/butadiene rubber. OR A molecule or substance which can be polymerized, usually of low molar mass.

**monooxygenase:** An enzyme catalyzing the incorporation of one atom from molecular oxygen into a compound and the reduction of the other atom of oxygen to water.

**Monooxygenases, cytochrome P450:** Enzymes that use O<sub>2</sub> and incorporate one atom of oxygen into a substrate and reduce the other atom to water; important in the synthesis of steroid hormones and tyrosine, as well as the detoxification of xenobiotic compounds.

**monophosphoryl lipid A:** A modified form of lipid A, the biologically active part of Gram-negative bacterial lipopolysaccharide (LPS) endotoxin, and a Toll-like receptor 4 (TL= R4) agonist, with potential immunostimulatory activity. As a vaccine adjuvant, monophosphoryl lipid A (MPLA) stimulates both cellular and humoral responses to the vaccine antigen. Compared to LPS, MPLA exerts a similar immunostimulatory activity but with reduced toxicity. Check for active clinical trials using this agent.

**monoprotic acid:** An acid having only one dissociable proton.

**monosaccharide:** A simple sugar most commonly having 5 or 6 carbon atoms present which cannot be hydrolyzed to simpler sugars. OR A monosaccharide is one sugar molecule. They usually have six carbon, twelve hydrogen, and six oxygen atoms in one molecule with the formula (CH<sub>2</sub>O)<sub>x</sub>. They may also be in a six-carbon ring or a five carbon ring. The important idea is that it is one piece. OR A carbohydrate that cannot be decomposed into simpler carbohydrates by hydrolysis. OR A carbohydrate

consisting of a single sugar unit. OR Single aldehydes or ketones that have two or more hydroxyl groups; the simplest carbohydrates. OR sugars that are composed of single molecules.

**monosialotetrahexosylganglioside:** A glycosphingolipid containing a sialic acid residue found in neuronal cell membranes, with potential neuroprotective and neuroregenerative activities. Upon administration, monosialotetrahexosylganglioside, also called GM-1, is able to both prevent neurologic damage and induce regeneration of damaged neurons through neurotrophic repair mechanisms, enhancement of the production of neurotrophins, and augmenting neurite outgrowth. In addition, GM-1 exerts anti-excitotoxic activity, prevents necrosis, and improves neuronal recovery and function.

**monotherapy :** Therapy that uses one type of treatment, such as radiation therapy or surgery alone, to treat a certain disease or condition. In drug therapy, monotherapy refers to the use of a single drug to treat a disease or condition.

**monotremes:** the egg-laying mammals that produce milk.

**Monotropic:** Referring to a system in which various solid forms retain the rank order of their stabilities at all temperatures (in contrast to enantiotropic).

**monsoon:** seasonal wind pattern changes that cause rainy and dry seasons. OR A name for seasonal winds, first applied to the winds over the Arabian Sea that blow for six months from the northeast and for six months from the southwest. The term has been extended to similar winds in other parts of the world (i.e., the prevailing west to northwest winds of summer in Europe have been called the European monsoon). The primary cause for these seasonal winds is the much greater annual variation of temperature over large land areas compared with neighboring ocean surfaces, causing an excess of pressure over the continents in winter and a deficit in summer, but other factors, such as topography of the land, also have an effect. The monsoons are strongest in the southern and eastern sides of Asia, but also occur along the coasts of tropical regions wherever the planetary circulation is not strong enough to inhibit them. The monsoon climate can be described as a long winter-spring dry season, which includes a cold season followed by a short hot season just preceding the rains; a summer and early autumn

rainy season, which is generally very wet but may vary greatly from year to year; and a secondary warming immediately after the rainy season.

**Montanide ISA 51 VG:** An water-in-oil (w/o) emulsion with immunoadjuvant activity. Montanide ISA 51 VG appears to act by enhancing the immune system's cytotoxic T-lymphocyte (CTL) response against antigen(s) in vaccines. The surfactant mannide monooleate in Montanide ISA 51 VG contains vegetable-grade (VG) oleic acid derived from olive oil.

**Montanide ISA 720:** A proprietary adjuvant, applicable for water-in-oil (W/O; 30/70 v/v) vaccine emulsion, with potential immunoadjuvant activity. Montanide ISA 720 is made of natural metabolizable non-mineral oil and a highly refined emulsifier from the mannide mono-oleate family; it is rapidly metabolized and eliminated, and may be used in various vaccines, including cancer vaccines. Upon administration, Montanide ISA 720 forms a depot at the injection site and is therefore capable of slowly releasing the antigen(s) from the injection site. This may result in enhanced cellular and humoral immune responses to the antigen vaccine. Check for active clinical trials using this agent.

**Montanide ISA-51 :** A mixture of oil and water that is combined with a specific antigen to boost the immune response to that antigen. It is being studied in immunotherapy and as a way to increase the immune response to cancer vaccines. It is a type of immune modulator. Also called IFA and incomplete Freund's adjuvant.

**montelukast :** The active ingredient in a drug used to treat symptoms of asthma, such as trouble breathing, tight chest, wheezing, coughing, and runny nose. Montelukast blocks the action of a substance that causes airways in the lungs to narrow and causes other symptoms of asthma. It is a type of leukotriene receptor antagonist and a type of antiasthmatic agent.

**montelukast sodium:** The orally bioavailable monosodium salt of montelukast, a selective cysteinyl leukotriene receptor antagonist with anti-inflammatory and bronchodilating activities. Montelukast selectively and competitively blocks the cysteinyl leukotriene 1 (CysLT1) receptor, preventing binding of the inflammatory mediator leukotriene D4 (LTD4). Inhibition of LTD4 activity results in inhibition of leukotriene-mediated inflammatory events including: migration of eosinophils and neutrophils; adhesion of leukocytes to vascular endothelium, monocyte and neutrophil

aggregation; increased airway edema; increased capillary permeability; and bronchoconstriction. The CysLT1 receptor is found in a number of tissues including spleen, lung, placenta, small intestine, and nasal mucosa, and in a variety of cell types including monocyte/macrophages, mast cells, eosinophils, CD34-positive hemopoietic progenitor cells, neutrophils and endothelial cells.

**montelukast sodium :** A drug used to treat symptoms of asthma, such as trouble breathing, tight chest, wheezing, coughing, and runny nose.

Montelukast sodium blocks the action of a substance that causes airways in the lungs to narrow and causes other symptoms of asthma. It is a type of leukotriene receptor antagonist and a type of antiasthmatic agent. Also called Singulair.

**Monurol:** (Other name for: fosfomycin tromethamine)

**mood:** refers to the manner or attitude of the speaker which the verb intends to convey; verbs have three moods: indicative, imperative, or subjunctive.

**MOPAC:** The most popular package for semiempirical MO calculations (16).

**MOPP :** An abbreviation for a chemotherapy combination used alone or with radiation therapy to treat Hodgkin lymphoma. It includes the drugs mechlorethamine hydrochloride, vincristine sulfate (Oncovin), procarbazine hydrochloride, and prednisone. Also called MOPP regimen.

**MOPP regimen:** A chemotherapy regimen consisting of mechlorethamine, vincristine (Oncovin), procarbazine and prednisone, used alone or in combination with radiation therapy for the treatment of stage I-IV Hodgkin lymphoma. Due to the increased risk of gonadal toxicity, this regimen has been widely replaced by the ABVD regimen. or An abbreviation for a chemotherapy combination used alone or with radiation therapy to treat Hodgkin lymphoma. It includes the drugs mechlorethamine hydrochloride, vincristine sulfate (Oncovin), procarbazine hydrochloride, and prednisone. Also called MOPP.

**MOQ:** Minimum Order Quantity

**MORAb-009:** A substance being studied in the treatment of mesothelioma. MORAb-009 binds to a protein called mesothelin, which is found on some cancer cells. MORAb-009 may help the immune system kill cancer cells. It

is a type of monoclonal antibody. Also called amatuximab and anti-mesothelin monoclonal antibody MORAb-009.

**moraine:** an accumulation of till either left behind when a glacier recedes or carried on top of alpine glaciers. OR large area of deposition left behind from the advance of a glacier.

**moral :** Having to do with beliefs about what is right and wrong in terms of how people behave. Also called ethical.

**morbidity:** Any departure, subjective or objective, from a state of physiological or psychological well-being. In this sense, sickness, illness, and morbid condition are similarly defined and synonymous (Last, 1988).

**morbidity :** Refers to having a disease or a symptom of disease, or to the amount of disease within a population. Morbidity also refers to medical problems caused by a treatment.

**morbidity survey:** A method for the estimation of the prevalence and/or incidence of disease or diseases in a population. A morbidity survey is usually designed simply to ascertain the facts as to disease distribution, and not to test a hypothesis (Last, 1988).

**Mordant:** Solution or preparation applied to a surface to assist paint to adhere thereon, e.g. on galvanised iron.

**Morinda citrifolia :** A tropical shrub. An extract from the fruit is being studied as a treatment for cancer, and extracts from the fruit, leaves, or roots have been used in some cultures to treat other diseases. Also called noni.

**Morinda citrifolia fruit extract:** An extract prepared from the fruit of *Morinda citrifolia*, a plant that yields various herbal preparations. *Morinda citrifolia* fruit juice has antioxidant properties and may prevent tumorigenesis via inhibition of DNA-carcinogen adduct formation.

**morphine sulfate:** The sulfate salt of morphine, an opiate alkaloid isolated from the plant *Papaver somniferum* and produced synthetically. Morphine binds to and activates specific opiate receptors (delta, mu and kappa), each of which are involved in controlling different brain functions. In the central nervous and gastrointestinal systems, this agent has widespread effects including analgesia, anxiolysis, euphoria, sedation, respiratory depression, and gastrointestinal system smooth muscle contraction.

**morphine sulfate :** A drug used to treat moderate to severe pain. It binds to opioid receptors in the central nervous system and some other tissues.

Morphine sulfate is made from opium. It is a type of opiate and a type of analgesic agent.

**morphine sulfate sustained-release tablet:** A sustained-release tablet formulation containing the sulfate salt of the opiate alkaloid morphine with analgesic activity. Morphine binds to and activates the mu-opioid receptors in the central nervous system (CNS), thereby mimicking the effects of the endogenous opioids. Binding of morphine to opioid receptors stimulates exchange of GTP for GDP, inhibits adenylate cyclase, and decreases intracellular cAMP. This inhibits the release of various nociceptive neurotransmitters, such as substance P, gamma-aminobutyric acid (GABA), dopamine, acetylcholine, noradrenaline, vasopressin, and somatostatin. In addition, morphine closes N-type voltage-gated calcium channels and opens calcium-dependent inwardly rectifying potassium channels, which results in hyperpolarization of neuronal membranes and a reduction in neuronal excitability, and subsequently, analgesia and sedation.

**Morphology:** The external shape of a crystal; synonymous with the crystal habit. OR The science of the form and structure of organisms (plants, animals, and other forms of life).

**mortality :** Refers to the state of being mortal (destined to die). In medicine, a term also used for death rate, or the number of deaths in a certain group of people in a certain period of time. Mortality may be reported for people who have a certain disease, live in one area of the country, or who are of a certain gender, age, or ethnic group.

**mortality rate:** See death rate.

**Mortar:** A mixture of lime or cement and sand used as the jointing mixture for bricks or stone. OR It is made by mixing sand and cement with water. It sets hard and is used to hold bricks etc together.

**Mortise:** A cavity cut into a piece of wood or stone to receive a corresponding projection (called a tenon) so as to form a strong joint.

**morula:** a solid mass of cells that develops about six days after fertilization of an egg cell.

**Mosaic protein:** A protein encoded by a gene assembled by exon shuffling; the exons encode the structural units of the protein.

**mosaicism :** The occurrence of 2 or more cell lines with different genetic or chromosomal make-up, within a single individual or tissue.

**most probable number (MPN):** that number of organisms per unit volume that, in accordance with statistical theory, would be more likely than any other number to be yielded with the greatest frequency in a specific test. Expressed as density of organisms per 100 ml. Results are computed from the number of positive findings of coliform-group organisms resulting from multiple-portion decimal-dilution plantings.

**Mota and motb:** A pair of bacterial proteins that form a ring around the base of the flagellum and, in conjunction with flig, form a proton channel that drives the rotation of the flagellum.

**motesanib diphosphate:** The orally bioavailable diphosphate salt of a multiple-receptor tyrosine kinase inhibitor with potential antineoplastic activity. Motesanib selectively targets and inhibits vascular endothelial growth factor (VEGFR), platelet-derived growth factor (PDGFR), kit, and Ret receptors, thereby inhibiting angiogenesis and cellular proliferation.

**motexafin gadolinium:** A synthetic metallotexaphyrin with radiosensitizing and chemosensitizing properties. Motexafin gadolinium accumulates in tumor cells preferentially due to their increased rates of metabolism, generating reactive oxygen species (ROS) intracellularly and lowering the tumor cell apoptotic threshold to ionizing radiation and chemotherapy. Check for active clinical trials using this agent. Or A substance being studied in the treatment and diagnosis of some types of cancer. It builds up in some cancer cells, which may make them easier to kill with radiation therapy and chemotherapy. Motexafin gadolinium is also used in magnetic resonance imaging (MRI) to help find cancer cells in the body. It is a type of radiosensitizing agent, a type of chemosensitizing agent, and a type of contrast agent. Also called gadolinium texaphyrin.

**motexafin lutetium :** A substance that is being studied in the treatment of cancer using photodynamic therapy. It belongs to the family of drugs called metallotexaphyrins. Also called lutetium texaphyrin. Or A pentadentate aromatic metallotexaphyrin with photosensitizing properties. Motexafin lutetium preferentially accumulates in tumor cells due to their increased rates of metabolism and absorbs light, forming an extended high energy conformational state that produces high quantum yields of singlet oxygen, resulting in local cytotoxic effects.

**mother liquor:** The solution in recrystallization.

**motor :** In medicine, having to do with the movement of body parts.

**motor neuron:** a type of neuron that transmits impulses from the brain and spinal cord to muscles or glands.

**motor neuron disease :** A type of disease in which the nerve cells in the brain that act on muscle cells break down and stop working. This affects basic activities such as speaking, walking, breathing, and swallowing. Symptoms include muscle weakness, wasting, twitching, trouble swallowing, and slowly becoming paralyzed. Motor neuron diseases are sometimes inherited. Amyotrophic lateral sclerosis (ALS or Lou Gehrig's disease) is the most common type of motor neuron disease.

**Motrin:** (Other name for: ibuprofen)

**Motrin :** A drug used to treat fever, swelling, pain, and redness by preventing the body from making a substance that causes inflammation. It is a type of nonsteroidal anti-inflammatory drug (NSAID). Also called Advil and ibuprofen.

**Mould Cooling:** Mould cooling describes the process by which the melt temperature is reduced to the point where part can be removed from the mould.

**Mould growth on inside surfaces:** Mould flourishes in conditions of high humidity, poor ventilation and on surfaces with a high moisture content. It can be very destructive to paint coatings and needs to be eradicated before applying paint. Treat affected areas with Weathershield Multi-Surface Fungicidal Wash. Leave for 24 hours, wash down to remove residues and allow to dry thoroughly. If necessary, repeat the treatment.

**Mould Packing / Follow up pressure / Hold on phase:** Mould packing is the process of delivering an additional amount of melt to the mould, to compensate for the shrinkage after filling.

**Mould Temperature:** It refers to temperature of mould surface in contact with melt. It varies from point to point on surface if cooling design does not provide uniform heat extraction. It also fluctuates if heat is not balanced.

**Mould/algae moss on outside surfaces:** Yes, there is a very effective treatment for these types of vegetable growths, which are most likely to occur in damp conditions or on surfaces with a high moisture content.. Before treating, first repair the source of any leaks and check for blocked air bricks and defective or missing DPC. Treat affected areas with Weathershield Multi-Surface Fungicidal Wash. Leave for 24 hours, wash

down to remove residues and allow to dry thoroughly before applying coating. Isolated algae patches on a building exterior may indicate structural defects and should be investigated by a reputable builder or building surveyor.

**Moulding Cycle:** The moulding cycle is the series of steps that result in the machine producing a part. The cycle is usually described by breaking down into four separate phases. The amount of time that it takes to complete one cycle is called cycle time.

**mountain belt:** long chains of mountain ranges; typically thousands of kilometers long.

**mountain range:** a group of mountain peaks or ridges that form a discrete topographic area.

**mountain root:** a bulge of continental crust downward into the mantle beneath a mountain.

**mountain-building:** the process of building mountains through tectonic forces that deform, metamorphose, and uplift crustal rocks.

**Mounting Plate:** The part of the blow molding unit to which the mold is attached.

**mouse gp100 plasmid DNA vaccine:** A vaccine consisting of a plasmid DNA encoding the murine melanoma-associated antigen gp100. Upon administration, expressed gp100 antigen may stimulate a cytotoxic T cell HLA-A2.1-restricted immune response against tumor cells that express the gp100 antigen, resulting in tumor cell lysis.

**mouse model :** The use of special strains of mice to study a human disease or condition, and how to prevent and treat it.

**mouse prostate-specific membrane antigen plasmid DNA vaccine:** A vaccine consisting of a plasmid DNA encoding the murine prostate-specific membrane antigen (PSMA). Upon administration, expressed PSMA may stimulate a cytotoxic T cell response against tumor cells that express PSMA, resulting in tumor cell lysis. Check for active clinical trials using this agent.

**mouse renal adenocarcinoma cell-encapsulated agarose-agarose macrobeads:** An agarose matrix containing mouse renal adenocarcinoma (RENCA) cells, with potential antineoplastic activity. The agarose-agarose macrobeads consist of two spherical agarose layers; the mouse RENCA

cells are contained within the inner agarose layer. Upon placement into the abdominal cavity, the restricted mouse renal adenocarcinoma cells in the agarose macrobeads produce and release certain growth-retarding factors that inhibit the proliferation of the RENCA cells. Upon diffusion of these growth-slowing factors out of the agarose layers, these substances may inhibit cancer cell proliferation of proliferating tumors.

**mouth:** the terminus of a stream. OR the opening at the top of a bottle or jar.

**MOv-gamma chimeric receptor gene:** A recombinant engineered chimeric gene derived from the murine gene encoding the variable region of monoclonal antibody MOv18 against folate-binding protein, which is often overexpressed in human ovarian cancer cells, and the gene encoding the Fc receptor for the gamma subunit of human IgG and IgE. Peripheral blood lymphocytes expressing the MOv-gamma gene may be used in the immunotherapeutic treatment of ovarian cancer.

**Movable Platen:** The large back platen of an injection molding machine to which the back half of the mold is secured during operation. This platen is moved either by a hydraulic ram or a toggle mechanism.

**MOVABLE PLATEN:** The moving platen of an injection or compression molding machine to which half of the mold is secured during operation. This platen is moved either by a hydraulic ram or a toggle mechanism.

**Movalis:** (Other name for: meloxicam)

**Movantik:** (Other name for: naloxegol)

**Movatec:** (Other name for: meloxicam)

**Moving platen:** The platen of a molding machine that travels (opens and closes)It is connected to the clamp unit and is the mounting location for the ``b", or traveling half of the mold.

**Moviprep:** (Other name for: PEG-3350/sodium sulfate/sodium chloride/potassium chloride/sodium ascorbate/ascorbic acid-based laxative)

**moxetumomab pasudotox:** A recombinant immunotoxin consisting of the Fv portion of the anti-CD22 antibody covalently fused to a 38 KDa fragment of Pseudomonas exotoxin-A (PE38) with potential antineoplastic activity. The Fv portion of moxetumomab pasudotox binds to CD22, a cell surface receptor expressed on a variety of malignant B-cells, thereby delivering the toxin moiety PE38 directly to tumor cells. Once internalized,

PE38 induces caspase-mediated apoptosis via a mechanism involving mitochondrial damage and blocks translational elongation by binding to elongation factor 2 (EF-2). Moxetumomab Pasudotox exhibits a greater affinity for CD22 than its predecessor, anti-CD22 immunotoxin CAT-3888 (BL22 immunotoxin), and hence may be more effective against tumor cells expressing lower levels of CD22.

**moxibustion :** In traditional Chinese medicine, a type of heat therapy in which an herb is burned on or above the skin to warm and stimulate an acupuncture point or affected area.

**moxifloxacin :** A drug used to treat bacterial infections. It is a type of fluoroquinolone. Also called Avelox and moxifloxacin hydrochloride.

**moxifloxacin hydrochloride:** The hydrochloride salt of a fluoroquinolone antibacterial antibiotic. Moxifloxacin binds to and inhibits the bacterial enzymes DNA gyrase (topoisomerase II) and topoisomerase IV, resulting in inhibition of DNA replication and repair and cell death in sensitive bacterial species. or A drug used to treat bacterial infections. It is a type of fluoroquinolone. Also called Avelox and moxifloxacin.

**Mozobil:** (Other name for: plerixafor)

**Mozobil :** A drug used before autologous stem cell transplantation in patients with non-Hodgkin lymphoma or multiple myeloma. Mozobil is given together with granulocyte-colony stimulating factor (G-CSF) to help move stem cells from the bone marrow to the blood. The stem cells can then be collected, stored, and given back to the patient. Mozobil is a type of chemokine receptor antagonist. Also called AMD 3100 and plerixafor.

**MP-3549.1:** A formulation containing pegylated liposomal nanoparticles encapsulating a prodrug of the poorly water-soluble, second-generation taxane analog docetaxel, with potential antineoplastic activity. Upon intravenous administration of the liposomal docetaxel prodrug MNK-010, docetaxel is slowly released into the systemic circulation and accumulates at the tumor site due to the unique characteristics of the tumor's vasculature. In turn, docetaxel is taken up by tumor cells, and subsequently binds to and stabilizes the beta-subunit of tubulin, thereby stabilizing microtubules and inhibiting microtubule disassembly. This results in cell cycle arrest and induces cell death. Compared to the administration of docetaxel alone, this formulation is able to increase the delivery of docetaxel into tumors, thereby increasing docetaxel's efficacy while minimizing its toxicity. In

addition, this formulation solubilizes docetaxel without the use of toxic solvents, thereby permitting the administration of larger doses of docetaxel while avoiding solvent-associated toxicity.

**MP2:** Second-order Møller-Plesset perturbation theory. Standard Rayleigh-Schrödinger perturbation theory taken to second order. The least-expensive traditional method for including electron correlation. For open-shell cases with a UHF reference, MP2 is sometimes denoted "UMP2."

**MP2=fc:** Frozen-core MP2 calculation in Gaussian-style notation. (See "Frozen" and "MP2.")

**MP2=fu:** MP2=full.

**MP2=full:** MP2 calculation in which the core orbitals are active and not frozen.

**MP4:** Fourth-order MBPT. (See MP2.) At the heart of the BAC-MP4 method.

**MP470:** A substance being studied in the treatment of some types of cancer. It may block certain proteins involved in cancer cell growth and DNA repair. Blocking these proteins may make cancer cells more sensitive to anticancer drugs and radiation therapy. MP470 is a type of tyrosine kinase inhibitor. Also called amuvatinib.

**MPa:** Short for "megapascal", that is, one million pascals. A pascal is the pressure generated by a mass of approximately 100g on a square metre under the earth's gravitational field. Atmospheric pressure is about 100,000 pascal (100 kPa, or as weather forecasters like to say, 1000 hPa [hectopascal]), so 7 MPa is about 70 times atmospheric pressure. You may come across values in "psi", or "pound force per square inch": 1 MPa is about 145 psi.

**MPL gene :** A gene that makes a protein called the thrombopoietin receptor. This is a protein that helps control the number of blood cells that are made in the bone marrow, especially platelets. Mutated (changed) forms of the MPL gene may cause the body to make abnormal blood cells or too many platelets. Mutations in this gene have been found in some types of blood conditions, including essential thrombocythemia and primary myelofibrosis.

**MPNST:** A type of soft tissue sarcoma that develops in cells that form a protective sheath (covering) around peripheral nerves, which are nerves that are outside of the central nervous system (brain and spinal cord). Also called malignant peripheral nerve sheath tumor.

**Mps1 inhibitor BAY 1217389:** An orally bioavailable, selective inhibitor of the serine/threonine kinase monopolar spindle 1 (Mps1, TTK), with potential antineoplastic activity. Upon administration, the Mps1 inhibitor BAY 1217389 selectively binds to and inhibits the activity of Mps1. This inactivates the spindle assembly checkpoint (SAC), accelerates mitosis, causes chromosomal misalignment and missegregation, and mitotic checkpoint complex destabilization. This induces cell death in Mps1-overexpressing cancer cells. Mps1, a kinase expressed in proliferating normal tissues and aberrantly overexpressed in a wide range of human tumors, is activated during mitosis and is essential for proper SAC functioning and chromosome alignment.

**Mps1 kinase inhibitor BAY1161909:** An orally bioavailable, selective inhibitor of the serine/threonine monopolar spindle 1 (Mps1) kinase, with potential antineoplastic activity. Upon administration, the Mps1 kinase inhibitor BAY1161909 binds to and inhibits the activity of Mps1. This causes inactivation of the spindle assembly checkpoint (SAC), accelerated mitosis, chromosomal misalignment, chromosomal missegregation, mitotic checkpoint complex destabilization, and increased aneuploidy. This leads to the induction of cell death in cancer cells overexpressing Mps1. Mps1, a kinase expressed in proliferating normal tissues and aberrantly overexpressed in a wide range of human tumors, is activated during mitosis and is essential for SAC functioning and controls chromosome alignment.

**MR:** A measure of how fast cancer cells are dividing and growing. To find the MR, the number of cells dividing in a certain amount of cancer tissue is counted. MR is used to help find the stage of melanoma (a type of skin cancer) and other types of cancer. Higher MRs are linked with lower survival rates. Also called mitotic rate.

**MRA:** A procedure that uses radio waves and a powerful magnet linked to a computer to create detailed pictures of the blood vessels and blood flow inside the body. A dye may be injected into a vein to make the blood vessels and blood flow easier to see. MRA may be used to check for aneurysms (a bulge in the blood vessel wall), blockages in the arteries,

blood clots, and other blood vessel problems. Also called magnetic resonance angiography.

**MRCI:** Multi-reference configuration interaction. CI using more than one reference determinant, instead of the usual single Hartree-Fock reference. Among multi-reference theories, MR-CISD (singles and doubles CI) is popular and high-level (but not dissociation consistent).

**MRI:** A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. MRI makes better images of organs and soft tissue than other scanning techniques, such as computed tomography (CT) or x-ray. MRI is especially useful for imaging the brain, the spine, the soft tissue of joints, and the inside of bones. Also called magnetic resonance imaging, NMRI, and nuclear magnetic resonance imaging.

**mRNA:** messenger RNA; the RNA molecules that receive the genetic code in the DNA and carry the code into the cytoplasm where protein synthesis takes place. OR See messenger RNA. OR A type of RNA found in cells. mRNA molecules carry the genetic information needed to make proteins. They carry the information from the DNA in the nucleus of the cell to the cytoplasm where the proteins are made. Also called messenger RNA.

**mRNA-derived lung cancer vaccine CV9202:** A non-small cell lung cancer (NSCLC) vaccine containing six modified mRNAs, which encode six different NSCLC associated antigens, with potential antitumor and immunomodulatory activities. Upon intradermal administration, mRNA-derived lung cancer vaccine CV9202 may stimulate the immune system to mount both humoral and cellular responses against NSCLC cells. The six tumor-associated antigens (TAAs) encoded by these mRNAs are frequently expressed by NSCLC cells and are minimally expressed or absent in normal, healthy cells.

**mRNA-derived prostate cancer vaccine CV9103:** A prostate cancer vaccine containing mRNAs encoding prostate specific antigen (PSA), prostate specific membrane antigen (PSMA), prostate stem cell antigen (PSCA) and six-transmembrane epithelial antigen of the prostate (STEAP), with potential antitumor activity. Upon administration, mRNA-derived prostate cancer vaccine CV9103 may stimulate the immune system to

mount a cytotoxic T lymphocyte response (CTL) against PSA-, PSMA-, PSCA- and STEAP-expressing prostate tumor cells. The mRNA used in this vaccine is modified and formulated to have enhanced translational potency and adjuvant activities. PSA, PSMA, PSCA and STEAP may be upregulated in prostate cancer cells; their expression in prostate cancer has been correlated with disease progression. Check for active clinical trials using this agent.

**mRNA-derived prostate cancer vaccine CV9104:** A prostate cancer vaccine containing six messenger RNAs (mRNAs) encoding for antigens upregulated in prostate cancer, including mRNAs for prostate specific antigen (PSA), prostate specific membrane antigen (PSMA), prostatic acid phosphatase (PAP), and mucin 1 (MUC1), with potential antineoplastic and immunomodulating activities. Upon intradermal administration of mRNA-derived prostate cancer vaccine CV9104, this agent enters cells, the mRNAs are translated into the respective prostate specific antigens and may cause the immune system to mount a cytotoxic T lymphocyte response (CTL) against PSA-, PSMA-, PAP- and MUC1-expressing prostate tumor cells. The mRNAs used in this vaccine are modified to have enhanced translational potency and adjuvant activities. PSA, PSMA, PAP and MUC1 are frequently upregulated in prostate cancer cells; their expression in prostate cancer has been correlated with disease progression.

**MRSI:** A noninvasive imaging method that provides information about cellular activity (metabolic information). It is used along with magnetic resonance imaging (MRI) which provides information about the shape and size of the tumor (spatial information). Also called <sup>1</sup>H-nuclear magnetic resonance spectroscopic imaging, magnetic resonance spectroscopic imaging, and proton magnetic resonance spectroscopic imaging.

**MS 209:** A substance that is being studied for its ability to make cancer cells respond better to chemotherapy drugs to which they have become resistant. It is a type of quinolone antibiotic.

**MS Contin:** (Other name for: morphine sulfate)

**MS-275:** A substance that is being studied in the treatment of cancers of the blood. It belongs to the family of drugs called histone deacetylase inhibitors.

**MSDS:** Material safety data sheet

**MSDS:** Short for Material Safety Data Sheet. OR Safety information sheet for a particular substance that lists physical properties, hazards, cleanup and disposal procedures, fire and explosion data, and protective equipment required.

**MSG:** MSG is monosodium glutamate, used as a flavor enhancer in many foods.

**MSI:** A characteristic of cells that contain an abnormality in DNA mismatch repair (see microsatellite). For example, the presence of MSI in colorectal tumor tissue may be used as a marker for germline mutations in one of the DNA mismatch repair genes associated with HNPCC. MSI can also occur sporadically, and in these cases is related to gene hypermethylation. This is an issue in the differential diagnosis of HNPCC. Also called microsatellite instability. or A change that occurs in the DNA of certain cells (such as tumor cells) in which the number of repeats of microsatellites (short, repeated sequences of DNA) is different than the number of repeats that was in the DNA when it was inherited. The cause of MSI may be a defect in the ability to repair mistakes made when DNA is copied in the cell. Also called microsatellite instability.

**MSir:** (Other name for: morphine sulfate)

**MTD:** The highest dose of a drug or treatment that does not cause unacceptable side effects. The MTD is determined in clinical trials by testing increasing doses on different groups of people until the highest dose with acceptable side effects is found. Also called maximum tolerated dose.

**MTF-1 inhibitor APTO-253 HCl:** The hydrochloride salt of a small molecule inhibitor of human metal-regulatory transcription factor 1 (MTF-1) with potential antitumor activity. MTF-1 inhibitor APTO-253 inhibits MTF-1 activity and thereby induces the expression of MTF-1 dependent tumor suppressor factor Kruppel like factor 4 (KLF4). This subsequently leads to the downregulation of cyclin D1, blocking cell cycle progression and proliferation. This agent also causes decreased expression of genes involved in tumor hypoxia and angiogenesis.

**mTOR:** A protein that helps control several cell functions, including cell division and survival, and binds to rapamycin and other drugs. mTOR may be more active in some types of cancer cells than it is in normal cells. Blocking mTOR may cause the cancer cells to die. It is a type of

serine/threonine protein kinase. Also called mammalian target of rapamycin and mechanistic target of rapamycin.

**mTOR inhibitor** : A substance that blocks a protein called mTOR, which helps control cell division. Blocking mTOR's action may keep cancer cells from growing and prevent the growth of new blood vessels that tumors need to grow. Some mTOR inhibitors are used to treat cancer.

**mTOR kinase inhibitor AZD8055**: An inhibitor of the mammalian target of rapamycin (mTOR) with potential antineoplastic activity. mTOR kinase inhibitor AZD8055 inhibits the serine/threonine kinase activity of mTOR, resulting in decreased expression of mRNAs necessary for cell cycle progression, which may induce cell cycle arrest and tumor cell apoptosis. mTOR phosphorylates transcription factors, such as S6K1 and 4E-BP1, which stimulate protein synthesis and regulate cell growth, proliferation, motility, and survival. Check for active clinical trials using this agent.

**mTOR kinase inhibitor CC-223**: An orally available inhibitor of the mammalian target of rapamycin (mTOR) with potential antineoplastic activity. mTOR kinase inhibitor CC-223 inhibits the activity of mTOR, which may result in the induction of tumor cell apoptosis and a decrease in tumor cell proliferation. mTOR, a serine/threonine kinase that is upregulated in a variety of tumors, plays an important role downstream in the PI3K/AKT/mTOR signaling pathway, which is frequently dysregulated in human cancers.

**mTOR kinase inhibitor OSI-027**: An orally bioavailable mammalian target of rapamycin (mTOR) kinase inhibitor with potential antineoplastic activity. mTOR kinase inhibitor OSI-027 binds to and inhibits both the raptor-mTOR (TOR complex 1 or TORC1) and the rictor-mTOR (TOR complex 2 or TORC2) complexes of mTOR, which may result in tumor cell apoptosis and a decrease in tumor cell proliferation. mTOR is a serine/threonine kinase that is upregulated in some tumors and plays an important role downstream in the PI3K/Akt/mTOR signaling pathway.

**mTOR1/2 kinase inhibitor ME-344**: An active metabolite of NV-128, a novel flavonoid small molecule inhibitor of the mammalian Target of Rapamycin (mTOR), with potential antineoplastic activity. Upon administration, mTOR1/2 Kinase inhibitor ME-344 downregulates the PI3K/AKT/mTOR pathway and results in chromatin condensation in the absence of caspase activation. Consequently, this agent induces caspase-

independent cell death in tumor cells with a de-regulated PI3K/AKT/mTOR pathway or chemotherapeutic resistant cells.

**mTORC1/2 kinase inhibitor BI 860585:** An orally bioavailable inhibitor of raptor-mammalian target of rapamycin (mTOR) complex 1 (mTOR complex 1; mTORC1) and rictor-mTOR complex 2 (mTOR complex 2; mTORC2), with potential antineoplastic activity. Upon oral administration, mTORC1/2 kinase inhibitor BI 860585 binds to the kinase domain of mTOR and inhibits both mTORC1 and mTORC2, in an ATP-competitive manner. This inhibits mTOR-mediated signaling and leads to both an induction of apoptosis and a decrease in the proliferation of mTORC1/2-expressing tumor cells. mTOR is a serine/threonine kinase that is upregulated in certain tumor cell types. It plays an important role in the PI3K/Akt/mTOR signaling pathway, which is often deregulated in cancer cells and promotes cell growth, survival, and resistance to chemotherapy and radiotherapy.

**mTORC1/mTORC2/DHFR inhibitor ABTL0812:** An orally bioavailable, lipid analogue and inhibitor of raptor-mammalian target of rapamycin (mTOR) (mTOR complex 1; mTORC1), rictor-mTOR (mTOR complex 2; mTORC2) and dihydrofolate reductase (DHFR) with potential antineoplastic activity. Upon oral administration, mTORC1/mTORC2/DHFR inhibitor ABTL0812 binds to and inhibits both mTORC1 and mTORC2, which may result in apoptosis and a decrease in proliferation in mTORC1/2-expressing tumor cells. mTOR is a serine/threonine kinase that is upregulated in some tumors; it plays an important role in the PI3K/Akt/mTOR signaling pathway which is often deregulated in cancer cells. In addition, ABTL0812 inhibits DHFR, an enzyme that reduces dihydrofolic acid to tetrahydrofolic acid, thereby blocking tetrahydrofolate synthesis, and resulting in both the depletion of nucleotide precursors and the inhibition of DNA, RNA and protein synthesis. This leads to autophagy-induced cell death and further inhibition of cell proliferation.

**MTX:** A drug used to treat some types of cancer, rheumatoid arthritis, and severe skin conditions, such as psoriasis. MTX stops cells from making DNA and may kill cancer cells. It is a type of antimetabolite. Also called amethopterin, methotrexate, and Rheumatrex.

**MUC-1:** A protein found on certain epithelial cells, which line the inside and outside surfaces of the body. It may be found in higher than normal amounts in patients with some types of cancer, including breast, ovarian, lung, and prostate cancers, or in other conditions. Measuring the amount of MUC-1 in the blood may help to find out how well cancer treatment is working or if cancer has come back. MUC-1 is a type of tumor marker.

**MUC1 antigen:** MUC-1 antigen is a mammary-type apomucin, a high molecular weight transmembrane glycoprotein, of which the extracellular domain is formed by a repeating 20 amino acid sequence (in tandem) with a high content of serine and threonine on which are O-linked carbohydrate chains. MUC-1 synthesis and secretion are features of glandular epithelial tissues; MUC-1 is overexpressed in lactating breast and in breast, ovary, lung, and prostate malignancies.

**MUC1 peptide vaccine:** A cancer vaccine comprised of a synthetic peptide derived from the mucin 1 (MUC1) antigen with potential antineoplastic activity. Upon administration, MUC1 peptide vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells positive for the MUC1 antigen, resulting in decreased tumor growth. Overexpressed on many tumor cells, MUC1 antigen, a mammary-type apomucin, is a high-molecular-weight transmembrane glycoprotein.

**MUC1 peptide-poly-ICLC adjuvant vaccine:** A vaccine preparation containing mucus 1 (MUC1) peptide and the adjuvant poly-ICLC with potential immunostimulatory and antineoplastic activities. Upon administration, MUC1 peptide-poly-ICLC adjuvant vaccine may induce the host immune system to mount a cytotoxic T cell response against MUC1-expressing tumor cells. MUC1, a tumor associated antigen normally present on the lining of the human colon, may be overexpressed and/or mutated in a variety of cancer cell types. The adjuvant poly-ICLC, a ligand for toll-like receptor-3, induces the release of cytokines which may help boost the immune response against MUC1.

**MUC1-KLH conjugate vaccine:** A peptide vaccine, containing human tumor-associated epithelial mucin (MUC1) conjugated with keyhole limpet hemocyanin (KLH), with potential antineoplastic activity. Vaccination with MUC1-KLH conjugate vaccine may stimulate humoral and cytotoxic T-lymphocyte (CTL) responses against tumor cells expressing the MUC1

antigen. In this vaccine, MUC1 antigen is conjugated with KLH, an immunostimulant and a hapten carrier, to enhance immune recognition. MUC1 antigen, a membrane-bound glycoprotein expressed by most glandular and ductal epithelial cells, is overexpressed in an aberrant or deglycosylated form in various cancers such as those of the breast, prostate, and ovary.

**MUC1-KLH vaccine/QS21:** A peptide vaccine containing the human tumor-associated antigen epithelial mucin (MUC1 antigen) conjugated with keyhole limpet hemocyanin (KLH) and combined with the nonspecific immunoadjuvant QS21 with potential antineoplastic activity. MUC1 antigen is linked with KLH, an immunostimulant and a hapten carrier, in order to enhance immune recognition; the co-administration of saponin-derived QS21 potentially amplifies the total immune response to the MUC1 antigen. Administration of MUC1-KLH vaccine/QS21 may result in both the production of antitumor antibodies and the stimulation of a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing the MUC1 antigen. MUC1 antigen, a membrane-bound glycoprotein expressed by most glandular and ductal epithelial cells, is overexpressed as an aberrant or deglycosylated form in various cancers such as breast, prostate and ovarian cancers.

**MUC1-targeted peptide GO-2-03-2C:** An optimized small peptide drug candidate targeting epithelial mucin (MUC1) with antineoplastic activity. MUC1-targeted peptide GO-203-2C interacts with oncoprotein MUC1 C-terminal subunit on the cell surface, thereby impeding cell-cell interactions, signaling, and metastasis. MUC1 antigen, a membrane bound glycoprotein expressed by most glandular and ductal epithelial cells, is over-expressed in many diverse human carcinomas including those of the breast, prostate, lung, colon, pancreas, and ovary, and has been associated with poor prognosis.

**MUC16-targeted antibody-drug conjugate DMUC5754A:** An antibody drug conjugate (ADC) consisting of a humanized IgG1 monoclonal antibody targeting the MUC16 protein (CA-125) conjugated to, via a cleavable linker, the antimicrotubulin agent monomethyl auristatin E (MMAE), with potential antineoplastic activity. The monoclonal antibody moiety of DMUC5754A selectively binds to MUC16. After internalization of the drug conjugate and proteolytic cleavage of the linker, MMAE binds

to tubulin and inhibits its polymerization, which results in G2/M-phase growth arrest and tumor cell apoptosis. MUC16, a transmembrane protein, is overexpressed on the cell surface of more than 80 percent of ovarian cancer cells but not on healthy cells. Check for active clinical trials using this agent.

**mucin/peptide** : A protein/sugar compound made by some cancer cells.

**mucinous** : Containing or resembling mucin, the main compound in mucus.

**mucinous carcinoma** : A type of cancer that begins in cells that line certain internal organs and produce mucin (the main component of mucus).

**mucoadhesive hydrogel gargle**: An oral rinse composed of a viscous, mucoadhesive hydrogel, with potential protective and antimucositis activities. Upon gargling with the oral viscous mucoadhesive hydrogel formulation in the oral cavity, the hydrogel forms a protective barrier over the oral mucosa, which prevents inflammation of the mucosal membranes and may decrease chemotherapy- and/or radiation-induced oral mucositis. Check for active clinical trials using this agent.

**mucoadhesive oral wound rinse**: A viscous, oral hydrogel rinse intended for the management of oral mucositis/stomatitis. Mucoadhesive oral wound rinse consists of purified water, glycerin, benzyl alcohol, sodium saccharin, carbomer homopolymer A, potassium hydroxide, citric acid, polysorbate 60 and phosphoric acid. Upon gargling and rinsing with this solution, it forms a soothing protective hydrogel coating over the oral mucosa, thereby potentially preventing or reducing chemotherapy-induced mucositis.

**mucoadhesive paclitaxel formulation**: An orally available, mucoadhesive lipid preparation consisting of paclitaxel, a compound extracted from the Pacific yew tree *Taxus brevifolia*, in a formulation that is comprised of a mixture of monoolein, tricarylin, and Tween 80, with potential antineoplastic activity. Upon oral administration, DHP107 forms droplets and micelles in the intestine; these adhere to mucoepithelial cells in the gastrointestinal tract and are absorbed through lipid-based uptake mechanisms. Upon absorption, paclitaxel binds to and stabilizes tubulin molecules, which results in the inhibition of both microtubule depolymerization and cell division. This agent also induces apoptosis by both binding to and blocking the function of the apoptosis inhibitor protein B-cell Leukemia 2 (Bcl-2). The mucoadhesive paclitaxel formulation does

not contain P-glycoprotein inhibitors, the solvent cremophor or any other toxic solvent.

**Mucomyst:** (Other name for: acetylcysteine)

**mucopolysaccharide:** An older name for a glycosaminoglycan.

**mucosa :** The moist, inner lining of some organs and body cavities (such as the nose, mouth, lungs, and stomach). Glands in the mucosa make mucus (a thick, slippery fluid). Also called mucous membrane.

**mucosa-associated lymphoid tissue lymphoma :** A type of cancer that arises in cells in mucosal tissue that are involved in antibody production. Also called MALT lymphoma.

**mucositis :** A complication of some cancer therapies in which the lining of the digestive system becomes inflamed. Often seen as sores in the mouth.

**mucous membrane :** The moist, inner lining of some organs and body cavities (such as the nose, mouth, lungs, and stomach). Glands in the mucous membrane make mucus (a thick, slippery fluid). Also called mucosa.

**mucus :** A thick, slippery fluid made by the membranes that line certain organs of the body, including the nose, mouth, throat, and vagina.

**mucus colitis :** A disorder of the intestines commonly marked by abdominal pain, bloating, and changes in a person's bowel habits. This may include diarrhea or constipation, or both, with one occurring after the other. Also called IBS, irritable bowel syndrome, irritable colon, and spastic colon.

**Mud cracking:** It has most likely been caused by applying a thick, heavy coat of un-thinned paint to a textured or embossed surface. 'Mud cracking' can also be caused when the air temperature drops rapidly after applying a water-based product, or when over coating an emulsion without leaving sufficient drying time. The solution? Applying one or two thin coats will often successfully fill the cracks.

**mud flow:** the movement of a liquidy mass of soil, rock debris, and water down a well-defined channel.

**MUD Set:** MUD stands for Master Unit Die. A MUD set is a purchased universal injection mold base which reduces injection mold fabrication cost. Great for short runs, quick overturn and repair.

**mudpot:** a kind of hot spring that produces boiling mud and releases sulfurous gases.

**Mudstone** : A sedimentary rock made from small particles of mud.

**MuGard:** (Other name for: mucoadhesive oral wound rinse)

**muJ591:** A type of monoclonal antibody used in cancer detection or therapy. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells.

**Mullerian tumor** : A rare cancer of the uterus, ovary, or fallopian tubes.

**Mulliken population:** A procedure for assigning net atomic charges within a molecule. It includes an arbitrary choice involving overlap populations, and more seriously is very sensitive (values varying by more than 100%) to the choice of basis set. Still used mostly for convenience, since it has no cost and is included in all ab initio program packages. Superseded by NPA and AIM methods of population analysis.

**Mullion:** The upright frame member or division between the lights of a window or openings in a screen.

**multi-AGC kinase inhibitor AT13148:** An orally available, small molecule inhibitor of AGC group kinases, with potential antineoplastic activity. AT13148 inhibits, in an ATP-competitive manner, the enzymatic activity of two AGC kinases, protein kinase B (PKB or AKT) and p70S6K which play key roles in the PI3K/PKB/mTOR signaling pathway. Blockade of this pathway leads to an inhibition of cell growth and the induction of apoptosis in susceptible tumor cells. PI3K/PKB/mTOR pathway is dysregulated in greater than 50% of tumors, and is often correlated with resistance and increased tumor survival. AGC group kinases are serine/threonine kinases that are regulated by secondary messengers such as cyclic AMP and lipids.

**Multi-Cavity Mold:** A mold having two or more impressions for forming finished items in one machine cycle. OR A mold with multiple parts—allowing for more complex items to be made. OR A mold where more than one cavity is cut into the mold to allow for multiple parts to be formed in one cycle. Typically, if a mold is called “multi-cavity,” the cavities are all the same part number. See also “family mold.”

**multi-epitope anti-folate receptor peptide vaccine TPIV 200:** A peptide vaccine containing five immunogenic peptide epitopes of the human folate

receptor 1 (FOLR1; FR-alpha), with potential immunomodulating and antineoplastic activities. Upon intradermal administration, multi-epitope anti-folate receptor peptide vaccine TPIV 200 may induce a cytotoxic T-lymphocyte (CTL) response against FR-alpha-overexpressing tumor cells. FR-alpha is a high-affinity folate-binding protein and a member of the folate receptor family; this receptor is overexpressed in various cancer cell types. Check for active clinical trials using this agent.

**multi-epitope folate receptor alpha peptide vaccine:** A peptide vaccine containing five immunogenic peptide epitopes of the human folate receptor alpha (FR alpha or FOLR1), including FR30, FR56, FR76, FR113, and FR238, with potential immunomodulating and antineoplastic activity. Upon administration, the multi-epitope FR alpha peptide vaccine may induce a cytotoxic T-lymphocyte (CTL) response against FR alpha-overexpressing tumor cells. FR alpha is a high-affinity folate-binding protein and a member of the folate receptor family; this receptor is overexpressed in a majority of ovarian cancers and in about 50% of breast cancers.

**multi-epitope melanoma peptide vaccine:** A peptide cancer vaccine consisting of a combination of peptides derived from several melanoma epitopes. Vaccination with multi-epitope melanoma peptide vaccine stimulates the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing the corresponding antigens, resulting in tumor cell lysis. This vaccine may stimulate a broader CTL response compared to single-antigen vaccines.

**multi-glioblastoma-peptide-targeting autologous dendritic cell vaccine ICT-107:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with six synthetic glioblastoma (GBM) peptides: absent in melanoma 2 (AIM-2), melanoma-associated antigen 1 (MAGE-1), tyrosinase-related protein 2 (TRP-2), glycoprotein 100 (gp100), epidermal growth factor receptor 2 (HER-2), interleukin-13 receptor subunit alpha-2 (IL-13Ra2), with potential immunostimulatory and antineoplastic activities. Mononuclear cells obtained via leukapheresis are differentiated into DCs, and pulsed with the GBM-associated peptides. Upon administration, multi-glioblastoma-peptide-targeting autologous DC vaccine ICT-107 exposes the immune system to GBM-associated antigens, which activates a specific cytotoxic T-lymphocyte (CTL) response against GBM cells. This leads to GBM cell lysis. The six peptides are derived from tumor associated

antigens (TAA) expressed on GBM cells and cancer stem cells (CSCs). GBM stem-like cells contain a specific range of antigens that are essential for the neoplastic growth and survival of GBM cells.

**Multi-layer bottle:** a bottle that is co-extruded with two or more layers to contain oxygen sensitive foods or industrial chemicals. OR Containers composed of layers of specially selected plastics which are coextruded so that the unique characteristics of each material are retained. The objective is to improve the barrier qualities of the container, resulting in a longer shelf life.

**Multi-Modal Transportation:** The utilization of several different transportation methods within a company's supply chain (e.g., boat, rail, etc.) to maximize both cost efficiency and environmental sustainability.

**multi-peptide CMV-Modified Vaccinia Ankara vaccine:** A vaccine consisting of an inactivated, Modified Vaccinia Ankara (MVA) viral vector encoding three herpes virus cytomegalovirus (CMV) tumor-associated antigens (TAAs), including UL83 (pp65), UL123 (IE1) and UL122 (IE2), with potential immunostimulating activity. The viral peptides expressed after administration of the multi-peptide CMV-MVA vaccine, may stimulate the immune system to mount both cytotoxic T-lymphocyte (CTL) and helper T-cell responses against CMV-infected cells. This results in cell lysis and prevents viral replication and the development of CMV disease. This vaccine also provides active immunization and protective immunity against CMV infection in CMV-negative patients. CMV infection can cause serious complications in patients receiving either allogeneic hematopoietic cell transplants (HCT) or solid organ transplants.

**Multi-Shot Molding:** The injection of two-or-three materials, in sequence, into a single mold during a single molding cycle. OR A process where two or more plastic substances are injected into the mold to form a part. Toothbrushes are often manufactured using this technique. OR The injection of two-or-three materials, in sequence, into a single mold during a single molding cycle. The injection molding machine is equipped with two-or-three plasticators. (See also co-injection)

**Multi-Strand Weave :** A fabric consisting of alternating right and left hand double spirals (side by side as single units) joined by straight connecting rods.

**multicarotenoid supplement MCS-8:** A supplement containing multiple, as of yet undisclosed, carotenoids, with potential chemopreventive activity. Upon oral administration of the multicarotenoid supplement MCS-8, the carotenoids may be able to exert their chemopreventive activity through multiple mechanisms of action.

**multicenter study :** A clinical trial that is carried out at more than one medical institution.

**multicentric breast cancer :** Breast cancer in which there is more than one tumor, all of which have formed separately from one another. The tumors are likely to be in different quadrants (sections) of the breast. Multicentric breast cancers are rare.

**Multicomponent analysis:** analysis using several sensors connected directly to a sophisticated computer interface and software to monitor, process, and display the output from different sensors simultaneously. For example it can include simultaneous measurements of several different ions and/or pH, redox potential (ORP), dissolved oxygen and temperature.

**Multidirectional flow :** flow direction changes during filling resulting in orientation in different directions which can cause flow marks, stresses and warping.

**multidisciplinary :** In medicine, a term used to describe a treatment planning approach or team that includes a number of doctors and other health care professionals who are experts in different specialties (disciplines). In cancer treatment, the primary disciplines are medical oncology (treatment with drugs), surgical oncology (treatment with surgery), and radiation oncology (treatment with radiation).

**multidisciplinary opinion :** A treatment planning approach in which a number of doctors who are experts in different specialties (disciplines) review and discuss the medical condition and treatment options of a patient. In cancer treatment, a multidisciplinary opinion may include that of a medical oncologist (who provides cancer treatment with drugs), a surgical oncologist (who provides cancer treatment with surgery), and a radiation oncologist (who provides cancer treatment with radiation). Also called tumor board review.

**Multidrug resistance:** Adaptation of tumor cells to anticancer drugs in ways that make the drugs less effective. OR A phenomenon observed in cancer cells in which the development of resistance to one drug renders the

cells resistant to a range of other drugs; due to the action of an ATP-dependent pump called the multidrug-resistance protein (MDR), which contains an ABC domain.

**multidrug resistance inhibition :** Treatment used to make cancer cells less resistant to anticancer drugs.

**Multienzyme complex:** A polypeptide chain that contains domains for two or more enzymatic activities.

**multienzyme system:** A group of related enzymes participating in a given metabolic pathway.

**Multiferon:** (Other name for: multisubtype natural human leukocyte interferon alpha)

**multifocal breast cancer :** Breast cancer in which there is more than one tumor, all of which have arisen from one original tumor. The tumors are likely to be in the same quadrant (section) of the breast.

**Multifunctional enzymes:** Functionally related enzymes that are covalently linked in some fashion.

**multifunctional/multitargeted anticancer agent OMN54:** An orally available, multivalent herbal formulation containing a novel mixture of whole extracts from three commonly used Chinese medicinal herbs *Ganoderma lucidum* (lingzhi mushroom), *Salvia miltiorrhiza* (Chinese sage, or danshen) and *Scutellaria barbata* (ban zhi lian), with potential immunomodulating, antiangiogenic, anti-inflammatory, antiproliferative and antiviral activities. Although the exact mechanism of action remains to be fully elucidated due to the complexity of the multiple phytochemicals, multifunctional/multitargeted anticancer agent OMN54 appears to work in an additive and synergistic manner by acting on a variety of signaling pathways and on multiple targets, such as vascular endothelial growth factor, nuclear factor kappa B, interleukin-1beta, fibroblast growth factor, and epidermal growth factor.

**multigeneration study:** Toxicity test in which at least 3 generations of the test organism are exposed to the substance being assessed. Exposure is usually continuous.

**MultiHance:** (Other name for: gadobenate dimeglumine)

**MultiHance:** (Other name for: gadopentetate dimeglumine)

**MultiHance :** A drug used in MRI to help make clear pictures of blood vessels in the brain, spine, and nearby tissues. It is also being studied as a way to find abnormal areas in the liver and other organs and to help diagnose cancer. MultiHance is a type of contrast agent. Also called gadobenate dimeglumine.

**multikinase inhibitor 4SC-203:** A multikinase inhibitor with potential antineoplastic activity. Multikinase inhibitor 4SC-203 selectively inhibits FMS-related tyrosine kinase 3 (FLT3/STK1), FLT3 mutated forms, and vascular endothelial growth factor receptors (VEGFRs). This may result in the inhibition of angiogenesis and cell proliferation in tumor cells in which these kinases are upregulated. FLT3 (FLK2), a class III tyrosine kinase receptor, is overexpressed or mutated in most B lineage and acute myeloid leukemias (AML). VEGFRs, tyrosine kinase receptors, are overexpressed in a variety of tumor cell types and play key roles in angiogenesis. Check for active clinical trials using this agent.

**multikinase inhibitor AT9283:** A small-molecule inhibitor of several kinases with potential antineoplastic activity. Multikinase inhibitor AT9283 binds to and inhibits Aurora kinases A and B, JAK2 (Janus kinase 2) and the kinase BCR-ABL, which may result in the inhibition of cellular division and proliferation and the induction of apoptosis in tumor cells that overexpress these kinases. Aurora kinases are serine-threonine kinases that play essential roles in mitotic checkpoint control during mitosis; JAK2 is a kinase that transduces signals from the single chain and IL-3 cytokine receptor families, and from the IFN-gamma receptors; BCR-ABL is a fusion protein with tyrosine kinase activity that is commonly found in CML.

**multikinase inhibitor SAR103168:** A multikinase inhibitor with potential antineoplastic activity. Upon intravenous infusion, multikinase inhibitor SAR103168 may, through the inhibition of multiple kinases, inhibit the phosphorylation and activation of signal transducer and activator of transcription 5 (STAT5). STAT5, a protein often upregulated in cancer cells, plays a key role in signal transduction pathways and the suppression of apoptosis. Check for active clinical trials using this agent.

**Multikine:** (Other name for: recombinant leukocyte interleukin)

**multimodality therapy :** Therapy that combines more than one method of treatment. Also called combination therapy and multimodality treatment.

**multimodality treatment :** Therapy that combines more than one method of treatment. Also called combination therapy and multimodality therapy.

**multi-peptide vaccine S-588210:** A cancer vaccine composed of a combination of the injectable formulations S-488210, which contains the three HLA-A\*02:01-restricted peptides up-regulated lung cancer 10 (lymphocyte antigen 6K; LY6K; URLC10), cell division cycle-associated protein 1 (kinetochore protein Nuf2; NUF2; CDCA1) and insulin-like growth factor 2 mRNA-binding protein 3 (IGF2BP3; KOC1) and S-488211, which contains the two HLA-A\*02:01-restricted peptides DEP domain-containing protein 1A (DEPDC1) and M-phase phosphoprotein 1 (kinesin-like protein KIF20B; MPHOSPH1), with potential immunostimulatory and antitumor activities. Upon administration, multi-peptide vaccine S-588210 may stimulate a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing KOC1, CDCA1, URLC10, DEPDC1 or MPHOSPH1 peptides, resulting in tumor cell lysis and decreased tumor growth.

**multiple (or multiphasic) screening:** This procedure has evolved by combining single screening tests, and is the logical corollary of mass screening. Where much time and effort has been spent by a population in attending for a single test (e.g., mass radiography), it is natural to consider the economy of offering other tests at the same time. Multiple (or multiphasic) screening implies the administration of a number of tests, in combination, to large groups of people (Wilson & Jungner, 1968).

**multiple alleles:** a condition in which more than two alleles exist for a characteristic; one example is A, B, AB, and O blood types. OR a double or triple bond; multiple bonds involve the atomic p orbitals in side-to-side overlap, preventing rotation. OR Sharing of more than one electron pair between bonded atoms. A double bond consists of two shared pairs of electrons; a triple bond consists of three shared pairs.

**Multiple Cavity Flow:** Produces more than one identical part with each cycle.

**Multiple cavity mold:** produces more than one identical part with each cycle.

**multiple endocrine adenomatosis :** A rare, inherited disorder that affects the endocrine glands and can cause tumors in the parathyroid and pituitary glands and the pancreas. These tumors are usually benign (not cancer). They cause the glands to secrete high levels of hormones, which can lead to

other medical problems, such as kidney stones, fertility problems, and severe ulcers. In some cases, tumors inside the pancreas can become malignant (cancer). Also called MEN1 syndrome, multiple endocrine neoplasia type 1 syndrome, and Wermer syndrome.

**multiple endocrine adenomatosis type 2 :** A rare, genetic disorder that affects the endocrine glands and can cause tumors in the thyroid gland, parathyroid glands, and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. Multiple endocrine adenomatosis type 2 is caused by a mutation (change) in a gene called RET, and is divided into three subtypes (MEN2A, MEN2B, and FMTC). People with all subtypes of multiple endocrine adenomatosis type 2 have an increased risk of medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. Also called MEN2, MEN2 syndrome, and multiple endocrine neoplasia type 2 syndrome.

**multiple endocrine adenomatosis type 2A :** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the parathyroid glands and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. An itchy skin condition may also occur. Multiple endocrine adenomatosis type 2A is caused by a mutation (change) in a gene called RET. Also called MEN2A, MEN2A syndrome, multiple endocrine neoplasia type 2A syndrome, and Sipple syndrome.

**multiple endocrine adenomatosis type 2B :** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the adrenal glands and growths around the nerves in the lips, tongue, lining of the mouth, and eyelids. Gastrointestinal symptoms and trouble with the spine or bones in the feet and thighs may also occur. Multiple endocrine adenomatosis type 2B is caused by a mutation (change) in a gene called RET. Also called MEN2B, MEN2B syndrome, and multiple endocrine neoplasia type 2B syndrome.

**multiple endocrine neoplasia syndrome :** An inherited condition that may result in the development of cancers of the endocrine system. There are several types of multiple endocrine neoplasia syndrome, and patients with each type may develop different types of cancer. The altered genes that cause each type can be detected with a blood test. Also called MEN syndrome.

**multiple endocrine neoplasia type 1 syndrome :** A rare, inherited disorder that affects the endocrine glands and can cause tumors in the parathyroid and pituitary glands and the pancreas. These tumors are usually benign (not cancer). They cause the glands to secrete high levels of hormones, which can lead to other medical problems, such as kidney stones, fertility problems, and severe ulcers. In some cases, tumors inside the pancreas can become malignant (cancer). Also called MEN1 syndrome, multiple endocrine adenomatosis, and Wermer syndrome.

**multiple endocrine neoplasia type 2 syndrome :** A rare, genetic disorder that affects the endocrine glands and can cause tumors in the thyroid gland, parathyroid glands, and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. Multiple endocrine neoplasia type 2 syndrome is caused by a mutation (change) in a gene called RET, and is divided into three subtypes (MEN2A, MEN2B, and FMTC). People with all subtypes of multiple endocrine neoplasia type 2 syndrome have an increased risk of medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. Also called MEN2, MEN2 syndrome, and multiple endocrine adenomatosis type 2.

**multiple endocrine neoplasia type 2A syndrome :** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the parathyroid glands and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. An itchy skin condition may also occur. Multiple endocrine neoplasia type 2A syndrome is caused by a mutation (change) in a gene called RET. Also called MEN2A, MEN2A syndrome, multiple endocrine adenomatosis type 2A, and Sipple syndrome.

**multiple endocrine neoplasia type 2B syndrome :** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the adrenal glands and growths around the nerves in the lips, tongue, lining of the mouth, and eyelids. Gastrointestinal symptoms and trouble with the spine or bones in the feet and thighs may also occur. Multiple endocrine neoplasia type 2B syndrome is caused by a mutation (change) in a gene called RET. Also called MEN2B, MEN2B syndrome, and multiple endocrine adenomatosis type 2B.

**multiple equation word problems:** Word problems that can be translated into more than one equation.

**multiple hamartoma syndrome :** An inherited disorder marked by the formation of many noncancerous growths called hamartomas. These growths occur in the skin, breast, thyroid, colon, intestines, and inside of the mouth. Patients with multiple hamartoma syndrome are at increased risk of certain types of cancer, including breast and thyroid. Also called Cowden disease and Cowden syndrome.

**Multiple Head Machine:** A (blow molding) machine in which the plastic melt prepared by the extruder is divided into a multiplicity of separate streams (parisons) each giving ultimately a finished item.

**multiple myeloma :** A type of cancer that begins in plasma cells (white blood cells that produce antibodies). Also called Kahler disease, myelomatosis, and plasma cell myeloma.

**multiple operations:** An expression has multiple operations when you see more than one symbol for addition, subtraction, multiplication, and/or division.

**multiple sclerosis :** A disorder of the central nervous system marked by weakness, numbness, a loss of muscle coordination, and problems with vision, speech, and bladder control. Multiple sclerosis is thought to be an autoimmune disease in which the body's immune system destroys myelin. Myelin is a substance that contains both protein and fat (lipid), serving as a nerve insulator and helping in the transmission of nerve signals.

**multiple-gene panel test :** Genetic tests that use next-generation sequencing to test multiple genes simultaneously. Also called multigene test and multiple-gene test. or A laboratory test in which many genes are studied

in a sample of tissue. Multiple-gene panel tests may help find mutations (changes) in certain genes that may increase a person's risk of a disease such as cancer. They may also look at the activity of certain genes in a sample of tissue. Multiple-gene panel tests may be used to help plan treatment or make a prognosis, including helping to predict whether cancer will spread to other parts of the body or come back. Also called multigene test and multiple-gene test.

**multiple-gene test :** Genetic tests that use next-generation sequencing to test multiple genes simultaneously. Also called multigene test and multiple-gene panel test. Or A laboratory test in which many genes are studied in a sample of tissue. Multiple-gene tests may help find mutations (changes) in certain genes that may increase a person's risk of a disease such as cancer. They may also look at the activity of certain genes in a sample of tissue. Multiple-gene tests may be used to help plan treatment or make a prognosis, including helping to predict whether cancer will spread to other parts of the body or come back. Also called multigene test and multiple-gene panel test.

**multiples of a number:** An infinite list of the products of a number and each whole number. For example, the multiples of 3 are 3, 6, 9, 12, 15, 18 .  
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**multiplex genomic test :** A method for detecting multiple genetic alterations (i.e., gene mutations or single nucleotide polymorphisms in a single gene or across the genome) simultaneously.

**multiplex ligation-dependent probe amplification :** A laboratory method commonly used for the detection of unusual copy number changes (insertions or deletions) of genomic sequences. Also called MLPA.

**multiplication keywords:** Words that indicate multiplication.

**multiplication property of equations:** An equation is still true if both sides of the equation are multiplied by (or divided by) the same term.

**multiplicity :** A large number or variety.

**multistage cluster sampling:** Cluster sampling with more than two stages, each sampling being made on aggregates (or clusters) in which the clusters already obtained by the preceding sampling have been divided (ISO, 1977).

**multistage sampling:** A type of sampling in which the sample is selected by stages, the sampling units at each stage being subsampled from the larger units chosen at the previous state (ISO, 1977).

**MultiStem:** (Other name for: allogeneic multipotent adult progenitor cells)

**multisubtype natural human leukocyte interferon alpha:** A preparation containing a mixture of multiple naturally occurring, active subtypes 1, 2, 8, 10, 14 and 21 of interferon alpha (IFN-alpha) with immunomodulating, anti-viral and anti-cancer activities. Multi-subtype natural human leukocyte IFN-alpha is purified from the leukocyte fraction of human blood challenged with Sendai virus. Upon administration, IFN-alpha subtypes bind to cell surface IFN-alpha receptors (IFNARs), resulting in an upregulation of interferon stimulated genes and related protein products. This ultimately leads to the proliferation of human B cells, activation of natural killer (NK) cells and dendritic cells (DCs), an increase in HLA-I and HLA-II expression and activation of CD8-lymphocytes. Compared to single-subtype IFN, multi-subtypes act synergistically. Check for active clinical trials using this agent.

**multitargeted kinase inhibitor MGCD516:** An orally bioavailable, receptor tyrosine kinase (RTK) inhibitor with potential antineoplastic activity. Upon administration, multitargeted kinase inhibitor MGCD516 binds to and inhibits the activity of several RTKs including hepatocyte growth factor receptor (HGFR; c-Met; MET), tyrosine-protein kinase receptor UFO (AXL receptor tyrosine kinase; AXL), mast/stem cell growth factor receptor (SCFR; c-kit; KIT), the receptor tyrosine kinase MER, discoidin domain receptor 2 (DDR2), vascular endothelial growth factor receptor (VEGFR) types 1 (VEGFR-1; FLT1), 2 (VEGFR-2; KDR; Flk-1) and 3 (VEGFR-3), members of the platelet-derived growth factor receptor (PDGFR) family, RET (rearranged during transfection), tropomyosin-related kinases (TRK) and members of the ephrin (Eph) family of receptor tyrosine kinases. This may result in both the inhibition of signal transduction pathways mediated by these RTKs and the reduction of tumor cell proliferation in cancer cell types that overexpress these RTKs.

**multitargeted receptor tyrosine kinase inhibitor ABT-869 :** A substance being studied in the treatment of several types of cancer. Multitargeted receptor tyrosine kinase inhibitor ABT-869 blocks the action of several growth factors. It may also block the growth of new blood vessels that tumors need to grow and may cause cancer cells to die. It is a type of receptor tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called ABT-869.

**multitargeted tyrosine kinase inhibitor JNJ-26483327:** An orally bioavailable, small-molecule, multitargeted reversible tyrosine kinase inhibitor with potential antineoplastic activity. Multitargeted tyrosine kinase inhibitor JNJ-26483327 binds to and inhibits several members of the epidermal growth factor receptor (EGFR) family, including EGFR, HER2 and HER4; Src family kinases (Lyn, Yes, Fyn, Lck and Src); and vascular endothelial growth factor receptor type 3 (VEGFR3). By inhibiting several different signaling molecules that play crucial roles at various stages in tumorigenesis, this agent may inhibit tumor growth, invasion, migration and metastasis. In addition, JNJ-26483327 crosses the blood-brain barrier (BBB).

**multitargeted tyrosine kinase inhibitor MGCD265:** An orally bioavailable, small-molecule, multitargeted tyrosine kinase inhibitor with potential antineoplastic activity. Multitargeted tyrosine kinase inhibitor MGCD265 binds to and inhibits the phosphorylation of several receptor tyrosine kinases (RTKs), including the c-Met receptor (hepatocyte growth factor receptor); the Tek/Tie-2 receptor; vascular endothelial growth factor receptor (VEGFR) types 1, 2, and 3; and the macrophage-stimulating 1 receptor (MST1R or RON). Inhibition of these RTKs and their downstream signaling pathways may result in the inhibition of tumor angiogenesis and tumor cell proliferation in tumors overexpressing these RTKs.

**multivitamin:** A dietary supplement containing all or most of the vitamins that may not be readily available in the diet. Vitamins may be classified according to their solubility either in lipids (vitamins A, D, E, K, F) or in water (vitamins C, B-complex). Present in minute amounts in various foods, vitamins are essential to maintaining normal metabolism and biochemical functions.

**mung bean :** A type of bean grown in warm climates, usually for its seed and for bean sprouts. Mung bean may have anticancer effects.

**Munsell:** A system of designating colour by colour, hue and chroma.

**Muntin:** The vertical framing member or stile between the panels of a door.

**muramyl tripeptide phosphatidylethanolamine :** A drug being studied in the treatment of young adults with bone cancer that has gotten worse or come back. Muramyl tripeptide phosphatidylethanolamine activates certain types of white blood cells and helps the immune system kill cancer cells. It

is a type of immunostimulant. Also called L-MTP-PE, MEPACT, and mifamurtide.

**mureletecan:** A water-soluble prodrug, consisting of camptothecin covalently linked to polymeric backbone methacryloylglycynamide, with potential antineoplastic activity. After entering tumor cells, the active moiety camptothecin is slowly released from mureletecan via hydrolysis of the ester linkage. Camptothecin, an alkaloid isolated from the Chinese tree *Camptotheca acuminata*, binds to and stabilizes the topoisomerase I-DNA covalent complex. This inhibits the religation of topoisomerase I-mediated single-stranded DNA breaks and produces potentially lethal double-stranded DNA breaks when encountered by the DNA replication machinery, resulting in the inhibition of DNA replication and apoptosis. Compared to camptothecin, this prodrug formulation increases camptothecin drug delivery to the tumor site while reducing systemic toxicity. Check for active clinical trials using this agent.

**murine TYRP2 plasmid DNA vaccine:** A plasmid DNA vaccine encoding the mouse tumor associated antigen tyrosinase-related protein-2 (TYRP2) with potential immunostimulating and antineoplastic activities. Upon administration, murine TYRP2 plasmid DNA vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing TYRP2; this vaccine may also induce an immune response against tyrosinase-related protein-1 (TYRP1). TYRP2 and TYRP1, melanosomal membrane glycoproteins upregulated in melanoma cells, are involved in melanin synthesis.

**muromonab-CD3:** A murine IgG2a monoclonal antibody with immunosuppressive activity. Muromonab-CD3 binds to and inhibits CD3 on the surface of circulating T-lymphocytes; binding of muromonab-CD3 to CD3-positive T cells results in an early activation of this T cell subset, followed by cytokine release, and subsequently inhibition of T cell functions. This agent may cause the opsonization and elimination of CD3-positive T cells from the circulation by mononuclear phagocytes in the liver and spleen. CD3 is part of the functional T cell receptor (TCR) complex, which is necessary for antigen recognition by T cells, and is required for signal transduction or A type of monoclonal antibody used in cancer detection or therapy. Monoclonal antibodies are laboratory-produced substances that can locate and bind to cancer cells..

**muscadine grape skin extract:** A nutritional supplement containing an extract of the skin of muscadine grape (*Vitis rotundifolia*), with anti-inflammatory, antioxidant and potential chemopreventive activities. The skin extract of the muscadine grape contains numerous phytochemicals including hydrolyzable tannins and flavonoids, such as anthocyanin 3,5-diglucosides, quercetin, myricetin, and kaempferol glycosides. Upon administration, muscadine grape skin extract (MSKE) appears to inhibit PI3K/Akt and MAPK signaling, eventually leading to apoptosis and a reduction in tumor cell proliferation.

**Muscadine Plus:** (Other name for: muscadine grape skin extract)

**muscarinic agonist APD515:** A liquid, oromucosal formulation containing a muscarinic agonist with potential anti-xerostomia activity. Upon application to the inside lining of the mouth, muscarinic agonist APD515 may locally act on muscarinic receptors on the salivary glands and may stimulate the production of saliva thereby relieving dryness of the mouth. Check for active clinical trials using this agent.

**muscle contraction:** a process in which actin and myosin proteins move within a sarcomere.

**muscle wasting :** A weakening, shrinking, and loss of muscle caused by disease or lack of use. Muscle wasting decreases strength and the ability to move.

**musculoskeletal :** Having to do with muscles, bones, tendons, ligaments, joints, and cartilage.

**MUSE :** A method used to treat impotence (inability to have an erection). A suppository, in the form of a very small pellet, is inserted through the tip of the penis into the urethra. The suppository contains the drug alprostadil, which increases the flow of blood to the penis and causes an erection. Also called medicated urethral system for erection.

**music therapy :** A type of therapy that uses music to help improve a person's overall health and well-being. It may include creating, singing, moving, and/or relaxing to music. Music therapy may be used to help relieve stress, pain, anxiety, and depression caused by a disease, such as cancer, and its treatment. Music therapy is a type of complementary medicine.

**Mustargen:** (Other name for: mechlorethamine hydrochloride)

**Mustargen :** A drug used to treat non-Hodgkin lymphoma, advanced Hodgkin lymphoma, chronic leukemia, mycosis fungoides, and a type of lung cancer called bronchogenic carcinoma. It is also being studied in the treatment of other types of cancer. Mustargen damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called mechlorethamine hydrochloride and mustine.

**mustine :** A drug used to treat non-Hodgkin lymphoma, advanced Hodgkin lymphoma, chronic leukemia, mycosis fungoides, and a type of lung cancer called bronchogenic carcinoma. It is also being studied in the treatment of other types of cancer. Mustine damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called mechlorethamine hydrochloride and Mustargen.

**mutagen:** Anything that causes a mutation (a change in the DNA of a cell). DNA changes caused by mutagens may harm cells and cause certain diseases, such as cancer. Examples of mutagens include radioactive substances, x-rays, ultraviolet radiation, and certain chemicals. OR An agent that induces mutation (WHO, 1979). OR An agent that can bring about a heritable change (mutation) in an organism. OR Perturbs to the base sequence of DNA and causes a mutation; often chemicals but can also be energy sources such as ultraviolet light.

**Mutagenesis:** A process that leads to a change in the genetic material that is inherited in later generations.

**mutagenicity:** The property of a physical, chemical, or biological agent to induce mutations in living tissue (WHO, 1979).

**Mutamycin:** (Other name for: mitomycin C)

**Mutamycin :** A drug used to treat advanced cancer of the stomach and pancreas that has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Mutamycin comes from bacteria. It damages the cell's DNA and may kill cancer cells. It is a type of anticancer antibiotic. Also called mitomycin C and Mitozytrex.

**Mutant:** An organism that carries an altered gene or change in its genome.

**mutant p53 activator COTI-2:** An orally available third generation thiosemicarbazone and activator of mutant forms of the p53 protein, with potential antineoplastic activity. Upon oral administration, mutant p53 activator COTI-2 targets and binds to the misfolded mutant forms of the

p53 protein, which induces a conformational change that normalizes p53 and restores its activity. This induces apoptosis in tumor cells in which the p53 protein is mutated. In addition, COTI-2 inhibits the activation of Akt2 and prevents the activation of the PI3K/AKT/mTOR pathway, thereby inducing apoptosis in cancer cells in which this pathway is overexpressed. p53, a tumor suppressor protein, plays a key role in controlling cellular proliferation and survival. High levels of mutant p53 are seen in many cancers and are associated with uncontrolled cellular growth.

**mutant p53 peptide pulsed dendritic cell vaccine:** A cancer vaccine consisting of autologous dendritic cells which have been pulsed with a mutant p53 peptide. Vaccination with mutant p53 peptide pulsed dendritic cells may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing mutant p53, resulting in tumor cell lysis. Many tumor cells overexpress mutant p53 proteins, resulting in the loss of apoptosis regulation and abnormal cell proliferation.

**mutant-selective EGFR inhibitor PF-06459988:** An orally available, small molecule, third-generation, irreversible inhibitor of epidermal growth factor receptor (EGFR) mutant (EGFR<sub>m</sub>) forms with potential antineoplastic activity. EGFR inhibitor PF-06459988 specifically binds to and inhibits mutant forms of EGFR, including the secondary acquired resistance mutation T790M, which prevents EGFR-mediated signaling and leads to cell death in EGFR<sub>m</sub>-expressing tumor cells. Compared to some other EGFR inhibitors, PF-06459988 may have therapeutic benefits in tumors with T790M-mediated drug resistance. This agent shows minimal activity against wild-type EGFR (WT EGFR), and does not cause dose-limiting toxicities that are seen with the use of non-selective EGFR inhibitors, which also inhibit WT EGFR. EGFR, a receptor tyrosine kinase mutated in many tumor cell types, plays a key role in tumor cell proliferation and tumor vascularization.

**Mutarotation:** The change in optical rotation of a sugar that is observed immediately after it is dissolved in aqueous solution, as the result of the slow approach of equilibrium of a pyranose or a furanose in its alpha and beta forms. OR For carbohydrates, the interconversion of  $\alpha$  and  $\beta$  anomers through the open-chain form; usually measured through changes in optical rotation. OR The change in specific rotation of a pyranose or furanose sugar

or glycoside accompanying the equilibration of its  $\alpha$ - and  $\beta$ -anomeric forms.

**Mutase:** An enzyme that catalyzes the intramolecular shift of a chemical group. OR Enzymes that catalyze the transposition of functional groups.

**mutate :** To change the genetic material of a cell. The changes (mutations) can be harmful, beneficial, or have no effect.

**mutation:** Any heritable change in genetic material. This may be a chemical transformation of an individual gene (a gene or point mutation), which alters its function. On the other hand, this change may involve a rearrangement, or a gain or loss of part of a chromosome, which may be microscopically visible. This is designated a chromosomal mutation (WHO, 1979). OR a random change in the gene pool of a population that gives rise to new alleles and is the source of variation in a population. OR The genetically inheritable alteration of a gene or group of genes. OR An inheritable change in the nucleotide sequence of a chromosome. OR Variations that alter the meaning of the genetic message; required for evolution.

**mutation :** A change in the usual DNA sequence at a particular gene locus. Although the term often has a negative connotation, mutations (including polymorphisms) can be harmful, beneficial, or neutral in their effect on cell function. The term variant is sometimes used as a synonym for the term mutation.orAny change in the DNA sequence of a cell. Mutations may be caused by mistakes during cell division, or they may be caused by exposure to DNA-damaging agents in the environment. Mutations can be harmful, beneficial, or have no effect. If they occur in cells that make eggs or sperm, they can be inherited; if mutations occur in other types of cells, they are not inherited. Certain mutations may lead to cancer or other diseases.

**mutation analysis :** Germline genetic testing method targeted to detect a specific mutation (such as a deleterious MSH2 mutation previously identified in a family), panel of mutations (such as the 3 BRCA mutations comprising the founder mutation panel for individuals of Ashkenazi Jewish ancestry) or type of mutation (such as a large deletions or insertions in the BRCA1 gene). This type of testing is distinct from complete gene sequencing or mutation scanning. The latter are designed to detect most mutations in the region being tested. Current usage also applies this term to any genetic test.

**mutation carrier :** A person who has a mutated (changed) copy of a gene. This change may cause a disease in that person or in his or her children.

**Mutual Prodrug:** A prodrug that consists of two generally synergistic drugs attached to each other.

**mutualism:** a living arrangement in which both partners benefit.

**MVA-EBNA1/LMP2 vaccine:** A cancer vaccine consisting of a recombinant modified vaccinia Ankara (MVA) viral vector encoding the gene for the CD4 epitope-rich C-terminal domain of the Epstein Barr Virus (EBV) antigen EBNA1 and fused to the full-length of the EBV-associated antigen latent membrane protein 2 (LMP2), with potential immunostimulatory and antineoplastic activities. Upon administration, MVA EBNA1/LMP2 vaccine may elicit a cytotoxic T-cell immune response against cancer cells expressing EBNA1 and LMP2. Multi-antigen vaccine therapy may be more efficacious than single-antigen vaccine therapy. EBNA1, a sequence-specific DNA binding protein, plays an important role in EBV episomal genome maintenance and gene transactivation. Check for active clinical trials using this agent.

**MVA-FCU1 TG4023:** A cancer vaccine comprised of a recombinant modified vaccinia Ankara (MVA) viral vector encoding the suicide gene FCU1 with potential antineoplastic activity. FCU1 is a bifunctional yeast cytosine deaminase (CD) / uracil phosphoribosyltransferase (UPRT) fusion gene. Upon intratumoral administration, MVA-FCU1 TG4023 enters tumor cells where FCU1 is expressed. Subsequently, the noncytotoxic prodrug 5-fluorocytosine (5-FC) is administered systemically and is deaminated by CD in FCU1- transduced tumor cells into 5-fluorouracil (5-FU), which is then directly metabolized to 5-fluoro-uridine monophosphate (5-FUMP) by UPRT; 5-FUMP may then be further transformed to 5-fluoro-deoxyuridine monophosphate (5-FdUMP), an irreversible inhibitor of thymidylate synthase and, so, DNA synthesis through deprivation of deoxythymidine triphosphate (dTTP). 5-FU and its active metabolites may then selectively kill tumor cells, avoiding toxicity in nonmalignant cells. The MVA viral vector, derived from the replication-competent strain Ankara, is a highly attenuated, replication-defective vaccinia strain incapable of virion assembly. Check for active clinical trials using this agent.

**MVA-MUC1-IL2 vaccine:** A bivalent cancer vaccine comprised of a modified vaccinia virus Ankara (MVA) strain encoding human mucin 1

(MUC1) and interleukin-2 (IL-2) with potential immunostimulating and antineoplastic activities. Originally developed for the eradication of smallpox, MVA is a highly attenuated and replication-defective strain incapable of virion assembly and exerts potent immunostimulatory activity against antigens. Vaccination with MVA-MUC1-IL2 vaccine may stimulate the host immune system to mount a humoral and cytotoxic T lymphocyte (CTL) responses against tumor cells expressing MUC1, a tumor associated antigen, resulting in tumor cell lysis. Expression of IL-2 augments the specific CTL response against MUC1 expressing cells.

**MVA-PSA-PAP prostate cancer vaccine:** A cancer vaccine consisting of a recombinant modified vaccinia Ankara (MVA) viral vector encoding genes for prostate specific antigen (PSA) and prostate acid phosphatase (PAP) with potential immunostimulatory and antineoplastic activities. Upon administration, MVA-PSA-PAP prostate cancer vaccine expresses PSA and PAP peptides, which may elicit humoral and cellular immune responses against prostate cancer cells expressing PSA and PAP. Multi-antigen vaccine therapy may be more efficacious than single-antigen therapy vaccine therapy.

**MVF-HER-2(597-626)-MVF-HER-2 (266-296) peptide vaccine:** A combination peptide vaccine of 2 chimeric peptides of the promiscuous T cell epitope derived from measles virus fusion protein (MVF; amino acid residues 288-302) co-synthesized with B-cell epitopes derived from the HER-2/neu a.a. 597-626 and HER-2/neu a.a. 266-296, with potential antineoplastic activity. Vaccination with MVF-HER-2(597-626)/MVF-HER-2(266-296) peptide vaccine may induce an active specific immune response, mounting a cytotoxic T-lymphocyte (CTL) response and an antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells that overexpress the HER-2 protein. The oncogenic protein HER-2, a member of the human epidermal growth factor receptor (EGFR) family of tyrosine kinases, is overexpressed in a variety of cancers and is correlated with increased tumor growth, progression and a poor prognosis. HER-2(597-626) corresponds to the binding site of trastuzumab on the extracellular domain IV of HER-2; HER-2 (266-296) corresponds to the binding site of pertuzumab on the dimerization loop of domain II of HER-2.

**MVX-1-loaded macrocapsule/autologous tumor cell vaccine MVX-ONCO-1:** A two-component, anti-cancer vaccine containing irradiated

tumor cells from a patient, and a capsule implanted with a genetically modified allogeneic cell line that continuously releases granulocyte-macrophage colony stimulating factor (GM-CSF), with potential immune-protective and -boosting activities. Upon subcutaneous injection of MVX-1-loaded macrocapsule/autologous tumor cell vaccine MVX-ONCO-1, the GM-CSF-secreting allogeneic cell capsules and the autologous irradiated cells isolated from the patient's tumor are co-localized in the patient's tissue. This permits the production of GM-CSF and exposes the immune system to the tumor-associated antigens (TAA) expressed by the autologous tumor cells at the injection site. Local expression of GM-CSF recruits and activates antigen-presenting cells (APC), which induces both antibody-dependent cell-mediated cytotoxicity (ADCC) and cytotoxic T-lymphocyte responses at the site of the injection and systemically. This may lead to tumor regression. By using the patient's own irradiated cancer cells as vaccine antigens, the patient's immune system is exposed to the entire repertoire of this individual's TAAs. The encapsulated cell technology (ECT) of GM-CSF-secreting allogeneic cell capsules ensures the continuous release of GM-CSF. GM-CSF, a monomeric glycoprotein that functions as a cytokine, is a strong immune booster and plays an important role in the activation of immune system. Check for active clinical trials using this agent.

**MW:** Molecular weight

**myalgia :** Pain in a muscle or group of muscles.

**Myanmar:** The country formerly known as Burma. It is not a major crude oil producer.

**myasthenia gravis :** A disease in which antibodies made by a person's immune system prevent certain nerve-muscle interactions. It causes weakness in the arms and legs, vision problems, and drooping eyelids or head. It may also cause paralysis and problems with swallowing, talking, climbing stairs, lifting things, and getting up from a sitting position. The muscle weakness gets worse during activity, and improves after periods of rest.

**MYC-N amplification study :** A laboratory test in which tumor or bone marrow cells are checked to see how many copies of the MYC-N gene are in the DNA. MYC-N is important for cell growth. Having more than 10 copies of the gene is called MYC-N amplification. Neuroblastoma with

MYC-N amplification is more likely to spread in the body and less likely to respond to treatment.

**MYC-targeting siRNA DCR-MYC:** A lipid nanoparticle-based formulation consisting of small-interfering RNAs (siRNAs) directed against the oncogene c-Myc encapsulated in lipids with potential antineoplastic activity. Upon intravenous administration of MYC-targeting siRNA DCR-MYC, the lipid formulation promotes the uptake by tumor cells where the siRNAs moieties are subsequently released. The siRNAs bind to c-Myc mRNAs, which may result in the inhibition of translation and expression of the c-Myc protein and leads to growth inhibition for tumor cells that are overexpressing c-Myc. c-Myc, a proto-oncogene overexpressed in a variety of cancers, is involved in cellular proliferation, differentiation, and apoptosis.

**Mycelex:** (Other name for: clotrimazole)

**Mycelex Troche:** (Other name for: clotrimazole)

**mycobacterial cell wall-DNA complex:** A proprietary preparation of mycobacterial DNA oligonucleotides embedded in mycobacterial cell wall fragments derived from cultures of *Mycobacterium phlei*, with potential immunomodulatory and antineoplastic activities. DNA oligonucleotides in the mycobacterial cell wall-DNA complex (MCC) induce apoptosis by increasing BAX protein levels, releasing cytochrome C from mitochondria, and activating caspase-3 and -7, which results in the cleavage of poly (ADP-ribose) polymerase and the release of nuclear matrix proteins. In addition to its pro-apoptotic effect, MCC activates monocytes and macrophages to produce various cytokines, including interleukin 6 (IL-6), IL-8, IL-12, IL-18, and tumor necrosis factor alpha (TNF- $\alpha$ ). This results in the activation of natural killer (NK) cells and cytotoxic T lymphocytes (CTLs) and interferon gamma (IFN- $\gamma$ ) synthesis.

**Mycobacterium tuberculosis arabinomannan Z-100:** An extract from *Mycobacterium tuberculosis* (*M. tuberculosis*) containing the polysaccharide arabinomannan, with potential immunostimulating activity. Upon administration of *M. tuberculosis* arabinomannan Z-100, this agent may activate the immune system by increasing the expression of various cytokines, such as interferon-gamma (IFN $\gamma$ ) and interleukin-12. This inhibits the activity of suppressor T-cells, increases T helper 1 cell (Th1)

activity and may restore the balance between Th1/Th2 cells. Additionally, Z-100 may inhibit metastasis and tumor cell proliferation.

**Mycobacterium w:** An attenuated strain of *Mycobacterium w*, a non-pathogenic, rapidly growing, atypical mycobacterium, with non-specific immunopotentiating properties. In addition to sharing a number of common B and T cell determinants with *Mycobacterium leprae* and *Mycobacterium tuberculosis*, *Mycobacterium w* (Mw) also shares an immunogenic determinant with prostate specific antigen (PSA). In vitro and in vivo studies have shown that heat-killed Mw can induce significant T-cell responses. This agent may induce host T-cell responses against tumor cells expressing PSA. PSA is a glycoprotein secreted by prostatic epithelial and ductal cells and may be overexpressed in prostate cancer cells.

**Mycobutin :** A drug used to prevent the spread of a bacterium called in patients with advanced HIV (the virus that causes AIDS) infection. It blocks an enzyme that the bacteria need to grow. It is a type of antibiotic. Also called rifabutin.

**mycophenolate mofetil:** The morpholinoethyl ester of mycophenolic acid (MPA) with potent immunosuppressive properties. Mycophenolate stops T-cell and B-cell proliferation through selective inhibition of the de novo pathway of purine biosynthesis. In vivo, the active metabolite, MPA, reversibly inhibits inosine 5'-monophosphate dehydrogenase, an enzyme involved in the de novo synthesis of guanine nucleotides. MPA displays high lymphocyte specificity and cytotoxicity due to the higher dependence of activated lymphocytes on both salvage and de novo synthesis of guanine nucleotides relative to other cell types. or A drug used to prevent graft-versus-host disease (GVHD) after organ transplants. It is also being studied in the prevention of GVHD after stem cell transplants for cancer, and in the treatment of some autoimmune disorders. Mycophenolate mofetil is a type of immunosuppressive agent. Also called CellCept.

**mycophenolic acid:** An antineoplastic antibiotic derived from various *Penicillium* fungal species. Mycophenolic acid is an active metabolite of the prodrug mycophenolate mofetil. Mycophenolic acid inhibits inosine monophosphate dehydrogenase (IMPDH), preventing the formation of guanosine monophosphate and synthesis of lymphocyte DNA that results in inhibition of lymphocyte proliferation, antibody production, cellular

adhesion, and migration of T and B lymphocytes. Mycophenolic acid also has antibacterial, antifungal, and antiviral activities.

**mycosis fungoides** : A type of non-Hodgkin lymphoma that first appears on the skin and can spread to the lymph nodes or other organs such as the spleen, liver, or lungs.

**mycosis fungoides patch** : A flat, red area on the skin of patients who have mycosis fungoides. The patches may look like a thin, red rash and may be itchy. They are most common on the chest, groin, hips, buttocks, and under the arms. They may look like eczema or psoriasis.

**mycosis fungoides plaque** : In mycosis fungoides, an area of skin that is thickened, raised, red, scaly, and itchy.

**Mycostatin** : A drug used to treat infections caused by fungi (a type of microorganism). It is made by certain strains of bacteria and kills fungi by binding to their membranes. Mycostatin is a type of antifungal agent.

**myelin** : The fatty substance that covers and protects nerves.

**myelin sheath**: a fatty layer of material that covers the axons of nerve cells.

**myeloablation** : A severe form of myelosuppression. Myelosuppression is a condition in which bone marrow activity is decreased, resulting in fewer red blood cells, white blood cells, and platelets. It is a side effect of some cancer treatments. Also called severe myelosuppression.

**myeloablative chemotherapy** : High-dose chemotherapy that kills cells in the bone marrow, including cancer cells. It lowers the number of normal blood-forming cells in the bone marrow, and can cause severe side effects. Myeloablative chemotherapy is usually followed by a bone marrow or stem cell transplant to rebuild the bone marrow.

**myeloblast** : A type of immature white blood cell that forms in the bone marrow. Myeloblasts become mature white blood cells called granulocytes (neutrophils, basophils, and eosinophils).

**myeloblastic** : Refers to myeloblasts (a type of immature cell that forms in the bone marrow).

**myelodysplasia** : Abnormal bone marrow cells that may lead to myelogenous leukemia.

**myelodysplastic syndrome** : A type of cancer in which the bone marrow does not make enough healthy blood cells (white blood cells, red blood

cells, and platelets) and there are abnormal cells in the blood and/or bone marrow. When there are fewer healthy blood cells, infection, anemia, or bleeding may occur. Sometimes, myelodysplastic syndrome becomes acute myeloid leukemia (AML). Also called MDS.

**myelofibrosis** : A disorder in which the bone marrow is replaced by fibrous tissue.

**myelogenous** : Having to do with, produced by, or resembling the bone marrow. Sometimes used as a synonym for myeloid; for example, acute myeloid leukemia and acute myelogenous leukemia are the same disease.

**myelogram** : An x-ray of the spinal cord after an injection of dye into the space between the lining of the spinal cord and brain.

**myeloid** : Having to do with or resembling the bone marrow. May also refer to certain types of hematopoietic (blood-forming) cells found in the bone marrow. Sometimes used as a synonym for myelogenous; for example, acute myeloid leukemia and acute myelogenous leukemia are the same disease.

**myeloma** : Cancer that arises in plasma cells, a type of white blood cell.

**myelomatosis** : A type of cancer that begins in plasma cells (white blood cells that produce antibodies). Also called Kahler disease, multiple myeloma, and plasma cell myeloma.

**myelomonocyte** : An abnormal type of white blood cell that is found in chronic myelomonocytic leukemia. These cells are similar to both monocytes and myelocytes (immature cells that develop into different types of immune system cells).

**myeloproliferative neoplasm** : A type of disease in which the bone marrow makes too many red blood cells, platelets, or certain white blood cells. Myeloproliferative neoplasms usually get worse over time as the number of extra cells build up in the blood and/or bone marrow. This may cause bleeding problems, anemia, infection, fatigue, or other signs and symptoms. Certain myeloproliferative neoplasms may become acute myeloid leukemia (AML). Myeloproliferative neoplasms include chronic myelogenous leukemia (CML), polycythemia vera, primary myelofibrosis, essential thrombocythemia, chronic neutrophilic leukemia, and chronic eosinophilic leukemia. Also called chronic myeloproliferative neoplasm.

**myelosclerosis with myeloid metaplasia :** A progressive, chronic disease in which the bone marrow is replaced by fibrous tissue and blood is made in organs such as the liver and the spleen, instead of in the bone marrow. This disease is marked by an enlarged spleen and progressive anemia. Also called agnogenic myeloid metaplasia, chronic idiopathic myelofibrosis, idiopathic myelofibrosis, and primary myelofibrosis.

**myelosuppression :** A condition in which bone marrow activity is decreased, resulting in fewer red blood cells, white blood cells, and platelets. Myelosuppression is a side effect of some cancer treatments. When myelosuppression is severe, it is called myeloablation.

**myelosuppressive therapy :** Treatment that stops or slows the growth of blood-forming cells in the bone marrow. Myelosuppressive therapies, such as chemotherapy and radiation therapy, kill normal cells and cancer cells in the bone marrow. This lowers the number of normal red blood cells, white blood cells, and platelets in the blood and bone marrow. Myelosuppressive therapy may be given before a bone marrow or stem cell transplant. It may also be used to treat some blood conditions, such as polycythemia vera (a disease in which there are too many red blood cells in the bone marrow and blood).

**Myfortic:** (Other name for: mycophenolic acid)

**Myleran :** A drug used to treat chronic myelogenous leukemia (CML). It is also used with other drugs to prepare patients with CML for a stem cell transplant. It is also being studied in the treatment of other types of cancer. Myleran attaches to DNA in cells and may kill cancer cells. It is a type of alkylating agent. Also called busulfan and Busulfex.

**Mylosar :** A drug that is used to treat myelodysplastic syndromes and is being studied in the treatment of other types of cancer. It belongs to the family of drugs called antimetabolites. Also called azacitidine and Vidaza.

**Mylotarg :** A drug that was used to treat acute myeloid leukemia (AML) that recurred (came back). It was used in older patients who were not able to take other anticancer drugs. Mylotarg was taken off the market but continues to be studied in clinical trials for the treatment of certain types of leukemia. It contains a monoclonal antibody that binds to a protein called CD33, which is found on some leukemia cells. It also contains a toxic substance, which may help kill cancer cells. Mylotarg is a type of antibody-drug conjugate. Also called gemtuzumab ozogamicin.

**Mylovenge:** (Other name for: idiotype-pulsed autologous dendritic cell vaccine APC8020)

**Myochrysin:** (Other name for: gold sodium thiomalate)

**myoclonic epilepsy:** a form of epilepsy associated with involuntary muscle twitching

**myoclonic jerk :** A sudden, brief, strong contraction of a muscle or group of muscles that cannot be controlled.

**myoclonus:** involuntary muscle twitching

**Myofibril:** A unit of thick and thin filaments in a muscle fiber. OR microscopic filaments that make up a muscle cell. OR Fibrils inside the cytosol of vertebrate muscle cells that give such cells their striated appearance; the functional unit of a myofibril is a sarcomere.

**Myoglobin:** A vertebrate oxygen-storage protein found in muscle; structurally similar to an individual hemoglobin subunit.

**myoinositol :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Myoinositol helps cells make membranes and respond to messages from their environment. It has the same chemical formula as glucose (the chief source of energy for living organisms) but has a different arrangement of atoms. It is found in beans, peas, brown rice, wheat bran and nuts. It is water-soluble (can dissolve in water) and must be taken in every day. Myoinositol is being studied in the prevention of cancer. Also called inositol.

**myometrium :** The muscular outer layer of the uterus.

**myosin:** a protein microfilament that comprises the sarcomere of muscle cells. OR The main protein of the thick filaments in a muscle myofibril. It is composed of two coiled subunits (Mr about 220,000) that can aggregate to form a thick filament, which is globular at each end. OR A protein that forms the thick filaments of striated muscle; displays atpase activity at its globular head, which, in conjunction with the ability to reversibly bind actin at its fibrous region, provides the power stroke of muscle contraction. OR A contractile protein; the major component of the thick filaments of muscle and other actin-myosin systems.

**Myrbetriq:** (Other name for: mirabegron)

**myristyl nicotinate cream :** A substance being studied in the prevention of skin cancer. Myristyl nicotinate cream is also being studied as a way to help

lessen the side effects of retinoic acid (a form of vitamin A) when it is used to treat skin that has been damaged by the sun. Myristyl nicotinate cream contains a form of niacin (a member of the vitamin B complex). It is a type of chemopreventive agent.

**MZL:** An indolent (slow-growing) type of B-cell non-Hodgkin lymphoma that begins forming in certain areas (the marginal zones) of lymph tissue. There are three types based on whether it forms in the spleen, lymph nodes, or other lymphoid tissue that contains a lot of B cells (a type of white blood cell). Also called marginal zone B-cell lymphoma and marginal zone lymphoma.

**N-acetyl-L-cysteine :** A drug usually used to reduce the thickness of mucus and ease its removal. It is also used to reverse the toxicity of high doses of acetaminophen. Also called acetylcysteine and N-acetylcysteine.

**N-acetylcysteine :** A drug usually used to reduce the thickness of mucus and ease its removal. It is also used to reverse the toxicity of high doses of acetaminophen. Also called acetylcysteine and N-acetyl-L-cysteine.

**N-acetyldinaline :** A substance that is being studied as an anticancer drug in the treatment of non-small cell lung cancer. Also called CI-994.

**N-benzoyl-staurosporine :** A substance that is used in cancer research to cause bladder tumors in laboratory animals. This is done to test new diets, drugs, and procedures for use in cancer prevention and treatment.

**n-Butanol:** N-Butanol is an oxo-alcohol mainly used in the production of the butyl acrylate, which finds uses in the coatings industry. Others uses are in smaller volume acetate and glycol ether formulations. It is also used directly as a solvent. Most butanol is manufactured propylene with syngas in an oxo-process, then catalytically hydrogenated. Another major route, developed by Shell involves a one-step reaction with propylene and co-produces 2-ethylhexanol. There are other routes, including fermentation, which is not commercially viable. N-Butanol is a propylene derivative, and is produced in all regions.

**N-butyl-N-(4-hydroxybutyl) nitrosamine :** A group of researchers, cancer centers, and community doctors who are involved in studies that test new ways to screen, prevent, diagnose, and treat cancer. Clinical trials run by cooperative groups are funded and supported by the National Cancer Institute (NCI), and large numbers of patients take part in many locations. The current U.S. cooperative groups are the Alliance for Clinical Trials in

Oncology, ECOG-ACRIN Cancer Research Group, SWOG, and Children's Oncology Group (COG). The NCI clinical trials cooperative groups are part of the National Clinical Trials Network (NCTN).

**N-methylformamide:** A water-soluble organic solvent. As an adjuvant antineoplastic agent, N-methylformamide depletes cellular glutathione, a key molecule involved in the antioxidation of reactive oxygen species (ROS) and other free radicals, thereby enhancing ionizing radiation-induced DNA cross-linking in and terminal differentiation of tumor cells.

**N-terminal rule:** The dependency of the half-life of a cytosolic protein on the nature of its N-terminal amino acid.

**NA-17/MAGE-3.A2/NY-ESO-1 peptide vaccine:** A peptide cancer vaccine consisting of peptides derived from the melanoma antigen NA-17, the human leukocyte antigen HLA-A2-restricted human melanoma antigen 3 (MAGE-3.A2) and the cancer-testis antigen (NY-ESO-1), with potential immunostimulating and antineoplastic activities. Upon administration, the NA-17/MAGE-3.A2/NY-ESO-1 peptide vaccine may stimulate the immune system to mount a cytotoxic T-cell (CTL) response against tumor cells expressing NA-17, MAGE-3.A2 and NY-ESO-1, resulting in tumor cell lysis. The tumor-associated antigens (TAAs) NA-17, MAGE-3.A2 and NY-ESO-1 are overexpressed in a variety of cancer cell types. Check for active clinical trials using this agent.

**NA17-A antigen:** A specific melanoma antigen protein derived from a patient (NA17) with cutaneous melanoma metastases. When administered in a vaccine formulation, NA17-A antigen may stimulate a cytotoxic T lymphocyte (CTL) response against tumors that express this antigen, which may result in a reduction in tumor size. The NA17-A antigen is part of the enzyme N-acetyl glucosaminyl-transferase V (GnT-V). Approximately half of melanomas have been found to express significant levels of this atypical protein, which is not expressed by normal tissues.

**NA17.A2 peptide vaccine:** A peptide cancer vaccine comprised of human leukocyte antigen HLA-A2-restricted peptide derived from a metastatic melanoma cell line of patient NA17, with potential immunomodulating and antineoplastic activity. NA17.A2 peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumors that express this antigen, which may result in a reduction in tumor size. This NA17 specific antigen,

encoded by an intron sequence of N-acetylglucosaminyltransferase V (GnT-V) gene, is expressed in about 50% of melanomas.

**nabilone:** A synthetic cannabinoid and dibenzopyrane derivative with anti-emetic activity. Although the mechanism of action has not been fully elucidated yet, it has been suggested that nabilone is a highly selective and strong agonist for the cannabinoid receptors CB1 and CB2, both of which are coupled to Gi/o proteins. The CB1 receptors are expressed predominantly in central and peripheral neurons and receptor stimulation has been implicated in the reduction of chemotherapy-induced nausea. Check for active clinical trials using this agent.

**nabilone :** A synthetic pill form of an active chemical in marijuana called delta-9-tetrahydrocannabinol (THC). Nabilone is used to treat nausea and vomiting caused by chemotherapy in patients who have not been helped by other therapy. It is a type of cannabinoid. Also called Cesamet.

**nabiximols:** An herbal preparation containing a defined quantity of specific cannabinoids formulated for oromucosal spray administration with potential analgesic activity. Nabiximols contains a standardized extract of tetrahydrocannabinol (THC), the non-psychoactive cannabinoid cannabidiol (CBD), other minor cannabinoids, flavonoids, and terpenes from two cannabis plant varieties. Cannabinoids interact with G protein-coupled cannabinoid 1 (CB1) receptors in the central nervous system, resulting in analgesic, euphoric, and anticonvulsive effects.

**NaCl:** Chemical abbreviation for sodium chloride (table salt).

**NAD-binding domain:** A structural motif of NAD<sup>+</sup>-linked dehydrogenases that forms a binding site for NAD<sup>+</sup> and consists of four helices and six parallel  $\beta$  strands.

**NAD, NADP (nicotinamide adenine dinucleotide, nicotinamide adenine dinucleotide phosphate):** Nicotinamide-containing coenzymes functioning as carriers of hydrogen atoms and electrons in some oxidation-reduction reactions.

**NAD<sup>+</sup> and NADH (nicotinamide adenine dinucleotide):** An important electron carrier in the oxidation of fuel molecules; electrons are carried on the nicotinamide moiety of the coenzyme.

**NADH-Q oxidoreductase:** A large component of the respiratory chain that transfers electrons from NADH to ubiquinone and in the process pumps

protons across the inner mitochondrial membrane to generate the proton-motive force. Also called NADH dehydrogenase or Complex I.

**nadolol:** A non-selective beta-adrenergic antagonist with antihypertensive and antiarrhythmic activities. Nadolol competitively blocks beta-1 adrenergic receptors located in the heart and vascular smooth muscle, inhibiting the activities of the catecholamines epinephrine and norepinephrine and producing negative inotropic and chronotropic effects. This agent exhibits antiarrhythmic activity via the impairment of atrioventricular (AV) node conduction and a corresponding reduction in sinus rate. In the kidney, inhibition of the beta-2 receptor within the juxtaglomerular apparatus results in the inhibition of renin production and a subsequent reduction in angiotensin II and aldosterone levels, thus inhibiting angiotensin II-dependent vasoconstriction and aldosterone-dependent water retention. Check for active clinical trials using this agent.

**NADP<sup>+</sup> and NADPH (nicotinamide adenine dinucleotide phosphate):**

The electron donor for reductive biosynthesis; differs from NAD<sup>+</sup> and NADH in that a phosphate is attached to the adenine ribose at position 3.

**nadroparin calcium:** A low molecular weight heparin (LMWH) composed of a heterogeneous mixture of sulfated polysaccharide glycosaminoglycan chains obtained by depolymerisation of porcine mucosal sodium heparin, extraction/purification and conversion to the calcium salt. Nadroparin binds to antithrombin III (ATIII) and inhibits the activity of activated factor X (factor Xa), thereby inhibiting the final common pathway of the coagulation cascade and preventing the formation of a cross-linked fibrin clot.

**nafoxidine hydrochloride:** The hydrochloride salt of the partial estrogen antagonist nafoxidine. Nafoxidine competes with endogenous estrogen for binding to specific estrogen receptors. This agent also inhibits angiogenesis in some tissues by blocking the effects of fibroblast growth factor (FGF) and vascular endothelial growth factor (VEGF); paradoxically, it may enhance angiogenesis in uterine tissue. Nafoxidine also induces oxidative stress, protein kinase C and calcium signaling.

**naloxegol:** A pegylated form of naloxone, a peripherally-acting mu-opioid receptor antagonist, that can be used to reduce opioid-induced symptoms. Upon administration, naloxegol binds to and blocks mu-opioid receptors in the peripheral nervous system. This prevents peripheral opioid receptor

activation and abrogates opioid-induced side effects, such as opioid-induced constipation (OIC). Pegylation of naloxone reduces permeability across the blood-brain barrier (BBB) and prevents this agent from interfering with the analgesic activity of opioid receptor agonists.

**naloxone :** A substance that is being studied as a treatment for constipation caused by narcotic medications. It belongs to the family of drugs called narcotic antagonists.

**naloxone hydrochloride:** The hydrochloride salt of naloxone, a thebaine derivative with opioid antagonist activity. Naloxone binds to opioid receptors in the CNS in a competitive manner, reversing or inhibiting characteristic opioid effects, including analgesia, euphoria, sedation, respiratory depression, miosis, bradycardia, and physical dependence. This agent binds to mu-opioid receptors with a high affinity, and a lesser degree to kappa- and gamma-opioid receptors.

**naltrexone :** A drug that blocks the action of opiates (drugs used to treat pain). It may be used in the treatment of intravenous opiate addiction or alcohol dependence. Naltrexone is also being studied in the treatment of breast cancer. It may block the effects of the hormone estrogen, which causes some breast cancer cells to grow, or block the blood flow to tumors. It is a type of opiate antagonist. Also called naltrexone hydrochloride, ReVia, and Vivitrol.

**naltrexone hydrochloride:** The hydrochloride salt of naltrexone, a noroxymorphone derivative with competitive opioid antagonistic activity. Naltrexone and its metabolite 6-beta-naltrexol reverse the effects of opioids by binding to various opioid receptors in the central nervous system (CNS), including the mu-, kappa- and gamma-opioid receptors; opioid effects of analgesia, euphoria, sedation, respiratory depression, miosis, bradycardia, and physical dependence are inhibited. Naltrexone is longer-acting and more potent compared to naloxone.

**naltrexone hydrochloride :** A drug that blocks the action of opiates (drugs used to treat pain). It may be used in the treatment of intravenous opiate addiction or alcohol dependence. Naltrexone hydrochloride is also being studied in the treatment of breast cancer. It may block the effects of the hormone estrogen, which causes some breast cancer cells to grow, or block the blood flow to tumors. It is a type of opiate antagonist. Also called naltrexone, ReVia, and Vivitrol.

**Namenda:** (Other name for: memantine hydrochloride)

**Namenda :** A drug used to treat dementia caused by Alzheimer disease. It is also being studied in the treatment of side effects from whole-brain radiation therapy for cancer and other conditions. Namenda blocks the uptake of calcium by certain brain cells and decreases their activity. It is a type of N-methyl-D-aspartate (NMDA) receptor antagonist. Also called memantine hydrochloride.

**nandrolone decanoate:** The decanoate salt form of nandrolone, an anabolic steroid analog of testosterone with androgenic, anabolic, and erythropoietin stimulating effects. Nandrolone enters the cell and binds to and activates specific nuclear androgen receptors in responsive tissue, including the prostate, seminal vesicles, scrotum, penis, larynx, hair follicles, muscle, and bone. The resulting activated hormone receptor complex translocates into the nucleus and binds to androgen response elements (ARE) in the promoter region of targeted genes, where the complex promotes gene expression necessary for maintaining male sex characteristics. Mimicking the negative feedback mechanism of testosterone, nandrolone decanoate also suppresses the secretion of luteinizing hormone (LH). Furthermore, this agent also stimulates erythropoietin production by enhancing the production of erythropoietic stimulating factors.

**nano-:** Prefix meaning one billionth or  $10^{-9}$ . OR A prefix meaning one-billionth OR A prefix that divides a basic unit by one billion ( $10^{-9}$ ). OR Prefix used in the SI system meaning "multiply by  $10^{-9}$ ". For example 1 nm means "0.000000001 m"; 2.8 ng could also be written " $2.8 \times 10^{-9}$  g".

**nanocell-encapsulated miR-16-based microRNA mimic:** A nanoparticle-based formulation composed of a microRNA 16 (miR-16) mimic, a double-stranded, 23 base pair, synthetic RNA molecule, encapsulated in nonliving bacterial minicells and coated with anti-epidermal growth factor receptor (EGFR) antibodies, with potential antineoplastic activity. Upon intravenous administration and subsequent transfection, nanocell-encapsulated miR-16-based microRNA mimic targets EGFR-expressing tumor cells and facilitates the restoration of expression of the miR-16 family. This leads to the downregulation of the expression of tumor-promoting genes and the inhibition of tumor cell growth. In addition, restoration of miR-16 expression sensitizes the tumor cell to certain chemotherapeutic agents.

miR-16, a family of microRNAs, is critical to the regulation of gene expression and appears to have a tumor suppressor function; its expression is downregulated in various cancer cell types. Check for active clinical trials using this agent.

**Nanocurie:** One billionth  $10^{-9}$  of a curie.

**nanogram :** A measure of weight. One nanogram weighs a billion times less than one gram, and almost a trillion-times less than a pound.

**Nanometer:** A unit of measurement equivalent to one millionth of a meter. OR A unit of length, equal to  $10^{-9}$  meters, and equal to  $10 \text{ \AA}$  (Angstroms). OR A measure of length in the metric system. A nanometer is one billionth of a meter. An average human hair is about 60,000 nanometers thick. Nanometers are used to measure wavelengths of light and distances between atoms in molecules.

**nanomole :** The amount of a substance equal to a billionth of a mole (a measure of the amount of a substance). Also called nM.

**Nanoparticle:** Particles with sizes ranging from 1 - 100 nanometres OR A particle whose diameter measures between 0 and 1,000 nanometers.

**nanoparticle :** A particle of that is smaller than 100 nanometers (one-billionth of a meter). In medicine, nanoparticles can be used to carry antibodies, drugs, imaging agents, or other substances to certain parts of the body. Nanoparticles are being studied in the detection, diagnosis, and treatment of cancer.

**nanoparticle albumin-bound docetaxel ABI-008:** A nanoparticle albumin-bound formulation of the taxane docetaxel with antineoplastic activity. Docetaxel is a semi-synthetic, second-generation taxane derived from a compound found in the European yew tree *Taxus baccata*. Docetaxel binds to and stabilizes tubulin, thereby inhibiting microtubule disassembly which results in cell-cycle arrest at the G<sub>2</sub>/M phase and cell death. This agent also inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and displays immunomodulatory and pro-inflammatory properties by inducing various mediators of the inflammatory response. In nanoparticle albumin-bound docetaxel ABI-008 docetaxel is solubilized without the use of the nonionic solubilizer Cremophor ELP, permitting the administration of larger doses of docetaxel while avoiding Cremophor ELP-associated toxicity.

**nanoparticle albumin-bound rapamycin:** The macrolide antibiotic rapamycin bound to nanoparticle albumin with immunosuppressant (see sirolimus) and potential antiangiogenic and antineoplastic activities. Rapamycin binds to the immunophilin FK Binding Protein-12 (FKBP-12) to generate a complex that binds to and inhibits the activation of the mammalian Target Of Rapamycin (mTOR), a key regulatory kinase. In turn, inhibition of mTOR may result in the inhibition of the phosphatidylinositol 3 (PI-3) kinase/Akt pathway and vascular endothelial cell growth factor (VEGF) secretion, which may result in decreased tumor cell proliferation and tumor angiogenesis. The binding of water-insoluble rapamycin to nanoparticle albumin permits the albumin-mediated endocytosis of rapamycin by tumor cells and endothelial cells.

**nanoparticle paclitaxel :** A drug used to treat breast cancer that has come back or spread to other parts of the body. It is also used with carboplatin to treat advanced non-small cell lung cancer in patients who are not able to have surgery or radiation therapy. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that has spread to other parts of the body. It is being studied in the treatment of other types of cancer.

Nanoparticle paclitaxel is a form of the anticancer drug paclitaxel and may cause fewer side effects than paclitaxel. It stops cancer cells from growing and dividing, and may kill them. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called ABI-007, Abraxane, paclitaxel albumin-stabilized nanoparticle formulation, and protein-bound paclitaxel.

**nanoparticle-encapsulated docetaxel:** A nanoparticle-based formulation containing the poorly water-soluble, second-generation taxane analog docetaxel covalently conjugated to proprietary and as of yet undisclosed degradable linkers and encapsulated in polymers, with antineoplastic activity. Upon intravenous administration of nanoparticle-encapsulated docetaxel, the nanoparticles are able to accumulate at the tumor site due to the unique characteristics of the tumor's vasculature, while avoiding normal, healthy tissue. Docetaxel is released and becomes active upon cleavage from various linkers at a predetermined and controlled rate which is dependent on the properties of the proprietary linkers. In turn, active, unconjugated docetaxel binds to the beta-subunit of tubulin, stabilizes microtubules and inhibits microtubule disassembly. This prevents mitosis and results in tumor cell death. Compared to the administration of docetaxel alone, this formulation is able to increase docetaxel's efficacy while

avoiding systemic exposure, which minimizes its toxicity. By using different linkers, docetaxel can be released at various rates.

**nanoparticle-encapsulated doxorubicin hydrochloride:** A formulation of nanoparticles encapsulating the hydrochloride salt form of the anthracycline antibiotic doxorubicin, with potential antitumor activity. Upon intravenous administration, doxorubicin intercalates DNA, interferes with the activity of topoisomerase II, and causes DNA adducts and other DNA damage, resulting in tumor cell growth inhibition and apoptosis. This agent also interacts with cell membrane lipids causing lipid peroxidation. Delivery of doxorubicin in nanoparticles may improve drug penetration into tumors and may circumvent the tumor cells' multidrug resistance mechanisms and may therefore be effective in chemoresistant tumor cells.

**nanoprobe :** A device that uses x-rays instead of visible light to form images of very small structures, such as the insides of blood vessels and cells. It can be used to study processes such as angiogenesis (growth of blood vessels). The term nanoprobe is also used to describe very small particles that can be used in the detection, diagnosis, and treatment of cancer.

**nanosomal docetaxel lipid suspension:** A lipid-based nanosomal formulation of the poorly soluble, semi-synthetic, second-generation taxane docetaxel, with potential antineoplastic activity. Upon intravenous injection, docetaxel binds to and stabilizes tubulin, which inhibits microtubule disassembly and results in both cell cycle arrest at the G2/M phase and cell death. This liposomal formulation solubilizes docetaxel without the use of toxic solvents, such as polysorbate 80. This permits the administration of larger doses of docetaxel and improves the drug's safety profile by avoiding solvent-associated toxicities, such as hypersensitivity reactions and neurotoxicity. In addition, the nanosomal lipid-based delivery of docetaxel improves drug penetration into tumors and decreases drug clearance, all of which prolong the duration of docetaxel's therapeutic effects.

**Nanotechnology:** The creation of functional materials, devices and systems through control of matter on the nanometer length scale (1-100 nanometers), and exploitation of novel phenomena and properties (physical, chemical, biological) at that length scale. OR A branch of science and engineering devoted to the design and production of extremely small electronic devices and circuits built from individual atoms and molecules

OR The field of research that deals with the engineering and creation of things from materials that are less than 100 nanometers (one-billionth of a meter) in size, especially single atoms or molecules. Nanotechnology is being studied in the detection, diagnosis, and treatment of cancer.

**napabucasin:** An orally available cancer cell stemness inhibitor with potential antineoplastic activity. Even though the exact target has yet to be fully elucidated, napabucasin appears to target and inhibit multiple pathways involved in cancer cell stemness. This may ultimately inhibit cancer stemness cell (CSC) growth as well as heterogeneous cancer cell growth. CSCs, self-replicating cells that are able to differentiate into heterogeneous cancer cells, appear to be responsible for the malignant growth, recurrence and resistance to conventional chemotherapies.

**Naphtha:** Naphtha refers to a range of middle distillate streams whose composition lies part way between gasoline and kerosene. Paraffinic naphtha is a preferred feedstock for petrochemical production via the steam cracking to ethylene and co-products. Naphtha streams with a higher aromatic content are meanwhile processed in reformers to make additional gasoline as well as producing valuable aromatics compounds for the petrochemical industry.

**naphthalimide analogue UNBS5162:** An amonafide (naphthalimide) derivative and pan-antagonist of chemokine ligand (CXCL) expression, with potential anti-angiogenic activity. Although UNBS5162 is a derivative of amonafide, this agent appears to have a different profile than that of amonafide and its exact mechanism of action remains to be fully elucidated. This agent seems to decrease the expression of various proangiogenic CXCL chemokines in vitro and may have synergistic effects with radiotherapy or chemotherapy. CXCLs are small cytokines in the CXC chemokine family that are overexpressed in certain cancers; CXCL-mediated signaling plays a key role in angiogenesis and tumor progression.

**Naprosyn :** A drug used to treat mild pain and the symptoms of arthritis and several other conditions. It is also being studied in the treatment of bone pain in patients with cancer. Naprosyn stops the body from making substances that cause pain and inflammation. It is a type of nonsteroidal anti-inflammatory drug (NSAID) and a type of cyclooxygenase inhibitor. Also called naproxen.

**naproxen:** A propionic acid derivative and a non-steroidal anti-inflammatory drug (NSAID) with anti-inflammatory, antipyretic and analgesic activities. Naproxen inhibits the activity of the enzymes cyclooxygenase I and II, resulting in a decreased formation of precursors of prostaglandins and thromboxanes. The resulting decrease in prostaglandin synthesis is responsible for the therapeutic effects of naproxen. Naproxen also causes a decrease in the formation of thromboxane A<sub>2</sub> synthesis, by thromboxane synthase, thereby inhibiting platelet aggregation. or A drug used to treat mild pain and the symptoms of arthritis and several other conditions. It is also being studied in the treatment of bone pain in patients with cancer. Naproxen stops the body from making substances that cause pain and inflammation. It is a type of nonsteroidal anti-inflammatory drug (NSAID) and a type of cyclooxygenase inhibitor. Also called Naprosyn.

**Narcan:** (Other name for: naloxone hydrochloride)

**narcotic :** A substance used to treat moderate to severe pain. Narcotics are like opiates such as morphine and codeine, but are not made from opium. They bind to opioid receptors in the central nervous system. Narcotics are now called opioids.

**Nardil:** (Other name for: phenelzine sulfate)

**narnatumab:** A monoclonal antibody against RON (recepteur d'origine nantais; macrophage stimulating 1 receptor), with potential antineoplastic activity. Narnatumab binds to RON, thereby preventing binding of its ligand hepatocyte growth factor-like protein (HGFL or macrophage-stimulating protein (MSP)). This may prevent RON receptor-mediated signaling and may prevent cellular proliferation in tumor cells overexpressing RON. RON, a receptor tyrosine kinase, is overexpressed in a variety of epithelial cancer cell types and plays an important role in cellular proliferation, migration and invasion.

**Naropin :** A drug used to control pain and to cause a temporary loss of feeling in one part of the body, during and after surgery. It is also being studied for pain control after cancer surgery. It is a type of local anesthetic. Also called ropivacaine and ropivacaine hydrochloride.

**Narrow mouth:** a finish of a plastic container in which the diameter is small relative to the diameter of the body.

**Nasacort:** (Other name for: triamcinolone acetonide)

**nasal :** By or having to do with the nose.

**nasal saline irrigation solution:** A solution containing sodium chloride that can be used to cleanse the nasal passages. Upon nasal irrigation, the saline washes out thick or dry mucus, and irritants, such as pollen, dust particles, pollutants and bacteria, from the nasal cavities. This reduces nasal blockage, improves nasal airflow and helps keep nasal passages clean and clear, which decreases the risk of irritation and inflammation. The saline solution also moisturizes and soothes irritated mucus membranes. Check for active clinical trials using this agent.

**Nasalfent:** (Other name for: fentanyl citrate pectin-based nasal spray)

**Nascent RNA:** The initial transcripts of RNA, before any modification or processing.

**nasogastric :** Describes the passage from the nose to the stomach. For example, a nasogastric tube is inserted through the nose, down the throat and esophagus, and into the stomach.

**nasogastric tube :** A tube that is inserted through the nose, down the throat and esophagus, and into the stomach. It can be used to give drugs, liquids, and liquid food, or used to remove substances from the stomach. Giving food through a nasogastric tube is a type of enteral nutrition. Also called gastric feeding tube and NG tube.

**Nasonex :** A drug that is used in a cream to treat certain skin conditions and in a nasal spray to treat sinus problems caused by allergies. It is being studied as a way to treat inflammation of the skin caused by radiation therapy. Nasonex is a type of corticosteroid. Also called Elocon, mometasone, and mometasone furoate.

**nasopharyngeal cancer :** Cancer that forms in tissues of the nasopharynx (upper part of the throat behind the nose). Most nasopharyngeal cancers are squamous cell carcinomas (cancer that begins in flat cells lining the nasopharynx).

**nasopharynx :** The upper part of the throat behind the nose. An opening on each side of the nasopharynx leads into the ear.

**nasoscope :** A thin tube-like instrument used to examine the inside of the nose. A nasoscope has a light and a lens for viewing and may have a tool to remove tissue. Also called rhinoscope.

**nasoscopy** : Examination of the inside of the nose using a nasoscope (or rhinoscope). A nasoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called rhinoscopy.

**natalizumab**: A humanized recombinant IgG4 monoclonal antibody directed against the alpha4 subunit of the integrins alpha4beta1 and alpha4beta7 with immunomodulating, anti-inflammatory, and potential antineoplastic activities. Natalizumab binds to the alpha4-subunit of alpha4beta1 and alpha4beta7 integrins expressed on the surface of all leukocytes except neutrophils, inhibiting the alpha4-mediated adhesion of leukocytes to counter-receptor(s) such as vascular cell adhesion molecule-1 (VCAM-1); natalizumab –mediated disruption of VCAM-1 binding by these integrins may prevent the transmigration of leukocytes across the endothelium into inflamed parenchymal tissue. Integrins are cellular adhesion molecules (CAMs) that are upregulated in various types of cancer and some autoimmune diseases; alpha4beta1 integrin (VLA4) has been implicated in the survival of myeloma cells, possibly by mediating their adhesion to stromal cells.

**nateglinide**: A phenylalanine derivative of the meglitinide class of agents with hypoglycemic activity. Nateglinide, compared to repaglitinide, binds with a higher affinity to the SUR1 subunit and with a faster onset of action and a shorter duration of action. This agent is metabolized by the cytochrome P450 isoenzyme CYP2C9, and, to a lesser extent, by CYP3A4. The parent drug and metabolites are mainly excreted in the urine and its half-life is about 1.5 hours.

**National Center for Complementary and Integrative Health** : A federal agency that uses science to explore complementary and integrative health (CIH) practices, trains CIH researchers, and provides authoritative information about CIH to professionals and the public. The National Center for Complementary and Integrative Health awards grants for research projects, training, and career development in CIH; sponsors conferences, educational programs, and exhibits; studies ways to use proven CIH practices along with conventional medical practice; and supports adding CIH to medical, dental, and nursing school programs. The National Center for Complementary and Integrative Health is part of the National Institutes of Health. Also called NCCIH.

**National Clinical Trials Network :** A National Cancer Institute (NCI) program that gives funds and other support to cancer research organizations to conduct cancer clinical trials. The National Clinical Trials Network (NCTN) helps these organizations develop new clinical trials and manage their regulatory, financial, membership, and scientific committees. It also helps with statistics and data management, Institutional Review Boards (IRBs), and patient tissue sample collection and storage. This support allows researchers to conduct trials that focus on specific cancers and patient populations and new treatment methods. The groups in the NCTN include the Alliance for Clinical Trials in Oncology, ECOG-ACRIN Cancer Research Group, NRG Oncology, SWOG, Children's Oncology Group (COG), and the NCI of Canada-Clinical Trials Group (NCIC-CTG). The NCTN was previously known as the NCI Clinical Trials Cooperative Group Program. Also called NCTN.

**National Institutes of Health :** A lung cancer screening trial sponsored by the National Cancer Institute (NCI). In the trial, low-dose spiral CT scans were compared with chest x-rays for their ability to detect lung cancer early. The trial included more than 50,000 participants who were aged 55 to 74 years, were current or former heavy smokers, and had no signs or symptoms of lung cancer. The results of the trial showed that participants who were screened with spiral CT scans had about a 20% lower risk of dying from lung cancer than those who were screened with chest x-rays. Also called NLST.

**National Lung Screening Trial :** A type of immune cell that has granules (small particles) with enzymes that can kill tumor cells or cells infected with a virus. A natural killer cell is a type of white blood cell. Also called NK cell and NK-LGL.

**National Response Framework (NRF):** The guiding principles, roles, and structures that enable all domestic incident response partners to prepare for and provide a unified national response to disasters and emergencies. It describes how the Federal Government, States, Tribes, communities, and the private sector work together to coordinate a national response. The framework, which became effective March 22, 2008, builds upon the National Incident Management System, which provides a template for managing incidents. For additional detail, please see the NRC Incident Response Plan (NUREG-0728) .

**National Source Tracking System (NSTS):** A secure, Web-based data system that helps the NRC and its Agreement States track and regulate the medical, industrial, and academic uses of certain nuclear materials, from the time they are manufactured or imported to the time of their disposal or exportation. This information enhances the ability of the NRC and Agreement States to conduct inspections and investigations, communicate information to other government agencies, and verify the ownership and use of nationally tracked sources. For additional detail, see the NSTS page.

**native:** Native' is the term used to describe metal that is found in nature as the metal itself. OR Naturally occurring forms of precious metals, for example, native copper, native gold, and native silver. Native metals are often very impure. OR Used to describe a metal that is found as an element even though it may be mixed with other substances. Gold is often (!) found native. Even though it may not be in large lumps, it is not chemically combined with another element.

**native conformation:** The biologically active conformation of a macromolecule.

**Native Element Mineral:** A mineral that is made up of a pure element. Gold is often found alone and as a native element.

**Native form:** The stable, functional conformation of a biological macromolecule.

**Natrecor:** (Other name for: nesiritide)

**natural abundance:** The average fraction of atoms of a given isotope of an element on Earth.

**natural attenuation:** the natural breakdown of groundwater contaminants over time and distance from the point source.

**Natural circulation:** The circulation of the coolant in the reactor coolant system without the use of the reactor coolant pumps. The circulation is due to the natural convection resulting from the different densities of relative cold and heated portions of the system.

**Natural color:** Describes the translucent appearance of a plastic material which has not been colored.

**Natural Gas:** Natural gas is the name given to dry gas streams composing mainly of methane (CH<sub>4</sub>). It may also contain small volumes of ethane, propane and butane as well as traces of other gases, such as carbon dioxide.

Various components of natural gas is separated via distillation and are used to make methanol and various olefins. OR a gaseous mixture of hydrocarbons that usually occurs with crude oil. OR A mixture of methane and other gases, found trapped over petroleum deposits under the earth. OR The fossil fuel that is formed (usually along with crude oil) when the remains of dead sea creatures decompose over millions of years. It is composed mainly of methane (CH<sub>4</sub>) and it is the gas that is used in the home and in school for Bunsen burners.

**natural history study :** A type of leukemia in which large natural killer (NK) cells (a type of white blood cell) that contain granules (small particles) are found in the blood. It is a chronic disease that may last for a long time and get worse. Also called NK-LGL leukemia and NK-LGLL.

**natural human interferon alpha OPC-18:** A proprietary preparation of natural human interferon alpha (IFN alpha) with potential immunomodulatory and antineoplastic activities. Natural human interferon alpha OPC-18 binds to cell-surface IFN alpha receptors (IFNARs), resulting in the transcription and translation of genes whose products mediate antiviral, antiproliferative, and immune-modulating effects. IFN alpha is a type I interferon produced by peripheral blood leukocytes or lymphoblastoid cells when exposed to live or inactivated virus, double-stranded RNA, or bacterial products and is the primary interferon produced by virus-induced leukocyte cultures. In addition to its pronounced antiviral activity, it activates NK cells.

**natural killer cell :** A system of disease prevention and treatment that avoids drugs and surgery. Naturopathy is based on the use of natural agents such as air, water, light, heat, and massage to help the body heal itself. It also uses herbal products, nutrition, acupuncture, and aromatherapy as forms of treatment.

**natural killer cells ZRx101:** A population of activated, immortalized, interleukin-2 (IL-2)-dependent, cytotoxic natural killer (NK) cells with potential antitumor activity. Natural killer cells ZRx101 are derived from NK-92 cells, having been modified to target tumor-associated antigens (TAAs) upregulated in certain types of cancer. The NK-92 cell line was originally isolated from a patient with large granular lymphocytic (LGL) leukemia/lymphoma.

**natural killer-cell large granular lymphocyte leukemia :** A feeling of sickness or discomfort in the stomach that may come with an urge to vomit. Nausea is a side effect of some types of cancer therapy.

**natural levee:** a ridge of sand and silt deposited near the edge of a stream's channel.

**natural occurrence:** The occurrence in nature of a compound, when there are no man-made sources of the compound. The contamination of nature by some compounds may be so widespread that it is virtually impossible at the present time to get access to biota with a natural level and only "normal" levels can be measured, i.e., the levels that are usually prevalent at places where there is no obvious local contamination (WHO, 1979).

**natural orbital:** The natural orbitals are those for which the first-order density matrix is diagonal; each will contain some non-integer number of electrons between 0 and 2. Usually discussed in the context of a correlated calculation. RHF calculations give molecular orbitals that are also natural orbitals. The NOs are the orbitals for which the CI expansion converges fastest.

**Natural product:** A molecule produced by a living organism--a plant, marine organism or microorganism--that often has a medicinal use

**natural selection:** the concept that random, small variations take place in living things that lead to the gradual development of a species. OR theory by Charles Darwin which states that organisms best fit for their environment will survive and pass along these traits. OR The process of survival of the fittest by which organisms that adapt to their environment survive while those that do not adapt disappear.

**Natural uranium:** Uranium containing the relative concentrations of isotopes found in nature (0.7 percent uranium-235, 99.3 percent uranium-238, and a trace amount of uranium-234 by mass). In terms of radioactivity, however, the radiation emitted by natural uranium comes approximately 2.2 percent from uranium-235, 48.6 percent from uranium-238, and 49.2 percent from uranium-234. Natural uranium can be used as fuel in nuclear reactors.

**Naturally balanced runner system :** each succession of runner is identical to the runners in the same succession in all other flows in the mold.

**naturopathy :** A drug used to treat advanced non-small cell lung cancer. It blocks cell growth by stopping cell division and may cause cancer cells to die. It is a type of vinca alkaloid and a type of antimetabolic agent. Also called vinorelbine tartrate.

**nausea :** A substance being studied in the treatment of lymphomas and other types of cancer. It blocks some of the enzymes that keep cancer cells from dying. It is a type of Bcl-2 family inhibitor. Also called ABT-263.

**Navelbine :** A substance that is being studied for its ability to make cancer cells respond to drugs to which they have become resistant. It is a type of nucleoside analog.

**navitoclax:** An orally bioavailable, synthetic small-molecule antagonist of a subset of the B-cell leukemia 2 (Bcl-2) family of proteins with potential antineoplastic activity. Bcl-2 family protein inhibitor ABT-263 selectively binds to apoptosis suppressor proteins Bcl-2, Bcl-XL, and Bcl-w and prevents their binding to the apoptotic effectors Bax and Bak proteins, which may trigger apoptosis in tumor cells overexpressing Bcl-2, Bcl-XL, and Bcl-w. Bcl-2, Bcl-XL, and Bcl-w are frequently overexpressed in a wide variety of cancers, including those of the lymphatic system, breast, lung, prostate, and colon, and have been linked to tumor drug resistance. or A substance that is being studied in the treatment of leukemia. It belongs to the family of drugs called protein kinase inhibitors. Also called midostaurin and PKC412.

**navy bean powder:** The powder form of the cooked navy bean with potential antioxidant and chemopreventive activities. Navy beans are rich in fiber, minerals, vitamins, and phytochemicals such as flavonoids and phytosterols. They appear to prevent carcinogenesis by inducing tumor cell apoptosis. Intake of navy bean powder may have a beneficial effect on intestinal microflora.

**NBI1011:** A substance being studied in the treatment of cancer. It is made by combining interleukin-4 with a bacterial toxin. NBI-3001 is a type of recombinant chimeric protein. Also called interleukin-4 PE38KDEL cytotoxin and interleukin-4 PE38KDEL immunotoxin.

**NBI-3001:** A federal agency that uses science to explore complementary and integrative health (CIH) practices, trains CIH researchers, and provides authoritative information about CIH to professionals and the public.

NCCIH awards grants for research projects, training, and career

development in CIH; sponsors conferences, educational programs, and exhibits; studies ways to use proven CIH practices along with conventional medical practice; and supports adding CIH to medical, dental, and nursing school programs. NCCIH is part of the National Institutes of Health. Also called National Center for Complementary and Integrative Health.

**NBO:** Natural bond order. See NPA.

**NCCIH:** (... suh-POR-ted KLIH-nih-kul TRY-ul)

**NCI clinical trials cooperative group :** A research study conducted by researchers and institutions that receive funding or other resources from the National Cancer Institute (NCI). Resources from NCI include programs that provide scientific review and Institutional Review Board (IRB) support and management of patient tissue sample collection and storage. NCI also provides information about the clinical trials, such as regulatory requirements, patient enrollment, funding, and education materials to these researchers. This support allows the people who run the clinical trials more time for patient care and research. NCI-supported trials include trials that are part of NCI's national networks, such as National Clinical Trials Network (NCTN), NCI Community Oncology Research Program (NCORP), and Experimental Therapeutics Clinical Trials Network (ETCTN). NCI also funds, in full or in part, trials taking place at NCI-designated cancer centers throughout the U.S. and trials taking place at the NIH Clinical Center in Bethesda, Maryland.

**NCI-supported clinical trial :** A National Cancer Institute (NCI) program that gives funds and other support to cancer research organizations to conduct cancer clinical trials. The NCTN helps these organizations develop new clinical trials and manage their regulatory, financial, membership, and scientific committees. It also helps with statistics and data management, Institutional Review Boards (IRBs), and patient tissue sample collection and storage. This support allows researchers to conduct trials that focus on specific cancers and patient populations and new treatment methods. The groups in the NCTN include the Alliance for Clinical Trials in Oncology, ECOG-ACRIN Cancer Research Group, NRG Oncology, SWOG, Children's Oncology Group (COG), and the NCI of Canada-Clinical Trials Group (NCIC-CTG). The NCTN was previously known as the NCI Clinical Trials Cooperative Group Program. Also called National Clinical Trials Network.

**ncmtRNA oligonucleotide Andes-1537:** A proprietary antisense oligonucleotide targeting a novel non-coding mitochondrial RNA (ncmtRNA), with potential antineoplastic activity. Upon administration, Andes-1537 binds to ncmtRNA, which is overexpressed in rapidly proliferating cells, such as cancer cells, and not expressed in resting cells. This may decrease the expression of the ncmtRNA, which may inhibit cell proliferation and eventually induce apoptosis in susceptible cancer cells. The proprietary mitochondrial RNA (mtRNA) belongs to the family of non-coding RNAs (ncRNA); it contains an inverted repeat (IR) of 815 nucleotides (nt), which can form a covalent link to the 5' end of the mitochondrial 16S ribosomal RNA (16S mtrRNA). Check for active clinical trials using this agent.

**NCTN:** A substance being studied in the prevention of colorectal cancer. It is a form of aspirin that gives off nitric oxide gas and is less irritating to the lining of the stomach than plain aspirin. It is a type of nonsteroidal anti-inflammatory drug (NSAID). Also called nitric oxide-releasing acetylsalicylic acid derivative.

**NCX 4016:** A drug put on the skin to treat growths caused by sun exposure. A form of NDGA that is taken by mouth is being studied in the treatment of prostate cancer. NDGA is an antioxidant, and it may block certain enzymes needed for tumor growth. Also called Actinex, masoprocol, and nordihydroguaiaretic acid.

**NDGA:** Newcastle disease virus. A bird virus that is being studied in the treatment of cancer. It may be used to kill cancer cells directly, or it may be given as a cancer vaccine to stimulate the body's immune system. NDV is a type of biological response modifier and vaccine therapy. Also called Newcastle disease virus.

**NDV:** A device used to turn liquid into a fine spray.

**neap tide:** tide with the smallest tidal range; during both quarter phases.

**neap tides:** the lowest tides, which occur close to the first and third quarters of the moon.

**Nebcin:** (Other name for: tobramycin sulfate)

**nebula:** a cloud of gas and dust in space.

**nebular hypothesis:** the hypothesis that suggests that the planets and moons in the solar system formed from a huge hydrogen-helium cloud.

**nebulizer** : A drug used with gemcitabine and cisplatin to treat squamous non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has not been treated with other anticancer therapy. It is also being studied in the treatment of other types of cancer. Necitumumab binds to a protein called epidermal growth factor receptor (EGFR), which is found on some types of cancer cells. Blocking this protein may help keep cancer cells from growing. Necitumumab is a type of monoclonal antibody. Also called Portrazza.

**NebuPent:** (Other name for: pentamidine isethionate)

**necitumumab:** A fully human IgG1 monoclonal antibody directed against the epidermal growth factor receptor (EGFR) with potential antineoplastic activity. Necitumumab binds to and blocks the ligand binding site of EGFR, thereby preventing the activation and subsequent dimerization of the receptor. This may lead to an inhibition of EGFR-dependent downstream pathways and so inhibition of EGFR-dependent tumor cell proliferation and metastasis. EGFR, a member of the epidermal growth factor family of extracellular protein ligands, may be overexpressed on the cell surfaces of various tumor cell types. Check for active clinical trials using this agent.

**necitumumab** : Surgery to remove lymph nodes and other tissues in the neck.

**Neck:** The part of a container where the shoulder cross section area decreases to form the finish.

**Neck** : the part of a container where the shoulders cross section area decreases to form the finish.

**Neck Bead:** A protruding circle on a container at the point where the neck meets the finish, the diameter of which usually equals the outside diameter of the closure.

**neck dissection** : Refers to the death of living tissues.

**Neck finish:** the plastic surrounding the opening of a bottle shaped to accommodate a specific closure. It's the portion of the neck that carries the threads, lugs or friction fit members to which the closure is applied, and includes the sealing surface and sealing bead; generally, the whole portion above the transfer or pry-off bead. B&C Plastics Ltd. makes continuous thread (c/t) necks for twist-on caps, and hinge-guard (j-cap) necks for snap-

on caps. OR Part of the mold assembly which forms the neck and finish. Sometimes called Neck Ring.

**Neck linker:** A short segment of kinesin that binds to the head domain of kinesin when ATP is bound and is released when the nucleotide-binding site is vacant or occupied by ADP.

**Neck ring:** that part of the mold equipment that forms the finish of a bottle.

**NECK-IN:** In extrusion coating, the difference between the width of the extrusion die opening and the width of the coating on the substrate.

**necrosis:** Mass death of areas of tissues surrounded by otherwise healthy tissue. OR The removal of tissue or fluid with a needle for examination under a microscope. When a wide needle is used, the procedure is called a core biopsy. When a thin needle is used, the procedure is called a fine-needle aspiration biopsy.

**nedaplatin:** A second-generation cisplatin analogue with antineoplastic activity. Containing a novel ring structure in which glycolate is bound to the platinum by a bidentate ligand, nedaplatin forms reactive platinum complexes that bind to nucleophilic groups in DNA, resulting in intrastrand and interstrand DNA cross-links, apoptosis and cell death. This agent appears to be less nephrotoxic and neurotoxic compared to both cisplatin and carboplatin.

**needle biopsy :** A procedure used to mark a small area of abnormal tissue so it can be removed by surgery. An imaging device is used to guide a thin wire with a hook at the end through a hollow needle to place the wire in or around the abnormal area. Once the wire is in the right place, the needle is removed and the wire is left in place so the doctor will know where the abnormal tissue is. The wire is removed when a biopsy is done. Also called needle/wire localization and wire localization.

**needle localization :** A procedure used to mark a small area of abnormal tissue so it can be removed by surgery. An imaging device is used to guide a thin wire with a hook at the end through a hollow needle to place the wire in or around the abnormal area. Once the wire is in the right place, the needle is removed and the wire is left in place so the doctor will know where the abnormal tissue is. The wire is removed when a biopsy is done. Also called needle localization and wire localization.

**needle valve:** A valve which allows fine control over the rate of gas or liquid flowing through it. The valve contains a thin needle with a point that fits into a conical cup. When the valve is closed, the needle blocks an orifice in the bottom of the cup.

**needle-localized biopsy :** In acupuncture, the insertion of a thin needle into a specific place on the body to unlock qi (vital energy). The needle may be twirled, moved up and down at different speeds and depths, heated, or charged with a low electric current.

**needle/wire localization :** A procedure to mark and remove abnormal tissue when the doctor cannot feel a lump. An imaging device is used to guide a thin wire with a hook on the end through a hollow needle to place the wire in or around the abnormal area. Once the wire is in the right place, the needle is removed and the wire is left in so the doctor will know where the abnormal tissue is. The wire is removed at the time the biopsy is done.

**Needled mat:** A mat formed of strands cut to short length and felted together in a needle loom, with or without a carrier.

**needling :** A drug used to treat depression. It belongs to the family of drugs called antidepressant agents. Also called Serzone.

**nefazodone :** A lymph node in the armpit that is free of cancer.

**nefopam hydrochloride:** The hydrochloride salt form of nefopam, a centrally-acting, non-opioid benzoxazocine with analgesic activity. The mechanism of action through which nefopam exerts its analgesic effects is, as of yet, largely unknown but may involve inhibition of serotonin, dopamine and noradrenaline reuptake.

**negative axillary lymph node :** A test result that shows the substance or condition the test is supposed to find is not present at all or is present, but in normal amounts. In genetics, a negative test result usually means that a person does not have a mutation (change) in the gene, chromosome, or protein that is being tested. More testing may be needed to make sure a negative test result is correct.

**negative budget:** of a glacier, the losing of more volume than that gained from new snowfall.

**Negative Catalyst:** A negative catalyst is another term for an inhibitor. A negative catalyst has an opposite reaction from a catalyst.

**Negative control:** Repression of biological activity by the presence of a specific molecule.

**negative cooperativity:** A phenomenon of some multisubunit enzymes or proteins in which binding of a ligand or substrate to one subunit impairs binding to another subunit.

**negative feedback:** An interaction that reduces or dampens the response of the system in which it is incorporated. OR Regulation of a biochemical pathway achieved when a reaction product inhibits an earlier step in the pathway.

**negative gravity anomaly:** the gravity reading of a rock if it is lower than the normal regional gravity value.

**negative magnetic anomaly:** a magnetic reading that is lower than the average regional magnetic field strength.

**Negative Mold:** A mold with a concave cavity.

**negative polarity:** of a rock, the polarity created when the earth's magnetic field was reversed, which reduced the earth's net field strength.

**negative predictive value :** The likelihood that an individual with a negative test result is truly unaffected and/or does not have the particular gene mutation in question. Also called NPV.

**Negative selection:** A selection process in T-cell development in which T cells that bind with high affinity to MHC complexes of antigen-presenting cells displaying self-peptides undergo apoptosis.

**negative test result :** A drug used to treat certain types of T-cell acute lymphoblastic leukemia (T-ALL) and T-cell lymphoblastic lymphoma (T-LBL). It belongs to the family of drugs called antimetabolites. Also called 506U78 and Arranon.

**neihulizumab:** A humanized, agonistic monoclonal antibody against P selectin glycoprotein ligand-1 (PSGL-1; SELPLG; CD162), with potential immunosuppressive activity. Upon administration, neihulizumab specifically targets and binds to CD162 expressed on activated T-lymphocytes. This induces apoptosis of activated T-cells and reduces T-cell-mediated immune responses. This may halt disease progression of T-cell-mediated autoimmune diseases and acute graft-versus-host disease (GvHD).

**nelarabine:** An arabinonucleoside antimetabolite with antineoplastic activity. Nelarabine is demethoxylated by adenosine deaminase to become

biologically active 9-beta-D-arabinosylguanine (ara-G); ara-G incorporates into DNA, thereby inhibiting DNA synthesis and inducing an S phase-dependent apoptosis of tumor cells. Check for active clinical trials using this agent. or A drug that interferes with the ability of a virus to make copies of itself.

**nelfinavir mesylate:** The mesylate salt form of the antiviral agent nelfinavir. Nelfinavir selectively inhibits human immunodeficiency virus (HIV) protease, thereby preventing cleavage of the gag-pol viral polyprotein and resulting in the release of immature, noninfectious virions. In vivo, this agent exhibits broad tissue distribution compared to related agents. or Treatment given as a first step to shrink a tumor before the main treatment, which is usually surgery, is given. Examples of neoadjuvant therapy include chemotherapy, radiation therapy, and hormone therapy. It is a type of induction therapy.

**nelipepimut-S plus GM-CSF vaccine:** A cancer peptide vaccine comprised of a human leukocyte antigen (HLA) A2/A3 restricted HER2/neu (ERBB2) peptide from the extracellular domain of the HER2 protein (E75 peptide) and combined with the immunoadjuvant granulocyte-macrophage colony-stimulating factor (GM-CSF), with potential immunomodulating and antineoplastic activity. Upon intradermal injection, nelipepimut-S plus GM-CSF vaccine may induce a specific cytotoxic T-lymphocyte (CTL) response against HER2/neu-expressing tumor cell types. HER2/neu, a tumor-associated antigen and a member of the epidermal growth factor receptor family of tyrosine kinases, is overexpressed in various tumor cell types. GM-CSF potentiates the antitumor immune response.

**nematicide:** A chemical used to kill nematodes.

**Neo-Oestronol I:** (Other name for: diethylstilbestrol)

**neoadjuvant therapy :** Abnormal and uncontrolled cell growth.

**neoantigen-based glioblastoma vaccine:** A peptide-based, personalized glioblastoma cancer vaccine consisting of patient-specific glioblastoma-derived immunogenic mutated epitopes (neoantigens), with potential immunomodulating and antineoplastic activities. Vaccination with the neoantigen-based glioblastoma vaccine stimulates the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing the neoantigens, which results in tumor cell lysis. Neoantigens

are tumor-specific antigens derived from mutated proteins that are present only in a specific tumor.

**neoantigen-based melanoma-poly-ICLC vaccine:** A peptide-based melanoma cancer vaccine consisting of neoantigens and peptides derived from patient-specific melanoma immunogenic epitopes, combined with the immunostimulant poly-ICLC with potential immunomodulating and antineoplastic activities. Vaccination with the neoantigen-based melanoma vaccine stimulates the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing the neoantigens, which results in tumor cell lysis. The adjuvant poly-ICLC, composed of double-stranded RNA molecules of polyinosinic-polycytidylic acid stabilized with poly L-lysine in carboxymethylcellulose, is a ligand for toll-like receptor-3 (TLR3) and induces the release of cytokines which may help to boost the immune response against the selected neoantigens.

**Neodymium:** Symbol:"Nd" Atomic Number:"60" Atomic Mass: 144.24amu. Neodymium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. This reactive metal tarnishes easily and can be found in lasers, alloys, and even lenses for specialized types of eyewear.

**Neogest:** (Other name for: norgestrel)

**Neon:** Symbol:"Ne" Atomic Number:"10" Atomic Mass: 20.18amu. Neon is a non-reactive gas. It has no color and no smell, but when you send electricity through neon, it glows red. It is one of the noble or inert gases. You will find neon in television tubes, cryogenics, neon signs, and lasers.

**neoplasia :** An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Neoplasms may be benign (not cancer), or malignant (cancer). Also called tumor. Or A serious problem that may occur in cancer in which cancer cells spread from the original (primary) tumor to the meninges (thin layers of tissue that cover and protect the brain and spinal cord). It can happen in many types of cancer, but is the most common in melanoma, breast, lung, and gastrointestinal cancer. The cancer may cause the meninges to be inflamed. Also called carcinomatous meningitis, leptomeningeal carcinoma, leptomeningeal carcinomatosis, leptomeningeal metastasis, meningeal carcinomatosis, and meningeal metastasis.

**neoplasm:** Any formation of tissue associated with disease such as tumour. See malignant, tumour.

**neoplastic meningitis :** Surgery to remove a kidney or part of a kidney. In a partial nephrectomy, part of one kidney or a tumor is removed, but not an entire kidney. In a simple nephrectomy, one kidney is removed. In a radical nephrectomy, an entire kidney, nearby adrenal gland and lymph nodes, and other surrounding tissue are removed. In a bilateral nephrectomy, both kidneys are removed.

**Neoprene:** The trivial name for poly(2-chlorobutadiene). This polymer is used in the manufacture of fan belts and wetsuits. The monomer, 2-chlorobutadiene (aka chloroprene), looks something like this:

**Neoprene (GR-M):** A DuPont Dow Elastomers polymer of chloroprene which is prepared from coal, salt and limestone, not injection molded

**Neoquin:** (Other name for: apaziquone)

**Neoral:** (Other name for: cyclosporine)

**Neosar:** (Other name for: cyclophosphamide)

**Neoscan:** (Other name for: gallium citrate Ga 67)

**Neovastat:** (Other name for: shark cartilage extract AE-941)

**nephelometer:** an instrument that measures scattered light in a liquid.

**nephelometric turbidity unit (NTU):** a standard unit of turbidity measurement, equivalent to FNU.

**nephrectomy :** A doctor who has special training in diagnosing and treating kidney disease.

**nephrologist :** Surgery to make an opening from the outside of the body to the renal pelvis (part of the kidney that collects urine). This may be done to drain urine from a blocked kidney or blocked ureter into a bag outside the body. It may also be done to look at the kidney using an endoscope (thin, lighted tube attached to a camera), to place anticancer drugs directly into the kidney, or to remove kidney stones.

**nephron:** the functional and structural unit of the kidney that produces urine and is the primary unit of homeostasis in the human body.

**nephrostomy :** A series of x-rays of the kidneys. The x-rays are taken from different angles and show the kidneys clearly, without the shadows of the organs around them.

**nephrotomogram** : Poisonous or damaging to the kidney.

**nephrotoxic** : Surgery to remove a kidney and its ureter. Also called ureteronephrectomy.

**nephroureterectomy** : A bundle of fibers that receives and sends messages between the body and the brain. The messages are sent by chemical and electrical changes in the cells that make up the nerves.

**Neptazane**: (Other name for: methazolamide)

**Neptunium**: Symbol:"Np" Atomic Number:"93" Atomic Mass: 237.05amu. Neptunium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. A silvery, radioactive element that can be used in nuclear reactors because its atomic structure is so close to plutonium.

**neratinib**: An orally available, 6,7-disubstituted-4-anilinoquinoline-3-carbonitrile irreversible inhibitor of the HER-2 receptor tyrosine kinase with potential antineoplastic activity. Neratinib binds to the HER-2 receptor irreversibly, thereby reducing autophosphorylation in cells, apparently by targeting a cysteine residue in the ATP-binding pocket of the receptor. Treatment of cells with this agent results in inhibition of downstream signal transduction events and cell cycle regulatory pathways; arrest at the G1-S (Gap 1/DNA synthesis)-phase transition of the cell division cycle; and ultimately decreased cellular proliferation. Neratinib also inhibits the epidermal growth factor receptor (EGFR) kinase and the proliferation of EGFR-dependent cells.

**Nernst equation**: the response of an electrode varies with respect to the logarithm of the activity of the measured ion. The Nernst equation is a mathematical description of the potentiometric sensor behavior. OR An equation that relates the redox potential to the standard redox potential and the concentrations of the oxidized and reduced form of the couple.

**Nernstian response**: an potentiometric sensor is said to have a Nernstian response over a given concentration range if a plot of the potential difference (when measured against a reference electrode) versus the logarithm of the ionic activity of a given species in the test solution is linear with a slope factor, which is given by the Nernst equation.

**nerve** : A procedure in which medicine is injected directly into or around a nerve or into the spine to block pain.

**nerve block :** A type of cell that receives and sends messages from the body to the brain and back to the body. The messages are sent by a weak electrical current. Also called neuron.

**nerve cell :** Replacing a damaged nerve with a section of a healthy nerve that has been removed from another part of the body. This procedure is being studied in the prevention of erectile dysfunction in men having surgery for prostate cancer.

**nerve chord:** also called a spinal cord; a hollow structure that extends the length of the animal just above the notochord.

**nerve grafting :** A protein made by the body that causes certain nerve cells to grow and helps keep them alive.

**nerve growth factor :** Surgery to remove the prostate in which an attempt is made to save the nerves that help cause penile erections.

**nerve impulse:** an electrochemical event that occurs within the neuron.  
OR The increase in membrane potential and the changes in sodium and potassium conductances that result from alterations in the permeability of the axon membrane to those ions. Also called action potential.

**nerve roots:** the 31 pairs of projections that extend out along each side of the spinal cord; the sites of axons of the sensory and motor neurons.

**nerve-sparing radical prostatectomy :** A type of surgery that attempts to save the nerves near the tissues being removed.

**nerve-sparing surgery :** The organized network of nerve tissue in the body. It includes the central nervous system (the brain and spinal cord), the peripheral nervous system (nerves that extend from the spinal cord to the rest of the body), and other nerve tissue.

**nerves:** bundles of axons bound together.

**nervous system :** A procedure in which small electric impulses are used to stimulate muscles that are weak or paralyzed. It helps to increase muscle strength, blood circulation, and range of motion and to lessen muscle spasms. Also called neuromuscular electrical stimulation, NMES, and therapeutic (subthreshold) electrical stimulation.

**NES:** A combination of two drugs used to prevent nausea and vomiting caused by chemotherapy. It is a combination of netupitant and palonosetron hydrochloride. Netupitant and palonosetron hydrochloride blocks the action of chemicals in the brain that may trigger nausea and vomiting. Netupitant

and palonosetron hydrochloride is a type of antiemetic. Also called Akynzeo.

**nesiritide:** A recombinant version of the cardiac neurohormone, human B-type natriuretic peptide (hBNP) produced by the ventricular myocardium. Nesiritide binds to natriuretic peptide receptors on vascular smooth muscle and endothelial cells, through which it triggers guanylate cyclase dependent signal transduction resulting in increase of intracellular concentrations of cGMP. This leads to smooth muscle cell relaxation causing arterial and venous dilatation.

**Nest Plate:** A retainer plate with a depressed area for cavity blocks used in injection molding. OR A retainer plate in the mold with a depressed area for cavity blocks.

**nesvacumab:** A fully human monoclonal antibody directed against angiopoietin 2 (ANG2) with potential antiangiogenic and antineoplastic activities. Nesvacumab binds to ANG2 and interferes with the interaction between Ang2 and its receptor TEK tyrosine kinase (Tie2), which may inhibit tumor cell angiogenesis and tumor cell proliferation. ANG2 is upregulated in a variety of cancer cell types and plays a crucial role in angiogenesis.

**net chemical reaction:** A reaction that actually occurs as several elementary steps. Equations for net reactions often omit intermediates and catalysts.

**Net electric generation:** The gross amount of electric energy produced by a generating station, minus the amount used to operate the station. Note: Electricity required for pumping at pumped-storage plants is regarded as electricity for station operation and is deducted from gross generation. Net electric generation is measured in watthours (Wh), except as otherwise noted.

**net ionic equation:** A net ionic equation is an ionic equation with all spectator ions eliminated. For example,  $\text{Ag}^+(\text{aq}) + \text{NO}_3^-(\text{aq}) + \text{Na}^+(\text{aq}) + \text{Cl}^-(\text{aq}) = \text{AgCl}(\text{s}) + \text{Na}^+(\text{aq}) + \text{NO}_3^-(\text{aq})$  is an ionic equation; the net ionic equation would be  $\text{Ag}^+(\text{aq}) + \text{Cl}^-(\text{aq}) = \text{AgCl}(\text{s})$  because the sodium and nitrate ions are spectators (they appear on both sides of the ionic equation).

**net primary production:** The part of the gross primary production that remains stored in the producer organism (primarily green plants) after

deducting the amount used during the process of respiration. Abbreviated NPP.

**Net shape:** The final desired shape of a part; or a shape that does not require additional shaping operations before use.

**Net summer capacity:** The steady hourly output that generating equipment is expected to supply to system load, exclusive of auxiliary power, as demonstrated by measurements at the time of peak demand (summer). Net summer capacity is measured in watts unless otherwise noted.

**netazepide:** An orally active, benzodiazepine type, selective cholecystokinin B receptor (CCKBR; CCK2R; gastrin receptor) antagonist with potential gastric acid reducing and antiproliferative activity. Upon administration of netazepide, this agent selectively binds to and blocks the CCKBR, thereby preventing the binding of gastrin and cholecystokinin. This may prevent gastric neuroendocrine enterochromaffin-like (ECL) cell-induced secretion of histamine, ultimately preventing gastric acid secretion from adjacent parietal cells. In addition, YF476 may inhibit ECL cell proliferation and ECL-derived gastric carcinoids.

**netupitant:** A selective neurokinin 1 (NK1) receptor antagonist with potential antiemetic activity. Netupitant competitively binds to and blocks the activity of the human substance P/NK1 receptors in the central nervous system (CNS), thereby inhibiting NK1-receptor binding of the endogenous tachykinin neuropeptide substance P (SP), which may result in the prevention of chemotherapy-induced nausea and vomiting (CINV). SP is found in neurons of vagal afferent fibers innervating the brain-stem nucleus tractus solitarii and the area postrema, which contains the chemoreceptor trigger zone (CTZ), and may be elevated in response to chemotherapy. The NK-receptor is a G-protein receptor coupled to the inositol phosphate signal-transduction pathway and is found in both the nucleus tractus solitarii and the area postrema. Check for active clinical trials using this agent.

**netupitant and palonosetron hydrochloride:** An orally available combination formulation containing netupitant, a selective neurokinin 1 (NK1) receptor antagonist, and the hydrochloride salt form of palonosetron, a selective serotonin (5-hydroxytryptamine; 5-HT) receptor subtype 3 (5-HT3) antagonist, with antiemetic activity. Upon oral administration,

palonosetron competitively blocks the action of 5-HT at 5-HT<sub>3</sub> receptors located on vagal afferent nerves in the chemoreceptor trigger zone (CTZ). This inhibits acute emesis associated with 5-HT secretion and subsequent 5-HT<sub>3</sub> activation. Netupitant competitively binds to and blocks the activity of the human NK1 receptors in the central nervous system (CNS), thereby inhibiting NK1 receptor binding of the endogenous tachykinin neuropeptide substance P (SP). This prevents delayed emesis, which is associated with SP secretion. Altogether, this results in the prevention of chemotherapy-induced nausea and vomiting (CINV).

**netupitant and palonosetron hydrochloride :** A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. Neulasta is also used to help prevent damage to the bone marrow in patients who were exposed to high doses of certain types of radiation. Neulasta helps the bone marrow make more white blood cells. It is a form of filgrastim and is able to stay in the body longer. Neulasta is a type of colony-stimulating factor. Also called filgrastim-SD/01 and pegfilgrastim.

**network covalent solid:** A substance which consists of an array of atoms held together by an array of covalent bonds. A crystal of a network covalent solid is actually a single, gigantic molecule. Diamond and quartz are examples.

**Neugranin:** (Other name for: recombinant human albumin-human granulocyte colony-stimulating factor)

**Neulasta:** (Other name for: pegfilgrastim)

**Neulasta :** A drug used to increase the number of blood cells, especially platelets, in some cancer patients receiving chemotherapy. Neumega is a form of interleukin-11 (a cytokine normally made by support cells in the bone marrow) that is made in the laboratory. It is a type of biological response modifier. Also called oprelvekin, recombinant human interleukin-11, and rhIL-11.

**Neumega:** (Other name for: oprelvekin)

**Neumega :** A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. It is also used to treat chronic neutropenia and to prepare

the blood for the collection of certain types of blood cells. Neupogen is also used to help prevent damage to the bone marrow in patients who were exposed to very high doses of certain types of radiation. Neupogen helps the body make more white blood cells. It is a type of colony-stimulating factor. Also called filgrastim, G-CSF, granulocyte colony-stimulating factor, and Zarxio.

**Neupogen :** Having to do with nerves or the nervous system, including the brain and the spinal cord.

**Neuradiab:** (Other name for: iodine I 131 monoclonal antibody 81C6)

**neural :** Having to do with the way the brain affects emotion, behavior, and learning. Some cancers or their treatment may cause neurobehavioral problems.

**neuro-oncologist :** A pathologist who has special training in diseases of the nervous system. A pathologist identifies disease by studying cells and tissues under a microscope.

**neurobehavioral :** A type of cancer that forms from immature nerve cells. It usually begins in the adrenal glands but may also begin in the abdomen, chest, or in nerve tissue near the spine. Neuroblastoma most often occurs in children younger than 5 years of age. It is thought to begin before birth. It is usually found when the tumor begins to grow and cause signs or symptoms.

**neuroblastoma :** Having to do with the ability to think and reason. This includes the ability to concentrate, remember things, process information, learn, speak, and understand.

**neurocognitive :** A type of disease in which cells of the central nervous system stop working or die. Neurodegenerative disorders usually get worse over time and have no cure. They may be genetic or be caused by a tumor or stroke. Neurodegenerative disorders also occur in people who drink large amounts of alcohol or are exposed to certain viruses or toxins. Examples of neurodegenerative disorders include Alzheimer's disease and Parkinson's disease.

**neurodegenerative disorder :** A tumor of the central or peripheral nervous system.

**neuroectodermal tumor :** Having to do with the interactions between the nervous system and the endocrine system. Neuroendocrine describes certain

cells that release hormones into the blood in response to stimulation of the nervous system.

**neuroendocrine** : A rare type of cancer that forms on or just beneath the skin, usually in parts of the body that have been exposed to the sun. It is most common in older people and in people with weakened immune systems. Also called Merkel cell cancer, Merkel cell carcinoma, and trabecular cancer.

**neuroendocrine carcinoma of the skin** : A tumor that forms from cells that release hormones into the blood in response to a signal from the nervous system. Neuroendocrine tumors may make higher-than-normal amounts of hormones, which can cause many different symptoms. These tumors may be benign (not cancer) or malignant (cancer). Some examples of neuroendocrine tumors are carcinoid tumors, islet cell tumors, medullary thyroid cancer, pheochromocytomas, neuroendocrine carcinoma of the skin (Merkel cell cancer), small cell lung cancer, and large cell neuroendocrine carcinoma (a rare type of lung cancer).

**neuroendocrine tumor** : Having to do with tissue made up of sensory cells, such as tissue found in the ear, nose, and tongue.

**neuroepithelial** : A treatment being studied to improve brain function in certain brain disorders and in patients treated with chemotherapy for breast cancer. Sensors are placed on a person's head, which allows brain activity to be shown as patterns on a computer screen. A beep or a tone may be used as a reward to a person for changing certain brain activities. Neurofeedback may help cancer patients deal with the stress and mental side effects of chemotherapy. Also called EEG biofeedback.

**neurofeedback** : A benign tumor that develops from the cells and tissues that cover nerves.

**neurofibroma** : A rare genetic condition that causes brown spots and tumors on the skin, freckling in skin areas not exposed to the sun, tumors on the nerves, and developmental changes in the nervous system, muscles, bone, and skin. Also called NF1.

**neurofibromatosis type 1** : A genetic condition in which tumors form on the nerves of the inner ear and cause loss of hearing and balance. Tumors may also occur in the brain and on nerves in the skull and spinal cord, and may cause loss of speech, eye movement, and the ability to swallow. Also called acoustic neurofibromatosis and NF2.

**neurofibromatosis type 2** : Any of the cells that hold nerve cells in place and help them work the way they should. The types of neuroglia include oligodendrocytes, astrocytes, microglia, and ependymal cells. Also called glial cell.

**neuroglia** : the glial cells together with the extracellular tissue. OR A type of drug used to treat symptoms of psychosis. These include hallucinations (sights, sounds, smells, tastes, or touches that a person believes to be real but are not real), delusions (false beliefs), and dementia (loss of the ability to think, remember, learn, make decisions, and solve problems). Most neuroleptic agents block the action of certain chemicals in the nervous system. Also called antipsychotic and antipsychotic agent.

**neuroleptic agent** : A life-threatening condition that may be caused by certain drugs used to treat mental illness, nausea, or vomiting. Symptoms include high fever, sweating, unstable blood pressure, confusion, and stiffness. Also called NMS.

**neuroleptic malignant syndrome** : Having to do with nerves or the nervous system.

**neurologic** : A series of questions and tests to check brain, spinal cord, and nerve function. The exam checks a person's mental status, coordination, ability to walk, and how well the muscles, sensory systems, and deep tendon reflexes work.

**neurological exam** : A doctor who has special training in diagnosing and treating disorders of the nervous system.

**neurologist** : A tumor that arises in nerve cells.

**neuroma** : A procedure in which small electric impulses are used to stimulate muscles that are weak or paralyzed. It helps to increase muscle strength, blood circulation, and range of motion and to lessen muscle spasms. Also called NES, NMES, and therapeutic (subthreshold) electrical stimulation.

**neuromuscular electrical stimulation** : A rare nerve disorder that causes constant muscle activity that cannot be controlled, even during sleep. It often affects the muscles in the arms and legs, but may affect the whole body. Symptoms include muscle twitching, weakness, stiffness, and cramping; increased skin temperature, sweating, and heart rate; and problems with chewing, swallowing, speech, and breathing. The disorder

often gets worse over time. Neuromyotonia usually occurs in people aged 15 to 60 years. It may occur with certain types of cancer and is sometimes inherited. Also called Isaac syndrome.

**neuromyotonia :** A type of cell that receives and sends messages from the body to the brain and back to the body. The messages are sent by a weak electrical current. Also called nerve cell.

**neuron:** a nerve cell. OR A cell of nervous tissue specialized for transmission of a nerve impulse. OR A doctor who has special training in diagnosing and treating brain tumors and other tumors of the nervous system.

**Neurontin:** (Other name for: gabapentin)

**neuropathologist :** A nerve problem that causes pain, numbness, tingling, swelling, or muscle weakness in different parts of the body. It usually begins in the hands or feet and gets worse over time. Neuropathy may be caused by cancer or cancer treatment, such as chemotherapy. It may also be caused by physical injury, infection, toxic substances, or conditions such as diabetes, kidney failure, or malnutrition. Also called peripheral neuropathy.

**neuropathy:** disease or abnormality in the nervous system

**neuropeptide :** A member of a class of protein-like molecules made in the brain. Neuropeptides consist of short chains of amino acids, with some functioning as neurotransmitters and some functioning as hormones.

**neuropeptide :** A psychologist who diagnoses and treats behavioral and other problems related to the way the brain works. These may include problems with social interactions, ability to control emotions and behaviors, and cognitive abilities (thinking, learning, remembering, and problem solving). These problems may be caused by brain disease, injury, or medical treatment, such as cancer treatment.

**neuropsychologist :** The study of how the brain and central nervous system are related to behavior.

**neuropsychology :** A doctor trained in radiology who specializes in creating and interpreting pictures of the nervous system. The pictures are produced using forms of radiation, such as x-rays, sound waves, or other types of energy.

**neuroradiologist :** A doctor who has special training in surgery on the brain, spine, and other parts of the nervous system.

**neurosurgeon** : The tendency of some treatments to cause damage to the nervous system.

**neurotoxicity** : A substance that is poisonous to nerve tissue.

**neurotoxin** : A chemical that is made by nerve cells and used to communicate with other cells, including other nerve cells and muscle cells.

**neurotransmitter**: a chemical substance that accumulates in the synapse and increases the membrane permeability of the next dendrite. OR A small, diffusible molecule, such as acetylcholine, that mediates the passage of nerve impulses across the synapse. OR Neurotransmitters are molecules that are used to carry signals from one neuron to another. One neuron releases the neurotransmitter near another neuron's receptors. The neurotransmitter diffuses across the gap between the neurons and locks into a receptor site on the surface of the downstream neuron. This induces a change in the downstream neuron. OR A low molecular weight compound (usually containing nitrogen) secreted from the terminal of a neuron and bound by a specific receptor in the next neuron; serves to transmit a nerve impulse. OR A substance that transmits nerve impulses across a synapse. OR An ability to invade and live in neural tissue. This term is usually used to describe the ability of viruses to infect nerve tissue.

**neurotropism** : A condition in which there is a lower-than-normal number of neutrophils (a type of white blood cell).

**neutral**: An object that does not have a positive or negative charge. OR A substance that is neither acidic nor alkaline. It has a pH of 7. OR 1. having no net electrical charge. Atoms are electrically neutral; ions are not. 2. A solution containing equal concentrations of  $H^+$  and  $OH^-$ .

**Neutral oxide** : Although most metal oxides are bases and most non-metal oxides are acidic, a few form neutral solutions in water. One example of this kind of oxide is carbon monoxide.

**Neutralisation**: Adding base to an acidic solution until it is no longer acidic, or acid to a basic solution until it is no longer basic. pH 7, where equal amounts of  $H^+$  and  $OH^-$  ions will be present in any aqueous solution, is the pH of a truly neutral solution. OR A reaction where an acid "cancels out" an alkali. OR chemical addition of either acid or base to a solution such that the pH is adjusted to 7. OR A process where an acid and a base react with each other to form a salt and water. OR The process by which acids, such as sulfonic or sulfuric acids, are reacted with bases, such

as sodium hydroxide or triethanolamine, to give a salt, such as a sulfonate or sulfate. OR the chemical reaction of an acid and base to yield a salt and water. OR the reaction of an acid and a base. The products of an acid and base reaction are a salt and water.

**neutralization reaction:** A chemical change in which one compound acquires  $H^+$  from another. The compound that receives the hydrogen ion is the base; the compound that surrenders it is an acid.

**Neutrexin:** (Other name for: trimetrexate glucuronate)

**neutrino:** An elementary particle produced by certain nuclear decay processes. Neutrinos have no charge and extremely small masses compared to other subatomic particles.

**neutron:** a particle in the center of the atom with no charge. OR an uncharged particle in the atomic nucleus that has the same weight as a proton. Additional neutrons do not change an element but convert it to one of its isotopic forms. OR an uncharged sub-atomic particle, with a mass nearly equal to that of a proton. Present in the nucleus of all atoms except hydrogen. OR A particle found in the nucleus of an atom. It is almost identical in mass to a proton, but carries no electric charge. OR Electrically neutral subatomic particle found in the nucleus. OR One of the particles found in the nucleus of an atom. Whereas an electron has a negative (-) charge and a proton has a positive (+) charge, a neutron has a neutral charge (0). OR is a basic particle whose charge is 0 and whose mass is 1 g/mol (amu). OR Why atomic weights are complicated. Each element has a certain number of protons in its nucleus, which defines what element it is (e.g., 92 for Uranium, 2 for Helium, 109 for Meitnerium). To keep the positively charged protons from flying apart through electrostatic repulsion, they are bound together by the 'strong force' which is a very powerful force operating over very short distances between protons and neutrons. A certain number of neutrons gives optimal stability to a nucleus - too many or too few and the nucleus will be unstable (i.e., radioactive). Most elements are found naturally in a number of 'isotopes', forms with different number of neutrons - e.g., Carbon-12, Carbon-13, Carbon-14. Neutrons weigh about  $1.6749 \times 10^{-27}$  kg, slightly more than a proton. OR a heavy subatomic particle with zero charge; found in an atomic nucleus. OR An uncharged elementary particle, with a mass slightly greater than that of the proton, found in the nucleus of every atom heavier than hydrogen.

**neutron activation analysis:** An extremely sensitive technique for analyzing trace amounts of elements in a sample. The sample is bombarded with neutrons in a nuclear reactor, making it radioactive. Different elements produce different 'signatures' in the induced radiation which makes determination of their concentration in the sample possible.

**Neutron capture:** The reaction that occurs when a nucleus captures a neutron. The probability that a given material will capture a neutron is proportional to its neutron capture cross section and depends on the energy of the neutrons and the nature of the material.

**Neutron chain reaction:** A measure of the intensity of neutron radiation, determined by the rate of flow of neutrons. The neutron flux value is calculated as the neutron density ( $n$ ) multiplied by neutron velocity ( $v$ ), where  $n$  is the number of neutrons per cubic centimeter (expressed as neutrons/cm<sup>3</sup>) and  $v$  is the distance the neutrons travel in 1 second (expressed in centimeters per second, or cm/sec). Consequently, neutron flux ( $nv$ ) is measured in neutrons/cm<sup>2</sup>-sec.

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**Neutron generation:** The release, thermalization, and absorption of fission neutrons by a fissile material and the fission of that material producing a second generation of neutrons. In a typical nuclear power reactor system, there are about 40,000 generations of neutrons every second.

**Neutron leakage:** Neutrons that escape from the vicinity of the fissionable material in a reactor core. Neutrons that leak out of the fuel region are no longer available to cause fission and must be absorbed by shielding placed around the reactor pressure vessel for that purpose.

**Neutron source:** Any material that emits neutrons, such as a mixture of radium and beryllium, that can be inserted into a reactor to ensure a neutron flux large enough to be distinguished from background to register on neutron detection equipment.

**Neutron, thermal:** A neutron that has (by collision with other particles) reached an energy state equal to that of its surroundings, typically on the order of 0.025 eV (electron volts).

**neutron10:** An elementary particle found the atomic nucleus of all stable atoms except the hydrogen-1 atom. Neutrons have no charge and have a mass of 1.008665 daltons.

**neutropenia :** A type of immune cell that is one of the first cell types to travel to the site of an infection. Neutrophils help fight infection by ingesting microorganisms and releasing enzymes that kill the microorganisms. A neutrophil is a type of white blood cell, a type of granulocyte, and a type of phagocyte.

**neutrophil :** A genetic condition that causes unusual facial features and disorders of the skin, bones, nervous system, eyes, and endocrine glands. People with this syndrome have a higher risk of basal cell carcinoma. Also called basal cell nevus syndrome and Gorlin syndrome.

**neutrophil activation probe imaging agent:** A fluorescence imaging agent composed of a fluorescent agent linked, via a human neutrophil elastase (HNE) cleavable peptide, to a dequencher molecule, with imaging activity for diagnostic purposes. Upon local administration, the neutrophil activation probe (NAP) imaging agent, initially quenched, is quickly taken up by activated neutrophils. In turn, the HNE expressed by these cells specifically cleaves the linker and dequenches the fluorescent agent. The activated fluorescent moiety allows for visualization of activated neutrophils and HNE activity upon using a fluorescence imaging device. Activated neutrophils are upregulated at sites of inflammation and in inflammation-induced cancers, and express high levels of HNE.

**neutrophils:** the white blood cells that function in phagocytosis.

**Neuvence:** (Other name for: lapuleucel-T)

**nevirapine:** A non-nucleoside reverse transcriptase inhibitor (NNRTI) with activity against human immunodeficiency virus 1. Nevirapine binds directly to the human immunodeficiency virus type 1 (HIV-1) reverse transcriptase, an RNA-dependent DNA polymerase, blocking its function in viral DNA replication. In combination with other antiretroviral drugs, nevirapine reduces HIV viral loads and increases CD4 counts, thereby retarding or preventing the damage to the immune system and reducing the risk of developing AIDS. Check for active clinical trials using this agent.

**nevus** : A benign (not cancer) growth on the skin that is formed by a cluster of melanocytes (cells that make a substance called melanin, which gives color to skin and eyes). A nevus is usually dark and may be raised from the skin. Also called mole.

**neovirus** : A bird virus that is being studied in the treatment of cancer. It may be used to kill cancer cells directly, or it may be given as a cancer vaccine to stimulate the body's immune system. Newcastle disease virus is a type of biological response modifier and vaccine therapy. Also called NDV.

**New Chemical Entity (NCE)**: A compound that has not been previously described in the scientific literature.

**new mutation** : An alteration in a gene that is present for the first time in one family member as a result of a mutation in a germ cell (egg or sperm) of one of the parents, or a mutation that arises in the fertilized egg itself during early embryogenesis. Also called de novo mutation.

**Newcastle disease virus** : A drug used to treat advanced kidney cancer and a type of liver cancer that cannot be removed by surgery. It is also used to treat a type of advanced thyroid cancer that did not get better with radioactive iodine treatment. It is being studied in the treatment of other types of cancer. Nexavar stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of kinase inhibitor and a type of antiangiogenesis agent. Also called BAY 43-9006 and sorafenib tosylate.

**Newel**: The central post or wall (newel post - newel wall) around which a staircase is formed. Hence the main supporting posts of a staircase that continue upwards to form the ends of the balustrading.

**Newman projection**: a drawing of a molecule that shows a head-on view of a carbon-carbon bond. The front carbon is represented by a dot, and the rear carbon is represented by a circle. Substituents are shown as spokes radiating from the dot or circle. This projection is used to show the possible interactions of substituents bonded to adjacent carbon atoms.

**Newton, Issac**: developed the universal law of gravity.

**Newtonian fluid**: A fluid whose viscosity doesn't depend on gradients in flow speed. Gases and low-molecular weight liquids are usually Newtonian fluids.

**NEWTONIAN FLUIDS:** Fluids which exhibit constant viscosities independent of the shear rate. Water, glycerin, oil and other small molecule fluids are Newtonian.

**Nexavar :** A drug that blocks acid from being made in the stomach. It is used to treat acid reflux disease and to prevent certain types of gastrointestinal ulcers. Nexium is being studied in the prevention of esophageal cancer and in the treatment of other conditions, including side effects of chemotherapy. It is a type of anti-ulcer agent. Also called esomeprazole and esomeprazole magnesium.

**Nexium :** A rare genetic condition that causes brown spots and tumors on the skin, freckling in skin areas not exposed to the sun, tumors on the nerves, and developmental changes in the nervous system, muscles, bone, and skin. Also called neurofibromatosis type 1.

**Nexrutine:** (Other name for: Phellodendron amurense bark extract)

**next-generation sequencing :** A high-throughput method used to determine a portion of the nucleotide sequence of an individual's genome. This technique utilizes DNA sequencing technologies that are capable of processing multiple DNA sequences in parallel. Also called massively parallel sequencing and NGS.

**NF-kappa B :** A group of proteins that help control many functions in a cell, including cell growth and survival. These proteins also control the body's immune and inflammatory responses. NF-kB may be overactive or found in higher than normal amounts in some types of cancer cells. This may lead to cancer cell growth. High levels or overactivity of NF-kB may also lead to inflammatory disorders, such as asthma and ulcerative colitis, and autoimmune disorders, such as rheumatoid arthritis. Also called NF-kappa B and nuclear factor-kappa B.

**NF-kB:** A tube that is inserted through the nose, down the throat and esophagus, and into the stomach. It can be used to give drugs, liquids, and liquid food, or used to remove substances from the stomach. Giving food through an NG tube is a type of enteral nutrition. Also called gastric feeding tube and nasogastric tube.

**NF1:** A genetic condition in which tumors form on the nerves of the inner ear and cause loss of hearing and balance. Tumors may also occur in the brain and on nerves in the skull and spinal cord, and may cause loss of

speech, eye movement, and the ability to swallow. Also called acoustic neurofibromatosis and neurofibromatosis type 2.

**NF2:** A protein that controls how certain genes are expressed. These genes help protect the cell from damage caused by free radicals (unstable molecules made during normal cell metabolism). Free radicals may play a part in cancer, heart disease, stroke, and other diseases of aging. Also called Nrf2 and nuclear factor (erythroid-derived 2)-like 2.

**NFE2L2:** A group of proteins that help control many functions in a cell, including cell growth and survival. These proteins also control the body's immune and inflammatory responses. NF-kappa B may be overactive or found in higher than normal amounts in some types of cancer cells. This may lead to cancer cell growth. High levels or overactivity of NF-kappa B may also lead to inflammatory disorders, such as asthma and ulcerative colitis, and autoimmune disorders, such as rheumatoid arthritis. Also called NF-kB and nuclear factor-kappa B.

**NG tube :** An amino acid derivative used to counteract high blood pressure caused by interleukin-2.

**NG-monomethyl-L-arginine:** An amino acid derivative with potential antineoplastic activity. NG-monomethyl-L-arginine inhibits the enzyme nitric oxide synthase, resulting in a diminution of nitrous oxide production. This agent may inhibit tumor angiogenesis. Or A form of the amino acid arginine. An amino acid is a protein building block. NG-nitro-L-arginine is being studied in the treatment of cancer and other conditions. In cancer, it may stop the growth of tumor cells by blocking certain proteins needed for tumor cells to grow and by blocking blood flow to the tumor. It is a type of nitric oxide synthase inhibitor and an antiangiogenesis agent. Also called nitroarginine.

**NG-nitro-L-arginine:** An amino acid derivative and nitric oxide synthase (NOS) inhibitor with potential antineoplastic and antiangiogenic activities. Upon administration, NG-nitro-L-arginine inhibits the enzyme nitric oxide synthase, thereby preventing the formation of nitric oxide (NO). By preventing NO generation, the vasodilatory effects of NO are abrogated leading to vasoconstriction, reduction in vascular permeability and an inhibition of angiogenesis. As blood flow to tumors is restricted, this may result in an inhibition of tumor cell proliferation. NO plays an important role in tumor blood flow and stimulation of angiogenesis, tumor

progression, survival, migration and invasiveness. Check for active clinical trials using this agent.

**NG-nitro-L-arginine :** A substance being studied in the treatment of cancer. It is made by linking tumor necrosis factor (TNF) to a peptide. The peptide binds to tumor blood vessels, and TNF damages them. It is a type of biological response modifier. Also called tumor vasculature–targeted tumor necrosis factor alpha.

**NGR-TNF:** Any of a large group of cancers of lymphocytes (white blood cells). NHLs can occur at any age and are often marked by lymph nodes that are larger than normal, fever, and weight loss. There are many different types of NHL. These types can be divided into aggressive (fast-growing) and indolent (slow-growing) types, and they can be formed from either B-cells or T-cells. B-cell NHLs include Burkitt lymphoma, chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL), diffuse large B-cell lymphoma, follicular lymphoma, immunoblastic large cell lymphoma, precursor B-lymphoblastic lymphoma, and mantle cell lymphoma. T-cell NHLs include mycosis fungoides, anaplastic large cell lymphoma, and precursor T-lymphoblastic lymphoma. Lymphomas that occur after bone marrow or stem cell transplantation are usually B-cell NHLs. Prognosis and treatment depend on the stage and type of disease. Also called non-Hodgkin lymphoma.

**NGS:** A high-throughput method used to determine a portion of the nucleotide sequence of an individual’s genome. This technique utilizes DNA sequencing technologies that are capable of processing multiple DNA sequences in parallel. Also called massively parallel sequencing and next-generation sequencing.

**NHL:** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Niacin helps some enzymes work properly and helps skin, nerves, and the digestive tract stay healthy. Niacin is found in many plant and animal products. It is water-soluble (can dissolve in water) and must be taken in every day. Not enough niacin can cause a disease called pellagra (a condition marked by skin, nerve, and digestive disorders). A form of niacin is being studied in the prevention of skin and other types of cancer. Niacin may help to lower blood cholesterol. Also called nicotinic acid and vitamin B3.

**niacin:** A water-soluble vitamin belonging to the vitamin B family, which occurs in many animal and plant tissues, with antihyperlipidemic activity. Niacin is converted to its active form niacinamide, which is a component of the coenzymes nicotinamide adenine dinucleotide (NAD) and its phosphate form, NADP. These coenzymes play an important role in tissue respiration and in glycogen, lipid, amino acid, protein, and purine metabolism. Although the exact mechanism of action by which niacin lowers cholesterol is not fully understood, it may act by inhibiting the synthesis of very low density lipoproteins (VLDL), inhibiting the release of free fatty acids from adipose tissue, increasing lipoprotein lipase activity, and reducing the hepatic synthesis of VLDL-C and LDL-C. or A form of niacin (vitamin B3) that the body needs in small amounts to function and stay healthy. Niacinamide is found in many plant and animal products and in dietary supplements. It is water-soluble (can dissolve in water) and must be taken in every day. Niacinamide may be used to treat diabetes and certain skin conditions and is being studied in the treatment of some types of cancer. It may increase blood flow to cancer cells and block certain enzymes they need to repair damage to their DNA. This may make cancer cells easier to kill with radiation therapy and chemotherapy. Niacinamide is a type of radiosensitizing agent and a type of chemosensitizing agent. Also called nicotinamide.

**niacinamide:** The active form of vitamin B3 and a component of the coenzyme nicotinamide adenine dinucleotide (NAD). Niacinamide acts as a chemo- and radio-sensitizing agent by enhancing tumor blood flow, thereby reducing tumor hypoxia. This agent also inhibits poly(ADP-ribose) polymerases, enzymes involved in the rejoining of DNA strand breaks induced by radiation or chemotherapy. or A form of niacin (vitamin B3) that the body needs in small amounts to function and stay healthy. Nicotinamide is found in many plant and animal products and in dietary supplements. It is water-soluble (can dissolve in water) and must be taken in every day. Nicotinamide may be used to treat diabetes and certain skin conditions and is being studied in the treatment of some types of cancer. It may increase blood flow to cancer cells and block certain enzymes they need to repair damage to their DNA. This may make cancer cells easier to kill with radiation therapy and chemotherapy. Nicotinamide is a type of radiosensitizing agent and a type of chemosensitizing agent. Also called niacinamide.

**nicardipine:** A synthetic derivative of nitrophenyl-pyridine and potent calcium channel blocker, nicardipine (Nifedipine Family) blocks calcium ions from certain cell walls and inhibits contraction of coronary and peripheral arteries, resulting in lowered oxygen requirements for heart muscle and decreased arterial contraction and spasm. It is used clinically as a cerebral and coronary vasodilator.

**Nickel:** Symbol:"Ni" Atomic Number:"28" Atomic Mass: 58.70amu. This element is one of the transition elements in period four. You can find nickel used in coins, many minerals, desalination plants, and in batteries with cadmium.

**niclosamide:** An orally bioavailable chlorinated salicylanilide, with anthelmintic and potential antineoplastic activity. Upon oral administration, niclosamide specifically induces degradation of the androgen receptor (AR) variant V7 (AR-V7) through the proteasome-mediated pathway. This downregulates the expression of the AR variant, inhibits AR-V7-mediated transcriptional activity, and reduces AR-V7 recruitment to the prostate-specific antigen (PSA) gene promoter. Niclosamide also prevents AR-V7-mediated STAT3 phosphorylation and activation. This inhibits AR/STAT3-mediated signaling and prevents expression of STAT3 target genes. Altogether, this may inhibit growth of AR-V7-overexpressing cancer cells. The AR-V7 variant, which is encoded by contiguous splicing of AR exons 1/2/3/CE3, is upregulated in a variety of cancer cell types, and is associated with both cancer progression and resistance to AR-targeted therapies.

**NicoDerm CQ:** (Other name for: nicotine patch)

**Nicorette:** (Other name for: nicotine gum)

**nicotinamide :** An addictive, poisonous chemical found in tobacco. It can also be made in the laboratory. When it enters the body, nicotine causes an increased heart rate and use of oxygen by the heart, and a sense of well-being and relaxation. It is also used as an insecticide.

**nicotinamide adenine dinucleotide (NAD):** a coenzyme that functions during respiration to produce ATP. OR a coenzyme that functions during photosynthesis to produce ATP.

**Nicotinate:** A vitamin that is a key component of the electron-transfer coenzymes NAD<sup>+</sup>, NADH, NADP<sup>+</sup>, and NADPH. Also called niacine.

**nicotine:** A plant alkaloid, found in the tobacco plant, and addictive central nervous system (CNS) stimulant that causes either ganglionic stimulation in low doses or ganglionic blockage in high doses. Nicotine acts as an agonist at the nicotinic cholinergic receptors in the autonomic ganglia, at neuromuscular junctions, and in the adrenal medulla and the brain. Nicotine's CNS-stimulating activities may be mediated through the release of several neurotransmitters, including acetylcholine, beta-endorphin, dopamine, norepinephrine, serotonin, and ACTH. As a result, peripheral vasoconstriction, tachycardia, and elevated blood pressure may be observed with nicotine intake. This agent may also stimulate the chemoreceptor trigger zone, thereby inducing nausea and vomiting.

**nicotine :** A chewing gum that contains a small dose of nicotine, which enters the blood by being absorbed through the lining of the mouth. This helps stop nicotine cravings and relieves symptoms that occur when a person is trying to quit smoking. A prescription is not needed for nicotine gum.

**nicotine gum:** A chewing gum containing nicotine used as a substitute for the active ingredient in tobacco. Nicotine chewing gum reduces the withdrawal symptoms associated with smoking cessation.

**nicotine gum :** A device used to inhale (breathe in) small doses of nicotine through the mouth. The nicotine is absorbed through the lining of the mouth and lungs and goes into the blood. This helps stop nicotine cravings and relieves symptoms that occur when a person is trying to quit smoking. A prescription is needed for nicotine inhalers.

**nicotine inhaler :** A hard candy-like tablet that contains a small dose of nicotine. The nicotine is absorbed through the lining of the mouth and goes into the blood. This helps stop nicotine cravings and relieves symptoms that occur when a person is trying to quit smoking. A prescription is not needed for nicotine lozenges.

**nicotine lozenge:** A lozenge preparation containing the alkaloid nicotine with nicotine replacement activity. Upon administration of the lozenge, nicotine is released and, although nicotine binds to nicotinic cholinergic receptors at the autonomic ganglia, adrenal medulla and at neuromuscular junctions as well, the binding of nicotine to the receptors in the central nervous system (CNS) appears to be responsible for the addictive nature of nicotine. Binding to CNS nicotinic acetylcholine receptors causes the

release of the neurotransmitter dopamine which appears to be responsible for the addiction of nicotine. Administration of nicotine may prevent nicotine craving and may help with the withdrawal symptoms associated with smoking cessation. or A nose spray that contains a small dose of nicotine, which enters the blood by being absorbed through the lining of the nose. This helps stop nicotine cravings and relieves symptoms that occur when a person is trying to quit smoking. A prescription is needed for nicotine nasal spray.

**nicotine nasal spray:** A method for nicotine replacement. Or A patch that sticks on the skin and contains a small dose of nicotine, which enters the blood by being absorbed through the skin. This helps stop nicotine cravings and relieves symptoms that occur when a person is trying to quit smoking. Nicotine patches are available with and without a prescription.

**nicotine patch:** A transepidermal patch designed to deliver nicotine, the addictive substance contained in cigarettes, directly through the skin and into the blood stream. Used for cessation of or A type of treatment that uses special products to give small, steady doses of nicotine to help stop cravings and relieve symptoms that occur when a person is trying to quit smoking. These products include nicotine gum, nicotine inhaler, nicotine nasal spray, nicotine lozenges, and nicotine patch, and some are available without a prescription. They do not contain any of the other chemicals found in tobacco products.

**nicotine replacement therapy :** A substance being studied to see if it can help people quit smoking or keep them from starting again. It may stimulate the body's immune system to make antibodies against nicotine. These antibodies may help keep nicotine from reaching the brain, which can help reduce a person's craving for nicotine.

**nicotine vaccine :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Nicotinic acid helps some enzymes work properly and helps skin, nerves, and the digestive tract stay healthy. Nicotinic acid is found in many plant and animal products. It is water-soluble (can dissolve in water) and must be taken in every day. Not enough nicotinic acid can cause a disease called pellagra (a condition marked by skin, nerve, and digestive disorders). A form of nicotinic acid is being studied in the prevention of skin and other types of cancer. Nicotinic

acid may help to lower blood cholesterol. Also called niacin and vitamin B3.

**nicotinic acid** : A drug used to treat prostate cancer that has spread to other parts of the body. It is used in patients who have had surgery to remove the testicles (orchiectomy). Nilandron binds to proteins called androgen receptors, which are found in some prostate cancer cells, and keeps androgens (male hormones) from binding to the receptors. This blocks the ability of androgens to cause prostate cancer cells to grow. Nilandron is a type of antiandrogen. Also called nilutamide.

**Nicotrol NS**: (Other name for: nicotine nasal spray)

**NicVax**: (Other name for: 3'-aminomethyl nicotine-P. aeruginosa r-exoprotein A conjugate vaccine)

**Niferex**: (Other name for: iron)

**nifurtimox**: A nitrofurantoin derivative with antiprotozoal and potential antineoplastic activities. Nifurtimox is reduced by cytosol enzymes or flavin-containing microsomal enzymes to a highly reactive nitro anion free radical; autooxidation of the nitro anion free radical generates cytotoxic superoxide anion ( $O_2^-$ ). In addition, nifurtimox-derived nitro anion free radicals may alkylate macromolecules such as nucleic acids and proteins, resulting in the disruption of their structure and function.

**Nigerian**: Pertaining to Nigeria, one of the major crude oil producers of Africa. If history had turned out rather differently, we would be referring to "Biafran Crude".

**NIH**: A drug used to treat certain types of chronic myelogenous leukemia (CML). It is used in some newly diagnosed patients. It is also used in patients who have not gotten better after treatment with other anticancer drugs or who are not able to take imatinib mesylate. It is also being studied in the treatment of other types of cancer. Nilotinib blocks a protein called BCR-ABL, which may help keep cancer cells from growing. It is a type of tyrosine kinase inhibitor. Also called Tasigna.

**NikolskiEisenman equation** : an extension of the Nernst equation which relates the sensor potential to the activity of all the contributing ions in the sample, including any interfering ions. It is the same as the Nernst equation but with  $\log A$  replaced by  $\log [ax + K_{x,y}(a_y)^{z_x/z_y} + K_{x,z}(a_z)^{z_x/z_z} \dots \text{etc.}]$  (where:  $K_{x,y}$  = selectivity coefficient for ion y of an

electrode sensitive to primary ion x;  $K_{x,z}$  = selectivity coefficient for ion z of an electrode sensitive to primary ion x;  $a_x$  = activity of primary ion x;  $a_y$  and  $a_z$  = activities of interfering ions y and z;  $Z_x$  = an integer with sign and magnitude corresponding to the charge on the primary ion x;  $Z_y$  and  $Z_z$  = integer with same sign as  $Z_x$  but magnitude = charge on interfering ions y and z).

**Nilandron** : Belongs to a family of drugs called calcium channel blockers. It is being investigated for use with anticancer drugs to prevent or overcome drug resistance and improve response to chemotherapy.

**nilotinib**: An orally bioavailable aminopyrimidine-derivative Bcr-Abl tyrosine kinase inhibitor with antineoplastic activity. Designed to overcome imatinib resistance, nilotinib binds to and stabilizes the inactive conformation of the kinase domain of the Abl protein of the Bcr-Abl fusion protein, resulting in the inhibition of the Bcr-Abl-mediated proliferation of Philadelphia chromosome-positive (Ph<sup>+</sup>) chronic myeloid leukemia (CML) cells. This agent also inhibits the receptor tyrosine kinases platelet-derived growth factor receptor (PDGF-R) and c-kit, a receptor tyrosine kinase mutated and constitutively activated in most gastrointestinal stromal tumors (GISTs). With a binding mode that is energetically more favorable than that of imatinib, nilotinib has been shown to have an approximately 20-fold increased potency in kinase and proliferation assays compared to imatinib. Check for active clinical trials using this agent. or A substance being studied in the treatment of some types of cancer. Nimotuzumab binds to a protein called epidermal growth factor receptor (EGFR), which is found on some normal cells and some types of cancer cells. Blocking this protein may help keep cancer cells from growing. Nimotuzumab is a type of monoclonal antibody. Also called Theraloc.

**nilutamide**: A synthetic, nonsteroidal agent with antiandrogenic properties. Nilutamide preferentially binds to androgen receptors and blocks androgen receptor activation by testosterone and other androgens; this agent may inhibit androgen-dependent growth of normal and neoplastic prostate cells. or A substance that has been studied in the treatment of some types of cancer. Nimustine damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent and a type of nitrosourea.

**Nimbex**: (Other name for: cisatracurium besylate)

**NIMBY:** Acronym for Not In My Back Yard. An expression describing the response from members of a community who disapprove of proposed sites for solid waste disposal. A milder form of NOPE (Not On Planet Earth).

**nimodipine:** A dihydropyridine derivative and an analogue of the calcium channel blocker nifedipine, with antihypertensive activity. Nimodipine inhibits the transmembrane influx of calcium ions in response to depolarization in smooth muscle cells, thereby inhibiting vascular smooth muscle contraction and inducing vasodilatation. Nimodipine has a greater effect on cerebral arteries than on peripheral smooth muscle cells and myocardial cells, probably because this agent can cross the blood brain barrier due to its lipophilic nature. Furthermore, this agent also inhibits the drug efflux pump P-glycoprotein, which is overexpressed in some multi-drug resistant tumors, and may improve the efficacy of some antineoplastic agents. or A drug used with lenalidomide and dexamethasone to treat multiple myeloma. It is used in patients who received at least one other anticancer treatment. It is also being studied in the treatment of other types of cancer. Ninlaro blocks enzymes called proteasomes, which may help keep cancer cells from growing and may kill them. It is a type of proteasome inhibitor. Also called ixazomib citrate.

**Nimotop:** (Other name for: nimodipine)

**nimotuzumab:** A humanized monoclonal antibody directed against the epidermal growth factor receptor (EGFR) with potential antineoplastic activity. Nimotuzumab binds to and inhibits EGFR, resulting in growth inhibition of tumor cells that overexpress EGFR. This agent may act synergistically with radiation therapy.

**nimotuzumab :** The active ingredient in a drug that is used to treat hairy cell leukemia and is being studied in the treatment of other types of cancer. Nipent blocks a protein needed for cell growth and may kill cancer cells. It is made by a bacterium. It is a type of adenosine deaminase inhibitor. Also called pentostatin.

**nimustine:** A nitrosourea with antineoplastic activity. Nimustine alkylates and crosslinks DNA, thereby causing DNA fragmentation, inhibition of protein synthesis, and cell death. Or In anatomy, the small raised area in the center of the breast through which milk can flow to the outside.

**ninhydrin reaction:** A color reaction given by amino acids and peptides on heating with ninhydrin; widely used for their detection and estimation.

**Ninlaro:** (Other name for: ixazomib citrate) or Fluid that is not milk coming from the nipple.

**nintedanib:** An orally bioavailable, indolinone-derived, receptor tyrosine kinase (RTK) inhibitor with potential antiangiogenic and antineoplastic activities. Multitargeted tyrosine kinase inhibitor BIBF 1120 selectively binds to and inhibits vascular endothelial growth factor receptor (VEGFR), fibroblast growth factor receptor (FGFR) and platelet-derived growth factor receptor (PDGFR) tyrosine kinases, which may result in the induction of endothelial cell apoptosis; a reduction in tumor vasculature; and the inhibition of tumor cell proliferation and migration. In addition, this agent also inhibits members of the Src family of tyrosine kinases, including Src, Lck, Lyn, and FLT-3 (fms-like tyrosine kinase 3). VEGFR, FGFR and PDGFR RTKs play key roles in tumor angiogenesis. Check for active clinical trials using this agent.

**Niobium:** Symbol:"Nb" Atomic Number:"41" Atomic Mass: 92.91amu. Niobium is one of the transition elements. This ductile metal (when pure) is found in many minerals. It actually turns blue when in the air and is used in spacecraft and superconducting magnets.

**NIP ROLLS:** In film blowing, a pair of rolls situated at the top of the tower which close the blown film envelope, seal air inside of it, and regulate the rate at which the film is pulled away from the extrusion die. One roll is usually covered with a resilient material, the other being bare metal.

**Nipent :** A toxic, corrosive, colorless liquid used to make fertilizers, dyes, explosives, and other chemicals.

**nipple :** A substance being studied in the prevention of colorectal cancer. It is a form of aspirin that gives off nitric oxide gas and is less irritating to the lining of the stomach than plain aspirin. It is a type of nonsteroidal anti-inflammatory drug (NSAID). Also called NCX 4016.

**nipple discharge :** A form of the amino acid arginine. An amino acid is a protein building block. Nitroarginine is being studied in the treatment of cancer and other conditions. In cancer, it may stop the growth of tumor cells by blocking certain proteins needed for tumor cells to grow and by blocking blood flow to the tumor. It is a type of nitric oxide synthase inhibitor and an antiangiogenesis agent. Also called NG-nitro-L-arginine.

**niraparib:** An inhibitor of poly (ADP-ribose) polymerase (PARP) with potential antineoplastic activity. PARP Inhibitor MK4827 inhibits PARP activity, enhancing the accumulation of DNA strand breaks and promoting genomic instability and apoptosis. The PARP family of proteins detect and repair single strand DNA breaks by the base-excision repair (BER) pathway. The specific PARP family member target for PARP inhibitor MK4827 is unknown. Check for active clinical trials using this agent.

**Nitrogen oxides** : When nitrogen enters the cylinders of a car engine, it can be burned to form a variety of oxides. Rather than deal with all the different ones individually, it is useful to discuss them together as "nitrogen oxides". They are sometimes written as NO<sub>x</sub>. They are removed from the exhaust gases of a car by using a catalytic converter.

**nitazoxanide:** A synthetic benzamide with antiprotozoal activity. Nitazoxanide exerts its antiprotozoal activity by interfering with the pyruvate ferredoxin/ferredoxin oxidoreductase dependent electron transfer reaction, which is essential to anaerobic energy metabolism. PFOR enzyme reduces nitazoxanide, thereby impairing the energy metabolism. However, interference with the PFOR enzyme-dependent electron transfer reaction may not be the only pathway by which nitazoxanide exhibits antiprotozoal activity. Nitazoxanide is active against *Giardia lamblia* and *Cryptosporidium parvum*.

**nitrate<sup>3-</sup>:** 1. The NO<sub>3</sub><sup>-</sup> ion, formed by reaction of nitric acid with a base. 2. A compound containing the NO<sub>3</sub><sup>-</sup> ion, for example ammonium nitrate, NH<sub>4</sub>NO<sub>3</sub>.

**nitric acid** : An alkaloid drug belonging to a class of anticancer agents called topoisomerase inhibitors.

**nitric acid<sup>3</sup>:** A corrosive liquid with a sharp odor that acts as a strong acid when dissolved in water. Nitric acid is used to synthesize ammonium nitrate for fertilizers, and is also used in the manufacture of explosives, dyes, and pharmaceuticals. Salts of nitric acid are called nitrates.

**nitric oxide-releasing acetylsalicylic acid derivative:** A nitric oxide (NO) donating derivative of acetylsalicylic acid with anti-inflammatory, analgesic, antipyretic, antithrombotic, gastroprotective and potential antitumor activities. The acetylsalicylic acid derivative moiety of this agent inhibits the activities of cyclooxygenase (COX) I and II, preventing the formation of prostaglandins and thromboxanes. A reduction in

prostaglandin synthesis accounts for this agent's anti-inflammatory, anti-pyretic and analgesic activities; a reduction in thromboxane A<sub>2</sub> synthesis results in an irreversible inhibition of platelet aggregation. NO donation by this agent, after cleavage from the acetylsalicylic acid derivative in vivo, may protect the gastric mucosa against the damaging effects of the aspirin derivative by modulating prostaglandins. In tumor cells, the NO donating moiety may block the cell cycle in the G<sub>1</sub> and G<sub>2</sub> phases and may induce apoptosis through caspase-mediated mechanisms.

**nitric oxide-releasing acetylsalicylic acid derivative :** In medicine, a substance used as a drug to treat certain heart conditions and to widen the openings in blood vessels. Nitroglycerin is being studied as a way to help chemotherapy work better by making tumor cells more sensitive to the drugs. It is a type of vasodilator.

**nitrification:** the conversion of nitrogenous matter or free nitrogen into nitrates and ammonia by bacteria.

**Nitrile:** A carbon compound containing a carbon-nitrogen triple bond. An example is acetonitrile, a common organic solvent: OR Or Buna-N, The most commonly used elastomer for O-Rings because of its resistance to petroleum fluids, its good physical properties, and its useful temperature range

**nitrite<sup>2-</sup>:** 1. The NO<sub>2</sub><sup>-</sup> ion, formed by reaction of nitrous acid with a base.  
2. A compound containing the NO<sub>2</sub><sup>-</sup> ion.

**Nitro:** The -NO<sub>2</sub> functional group. You may have heard of trinitrotoluene (TNT) - here's a picture:

**nitroarginine :** A type of chemical found in tobacco products and tobacco smoke. Nitrosamines are also found in many foods, including fish, beer, fried foods, and meats. Some nitrosamines cause cancer in laboratory animals and may increase the risk of certain types of cancer in humans.

**Nitrobenzene:** Nitrobenzene is an aromatic derivative produced by nitration of benzene with nitric acid in the presence of sulfuric acid. Almost all nitrobenzene is converted to aniline by hydrogenation.

**nitrocamptothecin :** An anticancer drug that can cross the blood-brain barrier. Carmustine and lomustine are nitrosoureas.

**Nitrogen:** Symbol:"N" Atomic Number:"7" Atomic Mass: 14.00amu. Nitrogen is found as a gas in nature and it is classified as a non-metal. It

makes up over 75 percent of the air surrounding the Earth. It is also found in the soil and used by plants. You will also find nitrogen in ammonia, steel making, freezing liquids, and oil refineries. OR Element number 7, a colorless, odorless, tasteless gas that makes up about 80% of the earth's atmosphere.

**Nitrogen cycle:** The passage of nitrogen through various valence states, as the result of reactions carried out by a wide variety of different organisms. OR The cycling of various forms of biologically available nitrogen through the plant, animal, and microbial worlds, and through the atmosphere and geosphere.

**Nitrogen fixation:** Conversion of atmospheric nitrogen into a form that can be converted by biochemical reactions to an organic form. This reaction is carried out by a very limited number of microorganisms. OR The conversion of diatomic nitrogen into ammonia; the first step in the flow of nitrogen into amino acids, nucleotides, and other nitrogen-containing compounds in organisms. OR Conversion of atmospheric nitrogen ( $N_2$ ) into a reduced, biologically available form by nitrogen-fixing organisms.

**nitrogenase:** An enzyme system that catalyzes the reaction of molecular nitrogen ( $N_2$ ) to ammonia ( $NH_3$ ).

**Nitrogenase complex:** An enzyme complex that catalyzes the reduction of diatomic nitrogen to ammonia; found in bacteria and the blue-green algae. OR A system of enzymes capable of reducing atmospheric nitrogen to ammonia in the presence of ATP.

**nitrogenous base:** the nitrous molecules that make up DNA (and RNA) molecules; two major types are purines and pyrimidines. OR An aromatic nitrogen-containing molecule with basic properties. Such bases include purines and pyrimidines.

**nitroglycerin:** An organic nitrate with vasodilator activity. Nitroglycerin is converted into nitric oxide (NO) in smooth muscle and activates guanylyl cyclase, thereby increasing cGMP concentration, and resulting in smooth muscle relaxation. Dilatation of the veins results in decreased venous return to the heart, thereby decreasing left ventricular volume (reduced preload) and decreasing myocardial oxygen requirements. Arteriolar relaxation reduces arteriolar resistance (reduced afterload), thereby decreasing myocardial oxygen demands. In addition, nitroglycerin causes coronary artery dilatation, thereby improving myocardial blood distribution.

**nitroglycerin :** A drug used to treat classical Hodgkin lymphoma that has gotten worse after treatment with an autologous stem cell transplant and brentuximab vedotin (a type of anticancer drug). It is also used alone or with other drugs to treat certain types of melanoma, non-small cell lung cancer, and renal cell carcinoma (a type of kidney cancer). It is also being studied in the treatment of other types of cancer. Nivolumab binds to a protein called PD-1, which is found on T cells (a type of white blood cell). Nivolumab may block PD-1 and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called Opdivo.

**nitroglycerin transdermal patch:** A sustained-release transdermal patch containing the organic nitrate nitroglycerin, with vasodilator and potential immunomodulating activities. Upon application to the skin, nitroglycerin is continuously released from the patch and absorbed. In turn, nitroglycerin is converted into nitric oxide (NO), which activates guanylyl cyclase, increasing cyclic guanosine monophosphate concentration thus resulting in smooth muscle relaxation. In addition, activation of NO-mediated signaling pathways may inhibit hypoxia-induced tumor cell invasiveness, chemoresistance, evasion of immune cell recognition and cancer cell progression. Particularly, reactivation of NO-mediated signaling appears to inhibit the increased tumor cell shedding of the major histocompatibility complex class I chain-related (MIC) molecules MICA and MICB as is seen in hypoxic tumor environments; MIC molecules play key roles in tumor cell immune surveillance through their interaction with the C-type lectin-like NKG2D receptor on natural killer, lymphokine-activated killer and effector T cells.

**nitroglycerin/sodium citrate/ethanol solution:** An antimicrobial lock solution (ALS) containing the nitrate nitroglycerin, sodium citrate and ethanol, with potential antimicrobial and anticoagulant activities. Upon application to the catheter as an ALS, the nitroglycerin is converted into nitric oxide (NO), which exerts antimicrobial activity. The citrate exerts anticoagulant activity, thereby preventing blood clotting and occlusion and maintaining the fluidity of the administered solution. In addition, both citrate and ethanol exert antimicrobial activity. This may prevent bacterial colonization on the surface of the catheter, biofilm formation, and catheter-associated infections.

**nitrosamine :** A type of immune cell that has granules (small particles) with enzymes that can kill tumor cells or cells infected with a virus. An NK cell is a type of white blood cell. Also called natural killer cell and NK-LGL.

**nitrosamines:** A group of organic compounds with the basic structure NNO, some of which are powerful cancer-causing chemicals.

**nitrosourea :** A type of immune cell that has granules (small particles) with enzymes that can kill tumor cells or cells infected with a virus. An NK-LGL is a type of white blood cell. Also called natural killer cell and NK cell.

**nivolumab:** A fully human immunoglobulin (Ig) G4 monoclonal antibody directed against the negative immunoregulatory human cell surface receptor programmed death-1 (PD-1, PCD-1,) with immune checkpoint inhibitory and antineoplastic activities. Nivolumab binds to and blocks the activation of PD-1, an Ig superfamily transmembrane protein, by its ligands programmed cell death ligand 1 (PD-L1), overexpressed on certain cancer cells, and programmed cell death ligand 2 (PD-L2), which is primarily expressed on APCs. This results in the activation of T-cells and cell-mediated immune responses against tumor cells or pathogens. Activated PD-1 negatively regulates T-cell activation and plays a key role in tumor evasion from host immunity. or A type of leukemia in which large natural killer (NK) cells (a type of white blood cell) that contain granules (small particles) are found in the blood. It is a chronic disease that may last for a long time and get worse. Also called natural killer-cell large granular lymphocyte leukemia and NK-LGLL.

**Nizoral:** (Other name for: ketoconazole)

**NK cell :** A type of leukemia in which large natural killer (NK) cells (a type of white blood cell) that contain granules (small particles) are found in the blood. It is a chronic disease that may last for a long time and get worse. Also called natural killer-cell large granular lymphocyte leukemia and NK-LGL leukemia.

**NK-LGL:** A rare type of Hodgkin lymphoma (a cancer of the immune system). It is marked by the presence of lymphocyte-predominant cells, which used to be called popcorn cells. These cells are different from the typical Reed-Sternberg cells found in classical Hodgkin lymphoma. NLPHL may change into diffuse large B-cell lymphoma. Also called

LPHL, lymphocyte-predominant Hodgkin lymphoma, and nodular lymphocyte-predominant Hodgkin lymphoma.

**NK-LGL leukemia :** A lung cancer screening trial sponsored by the National Cancer Institute (NCI). In the trial, low-dose spiral CT scans were compared with chest x-rays for their ability to detect lung cancer early. The trial included more than 50,000 participants who were aged 55 to 74 years, were current or former heavy smokers, and had no signs or symptoms of lung cancer. The results of the trial showed that participants who were screened with spiral CT scans had about a 20% lower risk of dying from lung cancer than those who were screened with chest x-rays. Also called National Lung Screening Trial.

**NK-LGLL:** The amount of a substance equal to a billionth of a mole (a measure of the amount of a substance). Also called nanomole.

**NLPHL:** A procedure in which small electric impulses are used to stimulate muscles that are weak or paralyzed. It helps to increase muscle strength, blood circulation, and range of motion and to lessen muscle spasms. Also called NES, neuromuscular electrical stimulation, and therapeutic (subthreshold) electrical stimulation.

**NLST:** A protein found inside the nucleus of a cell. It is involved in making DNA, RNA, and proteins. It also helps control how certain genes are expressed (turned on) in a cell. NMP22 may be found in higher than normal amounts in the urine of patients with some types of cancer, including bladder cancer. Measuring the amount of NMP22 in the urine may help diagnose cancer or find out how well treatment is working. It is a type of tumor marker. Also called nuclear matrix protein 22.

**nm:** An abbreviation for nanometers. A nanometer is equal to  $10^{-9}$  meters.

**nM :** A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue.

NMRI makes better images of organs and soft tissue than other scanning techniques, such as computed tomography (CT) or x-ray. NMRI is especially useful for imaging the brain, the spine, the soft tissue of joints, and the inside of bones. Also called magnetic resonance imaging, MRI, and nuclear magnetic resonance imaging.

**NM-3:** An orally bioavailable antiangiogenic isocoumarin with potential antineoplastic activity. NM-3 inhibits vascular endothelial growth factor

(VEGF), a pro-angiogenic growth factor, thereby inhibiting endothelial cell proliferation. This agent also induces apoptosis by a mechanism involving reactive oxygen species.

**NMES:** A life-threatening condition that may be caused by certain drugs used to treat mental illness, nausea, or vomiting. Symptoms include high fever, sweating, unstable blood pressure, confusion, and stiffness. Also called neuroleptic malignant syndrome.

**NMP22:** Cancer that has not spread to the lymph nodes.

**NMRI:** Cancer that has spread to the lymph nodes.

**NMS:** A rare type of Hodgkin lymphoma (a cancer of the immune system). It is marked by the presence of lymphocyte-predominant cells, which used to be called popcorn cells. These cells are different from the typical Reed-Sternberg cells found in classical Hodgkin lymphoma. Nodular lymphocyte-predominant Hodgkin lymphoma may change into diffuse large B-cell lymphoma. Also called LPHL, lymphocyte-predominant Hodgkin lymphoma, and NLPHL.

**NO:** Natural orbital.

**no acceptable daily intake allocated:** This expression is applicable to substances for which the available information is not sufficient to establish their safety or when the specifications for identity and purity are not adequate. The fact that an ADI for an additive was not established should not be interpreted as casting doubt on its safety nor should it be considered for its withdrawal for use (Vettorazzi, 1980).

**No Flow Temperature:** No flow temperature is the temperature at which the viscosity of the melt is so high that it effectively can not be made to flow.

**no-observed-adverse-effect-level (NOEL):** The greatest concentration or amount of a chemical, found by experiment or observation, that causes no detectable adverse alteration of morphology, functional capacity, growth, development, or life span of the target (WHO, 1979).

**Nobelium:** Symbol:"No" Atomic Number:"102" Atomic Mass: (259)amu. Nobelium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element.

**Noble Gas:** The Noble Gases are the all of the elements in the furthest right column of the periodic table. They all have filled outer shells and are

very non-reactive. OR A gaseous chemical element that does not readily enter into chemical combination with other elements. An inert gas. Examples are helium, argon, krypton, xenon, and radon.

**noble gas core:** All completely filled shells underneath the valence shell.

**Noble Gas Elements:** Elements in the periodic table whose outermost shells are filled with electrons (8). Helium, neon, and argon are examples of noble gas elements. They are very non-reactive.

**noble gases:** The noble gases are the elements in Group 0 (sometimes called Group 8) in the Periodic Table helium, neon, argon, krypton, xenon, and radon. OR the column of elements from helium to radon; also called inert gases.

**Nociceptor:** A specialized neuron that transmits signals to pain-processing centers of the spinal cord and brain in response to the onset of tissue damage.

**node:** a region of zero electron density in an orbital; a point of zero amplitude in a wave.

**node:** A point, region, or surface where the amplitude of a standing wave is zero. The probability of finding an electron at an orbital node is zero.

**node-negative :** A small mass of tissue within a gland or organ that carries out the specialized functions of the gland or organ.

**node-positive :** A growth or lump that may be malignant (cancer) or benign (not cancer).

**nodular lymphocyte-predominant Hodgkin lymphoma :** A substance that is being studied in the treatment of liver cancer. It belongs to the family of drugs called thymidylate synthase inhibitors. Also called AG337 and Thymitaq.

**nodular parenchyma :** A mathematical device or model that shows relationships between things. For example, a nomogram of height and weight measurements can be used to find the surface area of a person, without doing the math, to determine the right dose of chemotherapy. Nomograms of patient and disease characteristics can help predict the outcome of some kinds of cancer.

**nodule :** A vaccine that works by stimulating an immune response against nine different antigens, such as nine different viruses or other microorganisms. For example, Gardasil 9 is a nonavalent vaccine that helps

protect the body against infection with nine different types of human papillomaviruses (HPV).

**Noise:** abrupt, random, small changes in displayed sensor signal (in electrode, usually due to the pickup of strong static charges). Noise may be caused by air bubbles, poor conductors, or high electrical resistance somewhere in the circuit.

**Noise reduction:** The absorption of sound vibrations. Fluoropolymer coatings form good noise dampening surfaces.

**nolatrexed :** Describes a clinical trial or other experiment in which the researchers know what treatments are being given to each study subject or experimental group. If human subjects are involved, they know what treatments they are receiving.

**nolatrexed dihydrochloride:** The dihydrochloride salt of nolatrexed, a water-soluble lipophilic quinazoline folate analog with antineoplastic activity. Nolatrexed occupies the folate binding site of thymidylate synthase, resulting in inhibition of thymidylate synthase activity and thymine nucleotide synthesis with subsequent inhibition of DNA replication, DNA damage, S-phase cell cycle arrest, and caspase-dependent apoptosis. This agent also exhibits radiosensitizing activity.

**nomenclature:** The systematic naming of chemical compounds. OR A system for naming things. For example, "organic nomenclature" is the system used to name organic compounds.

**Nominal Dimension:** The mean dimension of a liquid silicone injection molded article, from which small dimensional (plus and minus) deviations are allowed as manufacturing tolerances

**nomogram :** A clinical study that includes some, but not all, of the eligible patients identified by the researchers during the study registration period. This type of study does not usually have a control group.

**Non Toxic:** not poisonous.

**non-adjuvanted A(H1N1) influenza vaccine:** A monovalent vaccine containing hemagglutinin (HA) of influenza A (H1N1)-like virus with potential immunomodulating activity. Upon administration, non-adjuvanted A(H1N1) influenza vaccine may stimulate the immune system to mount an antibody response against H1N1.

**Non-bonded interaction:** A through-space interaction of atoms that are typically electrostatic or van der Waals in nature.

**Non-covalent attractive force:** See Non-covalent interaction.

**Non-covalent interactions:** The van der Waals forces between multipoles in molecules that are responsible for many phenomena including cohesion of most solids, surface tension, friction, changes of phase, viscosity, the Joule-Thomson effect, and causing deviations in the ideal gas law.

**non-electrolyte:** A substance that dissolves in water to form a solution that is non-conducting.

**Non-fill:** An unintentional void or absence of material in the liquid silicone rubber part

**Non-Fill (also known as Short Shot):** Failure to completely fill the mold or cavities of the mold. Edges may appear melted.

**Non-Governmental Organizations (NGOs):** A voluntary association of individuals or organizations for regional or international action against a certain cause or activity. As it relates to sustainability, many environmental NGO organizations are focused on the protection of biodiversity.

**non-Hodgkin lymphoma :** (non-I-uh-NY-zing RAY-dee-AY-shun)

**non-ionic surfactants:** a general family of surfactants so called because in solution the entire molecule remains associated. Non-ionic molecules orient themselves at surfaces not by an electrical charge, but through separate grease-solubilizing and water-soluble groups within the molecule.

**non-ionizing radiation :** Not cancerous. Nonmalignant tumors may grow larger but do not spread to other parts of the body. Also called benign.

**Non-metals:** Although this sounds like it ought to be everything that is not a metal, it really means the elements that are not metals. The non-metals are usually dull, have low melting and boiling points and do not conduct electricity There are some exceptions though like the graphite form of carbon which can conduct electricit

**non-Newtonian fluid:** A fluid whose viscosity changes when the gradient in flow speed changes. Colloidal suspensions and polymer solutions like ketchup and starch/water paste are non-Newtonian fluids.

**NON-NEWTONIAN FLUIDS:** Fluids having viscosities that depend on the shear rate. Polymer solutions and melts are non-Newtonian fluids. They

also exhibit other non-Newtonian properties such as stress relaxation and normal stresses.

**Non-reactive:** This is the opposite of reactive. Non-reactive elements do not easily combine with the other elements. Helium, neon, and argon are examples of very non-reactive elements.

**Non-Return Valve:** Screw tip that allows for material to flow in one direction and closes to prevent back flow and inject material into the mold (check valve). OR A mechanism mounted in (or at) the nozzle of the injection machine, which operates to shut off injection flow at the end of the injection cycle. This eliminates material from the upcoming shot from drooling out of the nozzle when the mold opens to eject parts from the previous shot.

**non-small cell lung cancer :** A substance that affects the immune system in a general way and may help the body fight cancer, infection, or other diseases. Nonspecific immunomodulating agents include BCG and levamisole.

**non-small cell lung cancer mRNA-derived vaccine CV9201:** A non-small cell lung cancer (NSCLC) vaccine containing modified mRNAs encoding cancer-testis antigen NY-ESO-1, melanoma-associated antigens C1 (MAGE-C1/CT7) and C2 (MAGE-C2/CT10), survivin, and the oncofetal antigen 5T4 with potential antitumor and immunomodulatory activities. Upon subcutaneous administration, non-small cell lung cancer mRNA-derived vaccine CV9201 may stimulate the immune system to mount a cytotoxic, antigen-specific T lymphocyte response (CTL) against NSCLC cells. The modified mRNAs in this vaccine are taken up by cells after injection and exhibit enhanced translational potency. The five tumor-associated antigens (TAAs) encoded by these mRNAs are frequently expressed by NSCLC cells.

**Non-stochastic effect:** The health effects of radiation, the severity of which vary with the dose and for which a threshold is believed to exist. Radiation-induced cataract formation is an example of a non-stochastic effect (also called a deterministic effect) (see 10 CFR 20.1003).

**Non-stoichiometric hydrate (or solvate):** A solvated crystal structure in which the solvent molecules are not in well-defined positions and therefore are present in variable amounts, depending on the vapor pressure of the

solvent in the system, (i.e., the relative humidity in the case of crystal hydrates).

**Non-vital plant systems:** Systems at a nuclear facility that may or may not be necessary for the operation of the facility (i.e., power production) but that would have little or no effect on public health and safety should they fail. These systems are not safety related.

**nonagon:** a plane closed figure with nine sides and nine angles

**nonavalent vaccine :** Lymphoma in which the lymph nodes containing cancer are not next to each other, but are on the same side of the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen).

**nonbenzenoid aromatic ring:** an aromatic ring system that does not contain a benzene ring.

**nonblinded :** A tumor that is found in endocrine tissue but does not make extra hormones. Nonfunctioning tumors usually do not cause symptoms until they grow large or spread to other parts of the body. Also called endocrine-inactive tumor.

**nonbonding electrons:** valence electrons that are not used for covalent bond formation.

**noncarrier :** An individual who does not carry a mutation previously identified in his or her family.

**Nonclaret disjunctional (ncd):** A member of the kinesin family of proteins that, in contrast with most family members, moves toward the negatively charged end of microtubules.

**Noncompetitive inhibition:** The reduction in the rate of enzyme activity observed when an enzyme can bind its substrate and its inhibitor simultaneously. Noncompetitive inhibitors decrease the turnover number for an enzyme but do not diminish the proportion of enzyme molecules bound to the substrate; their effects are not overcome by increasing substrate concentration. OR A type of enzyme inhibition not reversed by increasing the substrate concentration.

**Noncompetitive inhibitor:** An inhibitor of enzyme activity whose effect is not reversed by increasing the concentration of substrate molecule.

**nonconformity:** the erosional contact that separates a younger sedimentary rock unit from a plutonic or metamorphic rock unit.

**nonconsecutive case series :** Cancer that does not begin in the blood or bone marrow.

**noncontiguous lymphoma :** In medicine, describes a characteristic or trait that cannot be passed from a parent to a child through the genes.

Nonheritable forms of cancer may occur when there is a mutation (change) in the DNA in any of the cells of the body, except the germ cells (sperm and egg). People who have a nonheritable form of cancer do not have a family history of that cancer or an inherited change in their DNA that would increase their risk for that cancer.

**noncyclic electron flow:** The light-induced flow of electrons from water to NADP<sup>+</sup> in oxygen-evolving photosynthesis; it involves both photosystems I and II.

**nondynamic correlation:** Also called "static" correlation. The part of the correlation that is ascribed to the "multireference" nature of the problem at hand, i.e., to the qualitative failure of Hartree-Fock theory to describe the system. The best-known stable molecule with important nondynamic correlation is singlet methylene, CH<sub>2</sub> (  $\diamond$  1A<sub>1</sub>), for which two configurations are important: (a<sub>1</sub>)<sup>2</sup>(b<sub>1</sub>)<sup>0</sup> and (a<sub>1</sub>)<sup>0</sup>(b<sub>1</sub>)<sup>2</sup>. In many cases, the distinction between nondynamic and dynamic correlation is rather arbitrary. When nondynamic correlation is important, single-reference theories may be unreliable.

**Nonelectrolyte:** This is a solute that cannot conduct electricity when dissolved in the solvent (water). Water alone cannot conduct electricity well. Sugar is a good example of a nonelectrolyte substance that, when added to water, does not change the solution's ability to conduct electricity. Salt is a good electrolyte. OR A nonelectrolyte is a substance which does not ionize in solution.

**Nonessential amino acids:** Amino acids that can be synthesized by an organism and are thus not a dietary requirement.

**nonessential amino acids:** Amino acids that can be made by humans and other vertebrates from simpler precursors, and are thus not required in the diet.

**nonflowing artesian well:** a well in which water from the tapped aquifer must be pumped to the surface.

**nonfunctioning tumor :** Any of a large group of cancers of lymphocytes (white blood cells). Non-Hodgkin lymphomas can occur at any age and are often marked by lymph nodes that are larger than normal, fever, and weight loss. There are many different types of non-Hodgkin lymphoma. These types can be divided into aggressive (fast-growing) and indolent (slow-growing) types, and they can be formed from either B-cells or T-cells. B-cell non-Hodgkin lymphomas include Burkitt lymphoma, chronic lymphocytic leukemia/small lymphocytic lymphoma (CLL/SLL), diffuse large B-cell lymphoma, follicular lymphoma, immunoblastic large cell lymphoma, precursor B-lymphoblastic lymphoma, and mantle cell lymphoma. T-cell non-Hodgkin lymphomas include mycosis fungoides, anaplastic large cell lymphoma, and precursor T-lymphoblastic lymphoma. Lymphomas that occur after bone marrow or stem cell transplantation are usually B-cell non-Hodgkin lymphomas. Prognosis and treatment depend on the stage and type of disease. Also called NHL.

**nonhematologic cancer :** *Morinda citrifolia*. A tropical shrub. An extract from the fruit is being studied as a treatment for cancer, and extracts from the fruit, leaves, or roots have been used in some cultures to treat other diseases. Also called *Morinda citrifolia*.

**nonheme iron proteins:** Proteins, usually acting in oxidation-reduction reactions, containing iron but no porphyrin groups.

**nonheritable :** In medicine, it describes a procedure that does not require inserting an instrument through the skin or into a body opening. In cancer, it describes disease that has not spread outside the tissue in which it began.

**noni :** A type of low-energy radiation that does not have enough energy to remove an electron (negative particle) from an atom or molecule. Non-ionizing radiation includes visible, infrared, and ultraviolet light; microwaves; radio waves; and radiofrequency energy from cell phones. Most types of non-ionizing radiation have not been found to cause cancer.

**noninferiority study :** A research study that is designed to determine whether one intervention is not worse than another control intervention by a predetermined margin. An intervention that yields outcomes which are equivalent to or better than the control intervention is considered not inferior to the control intervention. Noninferiority studies are often conducted to examine whether a new, experimental treatment is not worse than an established standard of care.

**noninvasive** : In biology, refers to viruses that do not kill infected cells by disrupting their plasma membranes.

**Nonionic**: Er... not ionic? Any chemical species that has neither a positive or negative charge is nonionic.

**NONIONIC SURFACTANT**: A surfactant in which the hydrophile is uncharged. Examples; ethoxylated alcohols and phenols. (see RFF 750.10.01 - SURFACTANTS).

**nonlocal**: In DFT, indicates that a functional of the density gradient (i.e.,  $f[\text{grad } \rho]$ ) is included in addition to a local functional. The most popular NL exchange functional is that by Becke. Popular NL correlation functionals are those by Lee/Yang/Parr and by Perdew. A functional that includes nonlocal terms is sometimes called "gradient-corrected" or a "GGA," which stands for "generalized-gradient approximation." OR A nonmetal is a substance that conducts heat and electricity poorly, is brittle or waxy or gaseous, and cannot be hammered into sheets or drawn into wire. Nonmetals gain electrons easily to form anions. About 20% of the known chemical elements are nonmetals.

**nonlytic** : A disorder of the blood. Some nonmalignant hematologic disorders may lead to leukemia.

**nonmalignant** : Abnormal cells are found in the squamous cell or basal cell layer of the epidermis (topmost layer of the skin). These abnormal cells may become cancer and spread into nearby normal tissue. Also called stage 0 nonmelanoma skin carcinoma in situ.

**nonmalignant hematologic disorder** : Skin cancer that forms in the lower part of the epidermis (the outer layer of the skin) or in squamous cells, but not in melanocytes (skin cells that make pigment).

**nonmelanoma carcinoma in situ** : Abnormal cells are found in the epidermis (topmost layer of the skin). These abnormal cells may become cancer and spread into nearby normal tissue. Also called stage 0 nonmelanoma skin carcinoma in situ on the eyelid.

**nonmelanoma skin cancer** : Having to do with skin cancer that forms in the lower part of the epidermis (the outer layer of the skin) or in squamous cells, but not in melanocytes (skin cells that make pigment).

**nonmelanoma skin carcinoma in situ on the eyelid** : Cancer that has not spread from the primary site (place where it started) to other places in the

body.

**nonmelanomatous** : A drug that is not an opioid. Examples include acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin and ibuprofen.

**nonmetals**: the elements in the upper right part of the periodic table, and also hydrogen.

**nonmetastatic** : Refers to a medicine that can be bought without a prescription (doctor's order). Examples include analgesics (pain relievers), such as aspirin and acetaminophen. Also called OTC and over-the-counter.

**nonopioid** : A clinical trial in which the participants are not assigned by chance to different treatment groups. Participants may choose which group they want to be in, or they may be assigned to the groups by the researchers.

**nonparticulate**: Not composed of distinct particles.

**nonpenetrance** : The state in which a genetic trait, although present in the appropriate genotype, fails to manifest itself in the phenotype (e.g., a woman with a BRCA1 mutation who lives to be elderly and never develops breast or ovarian cancer).

**nonpolar**: Having no poles. Used to refer to a bond or molecule that overall has no separation of electrical charge. OR Having a relatively even or symmetrical distribution of charge. OR Hydrophobic; describing molecules or groups that are poorly soluble in water. OR Having no concentrations of electrical charge on a molecular scale, thus, incapable of significant dielectric loss. Examples among resins are polystyrene and polyethylene.

**nonpolar molecule**: A molecule in which the center of positive charge and the center of negative charge coincide. Examples are  $\text{CCl}_4$  and  $\text{CO}_2$ ; counterexamples are  $\text{CHCl}_3$  and  $\text{H}_2\text{O}$ .

**Nonpower reactor**: Reactors used for research, training, and test purposes, and for the production of radioisotopes for medical, industrial, and academic uses. For additional information, see Research and Test Reactors.

**Nonpower reactor (research and test reactor)**: A nuclear reactor that is used for research, training, or development purposes (which may include producing radioisotopes for medical and industrial uses) but has no role in producing electrical power. These reactors, which are also known as research and test reactors, contribute to almost every field of science,

including physics, chemistry, biology, medicine, geology, archeology, and ecology.

**nonprescription :** A type of cancer that begins in cells that form sperm or eggs. There are several types of nonseminoma tumors, including embryonal carcinoma, malignant teratoma, choriocarcinoma, and yolk sac tumor. These tumors are usually made up of more than one type of cancer cell. Although nonseminomas occur most often in the testicles or ovaries, they can occur in other tissues, such as the brain, chest, or abdomen. This happens when cells that have the ability to form sperm or eggs are found in other parts of the body.

**nonrandomized clinical trial :** A group of lung cancers that are named for the kinds of cells found in the cancer and how the cells look under a microscope. The three main types of non-small cell lung cancer are squamous cell carcinoma, large cell carcinoma, and adenocarcinoma. Non-small cell lung cancer is the most common kind of lung cancer.

**Nonreducing sugar:** A sugar that is not readily converted into a form with a free aldehyde group capable of reducing another compound. Such a conversion is prevented because the sugar forms a glycosidic bond with another compound.

**nonrenewable resources:** natural resources that cannot be replenished for millions of years, if at all.

**Nonribosomal peptides:** A class of peptides, including the antibiotic penicillin, formed by the action of specific megasynthases.

**Nonrigid Plastic:** A non-rigid plastic is one which has a stiffness or apparent modulus of elasticity of not over 50,000 psi. at 25 degrees C when determined according to ASTM test procedure D747-43 T.

**nonseminoma :** A cell (such as a phagocyte or a macrophage) that responds to many antigens, not just one antigen.

**nonsense codon:** A codon that does not specify an amino acid, but signals the termination of a polypeptide chain.

**Nonsense mutation:** A change in the base sequence that converts a sense codon (one that specifies an amino acid) to one that specifies a stop (a nonsense codon) There are three nonsense codons: amber, ochre and something I forget (let me know if you read this - SMowbray). OR Nonsense mutation. A change in the base sequence that converts a sense

codon (one that specifies an amino acid) to one that specifies a stop (a nonsense codon). There are three nonsense codons: amber, ochre and something I forget (let me know if you read this - S. Mowbray).

**nonsense mutation:** A mutation that results in the premature termination of a polypeptide chain.

**nonsense mutation :** A mutation that alters the genetic code in a way that causes the premature termination of a protein. The altered protein may be partially or completely inactivated, resulting in a change or loss of protein function.

**nonsense suppressor:** A mutation, usually in the gene for a tRNA, that causes an amino acid to be inserted into a polypeptide in response to a termination codon.

**nonsettleable matter:** the suspended matter which neither settles nor floats to the surface of water in a period of one hour.

**nonsettleable solids:** wastewater matter that will stay in suspension for an extended period of time. Such period may be arbitrarily taken for testing purposes as one hour.

**nonspecific immune cell :** A member of the family of vegetables that does not contain starch (sugar molecules joined chemically). Nonstarchy vegetables are usually lower in sugar and higher in fiber than starchy vegetables. Examples are broccoli, carrots, celery, peppers, tomatoes, and zucchini.

**nonspecific immunomodulating agent :** A drug that decreases fever, swelling, pain, and redness. Also called NSAID.

**nonstarchy vegetable :** A drug that decreases the production of sex hormones (estrogen or testosterone) and slows the growth of tumors that need sex hormones to grow.

**nonsteroidal anti-inflammatory drug :** Not harmful or destructive.

**nonsteroidal aromatase inhibitor :** A genetic disorder marked by unusual facial features, being shorter than normal, learning problems, heart defects, bleeding problems, defects in the skeleton (bones of the body), and fertility problems in males. People with Noonan syndrome have an increased risk of certain types of cancer, such as rhabdomyosarcoma (a soft tissue tumor), neuroblastoma (cancer of immature nerve cells), and some types of leukemia.

**nonterminal alkyne:** an alkyne in which the triple bond is located somewhere other than the 1 position.

**nontoxic :** A chemical made by some nerve cells and in the adrenal gland. It can act as both a neurotransmitter (a chemical messenger used by nerve cells) and a hormone (a chemical that travels in the blood and controls the actions of other cells or organs). Noradrenaline is released from the adrenal gland in response to stress and low blood pressure. Also called norepinephrine.

**nonvascular plants:** the plants that do not have specialized tissues to transport fluids.

**Nonvolatile:** The portion of a coating left after the solvent evaporates; sometimes called the solids content.

**Noonan syndrome :** A drug put on the skin to treat growths caused by sun exposure. A form of nordihydroguaiaretic acid that is taken by mouth is being studied in the treatment of prostate cancer. Nordihydroguaiaretic acid is an antioxidant, and it may block certain enzymes needed for tumor growth. Also called Actinex, masoprocol, and NDGA.

**noradrenaline :** A chemical made by some nerve cells and in the adrenal gland. It can act as both a neurotransmitter (a chemical messenger used by nerve cells) and a hormone (a chemical that travels in the blood and controls the actions of other cells or organs). Norepinephrine is released from the adrenal gland in response to stress and low blood pressure. Also called noradrenaline.

**Norcept-E:** (Other name for: ethinyl estradiol/norethindrone)

**Norcuron:** (Other name for: vecuronium bromide)

**nordihydroguaiaretic acid :** In medicine, a set of values that a doctor uses to interpret a patient's test results. The normal range for a given test is based on the results that are seen in 95% of the healthy population. Sometimes patients whose test results are outside of the normal range may be healthy, and some patients whose test results are within the normal range may have a health problem. The normal range for a test may be different for different groups of people (for example, men and women). Also called reference interval, reference range, and reference values.

**norepinephrine:** A neurotransmitter that increases heart rate, blood pressure, and is related to increased motor activity. It is the precursor to

epinephrine. OR a hormone produced in the adrenal medulla that intensifies the effects of epinephrine.

**norepinephrine :** A drug used to treat depression. It may also be used to treat panic or anxiety disorders and certain types of pain, and to help people quit smoking. Nortriptyline increases the levels of norepinephrine and other natural chemicals in the brain. This helps improve mood and may reduce a person's craving for nicotine. It is a type of tricyclic antidepressant. Also called Aventyl and Pamelor.

**Norethin:** (Other name for: ethinyl estradiol/norethindrone)

**norethindrone acetate:** The orally bioavailable acetate salt of norethindrone, a synthetic progestin with some anabolic, estrogenic, and androgenic activities. As do all progestins, norethindrone binds to and activates nuclear progesterone receptors (PRs) in target tissues such as the pituitary and reproductive system; ligand-receptor complexes are translocated to the nucleus where they bind to progesterone response elements (PREs) located on target genes, followed by various transcriptional events and histone acetylation. Physiological effects include the inhibition of luteinizing hormone (LH) release, an increase in the endometrial luteal-phase, and alterations in endocervical mucus secretion.

**norgestrel:** A synthetic progestin commonly used alone or in combination with an estrogen for contraception. Norgestrel suppresses the secretion of luteinizing and follicle-stimulating hormones (LH and FSH), thickens cervical mucus, and slows the transit of ova through the fallopian tubes. This agent also exhibits antiproliferative activity in endometrial tissue and may exhibit chemopreventive and antineoplastic activities in endometrial carcinoma.

**Norglycin:** (Other name for: tolazamide)

**Norinyl:** (Other name for: ethinyl estradiol/norethindrone)

**Norlutate:** (Other name for: norethindrone acetate)

**Norlutin:** (Other name for: norethindrone acetate)

**normal:** a solution concentration of one gram equivalent per liter of solution.

**normal dip-slip fault:** a dip-slip fault in which the hanging wall block has moved downward relative to the footwall block.

**normal fault:** fault that occurs when rocks are pulled apart, causing one side to move downward.

**normal force:** force that is parallel to the surface of the slope.

**normal range :** A drug used to treat infection with HIV (the virus that causes AIDS). It is also being studied in the treatment of some types of cancer. Norvir blocks the ability of HIV to make copies of itself and may block the growth of cancer cells. It is a type of anti-HIV agent and a type of protease inhibitor. Also called ritonavir.

**NORMAL STRESSES:** Polymer melts when sheared (i.e. when subjected to tangential forces) give rise to perpendicular (NORMAL) STRESSES. This means that when a fluid is flowing in a tube it is less compressed in the axial direction than in the radial direction. These NORMAL STRESSES are responsible for the phenomenon of EXTRUDATE SWELL at the exit of the die. Polymers containing a high molecular weight tail tend to give larger NORMAL STRESSES (i.e. they are more elastic).

**normality:** A measure of solution concentration, defined as the number of equivalents of solute per liter of solution. OR A measure of substance equivalents that are dissolved in a volume of solution. Equivalents are a measure of the actual mass of material divided by the equivalent mass. That equivalent mass is the atomic mass of the compound divided by the valence of the compound. Scientists use the letter 'N' to describe the normality of a solution. Normality can also be determined by multiplying the molarity of a solution by the net positive valence for the compound. OR a measure of solution concentration expressed in equivalent weights of solute per liter of solution. OR A concentration unit relating equivalents of solute to one liter of aqueous solution.

**Norplant:** (Other name for: levonorgestrel)

**Norpramin:** (Other name for: desipramine hydrochloride)

**North American ginseng extract AFX-2:** An orally available proprietary aqueous extract from the North American ginseng (*Panax quinquefolius*) dried root, primarily containing poly-furanosyl-pyranosyl-saccharides, with potential immunostimulating activity. Upon administration, North American ginseng extract AFX-2 may stimulate the proliferation and activation of B-lymphocytes and stimulates IgG production by B cells. Also, this agent induces maturation of dendritic cells, induces T cell

proliferation and activates peritoneal exudate macrophages leading to an increase in the production of the cytokines interleukin -1 and -6, tumor necrosis factor-alpha, interferon-gamma and nitric oxide.

**Northern blotting:** Analogous to Southern blotting, a technique in which a mixture of RNA fragments is separated by electrophoresis, transferred to a nitrocellulose sheet, hybridized to a radioactively labeled DNA probe complementary to the desired sequence, and visualized by autoradiography; the technique can therefore be used to locate and identify an RNA fragment containing a specific sequence.

**Nortrel:** (Other name for: ethinyl estradiol/norethindrone)

**nortriptyline :** A person who has a license that gives them the legal power to witness the signing of documents, to certify that documents are real, and to take statements made under oath.

**Norvir :** An antibiotic drug used to treat infection.

**noscapine hydrochloride:** The orally bioavailable hydrochloride salt of the opioid agonist noscapine, a phthalideisoquinoline alkaloid derived from the opium poppy *Papaver somniferum*, with mild analgesic, antitussive, and potential antineoplastic activities. Noscapine binds to tubulin and alters its conformation, resulting in a disruption of the dynamics of microtubule assembly (by increasing the time that microtubules spend idle in a paused state) and, subsequently, the inhibition of mitosis and tumor cell death. Unlike other tubulin inhibitors such as the taxanes and vinca alkaloids, noscapine does not affect microtubule polymerization.

**nose:** of a fold, its tip.

**Nose Roll :** Machined radius plate or roller, plastic or metal, located at the conveyor terminals which the belt wraps around, allowing a close transfer.

**Not Applicable (NA):** Specifies that a particular field is not applicable to the event.

**Not Reported (NR):** Specifies that information applicable to the particular field was not included in the event report.

**notary public :** A registered nurse who has additional education and training in how to diagnose and treat disease. NPs are licensed at the state level and certified by national nursing organizations. In cancer care, an NP may manage the primary care of patients and their families, based on a

practice agreement with a doctor. Also called advanced practice nurse, APN, and nurse practitioner.

**Notch Sensitivity:** the extent to which the sensitivity of a material to fracture is increased by the presence of a surface inhomogeneity such as a face notch, a sudden change in section, a crack, or a scratch. Low notch sensitivity is usually associated with ductile materials, and high notch sensitivity with brittle materials.

**Notch signaling pathway inhibitor MK0752:** A synthetic small molecule with potential antineoplastic activity. MK0752 inhibits the Notch signaling pathway, which may result in induction of growth arrest and apoptosis in tumor cells in which the Notch signaling pathway is overactivated. The Notch signaling pathway plays an important role in cell-fate determination, cell survival, and cell proliferation.

**notochord:** a flexible rod of tissue extending the length of an animal that provides internal support.

**noun:** a word that names a person, place, or thing, and can be either concrete or abstract.

**noun clause:** a clause that serves as a noun in a sentence.

**Novaban:** (Other name for: tropisetron hydrochloride)

**Novarel:** (Other name for: recombinant human chorionic gonadotropin)

**NovaSoy:** (Other name for: soy isoflavones)

**novel mutation :** A newly discovered, distinct gene alteration; NOT the same as new or de novo mutation.

**novobiocin :** A drug used to treat patients with immune thrombocytopenic purpura (ITP) who do not get better with other forms of treatment. In ITP, platelets (cells that cause blood clots to form) are destroyed by the immune system. Nplate is being studied as a way to treat low platelet counts caused by chemotherapy. It binds to the thrombopoietin receptor and causes the bone marrow to make more platelets. Nplate is also being studied in the treatment of myelodysplastic syndromes (a group of diseases in which the bone marrow does not make enough healthy blood cells). It is a type of thrombopoietin agonist. Also called AMG 531 and romiplostim.

**Novolac:** Multi-functional phenol.

**Novolauden:** (Other name for: hydromorphone hydrochloride)

**Novolin N:** (Other name for: insulin, NPH)

**Noxafil:** (Other name for: posaconazole)

**Nozzle:** As used in power water reactors and boiling water reactors, the interface (inlet and outlet) between reactor plant components (pressure vessel, coolant pumps, steam generators, etc.) and their associated piping systems. OR The hollow cored metal nose screwed into the extrusion end of (a) the heating cylinder of an injection machine or (b) a transfer chamber where this is a separate structure. A nozzle is designed to form under pressure a seal between the heating cylinder or the transfer chamber and the mold. The front end of a nozzle may be either flat or spherical in shape.

**NP:** A Latin abbreviation for “nothing by mouth.”

**NPA:** Natural population analysis. Considered better than Mulliken populations for assigning atomic charges; results are fairly independent of the basis set. Theory based upon chemical concepts of bonds, lone pairs, etc.

**Nplate:** (Other name for: romiplostim)

**Nplate :** A protein that controls how certain genes are expressed. These genes help protect the cell from damage caused by free radicals (unstable molecules made during normal cell metabolism). Free radicals may play a part in cancer, heart disease, stroke, and other diseases of aging. Also called NFE2L2 and nuclear factor (erythroid-derived 2)-like 2.

**NPO:** A protein found on the surface of some cancers.

**NPV:** The likelihood that an individual with a negative test result is truly unaffected and/or does not have the particular gene mutation in question. Also called negative predictive value.

**NQS:** See Interrupted decoupling.

**NR-LU-10 antigen :** A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called antitumor antibiotics and topoisomerase inhibitors. Also called rebeccamycin analog.

**NRC Operations Center:** The primary center of communication and coordination among the NRC, its licensees, State and Tribal agencies, and other Federal agencies, regarding operating events involving nuclear reactors or materials. Located in Rockville, MD, the Operations Center is staffed 24 hours a day by employees trained to receive and evaluate event

reports and coordinate incident response activities. For additional detail, see How We Respond to an Emergency.

**Nrf2:** A drug that decreases fever, swelling, pain, and redness. Also called nonsteroidal anti-inflammatory drug.

**Nrf2 activator RTA 408:** A member of the synthetic oleanane triterpenoid class of compounds and an activator of nuclear factor erythroid 2 [NF-E2]-related factor 2 (Nrf2, Nfe2l2), with potential chemopreventive activity. Upon administration, RTA 408 activates the cytoprotective transcription factor Nrf2. In turn, Nrf2 translocates to the nucleus, dimerizes with a small Maf protein (sMaf), and binds to the antioxidant response element (ARE). This induces the expression of a number of cytoprotective genes, including NAD(P)H quinone oxidoreductase 1 (NQO1), sulfiredoxin 1 (Srxn1), heme oxygenase-1 (HO1, HMOX1), superoxide dismutase 1 (SOD1), gamma-glutamylcysteine synthetase (gamma-GCS), thioredoxin reductase-1 (TXNRD1), glutathione S-transferase (GST), glutamate-cysteine ligase catalytic subunit (Gclc) and glutamate-cysteine ligase regulatory subunit (Gclm), and increases the synthesis of the antioxidant glutathione (GSH). Nrf2, a leucine zipper transcription factor, plays a key role in the maintenance of redox balance and cytoprotection against oxidative stress.

**NS5B polymerase inhibitor BMS-791325:** A non-nucleoside, polymerase inhibitor of the hepatitis C virus (HCV) nonstructural protein 5B (NS5B), a RNA-dependent RNA polymerase, with potential activity against HCV. Upon administration and after intracellular uptake, BMS-791325 allosterically binds to the non-catalytic Thumb 1 site of viral HCV NS5B polymerase and causes a decrease in viral RNA synthesis and replication. The HCV NS5B protein is essential for the replication of the viral HCV RNA genome. HCV is a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family.

**NSAID :** A virus being studied in the treatment of neuroendocrine tumors and other types of cancer. Neuroendocrine tumors form from cells that release hormones in response to a signal from the nervous system. The virus infects and breaks down these tumor cells but not normal cells. It is a type of oncolytic virus. Also called Seneca Valley virus-001 and SVV-001.

**NSC 655649:** A protein that controls how certain genes are expressed. These genes help protect the cell from damage caused by free radicals (unstable molecules made during normal cell metabolism). Free radicals

may play a part in cancer, heart disease, stroke, and other diseases of aging. Also called NFE2L2 and Nrf2.

**NSCLC Antigen-Loaded Dendritic Cell-derived Exosomesnon-small cell lung cancer tumor antigen-loaded dendritic cell-derived exosomes:**

Exosomes loaded with non-small cell lung cancer (NSCLC)-specific antigens, with potential immunostimulating and antineoplastic activities. Exosomes derived from autologous maturing dendritic cells (DCs) are pulsed with HLA-DP04-restricted MAGE-3, and HLA-A02-restricted peptides NY-ESO-1, MAGE-1, MAGE-3, and MART-1. Upon vaccination, these exosomes may stimulate natural killer (NK) cell activation and proliferation, restoration of NKG2D expression on NK cells, and antigen-specific T-cell responses. This may eventually lead to inhibition of tumor cell proliferation in NSCLC expressing these specific tumor antigens. These exosomes, nanovesicles secreted from DCs, are embedded with molecules necessary for potent immune responses on the exosomal surface, such as MHC class II molecules, CD40, ICAM-1, IL-15Ralpha, and NKG2D ligands. Check for active clinical trials using this agent.

**NSTS:** A secure, Web-based data system that helps the NRC and its Agreement States track and regulate the medical, industrial, and academic uses of certain nuclear materials, from the time they are manufactured or imported to the time of their disposal or exportation. This information enhances the ability of the NRC and Agreement States to conduct inspections and investigations, communicate information to other government agencies, and verify the ownership and use of nationally tracked sources. For additional detail, see the NSTS page.

**NTRK/ROS1 inhibitor DS-6051b:** An orally available inhibitor of the receptor tyrosine kinases C-ros oncogene 1 (ROS1) and the neurotrophic tyrosine receptor kinase (NTRK) types 1, 2 and 3, with potential antineoplastic activity. Upon oral administration, DS-6051b binds to and inhibits ROS1 and the NTRK family members. This inhibition leads to a disruption of ROS1- and NTRK-mediated signaling and eventually inhibits the growth of tumor cells that are overexpressing ROS1 and/or NTRKs. ROS1, overexpressed in certain cancer cells, plays a key role in cell growth and survival of cancer cells. NTRK mutations or rearrangements play a key role in cancer progression.

**NTU:** see nephelometric turbidity unit.

**NTX-010:** A group of proteins that help control many functions in a cell, including cell growth and survival. These proteins also control the body's immune and inflammatory responses. Nuclear factor-kappa B may be overactive or found in higher than normal amounts in some types of cancer cells. This may lead to cancer cell growth. High levels or overactivity of nuclear factor-kappa B may also lead to inflammatory disorders, such as asthma and ulcerative colitis, and autoimmune disorders, such as rheumatoid arthritis. Also called NF-kappa B and NF-kB.

**nuclear:** Of or pertaining to nucleus.

**nuclear binding energy:** Energy needed to break an atomic nucleus into separate protons and neutrons.

**Nuclear energy:** See Atomic energy.

**Nuclear Energy Agency (NEA):** A specialized agency within the Organisation for Economic Co-operation and Development (OECD), which was created to assist its Member countries in maintaining and further developing the scientific, technological, and legal bases for safe, environmentally friendly, and economical use of nuclear energy for peaceful purposes. The NEA's current membership consists of 31 countries in Europe, North America, and the Asia-Pacific region, which account for approximately 86% of the world's installed nuclear capacity.

**Nuclear envelope:** A double membrane, consisting of the inner nuclear membrane and the outer nuclear membrane, that surrounds the nucleus and is punctured with openings called nuclear pores.

**nuclear factor (erythroid-derived 2)-like 2 :** An evaluation of the size and shape of the nucleus in tumor cells and the percentage of tumor cells that are in the process of dividing or growing. Cancers with low nuclear grade grow and spread less quickly than cancers with high nuclear grade.

**nuclear factor-kappa B :** A procedure in which radio waves and a powerful magnet linked to a computer are used to create detailed pictures of areas inside the body. These pictures can show the difference between normal and diseased tissue. Nuclear magnetic resonance imaging makes better images of organs and soft tissue than other scanning techniques, such as computed tomography (CT) or x-ray. Nuclear magnetic resonance imaging is especially useful for imaging the brain, the spine, the soft tissue of joints, and the inside of bones. Also called magnetic resonance imaging, MRI, and NMRI.

**nuclear fission:** Splitting of a nucleus into two smaller nuclei and neutrons. The smaller nuclei have higher binding energy than the original nucleus, and fission results in the release of energy.

**Nuclear force:** A powerful short-ranged attractive force that holds together the particles inside an atomic nucleus.

**Nuclear fuel:** Fissionable material that has been enriched to a composition that will support a self-sustaining fission chain reaction when used to fuel a nuclear reactor, thereby producing energy (usually in the form of heat or useful radiation) for use in other processes.

**nuclear fusion:** Combination of two smaller nuclei to form a larger nucleus. The larger nucleus has higher binding energy per nucleon than the original nuclei, and fusion results in the release of energy.

**nuclear grade :** A protein found inside the nucleus of a cell. It is involved in making DNA, RNA, and proteins. It also helps control how certain genes are expressed (turned on) in a cell. Nuclear matrix protein 22 may be found in higher than normal amounts in the urine of patients with some types of cancer, including bladder cancer. Measuring the amount of nuclear matrix protein 22 in the urine may help diagnose cancer or find out how well treatment is working. It is a type of tumor marker. Also called NMP22.

**Nuclear hormone receptor:** A member of a large family of transcription factors that, on binding of a signal molecule such as a steroid hormone, modify the expression of specific genes by binding to control elements in the DNA.

**Nuclear localization sequence:** An amino acid sequence that directs a protein bearing such a sequence into the nucleus.

**Nuclear magnetic resonance:** A means of determining the structure of a protein in solution on the basis of the ability of certain atoms in a protein to absorb electromagnetic radiation.

**Nuclear Magnetic Resonance:** NMR is an analytical technique for working out what an organic compound actually is. It works by placing the sample inside a very strong magnetic field (typically around 100,000 times stronger than the earth's magnetic field, though it can be carried out with weaker and weaker fields as research continues) and playing FM radio waves at it. The strong magnetic field and the absorption and emission of the radio signals allows the operator to work out how the individual atoms

are connected within small to medium sized molecules. NMR was banned from export out of the USA for many years for fear that the Russians would get hold of this technology. The fear was based on the use of the word "Nuclear" in the title, not on what the machine actually did... A new version of NMR is able to resolve the spatial distribution of compounds and produce a 3D map. This has wonderful uses in the medical world, but once again the name "nuclear" was unacceptable, so the technique was renamed "Magnetic Resonance Imaging" or MRI. Perhaps if the FM link was made more widely known, we could refer to the technique as "Easy Listening Imaging" and make a clean break with anything remotely nuclear.

**Nuclear magnetic resonance (NMR) spectroscopy:** An analytical method used to study both liquid and solid samples. It involves placing the sample in a magnetic field and measuring the energy differences between spin states of the nuclei (most commonly protons and carbons). OR a method for measuring how much energy odd-numbered nuclei absorb in the radio frequency range when the atom is exposed to strong magnetic fields. This type of spectroscopy gives information on the environment surrounding the specific nucleus. OR A technique used to study the physical, chemical, and biological properties of matter; in this method, scientists subject a molecule to a strong magnet and watch what happens to the atoms that make up the molecule, which provides information about the molecule's composition. OR An analytical technique that takes advantage of the magnetic properties of certain nuclei.  $^1\text{H}$  NMR and  $^{13}\text{C}$  NMR are useful analytical techniques.

**nuclear magnetic resonance imaging :** A branch of medicine that uses small amounts of radioactive substances to make pictures of areas inside the body and to treat disease. In cancer, the radioactive substance may be used with a special machine (such as a PET scanner) to find the cancer, to see how far it has spread, or to see how well a treatment is working. Radioactive substances may also be used to treat certain types of cancer, such as thyroid cancer and lymphoma.

**Nuclear Material Management and Safeguards System (NMMSS):** A centralized U.S. Government database used to track and account for source and special nuclear material, to ensure that it has not been stolen or diverted to unauthorized users. The system contains current and historical data on the possession, use, and shipment of source and special nuclear material within the United States, as well as all exports and imports of such material.

The database is jointly funded by the NRC and DOE and is operated under a DOE contract.

**Nuclear materials:** See Special nuclear material, Source material, and Byproduct material. For additional detail, see Nuclear Materials.

**nuclear matrix protein 22 :** A method that uses radioactive substances to make pictures of areas inside the body. The radioactive substance is injected into the body, and locates and binds to specific cells or tissues, including cancer cells. Images are made using a special machine that detects the radioactive substance. Also called radioimaging.

**nuclear medicine :** An area inside the nucleus of a cell that is made up of RNA and proteins and is where ribosomes are made. Ribosomes help link amino acids together to form proteins. The nucleolus is a cell organelle.

**nuclear medicine scan :** A building block for nucleic acids (the molecules inside cells that carry genetic information). Nucleotides are attached end-to-end to form the nucleic acids DNA and RNA.

**Nuclear Overhauser enhancement spectroscopy (NOESY):** A technique that forms the basis of NMR analysis of protein structure; NOESY displays pairs of protons that are in close proximity in a protein even if they are not close together in primary structure; three-dimensional structure can then be determined from such observations.

**Nuclear poison (or neutron poison):** In reactor physics, a substance (other than fissionable material) that has a large capacity for absorbing neutrons in the vicinity of the reactor core. This effect may be undesirable in some reactor applications because it may prevent or disrupt the fission chain reaction, thereby affecting normal operation. However, neutron-absorbing materials (commonly known as "poisons") are intentionally inserted into some types of reactors to decrease the reactivity of their initial fresh fuel load. (Adding poisons, such as control rods or boron, is described as adding "negative reactivity" to the reactor.)

**Nuclear pores:** A complex protein assembly that provides openings in the nuclear membrane and permits the transit of large molecules into and out of the nucleus.

**Nuclear power plant:** An electrical generating facility using a nuclear reactor as its heat source to provide steam to a turbine generator. For additional detail, see Nuclear Power Plants.

**Nuclear Radiological Incident Annex:** An annex to the National Response Framework, which provides for a timely, coordinated response by Federal agencies to nuclear or radiological accidents or incidents within the United States. This annex covers radiological dispersal devices and improvised nuclear devices, as well as accidents involving commercial reactors or weapons production facilities, lost radioactive sources, transportation accidents involving radioactive material, and foreign accidents involving nuclear or radioactive material. For additional detail, please see the NRC Incident Response Plan (NUREG-0728) .

**Nuclear reactor:** The heart of a nuclear power plant or nonpower reactor, in which nuclear fission may be initiated and controlled in a self-sustaining chain reaction to generate energy or produce useful radiation. Although there are many types of nuclear reactors, they all incorporate certain essential features, including the use of fissionable material as fuel, a moderator (such as water) to increase the likelihood of fission (unless reactor operation relies on fast neutrons), a reflector to conserve escaping neutrons, coolant provisions for heat removal, instruments for monitoring and controlling reactor operation, and protective devices (such as control rods and shielding). For additional detail, see Nuclear Reactors.

**Nuclear receptor superfamily:** A class of transcription factors that bind DNA and activate transcription only in the presence of a specific signal molecule, such as a hormone.

**Nuclear steam supply system:** The reactor and the reactor coolant pumps (and steam generators for a pressurized water reactor) and associated piping in a nuclear power plant used to generate the steam needed to drive the turbine generator unit.

**Nuclear waste:** A subset of radioactive waste that includes unusable byproducts produced during the various stages of the nuclear fuel cycle, including recovery(or extraction), conversion, and enrichment of uranium; fuel fabrication; and use of the fuel in nuclear reactors. Specifically, these stages produce a variety of nuclear waste materials, including uranium mill tailings, depleted uranium, and spent (depleted) fuel, all of which are regulated by the NRC. (By contrast, "radioactive waste" is a broader term, which includes all wastes that contain radioactivity, regardless of how they are produced. It is not

considered "nuclear waste" because it is not produced through the nuclear fuel cycle and is generally not regulated by the NRC.)

**Nuclease:** An enzyme that cleaves phosphodiester bonds of nucleic acids. OR Enzymes that hydrolyze the internucleotide (phosphodiester) linkages of nucleic acids.

**Nucleating Agent:** Additive used in a polymer to increase crystallization rate by providing additional sites for crystal growth (i.e. Talc). This results in faster cycle time.

**Nucleation:** The formation of stable molecular assemblies leading to crystallization. Also, the initiation of a solid-state reaction. This occurs at a defect or impurity site in the crystal. The solid-state reaction often spreads from this site throughout the crystal.

**nucleation:** The process of providing sites for 1) new bubbles to form in a liquid that is boiling or supersaturated with gas; 2) new droplets to condense from a supersaturated vapor, or 3) new crystals to form in a supersaturated solution. Nucleation sites can be scratches in a surface, dust particles, seed crystals, and so on.

**Nucleation site:** The place at which nucleation occurs within a crystal.

**Nuclei:** Ordered arrays of solute molecules of sufficient size to persist in a given solution.

**Nucleic acid:** A large molecule composed of units of nucleotides; includes both RNA and DNA OR A polymer made of repeating nucleotides. Examples are DNA and RNA. OR large molecules comprised of nucleotides. OR Polymers of the ribonucleotides or deoxyribonucleotides. OR Biologically occurring polynucleotides in which the nucleotide residues are linked in a specific sequence by phosphodiester bonds; DNA and RNA.

**Nucleohistone:** A complex of DNA and histone.

**nucleoid:** In bacteria, the nuclear zone that contains the chromosome but has no surrounding membrane.

**nucleoli:** the small organelles that make up the nucleus; the site for ribosomal synthesis, assembly, and packaging (singular, nucleolus).

**Nucleolus:** A spherical structure visible in the nucleus during interphase. The nucleolus is associated with a site on the chromosome that is involved in ribosomal RNA synthesis. OR A densely staining structure in

the nucleus of eukaryotic cells; involved in rRNA synthesis and ribosome formation.

**nucleolus :** In biology, the structure in a cell that contains the chromosomes. The nucleus has a membrane around it, and is where RNA is made from the DNA in the chromosomes.

**nucleon:** A particle found in the nucleus, that is, a proton or a neutron. OR refers to the particles in the nucleus-- Protons and Neutrons. OR a proton or neutron found in an atomic nucleus. OR Common name for a constituent particle of the atomic nucleus. At present, applied to protons and neutrons, but may include any other particles found to exist in the nucleus. OR A proton or a neutron in the atomic nucleus.

**nucleophile:** a species that is capable of donating a pair of electrons to a nucleus. OR An electron-rich group with a strong tendency to donate electrons to an electron-deficient nucleus (electrophile); the entering reactant in a bimolecular substitution reaction.

**Nucleophilic group:** An electron-rich group that tends to attack an electron-deficient nucleus.

**nucleophilic substitution:** a reaction in which a group on a carbon atom, which has a full or partial positive charge, is displaced by a nucleophile.

**nucleoplasm:** The portion of a cell's contents enclosed by the nuclear membrane; ' also called the nuclear matrix.

**nucleoside:** A biologically important molecule consisting of an amine-containing purine or pyrimidine base joined to ribose, a 5-carbon sugar. OR An organic molecule containing a purine or pyrimidine base and a five-carbon sugar (ribose or deoxyribose). OR A purine or pyrimidine base linked to a sugar. OR A nucleotide base bound to a five-carbon sugar. OR A compound consisting of a purine or pyrimidine base covalently linked to a pentose.

**nucleoside analog DFP-10917:** A deoxycytosine analog with potential antineoplastic activity. Upon administration, DFP-10917 is phosphorylated to generate its nucleotide form, which functions as a deoxycytosine mimic and is incorporated into DNA in tumor cells. This causes DNA strand breaks during polymerization due to beta-elimination during the fidelity checkpoint, which results in G2/M phase-arrest and tumor cell apoptosis.

**nucleoside diphosphate kinase:** An enzyme that catalyzes the transfer of the terminal phosphate of a nucleoside 5'-triphosphate to a nucleoside 5'-diphosphate.

**nucleoside diphosphate sugar:** A coenzymelike carrier of a sugar molecule, functioning in the enzymatic synthesis of polysaccharides and sugar derivatives.

**nucleoside monophosphate kinase:** An enzyme that catalyzes the transfer of the terminal phosphate of ATP to a nucleoside 5'-monophosphate.

**Nucleosome:** A complex of DNA and an octamer of histone proteins in which a small stretch of the duplex is wrapped around a molecular bead of histone. OR Structural unit for packaging chromatin; consists of a DNA strand wound around a histone core.

**Nucleosomes:** The repeating unit of chromatin that consists of 200 base pairs of DNA and two each of the histones H2A, H2B, H3, and H4.

**nucleotide:** the unit that makes up nucleic acid; contains a nitrogen base, a phosphate group, and a carbohydrate molecule. OR A subunit of RNA or DNA containing a base, a phosphate, and a sugar; thousands of nucleotides link up to form a molecule of DNA or RNA OR An organic molecule containing a purine or pyrimidine base, a five-carbon sugar (ribose or deoxyribose), and one or more phosphate groups A phosphoester of a nucleoside. OR A nitrogenous purine or pyrimidine base linked to a sugar, which is in turn linked to one or more phosphate groups. OR A molecule which is a basic building block of nucleic acids and which plays a key role in energy transfer in biochemical reactions. Nucleotides consist of a five-carbon sugar, a heterocyclic nitrogen-containing organic base, and a phosphate group. OR A nucleoside phosphorylated at one of its pentose hydroxyl groups.

**nucleotide :** A molecule consisting of a nitrogen-containing base (adenine, guanine, thymine, or cytosine in DNA; adenine, guanine, uracil, or cytosine in RNA), a phosphate group, and a sugar (deoxyribose in DNA; ribose in RNA). DNA and RNA are polymers comprised of many nucleotides, strung together like beads in a necklace. or A drug used to treat moderate to severe pain. It binds to opioid receptors and other molecules in the central nervous system. Nucynta is a type of opioid and a type of analgesic agent. Also called tapentadol hydrochloride.

**nucleotide analogue GS 9219:** A prodrug of the acyclic nucleoside phosphonate analogue 9-(2-phosphonylmethoxyethyl)guanine (PMEG) with potential antineoplastic activity. Formulated to selectively accumulate in lymphocytes, nucleotide analogue GS 9219 is converted to its active metabolite, PMEG diphosphate (PMEGpp), via enzymatic hydrolysis, deamination, and phosphorylation; subsequently, PMEGpp is incorporated into nascent DNA chains by DNA polymerases, which may result in the termination of DNA synthesis, S-phase cell cycle arrest, and the induction of apoptosis in susceptible lymphoma cell populations.

**nucleotide base:** A heterocyclic nitrogen-containing base that is a constituent of nucleotides. Examples are adenine, guanine, thymine, uracil, and cytosine.

**Nucleotide kinases:** Enzymes that transfer the phosphoryl group of one nucleotide to another nucleotide, as in the reaction of ATP with UMP to form UDP and ADP.

**Nucleotide-excision repair:** A means of repairing DNA in which a stretch of DNA around the site of damage is removed and replaced.

**nucleus:** In eukaryotes, a membranebounded organelle that contains chromosomes. OR In eukaryotic cells, the centrally-located organelle that encloses most of the chromosomes. Minor amounts of chromosomal substance are found in some other organelles, most notably the mitochondria and the chloroplasts. OR The small, central, positively charged region of an atom. Except for the nucleus of ordinary hydrogen, which has only a proton, all atomic nuclei contain both protons and neutrons. The number of protons determines the total positive charge or atomic number. This number is the same for all the atomic nuclei of a given chemical element. The total number of neutrons and protons is called the mass number. OR the center of the atom consisting of the proton and neutron. OR the organelle within eukaryotic cells that contains the genetic material, DNA. OR the central core of an atom; the location of the protons and neutrons. OR the core of an atom, containing protons and neutrons. OR the central core of an atom; the location of the protons and neutrons. OR The nucleus is the centre of an atom, containing protons and neutrons. OR The nucleus of an atom is the center of the atom. The electrons orbit around the center and are arranged in shells. Protons and neutrons live in the nucleus. OR The central part of an atom containing protons and neutrons.

OR The central part of an atom that contains the protons and neutrons. Plural nuclei. OR A drug used to treat moderate to severe pain. It is also used as a sedative before surgery, to help with anesthesia during surgery, during labor, and to treat anxiety caused by some medical conditions. It is made from morphine and binds to opioid receptors in the central nervous system. Numorphan is a type of opioid and a type of analgesic agent. Also called Opana and oxymorphone hydrochloride.

**Nuclide:** A general term referring to all known isotopes, both stable (279) and unstable (about 2,700), of the chemical elements. OR An atom or ion with a specified mass number and atomic number. For example, uranium-235 and carbon-14 are nuclides.

**nuclide symbol:** A symbol for an nuclide that contains the mass number as a leading superscript and the atomic number as a leading subscript. For ions, the ionic charge is given as a trailing superscript. For example, the nuclide symbol for the most common form of the chloride ion is  $^{35}_{17}\text{Cl}^-$ , where 35 is the mass number, 17 is the atomic number, and the charge on the ion is -1. The atomic number is sometimes omitted from nuclide symbols.

**Nucynta :** A health professional trained to care for people who are ill or disabled.

**null allele :** A mutation that results in either no gene product or the absence of function at the phenotypic level.

**number:** refers to whether a noun or verb is singular or plural.

**Numorphan :** A registered nurse who has special training in how to plan, manage, and evaluate all aspects of patient care, especially for patients who get treatment over a long time. Also called case management nurse.

**nurse :** A registered nurse who has additional education and training in how to diagnose and treat disease. Nurse practitioners are licensed at the state level and certified by national nursing organizations. In cancer care, a nurse practitioner may manage the primary care of patients and their families, based on a practice agreement with a doctor. Also called advanced practice nurse, APN, and NP.

**nurse case manager :** A place that gives care to people who have physical or mental disabilities and need help with activities of daily living (such as taking a bath, getting dressed, and going to the bathroom) but do not need to be in the hospital.

**nurse practitioner :** A food or dietary supplement that is believed to provide health benefits.

**nursing home :** A chemical compound (such as protein, fat, carbohydrate, vitamin, or mineral) contained in foods. These compounds are used by the body to function and grow.

**nutraceutical :** Food that is high in nutrients but relatively low in calories. Nutrient-dense foods contain vitamins, minerals, complex carbohydrates, lean protein, and healthy fats. Examples of nutrient-dense foods include fruits and vegetables, whole grains, low-fat or fat-free milk products, seafood, lean meats, eggs, peas, beans, and nuts.

**nutraceutical TBL-12:** An orally available nutritional supplement and proprietary formulation containing extracts from the sea cucumber, sea sponge, shark fin, sea urchin and the marine grass Sargassum, with potential antioxidant, antitumor, anti-angiogenic and immunomodulating activities. TBL-12 contains various amino acids, minerals, vitamins and omega-3 fatty acids. Check for active clinical trials using this agent.

**Nutracort:** (Other name for: therapeutic hydrocortisone)

**NutreStore:** (Other name for: glutamine)

**nutrient:** A source of nourishment, especially a nourishing ingredient in food. OR Any substance assimilated by living things that promotes growth. OR The taking in and use of food and other nourishing material by the body. Nutrition is a 3-part process. First, food or drink is consumed. Second, the body breaks down the food or drink into nutrients. Third, the nutrients travel through the bloodstream to different parts of the body where they are used as "fuel" and for many other purposes. To give the body proper nutrition, a person has to eat and drink enough of the foods that contain key nutrients.

**nutrient-dense food :** Treatment based on nutrition. It includes checking a person's nutrition status, and giving the right foods or nutrients to treat conditions such as those caused by diabetes, heart disease, and cancer. It may involve simple changes in a person's diet, or intravenous or tube feeding. Nutrition therapy may help patients recover more quickly and spend less time in the hospital. Also called medical nutrition therapy.

**nutrient-rich whole wheat flour supplement:** A nutritional supplement composed of nutrient-rich whole wheat flour-based bread mix, with

potential anti-cachexia activity. Following the production of an unleavened bread from the mix and upon oral intake of the nutrient-rich whole wheat flour supplement, the various nutrients in the bread may improve cachexia symptoms. The bread is made from the flour of pulverized whole wheat from an Indian crop. Check for active clinical trials using this agent.

**nutrients:** materials which are considered essential to the support of biological life.

**nutrigenomics :** The study of the interaction of dietary and genetic factors and its effect on metabolism, health status, and risk of disease.

**Nutrison:** (Other name for: casein/whey protein/soy protein/pea protein/fat mix/EPA/DHA-based nutritional supplement)

**nutrition :** A process by which a health professional with special training in nutrition helps people make healthy food choices and form healthy eating habits. In cancer treatment, the goal of nutritional counseling is to help patients stay healthy during and after treatment and to stay strong enough to fight infections and the recurrence of disease. Also called dietary counseling.

**nutrition therapy :** The state of a person's health in terms of the nutrients in his or her diet.

**nutritional counseling :** A product that is added to the diet. A nutritional supplement is taken by mouth, and usually contains one or more dietary ingredient (such as vitamin, mineral, herb, amino acid, and enzyme). Also called dietary supplement.

**nutritional status :** A health professional with special training in nutrition who can help with dietary choices. Also called dietitian.

**nutritional supplement :** A drug that is used to treat certain sleep disorders, such as narcolepsy. It makes patients feel more alert and awake. It is also being studied in the treatment of insomnia and fatigue in patients treated for cancer. Nuvigil acts in a part of the brain that controls sleep and wakefulness. It is a type of wakefulness-promoting agent. Also called armodafinil.

**nutritional supplement drink:** A calorie-dense nutritional supplement drink containing a variety of vitamins and minerals. Nutritional supplement drink contains vitamin A, vitamin C, D, E and K, calcium, iron, thiamin, riboflavin, niacin, folate, vitamin B6, vitamin B12, pantothenic acid, biotin,

phosphorus, iodine, magnesium, zinc, selenium, copper, manganese, chromium, molybdenum, chloride and choline. In addition, this drink contains protein, fiber and fat, including omega-3 fatty acids.

**nutritional supplement drink (pediatric):** A liquid, milk protein-based, pediatric nutritional supplement containing a variety of vitamins and minerals. Nutritional supplement drink (pediatric) contains vitamins and minerals such as vitamin A, vitamin C, D, E and K, calcium, iron, thiamin, riboflavin, niacin, folate, vitamin B6, vitamin B12, pantothenic acid, biotin, phosphorus, iodine, magnesium, zinc, selenium, copper, manganese, chromium, molybdenum, chloride and choline. In addition, this supplement contains soy protein isolate and medium-chain triglycerides (MCTs), sucrose and short-chain oligofructosaccharides. Check for active clinical trials using this agent.

**nutritional table method:** A method of evaluating the dietary intake of a large number of people. The accuracy of the method largely depends on the accuracy with which records of the food consumption can be established and the accuracy of the nutritional tables specifying the concentration of various nutrients, vitamins, and essential and non-essential substances including pesticide residues. For each record of quantity of food consumed during a certain time period, the daily intake of the substance in question is calculated by multiplying the substance concentration in the food item (as obtained from the nutritional table) by the quantity of food consumed and dividing by the time of observation (WHO, 1979).

**nutritionist :** The active ingredient in a drug used to treat infections caused by fungi (a type of microorganism). Nystatin is made by certain strains of bacteria and kills fungi by binding to their membranes. It is a type of antifungal agent.

**Nuvigil :** A drug that may improve the response of cancer cells to chemotherapy.

**Nuvion:** (Other name for: visilizumab)

**NY-ESO-1 peptide vaccine:** A cancer vaccine consisting of an immunogenic peptide derived from the cancer-testis antigen (NY-ESO-1), an antigen found in normal testis and various tumors. Vaccination with NY-ESO-1 peptide vaccine may stimulate the host immune system to mount a humoral and cytotoxic T lymphocyte (CTL) response to cells expressing NY-ESO-1 antigen, resulting in tumor cell lysis.

**NY-ESO-1 plasmid DNA cancer vaccine:** A plasmid DNA encoding an immunogenic peptide derived from the cancer-testis antigen NY-ESO-1 with potential immunostimulating and antitumor activities. Upon administration, NY-ESO-1 plasmid DNA cancer vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing the NY-ESO-1 antigen, resulting in tumor cell lysis. NY-ESO-1 is a tumor associated antigen (TAA) found in normal testes and expressed on the surfaces of various tumor cells, including melanoma, breast, bladder, prostate, lung, ovarian, and hepatocellular tumor cells.

**NY-ESO-1 protein vaccine plus Montanide ISA-51 VG:** A cancer vaccine consisting of an immunogenic peptide derived from the cancer-testis antigen (NY-ESO-1) and emulsified in the immunoadjuvant Montanide ISA-51 VG, with potential immunomodulating and antineoplastic activities. Upon subcutaneous vaccination, the NY-ESO-1 protein vaccine emulsified in Montanide ISA-51 VG may stimulate the host immune system to mount a humoral and cytotoxic T lymphocyte (CTL) response against tumor cells expressing the NY-ESO-1 antigen, resulting in tumor cell lysis. NY-ESO-1, an antigen found in normal testes and various tumors, including bladder, breast, hepatocellular, melanoma, and prostate cancers. The surfactant mannide monooleate in Montanide ISA 51 VG is derived from vegetable-grade (VG) oleic acid that was purified from olive oil.

**NY-ESO-1 protein/microparticle MDP/bacterial DNA-containing MIS416 vaccine:** A combination preparation composed of a protein derived from the human tumor-associated antigen (TAA) cancer-testis antigen 1 (NY-ESO-1) and a microparticle combining two immune-modifying components derived from the bacterium *Propionibacterium acnes*, a bacterial cell wall component that is rich in muramyl dipeptide (MDP) and bacteria-derived single-stranded DNA fragments, with potential immunomodulating, immunoadjuvant and antineoplastic activities. Upon administration of NY-ESO-1 protein/microparticle MDP/bacterial DNA-containing MIS416 vaccine, MIS416 localizes in and is taken up mainly by the liver, thereby forming a liver depot. MIS416 is then taken up by immune cells, such as monocytes and dendritic cells (DCs), where MDP and the bacterial DNA target and bind to the cytosolic innate pattern recognition receptors (PRRs) nucleotide-binding oligomerization domain-

containing protein 2 (NOD2), and toll-like receptor 9 (TLR9), respectively. The simultaneous binding and activation of both NOD2 and TLR9, leads to activation of both NOD2 and TLR9 signaling pathways. This stimulates the innate immune system, induces secretion of cytokines, particularly interferon (IFN), and modulates the activation of various immune cells. In the presence of the NY-ESO-1 peptide, MIS416 enhances the cytotoxic T-lymphocyte (CTL)-mediated immune response against NY-ESO-1, resulting in an increased anti-tumor immune response. NY-ESO-1 is expressed in normal testes and on the surfaces of various tumor cells, and plays a key role in tumor cell proliferation and survival. Check for active clinical trials using this agent.

**NY-ESO-1 reactive TCR retroviral vector transduced autologous PBL:** Human autologous peripheral blood lymphocytes (PBLs) transduced with a retroviral vector encoding a T cell receptor (TCR) specific for the cancer-testis antigen NY-ESO-1, with potential antineoplastic activity. Upon isolation, transduction, expansion ex vivo, and reintroduction into the patient, the NY-ESO-1 reactive TCR-transduced autologous PBLs bind to NY-ESO-1-overexpressing tumor cells. This may result in a specific cytotoxic T-lymphocyte (CTL) killing of NY-ESO-1-positive cancer cells. NY-ESO-1, a tumor associated antigen (TAA), is found in normal testis and on the surface of various tumor cell types; the TCR is specific for NY-ESO-1:157-165.

**NY-ESO-1-specific CD4-positive T lymphocytes:** A preparation of autologous CD4+ T-lymphocytes sensitized to cancer-testis antigen NY-ESO-1, with potential immunostimulating and antineoplastic activities. CD4-positive T-lymphocytes are exposed to a NY-ESO-1 peptide ex vivo, expanded, and introduced into the patient. The NY-ESO-1-specific CD4-positive T-lymphocytes may stimulate the host immune system to produce a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing the NY-ESO-1 antigen, which results in tumor cell lysis. NY-ESO-1, an antigen found in normal testis, may be upregulated in various cancers.

**NY-ESO-1-specific TCR gene-transduced T lymphocytes TBI-1301:** Human peripheral blood T-lymphocytes transduced with a retroviral vector encoding a T-cell receptor (TCR) specific for the cancer-testis antigen NY-ESO-1, with potential antineoplastic activity. Following leukapheresis, isolation of lymphocytes, expansion ex vivo, transduction, and introduction

into the patient, the NY-ESO-1-specific TCR gene-transduced T lymphocytes TBI-1301 bind to NY-ESO-1 on tumor cells. This may result in cytotoxic T-lymphocyte (CTL)-mediated elimination of NY-ESO-1-positive cancer cells. NY-ESO-1, a tumor-associated antigen (TAA), is found in normal testis and on the surface of various tumor cell types.

**NY-ESO-1(157-165) peptide-pulsed autologous dendritic cell vaccine:**

A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with a peptide derived from the tumor associated antigen human cancer-testis antigen NY-ESO-1 (NY-ESO-1(157-165)), with potential immunostimulatory and antineoplastic activities. Upon administration, the NY-ESO-1(157-165) peptide-pulsed autologous dendritic cell vaccine may stimulate the immune system to mount both an anti-tumoral cytotoxic T-lymphocyte (CTL) and an antibody-mediated immune response against NY-ESO-1-expressing tumor cells, which may result in tumor cell lysis. NY-ESO-1 is expressed both in normal testes and on the surfaces of various tumor cells, and plays a key role in tumor cell proliferation and survival.

**NY-ESO-1/GLA-SE vaccine ID-G305:** A cancer vaccine composed of a recombinant form of the tumor antigen NY-ESO-1 and glucopyranosyl lipid adjuvant (GLA)-stable emulsion (GLA-SE), with potential antineoplastic and immunomodulating activities. Upon intramuscular injection, the adjuvant portion of the NY-ESO-1/GLA-SE vaccine ID-G30 binds to toll-like receptor subtype 4 (TLR-4) expressed on dendritic cells (DCs), monocytes, macrophages and B cells. The activated DCs present the NY-ESO-1 antigen to Th1 CD4 T-lymphocytes. This leads to the induction of cytotoxic T lymphocytes (CTLs) and the killing of NY-ESO-1-expressing tumor cells. This vaccine also induces specific antibody responses and increases the production of inflammatory cytokines.

**NY-ESO-1/LAGE-1 HLA class I/II peptide vaccine:** A cancer vaccine containing HLA class I- and II-binding peptides derived from the NY-ESO-1/LAGE-1 cancer/testis antigen with potential immunostimulatory and antineoplastic activities. Upon administration, NY-ESO-1/LAGE-1 HLA class I/II peptide vaccine may induce a cytotoxic immune response against tumor cells that over-express NY-ESO-1/LAGE-1. Rarely expressed by normal cells, the NY-ESO-1/LAGE-1 cancer/testis antigen has been shown to be preferentially expressed on the surface of some cancer cell types. Check for active clinical trials using this agent.

**NY-ESO-1/MART-1 peptide-pulsed dendritic cell vaccine:** A cell-based cancer vaccine composed of dendritic cells (DC) pulsed with peptides derived from the tumor-associated antigens human cancer/testis antigen NY-ESO-1 and melanoma antigen recognized by T-cells (MART-1/Melan-A), with potential immunostimulatory and antineoplastic activities. Upon administration, the NY-ESO-1/MART-1 peptide-pulsed DC vaccine may stimulate the immune system to mount an anti-tumor cytotoxic T-lymphocyte (CTL) response against NY-ESO-1/MART-1-expressing tumor cells, which may result in tumor cell lysis. NY-ESO-1 is expressed both in normal testes and on the surfaces of various tumor cells. MART-1 is expressed by melanoma cells.

**NY-ESO-1/PRAME/MAGE-A3/WT-1 peptide vaccine:** A peptide-based cancer vaccine comprised of synthetic peptides derived from the cancer-testis antigen NY-ESO-1, preferentially expressed antigen in melanoma (PRAME), human melanoma antigen A3 (MAGE-A3) and the human Wilms tumor protein-1 (WT-1), with potential immunostimulating and antineoplastic activities. Upon administration, NY-ESO-1/PRAME/MAGE-A3/WT-1 peptide vaccine may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing NY-ESO-1, PRAME, MAGE-A3 and WT-1, resulting in tumor cell lysis. The NY-ESO-1, PRAME, MAGE-A3 and WT-1 peptides, tumor-associated antigens (TAAs) overexpressed in a variety of cancer cell types, play a key role in tumor cell proliferation.

**NY-ESO-1b peptide vaccine:** A recombinant nonapeptide used as an antineoplastic vaccine. NY-ESO-1b peptide vaccine contains the amino acid sequence SLLMWITQC, derived from the cancer-testis tumor antigen (NY-ESO-1), which is expressed on tumor cells of many different types, including melanomas. Vaccination with this peptide vaccine may elicit strong humoral and cellular immune responses to NY-ESO-1-expressing cancers.

**NY-ESO-B:** A tumor-associated antigen belonging to the family of immunogenic testicular proteins that are aberrantly expressed in human cancers in a lineage-nonspecific fashion. Reverse transcription-PCR analysis showed NY-ESO-1 mRNA expression in a variable proportion of a wide array of human cancers, including melanoma, breast cancer, bladder cancer, prostate cancer, and hepatocellular carcinoma; and restricted

expression in normal tissues, with high-level mRNA expression found only in testis and ovary tissues. The gene for NY-ESO-1 maps to Xq28 and codes for an 18-kDa protein having no homology with any known protein. NY-ESO-1 elicits a strong, integrated humoral and cellular immune response in a high proportion of patients with NY-ESO-1-expressing tumors and is under investigation as a cancer immunotherapy agent.

**Nylon:** Nylons (polyamides) are the oldest and largest volume engineering polymers. Nylon refers to a family of a highly versatile materials that are consumed in a variety of applications including fibers, films and molded materials. Nylons are strong, tough polymers with good resistance to elevated temperatures and attack by chemicals. OR A class of polymers that is widely use in the clothing industry (amongst others). Their common feature is the presence of a -C(O)-NH- link between monomer units. This is also called a peptide bond. See Nylon 66 and Nylon 6. OR Generic name for all long-chain polymers which have recurring amide groups (-CONH-) as an integral part of the main polymer chain. Various types of nylons are described in subsequent listings, the numbers of which relate to the number of carbon atoms in the various reactants. OR There are five main types of nylon, including: 6/6, 6, 6/12, 11 and 12. Recently, due to a Global shortage of Nylon 11 and 12, many new blends of nylon are on the market. OR The generic name for all synthetic fiber-forming polyamides; they can be formed into monofilaments and yarns characterized by great toughness, strength and elasticity, high melt point, and good resistance to water and chemicals. The material is widely used for bristles in industrial and domestic brushes, and for many textile applications; it is also used in injection molding gears, bearings, combs, etc. OR Polyamide resins, with very high melting points, excellent clarity and stiffness. Two types are used for films: nylon-6 and nylon-66. The latter has much higher melt temperature, thus better temperature resistance, but the former is easier to process, and it is cheaper. Both have good oxygen and aroma barrier properties, but they are poor barriers to water vapor. Also, nylon films can be cast (see CAN), or oriented, (see BON).

**Nylon 6:** Another form of nylon that uses only one monomer unit (not two). This monomer is difunctional with a carboxylic acid group at one end and an amine group at the other. The condensation reaction between two such molecules produces an amide bond in the same way as the synthesis of Nylon 66. The monomer used is (I think) 7-amine-1-heptanoic acid.

**Nylon 66:** A polymer widely used in a fibrous form in fabrics as well as solid lumps of plastic (e.g. in chopping boards and bearings). Nylon 66 may be formed from the condensation polymerisation of 1,2-hexadamine and 1,8-octadioic acid, although modern industrial processes have improved upon these reactions by ionising the reagents to the hexadammium and 1,8-octadioate ions before the reaction is undertaken.

**Nylon Intermediates:** The Nylon Intermediates are the family of chemicals used in the production of the nylon family of polymers.

**nystagmus:** involuntary eye movements

**nystatin :** A branch of medicine that specializes in the care of women during pregnancy and childbirth and in the diagnosis and treatment of diseases of the female reproductive organs. It also specializes in other women's health issues, such as menopause, hormone problems, contraception (birth control), and infertility. Also called obstetrics and gynecology.

**O Ray:** See Ordinary ray.

**O-Ring:** A doughnut-shaped object that functions as a seal, blocking the passage of liquids or gases, by being compressed between the two mating surfaces comprising the walls of the cavity into which the ring is installed

**O(6)-benzylguanine :** A substance being studied in the treatment of several types of cancer. Obatoclax blocks the actions of certain proteins that cells need to live and it may kill cancer cells. It is a type of apoptosis inducer, a BCL2 protein antagonist, and a BH3 mimetic.

**O6-benzylguanine:** A guanine analogue with antineoplastic activity. O(6)-benzylguanine binds the DNA repair enzyme O(6)-alkylguanine DNA alkyltransferase (AGT), transferring the benzyl moiety to the active-site cysteine and resulting in inhibition of AGT-mediated DNA repair. Co-administration of this agent potentiates the effects of other chemotherapeutic agents that damage DNA.

**oat biscuit:** A biscuit containing oats.

**ob/gyn:** A substance being studied in the treatment of several types of cancer. It is a form of obatoclax, which blocks the activity of certain proteins needed for cells to live and may cause tumor cells to die. It is a type of apoptosis inducer.

**obatoclax :** Having an abnormally high, unhealthy amount of body fat.

**obatoclax mesylate:** The mesylate salt of obatoclax, a synthetic small-molecule inhibitor of the bcl-2 family of proteins with potential pro-apoptotic and antineoplastic activities. Obatoclax binds to members of the Bcl-2 protein family, preventing the binding of these anti-apoptotic proteins to the pro-apoptotic proteins Bax and Bak and so promoting the activation of the apoptotic pathway in Bcl-2-overexpressing cells. The Bcl-2 family of proteins (bcl-2, bcl-xl, bcl-w, and Mcl-1) are overexpressed in a wide variety of cancers, including those of the lymphatic system, breast, lung, prostate, and colon. or A condition marked by an abnormally high, unhealthy amount of body fat.

**obduction:** the process by which a crustal plate overrides another plate for a short distance.

**obese :** A drug used with bendamustine to treat follicular lymphoma that has come back or has not gotten better after treatment with rituximab. It is also used with chlorambucil to treat chronic lymphocytic leukemia (CLL) that has not already been treated. It is also being studied in the treatment of other types of cancer. Obinutuzumab binds to a protein called CD20, which is found on B cells (a type of white blood cell) and some types of leukemia and lymphoma cells. This may help the immune system kill cancer cells. Obinutuzumab is a type of monoclonal antibody. Also called Gazyva.

**obesity :** An improvement that can be measured by the health care provider (for example, when a tumor shrinks or there are fewer cancer cells in the blood).

**obinutuzumab:** A glycoengineered, fully humanized IgG1 monoclonal antibody with potential antineoplastic activity. Obinutuzumab, a third generation type II anti-CD20 antibody, selectively binds to the extracellular domain of the human CD20 antigen on malignant human B cells. The Fc region carbohydrates of the antibody, enriched in bisected non-fucosylated glycosylation variants, contribute to its higher binding affinity for human FcγRIII receptors compared to non-glycoengineered antibodies, resulting in enhanced antibody-dependent cellular cytotoxicity (ADCC) and caspase-independent apoptosis. In addition, modification of elbow hinge sequences within the antibody variable framework regions may account for the strong apoptosis-inducing activity of R7159 upon binding to CD20 on target cells. or A measurable response.

**object of the preposition:** a noun or pronoun that follows a preposition and completes the prepositional phrase.

**objective case:** when a noun or pronoun is the object of a verb, it is in the objective case.

**objective environment:** The actual physical, chemical, and social environment as described by objective measurements, such as noise levels in decibels and concentrations of air pollutants (WHO, 1979).

**objective improvement :** A substance being studied in the treatment of cancer. It may kill cancer cells by blocking the production of a protein that makes cancer cells live longer and by making them more sensitive to anticancer drugs. It is a type of antisense oligodeoxyribonucleotide. Also called augmerosen, bcl-2 antisense oligodeoxynucleotide G3139, and Genasense.

**objective response :** In medicine, watching a patient's condition but not giving treatment unless symptoms appear or change.

**oblate spheroid:** the shape of the Earth; not a perfect sphere, but flatter at the poles and slightly bulging at the Equator.

**Obligate anaerobes:** Organisms that cannot survive in the presence of oxygen and are thus usually dependent on fermentation as a source of cellular energy.

**oblimersen sodium:** The sodium salt of a phosphorothioate antisense oligonucleotide targeted to the initiation codon region of mRNA for the anti-apoptotic gene Bcl-2. Oblimersen inhibits Bcl-2 mRNA translation, which may result in decreased expression of the Bcl-2 protein and tumor cell apoptosis. This agent may enhance the efficacy of standard cytotoxic chemotherapy. The anti-apoptotic bcl-2 protein is an integral outer mitochondrial membrane protein (OMMP) that is overexpressed in some cancer cell types and is linked to tumor drug resistance. or A type of study in which individuals are observed or certain outcomes are measured. No attempt is made to affect the outcome (for example, no treatment is given).

**oblique-slip fault:** a fault in which the fault blocks show both horizontal and vertical displacement.

**Obliteration:** The quality or degree that a coat of paint hides the underlying surface; opacity.

**observation:** data that is collected through your senses. OR What you see during an experiment. You should look carefully at the substances before they react, while they are reacting and after they have reacted. Observations should include a colour and a physical state. A good observation could be something like "a pale brown liquid was formed near the positive electrode". That is far better than, "it went brown". OR An anxiety disorder in which a person has intrusive ideas, thoughts, or images that occur repeatedly, and in which he or she feels driven to perform certain behaviors over and over again. For example, a person may worry all the time about germs and so will wash his or her hands over and over again. Having an obsessive-compulsive disorder may cause a person to have trouble carrying out daily activities.

**observational study :** A doctor who specializes in caring for women during pregnancy and childbirth. Obstetricians also care for the fetus (unborn baby), treat problems with pregnancy, and deliver babies.

**obsessive-compulsive disorder :** A branch of medicine that specializes in the care of women during pregnancy and childbirth and in the diagnosis and treatment of diseases of the female reproductive organs. It also specializes in other women's health issues, such as menopause, hormone problems, contraception (birth control), and infertility. Also called ob/gyn.

**obstetrician :** Blockage of a passageway.

**obstetrics and gynecology :** A dulled or reduced level of alertness or consciousness.

**obstruction :** Cancer in which the site of the primary (original) tumor cannot be found. Most metastases from occult primary tumors are found in the head and neck.

**obtundation :** Cancer cells are found in sputum (mucus coughed up from the lungs), but no tumor can be found in the lung by imaging tests or bronchoscopy, or the tumor is too small to be checked.

**obtuse angle:** an angle greater than  $90^\circ$  but less than  $180^\circ$  OR An angle that measures more than 90 degrees and less than 180 degrees.

**obtuse triangle:** a triangle containing an obtuse angle OR A triangle with one obtuse angle.

**ocaratuzumab:** An Fc-engineered monoclonal antibody directed against human CD20 with potential antineoplastic activity. Ocaratuzumab

specifically binds to CD20 antigen (B1), preventing mitogen-induced B-cell proliferation; inhibiting B-cell differentiation; and promoting antibody-dependent cell-mediated cytotoxicity (ADCC) and apoptosis of B cells expressing CD20. The Fc portion of this monoclonal antibody has been engineered to possess a higher binding affinity for variant Fc receptors on T helper cells, resulting in an augmentation of the anti-tumor immune response. Because of Fc engineering, this agent may be significantly more potent than rituximab in inducing B cell-directed ADCC. CD20 is a non-glycosylated cell surface phosphoprotein that is exclusively expressed on B cells during most stages of B cell development.

**occluded front:** front that forms when a cold front catches up to a warm front.

**ocult primary tumor :** A health professional trained to help people who are ill or disabled learn to manage their daily activities.

**ocult stage non-small cell lung cancer :** A procedure that uses infrared light waves to give three-dimensional (3-D) pictures of structures inside tissues and organs. The pictures are made by a computer linked to the light source. Also called optical coherence tomography.

**Occupational Dose:** The internal and external dose of ionizing radiation received by workers in the course of employment in such areas as fuel cycle facilities, industrial radiography, nuclear medicine, and nuclear power plants. These workers are exposed to varying amounts of radiation, depending on their jobs and the sources with which they work. The NRC requires its licensees to limit occupational exposure to 5,000 mrem (50 mSv) per year. Occupational dose does not include the dose received from natural background sources, doses received as a medical patient or participant in medical research programs, or "second-hand doses" received through exposure to individuals treated with radioactive materials. For additional detail, see Information for Radiation Workers and Measuring Radation.

**occupational environment:** The environment at a work place (WHO, 1979).

**occupational hygiene:** The applied science concerned with recognition, evaluation and control of chemical, physical or biological factors arising from the workplace and which may affect the well-being of those at work or in the community.

**occupational therapist :** A drug similar to the naturally occurring growth hormone inhibitor somatostatin. Octreotide is used to treat diarrhea and flushing associated with certain types of tumors.

**occurrence (frequency):** In epidemiology, a general term describing the frequency of a disease or other attribute or event in a population without distinguishing between incidence and prevalence (Last, 1988).

**ocean mixing:** Processes that involve rates of advection, upwelling/downwelling, and eddy diffusion and that determine how rapidly excess atmospheric carbon dioxide can be taken up by the oceans.

**ocean-continent convergence:** convergence that occurs when oceanic crust is subducted under continental crust.

**ocean-ocean convergence:** convergence that occurs when two plates carrying ocean crust converge, with one slab subducted under the other at an ocean trench.

**oceanic trench:** a narrow deep trough that parallels the edge of a continent, island arc, or convergence of two oceanic plates and forms at the edge of a subduction zone.

**ocrelizumab:** A Fc-modified, humanized monoclonal antibody directed against the B-cell CD20 cell surface antigen, with immunosuppressive activity. Ocrelizumab binds to CD20 on the surfaces of B-cells, triggering complement-dependent cell lysis (CDCL) and antibody-dependent cell-mediated cytotoxicity (ADCC) of B-cells overexpressing CD20. The CD20 antigen, a non-glycosylated cell surface phosphoprotein that acts as a calcium ion channel, is found on over 90% of B-cells, B-cell lymphomas, and other lymphoid tumor cells of B-cell origin; it plays an important role in B-cell functioning.

**OCT:** A type of radionuclide scan used to find carcinoid and other types of tumors. Radioactive octreotide, a drug similar to somatostatin, is injected into a vein and travels through the bloodstream. The radioactive octreotide attaches to tumor cells that have receptors for somatostatin. A radiation-measuring device detects the radioactive octreotide, and makes pictures showing where the tumor cells are in the body. Also called somatostatin receptor scintigraphy and SRS.

**octagon:** a plane closed figure with eight sides and eight angles

**Octahedral Crystal:** This is a crystal that has eight sides. Think of a shape with two pyramids attached at their bases.

**octane<sup>818</sup>:** Flammable liquid compounds found in petroleum and natural gas. There are 18 different octanes- they have different structural formulas but share the molecular formula C<sub>8</sub>H<sub>18</sub>. Octane is used as a fuel and as a raw material for building more complex organic molecules. It is the eighth member of the alkane series.

**Octene:** Comonomer in production of usually linear low density polyethylene. OR A comonomer used in the production of linear low density polyethylenes. OR A co-monomer used in the production of linear low-density polyethylene plastics.

**octet:** In Lewis structures the goal is to make almost all atoms have an octet. This means that they will have access to 8 electrons regularly, even if they do have to share some of them. OR A stable group of eight electrons in the outer shell of an atom. OR eight electrons. Carbon, oxygen, and the halogens either share, lose, or gain electrons to have eight electrons in their valence shells. (Compare with "duet.") OR A set of eight valence electrons.

**octet rule:** A guideline for building Lewis structures that states that atoms tend to gain, lose, or share valence electrons with other atoms in a molecule until they hold or share eight valence electrons. The octet rule almost always holds for carbon, nitrogen, oxygen, and fluorine; it is regularly violated for other elements.

**Octreoscan:** (Other name for: indium In 111 pentetreotide)

**octreotide :** A rare cancer of melanocytes (cells that produce the pigment melanin) found in the eye. Also called intraocular melanoma.

**octreotide acetate:** The acetate salt of a synthetic long-acting cyclic octapeptide with pharmacologic properties mimicking those of the natural hormone somatostatin. Octreotide is a more potent inhibitor of growth hormone, glucagon, and insulin than somatostatin. Similar to somatostatin, this agent also suppresses the luteinizing hormone response to gonadotropin-releasing hormone, decreases splanchnic blood flow, and inhibits the release of serotonin, gastrin, vasoactive intestinal peptide (VIP), secretin, motilin, pancreatic polypeptide, and thyroid stimulating hormone. Check for active clinical trials using this agent.

**octreotide pamoate:** A synthetic long-acting octapeptide analogue of endogenous somatostatin. Octreotide pamoate binds to somatostatin receptors expressed by some neuroendocrine and non-neuroendocrine tumor cells, thereby initiating somatostatin receptor-mediated apoptosis. Other possible antineoplastic activities of this agent include suppression of tumor angiogenesis and tumor growth-promoting insulin-like growth factor 1 (IGF-1). Check for active clinical trials using this agent.

**octreotide scan :** A measure of the odds of an event happening in one group compared to the odds of the same event happening in another group. In cancer research, odds ratios are most often used in case-control (backward looking) studies to find out if being exposed to a certain substance or other factor increases the risk of cancer. For example, researchers may study a group of individuals with cancer (cases) and another group without cancer (controls) to see how many people in each group were exposed to a certain substance or factor. They calculate the odds of exposure in both groups and then compare the odds. An odds ratio of one means that both groups had the same odds of exposure and, therefore, the exposure probably does not increase the risk of cancer. An odds ratio of greater than one means that the exposure may increase the risk of cancer, and an odds ratio of less than one means that the exposure may reduce the risk of cancer. Also called relative odds.

**ocular:** The adjective applying to anything pertaining to the eye.

**ocular melanoma :** A drug used to treat locally advanced basal cell carcinoma (BCC) that has come back after surgery or radiation therapy. It is also used in patients who cannot be treated with surgery or radiation therapy. Odomzo is also being studied in the treatment of other types of cancer. Odomzo blocks a type of protein involved in tissue growth and repair and may block the growth of cancer cells. It is a type of hedgehog signaling pathway antagonist. Also called erismodegib, LDE225, and sonidegib.

**ocular proptosis:** abnormal protrusion of the eyeball

**oculomotor apraxia:** difficulty in moving the eyes from side to side

**OD, Outer Diameter:** The outermost, largest, surface of a circular object, such as a shaft or a round seal. the term OD is frequently used to indicate both the circumferential surface itself as well as the measured diameter of that surface

**odanacatib:** An inhibitor of cathepsin K with potential anti-osteoporotic activity. Odanacatib selectively binds to and inhibits the activity of cathepsin K, which may result in a reduction in bone resorption, improvement of bone mineral density, and a reversal in osteoporotic changes. Cathepsin K, a tissue-specific cysteine protease that catalyzes degradation of bone matrix proteins such as collagen I/II, elastin, and osteonectin plays an important role in osteoclast function and bone resorption.

**odd:** A number that is not divisible by two.

**odd integers:** Integers that are odd numbers.

**odds:** The ratio of the probability of occurrence of an event to that of non-occurrence, or the ratio of the probability that something is so, to the probability that it is not so (from Last, 1983).

**odds ratio:** The ratio of two odds. The term "odds" is defined differently according to the situation under discussion. Consider the following notation for the distribution of a binary exposure and a disease in a population or a sample.

**Odomzo :** A substance that gives off a smell.

**odontoid hypoplasia:** decreased ossification of the odontoid bone which is the anterior process of the second vertebra

**odor :** An abbreviation for a chemotherapy combination that is often used with radiation therapy to treat a certain type of childhood Hodgkin lymphoma in males. It includes the drugs vincristine sulfate (Oncovin), etoposide, prednisone, and doxorubicin hydrochloride (Adriamycin). Also called OEPA regimen.

**odorant :** An abbreviation for a chemotherapy combination that is often used with radiation therapy to treat a certain type of childhood Hodgkin lymphoma in males. It includes the drugs vincristine sulfate (Oncovin), etoposide, prednisone, and doxorubicin hydrochloride (Adriamycin). Also called OEPA.

**Odorants:** Small molecules in the air that bind to receptors in the main olfactory epithelium to generate the perception of smell.

**Odorants:** Used to add odor to materials, usually for safety reasons.

**Odorants & Deodorants:** Odorants are used to add odor to materials, usually for safety reasons.

**OEM:** Meaning Original Equipment Manufacturer, is a company that makes a component part that is used in another company's end product.

**OEPA:** A drug used to treat chronic lymphocytic leukemia (CLL) that has not gotten better with other anticancer drugs. It is also used with chlorambucil in patients who have not already been treated and cannot receive certain anticancer drugs. It is also being studied in the treatment of other types of cancer. Ofatumumab binds to a protein called CD20, which is found on B cells (a type of white blood cell) and some types of leukemia and lymphoma cells. This may help the immune system kill cancer cells. Ofatumumab is a type of monoclonal antibody. Also called Arzerra and HuMax-CD20.

**OEPA regimen:** A regimen consisting of vincristine, etoposide, prednisone and doxorubicin for the treatment of male patients with childhood Hodgkin lymphoma. Or An abbreviation for a chemotherapy combination used to treat pancreatic cancer. It includes the drugs oxaliplatin, fluorouracil, and leucovorin (folinic acid). Also called OFF regimen.

**Oestrogen:** A steroid hormone responsible for the development of female characteristics in mammals. The proper name for it is 'estradiol' and it looks like this:

**Oestrogenine:** (Other name for: diethylstilbestrol)

**Oestromenin:** (Other name for: diethylstilbestrol)

**Oestromon:** (Other name for: diethylstilbestrol)

**ofatumumab:** A fully human, high-affinity IgG1 monoclonal antibody directed against the B cell CD20 cell surface antigen with potential antineoplastic activity. Ofatumumab binds specifically to CD20 on the surfaces of B cells, triggering complement-dependent cell lysis (CDCL) and antibody-dependent cell-mediated cytotoxicity (ADCC) of B cells overexpressing CD20. The CD20 antigen, found on over 90% of B cells, B cell lymphomas, and other B cells of lymphoid tumors of B cell origin, is a non-glycosylated cell surface phosphoprotein that acts as a calcium ion channel; it is exclusively expressed on B cells during most stages of B cell development. or An abbreviation for a chemotherapy combination used to treat pancreatic cancer. It includes the drugs oxaliplatin, fluorouracil, and leucovorin (folinic acid). Also called OFF.

**OFF:** The office within the U.S. Department of Health and Human Services (DHHS) that protects the rights, welfare, and well-being of people involved in clinical trials. It also makes sure that the research follows the law 45 CFR 46 (Protection of Human Subjects). Also called OHRP.

**OFF regimen:** A chemotherapy regimen that includes leucovorin, 5-fluorouracil and oxaliplatin, which may be used in the treatment of pancreatic cancer. Or Describes the legal use of a prescription drug to treat a disease or condition for which the drug has not been approved by the U.S. Food and Drug Administration.

**off-label :** A substance that relieves pain and is being studied in the treatment of some types of cancer. OGFs bind to cells in the body, including tumor cells, which have OGF receptors on the surface. This may help stop the growth of the tumor cells. It may also prevent the growth of blood vessels that tumors need to grow. An OGF is a type of biological response modifier and a type of antiangiogenesis agent. Also called opioid growth factor.

**Off-register:** Misalignment of mold halves causing out-of-round O-Ring or part cross section

**Office for Human Research Protections :** An antibiotic drug used to treat infection. It belongs to the family of drugs called quinolone antibiotics.

**Offset:** A printing technique in which ink is transferred from a bath onto the raised surface of the printing plate by rollers. Subsequently, the printing plates transfer the ink to the object to be printed.

**Offset printing:** a printing technique in which ink is transferred from a reservoir to a printing plate. For the ink printing plate, the image is printed on a cylindrical rubber roll (blanket) and then to the object to be printed. OR A printing process in which the image to be printed is first applied to an intermediate carrier such as a roll or plate, then is transferred to a plastic film or molded article.

**ofloxacin:** A fluoroquinolone antibacterial antibiotic. Ofloxacin binds to and inhibits bacterial topoisomerase II (DNA gyrase) and topoisomerase IV, enzymes involved in DNA replication and repair, resulting in cell death in sensitive bacterial species.

**ofloxacin :** A substance being studied in the treatment of cancer. It blocks the production of a protein called clusterin, which helps cells live longer.

This may kill cancer cells that need clusterin to grow. It may also make cells more sensitive to anticancer drugs. It is a type of antisense oligonucleotide, and a type of chemosensitizing agent. Also called custirsen sodium.

**OGF:** The office within the U.S. Department of Health and Human Services (DHHS) that protects the rights, welfare, and well-being of people involved in clinical trials. It also makes sure that the research follows the law 45 CFR 46 (Protection of Human Subjects). Also called Office for Human Research Protections.

**oglufanide disodium:** The disodium salt of a synthetic form of a naturally-occurring dipeptide consisting of L-glutamic acid and L-tryptophan with potential antiangiogenic and potential immunomodulating activities. Oglufanide inhibits vascular endothelial growth factor (VEGF), which may inhibit angiogenesis. This agent has also been reported to stimulate the immune response to hepatitis C virus and intracellular bacterial infections.

**OGX-011:** A substance used on the skin to soothe or heal wounds, burns, rashes, scrapes, or other skin problems. Also called unguent.

**ohm:** a unit of electrical resistance equal to that of a conductor in which a current of one ampere is produced by a potential of one volt across its terminals. OR The unit of electrical resistance. A current of 1 amp at a potential difference of 1 volt experiences 1 ohm of resistance. OR The SI unit of electrical resistance, equal the resistance between two points when a constant voltage produces an electric current of 1 ampere. OR practical unit of electric resistance.

**Ohm's Law:** The strength of a direct current is directly proportional to the potential difference and inversely proportional to the resistance of the circuit.

**ohmmeter:** An instrument for measuring electrical resistance.

**OHRP:** A drug used to treat certain mental disorders. It is also being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of antipsychotic and a type of monoamine antagonist. Also called Zyprexa and Zyprexa Zydis.

**Oil** : Crude oil is the decayed remains of plants and animals that lived in the sea. The oil has been formed over a few million years. Crude oil is the major source of alkanes.

**oil field:** the occurrence of multiple oil pools in one area.

**Oil Resistant:** Ability of liquid silicone or natural rubber to resist swelling and other detrimental effects of exposure to various oils

**oil sands:** sandstone deposits that have been cemented with tar or asphalt. OR organic-rich shale formations from which oil can be extracted.

**ointment :** A drug used to treat advanced ovarian cancer caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is used in patients who have already received other anticancer drugs. It is also being studied in the treatment of other types of cancer. Olaparib blocks an enzyme involved in many cell functions, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. Olaparib may cause cancer cells to die. It is a type of targeted therapy agent and a type of poly (ADP-ribose) polymerase inhibitor. Also called AZD2281, Lynparza, and PARP inhibitor AZD2281.

**oisomerase:** oisomerase. An enzyme that changes the extent of supercoiling of a DNA duplex.

**Okazaki fragment:** A short segment of single-stranded DNA that is an intermediate in DNA synthesis. In bacteria, Okazaki fragments are 1000-2000 bases in length; in eukaryotes, 100-200 bases in length. OR Small fragments of DNA (approximately 1000 nucleotides) that are formed on the lagging strand at the replication fork of DNA synthesis and later joined; enable 5' . 3' polymerization at the nucleotide level while overall growth is in the 3' . 5' direction. OR new sections of DNA that are placed along the lagging strand during DNA replication and are joined together by DNA ligase to produce a new DNA strand.

**olanzapine:** A synthetic derivative of thienobenzodiazepine with antipsychotic, antinausea, and antiemetic activities. As a selective monoaminergic antagonist, olanzapine binds with high affinity binding to the following receptors: serotonergic, dopaminergic, muscarinic M1-5, histamine H1, and alpha-1-adrenergic receptors; it binds weakly to gamma-aminobutyric acid type A, benzodiazepine, and beta-adrenergic receptors. The antinausea and antiemetic effects of this agent appear to be due to the blockade of 5-HT2 and 5-HT3 receptors for serotonin. Although its exact mechanism of action in schizophrenia is unknown, it has been proposed that olanzapine's antipsychotic activity is mediated through antagonism to dopamine D2 receptors with rapid ligand-receptor dissociation kinetics that

help to minimize extrapyramidal symptoms (EPS). Olanzapine may also stimulate appetite. or A drug used to treat depression. It may also be used to help relieve anxiety and insomnia (trouble sleeping) and to treat certain other disorders. Oleptro increases the level of the chemical serotonin in the brain, which helps improve mood. It is a type of antidepressant. Also called trazodone.

**olaparib:** A small molecule inhibitor of the nuclear enzyme poly(ADP-ribose) polymerase (PARP) with potential chemosensitizing, radiosensitizing, and antineoplastic activities. Olaparib selectively binds to and inhibits PARP, inhibiting PARP-mediated repair of single strand DNA breaks; PARP inhibition may enhance the cytotoxicity of DNA-damaging agents and may reverse tumor cell chemoresistance and radioresistance. PARP catalyzes post-translational ADP-ribosylation of nuclear proteins and can be activated by single-stranded DNA breaks. or The sense of smell.

**olaratumab:** A fully human IgG1 monoclonal antibody directed against the platelet-derived growth factor receptor alpha (PDGFR alpha) with potential antineoplastic activity. Olaratumab selectively binds to PDGFR alpha, blocking the binding of its ligand, PDGF; signal transduction downstream of PDGFR through the MAPK and PI3K pathways is inhibited, which may result in inhibition of angiogenesis and tumor cell proliferation. Overexpressed by various cancer cell types, PDGFR is a transmembrane protein tyrosine kinase receptor, consisting of isoforms A and B, that is important in regulating cellular growth and differentiation and angiogenesis.

**Oleamide:** An ivory-coloured powder used as a slip additive in polyolefin plastics.

**oleandrin:** A lipid soluble cardiac glycoside with potential antineoplastic activity. Upon administration, oleandrin specifically binds to and inhibits the alpha3 subunit of the Na/K-ATPase pump in human cancer cells. This may inhibit the phosphorylation of Akt, upregulate MAPK, inhibit NF-kb activation and inhibit FGF-2 export and may downregulate mTOR thereby inhibiting p70S6K and S6 protein expression. All of this may lead to an induction of apoptosis. As cancer cells with relatively higher expression of the alpha3 subunit and with limited expression of the alpha1 subunit are more sensitive to oleandrin, one may predict the tumor response to treatment with lipid-soluble cardiac glycosides such as oleandrin based on

the tumors Na/K-ATPase pump protein subunit expression. Overexpression of the alpha3 subunit in tumor cells correlates with tumor proliferation.

**Oleate Ion:** The oleate ion is one of the most common soaps, being derived from triolein, a component of olive oil.

**OLEFIN:** A hydrocarbon containing a carbon-carbon double bond. Olefins are also known as alkenes.

**Olefin – :** and unsaturated simple hydrocarbon with one double bond per molecule, such as ethylene or butylene. Olefins are chained into polymers such as polyethylene.

**Olefins family:** The Olefins are a family of unsaturated hydrocarbons containing a double bond. The double bond provides a target for chemical reaction, both with other chemicals and with other olefins. Catalysed reaction of a pure olefin stream results in the production of polyolefins. Olefins are commonly produced by high temperature pyrolysis of refinery hydrocarbon streams in steam crackers.

**Oleochemicals:** Chemical materials or intermediates that are derived from plant and animal ingredients.

**Oleophobic:** Oil shedding.

**Oleoresinous:** Generally refers to varnishes composed of vegetable drying oils in conjunction with resins which may be either natural or synthetic.

**Oleptro :** Having to do with the sense of smell.

**Olfaction:** The sense of smell.

**olfaction :** A rounded mass of tissue that contains several types of nerve cells that are involved in the sense of smell. There are two olfactory bulbs on the bottom side of the brain, one above each nasal cavity. The olfactory bulbs receive information about smells from the nose and send it to the brain by way of the olfactory tracts.

**olfactory :** The parts of the body involved in sensing smell, including the nose and many parts of the brain. Smell may affect emotion, behavior, memory, and thought.

**olfactory bulb :** A series of events in which cells in the nose bind to scent-bearing molecules and send electrical signals to the brain where they are perceived as smells.

**olfactory nerve:** the nerve that carries the impulse from the nose to the brain for interpretation.

**olfactory system :** A brain tumor that forms from both oligodendrocytes and astrocytes, which are types of glial cells (cells that cover and protect nerve cells in the brain and spinal cord and help them work the way they should). An oligoastrocytoma is a type of mixed glioma.

**olfactory transduction :** A cell that forms the myelin sheath (a layer that covers and protects nerve cells) in the brain and spinal cord. An oligodendrocyte is a type of glial cell.

**oligoastrocytoma :** A rare, slow-growing tumor that begins in oligodendrocytes (cells that cover and protect nerve cells in the brain and spinal cord). Also called oligodendroglioma.

**oligodendrocyte :** A rare, slow-growing tumor that begins in oligodendrocytes (cells that cover and protect nerve cells in the brain and spinal cord). Also called oligodendroglial tumor.

**oligodendroglial tumor :** A substance that is used to improve the health of the digestive system and bones and is being studied in the prevention of colon cancer. Oligofructose-enriched inulin is made by combining two substances that occur naturally in many plants, including chicory root, wheat, bananas, onion, and garlic. Oligofructose-enriched inulin helps healthy bacteria grow in the intestines and helps the body absorb calcium and magnesium. Also called Raftilose Synergy 1.

**oligodendroglioma :** A type of metastasis in which cancer cells from the original (primary) tumor travel through the body and form a small number of new tumors (metastatic tumors) in one or two other parts of the body. For example, cancer cells may spread from the breast to form one or two new tumors in the brain or spread from the colon to form new tumors in the liver. These types of tumors may be treatable.

**oligofructose-enriched inulin:** A mixture of non-digestible carbohydrates, containing the fermentable plant fructans oligosaccharide and inulin, with potential prebiotic activity. Resisting hydrolysis by intestinal digestive enzymes, inulin and oligofructose serve as growth media and energy substrates for bifidobacteria in the colon; beneficial colonic commensal bacteria such as bifidobacteria may inhibit the colonization of the intestine by pathogenic bacteria and have been implicated to inhibit colon carcinogenesis. Oligofructose-enriched inulin may be administered in

combination with probiotic bifidobacteria. In addition, this agent may promote the absorption of calcium and magnesium from the gastrointestinal tract. or A drug used in cancer prevention.

**oligomer:** A molecule that consists of repeating molecular subunits--essentially a polymer but not as long. By analogy, if a yellow brick is a single subunit, the yellow brick road is a polymer, and the yellow brick driveway is an oligomer. OR A polymer made up with two, three or four monomer units, for example propylene tetramer. OR An oligomer is a molecule which is formed from a few smaller (identical) molecules joined together. Just as a monomer is one (mono) unit (mer) and a dimer is two (di) units, an oligomer is a few units. OR A short polymer, usually of amino acids, sugars, or nucleotides; the definition of "short" is somewhat arbitrary, but usually less than 50 subunits.

**oligomeric protein:** A multisubunit protein having two or more identical polypeptide chains.

**oligometastasis :** A drug used to treat certain types of chronic myelogenous leukemia (CML) that have not gotten better after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Omacetaxine mepesuccinate blocks certain proteins involved in cancer cell growth and may kill cancer cells. It is a type of plant alkaloid. Also called homoharringtonine and Synribo.

**Oligomycin:** An antibiotic that blocks ATP synthesis (and consequently the respiratory chain) by interfering with proton flow through the ATP synthase complex.

**Oligonucleotide:** A polynucleotide containing a small number of nucleotides. The linkages are the same as in a polynucleotide; the only distinguishing feature is the small size.

**oligonucleotide SPC2996:** A synthetic antisense oligonucleotide against Bcl-2 messenger RNA with potential antitumor activity. Oligonucleotide SPC2996 binds to and inactivates Bcl-2 mRNA, thereby inhibiting the expression of Bcl-2 protein, promoting tumor cell apoptosis, and potentially enhancing the efficacy of standard cytotoxic chemotherapy. Linked to tumor drug resistance, the antiapoptotic protein Bcl-2 is upregulated in several types of cancers.

**oligopeptide:** A few amino acids joined by peptide bonds.

**Oligosaccharide:** A molecule made up of several simple sugars linked together OR A molecule containing a small number of sugar residues joined in a linear or a branched structure by glycosidic bonds. OR

A carbohydrate that consists of only a few linked monosaccharide units. OR Several monosaccharide groups joined by glycosidic bonds.

**Oligosaccharides:** Carbohydrates composed of 2 to 12 monosaccharide units.

**olive oil extract/curcumin-based capsule:** A capsule containing an extract of olive oil, rich in polyphenols and curcumin, the polyphenol derived from the plant *Curcuma longa*, also known as turmeric, with potential anti-neoplastic, -angiogenic, -inflammatory, -oxidant and chemopreventive activities. The olive oil extract/curcumin-based capsule is rich in phytonutrients, especially polyphenols. Upon oral administration, the polyphenols, and other active ingredients in this supplement may exert anti-inflammatory activity by decreasing the production of inflammation mediators, such as TNF-alpha, interleukin (IL) 1-beta, IL-6, IL-10, interferon gamma, thromboxane B2, and leukotriene B4. They also inhibit a variety of pro-inflammatory enzymes, such as cyclooxygenase 1 (COX-1) and COX-2, block the formation of reactive-oxygen species and neutralize free radicals. In addition, curcumin and some other polyphenols disrupt cell signal transduction pathways involved in carcinogenesis. Specifically, curcumin inhibits cell invasion by inhibiting matrix metalloproteinase-9 (MMP-9) expression by suppressing NF-kB and AP-1 activation. Check for active clinical trials using this agent.

**olive oil/soya oil/egg lecithin-based emulsion:** An injectable, isotonic, nutritional lipid emulsion composed of approximately 80% refined olive oil and 20% refined soybean oil, used for parenteral nutrition. The olive oil/soya oil/egg lecithin emulsion provides about 15% of saturated fatty acids (SFA), 65% of mono-unsaturated fatty acids (MUFA) and 20% of essential poly-unsaturated fatty acids (EPUFA). Upon parenteral administration, the emulsion supplies calories, for energy, and essential fatty acids that can be incorporated into cell membranes. The fatty acids may decrease the production of certain pro-inflammatory cytokines, including interleukin 1 (IL-1), IL-6 and tumor necrosis factor (TNF). In addition to olive oil and soya oil, this lipid emulsion contains egg lecithin

and provides phosphorus and choline, which are needed to maintain cell membrane integrity.

**oltipraz** : A type of fat obtained in the diet and involved in immunity.

**omacetaxine mepesuccinate**: A semisynthetic formulation of the cytotoxic plant alkaloid homoharringtonine isolated from the evergreen tree *Cephalotaxus* with potential antineoplastic activity. Omacetaxine mepesuccinate binds to the 80S ribosome in eukaryotic cells and inhibits protein synthesis by interfering with chain elongation. This agent also induces differentiation and apoptosis in some cancer cell types. or Surgery to remove part or all of the omentum.

**omalizumab**: A humanized monoclonal antibody directed against the C-epsilon 3 domain of immunoglobulin E. Omalizumab binds to this IgE domain, thereby preventing IgE from binding to its high-affinity mast-cell receptor. Check for active clinical trials using this agent.

**ombitasvir/paritaprevir/ritonavir**: An orally bioavailable combination agent containing ombitasvir, an inhibitor of the hepatitis C virus (HCV) non-structural protein 5A (NS5A) replication complex, paritaprevir, a synthetic acylsulfonamide inhibitor of the HCV protease complex comprised of non-structural protein 3 and 4A (NS3/NS4A), and the cytochrome P450 (CYP) 3A4 inhibitor ritonavir, with potential activity against HCV. Upon oral administration of ombitasvir/paritaprevir/ritonavir, ombitasvir, enters the cell and binds to and blocks the activity of the NS5A protein. This results in the disruption of the viral RNA replication complex, blockage of HCV RNA production, and inhibition of viral replication. After intracellular uptake, paritaprevir reversibly binds to the active center and binding site of the HCV NS3/NS4A protease and prevents NS3/NS4A protease-mediated polyprotein maturation. This disrupts both the processing of viral proteins and the formation of the viral replication complex, which inhibits viral replication in HCV genotype 1-infected host cells. Although ritonavir is not active against HCV, it strongly inhibits the activity of CYP3A4, thereby blocking the degradation of paritaprevir, which is a CYP3A4 substrate. This leads to an increased concentration and half-life of paritaprevir as compared to the administration of paritaprevir without ritonavir. NS5A, a zinc-binding and proline-rich hydrophilic phosphoprotein, plays a crucial role in HCV RNA replication. NS3, a serine protease essential for the proteolytic cleavage of multiple sites within the

HCV polyprotein, plays a key role during HCV ribonucleic acid (RNA) replication. NS4A is an activating factor for NS3. HCV is a small, enveloped, single-stranded RNA virus belonging to the Flaviviridae family, and infection is associated with the development of hepatocellular carcinoma (HCC).

**ombrabulin:** A synthetic water-soluble analogue of combretastatin A4, derived from the South African willow bush (*Combretum caffrum*), with potential vascular-disrupting and antineoplastic activities. Ombrabulin binds to the colchicine binding site of endothelial cell tubulin, inhibiting tubulin polymerization and inducing mitotic arrest and apoptosis in endothelial cells. As apoptotic endothelial cells detach from their substrata, tumor blood vessels collapse; the acute disruption of tumor blood flow may result in tumor necrosis. Check for active clinical trials using this agent.

**omega-3 fatty acid:** Any fatty acid that contains an unsaturated bond originating from the 3rd carbon from the methyl end. Omega-3 fatty acids do not occur naturally with chain lengths shorter than 16 carbon units. Or A fold of the peritoneum (the thin tissue that lines the abdomen) that surrounds the stomach and other organs in the abdomen.

**omentectomy :** A drug that inhibits gastric acid secretion.

**omentum :** A device surgically placed under the scalp and used to deliver anticancer drugs to the fluid surrounding the brain and spinal cord.

**omeprazole:** A benzimidazole with selective and irreversible proton pump inhibition activity. Omeprazole forms a stable disulfide bond with the sulfhydryl group of the hydrogen-potassium ( $H^+ - K^+$ ) ATPase found on the secretory surface of parietal cells, thereby inhibiting the final transport of hydrogen ions (via exchange with potassium ions) into the gastric lumen and suppressing gastric acid secretion. This agent exhibits no anticholinergic activities and does not antagonize histamine H<sub>2</sub> receptors. Check for active clinical trials using this agent. or A substance being studied in the treatment of cancer. It blocks certain proteins that are needed for cell growth and may kill cancer cells. ON 01910.Na is a type of protein kinase inhibitor and a type of benzyl styryl sulfone analog.

**omiganan pentahydrochloride:** A pentahydrochloride salt of omiganan, a synthetic cationic antimicrobial peptide with wide-spectrum activity against both gram-positive and gram-negative bacteria and fungi. Omiganan pentahydrochloride, an analog of indolicidin, acts by disrupting bacterial

cytoplasmic membranes and has been tested in a topical gel for the prevention of catheter-related bloodstream infections.

**Ommaya reservoir :** A drug used to treat certain medical conditions. These include severe underarm sweating and severe muscle spasms in the neck and shoulders. OnabotulinumtoxinA is also used to smooth wrinkles on the face. It is being studied in the treatment of pain in patients with skin leiomyomas (benign smooth muscle tumors) and other conditions. It is a form of a toxin made by the bacterium *Clostridium botulinum*.

**Omni-Grid :** Turn curve belting consisting of an assembly of metal links and rods, capable of accommodating turns in a conveyor system. Wire mesh and plastic overlays are available to give greater product support. Omni-Grid belts can also be used in straight run applications.

**Omni-Lite :** Omni-Lite is a High Density Polyethylene (HDPE) plastic overlay attachment that can be used in place of wire mesh overlay on Ashworth 1" pitch Heavy Duty Omni-Grid belts.

**Omni-Tough :** The Omni-Tough overlay has a flat surface and is made from high tensile strength spring stainless steel wire with a high resilience to impact. Omni-Tough is available in most mesh configurations.

**Omnipaque:** (Other name for: iohexol)

**OmniScan:** (Other name for: gadodiamide)

**omnivores:** animals that consume both plants and animals.

**ON 01910.Na:** A drug used to treat acute lymphoblastic leukemia (ALL). It is a form of the drug asparaginase that is linked to a substance called PEG, which makes the drug stay in the body longer. Asparaginase is an enzyme that breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. It is a type of protein synthesis inhibitor. Also called PEG-asparaginase and pegaspargase.

**On-axis hole:** This is a hole that is concentric to the axis of revolution of the turned part. It is simply a hole on the end of a part and in the center.

**onabotulinumtoxinA :** A drug used to treat acute lymphoblastic leukemia (ALL). It is a form of the anticancer drug PEG-asparaginase that stays in the body longer. Oncaspar-IV is an enzyme that breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. It is a type of protein synthesis inhibitor. Also called EZN-2285 and SC-PEG E. coli L-asparaginase.

**onartuzumab:** A humanized monovalent monoclonal antibody directed against the hepatocyte growth factor receptor (c-Met) with potential antineoplastic activity. Onartuzumab binds to the extracellular domain of c-Met, preventing the binding of its ligand, hepatocyte growth factor (HGF); the activation of the c-Met signaling pathway is thus inhibited, which may result in cell death in c-Met-expressing tumor cells. c-Met, a receptor tyrosine kinase, is overexpressed on the cell surfaces of a variety of cancer cell types and may play a key role in their proliferation, invasion and survival.

**Oncaspar :** A gene that is a mutated (changed) form of a gene involved in normal cell growth. Oncogenes may cause the growth of cancer cells. Mutations in genes that become oncogenes can be inherited or caused by being exposed to substances in the environment that cause cancer.

**Oncaspar-IV :** A doctor who has special training in diagnosing and treating cancer. Some oncologists specialize in a particular type of cancer treatment. For example, a radiation oncologist specializes in treating cancer with radiation.

**OncoGel:** (Other name for: PGLA/PEG copolymer-based paclitaxel)

**Oncogene:** A gene of cellular or viral origin that is responsible for rapid, unruly growth of animal cells. A cancer-causing gene. OR A gene whose expression contributes to the development of cancer. OR A cancer-causing gene; any of several mutant genes that cause cells to exhibit rapid, uncontrolled proliferation. See also proto-oncogene. OR A branch of medicine that specializes in the diagnosis and treatment of cancer. It includes medical oncology (the use of chemotherapy, hormone therapy, and other drugs to treat cancer), radiation oncology (the use of radiation therapy to treat cancer), and surgical oncology (the use of surgery and other procedures to treat cancer).

**OncoLAR:** (Other name for: octreotide pamoate)

**oncologist :** A nurse who specializes in treating and caring for people who have cancer.

**oncology :** A licensed pharmacist with special training in how to design, give, monitor, and change chemotherapy for cancer patients. Also called BCOP and board certified oncology pharmacy specialist.

**oncology nurse :** An extract made from cancer cells.

**oncology pharmacy specialist :** The lysis (breakdown) of cancer cells. This can be caused by chemical or physical means (for example, strong detergents or high-energy sound waves) or by infection with a strain of virus that can lyse cells.

**oncolysate :** Treatment using an oncolytic virus (a virus that infects and breaks down cancer cells but not normal cells ). Oncolytic virotherapy may make it easier to kill tumor cells with chemotherapy and radiation therapy. It is a type of targeted therapy. Also called oncolytic virus therapy, viral therapy, and virotherapy.

**oncolysis :** A type of virus that infects and lyses (breaks down) cancer cells but not normal cells. Oncolytic viruses can occur naturally or can be made in the laboratory by changing other viruses. Certain oncolytic viruses are being studied in the treatment of cancer. They may make it easier to kill tumor cells with chemotherapy and radiation therapy.

**oncolytic adenovirus Ad5-DNX-2401:** An adenovirus serotype 5 strain, selectively replication competent in cells defective in the Rb/p16 tumor suppressor pathway, with potential oncolytic activity. Oncolytic adenovirus Ad5-Delta 24RGD contains an integrin binding RGD-4C motif, allowing Coxsackie adenovirus receptor-independent infection of tumor cells, which are often deficient for Coxsackie and adenovirus receptors (CARs). Selectively replication competent in cells that are defective in retinoblastoma gene (Rb) or cyclin-dependent kinase inhibitor-2A (p16), active replication of oncolytic adenovirus Ad5-Delta 24RGD in tumor cells may induce oncolysis or cell lysis. As integral components of the late G1 restriction point, the Rb gene product and p16 are negative regulators of the cell cycle; ovarian cancer cells and non-small cell lung cancer cells may be defective in the Rb/p16 pathway.

**oncolytic adenovirus encoding GM-CSF:** A recombinant oncolytic adenovirus encoding the immunohematopoietic cytokine granulocyte-macrophage colony stimulating factor (GM-CSF) with potential antineoplastic activity. Upon administration, the oncolytic adenovirus selectively infects and replicates in tumor cells, which may result in tumor cells lysis. Synergistically, GM-CSF (sargramostim) expressed by the oncolytic adenovirus may promote a cytotoxic T cell response against tumor cells harboring the oncolytic adenovirus, resulting in an immune-mediated tumor cell death.

**oncolytic adenovirus ICOVIR5-infected autologous mesenchymal stem cells:** Bone marrow-derived autologous mesenchymal stem cells (MSCs) infected with the oncolytic, replication-competent adenovirus ICOVIR5, with potential antineoplastic activity. Upon infusion of the oncolytic adenovirus ICOVIR5-infected autologous MSCs, these cells target the adenovirus to tumors. The oncolytic virus then selectively transfects and replicates in the tumor cells causing a direct cytotoxic effect and lysis of the tumor cells. In addition, the viral infection may stimulate an immune response against the virally-infected tumor cells. This may lead to an inhibition of cancer cell proliferation. ICOVIR-5, a virus derived from wild-type human adenovirus serotype 5 (Had5), has been modified to selectively replicate in tumor cells that have a deregulated retinoblastoma/E2F pathway.

**oncolytic herpes simplex virus encoding GM-CSF:** An ICP34.5-, ICP47-deleted, oncolytic herpes simplex type-1 virus (HSV-1) isolated from the mouth of an HSV-1-infected patient of Chinese Han ethnicity, and encoding the immunostimulating factor cytokine granulocyte-macrophage colony stimulating factor (GM-CSF) with potential immunostimulating and antineoplastic activities. Upon administration, the recombinant human GM-CSF HSV-1 selectively infects and replicates in tumor cells, thereby inducing tumor cell lysis. In addition, GM-CSF attracts dendritic cells (DCs) and may stimulate a cytotoxic T cell response against tumor cells, which results in immune-mediated tumor cell death. Deletion of the gene encoding for ICP34.5 provides tumor selectivity and prevents replication in healthy cells. As ICP47 blocks antigen presentation in HSV-infected cells, deletion of this gene may induce a more potent antitumor immune response in the tumor cells. Additionally, deletion of ICP47 causes increased expression of the HSV US11 gene and allows US11 to be expressed as an immediate early and not a late gene. This further enhances the degree of viral replication and oncolysis of tumor cells. Interruption of the ICP6 gene, which encodes the large subunit of the viral ribonucleotide reductase, in the viral vector also enhances selective replication in tumor cells. Check for active clinical trials using this agent.

**oncolytic HSV-1 rRp450:** A gene therapy agent containing an attenuated, replication-competent, genetically engineered mutant form of the Herpes simplex virus 1 (HSV-1) strain KOS with potential antineoplastic activity. Upon infusion into the hepatic artery, oncolytic HSV-1 rRp450 replicates in

hepatocellular carcinoma (HCC) cells and exerts direct cytotoxic effects eventually disrupting cancer cell membranes and liberating progeny virions thereby infecting adjacent tumor cells. In addition, rRp450 expresses the cytochrome P450 transgene that activates oxazaphosphorines, such as cyclophosphamide (CPA). Therefore, CPA can become activated in the presence of rRp450 and exert its antineoplastic effect. rRp450 is deleted for the HSV-1 gene UL39, encoding the viral ribonucleotide reductase large subunit infected cell protein 6 (ICP6), thereby disrupting the activity of viral ribonucleotide reductase and resulting in the inhibition of nucleotide metabolism and viral DNA synthesis in nondividing cells but not in dividing cells. UL39 is replaced by the rat CYP2B1 gene, encoding a cytochrome P450 enzyme that activates oxazaphosphorines. rRp450 also expresses viral thymidine kinase, which activates the cancer prodrug ganciclovir.

**oncolytic HSV-1716:** A neuroattenuated, replication-restricted, ICP34.5 deleted (RL1 gene)-mutant herpes simplex virus (HSV) type I, constructed from wild-type strain 17, with potential oncolytic activity. Upon intratumoral injection, oncolytic HSV1716 transfects, replicates in, and lyses rapidly dividing cells such as tumor cells. Because the RL1 gene is deleted, HSV1716 is unable to replicate in non-dividing cells.

**oncolytic measles virus encoding thyroidal sodium iodide symporter:** An attenuated oncolytic Edmonston (Ed) strain of measles virus encoding the human thyroidal sodium iodide symporter (MV-NIS) with potential gene expression and antineoplastic activities. After attachment to and fusion with host tumor cell membranes, MV-NIS may induce tumor cell syncytia and tumor cell lysis. When combined with iodine 123 (I-123), expressed NIS facilitates uptake of I-123 by MV-NIS-infected tumor cells, allowing noninvasive imaging of these cells. MV-NIS may also enhance the oncolytic activity of MV against radiosensitive tumor cells by facilitating the uptake of iodine 131 (I-131) by MV-NIS-infected cells. The cellular receptor for MV is the human CD46 antigen, a type 1 integral membrane glycoprotein found on nearly all human tissues and overexpressed on many cancer cell types.

**oncolytic Newcastle disease virus:** An oncolytic viral agent containing the oncolytic, live-attenuated strain of the paramyxovirus Newcastle disease virus (NDV), with potential antineoplastic activity. Upon administration,

NDV specifically infects and replicates in cancer cells. This may result in a direct cytotoxic effect involving the lysis of tumor cells via apoptotic mechanisms and may eventually lead to an inhibition of cancer cell proliferation. Check for active clinical trials using this agent.

**oncolytic virotherapy** : Treatment using an oncolytic virus (a virus that infects and breaks down cancer cells but not normal cells ). Oncolytic virus therapy may make it easier to kill tumor cells with chemotherapy and radiation therapy. It is a type of targeted therapy. Also called oncolytic virotherapy, viral therapy, and virotherapy.

**oncolytic virus** : A substance being studied in the treatment of cancer. It is a type of ribonuclease enzyme. Also called ranpirnase.

**oncolytic virus therapy** : A vaccine made from a patient's tumor cells that may help the body's immune system kill cancer cells. This vaccine is used to treat kidney cancer, a type of brain cancer called glioma, and metastatic melanoma (a type of skin cancer that has spread). It is also being studied in the treatment of other types of cancer. Also called gp96 heat shock protein-peptide complex vaccine, gp96 HSP-peptide complex, and vitespen.

**Onconase** : A test that is used to help predict whether breast cancer will spread to other parts of the body or come back. The test looks at the activity of 21 different genes in breast cancer tissue of women who have early-stage breast cancer that is estrogen receptor positive and has not spread to the lymph nodes. If there is a high risk that the cancer will spread or come back, it may be used to help plan treatment with anticancer drugs. Also called 21-gene signature.

**Oncophage** : A drug used to treat acute leukemia. It is used in combination with other drugs to treat Hodgkin disease, non-Hodgkin lymphoma, rhabdomyosarcoma, neuroblastoma, and Wilms tumor. Oncovin is also being studied in the treatment of other types of cancer. It blocks cell growth by stopping cell division. It is a type of vinca alkaloid and a type of antimetabolic agent. Also called vincristine sulfate.

**Oncoquest-L vaccine**: (Other name for: autologous tumor cell proteoliposome chronic lymphocytic leukemia vaccine)

**Oncotype DX breast cancer assay** : A drug used to prevent nausea and vomiting caused by chemotherapy and radiation therapy. It is also used to prevent nausea and vomiting after surgery. Ondansetron hydrochloride blocks the action of the chemical serotonin, which binds to certain nerves

and may trigger nausea and vomiting. Blocking serotonin may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called Zofran.

**OncoVax-PR:** (Other name for: PSA prostate cancer vaccine)

**Oncovin :** A form of the anticancer drug irinotecan hydrochloride that is contained in very tiny, fat-like particles. Onivyde is used together with fluorouracil and leucovorin to treat a certain type of pancreatic cancer that has spread to other parts of the body and has gotten worse after treatment with gemcitabine anticancer therapy. It is also being studied in the treatment of other types of cancer. Irinotecan hydrochloride blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. Onivyde may have fewer side effects and work better than irinotecan hydrochloride. It is a type of topoisomerase inhibitor and a type of camptothecin analog. Also called irinotecan hydrochloride liposome, liposome-encapsulated irinotecan hydrochloride PEP02, and PEP02.

**Oncoxin:** (Other name for: green tea extract-based antioxidant supplement)

**ondansetron:** A carbazole derivative with antiemetic activity. As a selective serotonin receptor antagonist, ondansetron competitively blocks the action of serotonin at 5HT<sub>3</sub> receptors, resulting in suppression of chemotherapy- and radiotherapy-induced nausea and vomiting. Check for active clinical trials using this agent.

**ondansetron hydrochloride:** The hydrochloride salt of the racemic form of ondansetron, a carbazole derivative and a selective, competitive serotonin 5-hydroxytryptamine type 3 (5-HT<sub>3</sub>) receptor antagonist with antiemetic activity. Although its mechanism of action has not been fully characterized, ondansetron appears to competitively block the action of serotonin at 5HT<sub>3</sub> receptors peripherally in the gastrointestinal tract as well as centrally in the area postrema of the CNS, where the chemoreceptor trigger zone (CTZ) for vomiting is located, resulting in the suppression of chemotherapy- and radiotherapy-induced nausea and vomiting. Check for active clinical trials using this agent. or A drug used to treat acute myelogenous leukemia (AML). It is also being studied in the treatment of several other types of cancer. It blocks cell growth by damaging the cell's DNA and may kill cancer cells. It is a type of alkylating agent. Also called Cloretazine and Iaromustine.

**One-carbon metabolism:** Biochemical reactions in which tetrahydrofolate derivatives serve as donors of a variety of one-carbon units, ranging from the oxidation level of a methyl group to a formyl group; also includes reactions involving the fully oxidized carbon unit, carbon dioxide, and its carrier, biotin.

**Onivyde :** The length of time it takes for a medicine to start to work.

**ONLY ELECTRONS FLOW:** to produce ions. The protons are deep down in the nucleus and stay there. (Except in nuclear reactions, but that's another story ). So electrons are either added or subtracted to make ions.

**Onrigin :** A drug used to treat cutaneous T-cell lymphoma that can bind the cytokine IL-2 and that has not responded to other treatment. It is also being studied in the treatment of other types of cancer. Ontak is made by combining a part of IL-2 with a bacterial toxin. The IL-2 part of the drug attaches to the cancer cells and then the toxin kills the cells. Ontak is a type of immunotoxin and a type of fusion toxin. Also called denileukin diftitox.

**onset of action :** A modified cold virus that selectively grows in and destroys certain types of cancer cells and leaves normal cells undamaged.

**Onsolis:** (Other name for: fentanyl buccal soluble film)

**Ontak :** The process of freezing one or more unfertilized eggs (eggs that have not been combined with sperm) to save them for future use. The eggs are thawed and fertilized in the laboratory to make embryos that can be placed in a woman's uterus. Oocyte cryopreservation is being studied as a type of fertility preservation. It may be useful for women with cancer who want to have children after having radiation therapy, chemotherapy, or certain types of surgery, which can cause infertility. Also called egg banking, egg cryopreservation, and egg freezing.

**Onyx:** (Other name for: ethylene-vinyl alcohol copolymer-based embolic agent)

**ONYX-015:** An E1B-55kDa-deleted adenovirus that is able to selectively replicate in and lyse TP53-deficient human tumor cells. After tumor cell lysis, released viruses infect neighboring tumor cells, tripping a chain of ONYX-015-mediated tumor cell cytotoxicity.

**ONYX-015:** Surgery to remove one or both ovaries.

**oocyte cryopreservation :** A procedure used to help keep a woman fertile by preventing damage to the ovaries during radiation therapy. Before

radiation therapy begins, one or both ovaries and fallopian tubes are separated from the uterus and attached to the wall of the abdomen away from where the radiation will be given. Oophoropexy may be useful for women who want to have children after having radiation therapy that can cause infertility. It is a type of fertility preservation. Also called ovarian transposition.

**oocytes:** the developed oogonia in a female after the age of puberty.

**oogonia:** primitive egg cells that accumulate in the ovaries before a female is born.

**oophorectomy :** A drug used to treat moderate to severe pain. It is also used as a sedative before surgery, to help with anesthesia during surgery, during labor, and to treat anxiety caused by some medical conditions. It is made from morphine and binds to opioid receptors in the central nervous system. Opana is a type of opioid and a type of analgesic agent. Also called Numorphan and oxymorphone hydrochloride.

**oophoropexy :** A drug used to treat classical Hodgkin lymphoma that has gotten worse after treatment with an autologous stem cell transplant and brentuximab vedotin (a type of anticancer drug). It is also used alone or with other drugs to treat certain types of melanoma, non-small cell lung cancer, and renal cell carcinoma (a type of kidney cancer). It is also being studied in the treatment of other types of cancer. Opdivo binds to a protein called PD-1, which is found on T cells (a type of white blood cell). Opdivo may block PD-1 and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called nivolumab.

**OPACIFIER:** A substance, such as fatty acid esters, which, when added to a clear formulation, renders that formulation opaque - similar to pearlizer.

**Opacity:** A term to indicate the hiding power of pigmented (mostly white) plastic films. It is beneficial for packing materials sensitive to light (visible or ultraviolet). OR The amount of light that is blocked by a pigmented film. OR The degree of obscuration of light; for example, a glass window has almost 0% opacity, whereas a concrete wall has 100% opacity. OR The ability of a coat of paint to obliterate the surface to which it is applied. OR The ability of a paint to hide the previous surface or color.

**Opana :** A procedure in which a surgical incision (cut) is made through the skin to expose and remove tissues. The biopsy tissue is examined under a

microscope by a pathologist. An open biopsy may be done in the doctor's office or in the hospital, and may use local anesthesia or general anesthesia. A lumpectomy to remove a breast tumor is a type of open biopsy.

**Opaque:** Descriptive of a material or substance which will not transmit light. Opposite of transparent. Materials which are neither opaque nor transparent are sometimes described as semi-opaque, but are more properly classified as translucent.

**OPAQUE COATING:** A coating that hides the previous surface coating.

**OPCs/green tea,/spirullina/curcumin/antrodia camphorate/fermented soymilk extract capsule:** A capsule containing a fermented soymilk extract and oligomeric proanthocyanidins (OPCs), green tea, spirullina, curcumin and antrodia camphorate powder, with potential antioxidant, immunomodulating, anti-infective and anti-cancer activities. OPCs/green tea/spirullina/curcumin/antrodia camphorate/fermented soymilk extract capsule may boost the immune system and may alleviate fatigue and poor appetite in cancer chemotherapy patients.

**Opdivo :** An operation to remove all or part of the colon through a long incision made in the wall of the abdomen. When only part of the colon is removed, it is called a partial colectomy.

**Opdivo Injection:** (Other name for: nivolumab)

**opebacan:** An injectable formulation composed of opebacan, a 21 kDa recombinant fragment of human bactericidal/permeability-increasing protein (BPI), with potential anti-infective activity. Upon intravenous administration, opebacan is able to mimic BPI and binds to and neutralizes lipopolysaccharides (LPS or endotoxins), which are components of the cell wall of gram-negative bacteria that induce a potent innate immune response. This may prevent an endotoxin-mediated inflammatory response and may prevent graft-versus-host-disease (GvHD) after myeloablative allogeneic hematopoietic stem cell transplantation (aHSCT). BPI, a host-defense protein against microbial infection, is naturally produced by neutrophils. Chemotherapy and radiation therapy induce neutropenia and depletion of endogenous BPI. These therapies also cause intestinal damage and release of bacterial endotoxins into the bloodstream, which initiate a systemic inflammatory response, activate donor T-lymphocytes and possibly cause GvHD following aHSCT.

**open biopsy :** A type of study in which both the health providers and the patients are aware of the drug or treatment being given.

**Open circuit:** lack of electrical contact in any part of the measuring circuit (which consists of the sensing electrode, instrument, reference electrode and solutions). An open circuit is characterized by rapid large jumps in displayed potential, followed by an offscale reading. Frequent large erratic changes in potential indicate an intermittent open circuit.

**open colectomy :** Surgery to remove part or all of the prostate gland through an incision in the lower abdomen or perineum (the area between the anus and scrotum). An open prostatectomy may be done to remove an enlarged prostate gland in benign prostatic hyperplasia (BPH) or as a treatment for prostate cancer.

**open fold:** a broad feature in which the limbs of a fold dip at a gentle angle away from the crest of the fold.

**open label study :** Surgery to remove part or all of an organ or a tumor and nearby lymph nodes. The incision is large enough to let the surgeon see into the body.

**Open moulding:** Open moulding is the simplest and most widely used process to manufacture FRP parts. The mould is generally fabricated from FRP and is one sided. It can be male (part is moulded onto) or female (part is moulded into). The cosmetic surface of the part is fabricated next to the mould. The back of the mould is open.

**open prostatectomy :** Describes a condition that can be treated by surgery.

**open reading frame:** A group of contiguous nonoverlapping nucleotide codons in a DNA or RNA molecule that do not include a termination codon.

**open resection :** Having to do with the eye.

**open system:** A system that exchanges matter and energy with its surroundings. See also system.

**Opening :** Clear space on the carrying surface of the fabric between wires.

**Opening - Lateral :** The nominal inside distance between parallel wires, measured along a line perpendicular to the angle of weave to the nearest intersecting wire whether in the same or adjacent spiral. (Compound Balance Weave does not fall within this definition.)

**Opening - Longitudinal :** The nominal inside distance along the angle of weave measured between the connectors of the spirals. (Compound Balance Weave does not fall within this definition.)

**Operable:** A system, subsystem, train, component, or device is operable or has operability when it is capable of performing its specified functions and when all necessary attendant instrumentation, controls, electrical power, cooling or seal water, lubrication, or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its functions are also capable of performing their related support functions. OR A method of delivering anticancer drugs directly to a tumor in the eye. A catheter (a thin, flexible tube) is put into an artery that leads to the eye and the anticancer drug is given through the catheter. A small balloon may then be put into the artery to block it, which keeps the anticancer drug near the tumor. Ophthalmic artery infusion may be used to treat certain types of retinoblastoma.

**Operating Pressure Range:** the range of pressures for which the component will perform normally.

**Operating Pressure Range:** the range of pressures for which the component will perform normally.

**Operational mode:** In a nuclear power reactor, an operational mode corresponds to any one inclusive combination of core reactivity condition, power level, and average reactor coolant temperature.

**Operator:** A DNA segment that is adjacent to a group of structural genes and is the target sequence for a repressor protein; a unit of gene regulation and expression that includes structural genes and regulatory elements recognized by one or more regulatory gene products. OR A region of DNA that interacts with a repressor protein to control the expression of a gene or group of genes. OR A group of contiguous genes that are coordinately regulated by two cis-acting elements, a promoter and an operator Found only in prokaryotic cells.

**operon:** A unit of genetic expression consisting of one or more related genes and the operator and promoter sequences that regulate their transcription.

**Operon model:** A model of prokaryotic gene regulation that consists of an operator sequence and its associated structural genes.

**ophiolite:** a mafic rock sequence at the earth's surface that is believed to be pieces of ancient oceanic crust that were thrust onto the continent during subduction and mountain-building.

**ophthalmic :** A doctor who has special training in diagnosing and treating eye problems, including injury and disease.

**ophthalmic artery infusion :** A lighted instrument used to examine the inside of the eye, including the retina and the optic nerve.

**ophthalmologist :** An exam that uses a magnifying lens and a light to check the fundus of the eye (back of the inside of the eye, including the retina and optic nerve). The pupils may be dilated (enlarged) with medicated eye drops so the doctor can see through the pupil to the back of the eye. Ophthalmoscopy may be used to check for eye problems, such as glaucoma, macular degeneration, eye cancer, optic nerve problems, or eye injury. Also called funduscopy and funduscopy.

**ophthalmoplegia:** paralysis or weakness of one or more of the muscles that control eye movement

**ophthalmoscope :** A substance used to treat pain or cause sleep. Opiates are made from opium or have opium in them. Opiates bind to opioid receptors in the central nervous system. Examples of opiates are codeine, heroin, and morphine. An opiate is a type of analgesic agent.

**ophthalmoscopy :** A substance used to treat moderate to severe pain. Opioids are like opiates, such as morphine and codeine, but are not made from opium. Opioids bind to opioid receptors in the central nervous system. Opioids used to be called narcotics. An opioid is a type of alkaloid.

**opiate :** A substance that relieves pain and is being studied in the treatment of some types of cancer. Opioid growth factors bind to cells in the body, including tumor cells, which have opioid growth factor receptors on the surface. This may help stop the growth of the tumor cells. It may also prevent the growth of blood vessels that tumors need to grow. An opioid growth factor is a type of biological response modifier and a type of antiangiogenesis agent. Also called OGF.

**opioid :** An abbreviation for a chemotherapy combination that is often used with radiation therapy to treat a certain type of childhood Hodgkin lymphoma in females. It includes the drugs vincristine sulfate (Oncovin),

prednisone, procarbazine hydrochloride, and doxorubicin hydrochloride (Adriamycin). Also called OPPA regimen.

**opioid agonist GIC-1001:** A sulfonate-based salt form of a trimebutine derivative, an orally available, peripherally-acting opioid agonist and muscarinic antagonist, with potential visceral analgesic activity. Upon oral administration of GIC-1001, this agent may exert its therapeutic effects through the potential mechanisms of action for the trimebutine and sulfonate moieties: The trimebutine moiety can act as a motility enhancer in the gastrointestinal (GI) tract, as an antispasmodic agent to reduce colonic spasms, as an agonist of colonic mu and kappa opioid receptors, which could provide an analgesic effect, and blocks sodium channels and the release of a variety of GI peptides, which modulates the activity of visceral afferents. The sulfonate moiety releases hydrogen sulfide (H<sub>2</sub>S), which is involved, through an as of yet not fully elucidated mechanism of action, in the modulation of visceral perception and pain, possibly through the activation of ATP-sensitive potassium (K<sub>ATP</sub>) ion channels and mu opioid receptors. Altogether, administration of this agent may both facilitate the insertion of the colonoscope during a colonoscopy and reduce colonic spasms and pain.

**opioid agonist GIC-1002:** An orally available, peripherally-acting opioid agonist, with potential visceral analgesic activity. Upon oral administration of GIC-1002, this agent binds to colonic mu and kappa opioid receptors causing analgesic effects.

**opioid growth factor:** An endogenous pentapeptide with potential antineoplastic and antiangiogenic activities. Opioid growth factor (OGF) binds to and activates the opioid growth factor receptor (OGFr), present on some tumor cells and vascular cells, thereby inhibiting tumor cell proliferation and angiogenesis. or An abbreviation for a chemotherapy combination that is often used with radiation therapy to treat a certain type of childhood Hodgkin lymphoma in females. It includes the drugs vincristine sulfate (Oncovin), prednisone, procarbazine hydrochloride, and doxorubicin hydrochloride (Adriamycin). Also called OPPA.

**opium tincture:** Also known as laudanum and formulated for oral administration, opium tincture is made of air-dried poppy (*Papaver somniferum*) latex and contains alkaloids such as morphine and codeine. As an antidiarrheal agent, it slows transit of intestinal contents by increasing

intestinal smooth muscle tone and inhibiting motility; water is absorbed from fecal contents, decreasing diarrhea.

**OPPA:** An infection caused by an organism that does not normally cause disease. Opportunistic infections occur in people with weakened immune systems.

**OPPA regimen:** A regimen consisting of vincristine, prednisone, procarbazine and doxorubicin (OPPA) used in combination with radiation therapy for the treatment of female patients with childhood Hodgkin lymphoma with low-risk features. Or A drug used to increase the number of blood cells, especially platelets, in some cancer patients receiving chemotherapy. Oprelvekin is a form of interleukin-11 (a cytokine normally made by support cells in the bone marrow) that is made in the laboratory. It is a type of biological response modifier. Also called Neumega, recombinant human interleukin-11, and rhIL-11.

**opportunistic infection :** A substance being studied in the treatment of diarrhea caused by infection with *Clostridium difficile* (a type of bacteria that can grow without oxygen) in cancer patients. OPT-80 is a type of antibiotic. Also called PAR-101 and tiacumicin B.

**oprelvekin:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous cytokine interleukin 11 (IL-11). Secreted by bone marrow stromal cells and a number of mesenchymal cells, IL-11 binds to and activates its cell-surface receptor, promoting primary and secondary immune responses, modulating antigen-specific antibody reactions, and preventing apoptotic cell death. This agent also stimulates the T-cell-dependent development of IgG-secreting B-cells in spleen cell cultures and may be an important regulator of megakaryocytopoiesis. or The place in the brain where some of the optic nerve fibers coming from one eye cross optic nerve fibers from the other eye. Also called optic chiasma.

**oprozomib:** An orally bioavailable proteasome inhibitor with potential antineoplastic activity. Oprozomib inhibits the activity of the proteasome, thereby blocking the targeted proteolysis normally performed by the proteasome; this may result in an accumulation of unwanted or misfolded proteins. Disruption of various cell signaling pathways may follow, eventually leading to the induction of apoptosis and inhibition of tumor growth. Proteasomes are large protease complexes that degrade unneeded or damaged proteins that have been ubiquitinated.

**Opsin:** A 7TM receptor of rod cells that, when bound to 11-cis-retinal to form rhodopsin, absorbs visible light to initiate the visual signal-transduction pathway.

**OPT-80:** The place in the brain where some of the optic nerve fibers coming from one eye cross optic nerve fibers from the other eye. Also called optic chiasm.

**optic chiasm :** The nerve that carries messages from the retina to the brain.

**optic chiasma :** Inflammation of the optic nerve (the nerve that carries messages from the back of the eye to the brain). It may be caused by infection, drugs, toxins, and diseases of the immune system, such as multiple sclerosis. Symptoms include sudden changes in vision in one eye, including loss of vision and pain with eye movement. The symptoms often disappear within a few weeks.

**optic nerve :** A rare, slow-growing tumor that usually forms in the optic nerve, optic chiasm, or optic tract. These are parts of the nervous system that carry messages from the eye to the brain. Also called visual pathway glioma.

**optic neuritis :** The nerves that travel from the optic chiasm (place in the brain where some of the optic nerve fibers cross) into certain parts of the brain involved in vision.

**optic pathway glioma :** A procedure that uses infrared light waves to give three-dimensional (3-D) pictures of structures inside tissues and organs. The pictures are made by a computer linked to the light source. Also called OCT.

**optic tract :** In medicine, a technique that uses low power light, fiberoptic instruments, and detectors to examine tissue. It is being studied as a way to identify differences between normal cells and cells that may become cancer, and as a way to identify cancer cells that remain in the edges of tumor tissue removed from a patient.

**optical activity:** The capacity of a substance to rotate the plane of plane-polarized light. OR A substance that is capable of rotating plane-polarized light. Molecules of an optically active substance cannot be superimposed on their own mirror images, just as your left hand cannot be superimposed on your right when both are held palm-down. OR The property of a molecule that leads to rotation of the plane of polarization of plane-polarized light

when the latter is transmitted through the substance Chirality is a necessary and sufficient property for optical activity. OR the ability of some chemicals to rotate plane-polarized light. OR the nerve that carries impulses from the eye to the brain.

**Optical axis:** The direction in a crystal in which both components of the plane-polarized light are equal.

**optical coherence tomography :** The tendency to believe that there is good in everything and to have positive thoughts about most things that happen.

**Optical Comparator:** A device that applies the principles of optics to the inspection of manufactured parts. In a comparator, the magnified silhouette of a part is projected upon the screen, and the dimensions and geometry of the part are measured against prescribed limits.

**Optical goniometry:** See Reflective goniometry.

**optical isomer:** another name for an enantiomer.

**optical purity:** a number equal to the angle of rotation of a solution divided by the rotation of the pure enantiomer (x 100).

**Optical rotation:** The change in direction of polarization of linearly polarized light on passing through an optically active solution; can be used as an indicator of the main-chain conformation of a protein.

**optical spectroscopy :** By or having to do with the mouth.

**optical thickness (optical depth):** In calculating the transfer of radiant energy, the mass of an absorbing or emitting material lying in a vertical column of unit cross-sectional area and extending between two specified levels. Also, the degree to which a cloud prevents light from passing through it; the optical thickness then depends on the physical constitution (crystals, drops, and/or droplets), the form, the concentration, and the vertical extent of the cloud.

**Optical trap:** A means of measuring the force exerted by a single myosin molecule on an actin filament. In this device, a laser beam is focused on a bead, which is attached to an actin filament. The laser holds or traps the bead at the center of the beam. The strength of the force holding the beam may be adjusted by altering the intensity of the laser beam. The force exerted by a myosin molecule on the actin filament is measured as the force required to hold the bead in the optical trap.

**optimism** : A dentist who has special training in surgery of the mouth, face, and jaw.

**optimum pH**: The characteristic pH at which an enzyme has maximal catalytic activity.

**OptiPrep**: (Other name for: iodixanol)

**Optison**: (Other name for: perflutren protein-type A microspheres)

**Optoelectronic interface**: an element of the fiber optic chemical sensor, which can be regarded as transducer. Optoelectronic interface converts the light beam, after having interacted with the chemooptical interface, into an electrical signal. It contains a photodetector (e.g. photodiode) and an amplifier.

**Optomembrane** : the receptor part (chemooptical interface) of the fiber optic chemical sensor, containing an immobilized reagent (e.g. dye, indicator or chromoionophore).

**Optrode/Optode**: term, which comprises optic sensor or in certain cases only the optomembrane (receptor part of the optic sensor). The term optrode is related to optic+electrode, from the similar operation mode (dipping in the sample solution) of the ionselective electrodes and fiber optic chemical sensors.

**Ora-Testryl**: (Other name for: fluoxymesterone)

**Oracit**: (Other name for: sodium citrate)

**oral** : Cancer that forms in tissues of the oral cavity (the mouth) or the oropharynx (the part of the throat at the back of the mouth).

**oral aminolevulinic acid hydrochloride**: A powder for an oral solution comprised of the hydrochloride salt of 5-aminolevulinic acid (ALA) with a potential application for photodynamic therapy. After oral administration, ALA is converted intracellularly into the photosensitizer protoporphyrin IX (PpIX). Upon exposure to light of appropriate wavelength (violet to blue range), excited PpIX emits a characteristic red fluorescence which could facilitate guided resection, and generates excited singlet oxygen molecules that could kill cells when appropriate laser dosage is applied. ALA is preferentially taken up by and accumulates in many types of cancer cells compared to normal, healthy cells. Consequently, cancer cells can be visualized and can be distinguished from normal, healthy cells. Check for active clinical trials using this agent.

**oral and maxillofacial surgeon :** Refers to the mouth. It includes the lips, the lining inside the cheeks and lips, the front two thirds of the tongue, the upper and lower gums, the floor of the mouth under the tongue, the bony roof of the mouth, and the small area behind the wisdom teeth.

**oral azacitidine:** An orally bioavailable formulation of azacitidine, a pyrimidine nucleoside analogue of cytidine, with antineoplastic activity. Upon oral administration, azacitidine is taken up by cells and metabolized to 5-azadeoxycytidine triphosphate. The incorporation of 5-azadeoxycytidine triphosphate into DNA reversibly inhibits DNA methyltransferase, and blocks DNA methylation. Hypomethylation of DNA by azacitidine may reactivate tumor suppressor genes previously silenced by hypermethylation, resulting in an antitumor effect. In addition, the incorporation of 5-azacitidine triphosphate into RNA disrupts normal RNA function and impairs tRNA (cytosine-5)-methyltransferase activity, resulting in an inhibition of RNA and protein synthesis.

**oral cancer :** Cancer that forms in tissues of the oral cavity (the mouth). The tissues of the oral cavity include the lips, the lining inside the cheeks and lips, the front two thirds of the tongue, the upper and lower gums, the floor of the mouth under the tongue, the bony roof of the mouth, and the small area behind the wisdom teeth.

**oral cavity :** Treatment with drugs given by mouth to kill cancer cells or stop them from dividing.

**oral cavity cancer :** A pill used to prevent pregnancy. It contains hormones that block the release of eggs from the ovaries. Most oral contraceptives include estrogen and progesterin. Also called birth control pill.

**oral chemotherapy :** A dentist with special training in surgery of the mouth and jaw.

**oral contraceptive pill :** A substance being studied in the treatment of cancer. Orantinib blocks proteins involved in the growth and spread of cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called SU006668 and SU6668.

**oral fludarabine phosphate:** An oral formulation of the phosphate salt of fludarabine, a synthetic purine nucleoside analogue antimetabolite with antineoplastic activity. Fludarabine is preferentially transported into malignant cells and metabolized by deoxycytidine kinase to its active form,

2-fluoro-ara-ATP; 2-fluoro-ara-ATP competes directly with deoxyadenosine triphosphate (dATP) and inhibits alpha DNA polymerase, RNA reductase, and DNA primase, which may result in inhibition of DNA synthesis and cell death.

**oral Hsp90 inhibitor IPI-493:** An orally bioavailable formulation of the ansamycin derivative 17-amino-17-demethoxygeldanamycin (17-AG) with potential antineoplastic activity. Oral Hsp90 inhibitor IPI-493 binds to and inhibits Hsp90, which may result in growth inhibition in sensitive tumor cell populations. Hsp90, a 90 kDa molecular chaperone, may be highly expressed in tumor cells, playing a key role in the conformational maturation, stability and function of other substrate or "client" proteins within the cell; many of these client proteins are involved in signal transduction, cell cycle regulation and apoptosis, and may include kinases, transcription factors and hormone receptors.

**oral microencapsulated diindolylmethane:** An orally bioavailable microencapsulated formulation of diindolylmethane, an indole phytonutrient found in cruciferous vegetables, with estrogen-modulating, antiandrogenic, and potential antineoplastic activities. As a dimer of indole-3-carbinol, diindolylmethane (DIM) modulates estrogen balance by reducing the levels of 16-hydroxy estrogen metabolites and increasing the formation of beneficial 2-hydroxy estrogen metabolites. DIM also antagonizes androgen receptor activity, which may result in diminished cell proliferation and apoptosis in susceptible tumor cell populations. Pure DIM, which is relatively hydrophobic, is poorly absorbed after oral administration. This oral formulation, which consists of DIM, d-alpha-tocopheryl acid succinate, phosphatidylcholine, and silica microencapsulated in starch, significantly improves the gastrointestinal absorption of DIM.

**oral milataxel:** An orally bioavailable taxane with potential antineoplastic activity. Upon oral administration, milataxel and its major active metabolite M-10 bind to and stabilize tubulin, resulting in the inhibition of microtubule depolymerization and cell division, cell cycle arrest in the G2/M phase, and the inhibition of tumor cell proliferation. Unlike other taxane compounds, milataxel appears to be a poor substrate for the multidrug resistance (MDR) membrane-associated P-glycoprotein (P-gp) efflux pump and may be useful for treating multidrug-resistant tumors.

**oral picoplatin:** An oral preparation of picoplatin, a third generation platinum compound with antineoplastic activity. Designed to overcome platinum drug resistance, picoplatin alkylates DNA, forming both inter- and intra-strand cross-linkages, resulting in inhibition of DNA replication and RNA transcription and the induction of apoptosis. Because of the increase in steric bulk around the platinum center, there is a relative reduction in the inactivation of picoplatin by thiol-containing species such as glutathione and metallothionein in comparison to cisplatin.

**oral rehydration solution:** An aqueous solution composed of glucose and electrolytes, including sodium, potassium, chloride, magnesium, and phosphorus, with dehydration preventative and rehydration activities. Upon oral administration of the oral rehydration solution (ORS), water, electrolytes and glucose are absorbed from the gastrointestinal (GI) tract into the systemic circulation. This replenishes the body's supply of water, carbohydrates and electrolytes, and prevents both dehydration and renal dysfunction.

**oral sodium phenylbutyrate:** An orally active derivative of the short-chain fatty acid butyrate with potential antineoplastic activity. 4-Phenylbutyrate inhibits histone deacetylase, resulting in cell cycle gene expression modulation, reduced cell proliferation, increased cell differentiation, and apoptosis. This agent also initiates fragmentation of genomic DNA, resulting in decreased DNA synthesis and the inhibition of tumor cell migration and invasion.

**oral surgeon :** Surgery to remove one or both testicles. Also called orchiectomy.

**oral topotecan hydrochloride:** An oral formulation of the hydrochloride salt of topotecan, a semisynthetic derivative of the quinoline alkaloid camptothecin, with potential antineoplastic activity. Topotecan selectively inhibits topoisomerase I activity by stabilizing topoisomerase I-DNA covalent complexes during the S phase of the cell cycle, thereby inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when encountered by the DNA replication machinery. Check for active clinical trials using this agent.

**Oralet:** (Other name for: fentanyl citrate)

**Oramorph:** (Other name for: morphine sulfate)

**Oramorph SR:** (Other name for: morphine sulfate)

**Orange Field:** Said of injection moldings that have unintentionally rough surfaces.

**Orange Peel:** A surface finish on a molded part usually caused by moisture in the mold cavity or poor heat transfer properties. OR A type of granular surface finish resembling the peel of an orange. OR The 'dimple' effect on a paint coating. With spray application it is often caused by insufficient thinning. With roller application it is usually caused by insufficient thinning and/or type of roller used. OR Film having the roughness of an orange due to poor roller or spray application.

**Orange peeling:** When spraying, insufficient thinning can create this 'dimple' effect on a paint coating. The same is true when using a roller, or it could be the wrong type of roller for the product used. In any case, to correct the fault, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Rub down with wet 'dry' abrasion, using water or a suitable solvent, then rinse down and allow to dry thoroughly prior to applying a new paint coating.

**orantinib:** An orally bioavailable receptor tyrosine kinase inhibitor. Orantinib binds to and inhibits the autophosphorylation of vascular endothelial growth factor receptor 2 (VEGFR2), platelet-derived growth factor receptor (PDGFR), and fibroblast growth factor receptor (FGFR), thereby inhibiting angiogenesis and cell proliferation. Orantinib also inhibits the phosphorylation of the stem cell factor receptor tyrosine kinase c-kit, often expressed in acute myelogenous leukemia cells. or Surgery to remove one or both testicles. Also called orchidectomy.

**Orathecin:** (Other name for: rubitecan)

**oraxol:** A combination formulation composed of a capsule containing the taxane compound paclitaxel and a tablet containing the multidrug resistance (MDR) efflux pump P-glycoprotein (P-gp) inhibitor HM30181A, with potential antineoplastic activity. Upon oral administration of oraxol, the HM30181A moiety binds to and inhibits P-gp, which prevents P-gp-mediated efflux of paclitaxel, therefore enhancing its oral bioavailability. In turn, paclitaxel binds to and stabilizes microtubules, preventing their depolymerization, which results in the inhibition of cellular motility, mitosis, and replication. Altogether, this may result in greater intracellular concentration of paclitaxel, and enhanced cytotoxicity against tumor cells,

when compared to the administration of paclitaxel alone. P-gp, encoded by the MDR-1 gene, is a member of the ATP-binding cassette (ABC) superfamily of transmembrane transporters; it prevents the intestinal uptake and intracellular accumulation of various cytotoxic agents.

**Orazol:** (Other name for: enteric-coated zoledronic acid tablet MER-101)

**orbit:** an area around an atomic nucleus where there is a high probability of finding an electron; also called a shell. An orbit is divided into orbitals, or subshells.

**Orbit:** An orbit is the path one object takes when it spins around another object. An electron has a path in a circle around the center of the atom. The Earth has an orbit around the sun. Since electrons can move in any direction around the center of the atom, their space is called a shell.

**orbital:** A region of space where there is a high probability of finding an electron in an atom or ion. OR The orbital is where an atom keeps its electrons. An atom can have up to seven orbitals. We also call it a shell. OR a component of a subshell occupied by up to 2 electrons. OR s the spherical orbital nearest the nucleus of an atom. OR an area in an orbit where there is a high probability of finding an electron; a subshell. All of the orbitals in an orbit have the same principal and angular quantum numbers. OR are the probability distributions of where electrons may be found in their atoms, s -orbitals are spherical, p - orbitals are dumbbell shaped. OR An energy state in the atomic model which describes where an electron will likely be. OR Usually an eigenfunction of a one-electron hamiltonian, e.g., from Hartree-Fock theory. A spin orbital has an explicit spin and a spatial orbital does not. Orbitals are probably the most useful concept from quantum chemistry: one can think of an atom or molecule as having a set of orbitals that are filled with electrons (occupied) or vacant (unoccupied or "virtual").

**orchidectomy :** A monoclonal antibody that is being studied in the treatment of ovarian cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. Oregovomab binds to the CA-125 antigen, which is found on most ovarian cancer cells. Also called OvaRex.

**orchietomy :** A part of the body that performs a specific function. For example, the heart is an organ.

**order:** a grouping of similar families. OR The order of a reaction is the sum of concentration exponents in the rate law for the reaction. For example, a reaction with rate law  $d[C]/dt = k[A]^2[B]$  would be a third order reaction. Noninteger orders are possible.

**order of operations:** When an expression has multiple operations, they must be performed in the following order: 1) operations within parentheses; 2) exponents; 3) multiplication and division, from left to right; and 4) addition and subtraction, from left to right.

**Ordinary ray:** The component of plane-polarized light that travels through a uniaxial crystal with a constant velocity.

**ore:** An ore is a rock containing a metal or metal compound from which it is economically viable to extract the metal. OR A substance that can be used as a source of a metal. Haematite is an ore of iron. To be useful, an ore has to have a high enough percentage of the metal in it to be economically viable to extract.

**Ore flotation:** A common way for extracting particles of metal from an ore is to crush the ore into a fine powder, add water and surfactant, and bubble air through. Particles of many useful minerals, which are more hydrophobic than the rock that surrounds them, will stick to the surfactant bubbles and collect at the surface.

**oregovomab:** A murine monoclonal antibody that attaches to the tumor-associated antigen CA125. Vaccination with monoclonal antibody B43.13 may stimulate a host cytotoxic immune response against tumor cells that express CA125.

**oregovomab :** A small structure in a cell that is surrounded by a membrane and has a specific function. Examples of organelles are the nucleus (a structure that contains the cell's chromosomes and is where RNA is made), mitochondria (structures that make energy for the cell), and lysosomes (sac-like containers filled with enzymes that digest and help recycle molecules in the cell).

**Orencia:** (Other name for: abatacept)

**Orestralyne:** (Other name for: ethinyl estradiol)

**organ :** Food produced without the use of man-made fertilizer, drugs that increase growth, or drugs that kill insects, bacteria, or other living things. In

the United States, the Department of Agriculture sets standards for growing, harvesting, processing, and labeling organic foods.

**Organelle:** A subcellular membrane-bounded body with a well-defined function. OR microscopic bodies within the cytoplasm that perform distinct functions. OR Membrane-bounded structures found in eukaryotic cells; contain enzymes and other components required for specialized cell functions. OR A living thing, such as an animal, a plant, a bacterium, or a fungus.

**Organic:** When referring to chemical compounds, anything that contains carbon. The original definition was more like "any chemical found in or derived from a living organism" and most chemists still feel funny calling carbon monoxide or the carbonate ion ( $\text{CO}_3^{2-}$ ) organic compounds. OR refers to compounds based on carbon. OR Carbon-containing OR Compounds that contain carbon chemically bound to hydrogen. They often contain other elements (particularly O, N, halogens, or S). Organic compounds were once thought to be produced only by living things. We now know that any organic compound can be synthesized in the laboratory (although this can be extremely difficult in practice!)

**organic chemistry:** The study of compounds that contain carbon chemically bound to hydrogen, including synthesis, identification, modelling, and reactions of those compounds. OR the study of the compounds of carbon. OR A branch of chemistry dedicated to the study of the structures, synthesis, and reactions of carbon-containing compounds OR an area of chemistry dealing principally with the chemistry of carbon. OR originally applied to chemicals derived from living organisms, as distinguished from "inorganic" chemicals found in minerals and inanimate substances; modern chemist define organic chemicals more exactly as those, which contain the element carbon.

**Organic crystal:** A crystal consisting of a regular arrangement of organic molecules held together by van der Waals forces.

**Organic fluorophosphates:** Compounds such as diisopropylfluorophosphate, which inhibits acetylcholinesterase by forming a stable phosphoryl enzyme complex at a serine residue in the active site.

**organic food :** The final part of the sex act, which involves contraction of sexual organs and a sudden release of endorphins, leading to a feeling of pleasure. In males, orgasm usually occurs with release of semen.

**organic matter:** chemical compounds based on carbon chains or rings, and also containing hydrogen with or without oxygen, nitrogen, or other compounds.

**organic nitrogen:** nitrogen combined in organic molecules such as protein, amines, and amino acids.

**Organic polymer :** Organic polymers can be water soluble or water insoluble. Typical examples of water insoluble polymers are plastics. Water soluble organic polymers can be anionically or cationically charged, or they can be non-charged. Organic polymers can be long chained, like flocculants, or short chained, like antiscalting agents or organic coagulants. The origin of an organic polymer may be in synthetic building blocks, monomers, like in polyacrylamides, or it may be a natural based polymer, like starch.

**organic sedimentary rock:** a sedimentary rock composed primarily of accumulations of organic remains from plants or animals.

**Organic Synthesis:** A branch of chemical synthesis that focuses on the synthesis of organic molecules.

**Organisation for Economic Co-operation and Development (OECD):**

An intergovernmental organization (based in Paris, France) which provides a forum for discussion and cooperation among the governments of industrialized countries committed to democracy and the market economy. The primary goal of the OECD and its member countries is to support sustainable economic growth, boost employment, raise living standards, maintain financial stability, assist other countries' economic development, and contribute to growth in world trade. In addition, the OECD is a reliable source of comparable statistics and economic and social data. The OECD also monitors trends, analyzes and forecasts economic developments, and researches social changes and evolving patterns in trade, environment, agriculture, technology, taxation, and other areas.

**organism :** A medical system that has been used for thousands of years to prevent, diagnose, and treat disease. It is based on the belief that qi (the body's vital energy) flows along meridians (channels) in the body and keeps a person's spiritual, emotional, mental, and physical health in balance. Oriental medicine aims to restore the body's balance and harmony between the natural opposing forces of yin and yang, which can block qi and cause disease. Oriental medicine includes acupuncture, diet, herbal therapy,

meditation, physical exercise, and massage. Also called TCM and Traditional Chinese Medicine.

**Organization of the Petroleum Exporting Countries:** A powerful grouping of oil producing countries that seeks to maintain steady oil prices and regulate production. The current member nations are: Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, Vatican City and Venezuela.

**organochromic indicators:** Colored organic compounds that change color when they chelate different metals. Organochromic indicators are used to determine the endpoint in complexometric titrations. Examples of organochromic indicators are Eriochrom Black T, calmagite, and Eriochrom Cyanine R.

**Organometallic Chemistry:** A branch of chemistry that mainly studies the chemistry of compounds that contain Carbon-Metal bonds.

**organometallic reaction:** a reaction in which a metallic element adds between a carbon atom and an electronegative atom in an organic molecule.

**orgasm :** Cancer that forms in tissues of the oropharynx (the part of the throat at the back of the mouth, including the soft palate, the base of the tongue, and the tonsils). Most oropharyngeal cancers are squamous cell carcinomas (cancer that begins in flat cells lining the oropharynx).

**Oriental medicine :** The part of the throat at the back of the mouth behind the oral cavity. It includes the back third of the tongue, the soft palate, the side and back walls of the throat, and the tonsils.

**Orientation:** the alignment of the crystalline structure in polymeric materials so as to produce a highly uniform structure. Orientation can be accomplished by cold drawing or stretching during fabrication. OR the arrangement of the molecules of the melt. If the molecules are orientated, they are aligned with each other; if non-orientated they are not in alignment. In general, orientated material shrinks more than non-orientated material. OR The process of stretching a hot plastic article to align the molecules, thus altering mechanical properties. When the stretching force is applied in one direction, the process is called uniaxial orientation. When stretching is in two directions, the term biaxial orientation is used. Upon reheating, an oriented film will shrink in the direction(s) of orientation. This property is useful in applications such as shrink packaging, and for improving the strength of molded or extruded articles such as pipe and fibers.

**Oriental defect:** A defect at which the tenant molecule takes up an abnormal orientation.

**Orifice:** An opening in a mold or finished product. OR An opening in a dispensing closure or fitment from which the product is dispensed. OR The opening in the extruder die formed by the orifice bushing (ring) and mandrel.

**Orifice Bushing:** The outer part of the die in an extruder head.

**origin:** The nucleotide sequence or site in DNA where DNA replication is initiated.

**Original Equipment Manufacturer (OEM):** A company who makes components that are used in other products

**ormaplatin:** A platinum(IV) analogue with antineoplastic activity. Ormaplatin alkylates DNA, forming both inter- and intra-strand platinum-DNA crosslinks, which result in inhibition of DNA replication and transcription and cell-cycle nonspecific cytotoxicity.

**orogeny:** a mountain-building period or event. OR the folding, faulting, deformation, and metamorphism from the onset of intense tectonic stress that results in mountain-building.

**oropharyngeal cancer :** A drug used to treat, prevent, or diagnose an orphan disease. An orphan disease is a rare disease or condition that affects fewer than 200,000 people in the United States. Orphan diseases are often serious or life threatening. In 1983, the U.S. government passed a law, called the Orphan Drug Act, to give drug companies certain financial benefits for developing orphan drugs that are safe and effective.

**oropharynx :** A status given to certain drugs called orphan drugs, which show promise in the treatment, prevention, or diagnosis of orphan diseases. An orphan disease is a rare disease or condition that affects fewer than 200,000 people in the United States. Orphan diseases are often serious or life threatening. In 1983, the U.S. government passed a law, called the Orphan Drug Act, to give drug companies certain financial benefits for developing orphan drugs. This law is meant to help bring more drugs to patients with rare diseases.

**Orotidylate:** A nucleotide precursor to uridylate and cytidylate formed by the reaction of orotate with 5-phosphoribosyl-1-pyrophosphate (PRPP).

**Orphan Drug:** Pharmaceutical agents that are used to treat rare medical conditions.

**orphan drug :** A system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. Also called allopathic medicine, biomedicine, conventional medicine, mainstream medicine, and Western medicine.

**orphan drug designation :** A surgeon who has special training in diagnosing and treating injuries and diseases of the musculoskeletal system. This includes the bones, joints, tendons, ligaments, and muscles.

**Orplatna:** (Other name for: satraplatin)

**ortataxel:** A semisynthetic, second-generation taxane derivative with potential antineoplastic activity. Ortataxel binds to and stabilizes tubulin molecules, thereby interfering with the dynamics of microtubule assembly/disassembly. This results in the inhibition of cell division and cellular proliferation. As it represents a poor substrate for P-glycoprotein (P-gp), multi-drug resistance protein (MRP-1) and breast cancer resistance protein (BCRP) mediated efflux, ortataxel modulates multi-drug resistance mechanisms and may be useful for treating multi-drug resistant tumors that express Pgp, MRP-1 and BCRP.

**orteronel:** An orally bioavailable non-steroidal androgen synthesis inhibitor of steroid 17alpha-monooxygenase (17,20 lyase) with potential antiandrogen activity. Orteronel binds to and inhibits the steroid 17alpha-monooxygenase in both the testes and adrenal glands, thereby inhibiting androgen production. This may decrease androgen-dependent growth signaling and may inhibit cell proliferation of androgen-dependent tumor cells. The cytochrome P450 enzyme CYP17A1 (P450C17), localized to the endoplasmic reticulum (ER), exhibits both 17alpha-hydroxylase and 17,20-lyase activities, and plays a key role in the steroidogenic pathway that produces steroidal hormones, such as progestins, mineralocorticoids, glucocorticoids, androgens, and estrogens.

**Ortho-Novum:** (Other name for: ethinyl estradiol/norethindrone)

**Ortho-Xylene:** Ortho-Xylene is an aromatic compound with two methyl groups substituted onto the benzene ring. Ortho-xylene is recovered from a mixed xylenes stream by fractionation. Its main application is for phthalic anhydride, which is used in plasticiser production.

**Orthoclone OKT3:** (Other name for: muromonab-CD3)

**orthodox medicine :** In medicine, refers to something that occurs in the normal or usual place in the body. It is often used to describe tissue or an organ that is transplanted into its normal place in the body.

**Orthologs:** Homologous molecules that are present within different species and have similar or identical functions.

**orthopedic surgeon :** The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that patients diagnosed with the disease are still alive. In a clinical trial, measuring the OS is one way to see how well a new treatment works. Also called overall survival.

**orthophosphate:** an acid or salt containing phosphorus as  $PO_4$ , such as  $K_3PO_4$  (potassium phosphate).

**Orthorhombic Crystal:** This crystal forms a prism that has three edges at ninety-degree angles.

**Orthorhombic crystal class:** A crystal class containing three mutually perpendicular two-fold rotation axes. This class consists of 59 space groups and has one restriction: all of the angles are equal to  $90^\circ$ . There are no restrictions on the lengths of the axes.

**orthotopic :** A drug used to prevent and to treat influenza virus infections. It blocks the release of the virus from infected cells. It is a type of antiviral agent. Also called Tamiflu.

**Orudis:** (Other name for: ketoprofen)

**Oruvail:** (Other name for: ketoprofen)

**OS:** A drug used to treat certain types of non-small cell lung cancer. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that cannot be removed by surgery or has spread to other parts of the body. It is being studied in the treatment of other types of cancer. OSI-774 blocks a protein called epidermal growth factor receptor (EGFR), which may help keep cancer cells from growing. It is a type of EGFR tyrosine kinase inhibitor. Also called CP-358,774, erlotinib hydrochloride, and Tarceva.

**Oscillating Seal:** Most commonly used in faucet valves, in this application the inner or outer member of the gland moves in an arc around the axis of a shaft. Movement is limited to a few turns in one direction and a few turns in the return direction (i.e. faucet on, faucet off)

**OSE 2101:** A proprietary cancer DNA vaccine that contains multiple natural and modified epitopes derived from the four tumor associated antigens, CEA, HER2/neu, p53, and MAGE 2/3. OSE 2101 also includes CAP1-6D, a heteroclitic CEA analog, and PADRE, a proprietary universal T-cell epitope that serves to enhance the immunogenicity of the epitopes. This agent has been shown to elicit cytotoxic T-lymphocyte responses against tumor cells expressing these multiple epitopes.

**oseltamivir phosphate:** The phosphate salt of oseltamivir, a synthetic derivative prodrug of ethyl ester with antiviral activity. By blocking neuraminidases on the surfaces of influenza viruses, oseltamivir interferes with host cell release of complete viral particles. Or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called thymidylate synthase inhibitors.

**OSI-774:** A substance being studied in the treatment of cancer. It blocks a protein called IGF-1R, which is found at high levels in some types of tumors. IGF-1R is needed for cell growth and blocking it may cause tumor cells to die. OSI-906 is a type of IGF-1R inhibitor. Also called IGF-1R inhibitor OSI-906.

**OSI-7904L:** A liposome-encapsulated formulation of the benzoquinazoline folate analog OSI-7904 with antineoplastic activity. As a thymidylate synthase inhibitor, OSI-7904 noncompetitively binds to thymidylate synthase, resulting in inhibition of thymine nucleotide synthesis and DNA replication. Liposome encapsulation improves the efficacy and increases the half-life of OSI-7904. or A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of a cell protein called epidermal growth factor receptor and whose disease got worse during or after treatment with an anticancer drug that blocks EGFR. It is also being studied in the treatment of other types of cancer. Osimertinib blocks this mutated protein, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor. Also called Tagrisso.

**OSI-906:** The concentration of particles dissolved in a fluid. The osmolality of serum can help diagnose several medical conditions such as dehydration, diabetes, and shock.

**osimertinib:** An orally available, irreversible, third-generation, mutant-selective epidermal growth factor receptor (EGFR) inhibitor, with potential

antineoplastic activity. Upon oral administration, osimertinib selectively and covalently binds to and inhibits the activity of the mutant forms of EGFR, including the T790M EGFR mutant form, thereby preventing EGFR-mediated signaling. This may both induce cell death and inhibit tumor growth in EGFR-overexpressing tumor cells. EGFR, a receptor tyrosine kinase overexpressed or mutated in many types of cancers, plays a key role in tumor cell proliferation and tumor vascularization. As osimertinib inhibits T790M, a secondarily acquired resistance mutation, this agent may have therapeutic benefits in tumors with T790M-mediated resistance. As this agent is selective towards mutant forms of EGFR, its toxicity profile may be reduced as compared to non-selective EGFR inhibitors, which also inhibit wild-type EGFR. Check for active clinical trials using this agent. or Having to do with osmosis (the passage of a liquid through a membrane from a less concentrated solution to a more concentrated one). This causes the more concentrated solution to become diluted, and makes the concentrations in both solutions more equal. Osmotic also refers to a type of laxative that increases the amount of water in the large intestine, which softens the stool to help it pass more easily.

**Osmitol:** (Other name for: mannitol)

**Osmium:** Symbol:"Os" Atomic Number:"76" Atomic Mass: 190.20amu. This element is one of the transition elements. Osmium is found in nature with platinum and nickel. It actually has the highest melting point of the group and is used in alloys that require a lot of strength.

**osmolality :** A chronic condition in which both the breakdown and regrowth of bone are increased. Osteitis deformans occurs most frequently in the pelvic and leg bones, skull, and lower spine. It is most common in older individuals, and may lead to bone pain, deformities, and fractures. Also called Paget disease of bone.

**osmometry:** Determination of the average molecular weight of a dissolved substance from measurements of osmotic pressure.

**osmosis:** The movement of solvent molecules through a membrane from region of lower solute concentration to a region of higher solute concentration. OR This process happens when water molecules move from an area of high concentration to low concentration. They need to pass through a semi-permeable membrane. It often happens when larger molecules are not able to cross the membrane and concentrations need to be

evened out. OR the movement of water molecules across a membrane from a region of high concentration to a region of low concentration. OR The movement of a solvent across a membrane in the direction that tends to equalize concentrations of solute on the two sides of the membrane. OR Passage of solvent molecules from a dilute solution through a semipermeable membrane to a more concentrated solution. OR Bulk flow of water through a semipermeable membrane into another aqueous compartment containing solute at a higher concentration.

**osmotic** : A benign (not cancer) tumor that has both bone and cartilage in it. This type of tumor usually occurs at the ends of the long bones of the arms and legs or in the pelvis or shoulder. It may cause abnormal growth of the arms, hands, and legs; problems moving the joints; and pain, numbness, and tingling. There may be one or more tumors, and having multiple tumors runs in families. Osteochondromas may also occur at some point in time after cancer treatment, such as stem cell transplant.

**Osmotic Pressure:** Where two solutions of different concentration are separated by a membrane which the solvent molecules can move through, but the dissolved particles (solute) can't, the solvent will move from the less concentrated to the more concentrated solution to attempt to equalise the concentrations. The pressure that must be exerted on the solution to stop this influx of solvent is called the Osmotic Pressure, which is given by a simple equation for dilute solutions:  $\text{Pressure} = 8.314 \times (\text{Temperature}) \times (\text{difference in number of solute molecules per litre})$  OR The pressure generated by the mass flow of water to that side of a membrane-bounded structure that contains the higher concentration of solute molecules. A stable osmotic pressure is seen in systems in which the membrane is not permeable to some of the solute molecules. OR Pressure which must be applied to a solution to prevent water from flowing in via a semipermeable membrane. OR Pressure generated by the osmotic flow of water through a semipermeable membrane into an aqueous compartment containing solute at a higher concentration.

**Ossirene:** (Other name for: ammonium trichlorotellurate)

**Ostarine:** (Other name for: enobosarm)

**osteitis deformans** : A cancer of the bone that usually affects the large bones of the arm or leg. It occurs most commonly in young people and affects more males than females. Also called osteosarcoma.

**osteochondroma** : Causing the breakdown of bone.

**osteogenic sarcoma** : A condition in adults in which bones become soft and deformed because they don't have enough calcium and phosphorus. It is usually caused by not having enough vitamin D in the diet, not getting enough sunlight, or a problem with the way the body uses vitamin D. Symptoms include bone pain and muscle weakness. When the condition occurs in children, it is called rickets. Also called adult rickets.

**osteolytic** : Inflammation of the bone caused by an infection, which may spread to the bone marrow and tissues near the bone. Osteomyelitis can cause severe pain in the infected bone. If it is not treated, it can kill bone tissue.

**Osteomalacia**: A clinical condition in adults that is due to vitamin D deficiency and is characterized by softening and weakening of the bones. OR A condition in which there is a loss of blood flow to bone tissue, which causes the bone to die. It is most common in the hips, knees, shoulders, and ankles. It may be caused by long-term use of steroid medicines, alcohol abuse, joint injuries, and certain diseases, such as cancer and arthritis. It may also occur at some point in time after cancer treatment that included methotrexate, bisphosphonates, or corticosteroids. Also called aseptic necrosis, avascular necrosis, and ischemic necrosis.

**osteomyelitis** : A condition in which there is a lower-than-normal bone mass or bone mineral density (the amount of bone mineral contained in a certain amount of bone). Osteopenia is a less severe form of bone loss than osteoporosis.

**osteonecrosis** : A condition that is marked by a decrease in bone mass and density, causing bones to become fragile.

**osteopenia** : A cancer of the bone that usually affects the large bones of the arm or leg. It occurs most commonly in young people and affects more males than females. Also called osteogenic sarcoma.

**osteoporosis** : An operation to create an opening (a stoma) from an area inside the body to the outside. Colostomy and urostomy are types of ostomies.

**osteosarcoma** : Refers to a medicine that can be bought without a prescription (doctor's order). Examples include analgesics (pain relievers),

such as aspirin and acetaminophen. Also called nonprescription and over-the-counter.

**ostomy :** A doctor who has special training in diagnosing and treating diseases of the ear, nose, and throat. Also called ENT doctor.

**Ostwald ripening:** A spontaneous process during which ultrafine (high-energy) crystals dissolve and the corresponding material redeposits on larger crystals.

**OTC:** A measure of weight (one-sixteenth pound) and volume (one-eighth cup).

**otlertuzumab:** A recombinant single-chain polypeptide engineered to exhibit the full binding and activity of an anti-CD37 monoclonal antibody with potential immunostimulatory and antineoplastic activities.

Otlertuzumab binds to CD37 on B-cells, which may result in antibody-dependent cell-mediated cytotoxicity (ADCC) and apoptosis. CD37 is a transmembrane glycoprotein expressed at high-levels on B cells and to a lesser extent on T cells and myeloid cells. This agent may have a longer half-life in vivo than conventional monoclonal antibodies.

**otolaryngologist :** A specific result or effect that can be measured.

Examples of outcomes include decreased pain, reduced tumor size, and improvement of disease.

**OTR:** Oxygen transmission rate measured by the amount of oxygen which passes across the film.

**OTR Oxygen transmission rate:** OTR of plastic materials varies considerably with humidity; therefore it needs to be specified. Standard conditions of testing are 0, 60 or 100% relative humidity. Units are cc.100 square inches/24 hours, (or cc/square meter/24 Hrs.) (cc = cubic centimeters)

**ounce :** A patient who visits a health care facility for diagnosis or treatment without spending the night. Sometimes called a day patient.

**Out Run :** Length of belt from the point tangent to the cage or turn to discharge of the product. Also known as out feed.

**OUT-OF-ROUND:** Non uniform radius or diameter.

**Outage:** The period during which a generating unit, transmission line, or other facility is out of service. Outages may be forced or scheduled, and full or partial.

**Outage (full forced):** A forced outage that causes a generating unit to be removed from the Committed state (when the unit is electrically connected and generating or pumping) or the Available state (when the unit is available for dispatch as a generator or pump but is not electrically connected and not generating or pumping). Full-forced outages do not include failed starts.

**Outage (scheduled):** The shutdown of a generating unit, transmission line, or other facility for inspection, maintenance, or refueling, which is scheduled well in advance (even if the schedule changes). Scheduled outages do not include forced outages and could be deferred if there were a strong commercial reason to do so.

**outcome :** A monoclonal antibody that is being studied in the treatment of ovarian cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. OvaRex binds to the CA-125 antigen, which is found on most ovarian cancer cells. Also called oregovomab.

**outcrop:** a bedrock exposure at the surface of the earth.

**outer core:** the iron- and nickel-rich liquid layer near the center of the Earth. OR the outer shell of the core, between the mantle and the inner core, that is inferred to be molten (liquid).

**Outer Die Ring:** The element of tubing die that shapes the outer surface of a tube.

**outer-shell electron:** see valence electron.

**outgassing:** gases that escape to the atmosphere during volcanic eruptions. OR to remove occluded gases by heating. OR A phenomenon wherein a substance (i.e. silicone or natural rubber) spontaneously releases volatile constituents in the form of vapors or gases normally during curing process with liquid silicone rubber.

**outline:** establishes an overall pattern of organization for an essay; they may be formal or informal but are essential to good writing.

**outpatient :** Having to do with the ovaries, the female reproductive glands in which the ova (eggs) are formed. The ovaries are located in the pelvis, one on each side of the uterus.

**outwash:** the sediments deposited by glacial meltwater.

**outwash plain:** sandy area downstream from a moraine created by drift particles and meltwater from a glacier. OR the broad front of outwash associated with an ice sheet.

**ovapuldencel-T:** A cancer vaccine consisting of autologous dendritic cells (DCs) loaded with autologous, lethally irradiated cancer cells and mixed with the cytokine granulocyte-macrophage colony stimulating factor (GM-CSF), with potential immunostimulatory and antineoplastic activities. Upon vaccination, ovapuldencel-T may stimulate the immune system to exert a cytotoxic T-lymphocyte (CTL) immune response against the repertoire of tumor associated antigens (TAAs) found in the irradiated cancer cells. GM-CSF enhances the activation of dendritic cells (DCs) and promotes antigen presentation to both B- and T-lymphocytes.

**OvaRex :** Treatment that stops or lowers the amount of estrogen made by the ovaries. Types of ovarian ablation include surgery to remove both ovaries, radiation therapy, and the use of certain drugs. Ovarian ablation may be used to prevent and treat breast cancer. Also called ovarian suppression.

**ovarian :** A condition in which cells that may become cancer form in the thin layer of tissue that covers an ovary (female reproductive gland in which eggs are made). In this condition, tumor cells rarely spread outside of the ovary. Also called ovarian low malignant potential tumor.

**ovarian ablation :** Cancer that forms in tissues of the ovary (one of a pair of female reproductive glands in which the ova, or eggs, are formed). Most ovarian cancers are either ovarian epithelial cancers (cancer that begins in the cells on the surface of the ovary) or malignant germ cell tumors (cancer that begins in egg cells). Fallopian tube cancer and primary peritoneal cancer are similar to ovarian epithelial cancer and are staged and treated the same way.

**ovarian borderline malignant tumor :** Cancer that forms in the tissue covering the ovary (one of a pair of female reproductive glands in which eggs are made). Most ovarian cancers are ovarian epithelial cancers. Fallopian tube cancer and primary peritoneal cancer are similar to ovarian epithelial cancer and are staged and treated the same way. Also called epithelial ovarian cancer.

**ovarian cancer :** An abnormal mass of tissue that forms in germ (egg) cells in the ovary (female reproductive gland in which the eggs are formed).

These tumors usually occur in teenage girls or young women, usually affect just one ovary, and can be benign (not cancer) or malignant (cancer). The most common ovarian germ cell tumor is called dysgerminoma.

**ovarian cancer peptide vaccine:** A cancer vaccine comprised of synthetic peptides corresponding to naturally-occurring peptides derived from ovarian cancer cell antigens. Ovarian cancer peptide vaccine may elicit a cytotoxic T-cell response against tumor cells expressing the related ovarian cancer cell antigens.

**ovarian cancer stem cell/hTERT/survivin mRNAs-loaded autologous dendritic cell vaccine:** A cancer vaccine containing autologous dendritic cells (DCs) that are transfected with mRNAs extracted from amplified ovarian cancer stem cells, and mRNAs of the universal tumor antigens human telomerase reverse transcriptase (hTERT) and survivin with potential immunostimulatory and antineoplastic activities. Upon administration, ovarian cancer stem cell/hTERT/survivin mRNAs-loaded autologous DC-006 vaccine may elicit a highly specific cytotoxic T-cell (CTL) response against ovarian cancer cells expressing hTERT, survivin, and specific ovarian cancer stem cell antigens. hTERT, the catalytic subunit of human telomerase, and survivin, a member of the inhibitor of apoptosis (IAP) family of proteins, may be upregulated in certain tumor cell types, playing key roles in tumor cell growth and survival. Ovarian cancer stem cells contain a specific range of antigens that are essential for the neoplastic growth and survival of ovarian cancer cells. Check for active clinical trials using this agent.

**ovarian epithelial cancer :** A condition in which cells that may become cancer form in the thin layer of tissue that covers an ovary (female reproductive gland in which eggs are made). In this condition, tumor cells rarely spread outside of the ovary. Also called ovarian borderline malignant tumor.

**ovarian germ cell tumor :** A procedure done during radiation therapy in which a protective cover is placed on the outside of the body, over the area of the ovaries and other parts of the female reproductive system (ovaries, fallopian tubes, uterus, cervix, and vagina). This may prevent damage from radiation therapy. Ovarian shielding is a type of fertility preservation.

**ovarian low malignant potential tumor :** Treatment that stops or lowers the amount of estrogen made by the ovaries. Types of ovarian suppression

include surgery to remove both ovaries, radiation therapy, and the use of certain drugs. Ovarian suppression may be used to prevent and treat breast cancer. Also called ovarian ablation.

**ovarian shielding :** The process of freezing ovarian tissue to save for future infertility treatment. Part or all of an ovary is removed, and the tissue that contains the eggs is cut into thin slices and frozen. The tissue may later be thawed and placed back into the woman's body, usually on the remaining ovary. Ovarian tissue banking is a type of fertility preservation. It may be useful for women who want to have children after having treatment that may cause infertility, such as certain cancer treatments. Also called ovarian tissue cryopreservation and ovarian tissue freezing.

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**ovarian tissue cryopreservation :** A procedure used to help keep a woman fertile by preventing damage to the ovaries during radiation therapy. Before radiation therapy begins, one or both ovaries and fallopian tubes are separated from the uterus and attached to the wall of the abdomen away from where the radiation will be given. Ovarian transposition may be useful for women who want to have children after having radiation therapy that can cause infertility. It is a type of fertility preservation. Also called oophoropexy.

**ovarian tissue freezing :** One of a pair of female reproductive glands in which the ova, or eggs, are formed. The ovaries are located in the pelvis, one on each side of the uterus.

**ovarian transposition :** Too much thyroid hormone. Symptoms include weight loss, chest pain, cramps, diarrhea, and nervousness. Also called hyperthyroidism.

**ovarian tumor antigen-activated autologous dendritic cell vaccine:** A dendritic cell (DC)-based cancer vaccine composed of autologous dendritic cells (DCs) activated with an ovarian tumor cell lysate containing tumor-associated antigens (TAAs) with potential immunostimulatory and antineoplastic activities. Upon administration, the ovarian tumor antigen-activated autologous DC vaccine may stimulate an anti-tumoral cytotoxic T-lymphocyte (CTL) response against ovarian cancer cells expressing ovarian tumor cell-specific antigens, which may result in ovarian tumor cell lysis.

**ovary:** an endocrine gland that secretes estrogens. In plants, the structure of the pistil where the ovules are enclosed.

**ovary :** The length of time from either the date of diagnosis or the start of treatment for a disease, such as cancer, that patients diagnosed with the disease are still alive. In a clinical trial, measuring the overall survival is one way to see how well a new treatment works. Also called OS.

**OVax:** (Other name for: autologous dinitrophenyl-modified ovarian cancer vaccine)

**Ovcon:** (Other name for: ethinyl estradiol/norethindrone)

**Over Molding:** A process in which a mold cavity is first partially filled with one plastic, then a second shot is injected to encapsulate the first shot. OR A two-shot process, in which two plastic substances, are injected into a mold sequentially, usually a harder base material with a coating of softer material.

**over-the-counter :** Being too heavy for one's height. Excess body weight can come from fat, muscle, bone, and/or water retention. Being overweight does not always mean being obese.

**overactive thyroid :** The percentage of people in a study or treatment group who are still alive for a certain period of time after they were diagnosed with or started treatment for a disease, such as cancer. The

overall survival rate is often stated as a five-year survival rate, which is the percentage of people in a study or treatment group who are alive five years after their diagnosis or the start of treatment. Also called survival rate.

**overall survival :** Finding cases of cancer with a screening test (such as a mammogram or PSA test) that will never cause any symptoms. These cancers may just stop growing or go away on their own. Some of the harms caused by overdiagnosis are anxiety and having treatments that are not needed.

**overall survival rate :** An amount of drug that is more than what should be taken at one time.

**Overcap:** A cap (usually plastic) provided with some cans. It is used to cover the open end once the can has been opened. Sometimes, it is used to describe a cap which is used to cover the primary closure or other dispensing system, such as a fingertip sprayer or aerosol valve.

**Overcoating:** In extrusion coating, the practice of extruding a web beyond the edge of the substrate web.

**overdiagnosis :** In biology, to make too many copies of a protein or other substance. Overexpression of certain proteins or other substances may play a role in cancer development.

**overdose :** A group of genetic disorders in which there is an abnormal increase in the size of the body or a body part that is often noted at birth. Examples of overgrowth syndromes include neurofibromatosis, Sotos syndrome, Beckwith-Wiedemann syndrome, Simpson-Golabi-Behmel syndrome, Weaver syndrome, Proteus syndrome, Sturge-Weber syndrome, and fragile X syndrome. Many of these syndromes increase the risk of cancer.

**Overdrive :** The amount of slippage between the belt and the drum or cage, in a spiral system.

**overexpress :** Refers to a medicine that can be bought without a prescription (doctor's order). Examples include analgesics (pain relievers), such as aspirin and acetaminophen. Also called nonprescription and OTC.

**Overflow:** A designed escape reservoir for liquid silicone rubber, used to insure mold cavity fill and also allowance for excess compound, generally frowned upon because part requires post molding trimming

**Overflow:** A mass of material away from the part, typically at the end of fill, connected by a thin cross-section. The overflow is added to improve part quality and is removed as a secondary operation.

**Overflow capacity:** the capacity of a container to the top of the finish or to the point of overflow.

**overgrowth syndrome :** Treatment of a cancer that would have gone away on its own or never caused any symptoms. These cancers are usually found on a screening test. Overtreatment may lead to problems and harmful side effects from cancer therapies that are not needed.

**Overhead product:** the product that leaves the top of a distillation column. The overhead product is relatively rich in the most volatile components of the feed to the column.

**Overlap peptides:** Peptides resulting from the degradation of a protein by two different procedures that are subsequently sequenced; the sequence of a peptide from one degradation procedure frequently overlaps the sequences of two or more peptides of the other degradation procedure, thereby establishing the order of the peptides.

**overlap region:** the region in space where atomic or molecular orbitals overlap, creating an area of high electron density.

**Overpack :** melt will fill the easiest flow path first and will continue to pack this area while material reaches the other areas. This is a cause of warping created by unbalanced flow.

**overriding plate:** crustal plate which collides with a more dense plate and moves above the plate.

**overtreatment :** The release of an egg from an ovary during the menstrual cycle.

**overturned fold:** a fold whose limbs dip in the same direction, indicating that the upper part of the fold has overridden the lower part.

**overturning:** rock layers that are flipped upside-down during the mountain-building process.

**overweight :** A protein being studied in the treatment of cancer. Substances that attach to OX-40 on the surface of T cells (a type of white blood cell) may help the T cells grow and kill more cancer cells. OX-40 is a type of tumor necrosis factor (TNF) receptor. Also called CD134.

**Ovrette:** (Other name for: norgestrel)

**ovulation:** the process by which an egg cell is released from the follicle and swept into the Fallopian tube where it moves toward to uterus. OR A drug used with other drugs to treat colorectal cancer that is advanced or has come back. It is also being studied in the treatment of other types of cancer. Oxaliplatin attaches to DNA in cells and may kill cancer cells. It is a type of platinum compound. Also called Eloxatin.

**ovules:** the protective structures that contain egg cells produced by the female.

**OX-40:** A drug used to help patients gain weight after injury, chronic infection, or severe illness. It belongs to the family of drugs called anabolic steroids.

**oxaliplatin:** An organoplatinum complex in which the platinum atom is complexed with 1,2-diaminocyclohexane (DACH) and with an oxalate ligand as a 'leaving group.' A 'leaving group' is an atom or a group of atoms that is displaced as a stable species taking with it the bonding electrons. After displacement of the labile oxalate ligand leaving group, active oxaliplatin derivatives, such as monoquo and diaquo DACH platinum, alkylate macromolecules, forming both inter- and intra-strand platinum-DNA crosslinks, which result in inhibition of DNA replication and transcription and cell-cycle nonspecific cytotoxicity. The DACH side chain appears to inhibit alkylating-agent resistance. Check for active clinical trials using this agent. or A chemical reaction that takes place when a substance comes into contact with oxygen or another oxidizing substance. Examples of oxidation are rust and the brown color on a cut apple.

**oxaliplatin-encapsulated transferrin-conjugated N-glutaryl phosphatidylethanolamine liposome:** A nanoparticle formulation containing N-glutaryl phosphatidylethanolamine (NGPE)-liposomes encapsulating oxaliplatin and conjugated to the human transferrin (Tf) ligand, with potential antineoplastic activity. Upon infusion of oxaliplatin-encapsulated transferrin-conjugated NGPE liposomes, the transferrin moiety targets and binds to the Tf receptor, which is overexpressed on a variety of human cancer cells. Upon binding and internalization, oxaliplatin is released and its active derivatives alkylate macromolecules, forming both inter- and intra-strand platinum-DNA crosslinks, resulting in an inhibition of DNA replication and transcription. By extending the circulation time and specifically targeting transferrin receptors, this formulation may improve

the efficacy and safety of oxaliplatin therapy, compared to administration of oxaliplatin alone. NGPE, a reactive phospholipid, is used as a linker to attach the Tf ligand, to the liposome.

**Oxandrin:** (Other name for: oxandrolone)

**oxandrolone:** A synthetic, anabolic steroid hormone analog of testosterone. Similar to testosterone, oxandrolone binds to and activates specific nuclear receptors. This agent may be used for testosterone replacement therapy in hypogonadal men, in HIV-wasting syndrome, and in other conditions in order to increase nitrogen retention and fat-free muscle mass. or A chemical reaction that takes place between an oxidizing substance and a reducing substance. The oxidizing substance loses electrons in the reaction, and the reducing substance gains electrons. For example, rust forms when there is an oxidation-reduction reaction between oxygen contained in water or moist air (an oxidizing substance) and iron (a reducing substance). Oxidation-reduction reactions also occur when glucose (a type of sugar) and fat are broken down in the body to make energy. Also called redox.

**oxbow lake:** a body of water shaped roughly like a U and formed when a meander begins to close on itself and the stream breaks through and bypasses the meander.

**oxcarbazepine:** A dibenzazepine carboxamide derivative with an anticonvulsant property. As a prodrug, oxcarbazepine is converted to its active metabolite, 10-monohydroxy. Although the mechanism of action has not been fully elucidated, electrophysiological studies indicate this agent blocks voltage-gated sodium channels, thereby stabilizing hyper-excited neural membranes, inhibiting repetitive neuronal firing, and decreasing the propagation of synaptic impulses.

**Oxecta:** (Other name for: oxycodone hydrochloride)

**Oxepa:** (Other name for: gluten-free DHA/EPA/GLA/antioxidant-rich nutritional liquid)

**oxidant:** a chemical agent that oxidizes.

**oxidation :** A chemical process in which oxygen is used to make energy from carbohydrates (sugars). Also called aerobic metabolism, aerobic respiration, and cell respiration.

**Oxidation** : A reaction in which oxygen is added to a substance. For every oxidation, there is always a reduction (something losing oxygen) of some kind. OR The addition of oxygen to a compound or the reduction of hydrogen. OR In respect to polyethylene, the reaction of air or oxygen in polyethylene causing the formation of hydroxy groups which affects the physical properties adversely. OR the addition of oxygen to a compound or the reduction of hydrogen. OR Oxidation is the loss of one or more electrons by an atom, molecule, or ion. Oxidation is accompanied by an increase in oxidation number on the atoms, molecules, or ions that lose electrons. OR The loss of electrons from a compound. OR the loss of electrons by an atom in a covalent bond. In organic reactions, this occurs when a compound accepts additional oxygen atoms. OR in a broad sense oxidation is the increase in positive valence of any element in a substance. On the basis of the electron theory, oxidation is a process in which an element loses electrons. In a narrow sense, oxidation means the chemical addition of oxygen to a substance. OR A process in which an electron is lost by an atom, molecule or ion. OR This is when an atom loses one or more electrons. Scientists may also use the term when describing ions or molecules. OR A chemical reaction which increases the oxygen content of a compound. In metal-working, oxidation usually leads to viscosity increases and deposit formation. OR Oxidation is the loss of electrons from an atom or ion (or addition of oxygen in a reaction). OR Chemical reaction upon exposure to oxygen. Some coatings cure by oxidation, when oxygen enters the liquid coating and cross-links the resin molecules. This film-forming method is also called "Air Cure" and "Air Dry." (Oxidation also causes rust on bare metals.) OR The process whereby substances combine with oxygen. Oil paints dry by oxidation of the oil content. OR the loss of electrons by a species.

**oxidation half reaction:** That part of a redox reaction that involves loss of electrons. In the oxidation half reaction, the oxidation number of one or more atoms within the reactants is increased.

**oxidation number:** A number assigned to each atom to help keep track of the electrons during a redox-reaction. OR a signed integer representing the real or hypothetical charge on an atom. OR A convention for representing a charge of an atom embedded within a compound, if the compound were purely ionic. For example, H<sub>2</sub>O is a covalent compound; if it were ionic, the hydrogens would be H<sup>+</sup> (oxidation number +1) and the oxygen would

be O<sup>2-</sup> (oxidation number -2). Oxidation number rises for at least one atom in a compound that is oxidized; oxidation number becomes smaller if the compound is reduced.

**OXIDATION NUMBERS or VALENCES:** are the number of electrons lost, gained or shared in a chemical reaction. Free elements have zero as an oxidation number.

**oxidation reaction:** A reaction where a substance loses electrons. OR A reaction that transfers electrons. OR A reaction in which electrons are transferred from a donor to an acceptor molecule; also called a redox reaction. OR A reaction involving the transfer of electrons.

**oxidation-reduction :** A condition in which antioxidant levels are lower than normal. Antioxidant levels are usually measured in blood plasma.

**oxidation,  $\beta$ :** See  $\beta$  oxidation.

**oxidative metabolism :** A type of chemical substance that is a combination of oxygen and another substance. Oxides are found in essential oils.

**Oxidative phosphorylation:** The formation of ATP as the result of the transfer of electrons to oxygen. OR The process in which ATP is formed as a result of the transfer of electrons from NADH or FADH<sub>2</sub> to O<sub>2</sub> by a series of electron carriers. OR The enzymatic phosphorylation of ADP to ATP coupled to electron transfer from a substrate to molecular oxygen.

**oxidative stress :** To cause oxidation (a chemical reaction that takes place when a substance comes into contact with oxygen or another oxidizing substance).

**oxide:** a compound of oxygen and another element. OR The new substance that is formed when a substance has reacted with oxygen. OR A binary compound that contains oxygen in the -2 oxidation state.

**oxide :** A drug used to treat moderate to severe pain. It is made from morphine and binds to opioid receptors in the central nervous system. Oxycodone hydrochloride is a type of analgesic agent and a type of opiate.

**Oxide layer :** Some metals (like iron) have oxides that crumble away to expose new metal. Some metals (aluminium and titanium are two good examples) form oxide layers that are tough and protect the metal from further attack. Think about the position of aluminium in the reactivity series (very high) but yet it is used to make window frames that have to resist corrosion for many years. If you want to see the true reactivity of

aluminium ask your teacher to show you aluminium in water once it has had its oxide layer removed by reaction with mercury

**Oxide Mineral:** A mineral that is made up of compounds with an oxygen atom bonded to a metal. A ruby is a good example of an oxide mineral.

**oxidize :** A colorless, odorless gas. It is needed for animal and plant life. Oxygen that is breathed in enters the blood from the lungs and travels to the tissues.

**oxidized avidin:** An oxidized form of the glycoprotein avidin, that can be used as a linking agent for tissue-pretargeted radionuclide therapy. Upon intralesional administration, the aldehyde groups of oxidized avidin strongly bind to the amino groups on tissue proteins, via the formation of Schiff bases. As avidin is able to strongly bind to biotin, intravenous administration of radiolabeled biotin may lead to the selective eradication of the pre-targeted tumor cells.

**Oxidizer:** An oxidizer can also be called an oxidizing agent. It is something that can oxidize another substance. Some major oxidizing elements are chlorine and oxygen.

**oxidizing:** This adjective applied to a chemical is a substance which gives off oxygen to another substance. Oxidizing chemicals may increase and sustain fires. For example, chemicals belonging to following groups may act as oxidizers bromates, chlorates, chromates, dichromates, iodates, nitrates, oxides, perborate, perbromates, perchlorates, periodates, permanganates and peroxides.

**oxidizing agent:** The acceptor of electrons in an oxidation-reduction reaction. OR A reactant that removing electrons from other reactants in a chemical reaction. Oxidizing agents cause other substances to be oxidized in chemical reactions while they themselves are reduced. For example, nitrate ion is an oxidizing agent in the following reaction:

**Oxido-reductase:** An enzyme that catalyzes oxidation-reduction reactions.

**oxirane:** a three-membered ring that contains oxygen; also called an epoxide ring.

**oxitriptan:** An aromatic amino acid with antidepressant activity. In vivo, oxitriptan is converted into 5-hydroxytryptamine (5-HT or serotonin) as well as other neurotransmitters. Oxitriptan may exert its antidepressant activity via conversion to serotonin or directly by binding to serotonin (5-

HT) receptors within the central nervous system (CNS). Endogenous 5-hydroxytryptophan (5-HTP) is produced from the essential amino acid L-tryptophan. Exogenous therapeutic 5-HTP is isolated from the seeds of the African plant *Griffonia simplicifolia*.

**Oxo-or oxy-:** Prefixes meaning oxygen-containing

**oxoacid:** When one or more hydroxide (OH) groups are bonded to a central atom.

**oxonium ion:** a positively charged oxygen atom.

**OxPhos Inhibitor VLX600:** A lipophilic cation-based triazinoindolyl-hydrazone compound and mitochondrial oxidative phosphorylation (OxPhos) inhibitor, with potential antineoplastic activity. Upon infusion, in normal cells and proliferating tumor cells where glucose is readily available, inhibition of OxPhos by VLX600 induces a hypoxia-inducible factor 1-alpha (HIF-1alpha)-dependent shift to, and an increase in glycolysis. Glycolysis alone does not produce enough energy to support the growth of tumor cells in this environment, and the induction of autophagy occurs. In the metabolically compromised tumor microenvironment, the availability of oxygen and glucose is limited due to poor vascularization and perfusion of tumor micro-areas. Tumor cells growing in this environment are thus unable to compensate for decreased mitochondrial function by increasing glycolysis. This leads to nutrient depletion, decreased energy production, induction of autophagy, tumor cell death and an inhibition of cell proliferation in quiescent tumor cells. Mitochondrial OxPhos, which is hyperactivated in cancer cells, plays a key role in the promotion of cancer cell proliferation. Check for active clinical trials using this agent.

**Oxsoralen:** (Other name for: methoxsalen)

**Oxsoralen-Ultra:** (Other name for: methoxsalen)

**Oxyanion hole:** A region on certain proteolytic enzymes that stabilizes the oxyanion constituent of the tetrahedral intermediate of the reaction.

**oxycodone hydrochloride:** The hydrochloride salt of oxycodone, a methylether of oxymorphone and semisynthetic opioid agonist with analgesic and antitussive properties. Oxycodone binds to mu-receptors in the central nervous system (CNS), thereby mimicking the effects of endogenous opiates. In addition to analgesia and a depressive effect on the

cough center in the medulla, this agent may cause euphoria, anxiolysis, miosis, sedation, physical dependence, constipation, and respiratory depression, depending on dosage and variations in individual metabolism. or A type of unstable molecule that contains oxygen and that easily reacts with other molecules in a cell. A build up of oxygen radicals in cells may cause damage to DNA, RNA, and proteins, and may cause cell death. An oxygen radical is a free radical. Also called reactive oxygen species.

**oxycodone hydrochloride/naloxone hydrochloride prolonged-release tablet:** A prolonged-release tablet formulation composed of the hydrochloride salt form of the opioid receptor agonist oxycodone and the hydrochloride salt form of the opioid receptor antagonist naloxone which may produce analgesia while relieving opioid-mediated gastrointestinal (GI) side effects. Upon oral administration, oxycodone binds to opioid receptors, thereby mimicking the effects of endogenous opiates to provide analgesia. As naloxone is very poorly absorbed, this agent binds locally to opiate receptors in the GI tract, thereby preventing oxycodone from binding to these receptors. This relieves the opioid-related side effects on the GI tract, including opioid-induced constipation. Check for active clinical trials using this agent.

**oxycodone/acetaminophen:** A combination preparation of the analgesic and antipyretic acetaminophen and the semisynthetic opioid agonist oxycodone with analgesic and antitussive properties. Acetaminophen exerts its analgesic activity by inhibiting prostaglandin synthesis, while oxycodone exerts its analgesic activity by binding to the mu-receptors in the central nervous system (CNS), thereby mimicking the effects of endogenous opioids. Check for active clinical trials using this agent.

**OxyContin:** (Other name for: oxycodone hydrochloride)

**Oxygen:** Symbol:"O" Atomic Number:"8" Atomic Mass: 16.00amu. Oxygen is a gas and is classified as a non-metal. It is found in the crust of the Earth and in the air. Animals need oxygen to survive. It is also very reactive. You will also find it in ozone and plastics. OR Element 8, atomic weight 15.9994, a colorless, odorless gas that makes up about 1/5 of the earth's atmosphere and (in combined form) 8/9ths of earth's oceans and almost half of the earth's crust. The name is derived from the French oxygène, which means "acid generating".

**oxygen :** A test that measures the amount of oxygen being carried by red blood cells. One method uses a device that shines light through a finger. The device measures the amount of oxygen in the blood based on the way red blood cells carrying oxygen absorb and reflect light. In another method blood is taken from an artery and the amount of oxygen is measured directly. An oxygen level that is lower than normal may be a sign of lung disease or other medical conditions.

**oxygen debt:** The extra oxygen (above the normal resting level) consumed in the recovery period after strenuous physical exertion.

**Oxygen Index :** A flammability test based on the principle that a certain volumetric concentration of oxygen is necessary to maintain combustion of a specimen after it has been ignited.

**oxygen radical :** Treatment in which a storage tank of oxygen or a machine called a compressor is used to give oxygen to people with breathing problems. It may be given through a nose tube, a mask, or a tent. The extra oxygen is breathed in along with normal air. Also called supplemental oxygen therapy.

**oxygen saturation test :** A drug used to treat moderate to severe pain. It is also used as a sedative before surgery, to help with anesthesia during surgery, during labor, and to treat anxiety caused by some medical conditions. It is made from morphine and binds to opioid receptors in the central nervous system. Oxymorphone hydrochloride is a type of opioid and a type of analgesic agent. Also called Numorphan and Opana.

**oxygen therapy :** Funds awarded to certain U.S. institutions by the National Cancer Institute (NCI) for them to become cancer centers in the United States, based on scientific merit. The funds help the cancer centers improve the way they are run and develop new ways to prevent, diagnose, and treat cancer. To receive the award, one goal of the cancer center must be to turn clinical and basic research into better health care. Also called CCSG.

**Oxygen-dissociation curve:** A plot of the oxygen-binding capacity of a protein versus the partial pressure of oxygen.

**oxygenases:** Enzymes that catalyze reactions in which oxygen is introduced into an acceptor molecule.

**oxygenates:** Liquid organic compounds that can be blended into gasoline to increase its oxygen content; during combustion, this additional oxygen

reduces the output of CO and may reduce emissions of ozone-forming materials. The two major oxygenates in use today are ethanol and MTBE.

**oxymorphone hydrochloride:** The hydrochloride salt form of oxymorphone, a semisynthetic opioid with a potent analgesic property. Oxymorphone hydrochloride binds to and activates opiate receptors, specifically mu-receptors, in the central nervous system (CNS). This results in sedation, analgesia, decreased gastrointestinal motility, and respiratory depression. or A radioactive form of the element phosphorus used in the treatment of cancer.

**ozarelix:** A highly modified, fourth generation linear decapeptide with gonadotropin-releasing hormone (GnRH or LHRH) antagonizing properties. Ozarelix competitively binds to and blocks the gonadotropin releasing hormone receptor in the anterior pituitary gland, thereby inhibiting the secretion and release of luteinizing hormone (LH) and follicle stimulating hormone (FSH). In males, the inhibition of LH secretion prevents the release of testosterone. As a result, this may relieve symptoms associated with hormonally dependent disease states such as hormone-dependent prostate cancer.

**ozone:** oxygen in molecular form with three atoms of oxygen forming each molecule (O<sub>3</sub>). Atmospheric oxygen is molecular in form but each molecule contains only two atoms of oxygen. Ozone is formed by passing high voltage electric charges through dry air. The third atom of oxygen in each molecule of ozone is loosely bound and is easily released, thus making it a powerful oxidant; used to purify water and treat industrial wastes. OR The allotrope of oxygen that contains 3 atoms in one molecule, the formula for ozone being O<sub>3</sub>. OR A molecule made up of three atoms of oxygen. In the stratosphere, it occurs naturally and it provides a protective layer shielding the Earth from ultraviolet radiation and subsequent harmful health effects on humans and the environment. In the troposphere, it is a chemical oxidant and major component of photochemical smog.

**ozone layer:** An atmosphere layer at about 20 to 30 miles high (32 to 48 km), normally characterized by high ozone content, which blocks most solar UV radiation from entering the lower atmosphere.

**Ozone Resistance:** Ability to withstand the deteriorating effect of ozone, which generally causes cracking

**ozonide:** a compound formed by the addition of ozone to a double bond.

**ozonolysis:** the cleavage of double and triple bonds by ozone, O<sub>3</sub>.

**Ozurdex:** (Other name for: dexamethasone intravitreal implant)

**P body wave:** a compressional (longitudinal) body wave that induces rock to vibrate parallel to the direction the wave is traveling.

**P-32:** A health professional who is licensed to do certain medical procedures under the guidance of a doctor. A PA may take medical histories, do physical exams, take blood and urine samples, care for wounds, and give injections and immunizations. Also called physician assistant.

**p-cadherin antagonist PF-03732010:** An agent that inhibits p-cadherin (cdh3), with potential antineoplastic activity. PF-03732010 binds to and inhibits the activity of p-cadherin. Inhibition of the activity of p-cadherin may inhibit tumor cell invasion and proliferation in p-cadherin expressing tumor cells. P-cadherin, a cell-surface protein and member of the cadherin family, is overexpressed in a variety of solid tumors, and plays a role in cell adhesion, motility, invasion and proliferation.

**P-cadherin inhibitor PCA062:** An agent that inhibits p-cadherin, with potential antineoplastic activity. Upon intravenous infusion, PCA062 binds to and inhibits the activity of p-cadherin. Inhibition of the activity of p-cadherin may inhibit both invasion and proliferation of p-cadherin expressing tumor cells. P-cadherin, a cell-surface protein and member of the cadherin family, is overexpressed in a variety of tumors and plays a role in cell adhesion, motility, invasion, and proliferation.

**P-cadherin-targeting agent PF-06671008:** An agent that targets p-cadherin (CDH3), with potential antineoplastic activity. Upon administration, PF-06671008 binds to and inhibits the activity of p-cadherin; this may inhibit both invasion and proliferation of p-cadherin-expressing tumor cells. P-cadherin, a cell-surface protein and member of the cadherin family, is overexpressed in a variety of tumors and plays a role in cell adhesion, motility, invasion, and proliferation.

**p-glycoprotein :** A protein that pumps substances out of cells. Cancer cells that have too much p-glycoprotein may not be killed by anticancer drugs.

**P-glycoprotein inhibitor HM30181AK:** An inhibitor of the adenosine triphosphate (ATP)-binding cassette (ABC) transporter P-glycoprotein (P-gp), with adjuvant activity. Upon oral administration, P-gp inhibitor

HM30181AK selectively binds to and inhibits the multidrug resistance (MDR) efflux pump P-gp, which prevents the efflux of various chemotherapeutic agents from intestinal epithelial cells to the gastrointestinal tract. This leads to an increase in both oral bioavailability and therapeutic efficacy. P-gp prevents the intestinal uptake and intracellular accumulation of various cytotoxic agents. HM30181AK is not systemically absorbed.

**P-loop:** A component, characteristic of nucleotide-binding proteins, of the NTP-binding domain that interacts with the phosphoryl groups of a bound nucleotide.

**P-p68 inhibitor RX-5902:** An orally bioavailable small molecule inhibitor of phosphorylated-p68 RNA helicase (P-p68), with potential anti-proliferative and antineoplastic activity. Upon oral administration, P-p68 inhibitor RX-5902 may both inhibit the activity of the anti-apoptotic B-cell lymphoma 2 (Bcl-2) protein and facilitate the induction of cyclin-dependent kinase inhibitor 1 (p21). This may prevent G2/M cell cycle progression and lead to growth inhibition in tumor cells. P-p68 is overexpressed in various types of solid tumors but absent in normal tissues, and plays a role in tumor progression and metastasis. p21 is a potent cyclin-dependent kinase inhibitor which regulates cell cycle progression and mediates both growth arrest and cellular senescence.

**P-type atpases:** A family of enzymes that use the energy of hydrolysis to move ions across membranes; called “P-type atpases” because the reaction mechanism includes a phosphoaspartate intermediate.

**p-value :** A term in statistics. It helps show whether a difference found between groups that are being compared is due to chance. A small p-value usually means that the difference between groups is not due to chance alone, but is due to some other factor, such as a treatment one of the groups received. A large p-value usually means that the difference between groups is probably due to chance alone.

**P-wave shadow zone:** that area on the earth's surface in which P waves from an earthquake cannot be detected.

**P-waves:** primary waves generated by an earthquake; these compression waves are the fastest and travel through solids, liquids, and gases.

**p.DOM-WT1-126 DNA vaccine:** A fusion DNA vaccine containing the first domain of fragment C (FrC) of tetanus toxin (TT865-1120) (p.DOM)

fused to the human Wilms' Tumor gene-1 (WT1)-derived MHC class I-binding epitope WT1.126, with potential antitumor activity. Upon vaccination with p.DOM-WT1-126 DNA and subsequent electroporation, this vaccine may induce a WT1 epitope-specific cytotoxic T-lymphocyte (CTL) response against WT1 expressing cells, resulting in cell lysis and inhibition of cancer cell proliferation in WT1-overexpressing cancer cells. WT1, a tumor associated antigen, is overexpressed in most types of leukemia and in a variety of solid cancers. The FrC of tetanus toxin contains the MHC II-binding sequence, p30, which induces T-helper cell activation for long-lasting immunity. Check for active clinical trials using this agent.

**p.DOM-WT1-37 DNA vaccine:** A fusion DNA vaccine containing the first domain of fragment C (FrC) of tetanus toxin (TT865-1120) (p.DOM) fused to the human Wilms' Tumor gene-1 (WT1)-derived MHC class I-binding epitope WT1.37, with potential antitumor activity. Upon vaccination with p.DOM-WT1-37 DNA and subsequent electroporation, this vaccine may induce a WT1 epitope-specific cytotoxic T-lymphocyte (CTL) response against WT1 expressing cells, resulting in cell lysis and inhibition of cancer cell proliferation in WT1-overexpressing cancer cells. WT1, a tumor associated antigen, is overexpressed in most types of leukemia and in a variety of solid cancers. The FrC of tetanus toxin contains the MHC II-binding sequence, p30, which induces T-helper cell activation for long-lasting immunity. Check for active clinical trials using this agent.

**p110beta/delta PI3K Inhibitor GS-9820:** An inhibitor of the beta and delta isoforms of the 110 kDa catalytic subunit of class IA phosphoinositide-3 kinases (PI3K) with potential immunomodulating and antineoplastic activities. p110beta/delta PI3K inhibitor GS-9820 inhibits the activity of PI3K, thereby preventing the production of the second messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3), which decreases tumor cell proliferation and induces cell death. PI3K-mediated signaling is often dysregulated in cancer cells; the targeted inhibition of PI3K is designed to preserve PI3K signaling in normal, non-neoplastic cells.

**P30 Cancer Center Support Grant :** A tumor suppressor gene that normally inhibits the growth of tumors. This gene is altered in many types of cancer.

**p38 MAPK inhibitor LY2228820 dimesylate:** The dimesylate salt form of LY2228820, a tri-substituted imidazole derivative and orally available, p38 mitogen-activated protein kinase (MAPK) inhibitor with potential anti-inflammatory and antineoplastic activities. Upon administration, LY2228820 inhibits the activity of p38, particularly the alpha and beta isoforms, thereby inhibiting MAPKAPK2 phosphorylation and preventing p38 MAPK-mediated signaling. This may inhibit the production of a variety of cytokines involved in inflammation, cellular proliferation and angiogenesis such as tumor necrosis factor alpha (TNF $\alpha$ ), interleukin (IL)-1, -6 and -8, vascular endothelial growth factor, and macrophage inflammatory protein-1 alpha. Ultimately this induces apoptosis and reduces tumor cell proliferation. In addition, inhibition of the p38 MAPK pathway by LY2228820 increases the antineoplastic activity of certain chemotherapeutic agents. p38 MAPK, a serine/threonine protein kinase that is often upregulated in cancer cells, plays a crucial role in tumor cell proliferation, angiogenesis and metastasis.

**p38 MAPK inhibitor LY3007113:** An orally active p38 mitogen-activated protein kinase (MAPK) inhibitor with potential immunomodulating, anti-inflammatory, and antineoplastic activity. Upon administration, LY3007113 inhibits the activity of p38, thereby preventing p38 MAPK-mediated signaling. This may result in the inhibition of the production of proinflammatory cytokines and the induction of tumor cell apoptosis. p38 MAPK, a serine/threonine protein kinase often upregulated in cancer cells, plays a crucial part in the production of a variety of cytokines involved in inflammation and cellular proliferation such as tumor necrosis factor (TNF) and interleukin (IL)-1 and -6.

**p38/Tie2 kinase inhibitor Arry-614:** An orally bioavailable small-molecule inhibitor of p38 and Tie2 kinases with potential antineoplastic, anti-inflammatory and antiangiogenic activities. p38/Tie2 kinase inhibitor Arry-614 binds to and inhibits the activities of p38 and Tie2 kinases, which may inhibit the production of proinflammatory cytokines and may decrease tumor angiogenesis and tumor cell growth and survival. p38 is a MAP kinase that is often upregulated in cancer cells, playing a crucial part in the production of a variety of cytokines involved in inflammation and cellular proliferation such as tumor necrosis factor (TNF) and interleukin (IL)-1 and -6. Tie2 is an endothelial cell specific receptor that is activated by angiopoietins, growth factors required for angiogenesis. This agent has also

been reported to inhibit other kinases including vascular endothelial growth factor receptor (VEGFR2) and Src tyrosine kinases.

**p53 gene :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Bacteria that live in the intestines need PABA to survive. PABA is found in grains and foods from animals. It is being studied as a radiosensitizer (a substance that makes tumor cells more sensitive to radiation therapy) and in the treatment of certain skin disorders. Also called aminobenzoic acid and para-aminobenzoic acid.

**p53 peptide vaccine:** A peptide-based cancer vaccine composed of amino acids 264 to 272 of the wild-type protein encoded by the P53 gene. p53 peptide vaccine may elicit an HLA-A2.1-restricted cytotoxic T lymphocyte immune response against tumor cells that overexpress p53 protein.

**p53 synthetic long peptide (70-251) vaccine:** A peptide vaccine consisting of 10 synthetic long peptides (SLPs), 25-30 amino acids in size and derived from the middle portion of p53 (amino acids 70-251), mixed with the adjuvant Montanide ISA-51 with potential immunostimulatory and antitumor activities. Upon administration, p53 synthetic long peptide (70-251) vaccine may stimulate the host immune system to mount a cytotoxic T-cell lymphocyte (CTL) response against p53-expressing tumor cells. p53, a tumor associated antigen (TAA), may be overexpressed in variety of cancer cell types.

**p53-HDM2 protein-protein interaction inhibitor MI-773:** An orally available spiro-oxindole HDM2 (human double minute 2) antagonist with potential antineoplastic activity. Upon oral administration, the p53-HDM2 protein-protein interaction inhibitor MI-773 binds to HDM2, preventing the binding of the HDM2 protein to the transcriptional activation domain of the tumor suppressor protein p53. By preventing this HDM2-p53 interaction, the proteasome-mediated enzymatic degradation of p53 is inhibited and the transcriptional activity of p53 is restored, which may result in the restoration of p53 signaling and lead to the p53-mediated induction of tumor cell apoptosis. HDM2, a zinc finger protein and a negative regulator of the p53 pathway, is often overexpressed in cancer cells. It has been implicated in cancer cell proliferation and survival.

**p53/HDM2 interaction inhibitor CGM097:** An orally bioavailable HDM2 (human homolog of double minute 2) antagonist with potential

antineoplastic activity. Upon oral administration, p53/HDM2 interaction inhibitor CGM097 inhibits the binding of the HDM2 protein to the transcriptional activation domain of the tumor suppressor protein p53. By preventing this HDM2-p53 interaction, the proteasome-mediated enzymatic degradation of p53 is inhibited, which may result in the restoration of p53 signaling and, thus, the p53-mediated induction of tumor cell apoptosis. HDM2, a zinc finger nuclear phosphoprotein, is a negative regulator of the p53 pathway, often overexpressed in cancer cells and has been implicated in cancer cell proliferation and survival.

**P680:** A special pair of molecules in photosystem II in green plants; absorption of light by P680 results in the transfer of electrons from water to plastoquinone, which generates a proton gradient.

**P700:** A special pair of molecules in photosystem I in green plants; absorption of light by P700 results in the transfer of electrons that generates ferredoxin and, ultimately, NADPH.

**p70S6K inhibitor LY2584702:** An orally available inhibitor of p70S6K signaling, with potential antineoplastic activity. p70S6K inhibitor LY2584702 inhibits ribosomal protein S6 Kinase (p70S6K), and prevents phosphorylation of the S6 subunit of ribosomes, thereby inhibiting normal ribosomal function within tumor cells leading to a decrease in protein synthesis and in cellular proliferation. P70S6K, a serine/threonine kinase, acts downstream of PIP3 and phosphoinositide-dependent kinase-1 in the PI3 kinase pathway, is often upregulated in a variety of cancer cells, and is involved in the regulation of cell growth, proliferation, motility, and survival.

**p70S6K/Akt inhibitor MSC2363318A:** An orally available inhibitor of the serine/threonine protein kinases ribosomal protein S6 Kinase (p70S6K) and Akt (protein kinase B), with potential antineoplastic activity. Upon administration, p70S6K/Akt inhibitor MSC2363318A binds to and inhibits the activity of p70S6K and Akt. This prevents the activation of the PI3K/Akt/p70S6K signaling pathway and inhibits tumor cell proliferation in cancer cells that have an overactivated PI3K/Akt/p70S6K signaling pathway. Constitutive activation and dysregulated signaling of the PI3K/Akt/p70S6K pathway are frequently associated with tumorigenesis of many tumor types; targeting multiple kinases in this pathway is more efficacious than targeting a single kinase.

**P960:** A dimer of bacterial chlorophyll-b molecules, called the special pair, that absorbs light maximally at 960 nm; initiates charge separation in bacterial photosynthesis.

**p97 inhibitor CB-5083:** An orally bioavailable inhibitor of valosin-containing protein (VCP) p97, with potential antineoplastic activity. Upon oral administration, CB-5083 specifically binds to and inhibits the activity of p97. This prevents ubiquitin-dependent protein degradation and causes cellular accumulation of poly-ubiquitinated proteins. The inhibition of endoplasmic reticulum (ER)-associated protein degradation activates the ER-dependent stress response pathway, and leads to both an induction of apoptosis and inhibition of cell proliferation in susceptible tumor cells. p97, a type II AAA ATPase, plays a key role in cellular protein homeostasis. Its overexpression in many tumor cell types is associated with increased tumor cell proliferation and survival.

**PA:** Polyamide (nylon) OR An electronic device that is implanted in the body to monitor heart rate and rhythm. It gives the heart electrical stimulation when it does not beat normally. It runs on batteries and has long, thin wires that connect it to the heart. Also called artificial pacemaker and cardiac pacemaker.

**PABA :** A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden heliotrope, garden valerian, Indian valerian, Mexican valerian, valerian, *Valeriana officinalis*, and *Valeriana radix*.

**pacemaker :** A way to measure the amount a person has smoked over a long period of time. It is calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked. For example, 1 pack year is equal to smoking 1 pack per day for 1 year, or 2 packs per day for half a year, and so on.

**Pacific valerian :** A drug used to treat breast cancer, ovarian cancer, and AIDS-related Kaposi sarcoma. It is also used together with another drug to treat non-small cell lung cancer. Paclitaxel is also being studied in the treatment of other types of cancer. It blocks cell growth by stopping cell division and may kill cancer cells. It is a type of antimetabolic agent. Also called Taxol.

**Pacinian corpuscles:** the touch and pain receptors on the skin, muscles, and tendons.

**Pack Out:** The filling of the liquid silicone mold cavity or cavities as full as possible without causing undue stress on the silicone mold or causing flash to appear on the finished parts

**pack year :** A drug used to treat breast cancer that has come back or spread to other parts of the body. It is also used with carboplatin to treat advanced non-small cell lung cancer in patients who are not able to have surgery or radiation therapy. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that has spread to other parts of the body. It is being studied in the treatment of other types of cancer. Paclitaxel albumin-stabilized nanoparticle formulation is a form of the anticancer drug paclitaxel and may cause fewer side effects than paclitaxel. It stops cancer cells from growing and dividing, and may kill them. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called ABI-007, Abraxane, nanoparticle paclitaxel, and protein-bound paclitaxel.

**Packer:** packers are wide-mouth bottles typically used for pills, capsules and tablets. B&C Plastics Ltd. makes several different styles of packers, including rounds (also called pharma rounds), oblongs (with square bases) and apothecary styles (with concave shoulder areas) in both pet and hdpe. OR The filling of the mold cavity or cavities as full as possible without causing undue stress on the molds or causing flash to appear on the finished parts.

**Packing:** See Crystal packing.

**Packing ratio:** The degree of condensation of DNA in chromatin; the ratio of linear DNA to the length of the packaged DNA; the packing ratio of metaphase human chromosomes is 104.

**paclitaxel:** A compound extracted from the Pacific yew tree *Taxus brevifolia* with antineoplastic activity. Paclitaxel binds to tubulin and inhibits the disassembly of microtubules, thereby resulting in the inhibition of cell division. This agent also induces apoptosis by binding to and blocking the function of the apoptosis inhibitor protein Bcl-2 (B-cell Leukemia 2).

**paclitaxel :** A form of the anticancer drug paclitaxel that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of several types of

cancer. Paclitaxel liposome blocks the ability of cells to divide and may kill cancer cells. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called LEP-ETU, liposomal paclitaxel, LipoTaxen, and PNU-93914.

**paclitaxel albumin-stabilized nanoparticle formulation:** A Cremophor EL-free, albumin-stabilized nanoparticle formulation of the natural taxane paclitaxel with antineoplastic activity. Paclitaxel binds to and stabilizes microtubules, preventing their depolymerization and so inhibiting cellular motility, mitosis, and replication. This formulation solubilizes paclitaxel without the use of the solvent Cremophor, thereby permitting the administration of larger doses of paclitaxel while avoiding the toxic effects associated with Cremophor.

**paclitaxel albumin-stabilized nanoparticle formulation :** A form of the anticancer drug paclitaxel combined with a protein called poliglumex that may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of breast cancer, ovarian cancer, lung cancer, and other types of cancer. It belongs to the family of drugs called mitotic inhibitors. Also called CT-2103, paclitaxel polyglutamate, and Xyotax.

**paclitaxel injection concentrate for nanodispersion:** A nanoparticle-based injectable concentrate containing the water-insoluble taxane paclitaxel, with potential antineoplastic activity. Upon reconstitution and administration, paclitaxel binds to tubulin and inhibits the disassembly of microtubules, thereby resulting in the inhibition of cell division. Compared to paclitaxel alone, the nanodispersion-based formulation uses less toxic solvents and allows for administration of higher doses resulting in higher concentrations of paclitaxel at the tumor site, and an increased safety profile. Check for active clinical trials using this agent.

**paclitaxel liposome :** A form of the anticancer drug paclitaxel combined with a protein called poliglumex that may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of breast cancer, ovarian cancer, lung cancer, and other types of cancer. It belongs to the family of drugs called mitotic inhibitors. Also called CT-2103, paclitaxel poliglumex, and Xyotax.

**paclitaxel poliglumex:** The agent paclitaxel linked to a biodegradable, water-soluble polyglutamate polymer with antineoplastic properties. The polyglutamate residue increases the water solubility of paclitaxel and allows

delivery of higher doses than those achievable with paclitaxel alone. Paclitaxel promotes microtubule assembly and prevents microtubule depolymerization, thus interfering with normal mitosis. or A form of the anticancer drug paclitaxel used to treat breast cancer, ovarian cancer, and AIDS-related Kaposi sarcoma. It is also used with another drug to treat non-small cell lung cancer. Paclitaxel is mixed with very tiny particles of a substance that makes it easier to dissolve in water. This allows higher doses of paclitaxel to be given. It is a type of antimetabolic agent.

**paclitaxel polyglutamate :** An abbreviation for a chemotherapy combination used to treat multiple myeloma. It includes the drugs bortezomib, doxorubicin (Adriamycin), and dexamethasone. Also called PAD regimen.

**paclitaxel vitamin E-based emulsion formulation:** A cremophor-free, P-glycoprotein-inhibiting, vitamin E-based emulsion particle formulation of paclitaxel with antineoplastic activity. Paclitaxel binds to tubulin and inhibits the disassembly of microtubules, thereby resulting in the inhibition of cell division. This agent also induces apoptosis by binding to and blocking the function of the apoptosis inhibitor protein Bcl-2 (B-cell Leukemia 2). The vitamin-E based emulsion allows bolus infusion without steroid premedication and may diminish hypersensitivity reactions; tumor tissue may be passively targeted due to preferential deposition of emulsion particles while an emulsion formulation component inhibits the P-glycoprotein drug efflux pump. Check for active clinical trials using this agent.

**paclitaxel-loaded polymeric micelle:** A biodegradable poly(ethylene glycol)-poly(D,L-lactide) copolymer micellar nanoparticle-entrapped formulation of paclitaxel with antineoplastic activity. Paclitaxel promotes microtubule assembly and prevents depolymerization, thus interfering with normal mitosis. The copolymer residue increases the water-solubility of paclitaxel and allows delivery of higher doses than those achievable with paclitaxel alone. or An abbreviation for a chemotherapy combination used to treat multiple myeloma. It includes the drugs bortezomib, doxorubicin (Adriamycin), and dexamethasone. Also called PAD.

**pacritinib:** An orally bioavailable inhibitor of Janus kinase 2 (JAK2) and the JAK2 mutant JAK2V617F with potential antineoplastic activity. Pacritinib competes with JAK2 for ATP binding, which may result in

inhibition of JAK2 activation, inhibition of the JAK-STAT signaling pathway, and so caspase-dependent apoptosis. JAK2 is the most common mutated gene in bcr-abl-negative myeloproliferative disorders; the JAK2V617F gain-of-function mutation involves a valine-to-phenylalanine modification at position 617. The JAK-STAT signaling pathway is a major mediator of cytokine activity.

**PAD:** A chronic condition in which both the breakdown and regrowth of bone are increased. Paget disease of bone occurs most frequently in the pelvic and leg bones, skull, and lower spine. It is most common in older individuals, and may lead to bone pain, deformities, and fractures. Also called osteitis deformans.

**PAD regimen:** A chemotherapy regimen containing bortezomib, doxorubicin and dexamethasone regimen used in the treatment of multiple myeloma. Or A condition in which abnormal cells are found in the nipple. Symptoms commonly include itching and burning and an eczema-like condition around the nipple. There may also be oozing or bleeding from the nipple.

**padeliporfin:** A vascular-acting photosensitizer consisting of a water-soluble, palladium-substituted bacteriochlorophyll derivative with potential antineoplastic activity. Upon administration, padeliporfin is activated locally when the tumor bed is exposed to low-power laser light; reactive oxygen species (ROS) are formed upon activation and ROS-mediated necrosis may occur at the site of interaction between the photosensitizer, light and oxygen. Vascular-targeted photodynamic therapy (VTP) with padeliporfin may allow tumor-site specific cytotoxicity while sparing adjacent normal tissues.

**PADRE 965.10:** Pan-DR epitope (PADRE) 965.10 is a helper peptide. PADRE peptides have been shown the capacity to deliver help for antibody responses in vivo. They were also found to be able to provide significant helper T-cell activity in vivo. Acts as an adjuvant.

**PADRE-CMV fusion peptide vaccine:** A peptide-based vaccine containing a pan HLA DR-binding epitope (PADRE) fused to a cytomegalovirus (CMV) peptide epitope, with potential anti-viral and immunomodulating activities. Upon administration, PADRE-CMV fusion peptide may stimulate a cytotoxic T-lymphocyte (CTL) response against

CMV in the CMV-infected host. The synthetic peptide PADRE is a universal helper T cell epitope.

**Paget disease of bone :** A type of chemical formed when coal, oil, gas, garbage, tobacco, meat, and other substances are burned. These chemicals are also made for use in many products, including coal tar, creosote, roofing tar, pesticides, mothballs, dandruff shampoos, and some medicines. Being exposed to one of these chemicals over a long time may cause cancer. Also called polycyclic aromatic hydrocarbon.

**Paget disease of the nipple :** A sudden increase in pain that may occur in patients who already have chronic pain from cancer, arthritis, fibromyalgia, or other conditions. A pain flare usually lasts for a short time. During a pain flare, the level of pain may be severe but the type of pain and where it is in the body are usually the same as the patient's chronic pain. Pain flares may occur with stress, illness, and certain activities, such as exercising or coughing, or when the dose of pain medicine that the patient is taking wears off. Pain flares are usually not a symptom of a new condition or a condition that has gotten worse. Also called breakthrough pain.

**PAH:** The point at which a person becomes aware of pain.

**pahoehoe flow:** a basalt flow with a ropy or undulating surface resulting from quick cooling and solidification of the lava.

**PAI:** Polyamide-imide

**pain flare :** A substance that is being studied for its ability to increase the effectiveness of the anticancer drug fluorouracil.

**pain threshold :** The roof of the mouth. The front portion is bony (hard palate), and the back portion is muscular (soft palate).

**Paint:** A coating including resin, a solvent, additives, pigments and, in some products, a diluent. Paints are generally opaque, and commonly represent the portion of the industry known as "architectural coatings."

**Paint deodorants:** Aromatic materials which are added to paint to mask paint odour.

**PAINT GAUGE:** Instrument for measuring the thickness of paint film.

**PAINT REMOVER:** A compound that softens old paint or varnish and permits scraping off the loosened material.

**Paint remover:** A liquid composition that is applied to a dry paint film and softens it sufficiently to permit its removal by scraping.

**paired spin:** the spinning in opposite directions of the two electrons in a bonding orbital.

**PAK4 inhibitor PF-03758309:** An orally bioavailable small-molecule inhibitor of p21-activated kinase 4 (PAK4) with potential antineoplastic activity. PAK4 inhibitor PF-03758309 binds to PAK4, inhibiting PAK4 activity and cancer cell growth. PAK4, a serine/threonine kinase belonging to the p21-activated kinase (PAK) family, is often upregulated in a variety of cancer cell types and plays an important role in cancer cell motility, proliferation, and survival.

**PAK4/NAMPT inhibitor KPT-9274:** An orally bioavailable inhibitor of both the serine/threonine kinase P21-activated kinase 4 (PAK4) and the nicotinamide adenine dinucleotide (NAD)-synthesizing enzyme nicotinamide phosphoribosyltransferase (NAMPT; NAMPTase), with potential antineoplastic activity. Upon administration, KPT-9274 allosterically binds to, destabilizes and causes degradation of PAK4. This inhibits PAK4-mediated signaling, induces cell death in, and inhibits the proliferation of PAK4-overexpressing tumor cells. In addition, KPT-9274 binds to and inhibits the activity of NAMPT. This depletes cellular NAD and inhibits NAD-dependent enzymes, both of which are needed for rapid cell proliferation; this results in tumor cell death in NAMPT-overexpressing cancer cells. PAK4, a serine/threonine kinase and member of the PAK family of proteins upregulated in various cancer cell types, regulates cell motility, proliferation and survival. NAMPT, an enzyme that is responsible for maintaining the intracellular NAD pool, plays a key role in the regulation of cellular metabolism and has cytokine-like activities. NAMPT is often overexpressed in a variety of cancers and metabolic disorders and tumor cells rely on NAMPT activity for their NAD supply.

**PALA:** The soft flap of tissue that hangs down at the back of the mouth (at the edge of the soft palate). Also called uvula.

**palate :** A drug used to treat hormone-receptor positive (HR+), HER2 negative (HER2-) breast cancer that is advanced or has spread to other parts of the body. It is used with fulvestrant in women whose disease has gotten worse after treatment with hormone therapy. It is used with letrozole in postmenopausal women who have not been treated with hormone therapy. It is also being studied in the treatment of other types of cancer. Palbociclib

blocks certain proteins, which may help keep cancer cells from growing. It is a type of cyclin-dependent kinase inhibitor. Also called Ibrance.

**palatine uvula :** A form of keratinocyte growth factor (KGF) that is made in the laboratory. KGF stimulates the growth of cells that line the surface of the mouth and intestinal tract. Palifermin is used to prevent and treat oral mucositis (mouth sores) caused by high-dose chemotherapy and radiation therapy in leukemia and lymphoma. It is also being studied in the prevention and treatment of oral mucositis and dysphagia (difficulty swallowing) in other types of cancer. Palifermin is a type of recombinant human keratinocyte growth factor. Also called Kepivance.

**palbociclib:** An orally available cyclin-dependent kinase (CDK) inhibitor with potential antineoplastic activity. Palbociclib selectively inhibits cyclin-dependent kinase 4 (CDK4) and 6 (CDK6), thereby inhibiting retinoblastoma (Rb) protein phosphorylation early in the G1 phase leading to cell cycle arrest. This suppresses DNA replication and decreases tumor cell proliferation. CDK4 and 6 are serine/threonine kinases that are upregulated in many tumor cell types and play a key role in the regulation of cell cycle progression. or Relief of symptoms and suffering caused by cancer and other life-threatening diseases. Palliation helps a patient feel more comfortable and improves the quality of life, but does not cure the disease.

**paleocoast:** an old coastline that has been preserved in the geologic record.

**paleocurrent:** a direction of sediment transport or ice movement that is revealed by sedimentary or glacial features.

**paleomagnetic field:** an ancient magnetic field that can be detected from the orientation of magnetic crystals in rocks such as basalt.

**paleontology:** the science of locating, cataloging, and interpreting the life forms that existed in past millennia. OR the study of fossils.

**paleosol:** An ancient soil or soil horizon that formed on the surface during the geologic past.

**Palestrol:** (Other name for: diethylstilbestrol)

**palifermin:** A recombinant form of the endogenous human keratinocyte growth factor. Palifermin binds to epithelial cell surface receptors in the lining of the mouth and gastrointestinal tract, resulting in stimulation of

epithelial cell proliferation, differentiation and upregulation of cytoprotective mechanisms. or Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of palliative care is to prevent or treat as early as possible the symptoms of a disease, side effects caused by treatment of a disease, and psychological, social, and spiritual problems related to a disease or its treatment. Also called comfort care, supportive care, and symptom management.

**palifosfamide:** A synthetic mustard compound with potential antineoplastic activity. An active metabolite of ifosfamide covalently linked to the amino acid lysine for stability, palifosfamide irreversibly alkylates and cross-links DNA through GC base pairs, resulting in irreparable 7-atom inter-strand cross-links; inhibition of DNA replication and cell death follow. Unlike ifosfamide, this agent is not metabolized to acrolein or chloroacetaldehyde, metabolites associated with bladder and CNS toxicities. In addition, because palifosfamide does not require activation by aldehyde dehydrogenase, it may overcome the tumor resistance seen with ifosfamide.

**palifosfamide tromethamine:** A synthetic mustard compound of the tromethamine (tris) salt of palifosfamide (Isophosphamide mustard), with potential antineoplastic activity. As the stabilized active metabolite of ifosfamide, palifosfamide irreversibly alkylates and crosslinks DNA through GC base pairs, resulting in irreparable 7-atom interstrand crosslinks. This leads to an inhibition of DNA replication and ultimately cell death. Unlike ifosfamide, this agent is not metabolized to acrolein or chloroacetaldehyde, metabolites associated with bladder and CNS toxicities. In addition, because palifosfamide does not require activation by aldehyde dehydrogenase, it may overcome the tumor resistance seen with ifosfamide. Stabilization with tris instead of lysine further increases stability and may further decrease nephrotoxicity.

**palindrome:** A segment of duplex DNA in which the base sequences of the two strands exhibit twofold rotational symmetry about an axis. OR A sequence of bases that reads the same in both directions on opposite strands of the DNA duplex (e.g., GAATTC). OR A word, sentence, or verse that reads the same from right to left as it does from left to right; an example is "radar." By extension to biochemistry, a sequence of double-stranded DNA that is the same in each strand when the strands are read in the same

direction; that is, it displays a twofold rotational symmetry—for example, 3'-CCTAGG-5'/5'-GGATCC-3'.

**Palladium:** Symbol:"Pd" Atomic Number:"46" Atomic Mass: 106.40amu. Palladium is one of the transition elements. Palladium is another member of the platinum group. It is a white color and will not tarnish (oxidize) in air. You will find it used in jewelry, surgical instruments, and watches.

**palladium Pd 103:** A radioisotope of the metal palladium used in brachytherapy implants or 'seed'. With a half-life of 17 days, palladium 103 administered with brachytherapy allows continuous, tumor-site specific low-energy irradiation to the tumor cell population while sparing normal adjacent tissues from radiotoxicity.

**palladium-bacteriopheophorbide:** A novel palladium-substituted bacteriochlorophyll derivative and photosensitizer with potential antitumor activity. Upon administration, inactive palladium-bacteriopheophorbide is activated locally when the tumor bed is exposed to photoirradiation; the activated form induces local cytotoxic processes, resulting in local tissue damage, disruption of tumor vasculature, and tumor hypoxia and necrosis.

**Palletizing:** A process of producing pellets.

**palliation :** The use of special drugs called sedatives to relieve extreme suffering by making a patient calm, unaware, or unconscious. This may be done for patients who have symptoms that cannot be controlled with other treatment. Palliative sedation may be used in patients who are near the end of life to make them more comfortable. It is not meant to shorten life or cause death.

**palliative care :** Treatment given to relieve the symptoms and reduce the suffering caused by cancer and other life-threatening diseases. Palliative cancer therapies are given together with other cancer treatments, from the time of diagnosis, through treatment, survivorship, recurrent or advanced disease, and at the end of life.

**palliative sedation :** A condition marked by pain, swelling, numbness, tingling, or redness of the hands or feet. It sometimes occurs as a side effect of certain anticancer drugs. Also called hand-foot syndrome.

**palliative therapy :** A drug used to prevent nausea and vomiting caused by chemotherapy. It is also used to prevent nausea and vomiting after surgery. Palonosetron hydrochloride blocks the action of the chemical serotonin in

the brain, which may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called Aloxi.

**Palm Kernel Oil (PKO):** An edible plant oil derived from the kernel, or seed, of the oil palm tree.

**Palm Oil (PO):** An edible plant oil derived from the oil palm tree. Palm oil is extracted from the pulp of the oil palm fruit, contained and grown in bunches in the tree.

**Palm Plantation:** A large development and planting of palm oil trees, usually encompassing several hectares of land for this use. Such plantations, many of which are located in either Malaysia or Indonesia, are often found adjacent to harvesting and processing facilities, allowing the company to process the palm fruit into derivatives that can be used in consumer products and foods.

**palmar-plantar erythrodysesthesia :** A term used to describe cancer that can be felt by touch, usually present in lymph nodes, skin, or other organs of the body such as the liver or colon.

**palonosetron hydrochloride:** The hydrochloride salt of palonosetron, a carbazole derivative and a selective serotonin receptor antagonist with antiemetic activity. Palonosetron competitively blocks the action of serotonin at 5-hydroxytryptamine type 3 (5-HT<sub>3</sub>) receptors located on vagal afferents in the chemoreceptor trigger zone (CTZ), resulting in suppression of chemotherapy-induced nausea and vomiting. The CTZ is located in the area postrema on the dorsal surface of the medulla oblongata at the caudal end of the fourth ventricle and outside the blood-brain barrier (BBB). or Examination by pressing on the surface of the body to feel the organs or tissues underneath.

**palpable disease :** A rapid or irregular heartbeat that a person can feel.

**palpation :** A drug used to treat depression. It may also be used to treat panic or anxiety disorders and certain types of pain, and to help people quit smoking. Pamelor increases the levels of norepinephrine and other natural chemicals in the brain. This helps improve mood and may reduce a person's craving for nicotine. It is a type of tricyclic antidepressant. Also called Aventyl and nortriptyline.

**palpitation :** A drug used to treat hypercalcemia (high blood levels of calcium) caused by certain types of cancer. It is also used with other

anticancer drugs to treat multiple myeloma and breast cancer that has spread to bone. It is also used to treat Paget disease of the bone. Pamidronate disodium may help keep bone from breaking down and prevent the loss of calcium from the bones. It is a type of bisphosphonate. Also called Aredia.

**paludification:** The expansion of a bog caused by the gradual rising of the water table as accumulation of peat impedes water drainage.

**palynology:** The science of reconstructing the past flora and past climate from pollen data obtained from lake and bog sediments. The fossil pollen record is a function of the regional flora and vegetation at a given time and location.

**Pamelor :** A cure-all.

**pamidronate disodium:** The disodium salt of the synthetic bisphosphonate pamidronate. Although its mechanism of action is not completely understood, pamidronate appears to adsorb to calcium phosphate crystals in bone, blocking their dissolution by inhibiting osteoclast-mediated bone resorption. This agent does not inhibit bone mineralization and formation. Check for active clinical trials using this agent. or A type of lung cancer that begins in the upper part of a lung and spreads to nearby tissues such as the ribs and vertebrae. Most Pancoast tumors are non-small cell cancers. Also called pulmonary sulcus tumor.

**Pamolyn 300:** (Other name for: conjugated linoleic acid)

**PAN:** Polyacrylonitrile

**pan FGFR inhibitor ARQ 087:** An orally bioavailable inhibitor of the fibroblast growth factor receptor (FGFR) with potential antineoplastic activity. FGFR inhibitor ARQ 087 binds to and potently inhibits the activity of FGFR subtypes 1, 2 and 3. This may result in the inhibition of FGFR-mediated signal transduction pathways, tumor cell proliferation, tumor angiogenesis and tumor cell death in FGFR-overexpressing tumor cells. FGFR, a receptor tyrosine kinase, is upregulated in many tumor cell types and plays a key role in tumor cellular proliferation, differentiation, angiogenesis and survival.

**pan FGFR kinase inhibitor BGJ398:** An orally bioavailable pan inhibitor of human fibroblast growth factor receptors (FGFRs) with potential antiangiogenic and antineoplastic activities. pan FGFR kinase inhibitor

BGJ398 selectively binds to and inhibits the activities of FGFRs, which may result in the inhibition of tumor angiogenesis and tumor cell proliferation, and the induction of tumor cell death. FGFRs are a family of receptor tyrosine kinases which may be upregulated in various tumor cell types and may be involved in tumor cell differentiation and proliferation, tumor angiogenesis, and tumor cell survival.

**pan-AKT inhibitor ARQ 751:** An orally bioavailable pan inhibitor of the serine/threonine protein kinase AKT (protein kinase B) enzyme family with potential antineoplastic activity. Upon oral administration, AKT inhibitor ARQ 751 selectively binds to and inhibits the activity of the AKT isoforms 1, 2 and 3, which may result in the inhibition of the phosphatidylinositol 3-kinase (PI3K)/AKT signaling pathway. This may lead to a reduction in tumor cell proliferation and the induction of tumor cell apoptosis. The AKT signaling pathway is often deregulated in cancer and is associated with tumor cell proliferation, survival and migration. Check for active clinical trials using this agent.

**pan-AKT kinase inhibitor GSK690693:** An aminofurazan-derived inhibitor of Akt kinases with potential antineoplastic activity. Pan-AKT kinase inhibitor GSK-690693 binds to and inhibits Akt kinases 1, 2, and 3, which may result in the inhibition of protein phosphorylation events downstream from Akt kinases in the PI3K/Akt signaling pathway, and, subsequently, the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. In addition, this agent may inhibit other protein kinases including protein kinase C (PKC) and protein kinase A (PKA). As serine/threonine protein kinases which are involved in a number of biological processes, AKT kinases promote cell survival by inhibiting apoptosis and are required for glucose transport.

**pan-FGFR tyrosine kinase inhibitor BAY1163877:** A pan inhibitor of human fibroblast growth factor receptors (FGFRs) with potential antiangiogenic and antineoplastic activities. Pan-FGFR kinase inhibitor BAY1163877 inhibits the activities of FGFRs, which may result in the inhibition of both tumor angiogenesis and tumor cell proliferation, and the induction of tumor cell death. FGFRs are a family of receptor tyrosine kinases, which may be upregulated in various tumor cell types and may be involved in tumor cell differentiation and proliferation, tumor angiogenesis, and tumor cell survival.

**pan-FGFR tyrosine kinase inhibitor JNJ-42756493:** An orally bioavailable, pan fibroblast growth factor receptor (FGFR) inhibitor with potential antineoplastic activity. Upon oral administration, JNJ-42756493 binds to and inhibits FGFR, which may result in the inhibition of FGFR-related signal transduction pathways and thus the inhibition of tumor cell proliferation and tumor cell death in FGFR-overexpressing tumor cells. FGFR, upregulated in many tumor cell types, is a receptor tyrosine kinase essential to tumor cell proliferation, differentiation and survival. Check for active clinical trials using this agent.

**pan-HER kinase inhibitor AC480:** An orally bioavailable, small-molecule pan-HER tyrosine kinase inhibitor with potential antineoplastic and radiosensitizing activities. Pan-HER kinase inhibitor AC480 binds to and inhibits the human epidermal growth factor receptors (HER) HER1 (EGFR), HER2 (ErbB-2) and HER4, which may prevent downstream signaling and inhibit the proliferation of tumor cells that overexpress these receptors. In addition, this agent may enhance the radiosensitivity of certain tumor cell types that express HER1 and HER2 through cell cycle redistribution in G1 phase and inhibition of DNA repair. EGFRs, frequently overexpressed on tumor cells, play a key role in tumor cell proliferation and survival.

**pan-HER/VEGFR2 receptor tyrosine kinase inhibitor BMS-690514:** A pyrrolotriazine-based compound and a pan inhibitor of receptor tyrosine kinases with potential antineoplastic activity. Pan HER/VEGFR2 receptor tyrosine kinase inhibitor BMS-690514 binds to human epidermal growth factor receptors (EGFR) 1, 2 and 4 (HER1, HER2 and HER4) and vascular endothelial growth factor receptor 1, 2 and 3 (VEGFR-1, -2 and -3), all of which are frequently overexpressed by a variety of tumor types. Binding of this agent to these receptors may result in the inhibition of tumor cell proliferation; the inhibition of endothelial cell migration and proliferation and angiogenesis; and tumor cell death.

**pan-PI3K inhibitor CLR457:** An orally bioavailable pan inhibitor of phosphatidylinositol-3-kinase (PI3K), with potential antineoplastic activity. Upon oral administration, pan-PI3K inhibitor CLR457 inhibits all of the PI3K kinase isoforms, which may result in apoptosis and growth inhibition in tumor cells overexpressing PI3K. Activation of the PI3K pathway

promotes cell growth, survival, and resistance to both chemotherapy and radiotherapy.

**pan-PI3K/mTOR inhibitor PQR309:** An orally bioavailable pan inhibitor of phosphoinositide-3-kinases (PI3K) and inhibitor of the mammalian target of rapamycin (mTOR), with potential antineoplastic activity. PI3K/mTOR kinase inhibitor PQR309 inhibits the PI3K kinase isoforms alpha, beta, gamma and delta and, to a lesser extent, mTOR kinase, which may result in tumor cell apoptosis and growth inhibition in cells overexpressing PI3K/mTOR. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to both chemotherapy and radiotherapy. As mTOR, a serine/threonine kinase downstream of PI3K, may also be activated independent of PI3K, this agent may potentially be more potent than an agent that inhibits either PI3K kinase or mTOR kinase. By inhibiting mTOR to a lesser extent than PI3K, PQR309 does not interfere with the mTOR-mediated negative feedback loop on PI3K signaling. Blocking the negative feedback loop would potentially increase PI3K signaling and decrease therapeutic efficacy.

**pan-PI3K/mTOR inhibitor SF1126:** A water soluble, small-molecule prodrug containing the pan-PI3K/mTOR inhibitor LY294002/SF1101 conjugated to the RGD-containing tetra-peptide SF1174 with potential antineoplastic and antiangiogenic activities. The targeting peptide SF1174 moiety of pan-PI3K/mTOR inhibitor SF1126 selectively binds to cell surface integrins and, upon cell entry, the agent is hydrolyzed to the active drug SF1101; SF1101 selectively inhibits all isoforms of phosphoinositide-3-kinase (PI3K) and other members of the PI3K superfamily, such as the mammalian target of rapamycin (mTOR) and DNA-PK. By inhibiting the PI3K signaling pathway, this agent may inhibit tumor cell and tumor endothelial cell proliferation and survival. Integrins are transmembrane cell adhesion proteins expressed on the surfaces of endothelial and tumor cells.

**pan-PIM inhibitor INCB053914:** An orally available, small molecule and selective ATP-competitive pan-inhibitor of proviral integration sites for Moloney murine leukemia virus (PIM) kinases, with potential antineoplastic activity. Upon oral administration, pan-PIM kinase inhibitor INCB053914 binds to and inhibits the activities of the three PIM isoforms, PIM1, PIM2 and PIM3. This prevents phosphorylation of their downstream targets and inhibits proliferation in cells that overexpress PIMs. PIMs,

constitutively active proto-oncogenic serine/threonine kinases upregulated in various types of cancers, play key roles in tumor cell proliferation and survival.

**pan-PIM kinase inhibitor AZD1208:** An orally available, small molecule inhibitor of PIM kinases with potential antineoplastic activity. Pan-PIM kinase inhibitor AZD1208 inhibits the activities of PIM1, PIM2 and PIM3 serine/threonine kinases, which may result in the interruption of the G1/S phase cell cycle transition, thereby causing cell cycle arrest and inducing apoptosis in cells that overexpress PIMs. The growth inhibition of several leukemia cell lines by this agent is correlated with the expression levels of PIM1, which is the substrate of STAT transcription factors. PIM kinases are downstream effectors of many cytokine and growth factor signaling pathways and are upregulated in various malignancies.

**pan-Raf inhibitor LXH254:** An orally available inhibitor of all members of the serine/threonine protein kinase Raf family, with potential antineoplastic activity. Upon administration, pan-RAF inhibitor LXH254 binds to Raf proteins and inhibits Raf-mediated signal transduction pathways. This inhibits proliferation of Raf-overexpressing tumor cells. Raf protein kinases are critical enzymes in the Ras/Raf/MEK/ERK signaling pathway and are upregulated in a variety of cancer cell types. They play key roles in tumor cell proliferation and survival. Check for active clinical trials using this agent.

**pan-RAF inhibitor LY3009120:** An orally available inhibitor of all members of the serine/threonine protein kinase Raf family, including A-Raf, B-Raf and C-Raf protein kinases, with potential antineoplastic activity. Upon administration, pan-RAF kinase inhibitor LY3009120 inhibits Raf-mediated signal transduction pathways, which may inhibit tumor cell growth. Raf protein kinases play a key role in the RAF/mitogen-activated protein kinase kinase (MEK)/extracellular signal-regulated kinase (ERK) signaling pathway, which is often dysregulated in human cancers and plays a key role in tumor cell proliferation and survival.

**pan-RAF kinase inhibitor CCT3833:** An orally available inhibitor of the serine/threonine protein kinase family Raf, including A-Raf, B-Raf and C-Raf, with potential antineoplastic activity. Upon administration, pan-RAF kinase inhibitor CCT3833 inhibits Raf-mediated signal transduction pathways, which may inhibit the proliferation of Raf-overexpressing tumor

cells. Raf protein kinases play a key role in the RAF/mitogen-activated protein kinase kinase (MEK)/extracellular signal-regulated kinase (ERK) signaling pathway, which is often dysregulated in human cancers and plays a key role in tumor cell proliferation and survival. Check for active clinical trials using this agent.

**pan-RAF kinase inhibitor TAK-580:** An orally available inhibitor of A-Raf, B-Raf and C-Raf protein kinases, with potential antineoplastic activity. Upon administration, pan-RAF kinase inhibitor TAK-580 inhibits Raf-mediated signal transduction pathways, which may inhibit tumor cell growth. Raf protein kinases play a key role in the RAF/MEK/ERK signaling pathway, which is often deregulated in human cancers and plays a key role in tumor cell proliferation and survival. Check for active clinical trials using this agent.

**pan-selectin antagonist GMI-1070:** A synthetic, glycomimetic molecule and pan-selectin antagonist, with potential use in a vaso-occlusive crisis. Upon administration, GMI-1070 prevents the interaction between leukocytes and the endothelium and may prevent cell activation and adhesion. By preventing selectin-mediated cell adhesion in sickle cell anemia, this agent may inhibit red blood cell-white blood cell interactions, normalize blood flow and reduce inflammation and vascular occlusive pain. GMI-1070 has the strongest antagonistic activity towards E-selectin but the incorporation of a sulfate-binding domain allows for interactions with P- and L-selectins. Selectins, containing lectin- and EGF-like domains, are a family of cell adhesion molecules implicated in inflammatory processes and cancer. Check for active clinical trials using this agent.

**pan-VEGFR/Tie2 tyrosine kinase inhibitor CEP-11981:** An orally bioavailable inhibitor of vascular endothelial growth factor receptor (VEGFR) and Tie2 receptor tyrosine kinases with potential antiangiogenic and antineoplastic activities. Pan-VEGFR/Tie2 tyrosine kinase inhibitor CEP-11981 selectively binds to VEGFR and Tie2 receptor tyrosine kinases, which may result the inhibition of endothelial cell migration, proliferation and survival and the inhibition of tumor cell proliferation and tumor cell death. VEGFR and Tie2 are frequently overexpressed by a variety of tumor cell types and play crucial roles in the regulation of angiogenesis and the maintenance of tumor blood vessels. Tie2 (tyrosine kinase with

immunoglobulin-like and EGF-like domains) is activated by angiopoietin-1 (Ang-1).

**panacea** : A glandular organ located in the abdomen. It makes pancreatic juices, which contain enzymes that aid in digestion, and it produces several hormones, including insulin. The pancreas is surrounded by the stomach, intestines, and other organs.

**Pancoast tumor** : Surgery to remove all or part of the pancreas. In a total pancreatectomy, part of the stomach, part of the small intestine, the common bile duct, gallbladder, spleen, and nearby lymph nodes also are removed.

**pancreas**: a large, glandular organ lying near the stomach that produces many of the enzymes used to digest food.

**pancreas** : Having to do with the pancreas.

**Pancrease**: (Other name for: pancrelipase)

**pancreatectomy** : A disease in which malignant (cancer) cells are found in the tissues of the pancreas. Also called exocrine cancer.

**pancreatic** : Part of a system of ducts in the pancreas. Pancreatic juices containing enzymes are released into these ducts and flow into the small intestine.

**pancreatic cancer** : A rare cancer that forms in islet cells (hormone-making cells) of the pancreas. Islet cells make several different hormones that affect body functions, including controlling the amount of glucose (sugar) in the blood and helping digest food in the stomach. Functional pancreatic endocrine cancers make extra amounts of these hormones, which can cause symptoms. Nonfunctional pancreatic endocrine cancers do not make extra amounts of hormones, but they may cause symptoms as they grow and spread. Also called islet cell carcinoma.

**pancreatic duct** : A tumor that forms in islet cells (hormone-making cells) of the pancreas. Pancreatic endocrine tumors may be benign (not cancer) or malignant (cancer). Islet cells make several different hormones that affect body functions, including controlling the amount of glucose (sugar) in the blood and helping digest food in the stomach. Functional pancreatic endocrine tumors make extra amounts of these hormones, which can cause symptoms. Nonfunctional pancreatic endocrine tumors do not make extra

amounts of hormones, but they may cause symptoms as they grow and spread. Also called islet cell tumor and pancreatic neuroendocrine tumor.

**pancreatic endocrine cancer :** A protein secreted by the pancreas that aids in the digestion of food.

**pancreatic endocrine tumor :** A test used to measure the ability of the pancreas to respond to a hormone called secretin. Secretin causes the pancreas, liver, and stomach to release substances that help digest food. During a pancreatic function test, a tube is inserted through the nose or throat into the stomach and small intestine. Secretin is given to the patient by injection into a vein. After a certain amount of time, samples of fluid are taken from the small intestine through the tube and sent to a lab to test for a response. A pancreatic function test may be used to help diagnose problems that affect the pancreas, such as pancreatitis, cystic fibrosis, and a type of pancreatic tumor called a gastrinoma. Also called secretin stimulation test.

**pancreatic enzyme :** An abnormal mass that grows in the beta cells of the pancreas that make insulin. Pancreatic insulin-producing tumors are usually benign (not cancer). They secrete insulin and are the most common cause of low blood sugar caused by having too much insulin in the body. Also called beta cell neoplasm, beta cell tumor of the pancreas, and insulinoma.

**pancreatic function test :** Fluid made by the pancreas. Pancreatic juices contain proteins called enzymes that aid in digestion.

**pancreatic insulin-producing tumor :** A tumor that forms in islet cells (hormone-making cells) of the pancreas. Pancreatic neuroendocrine tumors may be benign (not cancer) or malignant (cancer). Islet cells make several different hormones that affect body functions, including controlling the amount of glucose (sugar) in the blood and helping digest food in the stomach. Functional pancreatic neuroendocrine tumors make extra amounts of these hormones, which can cause symptoms. Nonfunctional pancreatic neuroendocrine tumors do not make extra amounts of hormones, but they may cause symptoms as they grow and spread. Also called islet cell tumor and pancreatic endocrine tumor.

**pancreatic juice :** A small protein made by the pancreas that helps control the release of other substances made by the pancreas. The amount of pancreatic polypeptide in the blood increases after a person eats. It may also increase with age, and in certain diseases, such as diabetes and pancreatic cancer. Also called PP.

**pancreatic neuroendocrine tumor :** A tumor that forms in the cells of the pancreas. The two main types of pancreatic tumors are pancreatic exocrine tumors and pancreatic neuroendocrine tumors. Most pancreatic cancers are exocrine tumors, which form in cells that make enzymes to help the body digest food. Pancreatic neuroendocrine tumors form in neuroendocrine pancreas cells (such as islet cells). These cells make hormones that help control sugar levels in the blood. Pancreatic neuroendocrine tumors may be benign (not cancer) or malignant (cancer). They are much less common than pancreatic exocrine tumors and have a better prognosis.

**pancreatic polypeptide :** Inflammation of the pancreas. Chronic pancreatitis may cause diabetes and problems with digestion. Pain is the primary symptom.

**pancreatic tumor :** A type of surgery used to treat pancreatic cancer. The head of the pancreas, the duodenum, a portion of the stomach, and other nearby tissues are removed. Also called Whipple procedure.

**pancreatitis :** A rare condition in which the pituitary gland stops making most or all hormones. Pituitary hormones help control the way many parts of the body work. Symptoms of the condition depend on the hormones that are missing. They include growth problems (in children), obesity (in adults), hair loss, slow heart rate, low blood sugar, low blood pressure, fatigue, and problems with reproduction. This condition may be caused by a tumor on or near the pituitary gland, infection, stroke, injury, surgery, or radiation therapy. It may also be inherited. Also called PHP.

**pancreatoduodenectomy :** Sudden extreme anxiety or fear that may cause irrational thoughts or actions. Panic may include rapid heart rate, flushing (a hot, red face), sweating, and trouble breathing.

**pancrelipase:** A standardized enzyme concentrate containing the pancreatic enzymes, lipase, protease and amylase used in enzyme substitution therapy. Lipase, protease and amylase break down fat, protein, and starches, respectively in the small intestine, thereby promoting digestion. Pancrelipase is used to reduce malabsorption when the pancreas is unable to secrete sufficient amounts of these enzymes.

**Paneling:** distortion, side wall collapse of a container occurring during aging or storage. Paneling is caused by the development of a reduced pressure inside the bottle.

**Pangaea:** a single continental mass that rifted to form our present-day continents.

**Panglobulin:** (Other name for: therapeutic immune globulin)

**Panhematin:** (Other name for: therapeutic hemin)

**panhypopituitarism :** A human monoclonal antibody that is being used to treat colorectal cancer that has spread to other parts of the body. It is used in patients whose disease has not gotten better during or after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells.

Panitumumab binds to the epidermal growth factor receptor (EGFR) and may block tumor cell growth. Also called ABX-EGF and Vectibix.

**panic :** A drug used with bortezomib and dexamethasone to treat multiple myeloma. It is used in patients who have already been treated with bortezomib and an immunomodulating agent. It is also being studied in the treatment of other types of cancer. Panobinostat blocks certain enzymes needed for cells to grow and divide and may kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of histone deacetylase inhibitor and a type of antiangiogenesis agent. Also called Farydak and LBH589.

**panitumumab:** A human monoclonal antibody produced in transgenic mice that attaches to the transmembrane epidermal growth factor (EGF) receptor. Panitumumab may inhibit autocrine EGF stimulation of tumor cells that express the EGF receptor, thereby inhibiting tumor cell proliferation. or A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Pantothenic acid helps some enzymes use foods and make many substances used in the body and protects cells against damage from peroxides. It is found in almost all plant and animal foods. Pantothenic acid is water-soluble (can dissolve in water) and must be taken in every day. Also called vitamin B5.

**panitumumab-IRDye800:** An imaging agent composed of panitumumab, a humanized anti-epidermal growth factor receptor (EGFR) monoclonal antibody, conjugated to the near-infrared (NIR) fluorescent dye IRDye800, that can potentially be used for the imaging of EGFR-expressing tumors. Upon administration of panitumumab-IRDye800, the panitumumab moiety

targets and binds to EGFR expressed on tumor cells. Upon fluorescence imaging of IRDye800, the tumor cells can be detected.

**PankoMab-GEX:** (Other name for: anti-TA-MUC1 monoclonal antibody PankoMab)

**panobinostat:** A cinnamic hydroxamic acid analogue with potential antineoplastic activity. Panobinostat selectively inhibits histone deacetylase (HDAC), inducing hyperacetylation of core histone proteins, which may result in modulation of cell cycle protein expression, cell cycle arrest in the G2/M phase and apoptosis. In addition, this agent appears to modulate the expression of angiogenesis-related genes, such as hypoxia-inducible factor-1alpha (HIF-1a) and vascular endothelial growth factor (VEGF), thus impairing endothelial cell chemotaxis and invasion. HDAC is an enzyme that deacetylates chromatin histone proteins. or A cancer vaccine made with a form of vaccinia virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins, including the tumor markers called CEA and MUC-1, that may help immune cells in the body kill tumor cells. Also called inalimarev and recombinant vaccinia-CEA-MUC-1-TRICOM vaccine.

**Panretin:** (Other name for: alitretinoin)

**pantoprazole sodium:** The sodium salt form of a substituted benzimidazole with proton pump inhibitor activity. Pantoprazole is a lipophilic, weak base that crosses the parietal cell membrane and enters the acidic parietal cell canaliculus where it becomes protonated, producing the active metabolite sulfenamide, which forms an irreversible covalent bond with two sites of the H<sup>+</sup>/K<sup>+</sup>-ATPase enzyme located on the gastric parietal cell, thereby inhibiting both basal and stimulated gastric acid production.

**Pantothenate:** A vitamin that is a key component of coenzyme A.

**pantothenic acid :** An enzyme produced by the prostate. It may be found in increased amounts in men who have prostate cancer. Also called prostatic acid phosphatase.

**PANVAC-F:** (Other name for: falimarev)

**PANVAC-V :** A procedure in which a small brush or spatula is used to gently remove cells from the cervix so they can be checked under a microscope for cervical cancer or cell changes that may lead to cervical

cancer. A Pap smear may also help find other conditions, such as infections or inflammation. It is sometimes done at the same time as a pelvic exam and may also be done at the same time as a test for certain types of human papillomavirus (HPV). Also called Pap test and Papanicolaou test.

**Panwarfin:** (Other name for: warfarin)

**Panzem:** (Other name for: 2-methoxyestradiol)

**PAP:** A procedure in which a small brush or spatula is used to gently remove cells from the cervix so they can be checked under a microscope for cervical cancer or cell changes that may lead to cervical cancer. A Pap test may also help find other conditions, such as infections or inflammation. It is sometimes done at the same time as a pelvic exam and may also be done at the same time as a test for certain types of human papillomavirus (HPV). Also called Pap smear and Papanicolaou test.

**Pap smear :** A procedure in which a human papillomavirus (HPV) test and a Pap test are done at the same time to check for cervical cancer. The HPV test looks for DNA or RNA from certain high-risk types of HPV in samples of cells taken from the cervix. The Pap test checks for cervical cancer cells and cell changes that may lead to cervical cancer. The same cell sample may be used for both the HPV test and the Pap test. Women aged 30 to 65 years may have a Pap/HPV cotest every 5 years. Cotesting is more likely to find abnormal cells or cervical cancer than a Pap test alone is. Also called HPV/Pap cotest.

**Pap test :** A procedure in which a small brush or spatula is used to gently remove cells from the cervix so they can be checked under a microscope for cervical cancer or cell changes that may lead to cervical cancer. A Papanicolaou test may also help find other conditions, such as infections or inflammation. It is sometimes done at the same time as a pelvic exam and may also be done at the same time as a test for certain types of human papillomavirus (HPV). Also called Pap smear and Pap test.

**Pap/HPV cotest:** The thin top layer of the dermis (the inner layer of the skin). The papillary dermis has connective tissue and blood vessels that give nutrients to the epidermis (the outer layer of the skin) and that help control the temperature of the skin.

**Papanicolaou test :** (PA-pih-LAYR-ee IN-truh-lim-FA-tik AN-jee-oh-EN-doh-THEE-lee-oh-muh)

**papaverine:** An opiate alkaloid isolated from the plant *Papaver somniferum* and produced synthetically. As a direct-acting smooth muscle relaxant, papaverine is not closely related to the other opium alkaloids in structure or pharmacological actions; its mechanism of action may involve the non-selective inhibition of phosphodiesterases and direct inhibition of calcium channels. This agent also exhibits antiviral activity against respiratory syncytial virus, cytomegalovirus, and HIV.

**papillary dermis :** A rare, slow-growing tumor of blood vessels that forms in or under the skin anywhere on the body. Papillary intralymphatic angioendotheliomas may appear as firm, raised, purplish bumps, which may be small or large. They usually do not spread to other parts of the body. Papillary intralymphatic angioendotheliomas can occur in children and adults. They are a type of vascular tumor. Also called Dabska tumor.

**papillary intralymphatic angioendothelioma :** An aggressive cancer that usually affects the uterus/endometrium, peritoneum, or ovary.

**papillary serous carcinoma :** Cancer that forms in follicular cells in the thyroid and grows in small finger-like shapes. It grows slowly, is more common in women than in men, and often occurs before age 45. It is the most common type of thyroid cancer.

**papillary thyroid cancer :** A tumor shaped like a small mushroom, with its stem attached to the epithelial layer (inner lining) of an organ.

**papillary tumor :** The layer of the skin between the papillary dermis (the thin top layer of the dermis) and the reticular dermis (the thick bottom layer of the dermis). The dermis is the layer of skin below the epidermis (the outer layer of the skin).

**papillary-reticular dermal interface :** Swelling around the optic disk, the area where the optic nerve (the nerve that carries messages from the eye to the brain) enters the eyeball. Papilledema occurs when increased brain pressure caused by tumors or other problems results in swelling of the optic nerve.

**papilledema :** A small, solid, raised bump on the skin that has a border with edges that are easy to see. Papules may be red, purple, brown, or pink.

**papule :** A substance being studied in the treatment of diarrhea caused by infection with *Clostridium difficile* (a type of bacteria that can grow without

oxygen) in cancer patients. PAR-101 is a type of antibiotic. Also called OPT-80 and tiacumicin B.

**PAR-101:** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Bacteria that live in the intestines need para-aminobenzoic acid to survive. Para-aminobenzoic acid is found in grains and foods from animals. It is being studied as a radiosensitizer (a substance that makes tumor cells more sensitive to radiation therapy) and in the treatment of certain skin disorders. Also called aminobenzoic acid and PABA.

**para-aminobenzoic acid :** A procedure in which a thin needle or tube is put into the abdomen to remove fluid from the peritoneal cavity (the space within the abdomen that contains the intestines, the stomach, and the liver).

**Para-Xylene:** para-Xylene is an aromatic compound with two methyl groups substituted onto the benzene ring at opposite positions. Para-xylene is recovered from a mixed xylenes stream by adsorption and by isomerisation of C8 aromatics. Almost all para-xylene consumed for chemicals production is used for the production of PTA and DMT, which are used in polyester production.

**parabolic dune:** a deeply curved dune with the tips pointing into the wind; usually forms around a blowout in vegetated areas.

**paracentesis :** A collection of cells that came from embryonic nervous tissue, and are found near the adrenal glands and some blood vessels and nerves. Most paraganglia secrete epinephrine and norepinephrine.

**paradigm:** In biochemistry, an experimental model or example.

**paraffin:** 1. a waxy substance that is a mixture of alkanes with chains containing 18 to 36 carbon atoms. 2. An alkane.

**Paraflex:** (Other name for: chlorzoxazone)

**paraganglia :** A rare, usually benign tumor that develops from cells of the paraganglia. Paraganglia are a collection of cells that came from embryonic nervous tissue, and are found near the adrenal glands and some blood vessels and nerves. Paragangliomas that develop in the adrenal gland are called pheochromocytomas. Those that develop outside of the adrenal glands near blood vessels or nerves are called glomus tumors or chemodectomas.

**paraganglioma :** A bad taste in the mouth. Also called dysgeusia.

**parageusia :** Loss of ability to move all or part of the body.

**paragraph:** develops one idea with a series of logically connected sentences and may vary in length.

**paragraph coherence:** the smooth logical flow of a paragraph.

**paragraph unity:** a paragraph that focuses on one idea and one idea only.

**parallax:** ) the apparent change in the position of stars due to Earth's revolution.

**parallel lines:** two or more lines, always the same distance apart. Parallel lines never meet.

**parallel retreat:** the retention by slopes of their original steepness as they erode.

**parallelism:** refers to matching grammatical structures; elements in a sentence that have the same function or express similar ideas should be grammatically parallel, or grammatically matched.

**parallelogram:** a four-sided plane closed figure having opposite sides equal and parallel. (Opposite angles are equal, and consecutive angles are supplementary.)

**parallels:** lines that never meet, such as latitude.

**Paralogs:** Homologous molecules that are present within one species; often differ in their detailed biochemical functions.

**paralysis :** A condition in which the muscles of the intestines do not allow food to pass through, resulting in a blocked intestine. Paralytic ileus may be caused by surgery, inflammation, and certain drugs.

**paralytic ileus :** The fat and connective tissue that surrounds the uterus. The parametrium helps connect the uterus to other tissues in the pelvis.

**paramagnetism:** Paramagnetic materials are attracted to a magnetic field due to the presence of least one unpaired spin in their atoms or molecules.

**parametrium :** A type of virus that has hemagglutinin-neuraminidase proteins in the outer coat and RNA as the genetic material. Measles (rubeola) virus, mumps virus, and Newcastle disease virus are paramyxoviruses.

**paramyxovirus :** One of many small hollow spaces in the bones around the nose. Paranasal sinuses are named after the bones that contain them: frontal (the lower forehead), maxillary (cheekbones), ethmoid (beside the

upper nose), and sphenoid (behind the nose). The paranasal sinuses open into the nasal cavity (space inside the nose) and are lined with cells that make mucus to keep the nose from drying out during breathing.

**paranasal sinus :** Cancer that forms in tissues of the paranasal sinuses (small hollow spaces in the bones around the nose) or nasal cavity (the inside of the nose). The most common type of paranasal sinus and nasal cavity cancer is squamous cell carcinoma (cancer that begins in flat cells lining these tissues and cavities).

**paranasal sinus and nasal cavity cancer :** A group of symptoms that may develop when substances released by some cancer cells disrupt the normal function of surrounding cells and tissue.

**paraneoplastic syndrome :** A mental disorder in which a person has an extreme fear and distrust of others. A paranoid person may have delusions that people are trying to harm him or her.

**paranoia :** A drug that is used to treat advanced ovarian cancer that has never been treated or symptoms of ovarian cancer that has come back after treatment with other anticancer drugs. It is also used with other drugs to treat advanced, metastatic, or recurrent non-small cell lung cancer and is being studied in the treatment of other types of cancer. Paraplatin is a form of the anticancer drug cisplatin and causes fewer side effects in patients. It attaches to DNA in cells and may kill cancer cells. It is a type of platinum compound. Also called carboplatin.

**paraparesis:** weakness in the lower extremities

**Parapet:** A low wall built along the edge of a roof bridge or other structure; the continuation of the main wall above the eaves level to form such a wall.

**paraphrase:** involves borrowing an idea that you rephrase in your own words.

**Paraplat:** (Other name for: carboplatin)

**Paraplatin :** An animal or plant that gets nutrients by living on or in an organism of another species. A complete parasite gets all of its nutrients from the host organism, but a semi-parasite gets only some of its nutrients from the host.

**parasite :** Having to do with or being a parasite (an animal or plant that gets nutrients by living on or in an organism of another species).

**parasites:** organisms that attack living things and cause disease.

**parasitic :** An abnormal disruption of sleep, such as sleep walking, sleep talking, nightmares, bedwetting, sleep apnea (problems with breathing that cause loud snoring), or nighttime seizures.

**parasitism:** a type of symbiosis in which one population benefits while the other is harmed.

**Parasolid:** A file format for exchanging CAD data.

**parasomnia :** The part of the nervous system that slows the heart, dilates blood vessels, decreases pupil size, increases digestive juices, and relaxes muscles in the gastrointestinal tract.

**parasympathetic nervous system:** a subdivision of the autonomic nervous system that returns the body to normal after an emergency.

**parasympathetic nervous system :** A substance made by the parathyroid gland that helps the body store and use calcium. A higher-than-normal amount of parathormone causes high levels of calcium in the blood and may be a sign of disease. Also called parathyrin, parathyroid hormone, and PTH.

**parathesis:** an abnormal sensation of the skin, such as numbness, tingling due to poor circulation in the limbs

**parathormone :** A substance made by the parathyroid gland that helps the body store and use calcium. A higher-than-normal amount of parathyrin causes high levels of calcium in the blood and may be a sign of disease. Also called parathormone, parathyroid hormone, and PTH.

**parathyrin :** A rare cancer that forms in tissues of one or more of the parathyroid glands (four pea-sized glands in the neck that make parathyroid hormone, which helps the body store and use calcium).

**parathyroid cancer :** One of four pea-sized glands found on the surface of the thyroid. The parathyroid hormone made by these glands increases the calcium level in the blood.

**parathyroid gland :** A substance made by the parathyroid gland that helps the body store and use calcium. A higher-than-normal amount of parathyroid hormone causes high levels of calcium in the blood and may be a sign of disease. Also called parathormone, parathyrin, and PTH.

**parathyroid glands:** glands located on the posterior surfaces of the thyroid gland that produce parathyroid hormone.

**parathyroid hormone** : Surgery to remove one or more parathyroid glands (four pea-sized organs found on the thyroid).

**parathyroid hormone-related protein (1-36)**: A recombinant form of a mature, N-terminal secretory peptide derived from a parathyroid hormone-related protein (PTHrP) prohormone through posttranslational endoproteolytic processing with vasodilating, myorelaxant, and parathyroid hormone (PTH)-like calciotropic activities. Expressed throughout the cardiovascular system, parathyroid hormone-related protein (1-36) [PTHrP (1-36)] was first identified as the PTH-like hypercalcemic factor of humoral hypercalcemia of malignancy; however, its sequence differs significantly from that of PTH (1-34) although both proteins share the same N-terminal end which accounts for the calciotropic activity. Both PTHrP (1-36) and PTH (1-34) bind to the type 1 parathyroid hormone receptor (PTH1R), a specific seven-transmembrane-helix-containing G protein-coupled receptor mainly located in bone and kidney cells.

**parathyroidectomy** : The essential or functional elements of an organ.

**parecoxib sodium**: A water-soluble, injectable sodium salt form of parecoxib, an amide prodrug of the cyclooxygenase II (COX-2) selective, non-steroidal anti-inflammatory drug (NSAID) valdecoxib, with anti-inflammatory, analgesic, and antipyretic activities. Upon intravenous or intramuscular administration, parecoxib is hydrolyzed by hepatic carboxyesterases to its active form, valdecoxib. Valdecoxib selectively binds to and inhibits COX-2. This prevents the conversion of arachidonic acid into prostaglandins, which are involved in the regulation of pain, inflammation, and fever. This NSAID does not inhibit COX-1 at therapeutic concentrations and, therefore, does not interfere with blood coagulation. Check for active clinical trials using this agent.

**parenchyma** : A form of nutrition that is delivered into a vein. Parenteral nutrition does not use the digestive system. It may be given to people who are unable to absorb nutrients through the intestinal tract because of vomiting that won't stop, severe diarrhea, or intestinal disease. It may also be given to those undergoing high-dose chemotherapy or radiation and bone marrow transplantation. It is possible to give all of the protein, calories, vitamins and minerals a person needs using parenteral nutrition. Also called hyperalimentation, total parenteral nutrition, and TPN.

**Parent:** A radionuclide that upon radioactive decay or disintegration yields a specific nuclide (the daughter).

**parent isotope:** An element that undergoes nuclear decay.

**parent name:** the root name of a molecule according to the IUPAC nomenclature rules; for example, hexane is the parent name in trans-1,2-dibromocyclohexane.

**parent rock:** the original rock from which a metamorphic rock was formed.

**parenteral nutrition :** An abnormal touch sensation, such as burning or prickling, that occurs without an outside stimulus.

**parentheses:** punctuation devices used to set off incidental information.

**paresthesia :** A substance that is being used to treat overactive parathyroid glands in patients with kidney failure. It is also being studied in the treatment of cancer. Paricalcitol belongs to the family of drugs called vitamin D analogs.

**paricalcitol:** A synthetic noncalcemic, nonphosphatemic vitamin D analogue. Paricalcitol binds to the vitamin D receptor and has been shown to reduce parathyroid hormone (PTH) levels. This agent also increases the expression of PTEN ('Phosphatase and Tensin homolog deleted on chromosome Ten'), a tumor-suppressor gene, in leukemic cells and cyclin-dependent kinase inhibitors, resulting in tumor cell apoptosis and tumor cell differentiation into normal phenotypes. or Surgery to cut the parts of the vagus nerve that cause gastric acid to be made in the stomach. It is done to treat stomach ulcers or other conditions in which the stomach makes too much acid.

**parietal cell vagotomy :** The outer layer of the pericardium, which is a thin sac of tissue that surrounds the heart.

**parietal pericardium :** The layers of tissue that line the abdominal wall and the pelvic cavity.

**parietal peritoneum :** A progressive disorder of the nervous system marked by muscle tremors, muscle rigidity, decreased mobility, stooped posture, slow voluntary movements, and a mask-like facial expression.

**Parison:** the extruded hot plastic tube that will be placed in a high-density polyethylene mold to be inflated into a bottle or other hollow form. OR The hollow plastic tube from which a container, toy, etc. is blow molded. OR A

round, hollow tube of molten plastic that is extruded from the head of the blow molding machine.

**Parison Curtaining:** The tendency for a parison to lose its tubular shape because of conditions in the extrusion process. Generally, the bottom of the parison tends to drape irregularly, causing the entire parison to lose its original shape, creating difficulties in molding the part.

**Parison Melt Strength:** Parison melt strength depends directly on the melt characteristics of the resin being extruded. The ability to extrude a parison of sufficient dimensions to produce the desired part depends on the melt strength of the parison. The larger and heavier the parison, the greater its melt strength requirements.

**Parison Pre-Blowing:** Introducing air pressure into the parison before closing the mold halves. This provides better distribution of wall thickness and prevents the parison wall from coming in contact before the inflation of the part.

**Parison Programming:** Varying the wall thicknesses in a parison to conform to the wall thickness requirements of a given part.

**Parison Swell:** In blow molding the ratio of the cross-sectional area of the parison to the cross-sectional area of the die opening.

**Parison Tail :** The bottom portion of a parison that is severed by the lower pinch-offs and falls outside the mold.

**Parkinson disease :** Cancer that forms in a parotid gland, the largest of the salivary glands, which make saliva and release it into the mouth. There are 2 parotid glands, one in front of and just below each ear. Most salivary gland tumors begin in parotid glands.

**Parlodel:** (Other name for: bromocriptine mesylate)

**Parnate:** (Other name for: tranlycypromine sulfate)

**paromomycin sulfate:** The sulfate salt form of paromomycin, a structural derivative of neomycin, an aminoglycoside antibiotic with amebicidal and bactericidal effects against predominantly aerobic gram-negative bacteria. Paromomycin binds specifically to the RNA oligonucleotide at the A site of bacterial 30S ribosomes, thereby causing misreading and premature termination of translation of mRNA and inhibition of protein synthesis followed by cell death.

**parotid gland cancer :** Surgery to remove all or part of the parotid gland (a large salivary gland located in front of and just below the ear). In a radical parotidectomy, the entire gland is removed.

**parotidectomy :** A drug used to treat depression and anxiety disorders. It is a type of selective serotonin reuptake inhibitor (SSRI). Also called Paxil.

**paroxetine hydrochloride:** The hydrochloride salt form of paroxetine, a phenylpiperidine derivative and a selective serotonin reuptake inhibitor (SSRI) with antidepressant and anxiolytic properties. Paroxetine binds to the pre-synaptic serotonin transporter complex resulting in negative allosteric modulation of the complex thereby blocking reuptake of serotonin by the pre-synaptic transporter. Inhibition of serotonin recycling enhances serotonergic function through serotonin accumulation in the synaptic cleft, resulting in long-term desensitization and downregulation of 5HT<sub>1</sub> (serotonin) receptors and leading to symptomatic relief of depressive illness. or A rare disorder in which red blood cells are easily destroyed by certain immune system proteins. Symptoms include blood clots, and red or brownish urine in the morning. Aplastic anemia (decreased production of blood cells) may lead to PNH, and people with PNH are at increased risk of acute myelogenous leukemia. Also called PNH.

**paroxysmal nocturnal hemoglobinuria :** A type of enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. Inhibitors of one enzyme, PARP-1, are being studied in the treatment of cancer. Also called poly (ADP-ribose) polymerase.

**PARP :** A substance that blocks an enzyme in cells called PARP. PARP helps repair DNA when it becomes damaged. DNA damage may be caused by many things, including exposure to UV light, radiation, certain anticancer drugs, or other substances in the environment. In cancer treatment, blocking PARP may help keep cancer cells from repairing their damaged DNA, causing them to die. PARP inhibitors are a type of targeted therapy. Also called poly (ADP-ribose) polymerase inhibitor.

**PARP 1/2 inhibitor E7449:** An orally available small molecule inhibitor of the nuclear enzymes poly (ADP-ribose) polymerase (PARP) 1 and 2, with potential antineoplastic activity. Upon administration, E7449 selectively binds to PARP 1 and 2, thereby preventing the repair of

damaged DNA via the base excision repair (BER) pathway. This agent enhances the accumulation of single and double strand DNA breaks and promotes genomic instability eventually leading to apoptosis. PARP 1/2 inhibitor E7449 may enhance the cytotoxicity of DNA-damaging agents and of radiotherapy. PARP catalyzes post-translational ADP-ribosylation of nuclear proteins that signal and recruit other proteins to repair damaged DNA. Check for active clinical trials using this agent.

**PARP inhibitor :** A drug used to treat advanced ovarian cancer caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is used in patients who have already received other anticancer drugs. It is also being studied in the treatment of other types of cancer. PARP inhibitor AZD2281 blocks an enzyme involved in many cell functions, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. PARP inhibitor AZD2281 may cause cancer cells to die. It is a type of targeted therapy agent and a type of poly (ADP-ribose) polymerase inhibitor. Also called AZD2281, Lynparza, and olaparib.

**PARP inhibitor AZD2281 :** An enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. Inhibitors of PARP-1 are being studied in the treatment of cancer. Also called poly (ADP-ribose) polymerase-1.

**PARP inhibitor BGB-290:** An orally bioavailable inhibitor of the nuclear enzyme poly(ADP-ribose) polymerase (PARP), with potential antineoplastic activity. PARP inhibitor BGB-290 selectively binds to PARP and prevents PARP-mediated repair of single-strand DNA breaks via the base-excision repair (BER) pathway. This enhances the accumulation of DNA strand breaks, promotes genomic instability, and eventually leads to apoptosis. PARP is activated by single-strand DNA breaks and, subsequently, catalyzes post-translational ADP-ribosylation of nuclear proteins which then transduce signals to recruit other proteins to repair damaged DNA. BGB-290 may both potentiate the cytotoxicity of DNA-damaging agents and reverse tumor cell chemo- and radioresistance.

**PARP inhibitor CEP-9722:** A small-molecule prodrug of CEP-8983, a novel 4-methoxy-carbazole inhibitor of the nuclear enzymes poly(ADP-ribose) polymerase (PARP) 1 and 2, with potential antineoplastic activity.

Upon administration and conversion from CEP-9722, CEP-8983 selectively binds to PARP 1 and 2, preventing repair of damaged DNA via base excision repair (BER). This agent enhances the accumulation of DNA strand breaks and promotes genomic instability and apoptosis. CEP-8983 may potentiate the cytotoxicity of DNA-damaging agents and reverse tumor cell chemo- and radioresistance. PARP catalyzes post-translational ADP-ribosylation of nuclear proteins that signal and recruit other proteins to repair damaged DNA and can be activated by single strand breaks in DNA.

**PARP inhibitor E7016:** An inhibitor of the nuclear enzyme poly(ADP-ribose) polymerase (PARP) with potential chemo- and/or radiosensitizing activity. PARP inhibitor E7016 selectively binds to PARP and prevents PARP-mediated DNA repair of single strand DNA breaks via the base-excision repair pathway. This enhances the accumulation of DNA strand breaks and promotes genomic instability and eventually leads to apoptosis. In addition, this agent may enhance the cytotoxicity of DNA-damaging agents and reverse tumor cell resistance to chemotherapy and radiation therapy. PARP catalyzes post-translational ADP-ribosylation of nuclear proteins that signal and recruit other proteins to repair damaged DNA and is activated by single-strand DNA breaks.

**PARP-1 :** A substance being studied in the treatment of breast cancers caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is also being studied in the treatment of other types of cancer. It blocks an enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. PARP-1 inhibitor ABT-888 may cause cancer cells to die. It is a type of poly(ADP-ribose) polymerase inhibitor. Also called ABT-888 and veliparib.

**PARP-1 inhibitor ABT-888 :** A substance being studied in the treatment of breast cancers caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is also being studied in the treatment of other types of cancer. It blocks an enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. PARP-1 inhibitor AG014699 may cause cancer cells to die. It is a type of poly(ADP-ribose) polymerase inhibitor. Also called AG014699.

**PARP-1 inhibitor AG014699 :** Surgery to remove part of the bladder (the organ that holds urine). Also called segmental cystectomy.

**PARP-1/2 inhibitor ABT-767:** An orally available inhibitor of the nuclear enzymes poly(ADP-ribose) polymerase (PARP) 1 and 2, with potential antineoplastic activity. Upon administration, ABT-767 selectively binds to PARP 1 and 2, thereby preventing repair of damaged DNA via the base excision repair (BER) pathway. This agent enhances the accumulation of DNA strand breaks and promotes genomic instability eventually leading to apoptosis. ABT-767 may enhance the cytotoxicity of DNA-damaging agents and reverse tumor cell chemo- and radioresistance. PARP catalyzes post-translational ADP-ribosylation of nuclear proteins that signal and recruit other proteins to repair damaged DNA and can be activated by single strand DNA (ssDNA) breaks. Check for active clinical trials using this agent.

**Part A/Part B:** LSR is a two-part compound; these components are kept separate until the LSR molding process begins.

**Part Picker :** An auxiliary unit usually mounted on fixed platen, which reaches into the open mold to grab parts and remove them prior to next molding cycle. Also called a robot, the device is used when you do not want to drop parts from mold upon ejection.

**Partial cure:** Process sometimes utilized when multiple layers of fluoropolymer coatings are to be applied. The first coat is incompletely cured; the second coat is applied and both are fully cured together. See Flashing.

**partial cystectomy :** Surgery to remove the uterus, but not the cervix. Also called subtotal hysterectomy.

**partial hysterectomy :** An operation to remove part of the larynx (voice box).

**partial laryngectomy :** An operation to remove the cancer and some normal tissue around it, but not the breast itself. Some lymph nodes under the arm may be removed for biopsy. Part of the chest wall lining may also be removed if the cancer is near it. Also called breast-conserving surgery, breast-sparing surgery, lumpectomy, quadrantectomy, and segmental mastectomy.

**partial mastectomy** : Surgery to remove part of one kidney or a kidney tumor, but not an entire kidney.

**partial melting**: the process by which a portion of the magma that is forming from a melting mass of rock separates and rises as a distinct magma.

**partial miscibility**: Two liquids are considered partially miscible if shaking equal volumes of the liquids together results in a meniscus visible between two layers of liquid, but the volumes of the layers are not identical to the volumes of the liquids originally added.

**partial nephrectomy** : Surgery to remove part of one ovary or part of both ovaries.

**partial oophorectomy** : Surgery to remove most, but not all, of the vulva (the external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina). The clitoris may not be removed. Sometimes lymph nodes in the groin area are also removed. Also called modified radical vulvectomy.

**partial pressure**: The pressure exerted by a certain gas in a mixture. OR Partial pressure is the pressure of one gas in a system of two or more nonreacting gases.

**partial radical vulvectomy** : A decrease in the size of a tumor, or in the extent of cancer in the body, in response to treatment. Also called partial response.

**partial remission** : A decrease in the size of a tumor, or in the extent of cancer in the body, in response to treatment. Also called partial remission.

**partial response** : Surgery to remove an affected area of the vulva (the external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina) along with a small amount of surrounding normal tissue.

**partial vacuum**: A volume that contains traces of gas at very low pressure.

**partial vulvectomy** : A type of radiation therapy given only to the part of the breast that has cancer in it. Partial-breast irradiation gives a higher dose over a shorter time than is given in standard whole-breast radiation therapy. Partial-breast irradiation may be given using internal or external sources of radiation. Also called accelerated partial-breast irradiation.

**partial-breast irradiation** : Treatment with injections of antibodies made in another animal or in the laboratory.

**Partially-balanced runner system**: composed of both naturally and artificially balanced runners.

**participial phrase**: begins with a past or present participle and is followed by its object and modifiers; participial phrases are used as adjectives.

**participle**: a verb that ends in -ing (present participle) or -ed, -d, -t, -en, -n (past participle).

**particle**: Small portion of matter.

**Particle-size distribution**: The size distribution of particles in a solid, typically represented graphically as a histogram or numerically as three values: 1) 10% of the sample is less than the value stated, 2) 50% of the sample is less than the value stated (the median), and 3) 90% of the sample is less than the value stated.

**Particles** : The bits of matter from which everything is made. If the particles stick together in fixed places and vibrate, we have a solid; if they can roll and slide about but remain in contact with each other, we have a liquid; if they fly around and are free from each other, we have a gas.

**particulate**: Composed of distinct particles. Smoke is particulate; pure gases are not. OR When fossil fuels are burned, some tiny bits of carbon can be left. These small particles are a source of air pollution and can lead to global dimming.

**particulate matter**: Very small pieces of solid or liquid matter, such as particles of soot, dust, aerosols, fumes, or mists.

**Particulate theory** : Matter is made of particles.

**Parting Agent**: A lubricant, often wax, used to coat a mold cavity to prevent the molded piece from sticking to it, and thus to facilitate its removal from the mold. Also called Release Agent.

**Parting line**: A plane at which two halves of a mold meet Also applies to any other plane where two moving sections come together and form a surface of a molded part or runner.

**partition coefficient**: A constant that expresses the ratio in which a given solute will be partitioned or distributed between two given immiscible liquids at equilibrium.

**partition coefficient:** The constant ratio that is found when a heterogenous system of two phases is in equilibrium; the ratio of the concentrations of the same molecular species (substance) in two phases (usually water and octanol) is constant at given temperature and pressure.

**Partitioned Mold Cooling:** A large diameter hole drilled into the mold (usually the core) and partitioned by a metal plate extending to near the bottom end of the channel. Water is introduced near the top of one side of the partition and removed on the other side.

**PARTITIONED MOLD COOLING:** See BUBBLER.

**PARTITIONED MOLD COOLING:** See BUBBLER.

**parts of speech:** there are eight parts of speech: noun, verb, pronoun, adjective, adverb, preposition, conjunction, and interjection.

**parts per million (ppm):** the unit commonly used to represent the degree of pollutant concentration where the concentrations are small. Larger concentrations are given in percentages.  $1\text{ ppm} = 1\text{ mg/L}$ . In BOD analysis, the results are expressed in ppm, whereas in the suspended solids test, the values are expressed in percents. In air, ppm is usually a volume/volume ratio; in water, ppm represents a weight/volume ratio. OR Concentration expressed as parts of solute per million parts of solution. Usually refers to parts per million by mass. For example, a 10 ppm NaCl solution can be written as: 10 mg NaCl/kg solution, 10  $\mu\text{g}$  NaCl/g solution, 10 ng NaCl/mg solution. In very dilute aqueous solutions, ppm is approximately equal to mg solute per liter of solution. OR Parts (molecules) of a substance contained in a million parts of another substance (e.g., water).

**ParvOryx:** (Other name for: parvovirus H-1)

**parvovirus H-1:** A replication-competent oncolytic parvovirus with potential antineoplastic activity. Upon infection of host cells, parvovirus H-1 preferentially replicates in tumor cells compared to healthy normal cells, thereby potentially resulting in tumor cell lysis and leading to an inhibition of tumor cell proliferation. In addition, H1-infected tumor cells strongly induce the release of the inducible heat shock protein 72 (Hsp72i), which chaperone tumor associated antigens in the H1-mediated tumor lysates and may activate antigen presenting cells (APCs), thereby leading to antitumor immune responses. Parvovirus H-1 does not cause any pathogenic effect in normal, healthy cells and is able to cross the blood brain barrier (BBB).

**pascal:** The SI unit of pressure, equal to a force of one newton per square meter. 101325 pascals = 1atmosphere; 105 pascals = 1 bar.

**pasireotide:** A synthetic long-acting cyclic peptide with somatostatin-like activity. Pasireotide activates a broad spectrum of somatostatin receptors, exhibiting a much higher binding affinity for somatostatin receptors 1, 3, and 5 than octreotide in vitro, as well as a comparable binding affinity for somatostatin receptor 2. This agent is more potent than somatostatin in inhibiting the release of human growth hormone (HGH), glucagon, and insulin. Check for active clinical trials using this agent.

**passive antibody therapy :** A person who is trained to give spiritual and mental health advice.

**passive continental margin:** area along the coast where sediments are deposited. OR marked by a landward, continental shelf followed by a deeper continental slope, continental rise, and flat abyssal plain; characterized by a lack of earthquake activity.

**Passive transport:** Transport of an ion or a molecule down a concentration gradient, where  $\Delta G$  for the transported species is negative. Also called facilitated diffusion.

**past climate analogs:** The reconstructing of past climates at a given locality from modern climatic conditions in a different elevation or latitudinal zone to infer past climatic conditions.

**past perfect:** a verb tense indicating action in past times in relation to another past time; it is formed with had and the past participle of the verb.

**past tense:** a verb tense indicating that an action is finished or complete.

**Pasteur effect:** The inhibition of glycolysis by respiration, discovered by Louis Pasteur; the rate of glycolysis is lower in the presence of oxygen than under anaerobic conditions, a phenomenon largely due to the inhibition of phosphofructokinase by ATP and citrate.

**pastoral counselor :** A bushy herb that is a member of the mint family. A strong-smelling oil taken from the leaves is used in perfumes, incense, detergents, and hair conditioners. It has been used in some cultures to prevent disease. The scientific name is *Pogostemon cablin*

**posttranslational modification:** Enzymatic processing of a polypeptide chain after translation from its mRNA.

**Patch prime:** The priming of localised bare surfaces when bringing forward, prior to stopping up and/or painting.

**Patch-clamp technique:** A method for studying ion channels in which a high-resistance seal is formed between a pipette and a small patch of plasma membrane, allowing the monitoring of the flow of ions through a single channel with high time resolution.

**Patchiness:** This is caused either by different levels of porosity in the substrate or by uneven application. Usually, one more coat will rectify the problem. Before applying, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Rub down with a suitable abrasive, dust off and apply coating.

**patchouli :** Having to do with the father, coming from the father, or related through the father.

**patent blue V dye:** A synthetic dye with imaging and food coloring property. It is a sodium or calcium salt of [4-(alpha-(4-diethylaminophenyl)-5-hydroxy-2,4-disulfophenyl-methylidene)-2,5-cyclohexadien-1-ylidene] diethylammonium hydroxide inner salt. Patent blue V dye is used in sentinel lymph node (SLN) technique to guide nodal dissection or other imaging procedures.

**paternal :** A disorder marked by anemia caused by iron deficiency, and a web-like growth of membranes in the throat that makes swallowing difficult. Having Paterson-Kelly syndrome may increase the risk of developing esophageal cancer. Also called Plummer-Vinson syndrome and sideropenic dysphagia.

**Paterson-Kelly syndrome :** Having to do with a sign or symptom that is specific to a certain disease.

**path length:** In absorption spectroscopy, the length of a path taken by radiation through a sample.

**pathogenic:** organisms that cause human disease. OR Disease-causing.

**pathogenic bacteria:** bacteria which may cause disease in the organisms by their parasitic growth.

**pathognomonic :** Findings that are distinctive or characteristic of a particular disease or condition and make the diagnosis. or A broken bone caused by disease, often by the spread of cancer to the bone.

**pathologic fracture :** The stage of cancer (amount or spread of cancer in the body) that is based on how different from normal the cells in samples of tissue look under a microscope.

**pathological stage :** A method used to find out the stage of cancer (amount or spread of cancer in the body) by removing tissue samples during surgery or a biopsy. The pathological stage is based on how different from normal the cells in the samples look under a microscope.

**pathological staging :** A doctor who has special training in identifying diseases by studying cells and tissues under a microscope.

**pathologist :** The description of cells and tissues made by a pathologist based on microscopic evidence, and sometimes used to make a diagnosis of a disease.

**pathology report :** A person who helps a patient work with others who have an effect on the patient's health, including doctors, insurance companies, employers, case managers, and lawyers. A patient advocate helps resolve issues about health care, medical bills, and job discrimination related to a patient's medical condition. Cancer advocacy groups try to raise public awareness about important cancer issues, such as the need for cancer support services, education, and research. Such groups work to bring about change that will help cancer patients and their families.

**patidegib:** An orally bioavailable, cyclopamine-derived inhibitor of the Hedgehog (Hh) pathway with potential antineoplastic activity. Specifically, patidegib binds to and inhibits the cell membrane-spanning G-protein coupled receptor SMO, which may result in the suppression of Hh pathway signaling and a decrease in tumor cell proliferation and survival. SMO is activated upon binding of Hh ligand to the cell surface receptor Patched (PTCH); inappropriate activation of Hh signaling and uncontrolled cellular proliferation may be associated with SMO mutations. The Hh signaling pathway plays an important role in proliferation of neuronal precursor cells in the developing cerebellum and other tissues.

**patient advocate :** A method of pain relief in which the patient controls the amount of pain medicine that is used. When pain relief is needed, the person can receive a preset dose of pain medicine by pressing a button on a computerized pump that is connected to a small tube in the body. Also called PCA.

**patient-controlled analgesia :** A drug used to treat depression and anxiety disorders. It is a type of selective serotonin reuptake inhibitor (SSRI). Also called paroxetine hydrochloride.

**patient-specific follicular lymphoma-derived anti-idiotypic vaccine:** A patient-specific cancer vaccine directed against the soluble protein idiotype of an individual follicular lymphoma with potential antineoplastic activity. A patient-specific follicular lymphoma-derived anti-idiotypic vaccine may be composed of a patient-specific, synthetic idiotype-related peptide (such as one corresponding to a hypervariable region of an IgG heavy chain) conjugated to the immunostimulant carrier protein keyhole limpet hemocyanin (KLH). Upon administration, this vaccine may induce an idiotype-specific cytotoxic T-lymphocyte (CTL) response against follicular lymphoma cells expressing the idiotype, resulting in tumor cell lysis.

**patina:** A thin layer of corrosion products with a distinctive coloration that forms on a metal surface exposed to air and water. Patina usually refers to the greenish coating that forms on copper alloys over time.

**Patisiran:** (Other name for: anti-transferrin receptor 1 siRNA ALN-TTR02)

**patritumab:** A fully human monoclonal antibody directed against the membrane-bound receptor HER3 (ERBB3) with potential antineoplastic activity. Patritumab binds to and inhibits HER3 activation, which may result in inhibition of HER3-dependent PI3K/Akt signaling and so inhibition of cellular proliferation and differentiation. HER3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in solid tumors, including breast, lung, and colorectal tumors of epithelial origin; it has no active kinase domain itself but is activated through heterodimerization with other members of the EGFR receptor family that do. Check for active clinical trials using this agent.

**pattern recognition:** A computational technique used to find patterns and develop classification schemes for data in very large data sets.

**patupilone:** A compound isolated from the myxobacterium *Sorangium cellulosum*. Similar to paclitaxel, patupilone induces microtubule polymerization and stabilizes microtubules against depolymerization conditions. In addition to promoting tubulin polymerization and stabilization of microtubules, this agent is cytotoxic for cells overexpressing

P-glycoprotein, a characteristic that distinguishes it from the taxanes.  
Epothilone B may cause complete cell-cycle arrest.

**Pauli exclusion principle:** states that no two electrons in an atom can have the same set of quantum numbers.

**PAULI EXCLUSION PRINCIPLE:** states that no two electrons may have the same quantum numbers. Only two electrons may occupy an orbital, but they must have opposite spins.

**Pauli principle:** No two electrons in an atom can have the same set of 4 quantum numbers. Because the n, l, and m quantum numbers address a particular orbital, and because the ms quantum number has only two possible values, the Pauli principle says that a maximum of two electrons can occupy an atomic orbital- and these electrons must have opposite spins.

**pause:** a region separating two layers of the atmosphere.

**Pavabid:** (Other name for: papaverine)

**Pavatym:** (Other name for: papaverine)

**Paxil:** (Other name for: paroxetine hydrochloride)

**Paxil :** A drug used to treat advanced renal cell carcinoma, which is the most common type of kidney cancer. It is also used to treat advanced soft tissue sarcoma that has been treated with other anticancer drugs. It is being studied in the treatment of other types of cancer. Pazopanib hydrochloride may prevent the growth of new blood vessels that tumors need to grow. It is a type of protein tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called GW786034 and Votrient.

**pazopanib hydrochloride:** The hydrochloride salt of a small molecule inhibitor of multiple protein tyrosine kinases with potential antineoplastic activity. Pazopanib selectively inhibits vascular endothelial growth factor receptors (VEGFR)-1, -2 and -3, c-kit and platelet derived growth factor receptor (PDGF-R), which may result in inhibition of angiogenesis in tumors in which these receptors are upregulated. or A chemotherapy combination used to treat endometrial, ovarian, and head and neck cancers, and non-small cell lung cancer that has spread. It includes the drugs carboplatin and paclitaxel (Taxol). Also called Carbo-Tax regimen, carboplatin-Taxol, carboplatin-Taxol regimen, and CaT regimen.

**PB:** Polybutylene

**pBCAR3 phosphopeptide-tetanus peptide vaccine:** A vaccine composed of a phosphorylated peptide from the tumor-associated antigen breast cancer anti-estrogen resistance-3 (BCAR3) and a tetanus-derived peptide, with potential immunomodulating and antineoplastic activities. Upon administration of pBCAR3 phosphopeptide-tetanus peptide vaccine, the pBCAR3 phosphopeptide may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against phosphopeptide-containing tumor cells. The tetanus peptide serves as an immunoadjuvant and induces a helper T-cell response, which may help stimulate an immune response against the pBCAR3-expressing melanoma tumor cells. BCAR3 is upregulated in a variety of cancer cells.

**pBCAR3/pIRS2-phosphopeptide-tetanus peptide vaccine:** A vaccine composed of phosphorylated peptides from the tumor associated antigens breast cancer anti-estrogen resistance-3 (BCAR3) and insulin receptor substrate-2 (IRS2) and a tetanus-derived peptide, with potential immunomodulating and antineoplastic activities. Upon administration of pBCAR3/pIRS2 phosphopeptide-tetanus peptide vaccine, the pBCAR3/pIRS2 phosphopeptide may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing either phosphopeptide. The tetanus peptide serves as an immunoadjuvant and induces a helper T-cell response which may help stimulate an immune response against pBCAR3 and pIRS2-expressing melanoma tumor cells. BCAR3 and IRS2 are upregulated in a variety of cancer cells.

**pbi-shRNA STMN1 lipoplex:** A proprietary RNA interference construct consisting of bifunctional short hairpin RNAs (shRNA) against human stathmin 1 (STMN1) encapsulated in the cationic bilamellar invaginated vesicle lipoplex (LP) with potential antineoplastic activity. pbi-shRNA STMN1 LP contains 2 stem-loop structures encoded by a plasmid vector. Upon intratumoral administration, one shRNA unit with a perfectly matched sequence renders the suppression of STMN1 mRNA translation (mRNA sequestration and cleavage-independent degradation) while the other unit with an imperfectly matched sequence renders STMN1 mRNA degradation via RNase H-like cleavage (cleavage-dependent mRNA silencing). The suppression of STMN1 expression in tumor cells results in a reduction of tumor cell proliferation. STMN1, a ubiquitous cytosolic

phosphoprotein and tubulin modulator that plays a key role in mitosis, is overexpressed in a variety of tumors and correlates with poor prognosis.

**PBN derivative OKN-007:** A disulfonyl derivative of phenyl-tert-butyl nitrene (PBN), with potential anti-glioma activity. Although the exact mechanism(s) of action of OKN007 are still largely unknown, this agent appears to inhibit cancer cell proliferation and migration. This agent appears to inhibit the activity of sulfatase 2 (SULF2), a highly specific endoglucosamine-6-sulfatase that is overexpressed in the extracellular matrix of cancer cells and catalyzes the removal of sulfate from the 6-O-sulfate esters of heparin. In addition, OKN007 may induce changes in tumor metabolism and scavenge free radicals.

**PBT:** Polybutylene terephthalate

**PBTL CD19CAR-28 zeta:** Peripheral blood T-lymphocytes (PBTLs) transduced with a retroviral vector expressing a chimeric antigen receptor (CAR) consisting of an anti-CD19 scFv (single chain variable fragment) coupled to the costimulatory signaling domain CD28, the signaling domain of 4-1BB (CD137), and the zeta chain of the T-cell receptor (TCR), with potential immunomodulating and antineoplastic activities. Upon transfusion, PBTL CD19CAR-28/CD137zeta directs the T-lymphocytes to CD19-expressing tumor cells and induces selective toxicity in CD19-expressing tumor cells. CD28, a T-cell surface-associated co-stimulatory molecule, is required for full T-cell activation, proliferation, and survival. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of CD19. Furthermore, inclusion of the 4-1BB signaling domain may increase the antitumor activity compared to the inclusion of the CD28 costimulatory domain and TCR zeta chain alone. CD19 antigen is a B-cell specific cell surface antigen, which is expressed in all B-cell lineage malignancies.

**PBTP:** Polybutylene terephthalate

**PC:** Polycarbonate

**PC regimen :** A method of pain relief in which the patient controls the amount of pain medicine that is used. When pain relief is needed, the person can receive a preset dose of pain medicine by pressing a button on a computerized pump that is connected to a small tube in the body. Also called patient-controlled analgesia.

**PC-SPES :** An abbreviation for a chemotherapy combination used to treat certain types of brain tumors. It is often used with radiation therapy. It includes the drugs procarbazine hydrochloride, lomustine (CCNU), and vincristine sulfate. Also called PCV regimen.

**PCA:** Primary CNS lymphoma. Cancer that forms in the lymph tissue of the brain, spinal cord, meninges (outer covering of the brain), or eye (called ocular lymphoma). Also called primary central nervous system lymphoma and primary CNS lymphoma.

**PCNSL:** A condition marked by infertility, enlarged ovaries, menstrual problems, high levels of male hormones, excess hair on the face and body, acne, and obesity. Women with PCOS have an increased risk of diabetes, high blood pressure, heart disease, and endometrial cancer. Also called polycystic ovary syndrome.

**pCO<sub>2</sub>:** The partial pressure of CO<sub>2</sub> in the atmosphere and the ocean. In the atmosphere, the partial pressure of CO<sub>2</sub> is defined as the pressure the CO<sub>2</sub> would exert if all other gases were removed. The sum of the partial pressure of all the atmospheric gases will equal the atmospheric pressure. The partial pressure of CO<sub>2</sub> in the atmosphere is determined by the atmospheric CO<sub>2</sub> concentration and atmospheric temperature. In the ocean, the pCO<sub>2</sub> is determined by the amount of dissolved CO<sub>2</sub> and H<sub>2</sub>CO<sub>3</sub>. It varies with alkalinity, latitude, depth, and temperature. Biological processes in the ocean also exert an influence on the pCO<sub>2</sub> in the ocean.

**PCOS:** A laboratory method used to make many copies of a specific piece of DNA from a sample that contains very tiny amounts of that DNA. PCR allows these pieces of DNA to be amplified so they can be detected. PCR may be used to look for certain changes in a gene or chromosome, which may help find and diagnose a genetic condition or a disease, such as cancer. It may also be used to look at pieces of the DNA of certain bacteria, viruses, or other microorganisms to help diagnose an infection. Also called polymerase chain reaction.

**PCR:** polymerase chain reaction; a technique used to amplify a gene of interest. OR Polymerase chain reaction A method for amplifying DNA sequences.

**PCR:** A procedure that produces millions of copies of a short segment of DNA through repeated cycles of: (1) denaturation, (2) annealing, and (3) elongation. PCR is a very common procedure in molecular genetic testing

and may be used to generate a sufficient quantity of DNA to perform a test (e.g., allele-specific amplification, trinucleotide repeat quantification). Also called polymerase chain reaction. or A mixture of eight herbs that has been sold as a dietary supplement and promoted as a way to keep the prostate healthy and to treat prostate cancer. PC-SPES has been studied in the treatment of prostate cancer, but has been taken off the market in the U.S. because of safety concerns.

**PCTFE:** Polychlorotrifluoroethylene

**PCV:** An abbreviation for a chemotherapy combination used to treat certain types of brain tumors. It is often used with radiation therapy. It includes the drugs procarbazine hydrochloride, lomustine (CCNU), and vincristine sulfate. Also called PCV.

**PCV regimen:** A regimen consisting of procarbazine, lomustine and vincristine used for the treatment of gliomas. Or A protein found on T cells (a type of immune cell) that helps keep the body's immune responses in check. When PD-1 is bound to another protein called PD-L1, it helps keep T cells from killing other cells, including cancer cells. Some anticancer drugs, called immune checkpoint inhibitors, are used to block PD-1. When this protein is blocked, the "brakes" on the immune system are released and the ability of T cells to kill cancer cells is increased.

**PD-1:** A family of molecules released from platelets (tiny pieces of cells that are found in the blood and that help the blood clot). Forms of PDGF help to heal wounds and to repair damage to blood vessel walls. They also help blood vessels grow. Also called platelet-derived growth factor.

**PD-1 knockout autologous T lymphocytes:** A population of engineered autologous T lymphocytes in which the gene encoding for the programmed cell death protein 1 (PDCD-1) is deleted, with potential immunomodulating activity. Following collection of peripheral blood lymphocytes and selection of T cells, the PDCD-1 gene was knocked out and the T cells were expanded. Upon reinfusion of the PDCD-1 knockout T lymphocytes, these T cells target and lyse cancer cells. The PDCD-1 protein, found on activated T cells and often overexpressed on T cells in cancer patients, negatively regulates T-cell activity; it plays a key role in immune evasion and prevents tumor cell lysis. PDCD-1 knockout enhances cytotoxicity and T-cell-mediated anti-tumor immune responses. Check for active clinical trials using this agent.

**PD0325901:** An orally bioavailable, synthetic organic molecule targeting mitogen-activated protein kinase kinase (MAPK/ERK kinase or MEK) with potential antineoplastic activity. MEK inhibitor PD325901, a derivative of MEK inhibitor CI-1040, selectively binds to and inhibits MEK, which may result in the inhibition of the phosphorylation and activation of MAPK/ERK and the inhibition of tumor cell proliferation. The dual specific threonine/tyrosine kinase MEK is a key component of the RAS/RAF/MEK/ERK signaling pathway that is frequently activated in human tumors.

**PDGF:** The largest amount of a substance or radiation that a person is exposed to at one time. Peak exposure to a harmful substance or radiation may increase the risk of certain diseases or conditions.

**PDGFR alpha/KIT mutant-specific inhibitor BLU-285:** An orally bioavailable inhibitor of specific mutated forms of platelet-derived growth factor receptor alpha (PDGFR alpha; PDGFRA) and mast/stem cell factor receptor c-Kit (SCFR), with potential antineoplastic activity. Upon oral administration, BLU-285 specifically binds to and inhibits specific mutant forms of PDGFRA and c-Kit, including the PDGFRA D842V mutant and various KIT exon 17 mutants. This results in the inhibition of PDGFRA- and c-Kit-mediated signal transduction pathways and the inhibition of proliferation in tumor cells that express these PDGFRA and c-Kit mutants. PDGFRA and c-Kit, protein tyrosine kinases and tumor-associated antigens (TAAs), are mutated in various tumor cell types; they play key roles in the regulation of cellular proliferation.

**PDK1 inhibitor AR-12:** An orally bioavailable, small-molecule, celecoxib-derived inhibitor of phosphoinositide-dependent kinase-1 (PDK1) with potential antineoplastic activity. Devoid of any COX inhibiting activity, PDK1 inhibitor AR-12 binds to and inhibits the phosphorylation of 3-phosphoinositide-dependent kinase-1 (PDK-1).; subsequently, the phosphorylation and activation of the serine/threonine protein kinase Akt (protein kinase B or PKB) is inhibited, which may result in inhibition of the PI3K/Akt signaling pathway, inhibition of tumor cell proliferation, and the induction of tumor cell apoptosis. In addition, this agent appears to induce the activity of protein kinase R-like endoplasmic reticulum kinase (PERK), which plays a key role in the endoplasmic reticulum stress pathway. Activation and dysregulation of the PI3K/Akt signaling pathway is

frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**PE:** Polyethylene

**PE/HPV16 E7/KDEL fusion protein TVGV-1:** A fusion protein consisting of a peptide sequence of human papillomavirus (HPV) type 16 E7 nuclear protein and fused to the *Pseudomonas aeruginosa* exotoxin A (PE) and a endoplasmic reticulum (ER) retention signal (KDEL), with potential antineoplastic activity. Upon administration of PE/HPV16 E7/KDEL fusion protein TVGV-1, the PE moiety binds to CD91 (LRP1) expressed on a variety of cells, including antigen-presenting cells such as dendritic cells (DCs), which facilitates the internalization, through endocytosis, of TVGV-1. Following endocytosis, this agent is proteolytically cleaved by the proteasome and the epitopes from the HPV E7 protein become bound to MHC-I molecules and are presented on the DC-cell surface. This facilitates a cytotoxic T-cell-mediated immune response against HPV16 E7 expressing-tumor cells. KDEL targets the fusion protein to the ER, which increases this agent's potential to be bound by MHC-I molecules; this increases the immune response against HPV16 E7-expressing cancer cells. Check for active clinical trials using this agent.

**peak exposure :** A dimpled condition of the skin of the breast, resembling the skin of an orange, sometimes found in inflammatory breast cancer.

**PEARLIZER:** A substance, such as glycol distearate (EGDS), which, when added to a formulation, imparts an opalescent finish to that formulation.

**peat:** an unlithified organic material that can be cut into blocks and burned for fuel.

**peau d'orange :** An abbreviation for a chemotherapy combination used in children to treat certain types of malignant (cancer) germ cell tumors that are not in the brain. It includes the drugs cisplatin (Platinol), etoposide phosphate, and bleomycin sulfate. Also called PEB regimen.

**PEB:** (... REH-jih-men)

**PEB regimen:** A chemotherapy regimen consisting of bleomycin, etoposide and cisplatin used for the treatment of pediatric germ cell tumors (GCT). In the PEB regimen, the pediatric patients receive bleomycin once

per cycle and do not receive weekly bleomycin during the weeks between cycles (every 21 days); in the adult BEP regimen, patients receive weekly bleomycin.

**PEB regimen :** An abbreviation for a chemotherapy combination used in children to treat certain types of malignant (cancer) germ cell tumors that are not in the brain. It includes the drugs cisplatin (Platinol), etoposide phosphate, and bleomycin sulfate. Also called PEB.

**Pebble dash:** A rough finish given to external walls by coating it with mortar or cement and sand and throwing small pebbles onto the surface before it has set.

**PEC:** Polyphenylene ether copolymer

**PectaSol-C:** (Other name for: modified citrus pectin supplement)

**pectus carinatum:** also called pigeon chest, is a deformity of the chest characterized by a protrusion of the sternum and ribs

**pectus excavatum:** also called funnel chest, a condition in which the ribs and sternum grow inward producing a concave appearance of the anterior chest wall

**pedalfer:** a thick soil high in aluminum and iron that develops in response to abundant rainfall, organic acids, and strong downward leaching.

**Pedi-Vit-A:** (Other name for: retinol)

**PEDIARIX:** (Other name for: diphtheria toxoid/tetanus toxoid/acellular pertussis adsorbed, recombinant hepatitis B/inactivated poliovirus vaccine combined)

**PediaSure:** (Other name for: nutritional supplement drink (pediatric))

**PediaSure :** A nutritional drink that helps children who cannot get everything they need in their diet from foods and other drinks. It may be given through a small tube that is inserted through the nose into the stomach or the small intestine. It may also be given through a tube that is put into the stomach or the intestinal tract through an opening made on the outside of the abdomen. Also called pediatric polymeric enteral nutrition formula.

**pediatric :** Having to do with children.

**pediatric hematologist :** A doctor who has special training in diagnosing and treating blood disorders in children.

**pediatric nurse specialist :** A registered nurse with an advanced degree in nursing who specializes in the care of children.

**pediatric oncologist :** A doctor who has special training in diagnosing and treating children with cancer.

**pediatric polymeric enteral nutrition formula :** A nutritional drink that helps children who cannot get everything they need in their diet from foods and other drinks. It may be given through a small tube that is inserted through the nose into the stomach or the small intestine. It may also be given through a tube that is put into the stomach or the intestinal tract through an opening made on the outside of the abdomen. Also called PediaSure.

**pediatric surgeon :** A surgeon who has special training in treating children. A surgeon removes or repairs a part of the body by operating on the patient.

**pediatrician :** A doctor who has special training in preventing, diagnosing, and treating diseases and injuries in children. Pediatricians also help manage other problems that affect children, such as developmental disorders and behavioral, emotional, and social problems.

**pedicle flap :** A type of surgery used to rebuild the shape of the breast after a mastectomy. Tissue, including skin, fat, and muscle, is moved from one area of the body, such as the back or abdomen, to the chest to form a new breast mound. The tissue flap, along with its blood vessels, stays connected to the body and is passed through a tunnel under the skin to the chest. A pedicle flap is a type of breast reconstruction.

**pedigree :** A graphic illustration of family history. Or A diagram that shows relationships among family members. In medicine, a pedigree may also show the pattern of certain genes or diseases within a family.

**pediment:** a low-angle erosion surface at the foot of a mountain range that is typically covered by up to 100 feet of sediment; occurs between the bajada and the range front.

**pedocal:** a thin, poorly leached soil formed in arid climates by the upward movement of soil water by subsurface evaporation and capillary action.

**pedunculated :** In the body, a structure that has a peduncle (a stalk or stem) or is attached to another structure by a peduncle.

**PedvaxHIB:** (Other name for: Haemophilus influenzae b vaccine)

**PEEK:** Polyetherether ketone

**Peeling:** An open blister.

**PEELING:** Detachment of a dried paint film in relatively large pieces, usually caused by moisture or grease under the painted surface.

**Peeling:** The detachment of paint from the surface in ribbons or sheets. Like flaking, it is the result of loss of adhesion properties. OR Like flaking, peeling results from paint losing its adhesion properties. The cure is to thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants, then scrape back all areas of poorly adhering or defective coatings to a firm edge. Finally, rub down to "feather" broken edges, dust off and repaint.

**peer review process :** The process by which original articles and grants written by researchers are evaluated for technical and scientific quality and correctness by other experts in the same field.

**peer-reviewed scientific journal :** A publication that contains original articles that have been written by scientists and evaluated for technical and scientific quality and correctness by other experts in the same field.

**PEG:** A polymer made by joining molecules of ethylene oxide and water together in a repeating pattern. PEG can be a liquid or a waxy solid. In medicine, forms of PEG can be used in ointments, in drugs or substances to make them stay in the body longer, or in laxatives. Also called polyethylene glycol.

**PEG tube :** A tube inserted through the wall of the abdomen directly into the stomach. It allows air and fluid to leave the stomach and can be used to give drugs and liquids, including liquid food, to the patient. Giving food through a PEG tube is a type of enteral nutrition. Also called gastrostomy tube and percutaneous endoscopic tube.

**PEG-3350/sodium sulfate/sodium chloride/potassium chloride/sodium ascorbate/ascorbic acid-based laxative:** A preparation containing the nonabsorbable polymer polyethylene glycol (PEG or macrogol) 3350 and sodium sulfate, sodium chloride, potassium chloride, sodium ascorbate and ascorbic acid with laxative activity. Upon oral administration, the PEG-3350, sodium sulfate, sodium chloride, potassium chloride, sodium ascorbate and ascorbic acid-based laxative promotes the retention of water in the bowel. This increases the water content of stool, which results in

increased gastrointestinal motility and evacuation of colonic contents. This results in a complete cleansing of the colon. Compared to the 4 liter PEG-3350-based preparations, this PEG-based laxative is a low volume (2 liter) preparation, which improves patients' tolerance.

**PEG-asparaginase :** A drug used to treat acute lymphoblastic leukemia (ALL). It is a form of the drug asparaginase that is linked to a substance called PEG, which makes the drug stay in the body longer. Asparaginase is an enzyme that breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. It is a type of protein synthesis inhibitor. Also called Oncaspar and pegaspargase.

**PEG-based laxative NER1006:** A preparation containing the nonabsorbable polymer polyethylene glycol (PEG or macrogol) 3350 with laxative activity. Upon oral administration, the PEG-3350-based laxative NER1006 promotes the retention of water in the bowel. This increases both the water content and volume of stool, which results in increased gastrointestinal motility and the evacuation of colonic contents leading to a complete cleansing of the colon. Compared to the 4 liter PEG-3350-based preparations, this PEG-based laxative is a low volume (2 liter) preparation, which may improve tolerance.

**PEG-interferon alfa-2a:** A covalent conjugate of recombinant interferon alfa, subtype 2a, and polyethylene glycol (PEG), used as an antiviral and antineoplastic agent. The biological activity of this agent is derived from its interferon alpha-2a protein moiety. Interferons alfa bind to specific cell-surface receptors, leading to the transcription and translation of genes whose protein products mediate antiviral, antiproliferative, anticancer and immune-modulating effects. The PEG moiety lowers the clearance of interferon alpha-2a, thereby extending the duration of its therapeutic effects, but may also reduce interferon-mediated stimulation of an immune response.

**PEG-interleukin-2:** A complex of polyethylene glycol conjugated with human recombinant cytokine interleukin-2 (IL-2) with antineoplastic activity. PEG-interleukin-2 induces natural killer (NK) cell activity and the production of interferon-gamma (IFN-gamma), and enhances T cell-mediated cytotoxicity. Pegylation of IL-2 protects the cytokine from degradation. Check for active clinical trials using this agent.

**PEG-Intron :** A drug used to treat hepatitis C infections. PEG-Intron is a brand name for peginterferon alfa-2b. It is a type of cytokine and a type of biological response modifier.

**PEG-linked L-RNA oligonucleotide hepcidin-targeting agent NOX-H94:** A proprietary 44-nucleotide L-stereoisomer RNA oligonucleotide conjugated to a 40 kDa polyethylene glycol (PEG) that targets hepcidin with potential anti-anemic activity. Upon intravenous or subcutaneous administration, PEG-linked L-RNA oligonucleotide hepcidin targeting agent NOX-H94 binds to hepcidin and prevents it from binding to the iron channel ferroportin, located on the basolateral surface of gastrointestinal enterocytes and the plasma membrane of macrophages. This prevents hepcidin-induced internalization and degradation of ferroportin, thus decreasing macrophage iron retention. In turn, binding of NOX-H94 to hepcidin normalizes plasma iron levels and increases erythropoiesis. This may inhibit anemia caused by inflammation. Hepcidin, a peptide hormone that plays a key role in the homeostasis of systemic iron, is upregulated during acute and chronic inflammation in response to cytokines. The unique mirror-image configuration of this agent renders it resistant to hydrolysis and shows a low antigenicity profile. Pegylation increases the half-life of this agent.

**PEG-MGDF:** A form of megakaryocyte growth and development factor (MGDF) that is made in the laboratory. MGDF comes from the protein thrombopoietin, which is normally made in the body to help make platelets. PEG-MGDF is being studied as a way to increase the number of platelets in patients receiving chemotherapy. Also called PEG-rhMGDF and polyethylene glycosylated recombinant human megakaryocyte growth and development factor.

**PEG-PEI-cholesterol lipopolymer-encased IL-12 DNA plasmid vector GEN-1:** A nanoparticle-based formulation composed of a non-viral plasmid DNA vector encoding the human pro-inflammatory cytokine interleukin-12 (IL-12) encapsulated in a biodegradable, biocompatible lipoplex composed of polyethylene glycol (PEG), polyethylenimine (PEI), and cholesterol, with potential immuno-activating and antineoplastic activities. Upon intraperitoneal (IP) delivery of the PEG-PEI-cholesterol lipopolymer-encased IL-12 DNA plasmid vector GEN-1, the lipoplex is endocytosed by nearby cells, and the plasmid DNA is transported into the

nucleus, which leads to local expression of IL-12. In turn, the increased IL-12 production at the tumor site activates the immune system by promoting the activation of natural killer cells (NKs), inducing secretion of interferon-gamma (IFN-g) and promoting cytotoxic T-cell responses against tumor cells.

**PEG-proline-interferon alpha-2b:** A long-acting formulation of recombinant interferon alpha subtype 2b (IFN-a2b) protein, in which IFN-a2b is coupled, via proline, to polyethylene glycol (PEG), with antiviral, immunomodulating and antineoplastic activities. Upon subcutaneous administration, IFN-a2b binds to specific interferon cell-surface receptors. This activates interferon-mediated signal transduction pathways and induces the transcription and translation of genes with interferon-specific response elements (ISREs); the protein products mediate antiviral, antiproliferative, anticancer, and immune-modulating effects. The PEG moiety inhibits proteolytic breakdown and clearance of IFN-a2b, which prolongs its half-life, extends the duration of its therapeutic effects and allows less frequent dosing. The proline linker facilitates the synthesis of a predominant (90%) positional isomer which allows for further increases in stability and a longer half-life than previous PEG conjugates.

**PEG-rhMGDF:** A form of megakaryocyte growth and development factor (MGDF) that is made in the laboratory. MGDF comes from the protein thrombopoietin, which is normally made in the body to help make platelets. PEG-rhMGDF is being studied as a way to increase the number of platelets in patients receiving chemotherapy. Also called PEG-MGDF and polyethylene glycosylated recombinant human megakaryocyte growth and development factor.

**pegaspargase:** A complex of polyethylene glycol conjugated with L-asparaginase. Asparaginase hydrolyzes L-asparagine to L-aspartic acid and ammonia, thereby depleting these cells of asparagine and blocking protein synthesis and tumor cell proliferation, especially in the G1 phase of the cell cycle. The agent also induces apoptosis in tumor cells. Pegylation decreases the enzyme's antigenicity. Asparagine is critical to protein synthesis in leukemic cells, which cannot synthesize this amino acid due to the absence of the enzyme asparagine synthase. or A drug used to treat acute lymphoblastic leukemia (ALL). It is a form of the drug asparaginase that is linked to a substance called PEG, which makes the drug stay in the body

longer. Asparaginase is an enzyme that breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. It is a type of protein synthesis inhibitor. Also called Oncaspar and PEG-asparaginase.

**Pegasys :** A drug used to treat hepatitis C infections. It is also being studied in the treatment and prevention of cancer. It is a cytokine that is modified in the laboratory. It is a type of biological response modifier. Also called peginterferon alfa-2a.

**pegdinetanib:** A highly specific, synthetic peptide vascular endothelial growth factor receptor-2 (VEGFR-2) antagonist with potential antiangiogenic activity. Derived from human fibronectin with a proprietary protein engineering process, pegdinetanib may block the activation of VEGFR-2 by all known activating ligands, thereby inhibiting the growth of new tumor blood vessels.

**pegfilgrastim:** A long-acting pegylated form of a recombinant therapeutic agent which is chemically identical to or similar to an endogenous human granulocyte colony-stimulating factor (G-CSF). Produced endogenously by monocytes, fibroblasts, and endothelial cells, G-CSF binds to and activates specific cell surface receptors, stimulating neutrophil progenitor proliferation and differentiation and selected neutrophil functions. Conjugation of the cytokine with a branched polyethylene glycol molecule (pegylation) significantly increases its therapeutic half-life.

**pegfilgrastim :** A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. Pegfilgrastim is also used to help prevent damage to the bone marrow in patients who were exposed to high doses of certain types of radiation. Pegfilgrastim helps the bone marrow make more white blood cells. It is a form of filgrastim and is able to stay in the body longer. Pegfilgrastim is a type of colony-stimulating factor. Also called filgrastim-SD/01 and Neulasta.

**pegfilgrastim anti-neutropenic factor:** A long-acting, engineered and pegylated version of human granulocyte-colony stimulating factor (G-CSF), with potential hematopoietic activity. Similar to G-CSF, pegfilgrastim anti-neutropenic factor (ANF) binds to and activates specific cell surface receptors, and stimulates neutrophil progenitor proliferation and

differentiation. Therefore, this agent may prevent the duration and incidence of chemotherapy-induced neutropenia. Compared to filgrastim, the conjugation with a branched polyethylene glycol molecule reduces renal clearance and increases its plasma half-life.

**pegfilgrastim biosimilar LA-EP2006:** A biosimilar of pegfilgrastim, a long-acting pegylated form of recombinant human granulocyte colony-stimulating factor (G-CSF) filgrastim, with hematopoietic activity. In a similar manner to G-CSF, pegfilgrastim biosimilar LA-EP2006 binds to and activates specific cell surface receptors, stimulating neutrophil progenitor proliferation and differentiation and selected neutrophil functions.

Therefore, this agent may prevent the incidence and shorten the duration of chemotherapy-induced neutropenia. Conjugation of the cytokine with a branched polyethylene glycol molecule significantly increases this agent's therapeutic half-life compared to filgrastim.

**peginterferon alfa-2a :** A drug used to treat hepatitis C infections. It is also being studied in the treatment and prevention of cancer. It is a cytokine that is modified in the laboratory. It is a type of biological response modifier. Also called Pegasys. Or A covalent conjugate of recombinant interferon alpha, subtype 2b, and polyethylene glycol (PEG), used as an antiviral and antineoplastic agent. The biological activity of this agent is derived from its interferon alpha-2b protein moiety. Interferons alfa bind to specific cell-surface receptors, leading to the transcription and translation of genes whose protein products mediate antiviral, antiproliferative, anticancer, and immune-modulating effects. The PEG moiety lowers the clearance of interferon alpha-2b, thereby extending the duration of its therapeutic effects, but may also reduce the interferon-mediated stimulation of an immune response.

**peginterferon alfa-2b :** A drug used to treat melanoma and hepatitis C. It is also being studied in the treatment of other types of cancer. It is used under the brand name Sylatron to treat melanoma in patients who have had surgery to remove cancer that has spread to lymph nodes. It is used under the brand name PEG-Intron to treat hepatitis C infections. Peginterferon alfa-2b is a form of interferon alfa (a substance normally made by cells in the immune system) linked to a substance called PEG, which makes the drug stay in the body longer. Peginterferon alfa-2b is made in the

laboratory. It is a type of cytokine and a type of biological response modifier. Also called SCH 54031.

**pegmatite:** a dike that contains very coarse-grained crystals.

**pegol sihematide:** A synthetic peptide derived from erythropoietin (EPO) linked to polyethylene glycol (PEG), with erythropoietic stimulating activity. Upon administration, pegol sihematide binds to and activates EPO receptors on the surface of erythroid progenitor cells in the bone marrow resulting in their differentiation and proliferation. This increases the production of red blood cells and prevents anemia. Pegylation increases this agent's blood circulation time.

**pegteograstim:** An analogue of pegfilgrastim, a recombinant, pegylated form of endogenous human granulocyte colony-stimulating factor (G-CSF), with hematopoietic activity. Similar to endogenous G-CSF, this agent binds to and activates specific cell surface receptors, and stimulates neutrophil progenitor proliferation, differentiation and selected neutrophil functions. Pegteograstim may prevent and shorten the duration of chemotherapy-induced neutropenia (CIN). Pegylation of teograstim increases the half-life of this agent. Check for active clinical trials using this agent.

**pegvisomant:** A pegylated, recombinant, human growth hormone (GH) structural analog with GH receptor antagonist activity. As a GH analog, the structure of pegvisomant is similar to that of native GH with the exception of 9 amino acid substitutions. Pegvisomant selectively binds to GH receptors on cell surfaces, interfering with endogenous GH receptor binding and so GH signal transduction. Inhibition of GH signal transduction results in decreased serum concentrations of insulin-like growth factor-I (IGF-I), and other GH-responsive serum proteins, including IGF binding protein-3 (IGFBP-3) and the acid-labile subunit (ALS), and may inhibit the growth of cancers in which IGF-1 is upregulated.

**pegylated anti-GFR antibody fragment:** A pegylated, cross-linked, humanized divalent-Fab' antibody fragment directed against vascular endothelial growth factor receptor-2 (VEGFR-2) with potential antiangiogenic and antitumor activities. Pegylated anti-GFR antibody fragment binds to and inhibits VEGFR-2, which may inhibit angiogenesis and tumor cell proliferation. Multivalent Fab' antibody fragments may exhibit improved retention and internalization properties compared to their parent IgGs.

**pegylated arginine deiminase:** An agent consisting of the arginine-degrading enzyme arginine deiminase combined with polyethylene glycol (20,000 MW) (ADI-PEG 20) with potential antineoplastic activity. Upon administration, arginine deiminase breaks down the amino acid arginine into citrulline. Although arginine is a nonessential amino acid for normal human cells, certain cancer cells are autotrophic for arginine and need arginine in order to survive. Depletion of arginine may lead to an inhibition of cellular proliferation in those cancer cells. ADI is coupled to PEG in order to enhance this agent's half-life. or A substance being studied in the treatment of melanoma, liver cancer, and other types of cancer. It breaks down the amino acid arginine and may block the growth of cancer cells that need arginine to grow. It is a type of iminohydrolase. Also called ADI-PEG 20.

**pegylated granulocyte colony stimulating factor MAXY-G34:** A long-acting, pegylated recombinant variant of human granulocyte colony-stimulating factor (G-CSF) with immunomodulating activity. Pegylated granulocyte colony stimulating factor MAXY-G34 contains multiple non-naturally occurring lysines that have been introduced into alpha helices of wild type human G-CSF as pegylation sites; other naturally occurring lysine residues have been removed to prevent pegylation and the variant G-CSF is pegylated with methoxypolyethylene glycol succinimidyl propionate (mPEG SPA) at three amino acid residues. Similar to endogenous G-CSF, this agent binds to and activates specific cell surface receptors, stimulating neutrophil progenitor proliferation and differentiation and selected neutrophil functions. A difference in the degree of pegylation may account for the extended half-life of this agent compared to pegfilgrastim which is pegylated at only one amino acid residue.

**pegylated human recombinant arginase AEB1102:** A recombinant modified form of the human enzyme arginase 1 (ARG1), in which cobalt is substituted for manganese as a cofactor, covalently attached to polyethylene glycol (PEG), with potential arginine degrading and antineoplastic activities. Upon intravenous administration of pegylated recombinant human ARG1 AEB1102, ARG1 metabolizes the amino acid arginine to ornithine and urea, thereby lowering blood arginine levels. This normalizes blood arginine levels in patients with ARG1 deficiency and prevents hyperargininemia. This also inhibits the proliferation of cancer cells that are dependent on extracellular arginine uptake for their proliferation. In normal,

healthy cells, arginine is synthesized intracellularly by the enzymes ornithine transcarbamylase (OTC), argininosuccinate synthase (ASS), and argininosuccinate lyase (ASL); thus they are not dependent on extracellular arginine for survival. In cancer cells these enzymes are disabled; therefore, this agent may inhibit proliferation and survival of these cells by depleting extracellular arginine. Pegylation improves blood circulation times and cobalt substitution increases the catalytic activity of ARG1.

**pegylated interferon alfa:** A covalent conjugate of recombinant interferon alpha and polyethylene glycol (PEG), used as an antiviral and antineoplastic agent. The biological activity of this agent is derived from its interferon alpha protein moiety. Interferons alfa bind to specific cell-surface receptors, leading to the transcription and translation of genes whose protein products mediate antiviral, antiproliferative, anticancer, and immune-modulating effects. The PEG moiety lowers the clearance of interferon alpha, thereby extending the duration of its therapeutic effects, but may also reduce interferon-mediated stimulation of an immune response.

**pegylated irinotecan NKTR 102:** A formulation of polyethylene glycol (PEG)-encapsulated irinotecan with antineoplastic activity. The prodrug irinotecan, a semisynthetic derivative of camptothecin, is converted to the biologically active metabolite 7-ethyl-10-hydroxy-camptothecin by a carboxylesterase-converting enzyme. One thousand-fold more potent than its parent compound irinotecan, 7-ethyl-10-hydroxy-camptothecin inhibits topoisomerase I activity by stabilizing the cleavable complex of topoisomerase I and DNA, resulting in DNA breaks that inhibit DNA replication and trigger apoptosis. Pegylation provides improved drug penetration into tumors and decreases drug clearance, thereby increasing the duration of therapeutic effects while lowering the toxicity profile.

**pegylated liposomal doxorubicin hydrochloride:** A liposome-encapsulated form of the hydrochloride salt of the anthracycline antineoplastic antibiotic doxorubicin. Doxorubicin intercalates between base pairs in the DNA helix, thereby preventing DNA replication and ultimately inhibiting protein synthesis. Additionally, doxorubicin inhibits topoisomerase II which results in an increased and stabilized cleavable enzyme-DNA linked complex during DNA replication and subsequently prevents the ligation of the nucleotide strand after double-strand breakage. Doxorubicin also forms oxygen free radicals resulting in cytotoxicity

secondary to lipid peroxidation of cell membrane lipids. Liposomal delivery of doxorubicin HCL improves drug penetration into tumors and decreases drug clearance, thereby increasing the duration of therapeutic drug effects; a liposomal formulation of doxorubicin also modulates toxicity, specifically the cardiac effects commonly seen with anthracycline antitumor drugs.

**pegylated liposomal irinotecan:** A formulation of polyethylene glycol (PEG)-modified liposomes encapsulating the semisynthetic derivative of camptothecin irinotecan, with antineoplastic activity. As a prodrug, irinotecan is converted to the biologically active metabolite 7-ethyl-10-hydroxy-camptothecin (SN-38) by a carboxylesterase-converting enzyme. In turn, SN-38 inhibits topoisomerase I activity by stabilizing the cleavable complex of topoisomerase I and DNA, resulting in DNA breaks. This results in an inhibition of DNA replication and an induction of apoptosis. Pegylated liposomal delivery of irinotecan improves drug penetration into tumors and decreases drug clearance, thereby increasing the duration of exposure while lowering systemic toxicity.

**pegylated liposomal mitomycin C lipid-based prodrug:** A pegylated liposomal formulation comprised of a lipophilic prodrug of the antineoplastic antibiotic mitomycin C containing a cleavable disulfide bond (PL-MLP), with potential antineoplastic activity. Upon administration of the pegylated liposomal mitomycin C lipid-based prodrug, the MLP moiety becomes activated upon thiolysis at the tumor site, thereby releasing mitomycin C. Bio-reduced mitomycin C generates oxygen radicals, alkylates DNA, and produces interstrand DNA cross-links, thereby inhibiting DNA synthesis. The thiolytic environment and upregulated expression of thioredoxins at the tumor site allow for the activation and release of mitomycin C. This prodrug formulation allows for greater circulation time, less systemic toxicity and increased accumulation of mitomycin C at the tumor site.

**pegylated recombinant human arginase I BCT-100:** A recombinant human arginase I (liver arginase) covalently attached, via a succinamide propionic acid (SPA) linker, to a polyethylene glycol (PEG) of molecular weight 5,000 [rhArg-peg(5,000mw)] with potential antineoplastic activity. Upon intravenous administration of pegylated recombinant human arginase I BCT-100, arginase metabolizes the amino acid arginine to ornithine and urea, depleting intracellular arginine, which may inhibit proliferation of

cells that are auxotrophic for arginine such as hepatocellular carcinoma (HCC) cells. This agent may also work synergistically with various cytotoxic agents.

**pegylated recombinant human hyaluronidase PH20:** A pegylated formulation of a recombinant form of human hyaluronidase with potential antitumor activity. Upon intravenous administration, pegylated recombinant human PH20 degrades hyaluronic acid (HA) coating tumor cells, which may result in the inhibition of tumor cell growth. In addition, the degradation of HA may result in a lowering of the interstitial fluid pressure (IFP), allowing better penetration of chemotherapeutic agents into the tumor bed. HA is a glycosaminoglycan found in the extracellular matrix (ECM) that is frequently overproduced by various tumor cell types. The presence of HA in tumors correlates with increased tumor cell growth, metastatic potential, tumor progression, increased resistance to chemotherapeutic agents, and an elevation in tumor IFP. Check for active clinical trials using this agent.

**pegylated recombinant human interleukin-10 AM0010:** A covalent conjugate of recombinant human interleukin-10 (IL-10) and polyethylene glycol (PEG), with potential anti-fibrotic, anti-inflammatory, immunomodulating and antineoplastic activities. Upon subcutaneous administration, pegylated recombinant human interleukin-10 AM0010 may activate cell-mediated immunity against cancer cells by stimulating the differentiation and expansion of tumor specific cytotoxic CD8<sup>+</sup> T cells. This agent may also lower serum cholesterol levels and reduce atherosclerotic plaques by inhibiting the synthesis of pro-inflammatory cytokines, such as Interferon-gamma, IL-2, IL-3, TNF-alpha, and GM-CSF. The PEG moiety inhibits proteolytic breakdown and clearance of AM0010, which prolongs its half-life, extends the duration of its therapeutic effects and allows less frequent dosing.

**pegylated recombinant L-asparaginase Erwinia chrysanthemi:** A pegylated, recombinant form of L-asparaginase derived from the bacterium *Erwinia chrysanthemi* (mPEG-R-crisantaspase), with potential antineoplastic activity. Upon intravenous administration of pegylated recombinant L-asparaginase *Erwinia chrysanthemi*, asparaginase hydrolyzes L-asparagine to L-aspartic acid and ammonia, thereby depleting cancer cells of asparagine thus blocking protein synthesis and tumor cell

proliferation. Asparagine is critical to protein synthesis in cancer cells, which cannot synthesize this amino acid due to the absence of the enzyme asparagine synthase. Compared to other available *Erwinia chrysanthemi* derived L-asparaginase agents, the pegylated form is longer acting and less immunogenic. Check for active clinical trials using this agent.

**PEH:** Polyphenylene ether homopolymer

**PEI:** An injection of ethanol (alcohol) through the skin directly into a tumor to kill cancer cells. Ultrasound or a CT scan is used to guide the needle into the tumor. Also called alcohol ablation, ethanol ablation, and percutaneous ethanol injection.

**PEI:** Polyetherimide

**PEITC:** A substance being studied in the prevention of cancer. It is a naturally occurring compound found in some cruciferous vegetables. Also called phenethyl isothiocyanate.

**pelagic sediment:** a sea-floor sediment that is composed of finegrained clay particles and microskeletons of marine organisms that settle slowly to the ocean floor; its clay component (and sometimes volcanic ash) is generally carried from land by wind and deposited on the surface of the ocean.

**pelargonium :** A type of plant that is native to southern Africa and has white, pink, purple, or red flowers and 3- to 5-lobed leaves. An essential oil that smells like roses is taken from the leaves and used in perfume, in mosquito repellants, and in aromatherapy to treat skin problems and to reduce stress. The scientific name is *Pelargonium graveolens*. Also called geranium.

**peldesine :** A substance that is being studied for the treatment of cancer.

**pelitinib:** A 3-cyanoquinoline pan-ErbB tyrosine kinase inhibitor with potential antineoplastic activity. Pelitinib irreversibly binds covalently to epidermal growth factor receptors (EGFR) ErbB-1, -2 and -4, thereby inhibiting receptor phosphorylation and signal transduction and resulting in apoptosis and suppression of proliferation in tumor cells that overexpress these receptors. or A substance being studied in the treatment of some types of cancer. It blocks the action of certain proteins that are part of the epidermal growth factor receptor (EGFR) family of proteins. These proteins may be found in increased amounts on the surface of some types of cancer

cells. Blocking the action of these proteins may stop cancer cells from growing and may kill cancer cells. Pelitinib is a type of EGFR inhibitor. Also called EKB-569.

**pelitrexol:** A water soluble antifolate with anti-proliferative activity. Pelitrexol inhibits activity of glycinamide ribonucleotide formyltransferase (GARFT), the first folate-dependent enzyme of the de novo purine synthesis pathway essential for cell proliferation. Enzyme inhibition reduces the purine nucleotides pool required for DNA replication and RNA transcription. As a result, this agent causes cell cycle arrest in S-phase, and ultimately inhibits tumor cell proliferation.

**Pellagra:** A disease caused by dietary deficiencies of tryptophan and nicotinate and characterized by dermatitis, diarrhea, and dementia.

**Pellet:** A small ball or spherical shape.

**Pellet, fuel:** A thimble-sized ceramic cylinder (approximately 3/8-inch in diameter and 5/8-inch in length), consisting of uranium (typically uranium oxide, UO<sub>2</sub>), which has been enriched to increase the concentration of uranium-235 (U-235) to fuel a nuclear reactor. Modern reactor cores in pressurized-water reactors (PWRs) and boiling-water reactors (BWRs) may contain up to 10 million pellets, stacked in the fuel rods that form fuel assemblies.

**Pellets:** Resins or mixtures of resins with compounding additives similar in shape or size that have been extruded or chopped into short segments to prepare them for molding operations. OR Tablets of uniform size, consisting of resins or mixtures of resins with compounding additives which have been prepared for molding operations by shaping in a pelletizing machine or by extrusion and chopping into short segments. OR Tablets or granules of uniform size, consisting of resins or mixtures of resins with compounding additives which have been prepared for molding operations by extrusion and chopping into short segments.

**pelvic :** Having to do with the pelvis. The pelvis is the area of the body below the abdomen that is located between the hip bones and contains the bladder and rectum. In females, it also contains the vagina, cervix, uterus, fallopian tubes, and ovaries. In males, it also contains the prostate and seminal vesicles. or The area of the body below the abdomen that contains the hip bones, bladder, and rectum. In females, it also contains the vagina,

cervix, uterus, fallopian tubes, and ovaries. In males, it also contains the prostate and seminal vesicles.

**pelvic exam :** A physical exam of the vagina, cervix, uterus, fallopian tubes, ovaries, and rectum. First, the area outside the vagina is checked for signs of disease. A speculum is then inserted into the vagina to widen it so the vagina and cervix can be checked for signs of disease. Cell samples may be taken for a Pap test, or to test for sexually transmitted diseases or other infections. The doctor or nurse then inserts one or two lubricated, gloved fingers of one hand into the vagina and presses on the lower abdomen with the other hand to feel for lumps and check the size, shape, and position of the uterus and ovaries. The rectum may also be checked for lumps or abnormal areas. Also called internal exam.

**pelvic exenteration :** Surgery to remove the lower colon, rectum, and bladder, and create stomata (openings) through which urine and stool are passed out of the body. In women, the cervix, vagina, ovaries, and nearby lymph nodes are also removed.

**pelvic inflammatory disease :** A condition in which the female reproductive organs are inflamed. It may affect the uterus, fallopian tubes, ovaries, and certain ligaments. Pelvic inflammatory disease is usually caused by a bacterial infection. It may cause infertility and an increased risk of an ectopic pregnancy (pregnancy in the fallopian tubes). Also called PID.

**pelvic lymphadenectomy :** Surgery to remove lymph nodes in the pelvis for examination under a microscope to see if they contain cancer.

**pelvic wall :** The muscles and ligaments that line the part of the body between the hips.

**pembrolizumab:** A humanized monoclonal immunoglobulin (Ig) G4 antibody directed against human cell surface receptor PD-1 (programmed death-1 or programmed cell death-1) with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, pembrolizumab binds to PD-1, an inhibitory signaling receptor expressed on the surface of activated T cells, and blocks the binding to and activation of PD-1 by its ligands, which results in the activation of T-cell-mediated immune responses against tumor cells. The ligands for PD-1 include programmed cell death ligand 1 (PD-L1), overexpressed on certain cancer cells, and programmed cell death ligand 2 (PD-L2), which is primarily expressed on APCs. Activated PD-1 negatively regulates T-cell activation

and plays a key role in in tumor evasion from host immunity. or A drug used to treat squamous cell cancer of the head and neck that has recurred (come back) or spread to other parts of the body. It is used in patients whose disease got worse during or after treatment. It is also used to treat certain types of non-small cell lung cancer that have spread to other parts of the body and got worse during or after treatment. Pembrolizumab is also used to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Pembrolizumab binds to a protein called PD-1, which is found on T cells (a type of white blood cell). Pembrolizumab may block PD-1 and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called Keytruda.

**pemetrexed disodium:** The disodium salt of a synthetic pyrimidine-based antifolate. Pemetrexed binds to and inhibits the enzyme thymidylate synthase (TS) which catalyses the methylation of 2'-deoxyuridine-5'-monophosphate (dUMP) to 2'-deoxythymidine-5'-monophosphate (dTMP), an essential precursor in DNA synthesis. or A drug used alone or with another drug to treat certain types of non-small cell lung cancer and malignant pleural mesothelioma. It is being studied in the treatment of other types of cancer. Pemetrexed disodium blocks DNA synthesis and may kill cancer cells. It is a type of folate antagonist. Also called Alimta and LY231514.

**Pen-Vee:** (Other name for: penicillin V potassium)

**Pencil hardness:** A value determined by measuring the relative hardness of a coating based upon the ability of the coating to resist penetration and gouging by pencil lead of varying hardness. The order of pencils from softest to hardest is 4B, 3B, 2B, B, HB, F, H, 2H, 3H, 4H, 5H, 6H, 7H, and 8H. The hardness rating of the coating is equal to the first pencil which does not penetrate and gouge the coating when tested from softest to hardest.

**penclomedine:** A synthetic derivative of pyrimidine with antineoplastic activity. Penclomedine alkylates and crosslinks DNA, resulting in DNA strand breaks and inhibition of DNA and RNA synthesis. This agent is more active against tumor cells that are defective in p53 function. or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called alkylating agents.

**penectomy** : Surgery to remove part or all of the penis (an external male reproductive organ).

**peneplain**: an area reduced by erosion nearly to a plain.

**penetrance** : A characteristic of a genotype; it refers to the likelihood that a clinical condition will occur when a particular genotype is present. Or Describes how likely it is that a person who has a certain disease-causing mutation (change) in a gene will show signs and symptoms of the disease. Not everyone who has the mutation will develop the disease. For example, some people who have a BRCA1 or BRCA2 gene mutation will develop cancer during their lifetime, but others will not. Currently, there is no way to know which people who have a cancer-causing mutation will develop cancer. Complete penetrance means that every person who has the mutation will show signs and symptoms of the disease.

**Penetrating Finish**: A finish that sinks into the substrate, as opposed to settling on the surface.

**penetration**: Electrons in penetrating orbitals can reach the nucleus. The  $n$  and  $l$  quantum numbers determine how well an orbital penetrates. Lower  $n$  and lower  $l$  values mean better penetration. A low  $n$  value means the orbital is small. A low  $l$  value means the orbital has fewer nuclear nodes (planes that pass through the nucleus where the probability of locating the electron is zero).

**penicillamine**: A beta dimethyl analog of the amino acid cysteine. As a degradation product of penicillin antibiotics, penicillamine chelates with heavy metals and increases their urinary excretion. Possessing antineoplastic properties, penicillamine induces apoptosis by a p53-mediated mechanism and inhibits angiogenesis by chelating with copper, a cofactor for angiogenesis. or A drug that removes copper from the body and is used to treat diseases in which there is an excess of copper. It is also being studied as a possible angiogenesis inhibitor in the treatment of brain tumors.

**penicillin** : A drug that is used to treat infection. It belongs to the family of drugs called antibiotics.

**penicillin V potassium**: The potassium salt of penicillin V, a member of the penicillin antibiotic family with broad-spectrum bactericidal activity. Penicillin V binds to and inactivates penicillin-binding proteins (PBPs), enzymes located on the inner membrane of the bacterial cell wall, resulting

in the weakening of the bacterial cell wall and cell lysis. PBPs participate in the terminal stages of assembling the bacterial cell wall, and in reshaping the cell wall during cell division. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity.

**penile cancer** : A rare cancer that forms in the penis (an external male reproductive organ). Most penile cancers are squamous cell carcinomas (cancer that begins in flat cells lining the penis).

**penile implant** : A firm rod or inflatable device that is placed in the penis (an external male reproductive organ) during a surgical procedure. The implant makes it possible to have and keep an erection. Penile implants are used to treat erectile dysfunction or impotence.

**penis** : An external male reproductive organ. It contains a tube called the urethra, which carries semen and urine to the outside of the body.

**Pennsylvanian**: Pertaining to Pennsylvania. The geological epoch known as the Carboniferous (286-360 years before present), in which many of the world's major coal deposits were deposited, is divided into the Mississippian (286-320 ybp) and Pennsylvanian (320-360 ybp) in American-speaking countries.

**pentagon**: a five-sided plane closed figure. The sum of its five angles is  $540^\circ$ .

**Pentam** : A drug used to treat infections caused by certain microorganisms. It is also being studied in the treatment of melanoma. It prevents DNA from being copied and may kill cancer cells. It is a type of antifungal agent, a type of antiprotozoal agent, and a type of PRL phosphatase inhibitor. Also called pentamidine isethionate.

**pentamethylmelamine**: A principal metabolite of hexamethylmelamine with antineoplastic activity. Pentamethylmelamine alkylates DNA and other macromolecules and forms DNA intrastrand and DNA-protein crosslinks, thereby preventing DNA replication. Check for active clinical trials using this agent.

**pentamidine**: A synthetic derivative of amidine with antiprotozoal and antifungal activities. Although the precise mode of action of pentamidine is unclear, it appears to interact directly with the pathogen genome by binding

to AT-rich regions of duplex DNA and the minor groove of DNA, thereby interfering with DNA replication.

**pentamidine :** The active ingredient in a drug used to treat infections caused by certain microorganisms. It is also being studied in the treatment of melanoma. It prevents DNA from being copied and may kill cancer cells. It is a type of antifungal agent, a type of antiprotozoal agent, and a type of PRL phosphatase inhibitor.

**pentamidine isethionate:** A synthetic amidine derivative, Pentamidine Isethionate is an antiprotozoal and antifungal agent that appears to interact with the minor groove of AT-rich DNA regions of the pathogen genome, interfering with DNA replication and function. It is effective in the treatment of trypanosomiasis, leishmaniasis, some fungal infections, and Pneumocystis carinii pneumonia in HIV-infected patients. or A drug used to treat infections caused by certain microorganisms. It is also being studied in the treatment of melanoma. It prevents DNA from being copied and may kill cancer cells. It is a type of antifungal agent, a type of antiprotozoal agent, and a type of PRL phosphatase inhibitor. Also called Pentam.

**Pentasa:** (Other name for: mesalamine)

**pentavalent KLH conjugate vaccine:** A pentavalent vaccine comprised of the epitope antigens of the ganglioside lactones GD2L and GD3L, Globo H hexasaccharide 1 (Globo H), fucosyl GM1 and N-propionylated polysialic acid conjugated with the immunostimulant keyhole limpet hemocyanin (KLH), with potential immunostimulating and antineoplastic activity. Vaccination with the pentavalent KLH conjugate vaccine may induce production of IgG and IgM antibodies as well as an antibody-dependent cell-mediated cytotoxicity (ADCC) against tumors expressing any of these antigens. The antigens included in the pentavalent KLH conjugate vaccine are upregulated in a variety of cancer cells. KLH, a natural protein isolated from the marine mollusk keyhole limpet, is an immunostimulant carrier protein.

**pentetic acid calcium:** The calcium salt of pentetic acid, a synthetic chelating agent related to the chelating agent ethylenediaminetetraacetic acid (EDTA). Pentetic acid chelates with the metallic radioisotopic moieties of unbound, extracellular radioimmunotherapeutic agents, resulting in higher specific tumor cell binding of radioimmunotherapeutic agents; this

results in improved tumor cell radiocytotoxicity and the sparing of normal cells and tissues from the radiocytotoxic effects of these agents.

**pentetic acid calcium :** A drug that protects healthy tissues from the toxic effects of anticancer drugs.

**pentosan polysulfate :** A drug used to relieve pain or discomfort associated with chronic inflammation of the bladder. It is also being evaluated for its protective effects on the gastrointestinal tract in people undergoing radiation therapy.

**pentosan polysulfate sodium:** The sodium salt of a semisynthetic heparin-like glucosaminoglycan. Although its mechanism of action is unknown, pentosan polysulfate may act as a buffer to control cell permeability by preventing irritating solutes from reaching cells coated with it.

Administered orally, excreted pentosan polysulfate adheres to the urinary bladder wall, preventing irritants from entering bladder cells and the development or progression of interstitial cystitis (IC), a complication of some chemotherapies. This agent also exhibits anticoagulant and fibrinolytic properties.

**Pentose:** A sugar with five carbon atoms. OR A simple sugar with a backbone containing five carbon atoms.

**Pentose phosphate pathway:** The pathway involving the oxidation of glucose-6-phosphate to pentose phosphates and further reactions of pentose phosphates. OR A metabolic pathway that generates NADPH and five-carbon sugars such as ribose 5-phosphate from glucose 6-phosphate; it includes oxidative reactions that produce NADPH and ribose 5-phosphates as well as nonoxidative reactions that together convert five-carbon sugar phosphates into gluconeogenic precursors of glucose 6-phosphate. Also referred to as the hexose monophosphate shunt or the phosphogluconate pathway. OR A pathway that serves to interconvert hexoses and pentoses and is a source of reducing equivalents and pentoses for biosynthetic processes; present in most organisms. Also called the phosphogluconate pathway.

**Pentoses:** Monosaccharides that have five carbon atoms.

**pentostatin:** A purine nucleotide analogue antibiotic isolated from the bacterium *Streptomyces antibioticus*. Also known as 2'-deoxycoformycin, pentostatin binds to and inhibits adenine deaminase (ADA), an enzyme essential to purine metabolism; ADA activity is greatest in cells of the

lymphoid system with T-cells having higher activity than B-cells and T-cell malignancies higher ADA activity than B-cell malignancies. Pentostatin inhibition of ADA appears to result in elevated intracellular levels of dATP which may block DNA synthesis through the inhibition of ribonucleotide reductase. This agent may also inhibit RNA synthesis and may selectively deplete CD26+ lymphocytes. Check for active clinical trials using this agent.

**pentostatin :** The active ingredient in a drug that is used to treat hairy cell leukemia and is being studied in the treatment of other types of cancer. Pentostatin blocks a protein needed for cell growth and may kill cancer cells. It is made by a bacterium. It is a type of adenosine deaminase inhibitor. Also called Nipent.

**pentoxifylline:** A methylxanthine derivative with hemorrheologic and immunomodulating properties. Pentoxifylline inhibits phosphodiesterase, resulting in increased levels of cyclic adenosine monophosphate (cAMP) in erythrocytes, endothelium, and the surrounding tissues. This leads to vasodilation, improves erythrocyte flexibility, and enhances blood flow. In addition, the increased level of cAMP in platelets inhibits platelet aggregation, which may contribute to a reduction in blood viscosity. This agent also inhibits production of tumor necrosis factor-alpha and interferon-gamma, while it induces Th2-like (T-helper 2) cytokine production, thereby inhibiting Th1-mediated (T-helper 1) inflammatory and autoimmune responses. or A drug used to prevent blood clotting and as a treatment that may help decrease weight loss in people with cancer.

**penumbra:** the lighter, gray area of a shadow.

**PEO:** Polyethylene oxide

**PEP-3-KLH conjugate vaccine:** A cancer vaccine consisting of PEP-3, a synthetic peptide encompassing a tumor-specific mutated segment of the epidermal growth factor receptor type VIII (EGFRvIII), conjugated to the naturally-occurring immunoadjuvant keyhole limpet hemocyanin (KLH) with potential immunostimulating and antineoplastic activities. Upon administration, PEP-3-KLH conjugate vaccine may induce a cytotoxic immune response against tumor cells that overexpress EGFRvIII; this antitumoral immune response may involve antibody-dependent cellular cytotoxicity (ADCC).

**PEP-CMV vaccine:** A peptide vaccine derived from cytomegalovirus (CMV) antigens with potential immunostimulating activity. Intradermal

administration of the PEP-CMV vaccine may stimulate the immune system to mount a specific helper and cytotoxic T-lymphocyte (CTL) response against CMV-infected tumor cells. Infection with the herpesvirus CMV may play a significant role in tumor cell initiation and progression as well as chemoresistance.

**PEP02:** A form of the anticancer drug irinotecan hydrochloride that is contained in very tiny, fat-like particles. PEP02 is used together with fluorouracil and leucovorin to treat a certain type of pancreatic cancer that has spread to other parts of the body and has gotten worse after treatment with gemcitabine anticancer therapy. It is also being studied in the treatment of other types of cancer. Irinotecan hydrochloride blocks certain enzymes needed for cell division and DNA repair, and it may kill cancer cells. PEP02 may have fewer side effects and work better than irinotecan hydrochloride. It is a type of topoisomerase inhibitor and a type of camptothecin analog. Also called irinotecan hydrochloride liposome, liposome-encapsulated irinotecan hydrochloride PEP02, and Onivyde.

**Pepcid:** (Other name for: famotidine)

**Pepcid AC:** (Other name for: famotidine)

**peplomycin:** A semisynthetic analog of Bleomycin, a mixture of several basic glycopeptide antineoplastic antibiotics isolated from the fungus *Streptomyces verticillus*. Peplomycin forms complexes with iron that reduce molecular oxygen to superoxide and hydroxyl radicals that cause single- and double-stranded breaks in DNA. This agent appears to show greater antitumor activity than bleomycin; its use is limited due to pulmonary toxicity.

**pepsin :** An enzyme made in the stomach that breaks down proteins in food during digestion. Stomach acid changes a protein called pepsinogen into pepsin.

**pepsinogen :** A substance made by cells in the stomach. Acid in the stomach changes pepsinogen to pepsin, which breaks down proteins in food during digestion.

**Peptamen:** (Other name for: enzymatically hydrolyzed whey protein-based nutritional supplement)

**peptic ulcer :** A break in the lining of the lower part of the esophagus, the stomach, or the upper part of the small intestine. Peptic ulcers form when

cells on the surface of the lining become inflamed and die. They are usually caused by *Helicobacter pylori* bacteria and by certain medicines, such as aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs). Peptic ulcers may be linked to cancer and other diseases.

**peptidase:** An enzyme that hydrolyzes a peptide bond.

**peptide:** A small polymer of amino acids, formed by the condensation copolymerization of several amino acids. OR A molecule consisting of a chain of amino acids; a small protein fragment OR An organic molecule in which a covalent amide bond is formed between the  $\alpha$ -amino group of one amino acid and the  $\alpha$ -carboxyl group of another amino acid, with the elimination of a water molecule. The resulting connection is called a peptide bond. OR Two or more amino acids joined by peptide bonds. OR A short polymer made by linking together amino acid molecules. OR Two or more amino acids covalently joined by peptide bonds.

**peptide :** A molecule that contains two or more amino acids (the molecules that join together to form proteins). Peptides that contain many amino acids are called polypeptides or proteins.

**peptide 946 :** A piece of a protein found only on melanoma (a type of skin cancer) cells. It is being used in vaccines to help the immune system kill melanoma cells.

**Peptide bond:** The chemical link joining amino acids in peptides and proteins OR A covalent linkage formed between the  $\alpha$ -carboxyl group of one amino acid and the  $\alpha$ - amino group of another. Also known as an amide bond. OR A substituted amide linkage between the  $\alpha$ -amino group of one amino acid and the  $\alpha$ -carboxyl group of another, with the elimination of the elements of water.

**peptide mapping:** The characteristic two-dimensional pattern (on paper or gel) formed by the separation of a mixture of peptides resulting from partial hydrolysis of a protein; also known as peptide fingerprinting.

**peptides:** small proteins.

**Peptidoglycan:** The main component of the bacterial cell wall, consisting of a two-dimensional network of heteropolysaccharides running in one direction, cross-linked with polypeptides running in the perpendicular direction. OR A macromolecule that consists of linear polysaccharides cross-linked by short peptides; often found in bacterial cell walls,

peptidoglycans confer mechanical support and protect bacterial cells from disruption by osmotic pressure. OR A major component of bacterial cell walls; generally consists of parallel heteropolysaccharides cross-linked by short peptides.

**Peptidyl transferase center:** A region of the large ribosomal subunit that catalyzes peptide-bond formation between the aminoacyl (or peptidyl) trna in the P site and the aminoacyl trna in the A site.

**Pepto-Bismol:** (Other name for: bismuth subsalicylate)

**Peracetic acid (CH<sub>3</sub>CO<sub>3</sub>H) :** A highly oxidative organic compound. This organic peroxide is a colorless liquid with a characteristic odor reminiscent of acetic acid. It can be highly corrosive.

**perampanel:** An orally active, non-competitive, and selective alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) glutamate receptor antagonist, with anti-epileptic activity. Although the mechanism of action through which perampanel exerts its antiepileptic effect has not been fully elucidated, this agent antagonizes the AMPA subtype of the excitatory glutamate receptor found on postsynaptic neurons in the central nervous system (CNS). This antagonistic action prevents AMPA receptor activation by glutamate and results in the inhibition of neuronal excitation, repetitive neuronal firing, and the stabilization of hyper-excited neural membranes. Glutamate, the primary excitatory neurotransmitter in the CNS, plays an important role in various neurological disorders caused by neuronal hyperexcitation.

**percent composition:** Expresses the mass ratio between different elements in a compound.

**percent error:** formula used to find the inaccuracy of a measurement. OR The relative error times 100%.

**percent yield:** Percent yield equals experimental yield divided by theoretical yield times 100%.

**percent(s):** The part per one hundred in the percent proportion:

**percentage composition:** The percentage composition is the proportions of each element present in a compound by mass (expressed as percentages). OR This composition measurement reflects the percentage of total mass for a specific element. The percentage composition of sodium in sodium chloride (NaCl) is about 39%. Just take the total mass of one element of the

compound and divide it by the total mass of the compound. Then multiply by 100. OR can be found by totaling the atomic masses of the atoms in the formula, dividing each mass by the total, and changing the results to %-age.

**percentages:** A given part in every hundred.

**perched water table:** an accumulation of groundwater that is held above the water table in the unsaturated zone by an impermeable bed such as clay.

**Percocet:** (Other name for: oxycodone/acetaminophen)

**percolation:** The movement of water downward and radially through the subsurface soil layers, usually continuing downward to the groundwater.

**percutaneous :** Passing through the skin, as an injection or a topical medicine.

**percutaneous endoscopic tube :** A tube inserted through the wall of the abdomen directly into the stomach. It allows air and fluid to leave the stomach and can be used to give drugs and liquids, including liquid food, to the patient. Giving food through a percutaneous endoscopic tube is a type of enteral nutrition. Also called gastrostomy tube and PEG tube.

**percutaneous epididymal sperm aspiration :** A procedure in which a sample of sperm cells is removed from the epididymis through a syringe attached to a small needle. The epididymis is a narrow, tightly-coiled tube that is attached to each of the testicles and is where sperm cells mature and are stored. The sperm is looked at under a microscope in a laboratory, where it may be used right away to fertilize eggs or frozen for future infertility treatment. Percutaneous epididymal sperm aspiration may be useful for men who have fertility problems caused by a blockage that keeps sperm from being ejaculated. This could be caused by previous vasectomy, certain genetic conditions, infection, or other conditions. It may also be useful for men who want to have children after having treatment that may cause infertility, such as certain cancer treatments. Percutaneous epididymal sperm aspiration is a type of sperm retrieval method.

**percutaneous ethanol injection :** An injection of ethanol (alcohol) through the skin directly into a tumor to kill cancer cells. Ultrasound or a CT scan is used to guide the needle into the tumor. Also called alcohol ablation, ethanol ablation, and PEI.

**percutaneous transhepatic biliary drainage :** A procedure to drain bile to relieve pressure in the bile ducts caused by a blockage. An x-ray of the liver

and bile ducts locates the blockage of bile flow. Images made by ultrasound guide placement of a stent (tube), which remains in the liver. Bile drains through the stent into the small intestine or into a collection bag outside the body. This procedure may relieve jaundice before surgery. Also called percutaneous transhepatic cholangiodrainage and PTCD.

**percutaneous transhepatic cholangiodrainage :** A procedure to drain bile to relieve pressure in the bile ducts caused by a blockage. An x-ray of the liver and bile ducts locates the blockage of bile flow. Images made by ultrasound guide placement of a stent (tube), which remains in the liver. Bile drains through the stent into the small intestine or into a collection bag outside the body. This procedure may relieve jaundice before surgery. Also called percutaneous transhepatic biliary drainage and PTCD.

**percutaneous transhepatic cholangiography :** A procedure to x-ray the hepatic and common bile ducts. A contrasting agent is injected through the skin into the liver or bile duct, and the ducts are then x-rayed to find the point of obstruction. Also called PTC.

**Perdolat:** (Other name for: penicillamine)

**peretinoin:** An orally available, acyclic retinoid with potential antineoplastic and chemopreventive activities. Peretinoin binds to and activates nuclear retinoic acid receptors (RAR), which in turn recruit coactivator proteins and promote, with other transcriptional complexes, the transcription of target genes. As a result, this agent may modulate the expression of genes involved in the regulation of cell proliferation, cell differentiation, and apoptosis of both normal and tumor cells.

**perfect crystal:** A crystal with no defects or impurities, made of completely identical repeating subunits. Further, a perfect crystal has only one possible arrangement of subunits, with every subunit making exactly the same contribution to the total energy of the crystal.

**perflenapent emulsion:** An oil-in-water nano-emulsion composed of the perfluorocarbon perflenapent, that has oxygen-carrying capacity, can be used as a contrast agent and has potential antihypoxic and radiosensitizing activities. Upon intravenous administration of the perflenapent emulsion, this agent increases the oxygen-carrying capacity of blood, enhances the transport of oxygen to hypoxic and ischemic tissues and increases the oxygen concentration in these tissues. Hypoxic tumors are correlated with increased resistance to radiation treatment; therefore, since perflenapent

may increase tumor oxygenation, it may improve the tumor's sensitivity to radiation therapy.

**perflubron:** A synthetic radiopaque liquid form of perfluorooctyl bromide. Used as a contrast agent for magnetic resonance imaging (MRI), perflubron is also used as a liquid ventilation agent to improve pulmonary gas exchange and lung compliance and may be used in surgery to reduce or eliminate the need for a donor blood. Ventilation with perfluorocarbon fluid improves lung function in conditions involving surfactant deficiency and dysfunction, including respiratory distress syndrome and adult respiratory distress syndrome. Check for active clinical trials using this agent.

**perflutren:** A fluorinated hydrocarbon and gaseous substance used as an imaging contrast agent. After administration in microsphere form, perflutren exhibits lower acoustic impedance than blood and improves ultrasound signaling.

**perflutren lipid microspheres:** An injectable suspension of liposome-encapsulated microspheres containing the fluorocarbon gas perflutren for contrast enhancement in ultrasound procedures. Because the acoustic impedance of perflutren lipid microspheres is much lower than that of blood, impinging ultrasound waves are scattered and reflected at the microsphere-blood interface and may be visualized with ultrasound imaging. Check for active clinical trials using this agent.

**perflutren protein-type A microspheres:** A sterile non-pyrogenic suspension of microspheres of human serum albumin with the stable, high-molecular-weight fluorocarbon gas perflutren, used as a contrast enhancement agent for ultrasound procedures. Because the acoustic impedance of perflutren protein-type A microspheres is much lower than that of blood, impinging ultrasound waves are scattered and reflected at the microsphere-blood interface and may be visualized with ultrasound imaging. At the frequencies used in adult echocardiography (2-5 MHz), the microspheres resonate which further increases the extent of ultrasound scattering and reflection.

**PERFORATING:** Processes by which plastic film or sheeting is provided with holes ranging from relatively large diameters for decorative effects (by means of punching or clicking) to very small, even invisible, sizes. The latter are attained by passing the material between rollers or plates, one of which is equipped with closely-spaced fine needles, or by spark erosion.

**Perforating:** Processes used by plastic manufacturers by which plastic film or plastic sheeting, or extrusions are provided with holes within the plastic material ranging from relatively large diameters for decorative effects to very small, even invisible, sizes on the plastic.

**Perforin:** A protein secreted by activated T cells that renders target cells permeable by forming 10-nm pores in the target-cell membranes; pores allow entry of granzymes.

**PERFORM:** A pill, tablet, or biscuit used in thermoset molding. Material measured by volume, the bulk factor of powder reduced by pressure all in the interest of efficiency and accuracy.

**Performance:** A term used to indicate the degree to which a paint system will meet the requirements of any specific job, e.g. an interior quality paint would give poor performance (would have poor durability) if used on exterior surfaces.

**Performance indicator:** A quantitative measure of a particular attribute of licensee performance that shows how well a plant is performing when measured against established thresholds. Licensees submit their data quarterly; the NRC regularly conducts inspections to verify the submittals and then uses its own inspection data plus the licensees' submittals to assess each plant's performance. For additional detail, see Assessment of Performance, What is a performance indicator? and Reactor Performance Assessment Basics.

**performance status :** A measure of how well a patient is able to perform ordinary tasks and carry out daily activities.

**Performance-based regulation:** A regulatory approach that focuses on desired, measurable outcomes, rather than prescriptive processes, techniques, or procedures. Performance-based regulation leads to defined results without specific direction regarding how those results are to be obtained. At the NRC, performance-based regulatory actions focus on identifying performance measures that ensure an adequate safety margin and offer incentives for licensees to improve safety without formal regulatory intervention by the agency. For additional detail, see Risk Assessment in Regulation.

**Performance-based regulatory action:** Licensee attainment of defined objectives and results without detailed direction from the NRC on how these results are to be obtained. (See the Communication Plan for

Performance-Based Regulation by using accession number ML021120533 in ADAMS.)

**perfosfamide:** The active metabolite of the nitrogen mustard cyclophosphamide with potent antineoplastic and immunosuppressive properties. Perfosfamide alkylates DNA, thereby inhibiting DNA replication and RNA and protein synthesis. Check for active clinical trials using this agent.

**perfusion :** Bathing an organ or tissue with a fluid. In regional perfusion, a specific area of the body (usually an arm or a leg) receives high doses of anticancer drugs through a blood vessel. Such a procedure is performed to treat cancer that has not spread.

**perfusion magnetic resonance imaging :** A special type of magnetic resonance imaging (MRI) that uses an injected dye in order to see blood flow through tissues. Also called magnetic resonance perfusion imaging.

**Pergamid:** (Other name for: perfosfamide)

**Periactin:** (Other name for: cyproheptadine hydrochloride)

**periampullary cancer :** A cancer that forms near the ampulla of Vater (an enlargement of the ducts from the liver and pancreas where they join and enter the small intestine).

**pericardial effusion :** A condition in which extra fluid collects between the heart and the pericardium (the sac around the heart). The extra fluid causes pressure on the heart. This keeps it from pumping blood normally. Lymph vessels may also be blocked, which can cause infection. Pericardial effusions may be caused by cancer or cancer treatment, infection, injury, autoimmune disorders, thyroid or kidney problems, or other conditions.

**pericyclic process:** a step in a reaction in which the bonding electrons are redistributed through a cyclic structure.

**Peridex:** (Other name for: chlorhexidine gluconate)

**perifosine:** An orally active alkyl-phosphocholine compound with potential antineoplastic activity. Targeting cellular membranes, perifosine modulates membrane permeability, membrane lipid composition, phospholipid metabolism, and mitogenic signal transduction, resulting in cell differentiation and inhibition of cell growth. This agent also inhibits the anti-apoptotic mitogen-activated protein kinase (MAPK) pathway and modulates the balance between the MAPK and pro-apoptotic stress-

activated protein kinase (SAPK/JNK) pathways, thereby inducing apoptosis. Perifosine has a lower gastrointestinal toxicity profile than the related agent miltefosine.

**perifosine :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called alkylphospholipids.

**perigee:** position in an orbit that is closest to the Earth.

**perihelion:** point in an orbit that is closest to the Sun.

**perillyl alcohol:** A naturally occurring monoterpene related to limonene with antineoplastic activity. Perillyl alcohol inhibits farnesyl transferase and geranylgeranyl transferase, thereby preventing post-translational protein farnesylation and isoprenylation and activation of oncoproteins such as p21-ras, and arresting tumor cells in the G1 phase of the cell cycle. or A substance that is being studied in the prevention of cancer. It belongs to the family of plant drugs called monoterpenes.

**perimenopausal :** Describes the time in a woman's life when menstrual periods become irregular as she approaches menopause. This is usually three to five years before menopause and is often marked by many of the symptoms of menopause, including hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility.

**perimeter:** The sum of the lengths of the sides of any closed figure. OR the total distance around the outside of any polygon. The total length of all the sides.

**perindopril erbumine:** The tert-butylamine salt of perindopril, the ethyl ester of a non-sulfhydryl angiotensin converting enzyme (ACE) inhibitor with antihypertensive activity. Upon hydrolysis, perindopril erbumine is converted to its active form perindoprilat, inhibiting ACE and the conversion of angiotensin I to angiotensin II; consequently, angiotensin II-mediated vasoconstriction and angiotensin II-stimulated aldosterone secretion from the adrenal cortex are inhibited and diuresis and natriuresis ensue.

**perineal colostomy :** An opening made surgically to allow the colon to exit the body through the perineum (the area of the body between the anus and the vulva in females, and between the anus and the scrotum in males). A colostomy provides a new path for waste material to leave the body after part of the colon has been removed.

**perineal prostatectomy** : Surgery to remove the prostate through an incision made between the scrotum and the anus.

**perineum** : The area of the body between the anus and the vulva in females, and between the anus and the scrotum in males.

**perineural** : Around a nerve or group of nerves.

**period**: a series of elements, arranged in order of atomic number represented by a horizontal row on the Periodic Table. OR The horizontal rows in the periodic table. OR Periods are the rows of the periodic table. All elements in a period have the same number of atomic shells, or orbitals. OR The periods are the horizontal rows in the Periodic Table. OR a horizontal row of elements in the periodic table. OR punctuation device used with statements, requests, mild exclamations, courtesy questions, and abbreviations. OR Rows in the periodic table are called periods. For example, all of the elements in the second row are referred to as 'second period elements'. All elements currently known fall in the first seven periods.

**periodic neutropenia** : A chronic condition that affects neutrophils (a type of white blood cell). In periodic neutropenia, the number of neutrophils in the blood goes in cycles from normal to low and back to normal again. Symptoms include fever, inflamed mucous membranes in the mouth, and infections. Also called cyclic neutropenia.

**Periodic table** : of the elements in order of atomic number with similar elements falling into columns. OR Most people use the form of periodic table formulated by Mendeleev. This shows all the elements that have so far been discovered. They are in order of atomic number. the sets of elements with similar properties are arranged in vertical columns called GROUPS. The horizontal rows are called PERIODS. OR An arrangement of the elements according to increasing atomic number that shows relationships between element properties. OR An arrangement of chemical elements in order of increasing atomic number. Elements of similar properties are placed one under the other, yielding groups or families of elements. Within each group, there is a variation of chemical and physical properties, but in general, there is a similarity of chemical behavior within each group. (See an online periodic table.) OR chart of the elements arranged in columns and rows according to the increasing atomic numbers. OR A chart of all the elements arranged by atomic number. OR A logical

way of writing down all the 111 elements so that the connections between their properties and their electronic structure is 'obvious'. I think 111 is the right number this week.... There are many fantastic periodic tables on the web, such as WebElements. OR The Periodic Table is a table listing the elements in order of atomic number, arranged so that similar elements appear in columns. OR (first worked out by Mendeleev in 1869) is organized by the regularly repeating pattern of chemical properties of the elements. Each column is a family of elements having similar properties. The properties are a periodic function of the atomic numbers. Atomic number is symbolized "Z". The table is based on the electron configuration of the atoms. OR This famous table organizes all of the known chemical elements by their atomic number. The periodic table usually shows the atomic number, atomic symbol, and, atomic mass of the element. OR Grouping of the known elements by their number of protons. There are many other trends such as size of elements and electronegativity that are easily expressed in terms of the periodic table. OR a table in which the elements are commonly arranged in order of increasing atomic number. Elements of similar properties are placed one under the other, yielding eight families or groups of elements. Within each group there is a gradation of chemical and physical properties, but in general a similarity of chemical behavior. From group to group, however, there is a progressive shift of chemical behavior from one end of the table to the other. OR The periodic law states that physical and chemical properties of the elements recur in a regular way when the elements are arranged in order of increasing atomic number.

**periodic trend:** A regular variation in element properties with increasing atomic number that is ultimately due to regular variations in atomic structure.

**perioperative :** Around the time of surgery. This usually lasts from the time the patient goes into the hospital or doctor's office for surgery until the time the patient goes home.

**peripheral blood :** Blood circulating throughout the body.

**peripheral blood lymphocyte therapy :** A treatment for Epstein-Barr virus infection or overgrowth of white blood cells (lymphocytes) after an organ or bone marrow transplant. Specific lymphocytes from a sibling donor are infused into the patient to try and reverse these conditions.

**peripheral blood smear :** A procedure in which a sample of blood is viewed under a microscope to count different circulating blood cells (red blood cells, white blood cells, platelets, etc.) and see whether the cells look normal.

**peripheral blood stem cell transplant :** A method of replacing blood-forming cells destroyed by cancer treatment. Immature blood cells (stem cells) in the bloodstream are given to the patient after treatment. This helps the bone marrow recover and continue to make healthy blood cells. A stem cell transplant may be autologous (a patient's own blood cells saved earlier), allogeneic (blood cells donated by someone else), or syngeneic (blood cells donated by an identical twin). Also called peripheral stem cell support.

**Peripheral membrane protein:** A protein associated with the surface of a membrane by electrostatic and hydrogen-bond interactions.

**peripheral nervous system:** a collection of nerves that connect the brain and spinal cord to other parts of the body and the external environment.

**peripheral neuropathy :** A nerve problem that causes pain, numbness, tingling, swelling, or muscle weakness in different parts of the body. It usually begins in the hands or feet and gets worse over time. Peripheral neuropathy may be caused by cancer or cancer treatment, such as chemotherapy. It may also be caused by physical injury, infection, toxic substances, or conditions such as diabetes, kidney failure, or malnutrition. Also called neuropathy.

**peripheral primitive neuroectodermal tumor :** A type of cancer that forms in bone or soft tissue. Also called Ewing sarcoma and pPNET.

**peripheral proteins:** Proteins that are loosely or reversibly bound to a membrane by hydrogen bonds or electrostatic forces; generally water-soluble once released from the membrane.

**peripheral stem cell :** An immature cell found circulating in the bloodstream. New blood cells develop from peripheral stem cells.

**peripheral stem cell support :** A method of replacing blood-forming cells destroyed by cancer treatment. Immature blood cells (stem cells) in the bloodstream are given to the patient after treatment. This helps the bone marrow recover and continue to make healthy blood cells. A stem cell transplant may be autologous (a patient's own blood cells saved earlier),

allogeneic (blood cells donated by someone else), or syngeneic (blood cells donated by an identical twin). Also called peripheral blood stem cell transplant.

**peripheral T-cell lymphoma :** One of a group of aggressive (fast-growing) non-Hodgkin lymphomas that begin in mature T lymphocytes (T cells that have matured in the thymus gland and gone to other lymphatic sites in the body, including lymph nodes, bone marrow, and spleen.) Also called mature T-cell lymphoma.

**peripheral venous catheter :** A device used to draw blood and give treatments, including intravenous fluids, drugs, or blood transfusions. A thin, flexible tube is inserted into a vein, usually in the back of the hand, the lower part of the arm, or the foot. A needle is inserted into a port to draw blood or give fluids.

**peripherally inserted central catheter :** A device used to draw blood and give treatments, including intravenous fluids, drugs, or blood transfusions. A thin, flexible tube is inserted into a vein in the upper arm and guided (threaded) into a large vein above the right side of the heart called the superior vena cava. A needle is inserted into a port outside the body to draw blood or give fluids. A peripherally inserted central catheter may stay in place for weeks or months and helps avoid the need for repeated needle sticks. Also called PICC.

**Periplasm:** The region between the inner (cytoplasmic) membrane and the cell wall or outer membrane of a bacterium.

**peristalsis:** a rhythmic series of muscular contractions that propels the bolus along.

**peristalsis :** The rippling motion of muscles in the intestine or other tubular organs characterized by the alternate contraction and relaxation of the muscles that propel the contents onward.

**Peristaltic Pump:** A pump based on a flexible tube. Fluid is moved through the tube by rollers that compress the tube, usually in a rotary alignment. A primary advantage of this type of pump is that the fluid never comes in contact with moving parts and the tube can be easily sterilized. Used extensively in medical applications.

**peritoneal :** Having to do with the parietal peritoneum (the tissue that lines the abdominal wall and pelvic cavity) and visceral peritoneum (the tissue

that covers most of the organs in the abdomen, including the intestines).

**peritoneal cavity** : The space within the abdomen that contains the intestines, the stomach, and the liver. It is bound by thin membranes.

**peritoneal fluid** : A liquid that is made in the abdominal cavity to lubricate the surface of the tissue that lines the abdominal wall and pelvic cavity and covers most of the organs in the abdomen.

**peritoneal infusion** : A method of delivering fluids and drugs directly into the abdominal cavity through a thin tube. Also called intraperitoneal infusion.

**peritoneal perfusion** : A method of delivering fluids and drugs directly to tumors in the peritoneal cavity.

**peritoneal washing** : A procedure in which a salt-water solution is used to wash the peritoneal cavity and then is removed to check for cancer cells. The peritoneal cavity is the space in the abdomen that contains the intestines, stomach, and liver. Peritoneal washings are commonly done during surgery for cancer of the ovary and uterus, to see if cancer has spread to the peritoneal cavity.

**peritoneum** : The tissue that lines the abdominal wall and covers most of the organs in the abdomen.

**peritonitis** : Inflammation of the peritoneum (tissue that lines the abdominal wall and covers most of the organs in the abdomen). Peritonitis can result from infection, injury, or certain diseases. Symptoms may include swelling of the abdomen, severe pain, and weight loss.

**Perjeta** : A drug used with other drugs to treat breast cancer that is HER2-positive. It is used in patients whose disease has spread to other parts of the body and has not been treated with anticancer drugs. It is also used before surgery in certain patients who are at high risk for their disease to recur (come back) or spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Perjeta binds to HER2 on the surface of some cancer cells, and may kill them. It is a type of monoclonal antibody. Also called pertuzumab.

**permafrost**: Perennially frozen ground that occurs wherever the temperature remains below 0 degrees C for several years.

**Permanent change** : The new substance that you have made cannot be changed back into the starting materials. Chemical changes are permanent

changes. Some people use the term "irreversible change" too.

**permanent hardness:** Water hardness that remains after boiling the water, mainly due to dissolved calcium sulfate. Chlorides also contribute to permanent hardness.

**PERMANENT SET:** The increase in length, expressed in a percentage of the original length, by which an elastic material fails to return to original length after being stressed for a standard period of time. OR The deformation remaining in a liquid silicone rubber specimen following both stress and relaxation over a period of time

**permanganate<sup>4-</sup>:** Permanganate ion (MnO<sub>4</sub><sup>-</sup>) is a powerful oxidizing agent used in chemical analysis and water treatment. The ion has an intense purple color.

**Permeability:** (1) the passage or diffusion of a gas, vapor, liquid, or solid through a barrier without physically or chemically affecting it. (2) the rate of such passage. OR The passage or diffusion of a gas, vapor, liquid, or solid through a barrier without physically or chemically affecting it. OR The rate at which liquid or gas, under pressure, passes through a solid material by diffusion and solution. In silicone rubber terminology: the rate of gas flow, expressed in atmospheric cubic centimeters per second, through an elastomeric material, one centimeter square and one centimeter thick OR the rate at which water sinks into the ground. OR of a rock, the ease with which fluid is transmitted through its pore space.

**Permeable:** A paint system which is said to be permeable when it allows water vapour to pass through the paint film, i.e. the paint allows the substrate to breathe.

**Permeable:** The property of allowing material to pass through, as a permeable membrane.

**Permease:** A protein that catalyzes the transport of a specific small molecule across a membrane. OR See transporters. peroxisome: Membrane-bounded organelle in the cytoplasm of eukaryotic cells; contains peroxide-forming and peroxide-destroying enzymes.

**Permeation:** Flowing into the pores and gaps of a substance; why you can pour water into a cup that is already full of sand, and pour a lot of water into a cup that is already full of popcorn.

**Permitil:** (Other name for: fluphenazine hydrochloride)

**Permittivity:** preferred term for dielectric constant. It is that property of a dielectric material that determined how much electrostatic energy can be stored per unit of volume when unit voltage is applied; the relative permittivity of most materials varies from 2 to 10, air having 1.

**Pernicious anemia:** A disease in which vitamin B12 absorption is impaired, owing to a deficiency of intrinsic factor, which results in an inability to synthesize thymine and purines. OR A type of anemia (low red blood cell count) caused by the body's inability to absorb vitamin B12.

**Peroxidases:** Heme enzymes catalyzing the reduction of an alkyl peroxide to produce an alcohol and water.

**peroxide:** a compound that contains an oxygen-oxygen single covalent bond. OR Oxygen-rich compounds used to cure polyester resins.

**peroxin:** name for any of several proteins/enzymes functioning in the peroxisomes; usually the proteins are identified as PEX followed by a number, e.g. PEX1

**peroxisome:** cytoplasmic body containing enzymes for digestion.

**peroxisome proliferator-activated receptor gamma pathway :**

Describes a group of proteins in a cell that work together to help control how certain genes are expressed and the use of lipids (fats) and glucose (sugar) in the body. Changes in the peroxisome proliferator-activated receptor gamma pathway may lead to diseases such as heart disease, diabetes, and cancer. Drugs or substances that affect this pathway are being studied in the prevention and treatment of cancer and other diseases. Also called PPAR gamma pathway.

**Peroxisomes:** Subcellular organelles that contain flavin-requiring oxidases and that regenerate oxidized flavin by reaction with oxygen. OR Small membrane-bounded organelles that are present in most eukaryotes and play a role in detoxification, the synthesis of plasmalogens and bile salts, and  $\beta$ -oxidation of long-chain fatty acids.

**peroxyacid:** an acid of general form

**perpendicular:** Two line segments are perpendicular if they meet at a right angle, 90 degrees.

**perpendicular lines:** two lines that intersect at right angles.

**Persantine:** (Other name for: dipyrindamole)

**persistence:** When applied to a chemical this has a meaning of ability to remain unchanged in the environment.

**person:** refers to the person (or thing) that is a subject or object; person can be either first (I, me, my, mine), second (you, your), or third (he, she, him, her, it, they).

**personal health record :** A collection of information about a person's health that allows the person to manage and track his or her own health information. A personal health record may include information about allergies, illnesses, surgeries, immunizations, and results of physical exams, tests, and screenings. It may also include information about medicines taken and health habits, such as diet and exercise. Also called personal history, personal medical history, and PHR.

**personal history :** A collection of information about a person's health that allows the person to manage and track his or her own health information. A personal history may include information about allergies, illnesses, surgeries, immunizations, and results of physical exams, tests, and screenings. It may also include information about medicines taken and health habits, such as diet and exercise. Also called personal health record, personal medical history, and PHR.

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**personal pronoun:** (I, me, he, she, it, and so on) stand in for one or more persons or things and differ in form depending upon their case.

**personalized medicine :** A form of medicine that uses information about a person's genes, proteins, and environment to prevent, diagnose, and treat disease. In cancer, personalized medicine uses specific information about a person's tumor to help diagnose, plan treatment, find out how well treatment is working, or make a prognosis. Examples of personalized medicine include using targeted therapies to treat specific types of cancer cells, such as HER2-positive breast cancer cells, or using tumor marker testing to help diagnose cancer. Also called precision medicine.

**personalized polyepitope plasmid DNA breast cancer vaccine:** A polyepitope DNA vaccine composed of a DNA plasmid encoding multiple, highly immunogenic tumor-associated antigens (TAAs) that are specifically selected after genome profiling of the patient's breast cancer cells, with potential immunostimulatory and antineoplastic activities. Upon intramuscular administration and electroporation of the personalized polyepitope plasmid DNA breast cancer vaccine, the expressed TAAs induce cytotoxic T-lymphocyte (CTL) immune responses against tumor cells expressing the TAAs.

**personalized synthetic long peptide breast cancer vaccine:** A cancer vaccine consisting of one or more long, synthetic peptides derived from patient-specific breast cancer tumor-associated antigens (TAAs), with potential immunomodulating and antineoplastic activities. Upon intramuscular administration of the personalized synthetic long peptide breast cancer vaccine, the peptides stimulate the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing the TAAs, which results in tumor cell lysis.

**Personnel monitoring:** The use of portable survey meters to determine the amount of radioactive contamination on individuals, or the use of dosimetry to determine an individual's occupational radiation dose.

**Pertofrane:** (Other name for: desipramine hydrochloride)

**perturbation :** A disruption or disturbance.

**pertussis :** A serious bacterial infection of the lungs and breathing tubes that spreads easily. Pertussis begins like a cold, but develops into severe coughing and gasping for air. Long spells of coughing may cause vomiting, and broken blood vessels in the eyes and on the skin. Also called whooping cough.

**pertuzumab:** A humanized recombinant monoclonal antibody directed against the extracellular dimerization domain of the HER-2 tyrosine kinase receptor. Binding of the antibody to the dimerization domain of the HER-2 tyrosine kinase receptor protein directly inhibits the ability of the HER-2 tyrosine kinase receptor protein (the most common pairing partner) to dimerize with other HER tyrosine kinase receptor proteins; inhibiting receptor protein dimerization prevents the activation of HER signaling pathways, resulting in tumor cell apoptosis. or A drug used with other drugs to treat breast cancer that is HER2-positive. It is used in patients whose

disease has spread to other parts of the body and has not been treated with anticancer drugs. It is also used before surgery in certain patients who are at high risk for their disease to recur (come back) or spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Pertuzumab binds to HER2 on the surface of some cancer cells, and may kill them. It is a type of monoclonal antibody. Also called Perjeta.

**PES:** Potential energy surface. The 3N-6 (or 3N-5, for linear molecules) dimensional function that indicates how the molecule's energy depends upon its geometry. (Not to be confused with experimental photoelectron spectroscopy.) OR Polyethersulfone

**pesticide :** Any substance that is used to kill insects and other pests.

**pesticide residue:** A pesticide residue is any substance or mixture of substances in food for man or animals resulting from the use of a pesticide and includes any specified derivatives, such as degradation and conversion products, metabolites, reaction products, and impurities that are considered to be of toxicological significance (WHO, 1976).

**pesticides:** This is a descriptor applied to chemicals used to kill pests and minimize their impact in agriculture, health and other human interests. Pesticides are often classified according to the organisms which they are used to control, for example as fungicides, herbicides, insecticides, molluscicides, nematocides, rodenticides, etc.

**PET:** Short for poly(ethylene terephthalate), a condensation polymer that is commonly used in soft-drink bottles. It can be prepared by the reaction between ethylene glycol and terephthalic acid to give polymer and water:  
OR Polyethylene terephthalate

**Pet (polyethylene terephthalate):** known as thermoplastic polyester. Pet has the unusual ability to exist in either an amorphous or highly crystalline state. The crystalline state is necessary for extruding the material. The amorphous state permits it to be oriented.

**PET scan :** A procedure in which a small amount of radioactive glucose (sugar) is injected into a vein, and a scanner is used to make detailed, computerized pictures of areas inside the body where the glucose is taken up. Because cancer cells often take up more glucose than normal cells, the pictures can be used to find cancer cells in the body. Also called positron emission tomography scan.

**PET-CT scan :** A procedure that combines the pictures from a positron emission tomography (PET) scan and a computed tomography (CT) scan. The PET and CT scans are done at the same time with the same machine. The combined scans give more detailed pictures of areas inside the body than either scan gives by itself. A PET-CT scan may be used to help diagnose disease, such as cancer, plan treatment, or find out how well treatment is working. Also called positron emission tomography-computed tomography scan.

**pet-facilitated therapy :** A type of therapy that uses dogs or other pets to improve the physical and mental health of patients with certain acute or chronic diseases. It is being studied as a way to relieve distress in cancer patients undergoing treatment for pain. Also called animal-assisted therapy.

**petechiae :** Pinpoint, unraised, round red spots under the skin caused by bleeding.

**PETG:** Glycol-modified PET

**PETP:** Polyethylene terephthalate

**Petrifying liquid:** Usually a dilute emulsion of drying oil and/or varnish in water used as a sealing coat on surfaces under water paint or as a thinning agent for water paint.

**Petrochemical Feedstocks:** Petrochemical Feedstocks are those groupings of feedstock materials that are consumed by the petrochemical industry. Conventionally these feed streams are obtained from refinery operations, however the last 20 years has seen non refinery streams, such as ethane extracted from natural gas, grow in importance as a feedstock.

**Petrochemical Industry:** Industries based on petroleum and chemicals derived from petroleum.

**Petrochemical Materials:** Petrochemical materials are derived from crude oil, and thus are considered to be “synthetic” materials. P&G’s use of natural, renewable materials provides a sustainable solution versus petrochemical, or petroleum based, alternatives.

**Petrochemicals:** Value-added products made from crude oil or natural gas. Most all of the chemicals we use to keep civilisation rolling along.

**petrolatum :** A thick, greasy, substance with no odor or taste made from petroleum (mixture of oily liquids found in the earth). Petrolatum is used on

the skin to prevent drying and to help heal scrapes and burns. It is also used as a base for some ointments. Also called petroleum jelly.

**petrolatum-mineral oil-lanolin-ceresin ointment:** A petrolatum-based ointment absorbed by dry and moist skin, petrolatum-mineral oil-lanolin-ceresin ointment is non-comedogenic, non-irritating, and non-sensitizing. It can reduce healing time of cracked, dry skin on hands, elbows, and knees, and helps prevent diaper rash. The original ointment also contained mineral oil, ceresin, lanolin alcohol. Its use is indicated in atopic dermatitis, eczema, and psoriasis when extra protection from a heavier base is needed.

**petroleum:** a general term that includes both natural gas and crude oil.

**Petroleum:** A sticky, oily, flammable liquid that is a complex mixture of organic compounds (mostly hydrocarbons) and other may vary in colour from nearly colourless to black. Basically, it is another word for crude oil. 'Petr' means something like 'rock' and 'oleum' means something like 'oil'.

**PETROLEUM ETHER EXTRACT (PEE):** see - UNREACTED

**petroleum jelly :** A thick, greasy, substance with no odor or taste made from petroleum (mixture of oily liquids found in the earth). Petroleum jelly is used on the skin to prevent drying and to help heal scrapes and burns. It is also used as a base for some ointments. Also called petrolatum.

**Peutz-Jeghers syndrome :** A genetic disorder in which polyps form in the intestine and dark spots appear on the mouth and fingers. Having Peutz-Jeghers syndrome increases the risk of developing gastrointestinal and many other types of cancer. Also called PJS.

**pevonedistat:** A small molecule inhibitor of Nedd8 activating enzyme (NAE) with potential antineoplastic activity. Pevonedistat binds to and inhibits NAE, which may result in the inhibition of tumor cell proliferation and survival. NAE activates Nedd8 (Neural precursor cell expressed, developmentally down-regulated 8), an ubiquitin-like (UBL) protein that modifies cellular targets in a pathway that is parallel to but distinct from the ubiquitin-proteasome pathway (UPP). Functioning in diverse regulatory activities, proteins conjugated to UBLs like Nedd8 typically are not targeted for proteasomal degradation.

**pexastimogene-devacirepvec:** A thymidine kinase-deleted vaccinia virus expressing human GM-CSF (hGM-CSF) with oncolytic activity. Upon intratumoral or intravenous administration, pexastimogene-devacirepvec

may selectively infect and lyse tumor cells. While vaccinia displays a natural tumor cell tropism, deletion of the thymidine kinase gene increases the tumor selectivity of vaccinia by limiting viral replication to transformed cells. hGM-CSF expression by this agent may help recruit antigen processing cells (APCs), such as dendritic cells and macrophages, to virally infected tumor cells, initiating a systemic antitumoral immune response.

**pexidartinib:** A capsule formulation containing a small-molecule receptor tyrosine kinase (RTK) inhibitor of KIT, CSF1R and FLT3 with potential antineoplastic activity. Pexidartinib binds to and inhibits phosphorylation of stem cell factor receptor (KIT), colony-stimulating factor-1 receptor (CSF1R) and FMS-like tyrosine kinase 3 (FLT3), which may result in the inhibition of tumor cell proliferation and down-modulation of macrophages, osteoclasts and mast cells involved in the osteolytic metastatic disease. FLT3, CSF1R and FLT3 are overexpressed or mutated in many cancer cell types and play major roles in tumor cell proliferation and metastasis. Check for active clinical trials using this agent.

**PF:** Phenyl-formaldehyde

**PF-00299804:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called protein tyrosine kinase inhibitors.

**PF-02341066:** A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of the anaplastic lymphoma kinase (ALK) gene or the ROS1 gene. It is also being studied in the treatment of other types of cancer. PF-02341066 blocks the proteins made by the mutated ALK and ROS1 genes. Blocking these proteins may stop the growth and spread of cancer cells. PF-02341066 may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called crizotinib, MET tyrosine kinase inhibitor PF-02341066, and Xalkori.

**PF-3512676:** A substance that is being studied in the treatment of some types of cancer. It belongs to the family of drugs called biological response modifiers. Also called CpG 7909 and ProMune.

**PFA:** Perfluoroalkoxy (resin)

**PFA (perfluoroalkoxy):** Thermoplastic member of fluoropolymer family of engineering plastics, one characterized by excellent release, low friction and toughness.

**PFIC:** A rare, inherited disorder marked by a buildup in the liver of bile (fluid that helps digest fat). This can lead to liver disease and liver failure. It may also increase the risk of liver cancer. PFIC is caused by mutations (changes) in certain genes that make proteins needed to help the liver work the way it should. It usually occurs in infants and children. Also called progressive familial intrahepatic cholestasis.

**PFS:** The length of time during and after the treatment of a disease, such as cancer, that a patient lives with the disease but it does not get worse. In a clinical trial, measuring the PFS is one way to see how well a new treatment works. Also called progression-free survival.

**PFT:** A test used to measure how well the lungs work. It measures how much air the lungs can hold and how quickly air is moved into and out of the lungs. It also measures how much oxygen is used and how much carbon dioxide is given off during breathing. A PFT can be used to diagnose a lung disease and to see how well treatment for the disease is working. Also called lung function test and pulmonary function test.

**PG:** One of several hormone-like substances made by the body. Different PGs control blood pressure, contraction of smooth muscles, and other processes within tissues where they are made. Certain PGs are being studied as cancer biomarkers. Also called prostaglandin.

**PGE1:** A drug that is used to treat impotence (inability to have an erection) and is being studied in the treatment of sexual problems in men who have had surgery for prostate cancer. It is a type of vasodilator. Also called alprostadil and prostaglandin E1.

**PGG beta-glucan:** An injectable formulation of the polysaccharide beta 1,3/1,6 glucan derived from the cell wall of the yeast *Saccharomyces cerevisiae* with potential immunomodulating and antineoplastic activities. PGG beta-glucan binds to an alternate site on the neutrophil complement receptor 3 (CR3), priming the neutrophil to become cytotoxic when binding to complement on tumor cells via CR3. This agent has been reported to selectively activate immune cells without inducing pro-inflammatory cytokines, potentially reducing potential side effects observed with the induction of broad innate immune responses. In addition, PGG beta-glucan may induce hematopoietic progenitor cell (HPC) mobilization. Check for active clinical trials using this agent.

**PGLA/PEG copolymer-based paclitaxel:** A controlled-release, intratumoral paclitaxel formulation in which paclitaxel is incorporated into a thermosensitive, biodegradable triblock copolymer consisting of poly(lactide-co-glycolide) (PLGA) and polyethylene glycol (PEG). Upon intratumoral injection, paclitaxel is released slowly and continuously into tumor tissues from the gelled thermosensitive triblock copolymer over a period of 4 to 6 weeks; in tumor cells, paclitaxel binds to tubulin and inhibits the disassembly-assembly dynamics of microtubules, resulting in cell cycle arrest and cell death. The thermosensitive triblock copolymer component of this formulation transforms from a water-soluble polymer at room temperature to a water-insoluble, biodegradable gel depot at body temperature; intratumoral controlled-release of paclitaxel from the gel minimizes systemic exposure to paclitaxel and the paclitaxel toxicity profile.

**pH:** A measure of how acidic or basic a substance or solution is. pH is measured on a scale of 0 to 14. On this scale, a pH value of 7 is neutral, which means it is neither acidic nor basic. A pH value of less than 7 means it is more acidic, and a pH value of more than 7 means it is more basic. In medicine, having the right pH in the blood and other body fluids is important for the body to work the way it should. OR An expression of the degree of acidity or alkalinity of a substance. Neutrality is pH 7 -acid solutions being under 7 and alkaline solution over 7. pH meters are commercially available for accurate readings. OR Determines the concentration of either an acid or a base OR The negative logarithm of the hydrogen ion concentration of an aqueous solution. OR pH is a measure of effective concentration of hydrogen ions in a solution. It is approximately related to the molarity of H<sup>+</sup> by  $\text{pH} = -\log [\text{H}^+]$  OR a number describing the concentration of hydrogen ions in a solution. Equals  $-\log[\text{H}^+]$ . OR a convenient way of expressing the activity (concentration) of hydrogen ions which is a measure of the degree of acidity or alkalinity of a solution. It is calculated as the negative logarithm of the hydrogen ion concentration (in mol/l):  $\text{pH} = -\log [\text{H}^+]$ . Pure water undergoes a certain amount of dissociation or self-ionization to form hydrogen (or more strictly, hydroxonium) and hydroxyl ions. OR An expression of the degree of acidity or alkalinity of a substance expressed as a number from 0 to 14. Neutrality is pH 7. Acid solutions are less than 7 and alkaline solutions are greater than 7. OR A measure of the acidity or basicity of a solution.

Mathematically the pH is  $-\log_{10}$  of the hydrogen ion concentration of the solution. Under normal circumstances, the possible range of values is 0 -14. A  $\text{pH} < 7$  indicates acidity,  $> 7$  indicates basicity. pH is a common specification for water soluble materials. OR A mean to express and to compare the acidity and alkalinity of a solution. It is expressed in a scale from 0 to 14. The solution of pH 7 is neutral; if the pH is lower than 7 the solution is acidic; if the pH is higher than 7 the solution is alkaline (basic). OR pH is a measure of acidity. In logarithmic value, the pH is equal to the logarithm of one over the concentration of hydrogen ions. A pH less than seven indicates an acid. Seven is a neutral solution. A value above seven indicates a base. OR A measure of the amount of hydrogen ions in a solution, equal to the negative of the base-10 logarithm of the hydrogen ion concentration. OR Measures the acidity of a solution. It is the negative log of the concentration of the hydrogen ions in a substance. OR the negative logarithm of the hydrogen ion concentration ( $-\log_{10}[\text{H}^+]$ ) where  $\text{H}^+$  is the hydrogen-ion concentration in moles per liter. Neutral water has a pH value of 7.

**pH adjustment:** a means of maintaining the optimum pH through the use of chemical additives.

**pH electrode:** specific ion electrode, made of glass, that responds to hydrogen ion activity, over the range  $1 \text{ M H}^+$  ( $\text{pH} = 0$ ) to  $10^{14} \text{ M H}^+$  ( $\text{pH} = 14$ ). Special purpose electrodes are made for very acidic or very alkaline solutions, solutions containing high levels of other cations, high temperature operation, and industrial and medical applications. pH electrodes may be subject to "acid error" in strongly acidic solutions and are also subject to alkaline error caused by response to sodium or other cations in highly basic solutions.

**pH range (of an ISE):** all ionselective electrodes are also sensitive to pH to some extent, most commonly at the high and low ends of the pH scale. The pH range is the range over which a change in pH will not cause a significant change in the measured voltage. It is the plateau on a graph of pH against mV at constant concentration of the detected ion. Outside this range, a change in pH may cause a significant change in the measured signal. Thus if samples lie outside the pH range then they must be treated with a buffer solution to bring them within the range, or, if samples all have the same pH, then the calibration standard solutions must be treated so as to

make them the same pH as the samples. In practice both the standard and sample solutions are treated with the same buffer to ensure that they have the same pH; then it is irrelevant whether this pH is within or without the range quoted for the electrode.

**pH unit:** a tenfold change in hydrogen ion activity, expressed as the negative logarithm of the hydrogen ion activity. Thus a solution of pH 7 is  $10^{-7}$  M in hydrogen ion activity and a pH 8 solution is  $10^{-8}$  M. The lower the solution pH, the more acidic the solution.

**pH value:** The pH value of a solution is a number on a scale indicating how strongly acidic or alkaline the solution is. The lower the pH value, the more acidic it is. pH values less than 7 are acidic, pH values over 7 are alkaline, and a pH value of 7 indicates a neutral solution.

**pH/mV meter:** an instrument that measures and displays the voltage developed between a sensing electrode and a reference electrode placed in a solution, and which can convert the voltage developed by a pH electrode to a corresponding pH value.

**PH20 hyaluronidase-expressing adenovirus VCN-01:** An oncolytic, replication-competent adenovirus encoding the human glycosylphosphatidylinositol-anchored enzyme PH20 hyaluronidase with potential antitumor activity. After intratumoral administration, PH20 hyaluronidase-expressing adenovirus VCN-01 selectively replicates in tumor cells, which may both cause oncolytic virus-induced cell death and induce the infection of adjacent tumor cells. In addition, the virus expresses hyaluronidase, which hydrolyzes and degrades the hyaluronic acid (HA) that coats tumor cells. The degradation of HA may result in a decrease for both the viscosity of the interstitial space and the tumor's interstitial fluid pressure (IFP). This increases viral spread and may result in the inhibition of tumor cell growth. In addition, HA degradation facilitates the penetration of chemotherapeutic agents into the tumor. HA is a glycosaminoglycan found in the extracellular matrix (ECM) and is frequently overproduced by various tumor cell types. The presence of HA in tumors correlates with increases in tumor cell growth, metastatic potential, tumor progression and resistance to chemotherapeutic agents.

**PHA-739358:** A substance being studied in the treatment of chronic myelogenous leukemia. PHA-739358 may stop tumor growth by blocking

certain enzymes needed for cancer cells to divide and causing them to die. It is a type of kinase inhibitor.

**phage:** See bacteriophage.

**phagocyte :** A type of immune cell that can surround and kill microorganisms, ingest foreign material, and remove dead cells. It can also boost immune responses. Monocytes, macrophages, and neutrophils are phagocytes. A phagocyte is a type of white blood cell.

**phagocytes:** cells that attack and engulf invading microorganisms.

**phagocytosis:** occurs when the vesicle formed from endocytosis contains particulate matter; the process by which cells or microorganisms are engulfed by another cell.

**phagocytosis :** The process by which a phagocyte (a type of white blood cell) surrounds and destroys foreign substances (such as bacteria) and removes dead cells.

**Phaleria macrocarpa Extract DLBS-1425:** An extract of the flesh from the fruit of *Phaleria macrocarpa*, an Indonesian herbal medicine, with potential antineoplastic activity. Although the active ingredients and exact components are unclear, gallic acid and its derivatives in DLBS-1425 appear to inhibit the phosphoinositide-3 kinase (PI3K)/protein kinase B (AKT) signaling pathway by reducing PI3K transcription followed by a reduction in AKT phosphorylation. This extract also appears to induce apoptosis through induction of pro-apoptotic genes such as BAX, BAD and PUMA and inhibition of the apoptosis suppressor Bcl-2. Check for active clinical trials using this agent.

**phantom limb pain :** The sensation of pain or other unpleasant feelings in the place of a missing (phantom) limb.

**pharmacist :** A health professional who has special training in preparing and dispensing (giving out) prescription drugs. Pharmacists have been taught how drugs work, how to use them, and their side effects.

**Pharmacodynamics:** The study of the processes by which ligands interact with their binding site and the biochemical and physiological changes associated with the ligand. In simple terms, it is the study of what the drug does to the body.

**pharmacogenetics :** The study of how a person's genes affect the way he or she responds to drugs. Pharmacogenetics is being used to learn ahead of

time what the best drug or the best dose of a drug will be for a person. Also called pharmacogenomics. OR The study of how people's genetic make-up affects their response to medicines

**pharmacognosy:** Identification, isolation, and characterization of biologically active substances in living things.

**Pharmacokinetics:** The study of the fate of the drug administered to a living organism. Pharmacokinetics involves the study of a compound's ADME properties. In simple terms, it is the study of what the body does to the drug. OR The activity of drugs in the body over a period of time, including the processes by which drugs are absorbed, distributed in the body, localized in the tissues, and excreted.

**pharmacology:** The science of drugs; the properties of drugs related to their therapeutic effects. OR The study of drugs, of the body's reaction to drugs, and of the sources of drugs OR The study of drugs, which includes determination of biological activity, biological effects, breakdown and synthesis, and delivery.

**pharmacology :** The study of the origin, chemistry, and uses of drugs and their effects on the body.

**Pharmacophore:** A description of the main molecular features necessary for biological activity and their relative positions in space. Sometimes referred to as the minimum structure required to elicit a biological response.

**Pharmacopoeia:** An official documentation which details the analytical procedures, effects and directions of use of medicinal substances.

**pharmacopoeia :** A book describing chemicals, drugs, and other substances and how they are used as medicines. It is prepared by a recognized authority.

**pharyngeal cancer :** Cancer that forms in tissues of the pharynx (the hollow tube inside the neck that starts behind the nose and ends at the top of the windpipe and esophagus). Pharyngeal cancer includes cancer of the nasopharynx (the upper part of the throat behind the nose), the oropharynx (the middle part of the pharynx), and the hypopharynx (the bottom part of the pharynx). Cancer of the larynx (voice box) may also be included as a type of pharyngeal cancer. Most pharyngeal cancers are squamous cell carcinomas (cancer that begins in thin, flat cells that look like fish scales). Also called throat cancer.

**pharynx:** the cavity at the rear of the mouth that the nasal chambers open into; the throat.

**pharynx :** The hollow tube inside the neck that starts behind the nose and ends at the top of the trachea (windpipe) and esophagus (the tube that goes to the stomach). The pharynx is about 5 inches long, depending on body size. Also called throat.

**Phase:** If you call a 'system' anything that is in a bucket, that a 'phase' is a part of the system that can be (at least in theory) separated mechanically without any chemical reaction, and is of uniform composition. You could have ice and water mixed in a bucket (two phases) ice and soda water (three phases, if you count the bubbles) or ice and salad dressing (three phases - ice, oil, and vinegar - yuck). OR a substance with uniform composition and definite physical state. OR 1. A phase is a part of a sample of matter that is in contact with other parts but is separate from them. Properties within a phase are homogeneous (uniform). For example, oil and vinegar salad dressing contains two phases: an oil-rich liquid, and a vinegar-rich liquid. Shaking the bottle breaks the phases up into tiny droplets, but there are still two distinct phases. 2. In wave motion, phase is the fraction of a complete cycle that has passed a fixed point since the current cycle began. The phase is often expressed as an angle, since a full cycle is  $360^\circ$ ; (2). Two waves are "in phase" if the peaks of one wave align with the peaks of the other; they are "out of phase" if the peaks of one wave align with the troughs of the other.

**phase boundary:** A phase boundary is a surface where two samples of matter with different properties are in contact. The surface of a gas bubble in water or the surface of a crystal are examples of phase boundaries.

**phase change:** A change in the state of a sample of matter; for example, solid to liquid or liquid to gas. Phase changes are considered physical rather than chemical changes.

**phase diagram:** A map that shows which phases of a sample are most stable for a given set of conditions. Phases are depicted as regions on the map; the borderlines between regions correspond to conditions where the phases can coexist in equilibrium.

**phase I clinical trial :** The first step in testing a new treatment in humans. A phase I study tests the safety, side effects, best dose, and timing of a new treatment. It may also test the best way to give a new treatment (for

example, by mouth, infusion into a vein, or injection) and how the treatment affects the body. The dose is usually increased a little at a time in order to find the highest dose that does not cause harmful side effects. Phase I clinical trials usually include only a small number of patients who have not been helped by other treatments. Sometimes they include healthy volunteers.

**phase I detoxification :** A process in which the liver uses one of two major enzyme pathways to change a toxic substance, such as an anticancer drug, into a less toxic substance that is easier for the body to excrete.

**phase I/II clinical trial :** A study that tests the safety, side effects, and best dose of a new treatment. Phase I/II clinical trials also test how well a certain type of cancer or other disease responds to a new treatment. In the phase II part of the clinical trial, patients usually receive the highest dose of treatment that did not cause harmful side effects in the phase I part of the clinical trial. Combining phases I and II may allow research questions to be answered more quickly or with fewer patients.

**phase II clinical trial :** A study that tests whether a new treatment works for a certain type of cancer or other disease (for example, whether it shrinks a tumor or improves blood test results). Phase II clinical trials may also provide more information about the safety of the new treatment and how the treatment affects the body.

**phase II detoxification :** A process in which the liver uses one of two major enzyme pathways to change a toxic substance, such as an anticancer drug, into a less toxic substance that is easier for the body to excrete. In phase II detoxification, liver cells add a substance (such as cysteine, glycine, or a sulfur molecule) to a toxic chemical or drug, to make it less harmful.

**phase II/III clinical trial :** A study that tests how well a new treatment works for a certain type of cancer or other disease and compares the new treatment with a standard treatment. Phase II/III clinical trials may also provide more information about the safety and side effects of the new treatment. Combining phases II and III may allow research questions to be answered more quickly or with fewer patients.

**phase III clinical trial :** A study that tests the safety and how well a new treatment works compared with a standard treatment. For example, phase III clinical trials may compare which group of patients has better survival

rates or fewer side effects. In most cases, treatments move into phase III trials only after they meet the goals of phase I and II trials. Phase III clinical trials may include hundreds of people.

**phase IV clinical trial :** A type of clinical trial that studies the side effects caused over time by a new treatment after it has been approved and is on the market. These trials look for side effects that were not seen in earlier trials and may also study how well a new treatment works over a long period of time. Phase IV clinical trials may include thousands of people. Also called post-marketing surveillance trial.

**Phase problem:** Although the amplitude  $F(hkl)$  of the diffracted beam is readily available, the phase  $\alpha(hkl)$  necessary to compute the electron density is not known because X-rays cannot be focused. The phase is needed to determine the three-dimensional arrangement of the atoms without which the stereochemistry cannot be determined.

**phase sign:** the positive and negative symbols assigned to the upward and downward displacement, respectively, of the standing wave that describes the orbitals about an atom's nucleus. Each upward and downward displacement is called a phase.

**Phase transformation:** A transformation of one crystalline form of a solid to another. This can be a solid-solid, a solid-liquid-solid, or a vapor-mediated transformation.

**Phases of Drug Action:** The three phases of drug action are the pharmaceutical phase, pharmacokinetic phase, and the pharmacodynamic phase.

**Phases of Matter:** A phase is another name for a physical state of matter. Some scientists talk about what phase a piece of matter exists in. That's another way of saying what state that piece of matter is currently in. Examples of phases and states are solids, gases, and liquids.

**PHC:** (Other name for: cholecalciferol/d-alpha tocopherol/L-selenomethionine/green tea extract/saw palmetto berry extract/daidzein/genistein/lycopene prostate health supplement)

**Phellodendron amurense bark extract:** A proprietary formulation consisting of a Phellodendron amurense (Amur cork tree) bark extract, often used in traditional Chinese medicine, with anti-inflammatory, anti-oxidant and potential chemopreventive and antineoplastic activities.

Phellodendron amurense bark extract contains certain isoquinoline alkaloids, flavone glycosides and phenolic compounds. Upon administration of Phellodendron amurense bark extract, the various phytochemicals in this formulation modulate multiple signal transduction pathways. This agent appears to block the activation of the transcription factor cAMP response binding protein (CREB) and inhibits Akt signaling, thereby inhibiting tumor cell growth and inducing apoptosis in Akt- and CREB-overexpressing cancer cells. In addition, this agent inhibits cyclooxygenase type 2 (COX-2), nuclear factor kappa b (NF-kB) and tumor necrosis factor alpha (TNF-a)-mediated signaling; COX-2, NF-kB and TNF-a are upregulated in certain types of cancer and during inflammation.

**phenelzine sulfate:** A hydrazine derivative and a potent non-selective monoamine oxidase (MAO) inhibitor with anxiolytic and antidepressant properties. Phenelzine sulfate irreversibly binds to MAO, thereby blocking the oxidative deamination of monoamines resulting in an increased concentration of biogenic amines and a concurrent decrease in catabolism of monoamine neurotransmitters, norepinephrine and serotonin, in the brain. In addition, through its primary metabolite phenylethylidenehydrazine (PEH), phenelzine causes elevated GABA levels in the caudate-putamen and nucleus accumbens thereby exerting its anxiolytic effects.

**Phenergan:** (Other name for: promethazine hydrochloride)

**phenethyl isothiocyanate:** An isothiocyanate found in cruciferous vegetables with chemopreventive and potential antitumor activities. Although the mechanism of action is unclear, phenethyl Isothiocyanate (PEITC) was shown to induce apoptosis in tumor cells, possibly mediated through its metabolic intermediates, reactive oxygen species (ROS). PEITC also is able to activate ERK and JNK signal transduction, which in turn induces expression of stress-responsive genes. Specifically, this agent has been shown to reactivate gene expression of a detoxification enzyme, glutathione S-transferase that is silenced in prostate carcinoma.

**phenethyl isothiocyanate :** A substance being studied in the prevention of cancer. It is a naturally occurring compound found in some cruciferous vegetables. Also called PEITC.

**phenethyl isothiocyanate-containing watercress juice:** A juice extracted from watercress containing high amounts of phenethyl isothiocyanate (PEITC), with potential chemopreventive and antitumor activities.

Although the mechanism(s) of action through which PEITC exerts its effect(s) has yet to be fully elucidated, PEITC is able to induce apoptosis in tumor cells through the induction of reactive oxygen species (ROS). Additionally, PEITC is able to modulate extracellular signal-regulated kinases (ERK), c-Jun N-terminal kinase (JNK) and mitogen-activated protein kinase (MAPK) signal transduction pathways, activating the expression of stress-responsive genes and eventually inducing apoptosis. PEITC also inhibits the expression of genes involved in tumor progression such as HIF, STAT-3, HER2, BCL-XL, and XIAP and induces the expression of genes involved in tumor suppression such as p53, ATF-2, and p57. Furthermore, this agent has been shown to reactivate the gene expression of certain detoxification enzymes.

**phenformin hydrochloride:** The hydrochloride salt form of phenformin, an agent belonging to the biguanide class of antidiabetics with antihyperglycemic activity. Phenformin is not used clinically due to the high risk of lactic acidosis that is associated with its use.

**phenobarbital:** A long-acting barbituric acid derivative with antipsychotic property. Phenobarbital binds to and activates the gamma-aminobutyric acid (GABA)-A receptor, thereby mimicking the inhibitory actions of GABA in the brain. The activation effects of the phenobarbital-receptor-ionophore complex include increased frequency of chloride channel openings, membrane hyperpolarization and ultimately synaptic inhibition and decreased neuronal excitability. In addition, this agent inhibits glutamate induced depolarization. Check for active clinical trials using this agent.

**phenobarbital :** A drug that is used to treat seizures and as a sedative. It is being studied in the treatment of diarrhea and for its ability to increase the antitumor effect of other therapies. It belongs to the family of drugs called barbiturates.

**phenocopy :** A phenotypic trait or disease that resembles the trait expressed by a particular genotype, but in an individual who is not a carrier of that genotype. For example, breast cancer in a hereditary breast/ovarian cancer syndrome family member who does not carry the family's BRCA1 or BRCA2 mutation would be considered a phenocopy. Such an individual does not have the family's cancer-related mutation and therefore, they do not have the associated cancer risk from that specific mutation.

**Phenol:** A very poisonous chemical substance made from tar and also found in some plants and essential oils (scented liquid taken from plants). Phenol is used to make plastics, nylon, epoxy, medicines, and to kill germs. Also called carbolic acid. OR Phenol is a major commodity chemical intermediate produced from cumene. Phenol is used to produce phenolic resins for wood binding and bisphenol-A for polycarbonate resins. Other engineering applications include the production of caprolactam and adipic acid, which are nylon intermediates. It can also be used directly in some medical and water treatment applications, e.g. anesthetic, disinfectant, exfoliate in cosmetic surgery, acetyl salicylic acid (aspirin) and slimicide. Phenol production is principally from the reaction of propylene and benzene to cumene, then cumene oxidation; hence phenol is classed as a propylene derivative. A white, crystalline powder at room temperature, phenol has for a long time been produced directly from coal distillation, although the volumes from this source are now small relative to propylene-based production. Phenol production is widespread globally with the exception of the Middle East, although capacity is expected to develop there also. OR A group or molecule containing a benzene ring that has a hydroxyl group substituted for a ring hydrogen.

**Phenolic:** A resin or plastic, usually thermosetting, made by condensation of a phenol with an aldehyde and used for molding, insulating, coatings and adhesives. OR A synthetic resin used in the manufacture of some industrial finishes.

**Phenolic:** The generic name for phenolformaldehyde thermosetting plastic that's molded or cast.

**Phenolic Resin:** 1) A synthetic resin produced by the condensation of phenol with an aldehyde (usually formaldehyde). 2) Any of several types of thermoset plastics obtained by the condensation of phenol or substituted phenols. OR resins made by reaction of a phenol compound or tar acid with an aldehyde; more commonly applied to thermosetting resins made from pure phenol.

**phenology:** The study of periodic biological phenomena with relation to climate, particularly seasonal changes. These phenomena can be used to interpret local seasons and the climatic zones.

**phenolphthalein:** An organic compound used as an acid-base indicator. The compound is colorless in acidic solution and pink in basic solution

(with the transition occurring around pH 8.3). Phenolphthalein was used for many years as a laxative in very low concentrations- high concentrations are toxic!

**phenolphthalein alkalinity:** a measure of the hydroxides plus one-half of the normal carbonates in aqueous suspension. Measured by the amount of sulfuric acid required to bring the water to a pH value of 8.3, as indicated by a change in color of phenolphthalein. It is expressed in ppm of calcium carbonate (CaCO<sub>3</sub>).

**phenolphthalein:** A common misspelling of phenolphthalein.

**phenothiazine :** A type of drug that is used to treat severe mental and emotional disorders, severe nausea and vomiting, and certain other conditions. It belongs to the families of drugs called antipsychotics and antiemetics.

**phenotype:** The observable characteristics of an organism. OR the expression of genes and the physical characteristics that result. OR The observable trait(s) that result from the genotype in cooperation with the environment. OR The observable characteristics in an individual resulting from the expression of genes; the clinical presentation of an individual with a particular genotype.

**phenoxodiol :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called signal transduction inhibitors.

**phenoxybenzamine hydrochloride:** The hydrochloride salt form of phenoxybenzamine, a synthetic, dibenzamine alpha-adrenergic antagonist with antihypertensive and vasodilatory properties. Phenoxybenzamine non-selectively and irreversibly blocks the postsynaptic alpha-adrenergic receptor in smooth muscle, thereby preventing vasoconstriction, relieving vasospasms, and decreasing peripheral resistance. Reflex tachycardia may occur and may be enhanced by blockade of alpha-2 receptors which enhances norepinephrine release. Phenoxybenzamine is reasonably anticipated to be a human carcinogen.

**phenprocoumon:** An orally available, long-acting derivative of coumarin with anticoagulant activity. Upon administration, phenprocoumon inhibits the vitamin K epoxide reductase enzyme; inhibition of this enzyme prevents the formation of the reduced, active form of vitamin K (vitamin KH<sub>2</sub>), which is essential for the carboxylation of glutamate residues of vitamin K-dependent proteins. This prevents the activation of vitamin K-dependent

coagulation factors II, VII, IX, and X and the anticoagulant proteins C and S, which abrogates both thrombin production and thrombus formation.

**phentermine:** Amphetamine-like component of fen-phen that increases metabolism by raising the body's levels of dopamine and norepinephrine.

**phentolamine mesylate:** The mesylate salt of a synthetic imidazoline with alpha-adrenergic antagonist activity. As a competitive alpha-adrenergic antagonist, phentolamine binds to alpha-1 and alpha-2 receptors, resulting in a decrease in peripheral vascular resistance and vasodilatation. This agent also may block 5-hydroxytryptamine (5-HT) receptors and stimulate release of histamine from mast cells.

**phenyl:** A molecular group or fragment formed by abstracting or substituting one of the hydrogen atoms attached to a benzene ring.

**phenylacetate :** A substance that is being studied in the treatment of cancer. or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called differentiating agents.

**Phenylketonuria:** A human disease caused by a genetic deficiency in the enzyme that converts phenylalanine to tyrosine. The immediate cause of the disease is an excess of phenylalanine, which can be alleviated by a diet low in phenylalanine. OR A disease caused by the inability to convert phenylalanine into tyrosine, which results in excess phenylalanine and its secondary metabolites; the disease is characterized by severe retardation. OR An inherited disorder that causes a build-up of phenylalanine (an amino acid) in the blood. This can cause mental retardation, behavioral and movement problems, seizures, and delayed development. Using a blood test, PKU can easily be found in newborns, and treatment is a diet low in phenylalanine. Also called PKU.

**phenytoin sodium :** A drug used to treat or prevent seizures or convulsions that may be caused by epilepsy, brain surgery, or treatment for brain cancer. It is a type of anticonvulsant agent. Also called Dilantin.

**pheochromocytoma :** Tumor that forms in the center of the adrenal gland (gland located above the kidney) that causes it to make too much adrenaline. Pheochromocytomas are usually benign (not cancer) but can cause high blood pressure, pounding headaches, heart palpitations, flushing of the face, nausea, and vomiting.

**pheresis** : A procedure in which blood is collected, part of the blood such as platelets or white blood cells is taken out, and the rest of the blood is returned to the donor. Also called apheresis.

**Pheromone**: A hormone-like substance that acts as an attractant.

**Philadelphia chromosome** : An abnormality of chromosome 22 in which part of chromosome 9 is transferred to it. Bone marrow cells that contain the Philadelphia chromosome are often found in chronic myelogenous leukemia and sometimes found in acute lymphocytic leukemia.

**philosophical** : Having to do with the deeper questions of life and with a person's basic beliefs, ideas, and attitudes.

**phlebitis** : Inflammation (redness, swelling, pain, and heat) of a vein, usually in the legs. Phlebitis may be caused by infection, injury, or irritation.

**phlebotomy** : A procedure in which a needle is used to take blood from a vein, usually for laboratory testing. Phlebotomy may also be done to remove extra red blood cells from the blood, to treat certain blood disorders. Also called blood draw and venipuncture.

**phlegm** : A more than normal amount of thick mucus made by the cells lining the upper airways and lungs. A buildup of phlegm may be caused by infection, irritation, or chronic lung disease, and can cause discomfort in the chest and coughing.

**phloem**: structures of vascular plants that transport sugars and other nutrients from the leaves to the other parts of the plant.

**Phlogiston** : An old theory said that when metals burn they lose phlogiston. The theory explained the fact that metals get heavier when they burn by stating that phlogiston had negative mass. Although interesting as a theory to show how science has developed, we no longer believe the phlogiston theory.

**phobia** : An extreme, irrational, fear of something that may cause a person to panic. Examples of common phobias include fear of spiders, flying in an airplane, elevators, heights, enclosed rooms, crowded public places, and embarrassing oneself in front of other people.

**Phorbol esters**: Polycyclic alcohol derivatives of croton oil that resemble diacylglycerol and inappropriately stimulate protein kinase C; phorbol esters are tumor promoters.

**Phosphatase:** An enzyme that catalyzes the removal of a phosphoryl group from a substrate by hydrolysis.

**phosphate :** A form of phosphoric acid, which contains phosphorus. In the body, phosphates are found in the bones and teeth. Phosphates may be used to treat a high level of calcium in the blood. Adding or removing phosphate chemical groups may affect the way proteins act in the body.

**phosphate group:** a group derived from a molecule of phosphoric acid that connects the DNA molecules to one another.

**phosphate ion:** a product of adenosine triphosphate (ATP) together with ADP.

**Phosphate Mineral:** A mineral that is made up of compounds with a phosphate group bonded to a metal. Turquoise is a good example of a phosphate mineral.

**Phosphatidate (diacylglycerol 3-phosphate):** A precursor to triacylglycerols as well as many phospholipids.

**phosphatidylcholine-bound silybin:** An oral preparation of the flavonoid silybin with potential antioxidant and chemopreventive activities. Silybin, also known as silibinin, is a mixture of two stereoisomers, denoted silybin A and silybin B, and is the major active constituent of silymarin, a mixture of flavonolignans extracted from blessed milk thistle (*Silybum marianum*). Silybin modulates P-glycoprotein (P-gp)-mediated cellular efflux; has oxygen radical-scavenging effects; inhibits the arachidonic acid pathway; and inhibits various cytochrome P450 enzymes. This agent may also exhibit anti-angiogenic activity, possibly by inducing endothelial cell apoptosis via modulation of the transcription factor NF- $\kappa$ B, the Bcl-2 family of proteins, and caspases. Complexing silybin with phosphatidylcholine increases its bioavailability.

**phosphatidylinositol-3 kinase :** A type of enzyme that transmits signals in cells and that helps control cell growth. Some tumors have higher-than-normal levels of phosphatidylinositol-3 kinase. Also called PI3 kinase and PI3K.

**Phosphating:** Surface pretreatment used on ferrous parts that provide a very thin crystalline film that enhances both corrosion resistance and adhesion.

**Phosphating:** The treatment of steel or other metal surfaces or articles with solutions containing phosphates and phosphoric acid to produce a coating which inhibits corrosion and assists paint adhesion.

**Phosphodiester:** A molecule containing two alcohols esterified to a single molecule of phosphate. For example, the backbone of nucleic acids is connected by 5'-3' phosphodiester linkages between the adjacent individual nucleotide residues.

**phosphodiester linkage:** A chemical grouping that contains two alcohols esterified to one molecule of phosphoric acid, which thus serves as a bridge between them.

**Phosphodiesterase:** An enzyme that converts cyclic nucleotides (e.g., cAMP) into the noncyclic form (e.g., AMP).

**Phosphofructokinase:** A kinase that phosphorylates fructose 6-phosphate to fructose 1,6-bisphosphate; phosphofructokinase, an allosteric enzyme, is the major control point for flux through the glycolytic pathway.

**Phosphogluconate pathway:** Another name for the pentose phosphate pathway. This name derives from the fact that 6-phosphogluconate is an intermediate in the formation of pentoses from glucose. OR An oxidative pathway beginning with glucose-6-phosphate and leading, via 6-phosphogluconate, to pentose phosphates and yielding NADPH. Also called the pentose phosphate pathway.

**Phosphoinositide cascade:** A set of reactions that convert an extracellular signal into an intracellular one; the conversion entails the cleavage of the phospholipid phosphatidyl inositol 4,5-bisphosphate into two second messengers, inositol 1,4,5-trisphosphate and diacylglycerol.

**Phospholipases:** A class of enzymes of varying specificity that catalyze the degradation of phospholipids; can function as digestive enzymes as well as components of signal-transduction pathways.

**Phospholipid:** A lipid made up of glycerol and fatty acids, with a phosphate group attached OR A lipid containing charged hydrophilic phosphate groups; a component of cell membranes.

**phospholipid:** An ester of glycerol with two fatty acids and phosphoric acid ( $H_3PO_4$ ) or a derivative of phosphoric acid group (like  $H_2PO_4CH_2CH_2N(CH_3)_3$ ). Phospholipids have a hydrophilic head (the

phosphate group) and a lipophilic tail (the fatty acids). OR A lipid containing one or more phosphate groups.

**phospholipid** : A lipid (fat) that contains phosphorus. Phospholipids are a major part of cell membranes.

**phospholipid bilayer**: In an aqueous environment phospholipids can form a two-layered "sandwich" with the hydrophobic lipid tails on the inside and the hydrophilic phosphate heads facing outward. These bilayers are the essential structure for building cell membranes.

**phospholipid complex** : A chemical or drug that is attached to a lipid (fat) that contains phosphorus.

**Phospholipids**: Important constituents of membranes and composed of three components: a backbone (usually glycerol or sphingosine), two fatty acid chains, and a phosphorylated alcohol.

**phosphonoformate trisodium** : A drug used to treat infections with herpesviruses in people whose immune systems are weakened by AIDS. It blocks the viruses from making copies of themselves. It is a type of antiviral agent. Also called foscarnet sodium and Foscavir.

**Phosphoral**: (Other name for: sodium phosphate)

**Phosphoric**: Phosphoric acid,  $H_3PO_4$ , is a weak acid found in many soft drinks.

**phosphoric** : Having to do with or containing the element phosphorus.

**phosphoric acid** : An acid that contains phosphorus and is used in medicine and dentistry. It is also used to remove rust. A dilute form of phosphoric acid is used to flavor soft drinks.

**phosphorodiamidate morpholino oligomer AVI-4126**: A c-Myc antisense phosphorodiamidate morpholino oligomer (PMO) with potential antineoplastic activity. Phosphorodiamidate morpholino oligomer AVI-4126 binds to c-Myc mRNA and blocks its translation, which may result in the death of tumor cells overexpressing c-Myc. Differing from traditional antisense oligodeoxynucleotides (ODNs), neutrally charged PMOs are composed of subunits of nucleic acid bases linked to a synthetic backbone and, so, are less prone to enzymatic degradation. c-Myc, a proto-oncogene overexpressed in a variety of cancers, is involved in cellular proliferation, differentiation, and apoptosis.

**Phosphorolysis:** The cleavage of a bond by orthophosphate, as in the degradation of glycogen to glucose 1-phosphate. OR Cleavage of a compound with phosphate as the attacking group; analogous to hydrolysis.

**Phosphorus:** Symbol:"P" Atomic Number:"15" Atomic Mass: 30.97amu. Phosphorus is a very reactive element and is classified as a non-metal. Plants and animals need phosphorus to survive. When you go looking for it, you can find it in the soil. You will also find it in baking soda, making china, fireworks, fertilizers, and glass making.

**phosphorus :** A nonmetallic element that is found in the blood, muscles, nerves, bones, and teeth and is a component of adenosine triphosphate (ATP; the primary energy source for the body's cells).

**phosphorus P32:** A radioactive isotope of phosphorus with beta particle-emitting radiocytotoxic activity. Emitted by phosphorus P32, beta particles directly damage cellular DNA and, by ionizing intracellular water to produce several types of cytotoxic free radicals and superoxides, indirectly damage intracellular biological macromolecules, resulting in tumor cell death.

**phosphorus-32 :** A radioactive form of phosphorus used in the treatment of cancer. It is also used to help locate areas of DNA damage.

**Phosphoryl transfer potential:** A measure of the tendency of a phosphorylated compound to transfer a phosphate to another compound; presented as the  $\Delta G^\circ$  of hydrolysis of the phosphate compound; the more negative the  $\Delta G^\circ$  of hydrolysis, the greater the phosphoryl transfer potential.

**Phosphorylation:** The formation of a phosphate derivative of a biomolecule. OR Formation of a phosphate derivative of a biomolecule, usually by enzymatic transfer of a phosphate group from ATP.

**phosphorylation :** A process in which a phosphate group is added to a molecule, such as a sugar or a protein.

**Phosphorylation potential:** A means of measuring the energy status of a cell that is derived by dividing the concentration of ATP by the product of the concentrations of ADP and Pi.

**phosphorylation potential ( $\Delta G_p$ ):** The actual free-energy change of ATP hydrolysis under the nonstandard conditions prevailing within a cell.

**Photo-biodegradation:** Degradation of the polymer is triggered by UV light and assisted by the presence of UV sensitizers. In this process the

polymer is converted to low molecular weight material (waxes) and in a second step converted to carbon dioxide and water by bacterial action.

**photoactivity :** The effect produced when certain substances are exposed to light. In cancer treatment, some drugs become active when exposed to light and are then able to kill tumor cells.

**photochemical reaction center:** The part of a photosynthetic complex where the energy of an absorbed photon causes charge separation, initiating electron transfer.

**photochemical smog:** Air pollution caused by chemical reactions among various substances and pollutants in the atmosphere.

**photochemistry:** The study of chemical changes caused by light. For example, many of the key reactions that generate smog are photochemical.

**Photochlor:** (Other name for: HPPH)

**Photochromism:** A compound exhibits photochromism if, upon exposure to light, a color change occurs. Often the color change is reversible.

**photocoagulation :** The use of an intense beam of light, such as a laser, to seal off blood vessels or destroy tissue. It is used to treat certain eye conditions, and may be used to destroy blood vessels that a tumor needs to grow.

**photocyanine:** A metal complex compound of phthalocyanide with photosensitizing activity. Upon injection with photocyanide and subsequent introduction to photodynamic therapy (PDT), photocyanide becomes activated and forms reactive oxygen species that induce apoptosis.

**Photodegradable:** A process where ultraviolet radiation degrades the chemical bond or link in the polymer or chemical structure of a plastic. OR Degradation of plastics due to the action of light. OR Degradation of plastics due to the action of light. In the recycled plastic and plastic material industry, most plastics tend to absorb high-energy radiation in the UV portion of the spectrum this generates in the formation of free radicals and causes degradation in plastic materials.

**Photodetector:** (e.g. photodiode) an electronic device converting optical radiation into electrical signal.

**photodynamic therapy :** Treatment with drugs that become active when exposed to light. These activated drugs may kill cancer cells.

**photoelectric:** Of or relating to the electrical effects of light, including the emission of electrons, the generation of a voltage, or a change in resistance.

**PHOTOELECTRIC EFFECT:** is the emission of electrons from metal when the metal is struck by light. OR Ejection of electrons from an atom or molecule that has absorbed a photon of sufficient energy. The photoelectric effect is the operating principle behind "electric eyes"; it is experimental evidence for particle-like behavior of electromagnetic radiation.

**photoelectron:** An electron ejected from an atom or molecule that has absorbed a photon.

**Photofrin :** A drug used to treat some types of cancer. When absorbed by cancer cells and exposed to light, Photofrin becomes active and kills the cancer cells. It is a type of photodynamic therapy agent. Also called porfimer sodium.

**Photoinduced charge separation:** The excitation of an electron from its ground state to a higher energy level by light absorption and the subsequent movement of the excited electron from the initial molecule to an acceptor, resulting in a positive charge on the initial molecule and a negative charge on the acceptor molecule.

**Photolon:** (Other name for: phytochlorin sodium-polyvinylpyrrolidone complex)

**Photomicrography:** The technique of photographing a crystal on a microscope, sometimes at various stages in a reaction.

**photon:** Massless packet of energy, which behaves like both a wave and a particle. OR A particle of electromagnetic radiation having zero mass. OR A quantum (or packet) of energy emitted in the form of electromagnetic radiation. Gamma rays and x-rays are examples of photons. OR A discrete packet of energy associated with electromagnetic radiation. Each photon carries energy  $E$  proportional to the frequency of the radiation:  $E = h\nu$ , where  $h$  is Planck's constant. OR The ultimate unit (a quantum) of light energy.

**photon beam radiation therapy :** A type of radiation therapy that uses x-rays or gamma rays that come from a special machine called a linear accelerator (linac). The radiation dose is delivered at the surface of the body and goes into the tumor and through the body. Photon beam radiation therapy is different from proton beam therapy.

**photopheresis** : A procedure in which blood is removed from the body and treated with ultraviolet light and drugs that become active when exposed to light. The blood is then returned to the body. It is being studied in the treatment of some blood and bone marrow diseases and graft-vs-host disease (GVHD). Also called extracorporeal photopheresis.

**photophobia** : A condition in which the eyes are more sensitive than normal to light.

**photophosphorylation**: The enzymatic formation of ATP from ADP coupled to the light-dependent transfer of electrons in photosynthetic cells.

**Photoreactivation**: DNA repair in which the damaged region is repaired with the help of light and an enzyme. The lesion (break) is repaired without excision (cutting out) from the DNA.

**Photoreceptors**: Membrane proteins that can convert light into atomic motion and then into a chemical signal.

**photoreduction**: The light-induced reduction of an electron acceptor in photosynthetic cells.

**Photorespiration**: The conversion of organic carbon into carbon dioxide without the production of energy-rich metabolites; the result of the oxygenase reaction catalyzed by rubisco and the subsequent regeneration of glucose from two molecules of glycolate, with the release of carbon dioxide and ammonia and the consumption of ATP. OR Oxygen consumption occurring in illuminated temperate-zone plants, largely due to oxidation of phosphoglycolate.

**photosensitizer** : A drug used in photodynamic therapy. When absorbed by cancer cells and exposed to light, the drug becomes active and kills the cancer cells. Also called photosensitizing agent.

**photosensitizer LUZ 11**: A bacteriochlorin-based photosensitizer, with antineoplastic activity upon photodynamic therapy (PDT). Following intravenous administration, the photosensitizer LUZ 11 preferentially accumulates in hyperproliferative tissues, such as tumors. Local application of laser light at the tumor site results in the absorption of light by this agent and a photodynamic reaction between LUZ 11 and oxygen. This results in the production of reactive oxygen species (ROS), which includes singlet oxygen molecules, the superoxide ion, and other cytotoxic free radicals.

The formation of ROS induces free radical-mediated DNA damage and cell death.

**photosensitizing agent :** A drug used in photodynamic therapy. When absorbed by cancer cells and exposed to light, the drug becomes active and kills the cancer cells. Also called photosensitizer.

**Photospectrometer:** a spectrometer is an optical instrument used to examine light of various wavelengths. A photospectrometer (or spectrophotometer) examines those wavelengths of light in the visible and UV range. It can give  $L^*$ ,  $a^*$ , and  $b^*$  readings, although these readings can be affected by the surface texture and metallic content of the sample being measured.

**photosphere:** outer layer of the Sun.

**photosynthesis :** A chemical process that occurs in plants, algae, and some types of bacteria, when they are exposed to sunlight. During photosynthesis, water and carbon dioxide combine to form carbohydrates (sugars) and give off oxygen. Photosynthesis is needed for animal and plant life. OR Plants take in carbon dioxide and water. They use the energy from the Sun to make new substances glucose and oxygen. Glucose and oxygen have a higher energy content than carbon dioxide and water. OR The use of light energy to produce carbohydrates from carbon dioxide and a reducing agent such as water. OR A complex process used by many plants and bacteria to build carbohydrates from carbon dioxide and water, using energy derived from light. OR The biosynthesis that directly harnesses the chemical energy resulting from the absorption of light. Frequently used to refer to the formation of carbohydrates from  $CO_2$  that occurs in the chloroplasts of plants or the plastids of photosynthetic microorganisms. OR The manufacture by plants of carbohydrates and oxygen from carbon dioxide and water in the presence of chlorophyll with sunlight as the energy source. Oxygen and water vapor are released in the process. Photosynthesis is dependent on favorable temperature and moisture conditions as well as on the atmospheric carbon dioxide concentration. Increased levels of carbon dioxide can increase net photosynthesis in many plants. OR A nifty reaction carried out inside green plants, and by a number of different kinds of bacteria, which basically uses energy from the sun to run the combustion reaction backwards. OR Photosynthesis is the generation of glucose (and oxygen) from carbon dioxide and water in green plants. The reaction needs

sunlight and chlorophyll to take place. OR Process in which water and carbon dioxide are combined in the presence of sunlight to produce glucose and oxygen. This is the process used by green plants to create their food.

**photosynthetic phosphorylation:** See photophosphorylation.

**Photosynthetic unit:** A light-harvesting complex that includes about 2500 antenna chlorophyll molecules and a reaction-center chlorophyll pair, all in the thylakoid membrane.

**photosystem:** In photosynthetic cells, a functional set of light-absorbing pigments and its reaction center. OR the site within the chloroplast in which sunlight is captured; includes the pigment molecules, proton pumps, enzymes, coenzymes, and cytochromes.

**Photosystem I:** In chloroplasts, a photosynthetic unit that includes a light-harvesting complex, a reaction center, and an electron-transport chain. The system catalyzes the light-driven transfer of electrons from reduced plastoquinone to ferredoxin, which in turn drives the formation of NADPH; it requires light of wavelength shorter than 700 nm.

**Photosystem II:** In chloroplasts, a photosynthetic unit that includes a light-harvesting complex, a reaction center, and an electron-transport chain. The system catalyzes the light-driven transfer of electrons from water to plastoquinone, with the concomitant generation of oxygen; it requires light of wavelength shorter than 680 nm.

**phototesting :** Special tests used to measure the reaction of the skin to ultraviolet radiation. Phototesting is being used to see if drugs taken by mouth to treat cancer make the skin more sensitive to ultraviolet radiation.

**phototherapy :** The treatment of disease with certain types of light. Phototherapy can use lasers, LED, fluorescent lamps, and ultraviolet or infrared radiation. Also called light therapy.

**phototoxicity :** A condition in which the skin or eyes become very sensitive to sunlight or other forms of light. It can be caused by taking certain drugs, or rubbing certain essential oils (scented liquid taken from plants) or other topical agents into the skin. Phototoxicity causes sunburn, blisters, and other skin problems.

**phototroph:** An organism that can use the energy of light to synthesize its own fuels from simple molecules such as carbon dioxide, oxygen, and water; as distinct from a chemotroph.

**Phototrophs:** Organisms that can meet their energy needs by converting light energy into chemical energy.

**phototropism:** the bending and turning of the plant stem toward a light source.

**PHP:** A rare condition in which the pituitary gland stops making most or all hormones. Pituitary hormones help control the way many parts of the body work. Symptoms of the condition depend on the hormones that are missing. They include growth problems (in children), obesity (in adults), hair loss, slow heart rate, low blood sugar, low blood pressure, fatigue, and problems with reproduction. This condition may be caused by a tumor on or near the pituitary gland, infection, stroke, injury, surgery, or radiation therapy. It may also be inherited. Also called panhypopituitarism.

**PHR:** Parts per Hundred parts Resin. A measure of solids content in a coating. Example: a coating with a silica content of 70% PHR would contain 700 milligrams of silica per every gram of resin. OR A collection of information about a person's health that allows the person to manage and track his or her own health information. A PHR may include information about allergies, illnesses, surgeries, immunizations, and results of physical exams, tests, and screenings. It may also include information about medicines taken and health habits, such as diet and exercise. Also called personal health record, personal history, and personal medical history.

**phrase:** a group of related words that have no subject-predicate combination and cannot stand alone as a sentence.

**phrenic nerve :** A nerve that runs from the spinal cord to the diaphragm (the thin muscle below the lungs and heart that separates the chest from the abdomen). It causes the diaphragm to contract and relax, which helps control breathing.

**Phthalate:** A common substance added to some plastics (usually PVC) to increase flexibility. It doesn't bond with the plastic so over time it may be released into the environment. There are studies linking phthalates to a variety of ailments, particularly in children.

**Phthalic Anhydride:** Phthalic anhydride is an aromatics derivative produced by the oxidation of ortho-xylene. Phthalic anhydride is used to make phthalate plasticizers, which are used for PVC production. Phthalic anhydride is also used in the production of alkyd resins and unsaturated

polyester resins. OR Aromatic dicarboxylic acid anhydride, a chemical intermediate in the plastics industry.

**Phycobilisome:** A large assembly of phycobiliproteins, which contain the light-absorbing compound bilin, that harvests light for organisms, such as red algae and cyanobacteria, living at a depth of a meter or more in seawater.

**phyla:** related classes grouped together (singular, phylum).

**Phyllocontin:** (Other name for: aminophylline)

**phyllodes tumor :** A type of tumor found in breast or prostate tissue. It is often large and bulky and grows quickly. It may be benign (not cancer) or malignant (cancer) and may spread to other parts of the body. Also called CSP and cystosarcoma phyllodes.

**physiatrist :** A doctor who has special training in physical medicine. Physical medicine is the prevention and treatment of disease or injury with physical methods, such as exercise and machines. Also called physical medicine specialist.

**physical change:** A physical change is one in which no new substances are made, e.g. changes of state. OR No new substances are made. It is fairly easy to reverse this kind of change. OR A change which does not transform one substance into another. For example, freezing water is a physical change because both water and ice are H<sub>2</sub>O. However, electrolysis of water would not be a physical change because passing a strong electric current through water can decompose it into H<sub>2</sub> and O<sub>2</sub>.

**physical chemistry:** A branch of chemistry that studies chemical phenomena from a physical and mathematical perspective. Physical chemistry includes chemical thermodynamics, kinetics, spectroscopy, quantum chemistry, and statistical mechanics.

**physical dependence :** A condition in which a person takes a drug over time, and unpleasant physical symptoms occur if the drug is suddenly stopped or taken in smaller doses.

**physical examination :** An exam of the body to check for general signs of disease.

**physical geology:** the study of the earth's rocks, minerals, and soils and how they have formed through time.

**physical map:** a map that locates a gene of interest precisely by showing the actual number of base pairs between genes on a chromosome.

**physical medicine specialist :** A doctor who has special training in physical medicine. Physical medicine is the prevention and treatment of disease or injury with physical methods, such as exercise and machines. Also called physiatrist.

**physical model:** a representation of an object that you can hold.

**PHYSICAL PROPERTIES:** are such things color, density, hardness, ductility, malleability, solubility, heat conduction, electrical properties, melting and boiling point. OR A property that can be measured without changing the chemical composition of a substance. OR Measurement of a physical property may change the arrangement but not the structure of the molecules of a material. Examples of physical properties are density, color, boiling point, volume, temperature, and mass.

**Physical stability:** A term used to refer to the stability of a drug with respect to physical transformations, for example, to another polymorph or crystal form.

**physical therapist :** A health professional trained to evaluate and treat people who have conditions or injuries that limit their ability to move and do physical activities. Physical therapists use methods such as exercise, massage, hot packs, ice, and electrical stimulation to help strengthen muscles, relieve pain, and improve movement. They also teach exercises to help prevent injury and loss of motion.

**physical therapy :** The use of exercises and physical activities to help condition muscles and restore strength and movement. For example, physical therapy can be used to restore arm and shoulder movement and build back strength after breast cancer surgery.

**physical touch methods :** A type of therapy in which the therapist moves or manipulates one or more parts of the patient's body. It may be used to treat pain, stress, anxiety, and depression, and for general well-being. Examples include chiropractic treatments, physical therapy, and massage therapy. Also called manipulative and body-based practice and manual healing.

**Physical transformation:** A transformation of a solid in which the crystal structure or content of the crystal changes but in which no covalent bonds

are made or broken. Physical transformations include polymorph transformations and desolvations.

**Physical weathering** : Physical processes (such as temperature change, wind-borne grit etc) that can cause a rock to be broken down into smaller pieces.

**physician** : Medical doctor.

**physician assistant** : A health professional who is licensed to do certain medical procedures under the guidance of a doctor. A physician assistant may take medical histories, do physical exams, take blood and urine samples, care for wounds, and give injections and immunizations. Also called PA.

**physiologic** : Having to do with the functions of the body. When used in the phrase "physiologic age," it refers to an age assigned by general health, as opposed to calendar age.

**Physiology**: The study of how living organisms function

**phytic acid** : A substance found in many foods that come from plants, including corn, wheat, rice, and soybeans, and in large amounts in cereals and legumes. It is being studied in the prevention of cancer. Also called inositol hexaphosphate and IP6.

**phytochemical**: The term 'phyto' originated from a Greek word meaning plant. Phytonutrients are certain organic components of plants, and these components are thought to promote human health. Fruits, vegetables, grains, legumes, nuts and teas are rich sources of phytonutrients. Unlike the traditional nutrients (protein, fat, vitamins, minerals), phytonutrients are not 'essential' for life, so some people prefer the term 'phytochemical'. (USDA Agricultural Research Service) or A substance found in plants. Some phytochemicals may reduce the risk of cancer.

**phytochemistry**: The study of substances found in plants.

"Phytochemicals" are materials extracted from plant tissue.

**phytochlorin sodium-polyvinylpyrrolidone complex**: A photosensitizer composed of the sodium salt form of chlorin e6 and its derivatives complexed with a low-molecular weight polyvinylpyrrolidone (PVP) polymer component, with diagnostic and antineoplastic activities upon photodynamic therapy (PDT). Upon intravenous administration, the photosensitizer phytochlorin-PVP sodium complex preferentially

accumulates in hyperproliferative tissues, such as tumors. Local application of light with a certain wavelength to the tumor site results in the absorption of light by this agent, leading to its photoactivation. This results in a photodynamic reaction between phytochlorin and oxygen, which causes the production of reactive oxygen species (ROS), including singlet oxygen molecules, the superoxide ion, and other cytotoxic free radicals. The formation of ROS induces free radical-mediated oxidative DNA damage followed by apoptosis of tumor cells. Chlorin e6-PVP is able to penetrate deeply into tissues and is therefore able to treat hard-to-reach tumors.

**phytoestrogen :** An estrogen-like substance found in some plants and plant products. Phytoestrogens may have anticancer effects.

**phytohemagglutinin :** A substance found in plants that causes red blood cells to clump together and certain white blood cells to divide.

**phytol :** A chemical substance that comes from plants and is used to make vitamins E and K. Phytol is also found in soaps, beauty care products, and household products.

**phytonadione:** An analogue of the naphthoquinone vitamin K found in plants. The vitamins K are essential for blood coagulation as it is necessary for the hepatic synthesis of the coagulation factors II, VII, IX, and X; deficiency results in a bleeding diathesis. These vitamins are lipo-soluble; absorption via intestinal lymphatics requires the presence of bile salts.

**phytoplankton:** Algae, microscopic single-celled plants that float in the surface waters of the sea, lakes and rivers. In the ocean they constitute the bottom of the marine food chain. They have been called 'the pasture of the sea.' Like plants on land, they use sunlight to convert carbondioxide and water into sugars and oxygen in the process of photosynthesis. OR microscopic plants floating freely in the ocean. OR That portion of the plankton community comprised of tiny plants (e.g., algae and diatoms).

**phytoremediation:** Using plants to clear toxic metals from the environment by chelation.

**phytosterol :** A plant-based compound that can compete with dietary cholesterol to be absorbed by the intestines, resulting in lower blood cholesterol levels. Phytosterols may have some effect in cancer prevention. Also called plant sterol.

**PI:** Polyimide OR The person(s) in charge of a clinical trial or a scientific research grant. The PI prepares and carries out the clinical trial protocol (plan for the study) or research paid for by the grant. The PI also analyzes the data and reports the results of the trial or grant research. Also called principal investigator. OR a constant used in determining a circle's area or circumference. Equals approximately 3.14 or  $22/7$

**pi bond:** In the valence bond theory, a pi bond is a valence bond formed by side-by-side overlap of p orbitals on two bonded atoms. In most multiple bonds, the first bond is a sigma bond and all of the others are pi bonds. OR A type of covalent bond in which the electron density is concentrated around the line bonding the atoms. OR "A chemical bond formed by the indirect overlap of two atomic orbitals. I don't think I actually want to get into this, but the two bonds in a double bond are not the same; one is a sigma bond, formed by the direct "Head-to-Head" overlap of two atomic orbitals, and this is considerably stronger than the second one, which is a pi-bond."...

**PI-88:** A mixture of highly sulfated, monophosphorylated mannose oligosaccharides, derived from the extracellular phosphomannan of the yeast *Pichia (Hansenula) holstii*, with potential antiangiogenic activity. Heparanase inhibitor PI-88 inhibits the endo-beta-D-glucuronidase heparanase, which may interfere with the heparanase-mediated degradation of heparan-sulfate proteoglycans in extracellular matrices, an important step in the metastatic process. This agent may also bind with high affinity to the heparan sulfate-binding domains of vascular endothelial growth factor (VEGF) and fibroblast growth factors 1 and 2, thereby reducing their functional activities and inhibiting VEGF and FGF stimulation of tumor angiogenesis. Increased heparanase activity has been implicated in tumor angiogenesis and metastasis.

**PI-88:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called antiangiogenesis agents.

**Pi-Pi (p-p) interactions:** Attractive non-covalent interactions that arise between aromatic rings

**PI3 kinase :** A type of enzyme that transmits signals in cells and that helps control cell growth. Some tumors have higher-than-normal levels of PI3 kinase. Also called phosphatidylinositol-3 kinase and PI3K.

**PI3K:** A type of enzyme that transmits signals in cells and that helps control cell growth. Some tumors have higher-than-normal levels of PI3K. Also called phosphatidylinositol-3 kinase and PI3 kinase.

**PI3K alpha inhibitor MLN1117:** An orally bioavailable inhibitor of the class I phosphoinositide 3-kinase (PI3K) alpha isoform with potential antineoplastic activity. PI3K alpha inhibitor MLN1117 selectively inhibits PI3K alpha kinase, including mutations of PIK3CA, in the PI3K/Akt/mTOR pathway, which may result in tumor cell apoptosis and growth inhibition in PI3K alpha-expressing tumor cells. By specifically targeting class I PI3K alpha, this agent may be more efficacious and less toxic than pan PI3K inhibitors. Dysregulation of the PI3K/Akt/mTOR pathway is frequently found in solid tumors and results in promoting tumor cell growth, survival, and resistance to chemotherapy and radiotherapy; PIK3CA, one of the most highly mutated oncogenes, encodes the p110-alpha catalytic subunit of the class I PI3K.

**PI3K alpha/beta inhibitor BAY1082439:** An orally bioavailable inhibitor of the class I phosphoinositide 3-kinase (PI3K) alpha and beta isoforms with potential antineoplastic activity. PI3K alpha/beta inhibitor BAY1082439 selectively inhibits both PI3K alpha, including mutated forms of PIK3CA, and PI3K beta in the PI3K/Akt/mTOR pathway, which may result in tumor cell apoptosis and growth inhibition in PI3K-expressing and/or PTEN-driven tumor cells. By specifically targeting class I PI3K alpha and beta, this agent may be more efficacious and less toxic than pan PI3K inhibitors. Dysregulation of the PI3K/Akt/mTOR pathway is frequently found in solid tumors and results in increased tumor cell growth, survival, and resistance to chemotherapy and radiotherapy. PIK3CA, one of the most highly mutated oncogenes, encodes the p110-alpha catalytic subunit of the class I PI3K. PTEN, a tumor suppressor protein and negative regulator of PI3K activity, is often mutated in a variety of cancer cells.

**PI3K alpha/mTOR inhibitor PWT33597 mesylate:** The mesylate salt form of PWT33597, an orally bioavailable dual inhibitor of phosphatidylinositol 3-kinase (PI3K) alpha and mammalian target of rapamycin (mTOR) kinase with potential antineoplastic activity. PI3K alpha/mTOR dual inhibitor PWT33597 selectively inhibits both PI3K alpha kinase and mTOR kinase, which may result in tumor cell apoptosis and growth inhibition in PI3K/mTOR-overexpressing tumor cells. Activation of

the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated independent of PI3K.

**PI3K delta inhibitor PWT143:** An orally bioavailable inhibitor of the delta isoform of phosphatidylinositide 3-kinase (PI3K), with potential antineoplastic activity. Upon oral administration, PI3K-delta inhibitor PWT143 selectively inhibits the delta isoform of PI3K and prevents the activation of the PI3K/AKT signaling pathway. This both decreases proliferation and induces cell death in PI3K-delta-overexpressing tumor cells. PI3K-delta plays a key role in the proliferation and survival of hematologic cancer cells. The targeted inhibition of PI3K-delta is designed to preserve PI3K signaling in normal, non-neoplastic cells. PI3K, an enzyme often overexpressed in cancer cells, plays a crucial role in tumor cell regulation and survival.

**PI3K delta inhibitor TGR-1202:** An orally bioavailable, selective inhibitor of the delta isoform of the 110 kDa catalytic subunit of class I phosphoinositide-3 kinases (PI3K) with potential antineoplastic activity. PI3K-delta inhibitor TGR-1202 inhibits PI3K and prevents the activation of the PI3K/AKT kinase signaling pathway. This decreases proliferation and induces cell death in susceptible tumor cells. Unlike other isoforms of PI3K, PI3K-delta is expressed primarily in tumor cells and cells of the hematopoietic lineage. The targeted inhibition of PI3K-delta allows for PI3K signaling in normal, non-neoplastic cells. PI3K, an enzyme often overexpressed in cancer cells, plays a crucial role in tumor cell regulation and survival. Check for active clinical trials using this agent.

**PI3K delta/gamma inhibitor RP6530:** An orally active, highly selective, small molecule inhibitor of the delta and gamma isoforms of phosphoinositide-3 kinase (PI3K) with potential immunomodulating and antineoplastic activities. Upon administration, PI3K delta/gamma inhibitor RP6530 inhibits the PI3K delta and gamma isoforms and prevents the activation of the PI3K/AKT-mediated signaling pathway. This may lead to a reduction in cellular proliferation in PI3K delta/gamma-expressing tumor cells. In addition, this agent modulates inflammatory responses through various mechanisms, including the inhibition of both the release of reactive oxygen species (ROS) from neutrophils and tumor necrosis factor (TNF)-alpha activity. Unlike other isoforms of PI3K, the delta and gamma

isoforms are overexpressed primarily in hematologic malignancies and in inflammatory and autoimmune diseases. By selectively targeting these isoforms, PI3K signaling in normal, non-neoplastic cells is minimally impacted or not affected at all, which minimizes the side effect profile for this agent.

**PI3K inhibitor ACP-319:** An orally available inhibitor of phosphatidylinositol 3-kinase (PI3K), with potential antineoplastic activity. PI3K inhibitor ACP-319 inhibits PI3K, which prevents the activation of the PI3K/AKT (protein kinase B)-mediated signaling pathway. This results in the inhibition of growth and survival of PI3K-overexpressing tumor cells. Activation of the PI3K signaling pathway is frequently associated with tumorigenesis. Check for active clinical trials using this agent.

**PI3K inhibitor BGT226:** A phosphatidylinositol 3-kinase (PI3K) inhibitor with potential antineoplastic activity. PI3K inhibitor BGT226 specifically inhibits PI3K in the PI3K/AKT kinase (or protein kinase B) signaling pathway, which may trigger the translocation of cytosolic Bax to the mitochondrial outer membrane, increasing mitochondrial membrane permeability; apoptotic cell death may ensue. Bax is a member of the proapoptotic Bcl2 family of proteins.

**PI3K inhibitor GDC-0084:** A phosphatidylinositol 3-kinase (PI3K) inhibitor with potential antineoplastic activity. PI3K inhibitor GDC-0084 specifically inhibits PI3K in the PI3K/AKT kinase (or protein kinase B) signaling pathway, thereby inhibiting the activation of the PI3K signaling pathway. This may result in the inhibition of both cell growth and survival in susceptible tumor cell populations. Activation of the PI3K signaling pathway is frequently associated with tumorigenesis. Dysregulated PI3K signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**PI3K inhibitor GDC-0941 bismesylate:** The orally bioavailable bismesylate salt of a potent small-molecule thieno[3,2-d]pyrimidine inhibitor of the class I phosphatidylinositol 3 kinase (PI3K) isoforms p100alpha and p100delta with potential antineoplastic activity. PI3K inhibitor GDC-0941 selectively binds to PI3K isoforms in an ATP-competitive manner, inhibiting the production of the secondary messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3) and activation of the PI3K/Akt signaling pathway; inhibition of tumor cell growth, motility and

survival in susceptible tumor cell populations may result. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis; dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents. Check for active clinical trials using this agent.

**PI3K inhibitor GSK1059615:** A phosphoinositide 3-kinase (PI3K) inhibitor with potential antineoplastic activity. PI3K inhibitor GSK1059615 inhibits PI3K in the PI3K/AKT kinase signaling pathway, which may trigger the translocation of cytosolic Bax to the mitochondrial outer membrane and an increase in mitochondrial membrane permeability, followed by apoptosis. Bax is a member of the proapoptotic Bcl-2 family of proteins. PIK3, an enzyme often overexpressed in cancer cells, plays a crucial role in tumor cell regulation and survival. Check for active clinical trials using this agent.

**PI3K inhibitor GSK2126458:** A small-molecule pyridylsulfonamide inhibitor of phosphatidylinositol 3-kinase (PI3K) with potential antineoplastic activity. PI3K inhibitor GSK2126458 binds to and inhibits PI3K in the PI3K/mTOR signaling pathway, which may trigger the translocation of cytosolic Bax to the mitochondrial outer membrane, increasing mitochondrial membrane permeability and inducing apoptotic cell death. Bax is a member of the proapoptotic Bcl2 family of proteins. PI3K, often overexpressed in cancer cells, plays a crucial role in tumor cell regulation and survival.

**PI3K inhibitor PX-866:** A small-molecule wortmannin analogue inhibitor of the alpha, gamma, and delta isoforms of phosphoinositide 3-kinase (PI3K) with potential antineoplastic activity. PI3K inhibitor PX-866 inhibits the production of the secondary messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3) and activation of the PI3K/Akt signaling pathway, which may result in inhibition of tumor cell growth and survival in susceptible tumor cell populations. Activation of the PI3K/Akt signaling pathway is frequently associated with tumorigenesis and dysregulated PI3K/Akt signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**PI3K inhibitor WX-037:** A phosphatidylinositol 3-kinase (PI3K) inhibitor with potential antineoplastic activity. PI3K inhibitor WX-037 specifically inhibits PI3K, which prevents the activation of the PI3K/protein kinase B-

mediated signaling pathway. This may result in the inhibition of both tumor cell growth and survival in PI3K-overexpressing tumor cells. Activation of the PI3K signaling pathway is frequently associated with tumorigenesis. Dysregulated PI3K signaling may contribute to tumor resistance to a variety of antineoplastic agents.

**PI3K inhibitor ZSTK474:** An orally available, s-triazine derivative, ATP-competitive phosphatidylinositol 3-kinase (PI3K) inhibitor with potential antineoplastic activity. PI3K inhibitor ZSTK474 inhibits all four PI3K isoforms. Inhibiting the activation of the PI3K/AKT kinase (or protein kinase B) signaling pathway results in inhibition of tumor cell growth and survival in susceptible tumor cell populations. Dysregulated PI3K signaling may contribute to tumor resistance to a variety of antineoplastic agents. This agent does not induce apoptosis but rather induces strong G(0)/G(1) arrest, which might contribute to its favorable efficacy in tumor cells.

**PI3K p110beta/delta inhibitor KA2237:** A dual selective inhibitor of the beta and delta isoforms of the 110 kDa catalytic subunit of class I phosphoinositide-3 kinase (PI3K)-beta/delta, with potential antineoplastic activity. PI3K-beta/delta inhibitor KA2237 selectively inhibits the PI3K-beta and -delta isoforms and prevents their activation, which inhibits PI3K-beta/delta-mediated signal transduction pathways. This decreases proliferation and induces cell death in susceptible tumor cells. Unlike other isoforms of PI3K, PI3K-beta and -delta are overexpressed primarily in solid and hematological tumor cells and play crucial roles in tumor cell survival, and immunoregulation. The targeted inhibition of these PI3Ks allows this agent to potentially be more efficacious and less toxic than pan-PI3K inhibitors, which also affect normal, healthy cells.

**PI3K-beta inhibitor GSK2636771:** An orally bioavailable, substituted benzimidazole inhibitor of the class I phosphoinositide 3-kinase (PI3K) beta isoform with potential antineoplastic activity. PI3K beta inhibitor GSK2636771 selectively inhibits PI3K beta kinase activity in the PI3K/Akt/mTOR pathway, which may result in tumor cell apoptosis and growth inhibition in PI3K beta-expressing and/or PTEN-driven tumor cells. Dysregulation of the PI3K/Akt/mTOR pathway is frequently found in solid tumors and results in the promotion of tumor cell growth, survival, and resistance to both chemotherapy and radiotherapy. PI3K beta is the p110-beta catalytic subunit of the class I PI3K. PTEN, a tumor suppressor protein

and negative regulator of PI3K activity, is often mutated in a variety of cancer cells.

**PI3K-beta Inhibitor SAR260301:** An orally bioavailable inhibitor of the class I phosphatidylinositol 3-kinase (PI3K) beta isoform with potential antineoplastic activity. PI3K beta inhibitor SAR260301 selectively inhibits PI3K beta kinase activity in the PI3K/Akt/mTOR pathway, which may result in apoptosis and growth inhibition in PI3K beta-expressing and/or phosphatase and tensin homolog (PTEN)-deficient tumor cells.

Dysregulation of the PI3K/Akt/mTOR pathway is frequently found in solid tumors and contributes to increased tumor cell growth, tumor cell survival, and resistance to both chemotherapy and radiotherapy. PI3K beta is the p110-beta catalytic subunit of the class I PI3K. PTEN, a tumor suppressor protein and negative regulator of PI3K activity, is often mutated in a variety of cancer cells. By specifically targeting class I PI3K beta, this agent may be more efficacious and less toxic than pan-PI3K inhibitors.

**PI3K-delta inhibitor AMG 319:** A highly selective, potent, and orally bioavailable small molecule inhibitor of the delta isoform of the 110 kDa catalytic subunit of class IA phosphoinositide-3 kinases (PI3K) with potential immunomodulating and antineoplastic activities. PI3K-delta inhibitor AMG 319 prevents the activation of the PI3K signaling pathway through inhibition of the production of the second messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3), thus decreasing proliferation and inducing cell death. Unlike other isoforms of PI3K, PI3K-delta is expressed primarily in hematopoietic lineages. The targeted inhibition of PI3K-delta is designed to preserve PI3K signaling in normal, non-neoplastic cells.

**PI3K-delta inhibitor INCB050465:** An inhibitor of the delta isoform of phosphoinositide-3 kinase (PI3K) with potential antineoplastic activity. PI3K-delta inhibitor INCB050465 inhibits the delta isoform of PI3K and prevents the activation of the PI3K/AKT signaling pathway. This both decreases proliferation and induces cell death in PI3K-delta-overexpressing tumor cells. Unlike other isoforms of PI3K, PI3K-delta is expressed primarily in hematopoietic disease and cell lineages. The targeted inhibition of PI3K-delta is designed to preserve PI3K signaling in normal, non-neoplastic cells. PI3K, an enzyme often overexpressed in cancer cells, plays a crucial role in tumor cell regulation and survival.

**PI3K-gamma inhibitor IPI-549:** An orally bioavailable, highly selective small molecule inhibitor of the gamma isoform of phosphoinositide-3 kinase (PI3K-gamma) with potential immunomodulating and antineoplastic activities. Upon administration, IPI-549 prevents the activation of the PI3K-gamma-mediated signaling pathways, which may lead to a reduction in cellular proliferation in PI3K-gamma-expressing tumor cells. In addition, this agent is able to modulate anti-tumor immune responses and inhibit tumor-mediated immunosuppression. Unlike other isoforms of PI3K, the gamma isoform is overexpressed in certain tumor cell types and immune cells; its expression increases tumor cell proliferation and survival. By selectively targeting the gamma isoform, PI3K signaling in normal, non-neoplastic cells is minimally or not affected, which results in a reduced side effect profile.

**PI3K/HDAC inhibitor CUDC-907:** An orally bioavailable inhibitor of both phosphoinositide 3-kinase (PI3K) class I and pan histone deacetylase (HDAC) enzymes, with potential antineoplastic activity. Upon oral administration, CUDC-907 inhibits the activity of both PI3K class I isoforms and HDAC, thereby preventing the activation of the PI3K-AKT-mTOR signal transduction pathway that is often overactivated in many cancer cell types. This may prevent growth of PI3K and/or HDAC-expressing tumor cells. CUDC-907 shows an increased inhibition of tumor cell growth and induction of apoptosis when compared to inhibitors that target either PI3K or HDAC.

**PI3K/mTOR dual kinase inhibitor XL765:** An orally bioavailable small molecule targeting the phosphatidylinositol 3 kinase (PI3K) and mammalian target of rapamycin (mTOR) kinases in the PI3K/mTOR signaling pathway, with potential antineoplastic activity. PI3K/mTOR dual kinase inhibitor XL765 inhibits both PI3K kinase and mTOR kinase, which may result in tumor cell apoptosis and growth inhibition in susceptible tumor cell populations. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated in a PI3K-independent fashion in response to nutrient and energy deprivation. Accordingly, this agent maybe more potent compared to an agent that inhibits either PI3K kinase or mTOR kinase alone.

**PI3K/mTOR inhibitor LY3023414:** An orally bioavailable, small molecule inhibitor of certain class I phosphoinositide 3-kinase (PI3K) isoforms and mammalian target of rapamycin kinase (mTOR) in the PI3K/mTOR signaling pathway, with potential antineoplastic activity. PI3K/mTOR inhibitor LY3023414 inhibits both certain PI3K isoforms and mTOR in an ATP-competitive manner which may inhibit both the PI3K/mTOR signaling pathway in and proliferation of tumor cells overexpressing PI3K and/or mTOR. The PI3K/mTOR pathway is upregulated in a variety of tumor cells and plays a key role in promoting cancer cell proliferation, and survival, motility and resistance to chemotherapy and radiotherapy. mTOR, a serine/threonine kinase downstream of PI3K, may also be activated in a PI3K-independent fashion; therefore, this agent may be more potent than an agent that inhibits either PI3K or mTOR alone. In addition, LY3023414 may inhibit DNA-dependent protein kinase (DNA-PK), thereby inhibiting the ability of tumor cells to repair damaged DNA. DNA-PK is activated upon DNA damage and plays a key role in repairing double-stranded DNA breaks.

**PI3K/mTOR kinase inhibitor BEZ235:** An orally bioavailable imidazoquinoline targeting the phosphatidylinositol 3 kinase (PI3K) and the mammalian target of rapamycin (mTOR), with potential antineoplastic activity. PI3K/mTOR inhibitor BEZ235 inhibits PI3K kinase and mTOR kinase in the PI3K/AKT/mTOR kinase signaling pathway, which may result in tumor cell apoptosis and growth inhibition in PI3K/mTOR-overexpressing tumor cells. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated independent of PI3K.

**PI3K/mTOR kinase inhibitor DS-7423:** An orally bioavailable inhibitor of phosphatidylinositol 3 kinase (PI3K) and mammalian target of rapamycin (mTOR) kinase in the PI3K/mTOR signaling pathway, with potential antineoplastic activity. PI3K/mTOR kinase inhibitor DS-7423 inhibits both PI3K kinase and mTOR kinase, which may result in tumor cell apoptosis and growth inhibition in susceptible tumor cells. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated independent of PI3K.

Consequently, this agent may potentially be more potent than an agent that inhibits either PI3K kinase or mTOR kinase.

**PI3K/mTOR kinase inhibitor PF-04691502:** An agent targeting the phosphatidylinositol 3 kinase (PI3K) and mammalian target of rapamycin (mTOR) in the PI3K/mTOR signaling pathway, with potential antineoplastic activity. PI3K/mTOR kinase inhibitor PF-04691502 inhibits both PI3K and mTOR kinases, which may result in apoptosis and growth inhibition of cancer cells overexpressing PI3K/mTOR. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated independent of PI3K.

**PI3K/mTOR kinase inhibitor VS-5584:** A potent and selective inhibitor of both phosphatidylinositol 3 kinase (PI3K) and mammalian target of rapamycin (mTOR) kinase in the PI3K/mTOR signaling pathway, with potential antineoplastic activity. PI3K/mTOR kinase inhibitor VS-5584 inhibits mTOR kinase and all class I PI3K isoforms. Consequently, this disrupts phosphorylation of substrates downstream of PI3K and mTOR and may result in apoptosis and growth inhibition in susceptible tumor cells. Activation of the PI3K/mTOR pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy. mTOR is a serine/threonine kinase downstream of PI3K, which also has PI3K-independent activity. Consequently, this agent may potentially be more potent than an agent that inhibits either PI3K kinase or mTOR kinase.

**PI3K/mTOR/ALK-1/DNA-PK inhibitor P7170:** An orally bioavailable inhibitor of phosphoinositide 3-kinase (PI3K), mammalian target of rapamycin (mTOR), activin receptor-like kinase 1 (ALK-1) and DNA-dependent protein kinase (DNA-PK), with potential anti-angiogenic and antineoplastic activities. Upon oral administration, PI3K/mTOR/ALK-1/DNA-PK inhibitor P7170 inhibits the activity of all four kinases. This prevents PI3K/mTOR and ALK-1-mediated signaling pathways and may lead to the inhibition of cancer cell growth in PI3K/mTOR-overexpressing tumor cells and angiogenesis in ALK-1-overexpressing endothelial cells. Also, by inhibiting DNA-PK, this agent inhibits the ability of tumor cells to repair damaged DNA. The PI3K/mTOR pathway is upregulated in a variety of tumors and plays an important role in regulating cancer cell proliferation, growth, and survival. ALK-1, a member of the transforming growth factor

beta (TGF- $\beta$ ) type I receptor family, is overexpressed on endothelial cells in a variety of tumor types and increases endothelial cell proliferation and migration. DNA-PK is activated upon DNA damage and plays a key role in repairing double-stranded DNA breaks.

**PI3K/mTORC1/mTORC2 inhibitor DCBCI0901:** An inhibitor of phosphatidylinositol 3-kinase (PI3K), raptor-mTOR (mTOR complex 1 or mTORC1) and rictor-mTOR (mTOR complex 2 or mTORC2) with potential antineoplastic activity. Upon intravenous infusion, PI3K/mTORC1/mTORC2 inhibitor DCBCI0901 binds to and inhibits PI3K as well as both mTORC1 and mTORC2, which may result in both apoptosis and a decrease in cell proliferation in tumor cells overexpressing PI3K, mTORC1, and mTORC2. Activation of the PI3K/mTOR signaling pathway promotes cell growth, survival, and resistance to chemotherapy and radiotherapy; mTOR, a serine/threonine kinase downstream of PI3K, may also be activated independently of PI3K.

**PI3K $\alpha$ /mTOR inhibitor PKI-179:** A second generation, small-molecule mimetic of ATP that targets the mammalian target of rapamycin (mTOR) with potential antineoplastic activity. PKI-179 selectively inhibits mTOR and phosphoinositide-3-kinase (PI3K)  $\alpha$ . By inhibiting the PI3K/mTOR signaling pathway, this agent may inhibit tumor cell proliferation and survival.

**PI3K $\alpha$  inhibitor AZD8835:** An orally bioavailable inhibitor of the class I phosphatidylinositol-4,5-bisphosphate 3-kinase (PI3K) catalytic subunit  $\alpha$  (PIK3CA), with potential antineoplastic activity. PI3K  $\alpha$  inhibitor AZD8835 selectively binds to and inhibits PIK3CA and its mutated forms, in the PI3K/Akt (protein kinase B)/mammalian target of rapamycin (mTOR) pathway. This results in both apoptosis and growth inhibition in PIK3CA-expressing tumor cells. By specifically targeting PIK3CA, this agent may be more efficacious and less toxic than pan-PI3K inhibitors. Dysregulation of the PI3K/Akt/mTOR pathway is often found in solid tumors and results in the promotion of tumor cell growth, survival, and resistance to chemo- and radio-therapy. PIK3CA, one of the most frequently mutated oncogenes, encodes the p110- $\alpha$  catalytic subunit of the class I PI3K.

**PI3K $\beta$  inhibitor AZD8186:** An inhibitor of the beta isoform of phosphoinositide-3 kinase (PI3K), with potential antineoplastic activity.

Upon administration, PI3Kbeta inhibitor AZD8186 selectively inhibits the activity of PI3Kbeta in the PI3K/Akt/mTOR signaling pathway, which may result in a decrease of tumor cell proliferation. It also induces cell death in PI3K-expressing cancer cells. By specifically targeting class I PI3K beta, this agent may be more efficacious and less toxic than pan PI3K inhibitors. PI3K-mediated signaling is often dysregulated in cancer cells and contributes to increased tumor cell growth, survival, and tumor resistance to a variety of antineoplastic agents.

**PI3Kdelta inhibitor INCB040093:** An orally bioavailable, selective inhibitor of the delta isoform of the 110 kDa catalytic subunit of class I phosphoinositide-3 kinases (PI3K) with potential antineoplastic activity. PI3Kdelta inhibitor INCB040093 specifically inhibits PI3Kdelta, which prevents both the production of the second messenger phosphatidylinositol-3,4,5-trisphosphate (PIP3) and the activation of the PI3K/AKT kinase signaling pathway. This decreases proliferation and induces cell death in PI3K-overexpressing tumor cells. Unlike other isoforms of PI3K, PI3Kdelta is often overexpressed in tumor cells, especially those of hematologic origin, and plays a crucial role in tumor cell regulation and survival. The targeted inhibition of PI3Kdelta allows for PI3K signaling in normal, non-neoplastic cells.

**PIB:** Polyisobutylene

**pibenzimol:** A fluorescent dye of benzimidazole derivative. Pibenzimol binds to AT-specific sites in the minor groove of duplex DNA and inhibits topoisomerase I, and DNA polymerase, thereby preventing DNA replication. This agent prolongs the G2 phase of the cell cycle and initiates apoptosis in tumor cells.

**pibrozelesin:** A semisynthetic water-soluble derivative of the antineoplastic antibiotic duocarmycin B2. Activated by carboxyl esterase, pibrozelesin alkylates DNA by binding to adenine-thymine (A-T)-rich sequences in the minor groove of DNA, thereby inhibiting DNA replication and inducing apoptosis.

**Picato:** (Other name for: ingenol mebutate gel)

**PICC :** A device used to draw blood and give treatments, including intravenous fluids, drugs, or blood transfusions. A thin, flexible tube is inserted into a vein in the upper arm and guided (threaded) into a large vein above the right side of the heart called the superior vena cava. A needle is

inserted into a port outside the body to draw blood or give fluids. A PICC may stay in place for weeks or months and helps avoid the need for repeated needle sticks. Also called peripherally inserted central catheter.

**picibanil:** A lyophilized formulation containing cultures of a low-virulent strain of *Streptococcus pyogenes*, treated and killed with penicillin G, with potential sclerosing, immunostimulating and antineoplastic activities. Besides its activity as a sclerosing agent, picibanil appears to have multiple effects on the immune system as a non-specific immunostimulant. This agent activates the host immune system by stimulating the activity of natural killer (NK) cells, macrophages and lymphocytes, and by enhancing the production of several key immune mediators, including interleukins (ILs) and tumor necrosis factor (TNF). Check for active clinical trials using this agent.

**Picket :** A continuous corrugation of that flat strip with pre-positioned holes. (Applicable to flat wire belts).

**Picking out:** The individual colour treatment of ornamental units and/or mouldings in cornices and similar architectural features.

**Picking up:** This has two meanings: 1. The process of joining up to 'wet' or 'live' edges on lapping. 2. The lifting or softening of a previous coat of paint when applying a subsequent coating. OR There are two meanings for this term. One is the process of joining up to 'wet' or 'live' edges on lapping; the other meaning concerns the lifting or softening of a previous coat of paint when applying a new coat. The remedy in both cases is to thoroughly clean the surfaces to remove all dirt, grease and surface contaminants. Then scrape back all areas of poorly adhering or defective coatings to a firm edge, rub down to 'feather' broken edges, dust off and apply a new coating.

**Pickling:** The treatment of steel by immersion in a special acid solution in order to remove millscale (acid pickling). Alternatively, a method of removing paint varnish or varnished wallpaper with a strong alkaline solution. Hence any alkaline cleaning solution may be referred to as 'pickle'.

**Pickling liquor :** Pickling liquor refers to acid, which is used in mild steel pickling (surface treatment) in hot-roll process of steel manufacturing. After pickling the acid contains iron (Fe) metal and it is called spent pickling liquor (SPL). It is considered waste by many steel manufacturers. SPL can,

however, be utilized as iron (Fe) and acid by-product raw material in iron-based coagulant manufacturing.

**Pickouts:** A mold insert that remains stuck to the ejected part and has to be pulled out of the part and placed back into the mold before the next cycle.

**Pico-:** A prefix that divides a basic unit by one trillion ( $10^{-12}$ ). OR Prefix used in the SI system meaning "multiply by  $10^{-12}$ ". For example, 3 pm means  $3 \times 10^{-12}$  meters.

**Picocurie:** One trillionth ( $10^{-12}$ ) of a curie.

**picogram:** One picogram is  $10^{-12}$  grams.

**picoliter:** One picoliter is  $10^{-12}$  liters.

**picometer:** One picometer is  $10^{-12}$  meters.

**picoplatin:** A new generation organic platinum analog with an extended spectrum of antineoplastic activity. Designed to overcome platinum drug resistance, picoplatin alkylates DNA, forming both inter- and intra-strand cross-linkages, resulting in inhibition of DNA replication and transcription, and the induction of apoptosis.

**picropodophyllin:** A cyclolignan alkaloid found in the mayapple plant family (*Podophyllum peltatum*), and a small molecule inhibitor of the insulin-like growth factor 1 receptor (IGF1R) with potential antineoplastic activity. Picropodophyllin specifically inhibits the activity and downregulates the cellular expression of IGF1R without interfering with activities of other growth factor receptors, such as receptors for insulin, epidermal growth factor, platelet-derived growth factor, fibroblast growth factor and mast/stem cell growth factor (KIT). This agent shows potent activity in the suppression of tumor cell proliferation and the induction of tumor cell apoptosis. IGF1R, a receptor tyrosine kinase overexpressed in a variety of human cancers, plays a critical role in the growth and survival of many types of cancer cells.

**PID:** A condition in which the female reproductive organs are inflamed. It may affect the uterus, fallopian tubes, ovaries, and certain ligaments. PID is usually caused by a bacterial infection. It may cause infertility and an increased risk of an ectopic pregnancy (pregnancy in the fallopian tubes). Also called pelvic inflammatory disease.

**pidilizumab:** A humanized, immunoglobulin (Ig) G1 monoclonal antibody directed against human inhibitory receptor programmed cell death 1 (PD-1;

PDCD1), with potential immune checkpoint inhibitory and antineoplastic activities. Pidilizumab binds to PD-1 and blocks the interaction between PD-1 and its ligands, PD-1 ligand 1 (PD-L1) and PD-1 ligand 2 (PD-L2). This prevents the activation of PD-1 and its downstream signaling pathways. This may restore immune function through the activation of natural killer (NK) cells and cytotoxic T-lymphocytes (CTLs) against tumor cells. PD-1, an inhibitory receptor belonging to the B7-receptor family expressed on activated T-lymphocytes, B-cells and NK cells, negatively regulates T-cell activation and effector function when activated by its ligands; it plays an important role in tumor evasion from host immunity.

**piedmont glacier:** the forwardmost extension of a valley glacier; forms where the ice emerges at the front of the mountain range.

**Pier:** The supports of the arches of a bridge; area of plain wall between arches or openings. Hence is commonly used to describe any rectangular projection in a wall flank.

**Pig:** A colloquial term describing a container (usually lead or depleted uranium) used to ship or store radioactive materials. The thick walls of this shielding device protect the person handling the container from radiation. Large containers used for spent fuel storage are commonly called casks.

**pig iron:** Pig iron is impure iron from a blast furnace.

**Pigment:** This powder like substance is one of paint's basic components (the other is the binder). The pigment gives the paint its colour and hiding power. Titanium dioxide is the most important pigment used to provide hiding in paint. OR (Colorant) A plastic compound which contains a high percentage of pigment, to be blended in appropriate amounts with the base resin so that the correct final color is achieved. OR Any colorant, usually an insoluble powdered substance used to produce a desired color of hue. OR A plastic compound which contains a high percentage of pigment, to be blended in appropriate amounts with the base resin so that the correct final color is achieved. OR Paint ingredients mainly used to impart color and hiding power.

**pigment :** A substance that gives color to tissue. Pigments are responsible for the color of skin, eyes, and hair.

**PIHNOLE:** Very small holes in paint film, usually not deep enough to show undercoat.

**Pile:** A colloquial term describing the first nuclear reactors. They are called piles because the earliest reactors were "piles" of graphite and uranium blocks.

**Pillaster:** A square pillar, often purely ornamental, projecting from a pier or wall, often in symmetry with a line of columns.

**pillow structures:** blobs of submarine lava that break through the thin, hardened exterior of a lava flow and chill immediately in the cold water, forming small rounded shapes.

**pilocarpine :** A drug used to increase salivation in people who have dry mouth caused by opioids or radiation therapy. Pilocarpine belongs to the family of drugs called alkaloids.

**pilocarpine hydrochloride:** The hydrochloride salt of a natural alkaloid extracted from plants of the genus *Pilocarpus* with cholinergic agonist activity. As a cholinergic parasympathomimetic agent, pilocarpine predominantly binds to muscarinic receptors, thereby inducing exocrine gland secretion and stimulating smooth muscle in the bronchi, urinary tract, biliary tract, and intestinal tract. When applied topically to the eye, this agent stimulates the sphincter pupillae to contract, resulting in miosis; stimulates the ciliary muscle to contract, resulting in spasm of accommodation; and may cause a transitory rise in intraocular pressure followed by a more persistent fall due to opening of the trabecular meshwork and an increase in the outflow of aqueous humor.

**pilocytic :** Made up of cells that look like fibers when viewed under a microscope.

**pilot study :** The initial study examining a new method or treatment.

**PIM kinase inhibitor LGH447:** An orally available pan-PIM protein kinase inhibitor with potential antineoplastic activity. PIM kinase inhibitor LGH447 binds to and inhibits the activities of PIM-1, -2 and -3 serine/threonine kinases, which may result in the interruption of the G1/S phase cell cycle transition, the expression of the pro-apoptotic Bcl2 protein, and tumor cell apoptosis in cells that overexpress PIMs. PIM kinases, downstream effectors of many cytokine and growth factor signaling pathways, play key roles in cell cycle progression and apoptosis inhibition and may be overexpressed in various malignancies. Check for active clinical trials using this agent.

**Pim kinase inhibitor SGI-1776:** A small-molecule pan-Pim protein kinase inhibitor with potential antineoplastic activity. Pim kinase inhibitor SGI-1776 binds to and inhibits the activities of Pim-1, -2 and -3, serine-threonine kinases, which may result in the interruption of the G1/S phase cell cycle transition, the expression of pro-apoptotic Bcl2 proteins and tumor cell apoptosis. PIM kinases play key roles in cell cycle progression and apoptosis inhibition and may be overexpressed in various malignancies.

**pimasertib:** An orally bioavailable small-molecule inhibitor of MEK1 and MEK2 (MEK1/2) with potential antineoplastic activity. Pimasertib selectively binds to and inhibits the activity of MEK1/2, preventing the activation of MEK1/2-dependent effector proteins and transcription factors, which may result in the inhibition of growth factor-mediated cell signaling and tumor cell proliferation. MEK1/2 (MAP2K1/K2) are dual-specificity threonine/tyrosine kinases that play key roles in the activation of the RAS/RAF/MEK/ERK pathway and are often upregulated in a variety of tumor cell types.

**pimecrolimus cream:** A 33-epi-chloro-derivative of the ascomycin macrolactam with immunosuppressant properties. Pimecrolimus binds to the receptor macrophilin-12 (FKBP-12) forming a complex that blocks the calcium-dependent signal transduction cascade mediated by calcineurin. Via dephosphorylation, calcineurin is the enzyme responsible for activating nuclear factor of activated T-cells (NF-AT), a T cell transcriptional regulatory factor. As a consequence, the synthesis and release of Th1- (T helper 1) and Th2- (T helper 2) type cytokines, and other inflammatory mediators from T-cells and mast cells are blocked and the expression of signals essential for the activation of inflammatory T-lymphocytes is inhibited. However, pimecrolimus mode of action is cell-selective and does not affect Langerhans' cells/dendritic cells and primary fibroblasts. Check for active clinical trials using this agent.

**pimonidazole:** A nitroimidazole with hypoxic selectivity and radiosensitizing property. Pimonidazole is reduced in hypoxic environments as in tumor cells, thereby it can be used as an hypoxia marker. In hypoxic cells, reduced pimonidazole binds to -SH-containing molecules such as glutathione and proteins, and the resulting complexes accumulated in tissues, thereby sensitizing cells to be more susceptible for radiation treatment.

**pimonidazole hydrochloride:** A substituted nitroimidazole salt. Hypoxic cells bio-reductively activate and bind pimonidazole. This agent may be used as a hypoxia marker for detecting oxygen gradients in living tissues. Pimonidazole also exhibits radiosensitizing properties.

**PIN :** Noncancerous growth of cells lining the internal and external surfaces of the prostate gland. Having high-grade PIN may increase the risk of developing prostate cancer. Also called prostatic intraepithelial neoplasia.

**pinaverium bromide:** An orally available bromide salt form of pinaverium, a calcium channel blocker (CCB) with antispasmodic activity. Upon oral administration, pinaverium blocks the voltage-dependent calcium channels and inhibits calcium ion influx into the smooth muscle cells located in the gastrointestinal (GI) tract. This prevents smooth muscle contraction and relaxes the GI tract. In addition, pinaverium may both reduce bowel uptake of and facilitate the function of locally active, co-administered drugs.

**Pinch-off:** a raised edge around the cavity in the mold, which seals off the part and separates the excess material as the mold closes around the parison in the extrusion blow molding operation. OR A pinch-off is needed when the parison falls outside the cavity of the mold. It is the protruding edge separating the cavity from the flash pocket, and it compresses the flash to the point of severance. Inserted beryllium copper is preferred because the alloy has thermal conductivity equal to that of the aluminum alloy used in the mold. Steel pinches are used when pinch wear is critical - for example, when molding materials such as polycarbonates are used.

**pineal body :** A tiny organ in the cerebrum that produces melatonin. Also called pineal gland and pineal organ.

**pineal germinoma :** A type of germ cell tumor that is found in the pineal gland in the brain. Symptoms of pineal germinomas include headaches, changes in vision, nausea, and vomiting.

**pineal gland:** a human endocrine gland in the midbrain that regulates mating behaviors and day-night cycles. OR A tiny organ in the cerebrum that produces melatonin. Also called pineal body and pineal organ.

**pineal organ :** A tiny organ in the cerebrum that produces melatonin. Also called pineal body and pineal gland.

**pineal region tumor :** A type of brain tumor that forms in or around the pineal gland (a tiny organ near the center of the brain). Pineal region tumors may be benign (not cancer) or malignant (cancer). They include pineocytomas, pineoblastomas, and pineal germinomas. Also called pinealoma.

**pinealoma :** A type of brain tumor that forms in or around the pineal gland (a tiny organ near the center of the brain). Pinealomas may be benign (not cancer) or malignant (cancer). They include pineocytomas, pineoblastomas, and pineal germinomas. Also called pineal region tumor.

**pineoblastoma :** A fast growing type of brain tumor that occurs in or around the pineal gland, a tiny organ near the center of the brain.

**pineocytoma :** A slow growing type of brain tumor that occurs in or around the pineal gland, a tiny organ near the center of the brain.

**Pinhole:** A small hole in the surface of a moulded product, usually occurring in multiples.

**Pinholing:** The formation of minute holes in a paint film during application and drying. OR If minute holes appear in the paint film while applying or during the drying phase, it's likely due to the surface being contaminated by oil, grease or a similar substance. Apply a new coat, after first cleaning down the surfaces to remove all contaminants, rubbing down with a suitable abrasive and dusting off.

**pinkeye :** A condition in which the conjunctiva (membranes lining the eyelids and covering the white part of the eye) become inflamed or infected. Also called conjunctivitis.

**pinocytosis:** when the vesicle formed from endocytosis contains droplets of fluid.

**Pinpoint Gate:** A restricted gate of 0.030 in or less in diameter, this gate is common on hot-runner molds.

**pioglitazone :** A drug that is used to treat type 2 diabetes and is being studied in the prevention of head and neck cancer. It may be able to stop leukoplakia (a condition affecting the mouth ) from developing into cancer. It is a type of thiazolidinedione. Also called Actos.

**pioglitazone hydrochloride:** The hydrochloride salt of an orally-active thiazolidinedione with antidiabetic properties and potential antineoplastic activity. Pioglitazone activates peroxisome proliferator-activated receptor

gamma (PPAR-gamma), a ligand-activated transcription factor, thereby inducing cell differentiation and inhibiting cell growth and angiogenesis. This agent also modulates the transcription of insulin-responsive genes, inhibits macrophage and monocyte activation, and stimulates adipocyte differentiation.

**Pipe:** A tube usually for the conveyance of liquids. OR As it relates to tobacco use, a device that has a mouthpiece at one end of a tube and a small bowl at the other end that is filled with tobacco, which is lit and smoked. The smoke from a pipe is usually not inhaled into the lungs. It contains nicotine and many cancer-causing chemicals that are harmful to both smokers and nonsmokers. Pipe smoking can lead to nicotine addiction and can cause cancers of the mouth, larynx (voice box), esophagus, lung, pancreas, and bladder. It can also cause heart disease, lung disease, and other health problems.

**piperacillin sodium:** The sodium salt of piperacillin, a broad-spectrum semisynthetic, ampicillin-derived ureidopenicillin antibiotic with bactericidal activity. Piperacillin binds to and inactivates penicillin-binding proteins (PBPs), enzymes located on the inner membrane of the bacterial cell wall, resulting in the weakening of the bacterial cell wall and cell lysis. PBPs participate in the terminal stages of assembling the bacterial cell wall, and in reshaping the cell wall during cell division. Inactivation of PBPs interferes with the cross-linkage of peptidoglycan chains necessary for bacterial cell wall strength and rigidity. Check for active clinical trials using this agent.

**piperacillin-tazobactam :** A drug combination that is used to treat infection in people with cancer. Piperacillin is a synthetic penicillin; tazobactam enhances the effectiveness of piperacillin.

**piperazinedione:** A crystalline antibiotic fermentation product isolated from the bacterium *Streptomyces griseoluteus* with antineoplastic activity. Piperazinedione alkylates DNA at the N-7 position of guanine, inhibiting DNA replication and inducing cell cycle arrest.

**piperine extract (standardized):** A standardized extract containing the active alkaloid piperine, derived from the fruit of the plant *Piper nigrum* (black pepper) and/or the plant *Piper longum* L. (long pepper), with thermogenic properties. Co-ingestion of piperidine enhances the bioavailability of various nutrients, including beta-carotene, curcumin,

selenium, pyridoxine and coenzyme Q10. In addition, this agent may exert anti-inflammatory and anti-tumor activities and may enhance the production of serotonin.

**Pipracil:** (Other name for: piperacillin sodium)

**pirarubicin:** An analogue of the anthracycline antineoplastic antibiotic doxorubicin. Pirarubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. This agent is less cardiotoxic than doxorubicin and exhibits activity against some doxorubicin-resistant cell lines. Check for active clinical trials using this agent.

**pirfenidone:** An orally active synthetic antifibrotic agent structurally similar to pyridine 2,4-dicarboxylate. Pirfenidone inhibits fibroblast, epidermal, platelet-derived, and transforming beta-1 growth factors, thereby slowing tumor cell proliferation. This agent also inhibits DNA synthesis and the production of mRNA for collagen types I and III, resulting in a reduction in radiation-induced fibrosis. Or A substance that is being studied in the prevention and treatment of scar tissue caused by radiation therapy. It belongs to the family of drugs called anti-inflammatory agents.

**piritramide:** A diphenylpropylamine and opioid receptor agonist, with analgesic activity. Upon administration, piritramide binds to and activates mu-opioid receptors in the central nervous system (CNS), thereby mimicking the effects of endogenous opioids and producing analgesic relief.

**piritrexim:** A synthetic antifolate agent with antiparasitic, antipsoriatic and antitumor properties. Piritrexim inhibits the enzyme dihydrofolate reductase enzyme, thereby disrupting folate metabolism and DNA synthesis and cell division. Or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called folate antagonists.

**pirotinib:** An orally bioavailable inhibitor of the receptor tyrosine kinase (RTK) epidermal growth factor receptor (ErbB; EGFR) family, with potential antineoplastic activity. Upon administration, pirotinib selectively and irreversibly binds to and inhibits the epidermal growth factor receptors 1 (ErbB1; EGFR), 2 (ErbB2; HER2), and 4 (ErbB4; HER4). This may result in the inhibition of cell growth and angiogenesis in tumors overexpressing these RTKs. EGFRs play major roles in both tumor cell

proliferation and tumor vascularization, and are overexpressed in many cancer cell types.

**piroxastrone:** An anthrapyrazole antineoplastic antibiotic. Piroxastrone intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. Although less cardiotoxic than doxorubicin, this agent exhibits a narrow spectrum of antineoplastic activity.

**piroxicam:** A nonsteroidal oxycam derivative with anti-inflammatory, antipyretic and analgesic properties. As a non-selective, nonsteroidal anti-inflammatory drug (NSAID), piroxicam binds and chelates both isoforms of cyclooxygenases (COX1 and COX2), thereby stalling phospholipase A2 activity and conversion of arachidonic acid into prostaglandin precursors at the rate limiting cyclooxygenase enzyme step. This results in inhibition of prostaglandin biosynthesis. As a second, independent effect, piroxicam inhibits the activation of neutrophils thereby contributing to its overall anti-inflammatory effects.

**pIRS2 phosphopeptide-tetanus peptide vaccine:** A vaccine composed of a phosphorylated peptide from the tumor associated antigen insulin receptor substrate-2 (IRS2) and a tetanus-derived peptide, with potential immunomodulating and antineoplastic activities. Upon administration of pIRS2 phosphopeptide-tetanus peptide vaccine, the pIRS2 phosphopeptide may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against phosphopeptide-containing tumor cells. The tetanus peptide serves as an immunoadjuvant and induces a helper T-cell response which may help stimulate an immune response against the pIRS2-expressing melanoma tumor cells. IRS2 is upregulated in a variety of cancer cells.

**pistil:** the structure of the flower that contains a stigma, a style, and an ovary.

**Pit:** An imperfection, a small crater in the surface of the plastic. OR A small imperfection in plastic.

**Pitch:** A dark coloured bituminous substance. The angle of a sloping roof to the horizontal. OR The distance from any point on the flight of a screw line to the corresponding point on an adjacent flight, measured parallel to the axis of the screw line or threading.

**Pitch length (or pitch):** The number of base pairs per turn of a duplex helix.

**pith:** the structure at the center of the stem of vascular plants.

**Pitocin:** (Other name for: recombinant oxytocin)

**pituitary gland:** a gland at the base of the brain consisting of the anterior and posterior lobes that secretes several hormones. OR A pea-sized organ attached to the part of the brain called the hypothalamus. It lies at the base of the brain above the back of the nose. The hypothalamus sends signals to the pituitary gland, which then makes hormones that control other glands and many of the body's functions, including growth.

**pituitary tumor :** A tumor that forms in the pituitary gland. The pituitary gland is a pea-sized organ at the base of the brain. It makes hormones that affect other glands and many of the body's functions, including growth. Symptoms depend on the hormones affected by the tumor. Most pituitary tumors are benign (not cancer) and many do not cause any symptoms.

**pixantrone :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called antitumor antibiotics. Also called BBR 2778.

**pixantrone dimaleate:** The dimaleate salt of a synthetic, noncardiotoxic aza-anthracenedione analogue with potential antineoplastic activity. Pixantrone intercalates into DNA and induces topoisomerase II-mediated DNA strand crosslinks, resulting in inhibition of DNA replication and tumor cell cytotoxicity.

**PJS:** A genetic disorder in which polyps form in the intestine and dark spots appear on the mouth and fingers. Having PJS increases the risk of developing gastrointestinal and many other types of cancer. Also called Peutz-Jeghers syndrome.

**pK:** The negative logarithm of an equilibrium constant.

**pK<sub>aa</sub>:** The pK<sub>a</sub> of an acid is minus the base-10 log of its acid dissociation constant,  $pK_a = -\log K_a$ . For example, a pK<sub>a</sub> of 5 is equivalent to an acid dissociation constant of  $10^{-5}$ .

**pK<sub>bb</sub>:** The pK<sub>b</sub> of an base is minus the base-10 log of its base hydrolysis constant,  $pK_b = -\log K_b$ . For example, a pK<sub>b</sub> of 5 is equivalent to an base hydrolysis constant of  $10^{-5}$ .

**PKC:** An enzyme found throughout the body's tissues and organs. Several forms of PKC are involved in many cellular functions. PKC is being studied in the treatment of cancer. Also called protein kinase C.

**PKC412:** A substance that is being studied in the treatment of leukemia. It belongs to the family of drugs called protein kinase inhibitors. Also called midostaurin and N-benzoyl-staurosporine.

**PKU:** An inherited disorder that causes a build-up of phenylalanine (an amino acid) in the blood. This can cause mental retardation, behavioral and movement problems, seizures, and delayed development. Using a blood test, PKU can easily be found in newborns, and treatment is a diet low in phenylalanine. Also called phenylketonuria.

**PLA:** polymerized lactic acid - a corn-based resin made by natureworks pla that requires significantly less energy to mold into plastic containers.

**placebo:** An inactive substance, treatment or procedure that is intended to provide baseline measurements for the experimental protocol of a clinical trial. Check for active clinical trials using this agent.

**placebo :** An inactive substance or treatment that looks the same as, and is given the same way as, an active drug or treatment being tested. The effects of the active drug or treatment are compared to the effects of the placebo.

**placebo therapy :** An inactive treatment or procedure that is intended to mimic as closely as possible a therapy in a clinical trial. Also called sham therapy.

**placebo-controlled :** Refers to a clinical study in which the control patients receive a placebo.

**placenta:** the structure that supplies the fetus with nourishment. OR The organ that nourishes the developing fetus in the uterus.

**placental blood transplantation :** The transfer of blood from a placenta to an individual whose own blood production system is suppressed. Placental blood contains high levels of stem cells needed to produce new blood cells. It is being studied in the treatment of cancer and severe blood disorders such as aplastic anemia.

**placental mammals:** mammals that have a nutritive connection between the embryo and the mother's uterine wall.

**placer deposit:** a deposit of heavy metallic minerals, such as iron or titanium minerals, or native gold or diamonds, that have been concentrated

by wave or water action in a river or beach environment.

**pladienolide derivative E7107:** A synthetic urethane derivative of pladienolide D with potential antineoplastic activity. Pladienolide derivative E7107 is generated from the 12-membered macrolide pladienolide D, one of several macrolides derived from the bacterium *Streptomyces platensis* Mer-11107. This agent appears to bind to the 130-kDa subunit 3 (spliceosome-associated protein 130; SAP130) of the splicing factor 3b (SF3b), resulting in inhibition of pre-messenger RNA splicing and the arrest of cell-cycle progression. The splicing factor SF3b is a multiprotein complex integral to the accurate excision of introns from pre-messenger RNA; the subunit SAP130 associates with U2 snRNP and is recruited to prespliceosomal complexes.

**plagiarism:** the use of another writer's words or ideas without acknowledging that person's contribution.

**Plan:** The horizontal section of a building as shown on a drawing.

**Plan B :** A form of the hormone progesterone that is made in the laboratory and used to prevent pregnancy. It is being studied in the prevention of ovarian and endometrial cancer, and in the treatment of other conditions. Plan B is a type of oral contraceptive. Also called L-norgestrel and levonorgestrel.

**plan geologic map:** a two-dimensional map showing the locations and shapes of the outcrops at an appropriate scale and indicating, through a variety of geologic symbols, features such as folds, faults, contacts between different rock units, and strike and dip.

**Planck:** Planck contributed to the understanding of the electromagnetic spectrum by realizing that the relationship between the change in energy and frequency is quantized according to the equation  $\nabla E = hv$  where  $h$  is Planck's constant.

**Planck's constant:** A proportionality constant that relates the energy carried by a photon to its frequency. Planck's constant has a value of  $6.6262 \times 10^{-34}$  J s.

**plane:** often described as a flat surface.

**plane figure:** shape having only length and width (two dimensional).

**plane geometry:** the study of shapes and figures in two dimensions.

**plane of symmetry:** an imaginary plane that bisects a molecule, producing two halves that are mirror images of each other.

**plane-polarized light:** ordinary light that has had all oscillations of the electromagnetic field filtered out but one. The remaining oscillation exists in only one plane.

**Plane-polarized light:** The result of light passing through a polarizing filter resulting in only the extraordinary ray emerging as light polarized in only one plane.

**planetary albedo:** The fraction (approximately 30%) of incident solar radiation that is reflected by the earth-atmosphere system and returned to space, mostly by backscatter from clouds in the atmosphere.

**planetary boundary layer:** The transition region between the turbulent surface layer and the normally nonturbulent free atmosphere. This region is about 1 km in thickness and is characterized by a well-developed mixing generated by frictional drag as the air masses move over the Earth's surface. This layer contains approximately 10% of the mass of the atmosphere. Also called the atmospheric boundary layer or frictional layer.

**plankton:** Passively floating or weakly motile aquatic plants ( phytoplankton) and animals (zooplankton ).

**Planned special exposure:** An infrequent exposure to radiation, separate from and in addition to the annual dose limits (see 10 CFR 20.1003 and 20.1206).

**plant hormones:** hormones that regulate the growth and development of many plants.

**plant sterol :** A plant-based compound that can compete with dietary cholesterol to be absorbed by the intestines, resulting in lower blood cholesterol levels. Plant sterols may have some effect in cancer prevention. Also called phytosterol.

**plant-derived hematopoiesis enhancer PG2:** A proprietary botanical formulation derived from a traditional Chinese medicinal (TCM) plant with hematopoietic activity. Although the mechanism of action has yet to be fully elucidated, plant-derived hematopoiesis enhancer PG2 appears to stimulate multi-lineage progenitor cells that may be closely related to the hematopoietic stem cell. In both chemotherapy- and radiation therapy-induced animal models of myelosuppression, this agent has been shown to

restore granulocyte, erythrocyte, and platelet counts to normal levels. Plant-derived hematopoiesis enhancer PG2 stimulates the production of numerous cytokines such as granulocyte-colony stimulating factor (G-CSF) and may stimulate the production of neuroendocrine hormones.

**Plaque:** A circular clearing on a lawn (continuous layer) of bacterial or culture cells, resulting from cell lysis and production of phage or animal virus progeny.

**plaque :** In medicine, a small, abnormal patch of tissue on a body part or an organ. Plaques may also be a build-up of substances from a fluid, such as cholesterol in the blood vessels.

**plaque radiotherapy :** A type of radiation therapy used to treat eye tumors. A thin piece of metal (usually gold) with radioactive seeds placed on one side is sewn onto the outside wall of the eye with the seeds aimed at the tumor. It is removed at the end of treatment, which usually lasts for several days

**plasma:** A gas-like phase of matter that contains charged particles. OR a straw-colored liquid composed primarily of water; the fluid portion of blood. OR 1. In biology, the fluid in which blood cells or lymph cells are suspended. 2. A gaslike state of matter consisting of positively charged ions, free electrons, and neutral particles. Plasma is found in stars, the sun, the solar wind, lightning, and fire.

**plasma :** The clear, yellowish, fluid part of the blood that carries the blood cells. The proteins that form blood clots are in plasma.

**plasma cell :** A type of immune cell that makes large amounts of a specific antibody. Plasma cells develop from B cells that have been activated. A plasma cell is a type of white blood cell. Also called plasmacyte. OR large antibody-producing cells derived from B lymphocytes when stimulated.

**plasma cell myeloma :** A type of cancer that begins in plasma cells (white blood cells that produce antibodies). Also called Kahler disease, multiple myeloma, and myelomatosis.

**plasma cell tumor :** A tumor that begins in plasma cells (white blood cells that produce antibodies). Multiple myeloma, monoclonal gammopathy of undetermined significance (MGUS), and plasmacytoma are types of plasma cell tumors.

**plasma membrane:** also called a cell membrane; a membrane composed of lipids, proteins, and phospholipids. OR The membrane that separates the contents of a cell from its outside environment; it consists of a double layer of phospholipids with embedded proteins OR The membrane that surrounds the cytoplasm. OR The exterior membrane surrounding the cytoplasm of a cell. OR The outer membrane of a cell.

**plasma proteins:** The proteins present in blood plasma.

**plasmablastic lymphoma :** A very aggressive (fast-growing) type of large B-cell non-Hodgkin lymphoma (cancer that begins in the cells of the immune system). It is most common in patients with HIV infection, but may also occur in patients whose immune system is suppressed for other reasons.

**plasmacyte :** A type of immune cell that makes large amounts of a specific antibody. Plasmacytes develop from B cells that have been activated. A plasmacyte is a type of white blood cell. Also called plasma cell. or Having to do with plasma cells (a type of white blood cells).

**plasmacytoid dendritic cell vaccine:** A whole cell vaccine derived from a distinct subset of dendritic cells (DCs) with a plasma cell-like morphology that exhibits immunomodulating activity. Plasmacytoid dendritic cells (pDCs) express a characteristic set of surface markers, such as CD123 (interleukin-3 receptor alpha chain), BDCA-2 (blood dendritic cell antigen 2; CD303) and BDCA-4 (CD304), as well as intracellular toll-like receptors 7 and 9. Upon stimulation, the activated pDCs produce substantial amounts of interferon (IFN) alpha, and to a lesser degree IFN-beta, as well as other cytokines and chemokines, such as tumor necrosis factor alpha and interleukins 1, 6 and 8. In addition, these pDCs, directly or indirectly stimulate T-cells, B-cells and natural killer cells. This may potentially lead to increased immunity against tumor cells.

**plasmacytoma :** A type of cancer that begins in plasma cells (white blood cells that produce antibodies). A plasmacytoma may turn into multiple myeloma.

**plasmalogen:** A phospholipid with an alkenyl ether substituent on the C-1 of glycerol. OR Phospholipids containing an  $\alpha,\beta$ -unsaturated ether at the C-1 position of glycerol; abundant in phospholipids of the nervous system.

**plasmapheresis :** The process of separating certain cells from the plasma in the blood by a machine; only the cells are returned to the person.

Plasmapheresis can be used to remove excess antibodies from the blood.

**plasmid:** small circular DNA molecules often used as vectors to transform specific genes into cells. OR A circular DNA duplex that replicates autonomously in bacteria. Plasmids that integrate into the host genome are called episomes. Plasmids differ from viruses in that they never form infectious nucleoprotein particles. OR An extrachromosomal, independently replicating, small circular DNA molecule; commonly employed in genetic engineering. OR Circular duplex DNA molecules that replicate autonomously and act as accessory chromosomes in bacteria; they carry useful genes but are disposable under certain conditions.

**plasmid encoding antiangiogenic metargidin peptide:** A plasmid encoding the protein antiangiogenic metargidin plasmid (AMEP), the disintegrin domain of ADAM-15 (metargidin), with potential antiangiogenic and antimetastatic activities. Upon intratumoral electrotransfer of plasmid encoding AMEP, AMEP binds to cellular integrin receptors alpha-v-beta-3 (avb3) and alpha-5-beta-1 (a5b1), which are upregulated on activated endothelial cells and a variety of tumor cells. Binding to the integrin receptors may inhibit angiogenesis and may inhibit tumor cell proliferation.

**Plaster board:** A building board having a plaster core between two layers of stout paper.

**Plastering:** The operation of applying plaster and other similar materials to structures to produce a smooth surface. The normal process consists of three coats: (1) rendering, (2) floating, (3) setting.

**Plastic:** What most people think of when they think of polymers. Strictly speaking, a plastic is a polymeric material that can be molded into different shapes when heated (a thermoplastic) - this is true for most of the materials mentioned on this website, including poly(styrene), nylon66, PVC, and PET. Some misguided people say nasty things about plastic, but it wouldn't be everywhere if it wasn't (a) incredibly useful and (b) incredibly cheap. OR 1) High polymeric substances, including both natural and synthetic products, but excluding the rubbers that are capable in their manufacture of flowing under heat and pressure. 2) A material that contains an organic substance of large molecular weight, solid in finished state. OR A material that contains as an essential ingredient one or more organic polymeric substances of large molecular weight, is solid in its finished state,

and, at some stage in its manufacture or processing into finished articles, can be shaped by flow. OR An adjective indicating that the noun modified is made of, consists of, or pertains to plastics. (Noun) A material that in its finished state contains as an essential ingredient a synthetic polymer of high molecular weight, is a flexible or rigid solid but not an elastomer in its finished state, and at some stage in its manufacture or in its processing into finished articles can be shaped by flow or by in-situ polymerization or curing.

**Plastic Compound:** A mixture of resin(s) and additives to provide the end-user with a finished grade suitable for the required plastic extrusion profile or other manufactured plastic products.

**plastic deformation:** the physical, permanent changes, such as folds or stretching, in a rock from tectonic forces that do not result in fracturing. OR A change in dimensions of an object under load that is not recovered when the load is removed: opposed to elastic deformation. OR A change in dimensions of an object under load that is not recovered when the load is removed.

**Plastic Extrusion Machines:** Machines used for the process of plastic extrusion. Extruders produce items such as pipe/tubing, weather stripping, plastic fence posts and railings, synthetic decking, window frames, plastic films, thermoplastic coatings, and wire insulation, to name but a few.

**Plastic Extrusion Manufacturing:** Plastic extrusions are manufactured by loading plastic chips or pellets, in to a hopper before being fed into the screw barrel. The polymer resin is heated to molten state by a combination of heating elements and shear heating from the extrusion screw. The screw forces the resin through a die, forming the resin into the desired shape. The extrudate is cooled and solidified as it is pulled through the die or water tank.

**Plastic Extrusion Tooling:** Tooling consists of the dies which are designed for bespoke PVC extrusions

**Plastic Extrusions:** Plastic products extruded in a high-volume manufacturing process in which raw plastic material is melted and formed into a continuous profile. The first thermoplastic extrusion was made in Germany in 1935.

**Plastic Film:** Is a very thin piece of thermoplastic resin that is considerably longer than it is wide with a thicknesses of 10 mils (1 mil = 0.001 inch) or less (averaging 0.7 mils to 1.5 mils).

**plastic flow:** the ability of a material, such as glacial ice, to flow plastically without breaking.

**Plastic Jet Printing:** This process involves melting a solid plastic and extruding it layer by layer until the 3D -model is formed. In more complicated shapes, sometimes a soluble plastic is also extruded as a support piece, these can either be defined by the designer, or automatically rendered in the 3D modeling program.

**Plastic Manufacturing:** Fabrication of plastic products by various processes such as thermoplastic extrusion, sheet/film extrusion, blown film extrusion, various forms of plastic moulding, for example injection moulding, and vacuum forming of plastic sheet.

**Plastic Memory:** A phenomenon of plastic to return to its original molded form. Different plastics possess varying degrees of this characteristic.

**Plastic Modular Belt :** Plastic modules assembled with adjacent modules using a round stainless rod or plastic rod inserted through the modules.

**Plastic paint:** A plaster composition which can be manipulated after application to produce a patterned or modelled effect. The description should not be used for paints based on synthetic resins.

**Plastic Pellets:** Small plastic beads of uniform size, consisting of resins or mixtures of resins with compounding additives prepared for the plastic extrusion process, or other plastic manufacturing processes.

**Plastic Recycling:** The process of recovering plastic scrap or waste plastic material and reprocessing the plastic material into useful recycled plastic products.

**Plastic Sheet:** Is a comparatively thick piece of thermoplastic resin that is much longer than it is wider and as thick as 10 mils (1 mil = 0.001 inch) or more (up to 30 mils thick).

**plastic strain:** strain that results in a permanent change in the shape of a rock.

**plastic surgeon :** A surgeon who has special training in reducing scarring or disfigurement that may occur as a result of accidents, birth defects, or treatment for diseases.

**plastic surgery :** An operation that restores or improves the appearance of body structures.

**PLASTIC TOOLING:** Tools. e.g.. dies. jigs. fixtures, etc., for the metal forming trades constructed of plastics, generally laminates or casting materials.

**Plastic Tubing:** Plastic tubing can be made out of many different kinds of materials including, nylon, vinyl, polyurethane, polyethylene, among others.

**Plastic Virgin Material:** Any plastic compound or resin that has not been subjected to use or processing other than that required for the plastic compound or resin's original manufacture.

**Plasticiser:** "A compound added to a polymer to make it softer and more flexible. These are usually small molecules with dangling bits that can disrupt the packing of polymer chains. A common plasticiser used to soften PVC is dioctyl phthalate:

**Plasticiser:** A chemical compound added to some plastics to render them softer or more flexible.

**PLASTICITY:** A property of plastics which allows the material to be deformed continuously and permanently without rupture upon the application of a force that exceeds the yield value of the material.

**Plasticity:** The ability of a material to withstand continuous and permanent deformation by stresses exceeding the yield value of the material without rupture. OR A property of plastics which allows the material to be deformed continuously and permanently without rupture upon the application of a force that exceeds the yield value of the material. OR A property of plastics which allows the material to be deformed continuously and permanently without rupture upon the application of a force that exceeds the yield value of the material.

**Plasticize :** To render a material softer, more flexible and/or more moldable by the addition of a plasticizer. OR To soften a material and make it plastic or moldable, either by means of a plasticizer or the application of heat. OR To render a material softer, more flexible and/or more moldable by the addition of a plasticizer.

**Plasticizer:** Are usually low-melting solids or high-boiling organic liquids which, when added to hard plastics, impart flexibility. They have varying

degrees of softening action and solvating ability resulting from a reduction of intermolecular forces in the polymer. OR a liquid or solid incorporated in natural and synthetic resins and related substances to develop such properties as resiliency, elasticity, and flexibility. OR membrane solvent used in polymeric liquid membrane sensors. Solvent polymeric membranes are usually based on matrix containing about 33% (w/w) of PVC and 66% (w/w) of plasticizer. The presence of such a high amount of plasticizer provides membranes with required physical properties (i.e. lowers the glass transition temperature (T<sub>g</sub>) of the membrane polymer, decreases membrane resistance and ensures relatively high mobility of its components). In order to obtain a homogenous membrane phase the plasticizer should be compatible with the polymer.

**plastid:** In plants, a self replicating organelle; may differentiate into a chloroplast.

**Plastisol:** Mixtures of plasticizers and resins that can be converted to continuous films by applying heat.

**PLASTISOLS:** Mixtures of vinyl resins and plasticizers which can be molded: cast, or converted to continuous films by the application of heat.

**plate:** a segment of the earth's crust that is bounded by deep faults and moves in response to internal forces.

**Plate Dispersion Plug:** Two perforated plates held together with a connecting rod which are placed in the nozzle of an injection molding machine to aid in dispersing a colorant in a resin as it flows through the orifices in the plates.

**Plate Retainer:** The plate on which demountable pieces, such as mold cavities, ejector pins, guide pins, and bushings are mounted during molding

**Plate Stripper:** A plate that strips a liquid silicone molded piece from core pins or force plugs. The stripper-plate is set into operation by the opening of the mold

**plate tectonics:** the theory that the earth's surface is divided into large, slow-moving crustal plates that are driven by internal forces, such as convection currents in the mantle.

**Plate-mark:** Any imperfection in a pressed plastic sheet resulting from the surface of the pressing plate.

**Plate-Out :** An objectionable coating gradually formed on metal surfaces of molds during processing of plastics due to extraction and deposition of some ingredient such as pigment, lubricant, stabilizer or plasticizer.

**plateau:** a flat-lying hill underlain by resistant rock.

**platelet :** A tiny piece of cell that is made by breaking off of a large cell in the bone marrow. Platelets are found in the blood and spleen. They help form blood clots to slow or stop bleeding, and to help wounds heal. Also called thrombocyte.

**platelet-derived growth factor :** A family of molecules released from platelets (tiny pieces of cells that are found in the blood and that help the blood clot). Forms of platelet-derived growth factor help to heal wounds and to repair damage to blood vessel walls. They also help blood vessels grow. Also called PDGF.

**platelets:** small disk-shaped blood fragments produced in the bone marrow that serve as the starting material for blood clotting. OR Small, enucleated cells that initiate blood clotting; they arise from cells called megakaryocytes in the bone marrow. Also known as thrombocytes.

**Platen :** The large metal plates the mold attaches to on a plastic molding machine.

**Platen Movable:** The large back platen of an silicone injection molding machine to which the back half of the mold is secured during operation. The platen is moved horizontally or vertically by either a hydraulic ram or a toggle mechanism

**Platen Stationary:** The large front plate of an silicone injection molding machine to which the front plate of the mold is secured during operation

**Platens:** The flat surfaces of a molding machine to which the two halves of the mold are mounted One is stationary and the other travels There is a third platen (stationary) at the clamp end of the machine that serves as an anchoring point for the clamp unit.

**Platform Blowing:** A special technique for blowing large parts. To prevent excessive sag of the heavy parison the machine employs a table which after rising to meet the parison at the die descends with the parison but at a slightly lower rate than the parison extrusion speed.

**Platinol :** A drug used to treat cancers of the bladder, ovaries, and testicles. It is used in patients whose cancer cannot be treated with or has not gotten

better with other anticancer treatment. It is also being studied in the treatment of other types of cancer. Platinol contains the metal platinum. It kills cancer cells by damaging their DNA and stopping them from dividing. It is a type of DNA crosslinking agent. Also called cisplatin and Platinol-AQ.

**Platinol-AQ:** (Other name for: cisplatin)

**Platinol-AQ :** A drug used to treat cancers of the bladder, ovaries, and testicles. It is used in patients whose cancer cannot be treated with or has not gotten better with other anticancer treatment. It is also being studied in the treatment of other types of cancer. Platinol-AQ contains the metal platinum. It kills cancer cells by damaging their DNA and stopping them from dividing. It is a type of DNA crosslinking agent. Also called cisplatin and Platinol.

**Platinum:** Symbol:"Pt" Atomic Number:"78" Atomic Mass: 195.08amu. This is one of the many transition elements. Platinum is one of the Earth's precious metals. This shiny, silvery element has uses in jewelry, electronics, magnets, and airplane parts. Platinum is very non-reactive and does not oxidize in air. OR A metal that is an important component of some anticancer drugs, such as cisplatin and carboplatin.

**platyspodylia:** flatness of the bodies of the vertebrae

**Plausible accidents:** Postulated events that meet a probability test rather than the more challenging test represented by a design-basis event.

**Plavix:** (Other name for: clopidogrel bisulfate)

**playa lake:** a lake formed from water that drains from mountains into the central part of a valley.

**PLC (Performance Level Categories):** As defined by UL: "In order to avoid an excessive level of implied precision and bias, material performances for several tests are recorded as PLC, based on the mean test results (rather than recording the exact numerical results)". PLC levels are assigned to electric properties, tested according to UL 746A

**pleated sheet:** The side-by-side, hydrogen-bonded arrangement of polypeptide chains in the extended  $\beta$  conformation.

**PLED-based MnSOD mimetic:** A derivative of pyridoxyl ethyldiamine (PLED) and mimetic of the human mitochondrial manganese superoxide dismutase (MnSOD), with antioxidant, metal chelating and potential

chemoprotective activities. Upon administration, PLED-based MnSOD mimetic mimics MnSOD and scavenges oxygen free radicals such as superoxide anion, hydrogen peroxide, and hydroxyl radical, thereby preventing oxygen free radical damage to macromolecules such as DNA and minimizing oxygen free radical-related chemotoxicity in normal tissues. In addition, this agent is able to strongly bind to iron.

**pleiotropic pathway modifier CC-122 hydrochloride:** The hydrochloride salt form of CC-122, an orally available pleiotropic pathway modulator with potential antineoplastic activity. Check for active clinical trials using this agent.

**Pleistocene:** The earlier of the two epochs of the Quaternary period, starting 2 to 3 million years before the present and ending about 10,000 years ago. It was a time of glacial activity.

**Plenaxis :** A drug used to reduce the amount of testosterone made in patients with advanced symptomatic prostate cancer for which no other treatment options are available. It belongs to the family of drugs called gonadotropin-releasing hormone (GnRH) antagonists. Also called abarelix.

**Pleochroic:** Showing more than one color.

**pleomorphic :** Occurring in various distinct forms. In terms of cells, having variation in the size and shape of cells or their nuclei.

**plerixafor:** A bicyclam with hematopoietic stem cell-mobilizing activity. Plerixafor blocks the binding of stromal cell-derived factor (SDF-1alpha) to the cellular receptor CXCR4, resulting in hematopoietic stem cell (HSC) release from bone marrow and HSC movement into the peripheral circulation. or A drug used before autologous stem cell transplantation in patients with non-Hodgkin lymphoma or multiple myeloma. Plerixafor is given together with granulocyte-colony stimulating factor (G-CSF) to help move stem cells from the bone marrow to the blood. The stem cells can then be collected, stored, and given back to the patient. Plerixafor is a type of chemokine receptor antagonist. Also called AMD 3100 and Mozobil.

**pleura :** A thin layer of tissue that covers the lungs and lines the interior wall of the chest cavity. It protects and cushions the lungs. This tissue secretes a small amount of fluid that acts as a lubricant, allowing the lungs to move smoothly in the chest cavity while breathing.

**pleural cavity :** The space enclosed by the pleura, which is a thin layer of tissue that covers the lungs and lines the interior wall of the chest cavity.

**pleural effusion :** An abnormal collection of fluid between the thin layers of tissue (pleura) lining the lung and the wall of the chest cavity.

**pleurectomy :** Surgery to remove part of the pleura (a thin layer of tissue that covers the interior wall of the chest cavity).

**pleurodesis :** A medical procedure that uses chemicals or drugs to cause inflammation and adhesion between the layers of the pleura (a thin layer of tissue that covers the lungs and lines the interior wall of the chest cavity). This prevents the buildup of fluid in the pleural cavity. It is used as a treatment for severe pleural effusion.

**pleuropulmonary blastoma :** A rare and very aggressive (fast-growing) cancer that forms in tissues of the lung and pleura (a thin layer of tissue that covers the lungs and lines the interior wall of the chest cavity).

Pleuropulmonary blastoma is most common in children.

**plevitrexed:** An orally bioavailable, small molecule, non-polyglutamatable, antifolate quinazoline derivative thymidine synthetase inhibitor with potential antineoplastic activity. Plevitrexed is transported into the cell via the physiological reduced folate carrier (RFC) system. Intracellularly, this agent selectively binds to the folate binding site of thymidylate synthase and inhibits thymidine synthesis, which may result in DNA synthesis inhibition and apoptosis.

**plexiform fibrohistiocytic tumor :** A rare tumor found mainly in children and young adults. It usually forms in the skin on the arms and legs. It is slow-growing and usually does not spread to other parts of the body. It is a type of soft tissue tumor.

**plexiform neurofibroma :** A nerve that has become thick and misshapen due to the abnormal growth of cells and tissues that cover the nerve.

**plexopathy :** A disorder affecting a network of nerves, blood vessels, or lymph vessels.

**plicamycin:** An antibiotic isolated from the bacterium *Streptomyces plicatus* with antineoplastic activity. Plicamycin, also known as mithramycin, binds to the minor groove of DNA at GC-rich sites, resulting in inhibition of RNA synthesis; this agent also inhibits mRNA expression, resulting in a reduction in protein synthesis. In addition, plicamycin may

inhibit bone resorption by down regulating transcription of c-src, an oncogene involved in bone metabolism and resorption. or A drug used to treat some types of testicular cancer. It is also used to treat a higher-than-normal amounts of calcium in the blood or urine. Plicamycin binds to DNA and prevents cells from making RNA and proteins. It is a type of antineoplastic antibiotic. Also called Mithracin and mithramycin.

**plinabulin:** An orally active diketopiperazine derivative with potential antineoplastic activity. Plinabulin selectively binds to the colchicine-binding site of tubulin, thereby interrupting equilibrium of microtubule dynamics; mitotic spindle assembly is disrupted, resulting in cell cycle arrest at the M phase and blockage of cell division in tumor cells. In addition, this agent induces tubulin depolymerization in vascular endothelial cells, resulting in the disruption of tumor blood vessel architecture and a selective collapse of tumor vasculature. or A cyclic depsipeptide isolated from the marine tunicate *Aplidium albicans*. Plitidepsin displays a broad spectrum of antitumor activities, inducing apoptosis by triggering mitochondrial cytochrome c release, initiating the Fas/DC95, JNK pathway and activating caspase 3 activation. This agent also inhibits elongation factor 1-a, thereby interfering with protein synthesis, and induces G1 arrest and G2 blockade, thereby inhibiting tumor cell growth.

**Pliolite:** A synthetic type of resin used in the manufacture of some types of masonry paints. Pliolite is the trade mark of the Goodyear Tire & Rubber Co. Inc.

**PLK1 inhibitor TAK-960:** An orally available, Polo-like kinase 1 (PLK1) inhibitor with potential antineoplastic activity. Polo-like kinase 1 inhibitor TAK-960 selectively inhibits PLK1, inducing selective G2/M cell-cycle arrest followed by apoptosis in a variety of tumor cells while causing reversible cell-cycle arrest at the G1 and G2 stages without apoptosis in normal cells. PLK1 inhibition may result in the inhibition of proliferation in PLK1-overexpressed tumor cells. PLK1, named after the polo gene of *Drosophila melanogaster*, is a serine/threonine kinase crucial in the regulation of mitosis.

**PLL:** A type of chronic lymphocytic leukemia (CLL) in which too many immature white blood cells (prolymphocytes) are found in the blood and

bone marrow. PLL usually progresses more rapidly than classic CLL. Also called prolymphocytic leukemia.

**ploidy** : The number of sets of chromosomes in a cell or an organism. For example, haploid means one set and diploid means two sets.

**Plots**: graphical representations of analysis results.

**plozalizumab**: A humanized monoclonal antibody directed against the human chemokine receptor 2 (CCR2), with potential antiangiogenic, immunomodulating, antimetastatic, and antineoplastic activities.

Plozalizumab binds to CCR2 and prevents binding of the endothelium-derived CLL2 (monocyte chemoattractant protein-1 or MCP1) to its receptor CCR2, which may result in inhibition of CCR2 activation and so inhibition of angiogenesis, tumor cell migration, and tumor cell proliferation. In addition, this agent may reduce levels of C-reactive protein (CRP). The G-protein coupled receptor CCR2 is expressed on the surface of monocytes and macrophages, stimulates the migration and infiltration of these cell types, and plays an important role in inflammation, angiogenesis, and tumor cell migration and proliferation.

**PLS (partial least-squares) treatment**: A technique used to perform quantitative analyses on multicomponent mixtures with overlapping bands. PLS also allows calibration using mixtures permitting the modeling of interactions between components and the use of combinations of multiple numbers of wavelengths in the calibration.

**Plug Assist**: – A form created to help push material down for it to be vacuum formed. If this isn't used, webbing can occur which are small creases in the material on corners and edges. Bottoms of the cavity can get very weak in strength.

**Plug Forming**: A thermoforming process in which a plug or male mold is used to partially preform the part before forming is completed using vacuum or pressure.

**Plug-and-ring**: Method of sheet forming in which a plug, functioning as a male mold, is forced into a heated plastic sheet held in place by a clamping ring.

**Plummer-Vinson syndrome** : A disorder marked by anemia caused by iron deficiency, and a web-like growth of membranes in the throat that makes swallowing difficult. Having Plummer-Vinson syndrome may

increase the risk of developing esophageal cancer. Also called Paterson-Kelly syndrome and sideropenic dysphagia.

**plunge:** the angle between the horizontal and the hinge line in a plunging fold.

**PLUNGER:** That part of a transfer or injection press that applies pressure on the unmelted plastic material to push it into the chamber, which in turn forces plastic melt at the front of the chamber out through the nozzle. See RAM. OR The injecting member of a non-screw design molding machine. Plungers do not rotate (auger) to bring material forward in preparation for the next cycle. Nor do they blend the material as a screw does.

**plunging fold:** a fold that has been tipped by tectonic forces and that has a hinge line, or axis, that is not horizontal.

**pluripotent :** Able to mature or develop in any of several ways.

**pluripotent stem cell :** A cell that is able to develop into many different types of cells or tissues in the body.

**plutonic:** rock that forms below the Earth's surface (intrusive).

**plutonic rock:** an intrusive, discordant, generally coarse-grained rock that was formed deep in the earth's crust.

**Plutonium:** Symbol:"Pu" Atomic Number:"94" Atomic Mass: (244)amu. Plutonium is one of the elements in the actinide series of inner transition elements. It may be classified as a rare earth element. It is a radioactive and unstable element and you will find it in nuclear devices and reactors.

**Plutonium (Pu):** A heavy, radioactive, manmade metallic element with atomic number 94. Its most important isotope is fissile plutonium-239, which is produced by neutron irradiation of uranium-238. It exists in only trace amounts in nature.

**pluvial lake:** a lake formed during the wetter climates that existed during and after glacial retreat.

**PLX4032:** A drug used to treat advanced melanoma that has a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. PLX4032 blocks this mutated protein, which may stop the growth of cancer cells. It is a type of kinase inhibitor and a type of targeted therapy agent. Also called BRAF (V600E) kinase inhibitor RO5185426, RG7204, vemurafenib, and Zelboraf.

**pM-81:** A monoclonal antibody that is being studied in the detection and treatment of cancer. Monoclonal antibodies are produced in the laboratory and can locate and bind to cancer cells.

**PM00104:** A synthetic tetrahydroisoquinoline alkaloid related to the marine natural compounds Jorumycin and the family of Renieramycins, obtained from molluscs and sponges, respectively, with potential antineoplastic activity. PM00104 reversibly binds to DNA and interferes with DNA replication, transcription, and translation. DNA binding by this agent does not trigger DNA damage checkpoint responses, hence PM00104 exhibits a reversible cytotoxicity.

**PM3:** A semi-empirical method.

**PMMA:** Polymethyl methacrylate

**PMN:** A type of immune cell that has granules (small particles) with enzymes that are released during infections, allergic reactions, and asthma. Neutrophils, eosinophils, and basophils are PMNs. A PMN is a type of white blood cell. Also called granular leukocyte, granulocyte, and polymorphonuclear leukocyte.

**PMP2:** Spin-projected MP2 energy. Analog of PUHF, but for UMP2 energy instead of UHF energy. Likewise, the PMP3 and PMP4 energies are the UMP3 and UMP4 analogs.

**PMS:** Paramethylstyrene

**PMT:** Polymethylpentene

**PN401:** A drug used in the emergency treatment of patients who receive too much fluorouracil or capecitabine (types of anticancer drugs). It is also used in the emergency treatment of heart or central nervous system (CNS) toxicity or other serious side effects that occur within 4 days of ending treatment with fluorouracil or capecitabine. PN401 may help protect healthy cells from some of the side effects caused by certain anticancer drugs. It is a type of cytoprotective agent. Also called triacetyluridine, uridine triacetate, and Vistogard.

**PNET :** One of a group of cancers that develop from the same type of early cells, and share certain biochemical and genetic features. Some PNETs develop in the brain and central nervous system (CNS-PNET), and others develop in sites outside of the brain such as the limbs, pelvis, and chest wall (peripheral PNET). Also called primitive neuroectodermal tumor.

**Pneumatic:** moved or worked by air pressure.

**pneumatic larynx :** A device that is used to help a person talk after a laryngectomy. It uses air to produce a humming sound, which is converted to speech by movement of the lips, tongue, or glottis.

**pneumococcal 13-valent conjugate vaccine:** A pneumococcal conjugate vaccine containing 13 different strains of the bacterium *Streptococcus pneumoniae*, used in children and studied in immunocompromised patients for the prevention of pneumococcal disease. The pneumococcal 13-valent conjugate vaccine contains capsular antigen polysaccharides derived from the *S. pneumoniae* serotypes 1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F and 23F that are individually conjugated to a nontoxic diphtheria cross-reactive material (CRM) carrier protein (CRM197). Upon vaccination, pneumococcal 13-valent conjugate vaccine induces active immunization against 13 different serotypes of *S. pneumoniae* and protects against pneumococcal disease.

**pneumococcal 7-valent conjugate vaccine:** An active immunizing agent used to prevent infection by the bacterium *Streptococcus pneumoniae*. Pneumococcal 7-valent conjugate vaccine consists of a solution of saccharides of the capsular antigens of *Streptococcus* serotypes 4, 6B, 9V, 14, 18C, 19F, and 23F individually conjugated to diphtheria CRM 197 protein. Check for active clinical trials using this agent.

**pneumococcal polyvalent vaccine:** An polyvalent vaccine used to prevent infection by the bacterium *Streptococcus pneumoniae*. Pneumococcal polyvalent vaccine contains highly purified capsular antigens from the 23 most prevalent or invasive pneumococcal types of *Streptococcus pneumoniae* to ensure cross-protection. Following vaccination, protective capsular type-specific antibody levels typically develop by the third week; serotype-specific antibody levels generally decline after 5-10 years.

**pneumonectomy :** Surgery to remove all of one lung. In a partial pneumonectomy, one or more lobes of a lung are removed.

**pneumonia :** A severe inflammation of the lungs in which the alveoli (tiny air sacs) are filled with fluid. This may cause a decrease in the amount of oxygen that blood can absorb from air breathed into the lung. Pneumonia is usually caused by infection but may also be caused by radiation therapy, allergy, or irritation of lung tissue by inhaled substances. It may involve part or all of the lungs.

**pneumonitis :** Inflammation of the lungs. This may be caused by disease, infection, radiation therapy, allergy, or irritation of lung tissue by inhaled substances.

**pneumothorax:** abnormal presence of air in the pleural cavity resulting in the collapse of the lung

**Pneumovax 23:** (Other name for: pneumococcal polyvalent vaccine)

**pNGVL3-hICD vaccine:** A plasmid DNA cancer vaccine encoding the intracellular domain (ICD) of the HER-2/neu proto-oncogene. Upon administration and after cellular uptake by skin or muscle cells, the pNGVL3-hICD vaccine plasmid expresses the HER-2/neu protein, which, after intracellular processing, may elicit both antigen-specific cytotoxic T-lymphocyte (CTL) and humoral immune responses against tumor cells expressing HER-2. The HER-2/neu ICD protein is highly immunogenic and, as a subdominant epitope, may be associated with decreased immune tolerance.

**pNGVL4a-CRT/E7(detox) DNA vaccine:** A cancer vaccine consisting of the DNA plasmid pNGVL4a-A encoding calreticulin (CRT) linked to a detox form of human papillomavirus (HPV) type 16 E7 antigen, with potential immunomodulating and antineoplastic activities. Upon administration, this vaccine may generate a potent cytotoxic T-lymphocyte (CTL) response against E7-expressing tumor cells, resulting in tumor cell death. For E7(detox), the amino acids in E7 at positions 24 (cysteine to glycine) and 26 (glutamic acid to glycine) were substituted. CRT, a 46 kDa protein located in the lumen of the cell's endoplasmic reticulum (ER), may potentiate MHC class I presentation of HPV-16 E7 to E7-specific CD8-positive T cells. In addition, pNGVL4a-A contains two short immunostimulatory DNA sequences (ISS) in the noncoding region, which may elicit the production of IFN- and IL-12 in transfected keratinocytes and dermal antigen presenting cells (APCs), resulting in a potent T helper cell type 1 response.

**pNGVL4a-Sig/E7(detox)/HSP70 DNA vaccine:** An antigen-specific DNA cancer vaccine consisting of the coding sequences of a signal peptide (pNGVL4a-Sig), a detox form of the human papillomavirus type 16 (HPV-16) antigen E7, and the heat shock protein 70 (HSP70). Upon administration, this vaccine may generate potent cytotoxic CD8(+) T-cell responses against E7-expressing tumor cells, resulting in tumor cell death.

**PNH:** Paroxysmal nocturnal hemoglobinuria. A rare disorder in which red blood cells are easily destroyed by certain immune system proteins. Symptoms include blood clots, and red or brownish urine in the morning. Aplastic anemia (decreased production of blood cells) may lead to PNH, and people with this disorder are at increased risk of acute myelogenous leukemia. Also called paroxysmal nocturnal hemoglobinuria.

**PNP-expressing ovine atadenovirus FP253:** An ovine atadenovirus encoding E. coli purine nucleoside phosphorylase (PNP) with prodrug activating activity. Under the control of a prostate-directed promoter, PNP-expressing atadenovirus vaccine FP253 expresses PNP in prostate tissue only after intraprostatic administration; this enzyme catalyzes systemically administered fludarabine prodrug into the active agent, 2-fluoroadenine. Localized prodrug activation provides prostate-targeted chemotherapy, potentially reducing systemic side effects. Check for active clinical trials using this agent.

**PNU 166148:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called topoisomerase inhibitors.

**PNU-93914:** A form of the anticancer drug paclitaxel that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of several types of cancer. PNU-93914 blocks the ability of cells to divide and may kill cancer cells. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called LEP-ETU, liposomal paclitaxel, LipoTaxen, and paclitaxel liposome.

**Pnu-Imune 23:** (Other name for: pneumococcal polyvalent vaccine)

**Pocket dosimeter:** A small ionization detection instrument that indicates ionizing radiation exposure directly. An auxiliary charging device is usually necessary.

**podiatrist :** A doctor who has special training in diagnosing and treating foot and ankle problems.

**pOH:** Measures the basicity of a solution. It is the negative log of the concentration of the hydroxide ions. OR pOH is the measure of hydroxide ion concentration. The scale is the reverse of the pH scale. Seven is still neutral but values below seven are basic and values above seven are acidic.

**point:** a basic element of geometry, a location. If two lines intersect, they do so at a point.

**point mutation :** An alteration in a DNA sequence caused by the substitution of a single nucleotide for another nucleotide.

**point source:** A single source, usually in a defined location (WHO, 1979). OR the point of contamination.

**Pointing:** Filling the joints in brickwork or masonry with mortar.

**Poise:** A measurement of viscosity. OR A cgs unit of resistance to fluid flow (viscosity). If a force of 1 dyne is needed to force two fluid layers with 1 cm<sup>2</sup> area that are 1 cm apart past each other at a speed of 1 cm/s, the liquid has a viscosity of 1 poise. OR The unit of viscosity expressed as one dyne per second per square centimeter.

**POISEUILLE FLOW (also called PRESSURE FLOW):** The flow of a fluid caused by a pressure difference. The resulting velocity profile in a tube is parabolic for Newtonian fluids and somewhat "flatter" for polymer melts. The pressure drop is linear in the direction of flow for tubes or channels with parallel walls.

**Poison, neutron:** In reactor physics, a substance (other than fissionable material) that has a large capacity for absorbing neutrons in the vicinity of the reactor core. This effect may be undesirable in some reactor applications because it may prevent or disrupt the fission chain reaction, thereby affecting normal operation. However, neutron-absorbing materials (commonly known as "poisons") are intentionally inserted into some types of reactors to decrease the reactivity of their initial fresh fuel load. (Adding poisons, such as control rods or boron, is described as adding "negative reactivity" to the reactor.)

**poisoned catalyst:** a deactivated catalyst; one that is less effective in reactions than the nonpoisoned material.

**Poisoning:** the chemical conversion of the surface of a solid state electrode to a form, which is less responsive to, changes in ionic activity. In many cases, electrode function may be restored by physically removing a thin layer of the sensing element or by reversing the poisoning reaction chemically.

**Poisson's Ratio :** The constant relating the changes in dimensions which occur when a material is stretched. It is obtained by dividing the change in

width per unit length by the change in length per unit length.

**Pol I inhibitor CX5461:** An orally bioavailable inhibitor of RNA polymerase I (Pol I), with potential antineoplastic activity. Upon oral administration, CX-5461 selectively binds to and inhibits Pol I, prevents Pol I-mediated ribosomal RNA (rRNA) synthesis, induces apoptosis, and inhibits tumor cell growth. Pol I, the multiprotein complex that synthesizes rRNA, is upregulated in cancer cells and plays a key role in cell proliferation and survival. Hyperactivated rRNA transcription is associated with uncontrolled cancer cell proliferation.

**polaprezinc:** An orally bioavailable chelate composed of zinc and L-carnosine, with potential gastroprotective, anti-oxidant, anti-ulcer and anti-inflammatory activities. Upon administration, polaprezinc increases the expression of various anti-oxidant enzymes, such as superoxide dismutase 1 (SOD-1), SOD-2, heme oxygenase-1 (HO-1), glutathione S-transferase (GST), glutathione peroxidase (GSH-px), peroxidoredoxin-1 (PRDX1; PRXI) and PRXD5 (PRXV) in the gastric mucosa, which protect cells against reactive oxygen species (ROS). In addition, this agent inhibits the activity of the transcription factor nuclear factor-kappaB (NF-kB) and reduces the expression of several pro-inflammatory cytokines, such as interleukin (IL) 1beta, IL-6, IL-8, and tumor necrosis factor alpha (TNF-a). Polaprezinc also increases the expression of various growth factors, such as platelet-derived growth factor-B (PDGF-B), vascular endothelial growth factor (VEGF), and nerve growth factor (NGF), and various heat shock proteins (HSPs), including HSP90, HSP70, HSP60, HSP47, HSP27, and HSP10. This protects against damages to, and accelerates healing of the gastric mucosa.

**polar:** Hydrophilic, or "water-loving"; describing molecules or groups that are soluble in water.

**polar bond:** a bond with both ionic and covalent characteristics. OR A bond involving electrons that are unequally shared. Polar bonds can be thought of as intermediate between the extremes represented by covalent bonds and ionic bonds.

**polar covalent bond:** a bond in which the shared electrons are not equally available in the overlap region, leading to the formation of partially positive and partially negative ends on the molecule.

**Polar group:** A hydrophilic (water-loving) group.

**polar molecules:** Molecule with a partial charge. OR A polar molecule is a molecule with an imbalance of electrical charge. OR An asymmetric molecule containing polar bonds. H<sub>2</sub>O, NH<sub>3</sub>, and HCl are examples of polar molecules. Non-examples are CO<sub>2</sub>, CCl<sub>4</sub>, and BCl<sub>3</sub> which contain polar bonds but are nonpolar because they have symmetric shapes. Alkanes are usually asymmetric but are nonpolar because they contain no polar bonds. Polar molecules are electric dipoles and they attract each other via dipole-dipole forces.

**Polar mutation:** A mutation in one gene that reduces the expression of a gene or genes distal to the promoter in the same operon.

**polar wandering:** the apparent movement of the earth's geographic and magnetic poles through geologic time.

**polarimeter:** a device that first polarizes light and then passes the polarized light through a chemical solution. An analyzer shows the degree and direction of rotation of the plane-polarized light if the chemical is optically active. OR An instrument for determining the rotation of polarization of light as the light passes through a solution containing an optically-active substance.

**Polaris:** the North Star, located in the Little Dipper constellation.

**polarity:** the asymmetrical distribution of electrons in a molecule, leading to positive and negative ends on the molecule. OR (1) In chemistry, the nonuniform distribution of electrons in a molecule; polar molecules are usually soluble in water. (2) In molecular biology, the distinction between the 5' and 3' ends of nucleic acids. OR A property associated with molecules when the center of positive charge and the center of negative charge don't coincide. See also polar molecule and polar bond.

**polarizability:** Indication of the ease of distortion of an electron cloud around an atom. Large atoms (like iodine) have many electrons, and their location may easily shift, producing regions of partial positive and negative charge. The larger the atom, the greater the polarizability, or the more easily an electron cloud may be distorted.

**polarized:** A "polarized" basis set includes functions that are of higher angular momentum than is minimally required. For example, carbon atoms have 1s, 2s, and 2p orbitals, so a polarized basis set would also include at least a set of d-functions. The added functions are often called "polarization

functions." Polarization functions help to account for the fact that atoms within molecules are not spherical.

**polarizer:** a filter that blocks light waves in all planes except one; a polarizer creates plane-polarized light.

**Polarography:** An analytical technique that measures the current flow at a liquid-drop electrode at a given potential. The current flow is proportional to the amount of compound present.

**polatuzumab vedotin:** An antibody-drug conjugate (ADC) composed of a monoclonal antibody directed against B-cell antigen receptor complex-associated protein beta chain (CD79B) conjugated, via a protease-cleavable peptide linker, to monomethyl auristatin E (MMAE), an auristatin derivative and a potent microtubule inhibitor, with potential antineoplastic activity. Upon administration, polatuzumab vedotin selectively binds to CD79B, a protein which is abundantly expressed on the surface of B-cells. Upon internalization and proteolytic cleavage, MMAE binds to tubulin and inhibits its polymerization, resulting in G2/M phase arrest and tumor cell apoptosis. CD79B, a component of the B-cell receptor (BCR), plays a key role in B-cell receptor signaling and is expressed on the surface of almost all types of malignant B-cells.

**polifeprosan 20 carmustine implant :** A biodegradable wafer that is used to deliver the anticancer drug carmustine directly into a brain tumor site after the tumor has been removed by surgery. Also called carmustine implant and Gliadel Wafer.

**polifeprosan 20 with carmustine implant:** A synthetic, biodegradable wafer containing the agent carmustine with antineoplastic activity. Used to deliver drug directly into a brain tumor site and typically implanted post-surgically, the wafer is made of a biodegradable poly-anhydride copolymer and contains the nitrosourea carmustine. As an antineoplastic nitrosourea, carmustine alkylates and cross-links DNA during all phases of the cell cycle, resulting in disruption of DNA function, cell cycle arrest, and apoptosis. Carmustine also carbamoylates proteins, including DNA repair enzymes, resulting in an enhanced cytotoxic effect. Carmustine is highly lipophilic and crosses the blood-brain barrier readily.

**polihexanide solution:** A solution containing the polymer polihexanide, with potential antimicrobial, disinfectant and wound healing activities. Upon application to a wound, polihexanide strongly binds to the wound

surface and exerts an antiseptic effect through the binding of the positively charged guanidine groups of polyhexanide with the negatively charged phospholipids of the bacterial cell membrane. This compromises the stability of the bacterial cell membrane, which results in the leakage of cytoplasmic components and leads to bacterial cell death. In addition, polyhexanide accelerates wound healing by promoting epithelial cell migration and proliferation.

**pollutant:** A substance that contaminates an environment. OR Any undesirable solid, liquid, or gaseous matter in a gaseous, liquid, or solid medium (ISO, 1977). For the meaning of "undesirable" in air pollution contexts, see pollution. A primary pollutant is a pollutant emitted into the atmosphere from an identifiable source. A secondary pollutant is a pollutant formed by chemical reaction in the atmosphere (WHO, 1980).

**pollution:** The introduction of pollutants into a solid, liquid, or gaseous medium, the presence of pollutants in a solid, liquid, or gaseous medium, or any undesirable modification of the composition of a solid, liquid, or gaseous medium (ISO, 1979). For air pollution, an undesirable modification is one that has injurious or deleterious effects. OR a substance that harms living organisms or the environment.

**Polo-like kinase 1 inhibitor GSK-461364:** A small molecule Polo-like kinase 1 (PLK1) inhibitor with potential antineoplastic activity. Polo-like kinase 1 inhibitor GSK461364 selectively inhibits Plk1, inducing selective G2/M arrest followed by apoptosis in a variety of tumor cells while causing reversible cell arrest at the G1 and G2 stage without apoptosis in normal cells. Plk1, named after the polo gene of *Drosophila melanogaster*, is a serine/threonine protein kinase involved in regulating mitotic spindle function in a non-ATP competitive manner. Check for active clinical trials using this agent.

**Polo-like kinase 1 inhibitor MK1496:** An orally bioavailable Polo-like kinase 1 (Plk1) inhibitor with potential antineoplastic activity. Polo-like kinase 1 inhibitor MK1496 selectively inhibits Plk1, inducing selective G2/M arrest followed by apoptosis in a variety of tumor cells while causing reversible cell arrest at the G1 and G2 stage without apoptosis in normal cells. Plk1, named after the polo gene of *Drosophila melanogaster*, is a serine/threonine protein kinase involved in regulating mitotic spindle function in a non-ATP competitive manner.

**Polo-like kinase 1 inhibitor NMS-1286937:** An orally bioavailable, small-molecule Polo-like kinase 1 (PLK1) inhibitor with potential antineoplastic activity. Polo-like kinase 1 inhibitor NMS-1286937 selectively inhibits PLK1, inducing selective G2/M cell-cycle arrest followed by apoptosis in a variety of tumor cells while causing reversible cell-cycle arrest at the G1 and G2 stages without apoptosis in normal cells. PLK1 inhibition may result in the inhibition of proliferation in PLK1-overexpressing tumor cells. PLK1 is a serine/threonine protein kinase crucial in the regulation of mitosis.

**Polo-like kinase 4 inhibitor CFI-400945 fumarate:** An orally available fumarate salt form of CFI-400945, a polo-like kinase 4 (PLK4) inhibitor with potential antineoplastic activity. Upon oral administration, polo-like kinase 4 inhibitor CFI-400945 selectively inhibits PLK4, which results in the disruption of mitosis and the induction of apoptosis. PLK4 inhibition also prevents cell division and inhibits proliferation of PLK4-overexpressing tumor cells. PLK4, a member of the polo family of serine/threonine kinases overexpressed in a variety of cancer cell types, plays a crucial role in the regulation of centriole duplication during the cell cycle.

**Polocaine:** (Other name for: mepivacaine hydrochloride)

**Polonium:** Symbol:"Po" Atomic Number:"84" Atomic Mass: (209)amu. Polonium is a rare element often found in nature with uranium. It is radioactive and very dangerous. You may find it as a byproduct of reactions in a nuclear reactor.

**poly (ADP-ribose) polymerase :** A type of enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. Inhibitors of one enzyme, poly (ADP-ribose) polymerase-1, are being studied in the treatment of cancer. Also called PARP.

**poly (ADP-ribose) polymerase inhibitor :** A substance that blocks an enzyme in cells called PARP. PARP helps repair DNA when it becomes damaged. DNA damage may be caused by many things, including exposure to UV light, radiation, certain anticancer drugs, or other substances in the environment. In cancer treatment, blocking PARP may help keep cancer cells from repairing their damaged DNA, causing them to die. Poly (ADP-

ribose) polymerase inhibitors are a type of targeted therapy. Also called PARP inhibitor.

**poly (ADP-ribose) polymerase-1 :** An enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. Inhibitors of poly (ADP-ribose) polymerase-1 are being studied in the treatment of cancer. Also called PARP-1.

**poly AU:** A synthetic polyadenylic-polyuridylic acid double-stranded RNA. Poly AU may stimulate the release of cytotoxic cytokines and, by inducing the production of interferon, may increase the number and tumoricidal activities of various immunohematopoietic cells. Check for active clinical trials using this agent.

**poly IC:** A synthetic polyinosinic-polycytidylic acid double-stranded RNA. Poly IC may stimulate the release of cytotoxic cytokines and, by inducing interferon-gamma production, may increase the number and tumoricidal activities of various immunohematopoietic cells.

**poly ICLC:** A synthetic complex of carboxymethylcellulose, polyinosinic-polycytidylic acid, and poly-L-lysine double-stranded RNA. Poly ICLC may stimulate the release of cytotoxic cytokines and, by inducing interferon-gamma production, may increase the tumoricidal activities of various immunohematopoietic cells.

**poly-alendronate dextran-guanidine conjugate:** A polybisphosphonate dextran-guanidine conjugate with potential anti-resorptive and antineoplastic activities. Alendronic acid and aminoguanidine were conjugated sequentially to oxidized dextran resulting in an average of 8 alendronate and 50 guanidine groups coupled to the dextran backbone. Upon administration, the poly-alendronate dextran-guanidine conjugate inhibits the mevalonate pathway by inhibiting farnesyl diphosphate synthase (FDPS) which leads to a reduction in protein prenylation and to the loss of downstream metabolites essential for osteoclast function. This eventually leads to the induction of apoptosis in osteoclasts. Also, by preventing osteoclast-mediated bone resorption, this agent decreases bone turnover and stabilizes the bone matrix. The guanidine moiety increases the nitrogen content and possibly the activity of the bisphosphonate and its ability to inhibit FDPS. In addition, the guanidine moiety facilitates cell internalization and may contribute to this agent's cytotoxicity.

**poly-gamma glutamic acid:** A water-soluble and biodegradable polymer naturally synthesized by various strains of Bacillus and composed of D- and L-glutamic acid polymerized via gamma-amide linkages, with potential antineoplastic activity. Upon administration, poly-gamma glutamic acid may augment the immune response by increasing the production of interferon-gamma (IFN-gamma) and tumor necrosis factor-alpha (TNF-alpha) and inducing the activation of macrophage and natural killer (NK) cells. In addition to its tumor control properties, IFN-gamma is a major mediator of innate and adaptive immunity against viral and intracellular bacterial infections. TNF-alpha is a cytokine involved in systemic inflammation, which is capable of inducing apoptotic cell death and exhibits anti-tumoral effects.

**poly-ICLC :** A substance that is being studied in the treatment of cancer and for its ability to stimulate the immune system. It is made in the laboratory by combining the nucleic acid RNA with the chemicals poly-L-lysine and carboxymethyl cellulose.

**poly-TLR agonist polyantigenic vaccine CADI-05:** A poly-Toll-like receptor (TLR) agonist polyantigenic vaccine containing heat killed Mycobacterium indicus pranii (Mycobacterium w or Mw) with potential immunostimulating and antineoplastic activities. Upon administration, poly-TLR agonist polyantigenic vaccine activates a number of TLRs, which may result in macrophage and plasmacytoid dendritic cell (pDC) stimulation; secretion of interferon alpha; production of pro-inflammatory cytokines; upregulation of co-stimulatory molecules, enhanced T and B-cell stimulatory responses; T cell proliferation, and a Th1 immune response. TLRs are transmembrane receptors that recognize structurally conserved microbial molecules such as bacterial cell-surface lipopolysaccharides (LPS), lipoproteins, lipopeptides, lipoarabinomannan and flagellin, among others; immune responses stimulated by TLR activation may result in antineoplastic effects.

**Poly(A) tail:** A long (as many as 250 nucleotides) polyadenylate segment added posttranscriptionally to the 3' end of most eukaryotic mRNA.

**Polya's four-step process:** A process of problem solving published in 1945 by George Polya. The steps are as follows: 1) Understand the problem; 2) Devise a plan; 3) Carry out the plan; 4) Look back over the results.

**polyacrylamide hydrogel:** A transparent, biocompatible, non-resorbable, homogenous hydrogel containing 97.5% apyrogenic water and 2.5% of the cross-linked, synthetic polyacrylamide. Upon injection into the urethral submucosal tissue, the polyacrylamide hydrogel serves as a bulk forming agent and may possibly increase the strength of the urethral sphincter and thereby prevent or decrease stress-induced urinary incontinence. Check for active clinical trials using this agent.

**Polyacrylate :** A typically acrylic acid based, short chained and highly charged water soluble anionic polymer. Used typically as dispersant and as antiscalting agent.

**Polyaluminum chloride, PAC or PAX :** Polyaluminum chloride is a generic name for aluminum-based inorganic coagulants carrying cationic charge also at neutral and mildly alkaline pH range. PAX is produced from aluminum hydrate and hydrochloric acid. PAX is used in drinking water and waste water treatment to remove impurities from the water.

**Polyamide:** A polymer in which the structural units are linked by amide or thioamide groupings. Many polyamides are fiber-forming.

**Polyamide (PA):** Also known as nylon, a thermoplastic used for high strength, puncture resistance, heat resistance, and barrier to certain gasses.

**Polyamine:** A hydrocarbon containing more than two amino groups. OR A short chained, but highly charged water soluble cationic polymer. Used typically as organic coagulant in water treatment and as anionic trash control agent in papermaking.

**polyamine analogue PG11047:** A second generation polyamine analogue, synthesized through the restriction of molecular conformations of parent polyamine compounds, with potential antineoplastic activity. Polyamine analogue PG11047 may displace endogenous polyamines from DNA binding sites, thereby interfering with cell cycle processes dependent upon polyamine binding and function, and resulting in cell-cycle arrest, induction of apoptosis, depletion of polyamines, and interference with gene and ligand-receptor activities involved with cell growth. This agent may exhibit decreased toxicity and enhanced cytotoxicity profiles compared to first-generation polyamine compounds. In tumor cells, there is an increase dependence on polyamines as well as a dysregulated polyamine metabolic pathway resulting in abnormal or sustained tumor growth.

**polyatomic ion:** A polyatomic ion is a charged particle that contains more than two covalently bound atoms. See Polyatomic Ions for more.

**polyatomic molecule:** A polyatomic molecule is an uncharged particle that contains more than two atoms.

**polycarbonate:** A polymer in which the repeating unit is an organic carbonate  $[-R-O-C(O)-O-]_n$ . OR Polycarbonate is a resilient engineering resin with excellent optical properties. It is commonly made from bisphenol A linked by carbonate groups (O-CO-O) in the Engineering Polymers family. Polycarbonate is an engineering resin that exhibits good strength and high clarity thus used in technical applications such as optical media and automotive applications such as transparent construction sheet, automotive headlamps, CDs and DVDs. Polycarbonates are also compounded with ABS and used in thin walled electronic applications such as mobile phones and laptop computer cases. PC faces some competition from other glass-like polymers such as PMMA and PS resin. It is stronger than PMMA and has a better light transmission characteristics than glasses. OR A very tough thermoplastic, usually found as a substitute for glass, e.g. vandal proof telephone kiosks, bullet proof shields, baby bottles and picnic ware. It is also extensively used in the automobile industry. OR A high impact thermoplastic resin used in making “bulletproof glass” and microwave cookware.

**Polycarbonate Resin (PC):** A family of special types of polyesters in which groups of dihydric phenols are linked through carbonate linkages.

**polycarbophil/carbomer/glycerin/palm oil glyceride/mineral oil-containing vaginal moisturizer:** A commercial combination preparation that contains an adhesive polycarbophil polymer, which is used for vaginal lubrication. Polycarbophil is an insoluble compound that absorbs water and, after topical administration, adheres to vaginal epithelial cells. As a result, it helps both moisturize vaginal tissue and relieve the discomfort that is associated with vaginal dryness.

**Polychromism:** The capacity of a solid to exhibit more than one color.

**Polycistronic message:** Refers to an mRNA molecule that encodes for more than one protein.

**Polycistronic messenger RNA:** In prokaryotes, an RNA that contains two or more cistrons; note that only in prokaryotic mRNAs can more than one cistron be utilized by the translation system to generate individual proteins.

**Polyclonal antibodies:** Antibodies that are the products of many different populations of antibody-producing cells. OR A heterogeneous pool of antibodies produced in an animal by a number of different B lymphocytes in response to an antigen. Different antibodies in the pool recognize different parts of the antigen.

**Polycondensation:** Preparation of polyesters with liberation of water.

**polycyclic aromatic hydrocarbon :** A type of chemical formed when coal, oil, gas, garbage, tobacco, meat, and other substances are burned. These chemicals are also made for use in many products, including coal tar, creosote, roofing tar, pesticides, mothballs, dandruff shampoos, and some medicines. Being exposed to one of these chemicals over a long time may cause cancer. Also called PAH.

**polycystic ovary syndrome :** A condition marked by infertility, enlarged ovaries, menstrual problems, high levels of male hormones, excess hair on the face and body, acne, and obesity. Women with polycystic ovary syndrome have an increased risk of diabetes, high blood pressure, heart disease, and endometrial cancer. Also called PCOS.

**polycythemia vera :** A disease in which there are too many red blood cells in the bone marrow and blood, causing the blood to thicken. The number of white blood cells and platelets may also increase. The extra blood cells may collect in the spleen and cause it to become enlarged. They may also cause bleeding problems and make clots form in blood vessels.

**polydactyly:** refers to extra fingers and/or toes

**polydentate:** A ligand that has more than one atom that coordinates directly to the central atom in a complex. Polydentate ligands are called chelating agents when two or more coordinating atoms are attached to the same metal ion in a complex. For example, EDTA or ethylenediaminetetraacetic acid is a hexadentate ligand of calcium ion.

**POLYDISPERSITY INDEX (PDI):** The ratio of weight average to number average molecular weight ( $M_w/M_n$ ) (see also MOLECULAR WEIGHT).

**polydipsia:** increased thirst

**Polyester:** Polyesters are a class of polymer which use ester linkages (-C-O-C(O)-) to join the monomer units. Polyesters are condensation polymers.

**Polyester:** Usual term for unsaturated polyester resin. OR A resin formed by the reaction between a dibasic acid and a dihydroxy alcohol, both organic. Modification with multi-functional acids and/or bases and some unsaturated reactants permit cross-linking to thermosetting resins. Polyesters modified with fatty acids are called Alkyds. OR A large classification of resins that are used for making textile fibers. Not a tubing compound.

**Polyester Family:** The Polyester Intermediates are the family of chemicals used in the production of the polymer polyethylene terephthalate, also known as polyester, which is used for fibre and packaging applications.

**Polyethylene (PE):** A thermoplastic material composed by polymers of ethylene. It is normally a translucent, tough, waxy solid which is unaffected by water and by a large range of chemicals. It can be supplied in high or low density depending on application and is suitable for indoor and outdoor uses. It has good resistance to chemicals and low temperatures. OR Resins of various densities produced by polymerizing ethylene gas. Examples are Low Density (LDPE), Linear Low Density (LLDPE) and High Density (HDPE). OR PolyethylenePolyethylene, also known by its scientific name, “polyethene,” is a polymer with eleven different classifications. Freelin-Wade carries both LDPE and LLDPE Polyethylene tubing. OR A thermoplastic material composed by polymers of ethylene. It is normally a translucent, tough, waxy solid which is unaffected by water and by a large range of chemicals. OR A family of resins obtained by polymerizing the gas ethylene. By varying the catalysts and methods of polymerization, properties such as density, melt index, crystallinity, degree of branching and crosslinking, molecular weight, and molecular weight distribution can be regulated over wide ranges. Further modifications are obtained by copolymerization, chlorination, and compounding additives.

**polyethylene glycol :** A polymer made by joining molecules of ethylene oxide and water together in a repeating pattern. Polyethylene glycol can be a liquid or a waxy solid. In medicine, forms of polyethylene glycol can be used in ointments, in drugs or substances to make them stay in the body longer, or in laxatives. Also called PEG.

**polyethylene glycol 1000 cetyl ether cream:** A cream containing a non-ionic surfactant belonging to the polyethylene glycol (PEG) family.

Polyethylene glycol 1000 cetyl ether is used as an ointment base, but can also be used as an emulsifier and solubilizer.

**polyethylene glycol 3350-containing enema NER1008:** An enema containing the osmotic agent polyethylene glycol (PEG) 3350, also called macrogol 3350, with laxative activity. Upon rectal administration of the PEG3350-containing enema NER1008, PEG creates an osmotic gradient, which promotes the retention of water in the bowel. This increases the water content of stool, which results in increased gastrointestinal (GI) motility, decreased stool transit time and evacuation of colonic contents.

**polyethylene glycol recombinant endostatin:** A formulation containing recombinant endostatin attached to polyethylene glycol (PEG), with potential anti-angiogenic and antineoplastic activities. Endostatin, a 20 kDa C-terminal proteolytic fragment of collagen XVIII, induces microvascular endothelial cell apoptosis and inhibits endothelial proliferation and angiogenesis, which may result in a reduction of tumor cell growth. Modification with PEG extends the circulation half-life of endostatin, improves stability and increases solubility in organic solvents. Check for active clinical trials using this agent.

**polyethylene glycosylated recombinant human megakaryocyte growth and development factor :** A form of megakaryocyte growth and development factor (MGDF) that is made in the laboratory. MGDF comes from the protein thrombopoietin, which is normally made in the body to help make platelets. Polyethylene glycosylated recombinant human megakaryocyte growth and development factor is being studied as a way to increase the number of platelets in patients receiving chemotherapy. Also called PEG-MGDF and PEG-rhMGDF.

**POLYETHYLENE TEREPHTHALATE:** A saturated thermoplastic polyester resin made by condensing ethylene glycol and terephthalic acid, used for fibers and films (for example, DuPont's "Mylar" film), and, more recently, for injection molded parts. It is extremely hard, wear-resistant, dimensionally stable, resistant to chemicals, and has good dielectric properties.

**Polyethylene Terephthalate (PET or PETE):** PET is clear, tough and has good gas and moisture barrier properties. Some of this plastic is used in PET soft drink bottles and other blow molded containers, although sheet applications are increasing. Cleaned, recycled PET flakes and pellets are in

great demand for spinning fiber for carpet yarns and producing fiberfill and geotextiles. Other applications include strapping, molding compounds and both food and non-food containers. (Adapted from Modern Plastics Encyclopedia 1995).

**Polyethylene terephthalate (PET):** A resin with outstanding clarity and good resistance to impact, along with good barrier properties to resist grease and oil, cold and sunlight. Polyethylene Terephthalate is an excellent material for use in orientation blow molding (stretch blow molding). It is commonly used for carbonated beverage bottles. Oriented PET provides very good alcohol and essential oil barrier properties, generally good chemical resistance (although acetones and ketones will attack PET) and a high degree of impact resistance and tensile strength. The orienting process also serves to improve gas and moisture barrier properties. This material does not provide resistance to high temperature application (max. temp. 160½ F). However, heat-set PET creates a container which will accept a 195½ F hot fill and exhibit the clarity of other PET containers. This process provides an alternative to glass for products such as juice.

**Polyethylene Terephthalate (PET):** PET is one of the most commonly used plastics in Europe's packaging industry for several reasons. It is very strong, it can withstand high pressures and being dropped without bursting. It has excellent gas barrier properties, so it keeps the fizz in carbonated drinks, and protects the taste of the drinks in the bottles.

**Polyethylene Terephthalate (PET) Bottle Grade:** PET bottle grade is a transparent polyethylene terephthalate polymer used mainly for bottling carbonated soft drinks and mineral water. The production of PET bottle grade is by solid state polymerisation (SSP) of PET melt phase, which increases the viscosity of the polymer by vacuum treatment, but involves no other raw materials. Due to the ubiquitous usage of PET bottle grade, plants are located in all regions.

**Polyethylene Terephthalate (PET) Melt Phase:** PET Melt Phase is the basic, amorphous grade of PET (polyethylene terephthalate) which can be used directly for the production of polyester fibre or upgraded to PET bottle grade by solid state polymerisation (SSP). PET Melt phase is produced by the melt-phase polymerisation of terephthalic acid (from PTA or DMT) with MEG. PET melt phase plants for fibre production are increasingly

concentrated in Asia, while PET melt phase plants linked to PET bottle grade operations continue to be built around the world.

**Polyethylene terephthalate glycol (PETG):** A resin with good barrier properties and outstanding clarity, with a slightly higher tolerance to distortion temperatures, as compared to PET. PETG: Glycol modified Polyethylene Terephthalate is a durable material with excellent gloss, clarity and sparkle desired for clear bottles. PETG can be processed via conventional extrusion blow molding methods, generally on machines designed to process PVC. Applications include shampoos, soaps, and detergents. PETG exhibits a good impact strength and gas barrier. The chemical resistance of PETG is fair and compatibility testing is recommended, especially with products that contain alcohol.

**Polyethylene, high-density (HDPE):** In the high-density grade, this thermoplastic material is more rigid and less permeable than the low-density grade. It also displays a higher tolerance to distortion temperatures. HDPE is the most widely used resin for extrusion blown plastic bottles. This material is economical, impact resistant, and provides a good moisture barrier. HDPE is compatible with a wide range of products including acids and caustics but is not compatible with solvents. It is usually supplied in FDA approved food grade. HDPE is naturally translucent and flexible. The addition of color will make HDPE opaque although not glossy. Adding extra weight to the bottle will yield a rigid container. HDPE is supplied flame-treated on a stock basis and lends itself readily to silk screen decoration. While HDPE provides good protection at below freezing temperatures, it cannot be used with products filled at over 160½ F or products requiring a hermetic seal.

**Polyethylene, low-density (LDPE):** Squeezability is good, especially in the low-density grade of this thermoplastic material. It also displays better resistance to impact than the high-density grade. LDPE is similar to HDPE in composition. It is less rigid and generally less chemically resistant than HDPE, but is more translucent. LDPE is used primarily for squeeze applications. LDPE is significantly more expensive than HDPE, but will yield a glossy bottle when produced in colors.

**Polyethylene, medium-density (MDPE):** MDPE combines the characteristics of low and high density polyethylene. Bottles are less

translucent than LDPE but more flexible than HDPE. Like LDPE, MDPE is glossy when produced in colors.

**polyethyleneglycol-7-ethyl-10-hydroxycamptothecin:** A polyethylene glycol (PEG) conjugate of 7-ethyl-10-hydroxycamptothecin with potential antineoplastic activity. After hydrolysis in vivo, 7-ethyl-10-hydroxycamptothecin (SN38), an active metabolite of irinotecan, is released from polyethyleneglycol-7-ethyl-10-hydroxycamptothecin (PEG-SN38); 7-ethyl-10-hydroxycamptothecin selectively stabilizes topoisomerase I-DNA covalent complexes, resulting in single-stranded and double-stranded DNA breaks, the inhibition of DNA replication, and the induction of apoptosis. This agent is designed to deliver the active metabolite to tumor cells without the need for conversion as is the case with irinotecan. Compared to unPEGylated 7-ethyl-10-hydroxycamptothecin, PEGylation improves solubility and allows for parental delivery, and may result in a longer half-life and higher exposure for tumor cells.

**polyethyleneglycol-7-ethyl-10-hydroxycamptothecin DFP-13318:** A long-acting formulation composed of 7-ethyl-10-hydroxycamptothecin (SN38), a camptothecin derivative and active metabolite of irinotecan conjugated to polyethylene glycol (PEG), via a proprietary, cleavable linker, with potential antineoplastic activity. Upon administration, the proprietary linkage system allows for very slow release of SN38 from the formulation. Upon release, SN38 selectively stabilizes covalent topoisomerase I-DNA complexes, and results in single-stranded and double-stranded DNA breaks, the inhibition of DNA replication, and the induction of apoptosis. This agent is designed to deliver the active metabolite to tumor cells without the need for conversion as is the case with irinotecan. Compared to other PEG-SN38-based formulations, the linker system in DFP-13318 increases its half-life and the exposure time for tumor cells, while decreasing both blood plasma concentrations and exposure to off-target organs; this results in increased efficacy.

**Polygam S/D:** (Other name for: therapeutic immune globulin)

**polygenic inheritance:** the condition in which some characteristics are determined by an interaction of genes on several chromosomes or at several places on one chromosome; one example is human skin color.

**polyglutamate camptothecin:** A therapeutic formulation consisting of camptothecin, an alkaloid isolated from the Chinese tree *Camptotheca*

acuminata, conjugated with polyglutamate. During the S phase of the cell cycle, camptothecin selectively stabilizes topoisomerase I-DNA covalent complexes, thereby inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when encountered by the DNA replication machinery. Conjugation with polyglutamate renders this agent more water soluble and less toxic than the parent molecule.

**polyglutamate camptothecin :** A form of the anticancer drug camptothecin that may have fewer side effects and work better than camptothecin. It is being studied in the treatment of cancer. It is a type of DNA topoisomerase inhibitor. Also called CT-2106.

**polygon:** many-sided plane closed figure. Triangle, quadrilateral, pentagon, and so on.

**polyHEMA (poly(hydroxyethyl methacrylate)) :** polymer used as hydrogel layer, soaked with an internal solution, to create solid electrolyte in CHEMFETs. The deposition of this layer (between the gate oxide of an ISFET and an ionselective membrane) is required to obtain a thermodynamically welldefined interface between the sensing membrane and solid transducer. Additionally polyHEMA reduces the noise level and eliminates the carbon dioxide interference on the CHEMFET signal.

**Polyimide Resins:** A new group of resins recently introduced in the United States. The material is an aromatic polyimide made by reacting pyromellitic dianhydride with aromatic diamines. The polymer is characterized by the fact that it has rings of four carbon atoms tightly bound together, and the manufacturers claim that the new resin has greater resistance to heat than any other unfilled organic material yet discovered. Suggested applications include components for internal combustion engines.

**Polyisobutylene:** The polymerization product of isobutylene. It varies in consistency from a viscous liquid to a rubber-like solid with corresponding variation in molecular weight from 1,000 to 400,000.

**Polyketides:** A class of compounds, including the antibiotic erythromycin, formed by the action of specific megasynthases.

**Polylactic Acid:** (PLA)- Eco-friendly biodegradable thermoplastic derived from renewable resources.

**Polyliner:** A perforated longitudinally ribbed sleeve that fits inside the cylinder of an injection molding machine; used as a replacement for conventional injection cylinder torpedoes.

**Polymer:** A high-molecular-weight organic compound, natural or synthetic, whose structure can be represented by a repeated small unit, the MER: e.g., polyethylene, rubber, cellulose. Synthetic polymers are formed by addition or condensation polymerization of monomers. If two or more monomers are involved, a copolymer is obtained. Some polymers are elastomers, some plastics.

**Polymer :** When certain individual molecules (monomers) come together and link up in a chain-like manner, they form a polymer. A high molecular weight, chain-like substance with a similar repeating chemical structure along the whole molecule chain. Made from smaller building blocks, monomers. OR Another word for plastic material made from chains of molecules of one or more monomers. Polymers (plastics) are organic substances of high molecular weight, made from hundreds or thousands of molecules linked together in a repeating chain pattern. OR The generic word used to describe many plastics. Specifically, a polymer can be natural or synthetic. The compounds are formed from many low molecular weight monomers that are combined into long molecular chains. OR A high-molecular-weight organic compound, natural or synthetic, whose structure can be represented by a repeated small unit, the MER: e.g., polyethylene, rubber, cellulose. Synthetic polymers are formed by addition or condensation polymerization of monomers. If two or more monomers are involved, a copolymer is obtained. Some polymers are elastomers, some plastics. OR A short, often synthetic, fragment of DNA containing recognition sequences for several restriction endonucleases. OR Molecules which are composed of linked repeating units (called monomers) are referred to as polymers. Polymers are the basis for many plastics and synthetic fibers such as Teflon and polyester. OR Polymers are very large molecules made from repeating units formed when many small, reactive molecules (called monomers) join together. OR Polymer is the name given to a solid that is constructed by the repeated addition of simple monomer units. The majority of petrochemical value chains end in the production of a useful polymer material, with examples including polyethylene, polystyrene and polyester. OR Substance, the molecules of which consist of one or more structural units repeated any number of times; vinyl resins are examples of

true polymers. OR A large molecule (molecular weight ~10 000 or greater) composed of many smaller molecules (monomer) covalently bonded together. Some of us think they are much better than any of those little molecules, but the other chemists are always telling us size doesn't matter. OR This binder is produced from petrochemical feedstocks. The binder's polymer particles are small in size and carried in water. The binder polymer and water mix is known as emulsion. OR a very large molecule composed of repeating smaller units. OR A large molecule formed by combining many similar, smaller molecules OR A large molecule made by linking smaller molecules ("monomers") together. OR A molecule made up of small identical molecules called monomers. The monomers are joined together in a repeating pattern.

**Polymer (Synthetic):** The product of a polymerization reaction. The product of polymerization of one monomer is called a homopolymer, monopolymer or simply a polymer. When two different monomers are polymerized simultaneously the product is called a copolymer. The term terpolymer is sometimes used for polymerization products of three monomers.

**Polymer Chains:** A linear polymer is a polymer in which the monomers are bound to each other in a straight chain without any branches. Branched polymers have branched connections of molecules. Copolymers are polymers with repeating molecular units from at least two different monomers. Two kinds of arrangements are possible: random and alternating, resulting in random copolymers and alternating copolymers. Such polymers are called block-copolymers, characterized by both monomers A and B forming the backbone chain of the polymer. They have repeating monomers in linearly connected blocks. Another possibility is the formation of a graft-copolymer, which is essentially a branched-chain structure. It has side chains composed of one type of monomer unit attached to the backbone or main chain from another monomer unit.

**Polymer Matrix:** A mass of polymer consisting of a number of chains is often described as being a polymer matrix. In a mass of polymer like this, the chains will often be entangled. If the chains can slide past each other easily, the polymer matrix will be rubbery and flexible; if they cannot, the matrix will be hard and glassy.

**Polymer Process Aid (PPA):** Additives incorporated into plastic material as a modifier to help in the extrusion of plastic materials.

**POLYMER PROCESS AID (PPA):** Additives which are added or incorporated into plastics as a modifier to aid in the extrusion of film, pipe, sheet, etc.

**Polymer Scientist:** A species of selfless professional divided into two subspecies: polymer physicists, who do boring stuff, and polymer chemists, who do exciting stuff. The highest form of sentient life.

**Polymer Structure :** A general term referring to the relative positions, arrangement in space, and freedom of motion of atoms in a polymer molecule.

**Polymerase:** An enzyme that catalyzes the synthesis of a polymer from monomers. OR An enzyme that catalyzes the step-by-step addition of ribo- or deoxyribonucleotide units to a polynucleotide chain.

**Polymerase chain reaction:** A method for amplifying DNA sequences by using DNA polymerase; a series of three-step cycles is employed, in which parental DNA strands are separated by heating, primers to flanking regions of the target sequence are annealed to the separated strands, and the primers are then extended by DNA synthesis. OR A repetitive procedure that results in a geometric amplification of a specific DNA sequence.

**polymerase chain reaction :** A procedure that produces millions of copies of a short segment of DNA through repeated cycles of: (1) denaturation, (2) annealing, and (3) elongation. Polymerase chain reaction is a very common procedure in molecular genetic testing and may be used to generate a sufficient quantity of DNA to perform a test (e.g., allele-specific amplification, trinucleotide repeat quantification). Also called PCR. or A laboratory method used to make many copies of a specific piece of DNA from a sample that contains very tiny amounts of that DNA. Polymerase chain reaction allows these pieces of DNA to be amplified so they can be detected. Polymerase chain reaction may be used to look for certain changes in a gene or chromosome, which may help find and diagnose a genetic condition or a disease, such as cancer. It may also be used to look at pieces of the DNA of certain bacteria, viruses, or other microorganisms to help diagnose an infection. Also called PCR.

**polymeric camptothecin prodrug XMT-1001:** A polymeric prodrug of camptothecin (CPT) with potential antineoplastic activity. Polymeric

camptothecin prodrug XMT-1001 consists of CPT conjugated to the 60-70 kDa, inert, bio-degradable, hydrophilic copolymer poly[1-hydroxymethylene hydroxymethyl formal] (PHF). Through a dual-phase, non-enzymatic release mechanism, CPT is first released in plasma from XMT-1001 as the lipophilic prodrugs CPT-SI (a succinimidoglycinate derivative) and CPT-SA (a succinamidoyl glycinate derivative), which are then hydrolyzed within tissues to release the lactone form of CPT. CPT inhibits the catalytic activity of DNA topoisomerase I, thereby inhibiting DNA replication and inducing apoptosis. This agent may exhibit a more favorable pharmacokinetic profile than other agents in the same class.

**polymeric enteral nutrition formula :** A nutritional drink that may help people who cannot get everything they need in their diet from foods and other drinks. It may be taken by mouth or given through a small tube inserted through the nose into the stomach or the small intestine. It may also be given through a small tube that is put into the stomach or intestinal tract through an opening made on the outside of the abdomen. One example of a polymeric enteral nutrition formula is Ensure. Polymeric enteral nutrition formula is a type of dietary supplement.

**Polymeric membrane matrix:** inert polymeric phase providing necessary physical properties (i.e. mechanical stability, elasticity and solubility of membrane components) of the ionselective polymeric liquid membrane. Originally, liquid ISE membranes were obtained by soaking porous materials with a solution of the ionophore in organic solvent. Homogenous polymeric membranes have been used firstly as membrane matrix for charged carriers. The most often used polymeric membrane matrix is plasticized PVC (the plasticizer is necessary due to the high Tg of PVC). Other polymer, which not require plasticizer (Tg below room temperature), like silicone rubber, polysiloxanes, polyurethanes are also applied as matrix of liquid membranes.

**Polymerisation:** The process in which many small molecules (molecular weight ~100) are joined together to form a few, much larger molecules (molecular weight 10 000 - 10 000 000). The two ways in which this happens are chain-growth and step-growth polymerisation.

**Polymerization:** The interlocking of molecules by chemical reaction to produce very large molecules. The process of making plastics and plastic-based resins. OR the process by which an organic compound reacts with

itself to form a high-molecular-weight compound from repeating units of the original compound. Polymerization occurs by either cationic or free-radical mechanisms. OR A process that links smaller molecules together to form a larger molecule. OR The process of converting a monomer or a mixture of monomers into a polymer. Addition polymerization is the stepwise addition of a simple repeated unit. Or, the reaction that yields a product that is an exact multiple of the original monomeric molecule. Condensation polymerization is the combination of functional molecules, leading to the formation of a polymer with the liberation of simple by-products, usually water. OR A chemical reaction in which the molecules of a monomer are linked together to form large molecules whose molecular weight is a multiple of that of the original substance. When two or more monomers are involved, the process is called copolymerization or heteropolymerization.

**polymerize:** To link smaller molecules together to form a larger molecule.

**Polymethyl Methacrylate:** A thermoplastic material composed of polymers of methyl methacrylate. It is a transparent solid with exceptional optical properties and good resistance to water. It is obtainable in the form of sheets, granules, solutions, and emulsions. It is extensively used for aircraft domes, lighting, fixtures, decorative articles, etc.; it is also used in optical instruments and surgical appliances.

**polymorph:** Solid substances that occur in several distinct forms. Polymorphs have different chemical and physical properties. allotropes are polymorphs of elements.

**Polymorph (polymorphism):** One of the different crystal structures in which a compound can crystallize. Polymorphs are best characterized by their space group and unit-cell parameters. This term is usually reserved for materials with the same elemental analysis.

**polymorphic:** Describing a protein for which amino acid sequence variants exist in a population of organisms, but the variations do not destroy the protein's function.

**Polymorphic transformation:** A physical transformation in which the crystal structure of a compound is converted to a different crystal structure.

**polymorphism :** A common mutation. “Common” is typically defined as an allele frequency of at least 1%. All genes occur in pairs, except when x and y chromosomes are paired in males; thus a polymorphism with an allele

frequency of 1% would be found in about 2% of the population, with most carriers having one copy of the polymorphism and one copy of the normal allele. or A common change in the genetic code in DNA. Polymorphisms can have a harmful effect, a good effect, or no effect. Some polymorphisms have been shown to increase the risk of certain types of cancer.

**polymorphonuclear leukocyte :** A type of immune cell that has granules (small particles) with enzymes that are released during infections, allergic reactions, and asthma. Neutrophils, eosinophils, and basophils are polymorphonuclear leukocytes. A polymorphonuclear leukocyte is a type of white blood cell. Also called granular leukocyte, granulocyte, and PMN.

**Polymox:** (Other name for: amoxicillin)

**PolyMVA:** (Other name for: alpha-lipoic acid/vitamin/mineral supplement PolyMVA)

**polymyositis :** An inflammatory disease of the muscles closest to the center of the body. It causes weakness, inability to stand, climb stairs, lift, or reach. It may also cause muscle pain and difficulty swallowing, and may affect the lungs and heart. Having polymyositis increases the risk of certain types of cancer.

**polymyxin B:** A mixture of the polypeptides polymyxins B1 and B2, both obtained from *Bacillus polymyxa* strains, with antimicrobial activity.

Polymyxin B exerts its antimicrobial effect through its cationic detergent action on cell membranes. Specifically, this antibiotic binds to the negatively charged site in the lipopolysaccharide layer of the bacterial cell membrane via electrostatic affinity with the positively charged amino groups in the cyclic peptide portion. Subsequently, the fatty acid portion of polymyxin B dissolves in the hydrophobic region of the bacterial cell membrane. This results in an alteration in cell membrane structure, disruption of cell wall integrity and an increase in permeability for water and molecules. This will eventually lead to bacterial cell death.

**polyneuritis :** Inflammation of several peripheral nerves at the same time.

**Polynucleotide:** A chain structure containing nucleotides linked together by phosphodiester (5'-3') bonds. The polynucleotide chain has a directional sense with a 5' and a 3' end. OR A covalently linked sequence of nucleotides in which the 3' hydroxyl of the pentose of one nucleotide residue is joined by a phosphodiester bond to the 5' hydroxyl of the pentose of the next residue.

**Polynucleotide phosphorylase:** An enzyme that polymerizes ribonucleotide diphosphates. No template is required.

**Polyolefin:** A polymer of olefins, molecules that have an alkene (double bond) functionality. These polymers include polystyrene and poly(vinyl chloride). They are normally formed by free radical polymerisation (a form of addition polymerisation).

**Polyolefins:** Polyolefins is the name given to the polymers of the olefin family. By convention these are the single double bond olefins and the grouping does not contain rubber compounds that can be produced by polymerising butadiene.

**Polyoxymethylene:** A polymer in which the repeated structural unit in the chain is oxymethylene.

**polyp :** A growth that protrudes from a mucous membrane.

**polypectomy :** Surgery to remove a polyp.

**Polypeptide:** A linear polymer of amino acids held together by peptide linkages. The polypeptide has a directional sense, with an amino- and a carboxy-terminal end. OR A series of amino acids, each connected to the next in the series by a peptide bond. OR A long chain of amino acids linked by peptide bonds; the molecular weight is generally less than 10,000. OR A substance that contains many amino acids (the molecules that join together to form proteins).

**polyphagia:** increased appetite

**polyphenol :** A substance that is found in many plants and gives some flowers, fruits, and vegetables their color. Polyphenols have antioxidant activity.

**Polyphenon E :** A mixture that is prepared from the leaves of the Camellia sinensis plant. It contains substances called catechins, which are antioxidants. Antioxidants help protect cells from damage caused by certain chemicals that may increase the risk of cancer and other diseases.

Polyphenon E is being studied in the prevention of cancer and other diseases. It is a trademarked product of Mitsui Norin Co., Ltd.

**Polyphenon E Ointment:** (Other name for: kunecatechins ointment)

**polyposis :** The development of numerous polyps (growths that protrude from a mucous membrane).

**Polypropylene (PP):** Polypropylene (PP) is the propylene analogue of polyethylene and is also a member of the polyolefin family. PP has a higher chemical and temperature resistance than the polyethylenes. It also has a higher toughness than HDPE and can be used in applications that experience cycling loads. PP's mechanical properties are allowing it to grow into markets that previously specified Engineering Polymers, such as under bonnet applications in the automotive industry. PP goods are commonly marked with a 5 following the recycling codes developed by the American Society of the Plastics Industry. PP is commonly produced using specialized Ziegler-Natta catalysts in slurry reactors. OR A tough, lightweight, rigid plastic made by the polymerization of high-purity propylene gas in the presence of an organometallic catalyst at relatively low pressures and temperatures. Polypropylene is a naturally translucent material which provides contact clarity and an excellent moisture barrier. PP is easily processed via injection molding (jars and closures), and injection, extrusion, or stretch blow-molding (bottles). One major advantage of polypropylene is its stability at high temperatures, up to 200½ F. Polypropylene is autoclavable and offers the potential for steam sterilization. The compatibility of PP with high filling temperatures is responsible for its use with hot fill products such as pancake syrup. PP has excellent chemical resistance, but provides poor impact resistance in cold temperatures. Oriented PP offers improved impact resistance and clarity at low temperatures. Produced in color, PP exhibits a glossy finish. OR Polypropylene has excellent chemical resistance, is strong and has the lowest density of the plastics used in packaging. It has a high melting point, making it ideal for hot-fill liquids. In film form it may or may not be oriented (stretched). PP is found in everything from flexible and rigid packaging to fibers and large molded parts for automotive and consumer products. (Adapted from Modern Plastics Encyclopedia 1995; Plastic Packaging Opportunities and Challenges, February 1992).

**polyprotic:** refers to an acid with several hydrogens that can ionize.

**polyribosome:** See polysome.

**Polyribosome (polysome):** A complex of an mRNA and two or more ribosomes actively engaged in protein synthesis.

**Polysaccharide:** These are very complicated carbohydrates made of simple sugars (glucose, fructose) in long chains. The chains include many

mono-saccharides. They are found in the cell wall and other areas of organisms. Cellulose is a good example of a poly-saccharide. OR Any of a class of carbohydrates consisting of chains of simple sugars; see oligosaccharide, glycan OR A linear or branched chain structure containing many sugar molecules linked by glycosidic bonds. OR A carbohydrate consisting of a large number of linked monosaccharide units. Examples of polysaccharides are cellulose and starch.

**polysaccharide :** A large carbohydrate molecule. It contains many small sugar molecules that are joined chemically. Also called glycan.

**polysaccharide-K:** A protein-bound polysaccharide derived from the mushroom *Trametes versicolor* (Turkey Tail) with immunoadjuvant and potential antitumor activities. Although its mechanism of action has yet to be fully elucidated, in vitro and in vivo studies indicate that polysaccharide-K induces peripheral blood monocyte secretion of IL-8 and TNF-alpha, induces T cell proliferation, and prevents cyclophosphamide-induced immunosuppression. This agent has also been reported to stimulate macrophages to produce reactive nitrogen intermediates and superoxide anions and to promote apoptosis in the promyelocytic leukemia cell line HL-60.

**Polysaccharides:** Carbohydrates composed of large numbers of linear or branched monosaccharide units; homopolysaccharides are composed of large numbers of one type of sugar, whereas heteropolysaccharides contain more than one type. OR complex carbohydrates formed by linking multiple monosaccharides. OR A linear or branched polymer of monosaccharide units linked by glycosidic bonds.

**Polysome:** A group of ribosomes bound to an mRNA molecule and simultaneously carrying out translation. Also called polyribosome.

**polysome (polyribosome):** A complex of an mRNA molecule and two or more ribo

**polysomes:** also called polyribosomes, are a cluster of ribosomes, bound to a mRNA

**polysomnogram :** A group of recordings taken during sleep that shows brain wave changes, eye movements, breathing rate, blood pressure, heart rate, and the electrical activity of the heart and other muscles. A polysomnogram may be used to help diagnose sleep disorders.

**Polystyrene:** Is an aromatic polymer made from the aromatic monomer styrene, a liquid hydrocarbon that is commercially manufactured from petroleum by the chemical industry. Polystyrene is one of the most widely used materials in custom thermoforming. OR Thermoplastic compound used to make plastic containers, closures and more. OR Polystyrene is a very versatile plastic that can be rigid or foamed. General purpose polystyrene is clear, hard and brittle. It has a relatively low melting point. Typical applications include protective packaging, containers, lids, cups, bottles, trays and tumblers. (Plastic Packaging Opportunities and Challenges, February 1992). OR A water-white thermoplastic produced by the polymerization of styrene (vinyl benzene). The electrical insulating properties of polystyrene are outstandingly good and the material is relatively unaffected by moisture

**Polystyrene (PS):** Polystyrene (PS) is a solid aromatic polymer made from the monomer styrene. A commodity polymer used largely for semi/rigid packaging applications, it can be melted at high temperature for molding or extrusion, and then resolidified. It is commonly used as insulation in building structures and packaging. Other applications include electronics housing.

**Polytetrafluoroethylene (PTFE) Resins:** Members of the fluorocarbons family of plastics made by the polymerization of tetrafluoroethylene. PTFE is characterized by its extreme inertness to chemicals, very high thermal stability and low frictional properties. Among the applications for these materials are bearings, fuel hoses, gaskets and tapes, and coatings for metal and fabric.

**Polytetrafluoroethylene (PTFE):** A highly resistant plastic that does not react to chemical influences. It is most commonly known by its brand name, Teflon®.

**polyunsaturated fatty acid:** A fatty acid containing more than one double bond (C=C). The essential fatty acids omega-3 and omega-6 are polyunsaturated fatty acids (PUFAs) that contain 2 or more cis double bonds. Dietary intake of some PUFAs may have beneficial effects on blood pressure, serum lipids, and inflammation. Some PUFAs, such as omega-3 PUFAs, may have antineoplastic or chemopreventive activities.

**Polyurethane:** Polyurethane A thermoplastic noted for its high resistance to abrasion while being highly flexible and kink resistant. Available in both

an ether and ester base. The ester-based PUR is less desirable due to how it degrades in moisture. The ether-based polymer is much more durable and the key component in Freelin-Wade's Fre-Thane® polyurethane tubing. An outstanding tubing compound, available in four primary durometers.

**Polyurethane:** Polyurethanes are made by the reaction of isocyanates (MDI and TDI) with polyols. Polyurethanes can be in the form of flexible or rigid foams, elastomers, coatings, adhesives and low molecular weight additives. MDI is typically used for rigid foams, whereas TDI is used mostly in flexible foams.

**POLYURETHANE:** Wide range of coatings, ranging from hard gloss enamels to soft flexible coatings. Good to very good adhesion, hardness, flexibility and resistance. Surface preparation critical.

**Polyurethane (PUR):** Polyurethane is categorised as a polymer. It is a resilient, flexible and durable material that can be rigid or soft, protective like varnish, elastic like rubber, or have adhesive qualities. Polyurethanes are used in the manufacture of flexible, high-resilience foam seating; rigid foam insulation panels, microcellular foam seals and gaskets, elastomeric wheels and tires, automotive suspension units, high performance adhesives, surface coatings and surface sealants, synthetic fibres, carpet underlay, and hard-plastic parts (e.g., for electronic instruments). Polyurethane is also used for the manufacture of hoses and skateboard wheels as it combines the best properties of both rubber and plastic.

**Polyurethane Resins:** A family of resins produced by reacting diisocyanate with organic compounds containing two or more active hydrogens to form polymers having free isocyanate groups. These groups, under the influence of heat or certain catalysts, will react with each other, or with water, glycols, etc., to form a thermosetting material.

**polyuria:** excess urinary water and electrolyte output

**polyvalent antigen-KLH conjugate vaccine:** A multivalent cancer vaccine comprised of the five tumor-associated antigens (TAAs) globo H, GM2 ganglioside, Tn-MUC1, TF, and sTn conjugated with the immunoadjuvant keyhole limpet hemocyanin (KLH), with potential antineoplastic activity. Upon administration, polyvalent antigen-KLH conjugate vaccine may induce production of IgG and IgM antibodies and antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells expressing these TAAs, resulting in tumor cell death and tumor growth

inhibition. Globo H (globo H hexasaccharide 1); GM2 ganglioside; Tn-MUC1 (human tumor-associated epithelial mucin 1 carrying the tumor-specific glycan Tn); TF (Thompson-Friedreich); and sTn (sialyl-Tn) are overexpressed in a variety of cancer cells. KLH is a hapten carrier and serves as an immunostimulant to improve immune recognition of antigens. Check for active clinical trials using this agent.

**polyvalent melanoma vaccine:** A cancer vaccine consisting of whole irradiated heterologous melanoma cells which express multiple melanoma-related antigens. Polyvalent melanoma vaccine may stimulate an antitumoral cytotoxic T-cell immune response in the host, resulting in inhibition of tumor cell proliferation and tumor cell death.

**Polyvinyl Acetal:** A member of the family of vinyl plastics. Polyvinyl acetal is the general name for resins produced from a condensation of polyvinyl alcohol with an aldehyde. There are three main groups: polyvinyl acetal itself; polyvinyl butyl, and polyvinyl formal. Polyvinyl acetal resins are thermoplastics which can be processed by casting, extruding, molding and coating, but their main uses are in adhesives, lacquers, coatings and films.

**POLYVINYL ACETATE:** A thermoplastic material composed of polymers of vinyl acetate in the form of a colorless solid. Used extensively in adhesives for paper and fabric coatings.

**POLYVINYL ALCOHOL:** A thermoplastic material composed of polymers of the hypothetical vinyl alcohol.

**Polyvinyl Carbazole:** A thermoplastic resin, brown in color, obtained by reacting acetylene with carbazole. The resin has excellent electrical properties and good heat and chemical resistance. It is used as an impregnate for paper capacitors.

**Polyvinyl Chloride:** A synthetic resin used in the binders of coatings. Tends to discolor under exposure to ultraviolet radiation. Commonly called "vinyl."

**POLYVINYL CHLORIDE:** Thermoplastic compounds formed by polymerization or copolymerization of vinyl or vinylidene chlorides and vinyl esters.

**Polyvinyl Chloride (PVC):** Polyvinyl chloride (PVC) is a versatile polymer, produced by the polymerisation of VCM. PVC is almost always

converted into a compound by the incorporation of additives, allowing it to be used in both rigid and flexible forms as a plastic resin. Extensively used in the construction sector, PVC has a wide variety of applications, including pipe, siding and window/door profiles, wire and cable insulation, rigid film/sheet, and flooring. OR Polyvinyl Chloride (PVC): PVC tubing is made from a polymer that is tasteless, odorless and will not degrade in most organic solvents. When a plasticizer is introduced, the compound becomes highly flexible with good abrasion resistance. Does not break down the way rubber does. OR A thermoplastic material composed of copolymers of vinyl chloride and vinyl acetate; a colorless solid with good resistance to water, and concentrated acids and alkalies. It is obtainable in the form of granules, solutions, and emulsions. Compounded with plasticizers it yields a flexible material superior to rubber in aging properties. It is widely used for cable and wire coverings, in chemical plants, and in protective garments.

**Polyvinylidene chloride (PVDC):** Improves barrier properties to increase shelf life or to protect product. Used as a barrier material in a coating form, a layer in lamination or as part of a coextruded structure for a rigid container.

**polyvinylpyrrolidone-sodium hyaluronate gel:** An oral bioadherent gel containing polyvinylpyrrolidone (PVP) and sodium hyaluronate with mucoprotective activity. Upon oral application, this gel adheres to the mucosal surface of the mouth and throat, forming a thin layer that acts as a barrier to protect exposed and sensitized nerve endings from the painful stimuli associated with eating, drinking, and talking. or A gel used to lessen pain from mouth sores caused by chemotherapy or radiation therapy, oral surgery, braces, or disease. Polyvinylpyrrolidone-sodium hyaluronate gel is being studied in the treatment of pain caused by mouth sores in children receiving cancer treatment. It forms a thin layer over the surface of the mouth and throat to prevent irritation while eating, drinking, and talking. Also called Gelclair.

**POM:** The chemical abbreviation for Acetal, also known as Polyoxymethylene.

**pomalidomide:** An orally bioavailable derivative of thalidomide with potential immunomodulating, antiangiogenic and antineoplastic activities. Although its exact mechanism of action has yet to be fully elucidated, pomalidomide appears to inhibit TNF-alpha production, enhance the

activity of T cells and natural killer (NK) cells and enhance antibody-dependent cellular cytotoxicity (ADCC). In addition, pomalidomide may inhibit tumor angiogenesis, promote cell cycle arrest in susceptible tumor cell populations, and stimulate erythropoiesis. or A drug that is a form of thalidomide, and is used to treat multiple myeloma that has not gotten better with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Pomalidomide may help the immune system kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of immunomodulating agent and a type of antiangiogenesis agent. Also called CC-4047 and Pomalyst.

**Pomalyst :** A drug that is a form of thalidomide, and is used to treat multiple myeloma that has not gotten better with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Pomalyst may help the immune system kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of immunomodulating agent and a type of antiangiogenesis agent. Also called CC-4047 and pomalidomide.

**pomegranate :** A subtropical shrub or tree. Juice from the fruit may contain substances that decrease or slow the rise of prostate-specific antigen (PSA) levels. It is being studied for its ability to delay or prevent recurrent prostate cancer. The scientific name is *Punica granatum*.

**pomegranate juice:** A natural juice isolated from the fruit of the plant *Punica granatum* with antioxidant, potential antineoplastic, and chemopreventive activities. Pomegranate juice contains flavonoids which promote differentiation and apoptosis in tumor cells by down-regulating vascular endothelial growth factor (VEGF) and stimulating migration inhibitory factor (MIF), thereby inhibiting angiogenesis. The flavanoids in pomegranate juice also scavenge reactive oxygen species (ROS) and, in some cell types, may prevent ROS-mediated cell injury and death.

**pomegranate liquid extract:** A liquid extract preparation derived from pomegranate (*Punica granatum*) seeds with antioxidant, and potential antineoplastic and chemopreventive activities. Pomegranate liquid extract contains flavonoids which may promote differentiation and apoptosis in tumor cells by down-regulating vascular endothelial growth factor (VEGF) and stimulating migration inhibitory factor (MIF), thus inhibiting angiogenesis. Pomegranate liquid extract flavanoids also scavenge reactive

oxygen species (ROS) and, in some cell types, may prevent ROS-mediated cell injury and death.

**pomegranate-extract pill:** A pill formulation of polyphenol extracts derived from the fruit of the deciduous shrub *Punica granatum* with antioxidant and potential chemopreventive activities. By binding and neutralizing free-radical compounds, the polyphenol extracts contained in pomegranate-extract pill may prevent their genotoxic and carcinogenic effects. Check for active clinical trials using this agent.

**Pompe disease:** A disease that affects all tissues and is due to a lack of a lysosomal glycogen-degrading enzyme; the glycogen is structurally normal but present in abnormally large amounts; death results at an early age from cardiovascular failure.

**POMx:** (Other name for: pomegranate-extract pill)

**ponatinib hydrochloride:** An orally bioavailable multitargeted receptor tyrosine kinase (RTK) inhibitor with potential antiangiogenic and antineoplastic activities. Ponatinib hydrochloride inhibits unmutated and all mutated forms of Bcr-Abl, including T315I, the highly drug therapy-resistant missense mutation of Bcr-Abl. This agent also inhibits other tyrosine kinases including those associated with vascular endothelial growth factor receptors (VEGFRs) and fibroblast growth factor receptors (FGFRs); in addition, it inhibits the tyrosine kinase receptor TIE2 and FMS-related tyrosine kinase receptor-3 (Flt3). RTK inhibition by ponatinib hydrochloride may result in the inhibition of cellular proliferation and angiogenesis and may induce cell death. Bcr-Abl is a fusion tyrosine kinase encoded by the Philadelphia chromosome. or A drug used to treat chronic myelogenous leukemia (CML) and Philadelphia chromosome-positive acute lymphoblastic leukemia. It is used in patients who are not able to take or have not gotten better after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Ponatinib hydrochloride blocks BCR-ABL and other proteins, which may help keep cancer cells from growing and may kill them. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called Iclusig.

**ponesimod:** An orally available sphingosine-1-phosphate receptor 1 (S1PR1, S1P1) agonist that acts as a functional antagonist, with potential

immunomodulating activity. Upon oral administration, ponesimod selectively binds to S1PR1 on lymphocytes and causes transient receptor activation followed by S1PR1 internalization and degradation. This results in the sequestration of lymphocytes in lymph nodes. By preventing egress of lymphocytes, ponesimod reduces both the number of circulating peripheral lymphocytes and the infiltration of lymphocytes into target tissues. This prevents a lymphocyte-mediated immune response. S1PR1, a G-protein coupled receptor, plays a key role in lymphocyte migration from lymphoid tissues.

**pons:** the portion of the hindbrain below the medulla and the midbrain that acts as a bridge between various portions of the brain. OR Part of the central nervous system, located at the base of the brain, between the medulla oblongata and the midbrain. It is part of the brainstem.

**pontine :** Having to do with the pons (part of the central nervous system, located at the base of the brain, between the medulla oblongata and the midbrain).

**Pool reactor:** A reactor in which the fuel elements are suspended in a pool of water that serves as the reflector, moderator, and coolant. Popularly called a "swimming pool reactor," it is used for research and training, not for electrical generation.

**Poor gloss level on new paintwork:** Condensation forming on the surface soon after application can take the gloss of new paintwork. This can be caused by painting in cold, damp conditions or painting outside when rain or frost are imminent. Porous under-surfaces can also absorb gloss and make it appear dull. To remedy, lightly abrade the surface and apply a further finishing coat of paint when conditions more favourable.

**population:** an interbreeding group of individuals of one species occupying a defined geographic area.

**population (general usage):** The total number of persons inhabiting a country, town, or other area. A population may also be defined by some other characteristic (such as biological, legal, social, or economic) than living in a particular area, e.g., the male population, the gainfully occupied population.

**population (statistics):** The totality of items under consideration. Every clearly defined part of a population is called a "subpopulation". In the case of a random variable, the probability distribution is considered as defining

the population of that variable (ISO, 1977). The term Population Segment is sometimes used as a synonym for subpopulation.

**population at risk:** The number of people who can develop the adverse health effect under study and who are potentially exposed to the risk factor of interest. For example, all people in a population who have not developed immunity to an infectious disease are at risk of developing the disease, if they are exposed. Similarly, people already having chronic disease are excluded from the population at risk in studies of the incidence of the disease (WHO, 1979).

**population critical concentration (PCC):** The concentration of a chemical in the critical organ (toxicology) at which a specified percentage of the exposed population has reached their individual critical organ concentrations. The percentage indicated by PCC-10 for 10%, PCC- 50 for 50% etc. (similar to the use of the term LC50) (Kjellström et al., 1984).

**population risk :** The proportion of individuals in the general population who are affected with a particular disorder or who carry a certain gene; often discussed in the genetic counseling process as a comparison to the patient's personal risk given his or her family history or other circumstances.

**population study :** A study of a group of individuals taken from the general population who share a common characteristic, such as age, sex, or health condition. This group may be studied for different reasons, such as their response to a drug or risk of getting a disease.

**porcine :** Having to do with or coming from pigs.

**porcupine inhibitor ETC-1922159:** An orally bioavailable inhibitor of the membrane-bound O-acyltransferase (MBOAT) porcupine (PORCN), with potential antineoplastic activity. Upon oral administration, ETC-1922159 binds to and inhibits PORCN in the endoplasmic reticulum (ER), which blocks post-translational palmitoylation of Wnt ligands and inhibits their secretion. This prevents the activation of Wnt ligands, interferes with Wnt-mediated signaling, and inhibits cell growth in Wnt-driven tumors. Porcupine catalyzes the palmitoylation of Wnt ligands, and plays a key role in Wnt ligand secretion. Wnt signaling is dysregulated in a variety of cancers.

**porcupine inhibitor WNT974:** An orally available inhibitor of porcupine (PORCN), with potential antineoplastic activity. Upon oral administration,

WNT974 binds to and inhibits PORCN in the endoplasmic reticulum (ER), which blocks post-translational acylation of Wnt ligands and inhibits their secretion. This prevents the activation of Wnt ligands, interferes with Wnt-mediated signaling, and inhibits cell growth in Wnt-driven tumors.

Porcupine, a membrane-bound O-acyltransferase (MBOAT), is required for the palmitoylation of Wnt ligands, and plays a key role in Wnt ligand secretion and activity. Wnt signaling is dysregulated in a variety of cancers.

**pore space:** open space between sediment grains.

**porfimer sodium:** The sodium salt of a mixture of oligomers formed by ether and ester linkages of up to eight porphyrin units with photodynamic activity. Absorbed selectively by tumor cells, porfimer produces oxygen radicals after activation by 630 nm wavelength laser light, resulting in tumor cell cytotoxicity. In addition, tumor cell death may occur due to ischemic necrosis secondary to vascular occlusion that appears to be partly mediated by the release of thromboxane A<sub>2</sub>. or A drug used to treat some types of cancer. When absorbed by cancer cells and exposed to light, porfimer sodium becomes active and kills the cancer cells. It is a type of photodynamic therapy agent. Also called Photofrin.

**porfiromycin:** An N-methyl derivative of the antineoplastic antibiotic mitomycin C isolated from the bacterium *Streptomyces ardens* and other *Streptomyces* bacterial species. Bioreduced porfiromycin generates oxygen radicals and alkylates DNA, producing interstrand cross-links and single-strand breaks, thereby inhibiting DNA synthesis. Porfiromycin is preferentially toxic to hypoxic cells. or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called anticancer antibiotics.

**Porin:** A transmembrane protein that forms channels in the outer mitochondrial membrane, permitting the passage of small molecules and ions to the inner membrane space.

**porosity:** The ratio of the size of a material's pores to the volume of the material's mass. OR The degree to which a material will absorb liquids. OR of a rock or sedimentary deposit, the percentage of volume that consists of voids and open space. OR the percentage of open space between soil particles and rocks. OR Undesired voids included in a part. Porosity can manifest in many sizes and shapes from many causes. Generally, a porous part will be less strong than a fully dense part. OR Air pockets or voids in a

moulded product. Porosity can also be expressed as the ratio of void volume to total product volume.

**Porous:** Porous rocks have tiny holes in them that can soak up water or other liquids. Crude oil is found soaked into porous rocks.

**Porphyrias:** Inherited or acquired metabolic disorders caused by an enzyme deficiency in the biosynthetic pathway for heme; often characterized by the accumulation of one or more pathway intermediates in blood or other tissues, as well as their excretion in urine.

**Porphyrin:** A complex planar structure containing four substituted pyrroles covalently joined in a ring and frequently containing a central metal atom. For example, heme is a porphyrin with a central iron atom.

**porphyrin:** Complex nitrogenous compound containing four substituted pyrroles covalently joined into a ring; often complexed with a central metal atom.

**porphyritic:** of an igneous rock, containing coarser crystals that are supported in a fine-grained groundmass.

**porphyritic texture:** rocks that have different-sized crystals, created at different times.

**porphyry copper deposit:** a disseminated deposit in which copper and molybdenum are found in porphyritic intrusive rocks.

**port :** A device used to draw blood and give treatments, including intravenous fluids, drugs, or blood transfusions. The port is placed under the skin, usually in the chest. It is attached to a catheter (a thin, flexible tube) that is guided (threaded) into a large vein above the right side of the heart called the superior vena cava. A port may stay in place for many weeks or months. A needle is inserted through the skin into the port to draw blood or give fluids. Also called port-a-cath.

**port-a-cath :** A device used to draw blood and give treatments, including intravenous fluids, drugs, or blood transfusions. The port is placed under the skin, usually in the chest. It is attached to a catheter (a thin, flexible tube) that is guided (threaded) into a large vein above the right side of the heart called the superior vena cava. A port-a-cath may stay in place for many weeks or months. A needle is inserted through the skin into the port to draw blood or give fluids. Also called port.

**portal hypertension :** High blood pressure in the vein that carries blood to the liver from the stomach, small and large intestines, spleen, pancreas, and gallbladder. It is usually caused by a block in the blood flow through the liver due to cirrhosis (scarring) of the liver.

**portal vein :** A blood vessel that carries blood to the liver from the intestines, spleen, pancreas, and gallbladder. Also called hepatic portal vein.

**Portrazza :** A drug used with gemcitabine and cisplatin to treat squamous non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has not been treated with other anticancer therapy. It is also being studied in the treatment of other types of cancer. Portrazza binds to a protein called epidermal growth factor receptor (EGFR), which is found on some types of cancer cells. Blocking this protein may help keep cancer cells from growing. Portrazza is a type of monoclonal antibody. Also called necitumumab.

**posaconazole:** A broad-spectrum, second generation, triazole compound with antifungal activity. Posaconazole strongly inhibits 14-alpha demethylase, a cytochrome P450-dependent enzyme. Inhibition of 14-alpha-demethylase prevents the conversion of lanosterol to ergosterol, an important component of the fungal cell wall. Inhibition of ergosterol synthesis changes the fungal cell membrane composition and integrity, alters membrane permeability and eventually leads to fungal cell lysis. Compared to other azole antifungals, posaconazole is a significantly more potent inhibitor of sterol 14-alpha demethylase.

**Posidur:** (Other name for: extended release bupivacaine hydrochloride resorbable matrix formulation)

**Position of Equilibrium:** This measurement is the point in a chemical reaction where the forward reaction rate equals the reverse reaction rate. OR When a reaction's equilibrium "lies to the right", the concentrations of products will be greater than the concentrations of reactants when equilibrium is established. Conversely, an equilibrium that lies to the left will have a relatively small fraction of products.

**positive axillary lymph node :** A lymph node in the area of the armpit (axilla) to which cancer has spread. This spread is determined by surgically removing some of the lymph nodes and examining them under a microscope to see whether cancer cells are present.

**positive budget:** of a glacier, the gaining of more volume from new snowfall than the losing from melting.

**Positive control:** A system that is turned on by the presence of a regulatory protein.

**positive cooperativity:** A phenomenon of some multisubunit enzymes or proteins in which binding of a ligand or substrate to one subunit facilitates binding to another subunit.

**positive feedback:** An interaction that amplifies the response of the system in which it is incorporated.

**positive gravity anomaly:** the gravity reading of a rock if it is higher than the normal regional gravity value.

**positive magnetic anomaly:** a magnetic reading that exceeds the average magnetic field strength.

**Positive Mold:** A mold with a convex shape.

**positive polarity:** of a rock, when its magnetic field is the same as the earth's field today.

**positive predictive value :** The likelihood that an individual with a positive test result truly has the particular gene and/or disease in question. Also called PPV.

**Positive selection:** A selection process in T cell development in which T cells that can bind to MHC molecules survive, whereas those that cannot undergo apoptosis.

**positive test result :** A test result that shows that a person has the disease, condition, or biomarker for which the test is being done. In genetics, a positive test result usually means that a person has a mutation (change) in the gene, chromosome, or protein that is being tested. More testing may be needed to make a diagnosis or to make sure a positive test result is correct.

**Positive Valence:** This term describes the trait of elements that tend to give up electrons in electrovalent compounds. These are the positive ions of salts. Think about sodium, magnesium, and boron.

**Positron:** Particle equal in mass but opposite in charge to the electron. A positive electron.

**positron emission tomography scan :** A procedure in which a small amount of radioactive glucose (sugar) is injected into a vein, and a scanner

is used to make detailed, computerized pictures of areas inside the body where the glucose is taken up. Because cancer cells often take up more glucose than normal cells, the pictures can be used to find cancer cells in the body. Also called PET scan.

**positron emission tomography-computed tomography scan :** A procedure that combines the pictures from a positron emission tomography (PET) scan and a computed tomography (CT) scan. The PET and CT scans are done at the same time with the same machine. The combined scans give more detailed pictures of areas inside the body than either scan gives by itself. A positron emission tomography-computed tomography scan may be used to help diagnose disease, such as cancer, plan treatment, or find out how well treatment is working. Also called PET-CT scan.

**POSITRONS:** are electrons with a +1 charge. They are found in cosmic rays and in nuclear reactions. They are antimatter. When they meet an electron there is complete annihilation to give pure energy in the form of gamma rays. This is total matter and energy conversion by  $E = mc^2$ .

**Possession-only license:** A license, issued by the NRC, that authorizes the licensee to possess specific nuclear material but does not authorize its use or the operation of a nuclear facility. For additional detail, see Licensing.

**possessive case:** the case of a noun or pronoun used to show ownership.

**Post Cure:** The process of baking or autoclaving silicone parts after molding. This process is used to improve the heat and compression set resistance of specific elastomers- like silicone and fluorocarbons.

**Post gate:** A specialized gate that uses a hole that an ejector pin passes through to inject resin into the mold cavity. This leaves a post vestige that usually needs to be trimmed.

**Post-Consumer materials:** Are collected only after they were used for the purpose for which they were originally manufactured. Post consumer materials are acquired by residential curbside collection programs, drop-off programs, and collection at institutions such as schools and colleges. These materials are limited to PET and HDPE (bottle and film grade), some polypropylene from battery casings collected from vehicle battery return programs, and LDPE and HDPE film grocery bags collected at recycling stations by supermarkets

**Post-consumer Plastic:** Any plastic that has entered the stream of commerce, served its intended purpose, and has now been diverted for recycling or export. This includes residential, commercial and institutional plastic. This does not include industrial scrap material like factory regrind and plant scrap used within the primary manufacturing facility. (Post-consumer plastic resin is also known as PCR). (1995 post-consumer plastic Plastics Recycling/Recovery Rate Survey, Glossary of Terms, R.W. Beck & Associates).

**Post-cure:** A second cure at high temperature to enhance specific properties such as release and non-wetting. OR Application of external heat to bring a resin to a stable state of cure in the shortest possible time.

**post-marketing surveillance trial :** A type of clinical trial that studies the side effects caused over time by a new treatment after it has been approved and is on the market. These trials look for side effects that were not seen in earlier trials and may also study how well a new treatment works over a long period of time. Post-marketing surveillance trials may include thousands of people. Also called phase IV clinical trial.

**post-transplant lymphoproliferative disorder :** A condition in which a group of B-cells grow out of control after an organ transplant in patients with weakened immune systems. This usually happens if the patient has also been infected with Epstein-Barr virus. Post-transplant lymphoproliferative disorder may progress to non-Hodgkin lymphoma. Also called PTLN.

**post-traumatic stress disorder :** An anxiety disorder that develops in reaction to physical injury or severe mental or emotional distress, such as military combat, violent assault, natural disaster, or other life-threatening events. Having cancer may also lead to post-traumatic stress disorder. Symptoms interfere with day-to-day living and include reliving the event in nightmares or flashbacks; avoiding people, places, and things connected to the event; feeling alone and losing interest in daily activities; and having trouble concentrating and sleeping. Also called PTSD.

**Postcure:** Those additional operations to which a cured thermosetting plastic or rubber composition are subjected to enhance the level of one or more properties.

**posterior :** In human anatomy, has to do with the back of a structure, or a structure found toward the back of the body.

**posterior pelvic exenteration :** Surgery to remove the lower part of the bowel, rectum, uterus, cervix, ovaries, fallopian tubes, and vagina. Pelvic lymph nodes may also be removed.

**posterior urethral cancer :** A disease in which malignant (cancer) cells are found in the part of the urethra (the tube through which urine leaves the body) that connects to the bladder (the organ that stores urine).

**Postforming:** Process of shaping parts after a coating has been applied and cured, a technique commonly used with stamped, blanked or spun parts. OR The forming, bending, or shaping of fully cured, C-stage thermoset laminates that have been heated to make them flexible. On cooling, the formed laminate retains the contours and shape of the mold over which it has been formed.

**postmenopausal :** Having to do with the time after menopause. Menopause (“change of life”) is the time in a woman's life when menstrual periods stop permanently.

**postmortem :** After death. Often used to describe an autopsy.

**postoperative :** After surgery.

**postprandial :** After a meal.

**postremission therapy :** Treatment that is given after cancer has disappeared following the initial therapy. Postremission therapy is used to kill any cancer cells that may be left in the body. It may include radiation therapy, a stem cell transplant, or treatment with drugs that kill cancer cells. Also called consolidation therapy and intensification therapy.

**posttranscriptional processing:** The enzymatic processing of the primary RNA transcript, producing functional mRNA, tRNA, and rRNA molecules.

**Posttranslational modification:** The covalent bond changes that occur in a polypeptide chain after it leaves the ribosome and before it becomes a mature protein.

**Pot life:** This refers to the period during which a two-pack material remains useable after mixing. OR Amount of time after mixing a two-part paint system during which it can be applied.

**potable water:** water suitable for drinking or cooking purposes from both health and aesthetic considerations.

**Potassium:** Symbol:"K" Atomic Number:"19" Atomic Mass: 39.10amu. One of the alkali metal family. Potassium is a metallic element and one of the essential elements for organisms to survive. You can also find potassium in potash, many minerals, and fertilizers. OR Watch out for the spelling of this word. It is a silvery metal that reacts violently with water. It is one of the alkali metals. By comparing the reactivity of lithium, sodium and potassium you can see some of the trends in the groups of the periodic table.

**potassium :** A metallic element that is important in body functions such as regulation of blood pressure and of water content in cells, transmission of nerve impulses, digestion, muscle contraction, and heartbeat.

**potassium hydroxide :** A toxic and highly corrosive chemical used to make soap, in bleaching, and as a paint remover. It is used in small amounts as a food additive and in the preparation of some drugs.

**potential daily intake:** The potential daily intake of a pesticide is the theoretical intake calculated on the basis of the maximum residue limits and/or extraneous residue limits and the per caput consumption of the relevant food commodities per day. The same concept applies to food additive intakes (Vettorazzi, 1980).

**potential difference:** Work that must be done to move an electric charge between specified points. Electric potential differences are measured in volts.

**potential energy:** The energy an object has because of its composition or position. OR the energy a substance has due to its position or composition. OR energy an object possesses by virtue of its position. For example, lifting a mass  $m$  by  $h$  meters increases its potential energy by  $mgh$ , where  $g$  is the acceleration due to gravity.

**potentiation:** The joint action of two or more chemicals on an organism is more than additive (WHO, 1978a). OR In medicine, the effect of increasing the potency or effectiveness of a drug or other treatment.

**pothole:** a circular depression eroded into the bedrock of a stream by abrasive sediments.

**Potlife:** Time, usually in hours, during which a two or three component product can be used after it is mixed. Sometimes measured in terms of time to gel and/or double in viscosity. OR The time during which a liquid resin remains useable, after addition of catalyst and accelerator. Also known as

working life. Typically pot-life refers to neat resins (unreinforced) and working life refers to prepregs (reinforced.)

**POTTING:** Similar to ENCAPSULATING, except that steps are taken to insure complete penetration of all the voids in the object before the resin polymerizes.

**Pour-out finish:** a bottle finish having uniform undercut lips as a dealing surface, to facilitate pouring without dripping.

**povidone-iodine solution:** An iodophor solution containing a water-soluble complex of iodine and polyvinylpyrrolidone (PVP) with broad microbicidal activity. Free iodine, slowly liberated from the povidone-iodine (PVPI) complex in solution, kills eukaryotic or prokaryotic cells through iodination of lipids and oxidation of cytoplasmic and membrane compounds. This agent exhibits a broad range of microbicidal activity against bacteria, fungi, protozoa, and viruses. Slow release of iodine from the PVPI complex in solution minimizes iodine toxicity towards mammalian cells.

**Powder bridging:** The formation in a bulk powder of large cohesive regions, or “bridges,” that interfere with uniform flow of the powder in pharmaceutical operations.

**Powder diffraction method:** See X-Ray powder diffraction.

**Powder Molding:** General term used to denote several techniques for producing objects of varying sizes and shapes by melting polyethylene powder, usually against the inside of a mold. The techniques vary as to whether the molds are stationary (e.g., as in variations on slush molding techniques) or rotating (e.g., as in variations on rotational molding).

**Powdery/chalky surfaces on outside paintwork:** Powdery or chalky old paintwork is caused by the paint film wearing away due to exposure to weather. This natural erosion of the paint coating can often be removed by thoroughly washing down prior to repainting. If washing doesn't remove a chalky surface, seal with primer before painting, or in severe cases remove the chalky surface entirely.

**Powdery/chalky surfaces on plaster:** Powdery and chalky surfaces are quite common in older properties that have been painted with distemper or white wash. You should completely remove these coatings by washing with warm water and a detergent solution. Rinse with clean water and change the

water regularly. If the surface still remains slightly chalky, seal with an appropriate Dulux primer or plaster sealer prior to finishing.

**Powdery/chalky surfaces on previously painted exterior masonry:**

Brick and masonry surfaces painted with cement-based paint will eventually corrode and become powdery or chalky. Even unpainted pebbledash or render can become powdery with age. In each case, ensure the surface is sound, clean and dry. Remove all loose material with a stiff brush or paint scraper. If powdery or chalky residues still remain, stabilise the surface with a coat of Weathershield Stabilising Primer. However, don't use a stabilising solution on new or sound bare rendering that has never been painted. A well-thinned first coat of the appropriate Weathershield Masonry Paint is usually all that is required.

**power:** The rate at which energy is supplied. Power has define[SI] units of J/s, sometimes called "Watts" (W).

**Power coefficient of reactivity:** The change in reactivity per percent change in power. The power coefficient is the summation of the moderator temperature coefficient of reactivity, the fuel temperature coefficient of reactivity, and the void coefficient of reactivity.

**Power defect:** The total amount of reactivity added due to a given change in power. It can also be expressed as the integrated power coefficient over the range of the power change.

**Power Factor:** In a perfect condenser, the current leads the voltage by 90 degrees. When a loss takes place in the insulation, the absorbed current, which produces heat, throws the 90 degree relationship out according to the proportion of current absorbed by the dielectric. The power factor is the cosine of the angle between voltage applied and the current resulting.

**power of attorney :** A power of attorney is a legal document that gives one person (such as a relative, lawyer, or friend) the authority to make legal, medical, or financial decisions for another person. It may go into effect right away, or when that person is no longer able to make decisions for himself or herself.

**Power reactor:** A reactor designed to produce heat for electric generation (as distinguished from reactors used for research), for producing radiation or fissionable materials or for reactor component testing.

**Power stroke:** The conformational change in myosin heads powered by phosphate release as myosin binds to actin and pulls the actin filament, with the resulting displacement of the myosin heads.

**Power uprate:** The process of increasing the maximum power level at which a commercial nuclear power plant may operate. This power level, regulated by the NRC, is included in the plant's operating license and technical specifications. A licensee may only change its maximum power output after the NRC approves an uprate application. The NRC analyses must demonstrate that the plant could continue to operate safely with its proposed new configuration. When all requisite conditions are fulfilled, the NRC may grant the power uprate by amending the plant's operating license and technical specifications. For additional detail, see Power Uprates.

**POWER-LAW MODEL:** A simple mathematical expression describing the shear thinning behavior of polymers. Where  $m$  is the consistency index,  $n$  is the power-law index, and  $\dot{\gamma}$  is the shear rate (for polymer melts  $0.2 < n < 0.8$ ). The power-law model does a good job in fitting high shear rate viscosity data but a poor job for fitting low shear rate viscosity data. In fact for the power-law model gives  $\tau = K \dot{\gamma}^n$  which is, of course, unrealistic. The usefulness of the power-law model is derived from the fact that several analytical solutions are possible and many practical flow problems occur at high shear rates where the power-law model gives a reasonable fit of viscosity data.

**poziotinib:** An orally bioavailable, quinazoline-based, small-molecular and irreversible pan-epidermal growth factor receptor (EGFR or HER) inhibitor with potential antineoplastic activity. Poziotinib inhibits EGFR (HER1 or ErbB1), HER2, HER4 and EGFR mutants, thereby inhibiting the proliferation of tumor cells that overexpress these receptors. EGFRs, cell surface receptor tyrosine kinases, are often upregulated in a variety of cancer cell types and play key roles in cellular proliferation and survival.

**PP:** Polypropylene OR A small protein made by the pancreas that helps control the release of other substances made by the pancreas. The amount of PP in the blood increases after a person eats. It may also increase with age, and in certain diseases, such as diabetes and pancreatic cancer. Also called pancreatic polypeptide.

**PP14 derivative-treated HLA-matched donor mononuclear cell-enriched leukocytes:** A preparation of allogeneic HLA-matched leukocytes treated with a derivative of placental protein 14 (PP14) with potential immunomodulating activity. PP14 derivative-treated HLA-matched donor mononuclear cell-enriched leukocytes contain at least fifty-five percent early-apoptotic T cells; after infusion and when processed by recipient dendritic cells, early-apoptotic T cells may help induce a decrease in the donor effector T-cell responses against the recipient of an allogeneic hematopoietic stem cell (HSC) transplant, thereby minimizing allogeneic HSC transplant-related graft-versus-host disease (GVHD). PP14, a 162 amino acid glycosylated protein secreted by the late secretory phase endometrium, binds to T cells in a carbohydrate fashion and has been shown to induce T-cell apoptosis; maternal immune tolerance to the fetus and pregnancy-related remissions of autoimmune disease may involve PP14-induced T cell apoptosis.

**PPAP:** (Part Production Approval Process) Our ability, as product supplier, to meet requirements determined by our customers through continued process documentation and analysis. See PPAP link for more information.

**PPAR gamma pathway :** Describes a group of proteins in a cell that work together to help control how certain genes are expressed and the use of lipids (fats) and glucose (sugar) in the body. Changes in the PPAR gamma pathway may lead to diseases such as heart disease, diabetes, and cancer. Drugs or substances that affect this pathway are being studied in the prevention and treatment of cancer and other diseases. Also called peroxisome proliferator-activated receptor gamma pathway.

**ppb:** parts per billion

**PPE-expressing replication-defective HSV-1 vector NP2:** A replication-defective (ICP4-deleted) herpes simplex virus type 1 (HSV-1) viral vector expressing the human preproenkephalin A (PPE) gene with potential antinociceptive activity. Upon intradermal administration, PPE-expressing replication-defective HSV-1 vector NP2 is transported by retrograde axonal transport to the dorsal root ganglion (DRG) and becomes dormant. In the DRG, the vector transduces sensory neurons with high efficiency, delivering the engineered PPE gene; transduced neurons then express the protein proenkephalin A, the precursor for Met- and Leu-enkephalin. After proteolytic cleavage from proenkephalin A in the DRG neuronal cytosol,

transgene-mediated Met- and Leu-enkephalin bind to mu and gamma-opioid receptors, which may result in the inhibition of nociceptive neurotransmission.

**PPI:** A substance used to treat certain disorders of the stomach and intestines, such as heartburn and ulcers. PPIs block the actions of an enzyme in the stomach and reduce the amount of acid made in the stomach. Also called proton pump inhibitor.

**PPI-2458:** A synthetic derivative of fumagillin with antineoplastic and cytotoxic properties. PPI-2458 irreversibly inhibits the enzyme methionine aminopeptidase type 2 (MetAP2), thereby preventing abnormal cell growth and angiogenesis. PPI-2458 is reported to have a better toxicity profile compared to other agents of its class.

**ppm:** parts per million

**pPNET:** A type of cancer that forms in bone or soft tissue. Also called Ewing sarcoma and peripheral primitive neuroectodermal tumor.

**PPO:** Polyphenylene oxide

**PPS:** Polyphenylene sulfide

**PPV:** The likelihood that an individual with a positive test result truly has the particular gene and/or disease in question. Also called positive predictive value.

**PR:** A protein found inside the cells of the female reproductive tissue, some other types of tissue, and some cancer cells. The hormone progesterone will bind to the receptors inside the cells and may cause the cells to grow. Also called progesterone receptor.

**PR- :** Describes cells that do not have a protein to which the hormone progesterone will bind. Cancer cells that are PR- do not need progesterone to grow, and usually do not stop growing when treated with hormones that block progesterone from binding. Also called progesterone receptor negative.

**PR-104:** A non-toxic, small-molecule, hypoxia-activated, 3,5-dinitrobenzamide nitrogen mustard pre-prodrug with potential antitumor activity. Upon intravenous administration, PR-104 is converted by systemic phosphatases to the alcohol intermediate PR-104A, which is reduced to form the active DNA-crosslinking mustard species hydroxylamine PR-104H intracellularly under hypoxic conditions. PR-104H specifically

crosslinks hypoxic tumor cell DNA, resulting in the inhibition of DNA repair and synthesis, cell-cycle arrest, and apoptosis in susceptible hypoxic tumor cell populations while sparing normoxic tissues.

**PR-104:** A substance being studied in the treatment of cancer. PR-104 becomes active when cancer cells don't receive enough oxygen. It may kill cancer cells by damaging their DNA.

**PR+ :** Describes cells that have a protein to which the hormone progesterone will bind. Cancer cells that are PR+ need progesterone to grow and will usually stop growing when treated with hormones that block progesterone from binding. Also called progesterone receptor positive.

**PR1 leukemia peptide vaccine:** A cancer vaccine containing PR1, a 9 amino-acid human leukocyte antigen (HLA)-A2 restricted peptide derived from proteinase 3, with potential immunotherapeutic activity. Vaccination with PR1 leukemia peptide vaccine may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against tumor cells expressing proteinase 3, resulting in tumor cell lysis. Often overexpressed in leukemic cells, proteinase 3 is a serine proteinase that activates progelatinase A and is involved in angiogenesis and metastasis.

**pracinostat:** An orally bioavailable, small-molecule histone deacetylase (HDAC) inhibitor with potential antineoplastic activity. Pracinostat inhibits HDACs, which may result in the accumulation of highly acetylated histones, followed by the induction of chromatin remodeling; the selective transcription of tumor suppressor genes; the tumor suppressor protein-mediated inhibition of tumor cell division; and, finally, the induction of tumor cell apoptosis. This agent may possess improved metabolic, pharmacokinetic and pharmacological properties compared to other HDAC inhibitors.

**practitioner :** A person who works in a specific profession. For example, a doctor or nurse is a healthcare practitioner.

**Pradaxa:** (Other name for: dabigatran etexilate mesylate)

**pralatrexate:** A folate analogue inhibitor of dihydrofolate reductase (DHFR) exhibiting high affinity for reduced folate carrier-1 (RFC-1) with antineoplastic and immunosuppressive activities. Pralatrexate selectively enters cells expressing RFC-1; intracellularly, this agent is highly polyglutamylated and competes for the folate binding site of DHFR, blocking tetrahydrofolate synthesis, which may result in depletion of

nucleotide precursors; inhibition of DNA, RNA and protein synthesis; and apoptotic tumor cell death. Efficient intracellular polyglutamylation of pralatrexate results in higher intracellular concentrations compared to non-polyglutamylated pralatrexate, which is more readily effluxed by the MRP (multidrug resistance protein) drug efflux pump. RFC-1, an oncofetal protein expressed at highest levels during embryonic development, may be overexpressed on the cell surfaces of various cancer cell types. or A drug used in the treatment of peripheral T-cell lymphoma (a fast-growing form of non-Hodgkin lymphoma). It is also being studied in the treatment of other types of cancer. Pralatrexate may block the growth of cancer cells and cause them to die. It is a type of dihydrofolate reductase (DHFR) inhibitor. Also called FOLOTYN.

**PRAME-targeting T-cell receptor/Inducible caspase 9 BPX-701:**

Human allogeneic T lymphocytes transduced with a retroviral vector encoding a high-affinity T-cell receptor (TCR) specific for human leukocyte antigen (HLA)-A2-01-restricted, preferentially-expressed antigen in melanoma (PRAME) and containing the chemical induction of dimerization (CID) suicide/safety switch, composed of a drug binding domain coupled to the signaling domain of the suicide enzyme caspase-9, with potential antineoplastic activity. Peripheral blood mononuclear cells (PBMCs) are isolated from a patient, transduced with an anti-PRAME-HLA-A2 restricted TCR, expanded ex vivo, and reintroduced into the HLA-A2-positive patient. Upon reintroduction, PRAME-targeting T-cell receptor-based therapy BPX-701 binds to tumor cells expressing PRAME, which may induce cell death in and halt the growth of PRAME-expressing cancer cells. The tumor-associated antigen PRAME is overexpressed by a variety of cancer cell types. If potential T-cell toxicity due to graft-versus-host disease (GvHD) occurs, the chemical dimerizer rimiducid (AP1903) can be administered. Rimiducid binds to the drug binding domain expressed by the BPX-701 T cells, and triggers activation of the caspase-9 domain, which leads to caspase 9-mediated signaling, the induction of apoptosis and to selective and complete elimination of BPX-701 cells.

**pramipexole dihydrochloride:** The hydrochloride salt of pramipexole, a benzothiazole derivative. As a nonergot dopamine agonist, pramipexole binds to D2 and D3 dopamine receptors in the striatum and substantia nigra of the brain. Compared to other dopamine agonists, the use of this agent may be associated with fewer dyskinetic side effects in treated subjects.

**Prandin:** (Other name for: repaglinide)

**Praseodymium:** Symbol:"Pr" Atomic Number:"59" Atomic Mass: 140.91amu. Praseodymium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. This soft, silvery metal can be found in many minerals and even some cigarette lighter sparking mechanisms.

**prasterone:** A synthetic form of dehydroepiandrosterone with potential chemopreventive activity. Produced endogenously, dehydroepiandrosterone (DHEA) is an intermediate in the conversion of cholesterol to androgens and estrogens. Although the mechanisms of action of exogenously administered DHEA have not been fully illuminated, they may result in both direct and indirect physiologic effects. Direct effects include GABA-a receptor complex and NMDA receptor modulation, and enhanced pancreatic beta cell insulin secretion and antiglucocorticoid activities.

**Pravachol :** A drug used to lower the amount of cholesterol in the blood and to prevent stroke and heart attack. It is also being studied in the treatment of cancer and other conditions. Pravachol blocks an enzyme that helps make cholesterol in the body. It may also make tumor cells more sensitive to anticancer drugs. It is a type of HMG-CoA reductase inhibitor, a type of statin, and a type of chemosensitizer. Also called pravastatin sodium.

**pravastatin :** The active ingredient in a drug used to lower the amount of cholesterol in the blood and to prevent stroke and heart attack. It is also being studied in the treatment of cancer and other conditions. Pravastatin blocks an enzyme that helps make cholesterol in the body. It may also make tumor cells more sensitive to anticancer drugs. It is a type of HMG-CoA reductase inhibitor, a type of statin, and a type of chemosensitizer.

**pravastatin sodium:** The sodium salt of pravastatin with cholesterol-lowering and potential antineoplastic activities. Pravastatin competitively inhibits hepatic hydroxymethyl-glutaryl coenzyme A (HMG-CoA) reductase, the enzyme which catalyzes the conversion of HMG-CoA to mevalonate, a key step in cholesterol synthesis. This agent lowers plasma cholesterol and lipoprotein levels, and modulates immune responses by suppressing MHC II (major histocompatibility complex II) on interferon gamma-stimulated, antigen-presenting cells such as human vascular endothelial cells. In addition, pravastatin, like other statins, exhibits pro-

apoptotic, growth inhibitory, and pro-differentiation activities in a variety of tumor cells; these antineoplastic activities may be due, in part, to inhibition of the isoprenylation of Ras and Rho GTPases and related signaling cascades. orA drug used to lower the amount of cholesterol in the blood and to prevent stroke and heart attack. It is also being studied in the treatment of cancer and other conditions. Pravastatin sodium blocks an enzyme that helps make cholesterol in the body. It may also make tumor cells more sensitive to anticancer drugs. It is a type of HMG-CoA reductase inhibitor, a type of statin, and a type of chemosensitizer. Also called Pravachol.

**Pre-mrna:** The unspliced, immediate product of RNA polymerase II in eukaryotes.

**Pre-treatment:** The initial treatment of a surface prior to painting, e.g. treatment of galvanised metal with mordant solution or sterilising surfaces with fungicidal solution.

**precancerous :** A term used to describe a condition that may (or is likely to) become cancer. Also called premalignant.

**precancerous dermatitis :** A skin disease marked by scaly or thickened patches on the skin and often caused by prolonged exposure to arsenic. The patches often occur on sun-exposed areas of the skin and in older white men. These patches may become malignant (cancer). Also called Bowen disease and precancerous dermatosis.

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**precancerous polyps :** Growths that may become cancer that protrude from a mucous membrane.

**Precedex:** (Other name for: dexmedetomidine hydrochloride)

**Precession camera:** A camera used in X-ray crystallography in which the center of a flat film is always kept aligned with the direct beam of X-rays as a crystal is oscillated.

**Precession photograph:** An X-ray diffraction photograph made on a precession camera. Direct measurement of all lattice parameters are possible from a series of these photographs.

**prechlorination:** chlorination of water prior to filtration, or chlorination of sewage prior to treatment.

**precipitant:** a chemical or chemicals that cause a precipitate to form when added to a solution. OR the discrete particles of material separate from the liquid solution. OR A solid formed in a chemical reaction. OR A precipitate is an insoluble solid formed when two solutions react together. OR a solid that separates from solution. OR An insoluble substance that has been formed from substances dissolved in a solution. For example, mixing silver nitrate and sodium chloride solutions produces a precipitate, insoluble silver chloride (along with soluble sodium nitrate). OR An insoluble solid which is formed when two solutions react together.

**precipitation:** Any or all forms of liquid or solid water particles that fall from the atmosphere and reach the Earth's surface. It includes drizzle, rain, snow, snow pellets, snow grains, ice crystals, ice pellets, and hail. The ratio of precipitation to evaporation is the most important factor in the distribution of vegetation zones. Precipitation is also defined as a measure of the quantity, expressed in centimeters or milliliters of liquid water depth, of the water substance that has fallen at a given location in a specified amount of time. OR Precipitation is the conversion of a dissolved substance into insoluble form by chemical or physical means.

**precipitation, chemical:** to cause a solid substance to be separated (precipitate out) of a solution by the addition of chemical additives; the process of softening water by the addition of lime and soda ash as the precipitants.

**Precision:** a measure of the reproducibility of a method i.e. the closeness of agreement between independent test results, when multiple measurements are made on the sample under the same conditions. The observed values may differ from the true values without affecting the precision and reproducibility (see accuracy). OR Precision is reproducibility. Saying "These measurements are precise" is the same as saying, "The same measurement was repeated several times, and the measurements were all very close to one another". Don't confuse precision with accuracy.

**PRECISION:** gives consistent results. (Something can be precisely inaccurate.)

**precision:** The agreement of repeated measurements with each other. OR The closeness of agreement between the results obtained by applying the experimental procedure several times under prescribed conditions (ISO, 1977).

**precision medicine :** A form of medicine that uses information about a person's genes, proteins, and environment to prevent, diagnose, and treat disease. In cancer, precision medicine uses specific information about a person's tumor to help diagnose, plan treatment, find out how well treatment is working, or make a prognosis. Examples of precision medicine include using targeted therapies to treat specific types of cancer cells, such as HER2-positive breast cancer cells, or using tumor marker testing to help diagnose cancer. Also called personalized medicine.

**preclinical study :** Research using animals to find out if a drug, procedure, or treatment is likely to be useful. Preclinical studies take place before any testing in humans is done.

**Precose:** (Other name for: acarbose)

**precursor:** In metabolism, a chemical substance from which another chemical substance is formed OR the substance from which another compound is formed.

**precursor B-lymphoblastic leukemia :** An aggressive (fast-growing) type of leukemia (blood cancer) in which too many B-cell lymphoblasts (immature white blood cells) are found in the bone marrow and blood. It is the most common type of acute lymphoblastic leukemia (ALL). Also called B-cell acute lymphoblastic leukemia and B-cell acute lymphocytic leukemia.

**precursor lymphoblastic lymphoma :** An aggressive (fast-growing) type of non-Hodgkin lymphoma in which too many lymphoblasts (immature white blood cells) are found in the lymph nodes and the thymus gland. These lymphoblasts may spread to other places in the body. It is most common in teenagers and young adults and affects more males than females. It may be a T or B cell type. Also called lymphoblastic lymphoma.

**precursor T-lymphoblastic leukemia :** An aggressive (fast-growing) type of leukemia (blood cancer) in which too many T-cell lymphoblasts (immature white blood cells) are found in the bone marrow and blood. Also called T-cell acute lymphoblastic leukemia and T-cell acute lymphocytic leukemia.

**precursor T-lymphoblastic lymphoma :** A type of non-Hodgkin lymphoma in which too many T-cell lymphoblasts (immature white blood cells) are found in the lymph nodes and spleen. It is most common in young men. Also called T-lymphoblastic lymphoma.

**predation:** a relationship in which one population within a community may capture and feed upon another population.

**predicate:** part of a sentence that tells what the subject does or is, or what is done to the subject.

**predictive factor :** A condition or finding that can be used to help predict whether a person's cancer will respond to a specific treatment. Predictive factor may also describe something that increases a person's risk of developing a condition or disease.

**predisposing mutation :** A germline mutation that increases an individual's susceptibility or predisposition to a certain disease or disorder. When such a mutation is inherited, development of symptoms is more likely, but not certain. Also called susceptibility gene.

**prednisolone:** A synthetic glucocorticoid with anti-inflammatory and immunomodulating properties. After cell surface receptor attachment and cell entry, prednisolone enters the nucleus where it binds to and activates specific nuclear receptors, resulting in an altered gene expression and inhibition of proinflammatory cytokine production. This agent also decreases the number of circulating lymphocytes, induces cell differentiation, and stimulates apoptosis in sensitive tumor cell populations. or A drug that lessens inflammation and suppresses the body's immune response. It may also kill cancer cells. Prednisolone is used to treat disorders in many organ systems and to treat the symptoms of several types of leukemia and lymphoma. It is also being studied in the treatment of other types of cancer. Prednisolone is a type of therapeutic glucocorticoid.

**prednisone:** A synthetic glucocorticoid with anti-inflammatory and immunomodulating properties. After cell surface receptor attachment and cell entry, prednisone enters the nucleus where it binds to and activates specific nuclear receptors, resulting in an altered gene expression and inhibition of proinflammatory cytokine production. This agent also decreases the number of circulating lymphocytes, induces cell differentiation, and stimulates apoptosis in sensitive tumor cell populations. or A drug used to lessen inflammation and lower the body's immune

response. It is used with other drugs to treat leukemia and lymphoma and other types of cancer. It is also used alone or with other drugs to prevent or treat many other conditions. These include conditions related to cancer, such as anemia (a low level of red blood cells), allergic reactions, and loss of appetite. Prednisone is a type of therapeutic glucocorticoid.

**preferential order of discharge:** The preferential order of discharge is a list of negatively charged ions arranged in the order that they are likely to be oxidized at the anode during electrolysis.

**Preferred orientation:** The crystals in a powder are said to be in a preferred orientation when they are not randomly oriented and their diffraction intensities differ from those obtained when crystals are randomly oriented.

**Preform :** A plastic pre- shaped part produced by injection molding systems in the first step of a two-stage injection molding and blow molding process used to produce bottles or containers. The preform is subsequently re-heated and stretch blown through a blow molding process into the final container shape.

**pregabalin:** A 3-isobutyl derivative of gamma-amino butyric acid (GABA) with anti-convulsant, anti-epileptic, anxiolytic, and analgesic activities. Although the exact mechanism of action is unknown, pregabalin selectively binds to alpha2delta (A2D) subunits of presynaptic voltage-dependent calcium channels (VDCCs) located in the central nervous system (CNS). Binding of pregabalin to VDCC A2D subunits prevents calcium influx and the subsequent calcium-dependent release of various neurotransmitters, including glutamate, norepinephrine, serotonin, dopamine, and substance P, from the presynaptic nerve terminals of hyperexcited neurons; synaptic transmission is inhibited and neuronal excitability is diminished. Pregabalin does not bind directly to GABA-A or GABA-B receptors and does not alter GABA uptake or degradation. or A drug used to treat nerve pain caused by diabetes or herpes zoster infection and certain types of seizures. It is being studied in the prevention and treatment of nerve pain in the hands and feet of cancer patients given chemotherapy. Pregabalin is a type of anticonvulsant. Also called Lyrica.

**pregnancy :** The condition between conception (fertilization of an egg by a sperm) and birth, during which the fertilized egg develops in the uterus. In humans, pregnancy lasts about 288 days.

**Pregnenolone:** A steroid formed by the removal of the six-carbon side chain from cholesterol; steroid hormones are synthesized from pregnenolone.

**Pregnyl:** (Other name for: recombinant human chorionic gonadotropin)

**Preheat Roll:** In extrusion coating, a heated roll installed between the pressure roll and unwind roll whose purpose is to heat the substrate before it is coated.

**PREHEATING:** The heating of a compound prior to molding or casting in order to facilitate the operation, reduce cycle, and improve product.

**Preheating:** Warming of parts prior to application of a coating, recommended when adhesion is critical and when parts are being coated in humid atmospheres. In some cases, this technique can be used to achieve higher-than-normal film builds.

**preimplantation factor PIF-1:** A synthetic version, known as PIF-1, of the peptide preimplantation factor (PIF), an embryo-secreted peptide, with potential activity against graft-versus-host disease (GVHD). PIF-1 is believed to have wide-ranging activity on the immunologic system, including a whole host of immunologic changes that resemble pregnancy, in which there is neither graft-versus-host or host-versus-graft disease between the mother and the embryo. Replication of the immunologic profile of pregnancy through the administration of PIF-1 may thus benefit patients undergoing bone marrow transplant (BMT) who experience graft-versus-host disease (GVHD). Native embryonic PIF has been found to have a multi-targeted effect on various aspects of the immune system, coordinated so that there is a successful embryonic implantation and a successful pregnancy.

**Preimpregnation:** The practice of mixing resin and reinforcement before shipping it to the molder.

**Prelay:** (Other name for: troglitazone)

**Preliminary Notification (PN):** A brief summary report issued by the NRC staff to notify the Commission of the occurrence of a significant event that appears to have health and safety significance or major public or media interest. PNs are based on information provided by State radiation control program staff.

**Preloads (for fasteners):** The "tightness" of a fastener, equal to the make-up energy applied minus the energy required to overcome friction at the fastener's bearing surfaces and threads.

**Prelone:** (Other name for: prednisolone)

**pre-malignant :** A term used to describe a condition that may (or is likely to) become cancer. Also called precancerous.

**Premarin:** (Other name for: conjugated estrogens)

**premature birth :** The birth of a baby before 37 weeks of pregnancy. In humans, a normal pregnancy lasts about 40 weeks. The risk of premature birth may be increased by certain health problems in the mother, such as diabetes, heart disease, and kidney disease, or problems during pregnancy. Smoking cigarettes, being exposed to secondhand tobacco smoke, drinking alcohol, and taking certain drugs during pregnancy may also increase the risk of a premature birth. Also called preterm birth.

**premature death :** Death that occurs before the average age of death in a certain population. In the United States, the average age of death is about 75 years. Smoking cigarettes and being exposed to secondhand tobacco smoke are leading causes of premature death in the United States. They can increase the risk of cancer, heart disease, stroke, lung disease, and many other health problems. Other causes of premature death are injuries and suicide.

**premature menopause :** A condition in which the ovaries stop working and menstrual periods stop before age 40. Natural menopause usually occurs around age 50. A woman is said to be in menopause when she hasn't had a period for 12 months in a row. Symptoms of menopause include hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility. Premature menopause can be caused by some cancer treatments, surgery to remove the ovaries, and certain diseases or genetic conditions. Also called early menopause, premature ovarian failure, and primary ovarian insufficiency.

**premature ovarian failure :** A condition in which the ovaries stop working and menstrual periods stop before age 40. Natural menopause usually occurs around age 50. A woman is said to be in menopause when she hasn't had a period for 12 months in a row. Symptoms of menopause include hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility. Premature ovarian failure can be caused by

some cancer treatments, surgery to remove the ovaries, and certain diseases or genetic conditions. Also called early menopause, premature menopause, and primary ovarian insufficiency.

**premenopausal :** Having to do with the time before menopause.

Menopause ("change of life") is the time of life when a woman's menstrual periods stop permanently.

**PREMIX:** A molding compound prepared prior to and apart from the molding operations and containing all components required for molding: resin, reinforcement fillers, catalysts, release agents, and other compounds.

**premycotic phase :** A phase of mycosis fungoides in which a patient has areas of red, scaly, itchy skin on areas of the body that are usually not exposed to sun. This is early-phase mycosis fungoides, but it is hard to diagnose the rash as mycosis fungoides during this phase. The premycotic phase may last from months to decades.

**prenatal :** Having to do with the time a female is pregnant, before birth occurs. Also called antenatal.

**preparation:** a reaction in which a desired chemical is produced; for example, the dehydration of an alcohol is a preparation for an alkene. OR shows the relationship between a noun or pronoun and another noun or pronoun.

**prepositional idiom:** an expression that depends on the choice of a particular preposition.

**prepositional phrase:** a phrase that begins with a preposition and includes a noun or pronoun that is the object of the preposition.

**Prepreg:** A factory-made combination of reactive resins and reinforcing fibres, plus other necessary additive chemicals, ready to be moulded. To process prepregs, individual layers of prepreg are laid up on a tool and a vacuum bag is placed over the lay-up and the air evacuated. The bagged part is placed in an oven or an autoclave and cured for the specified time, temperature and pressure. OR A term generally used in reinforced plastics to mean the reinforcing material containing or combined with the full complement of resin before molding.

**prescription :** A doctor's order for medicine or another intervention.

**present perfect:** a verb tense that indicates action in past time in relation to present time; it is formed with has or have and the past participle of the

verb.

**present tense:** a verb tense that indicates the action is occurring now.

**PRESERVATIVE:** A chemical added to a product to inhibit the growth of bacteria.

**Press:** An injection molding machine.

**Pressure** : The force per unit area. OR Force per unit area. The SI unit of pressure is the pascal, defined as one newton per square meter. Other common pressure units are the atmosphere, the bar, and the Torr. OR The force caused by particles hitting the walls of a vessel.

**Pressure Drop:** energy loss in a fluid as it passes through a flow passage. The loss is due to friction between fluid particles and can be measured as a decrease in pressure in the direction of flow. OR Pressure drop is the loss of pressure that occurs when the melt is pushed into a section of the mould during the filling phase.

**PRESSURE FLOW (also called POISEUILLE FLOW):** The flow of a fluid caused by a pressure difference. The resulting velocity profile in a tube is parabolic for Newtonian fluids and somewhat "flatter" for polymer melts. The pressure drop is linear in the direction of flow for tubes or channels with parallel walls. In the metering section of an extruder screw, pressure flow is the relatively backward flow of material down the screw channel caused by pressure in the head.

**PRESSURE FORMING:** A thermoforming process wherein pressure is used to push the sheet to be formed against the mold surface as opposed to using a vacuum to suck the sheet flat against the mold.

**Pressure Forming:** Version of thermoforming, whereby a sheet of plastic is heated to a forming temperature while pressure forces the plastic downward onto a mold or tool to form its shape.

**Pressure Injection:** The pressure on the face of the injection ram at which molding silicone rubber is injected into a mold, liquid silicone rubber generally uses much lower injection pressures when compared with plastic injection

**Pressure Pads:** Reinforcements or hardened steel distributed around the dead areas in the faces of a mold to help the land absorb the final pressure of closing without collapsing.

**Pressure Profile:** After switch over point injection speed should remain at lower value and pressure is changed with time till the mould is just filled with out over packing. This follow up / hold on pressure change with respect to time is called Injection pressure profile.

**Pressure Roll:** In extrusion coating, the roll which with the chill roll applies pressure to the substrate and the molten extruded web.

**Pressure spraying:** Coating technique similar to siphon spraying, except that the coating is delivered from a pressurized pot to the spray nozzle under positive pressure. Generally used for high-volume production.

**Pressure vessel:** A strong-walled container housing the core of most types of power reactors. It usually also contains the moderator, neutron reflector, thermal shield, and control rods.

**Pressurized-water reactor (PWR):** A common nuclear power reactor design in which very pure water is heated to a very high temperature by fission, kept under high pressure (to prevent it from boiling), and converted to steam by a steam generator (rather than by boiling, as in a boiling-water reactor). The resulting steam is used to drive turbines, which activate generators to produce electrical power. A pressurized-water reactor (PWR) essentially operates like a pressure cooker, where a lid is tightly placed over a pot of heated water, causing the pressure inside to increase as the temperature increases (because the steam cannot escape) but keeping the water from boiling at the usual 212°F (100°C). About two-thirds of the operating nuclear reactor power plants in the United States are PWRs. For additional detail, see Pressurized Water Reactors (PWRs).

**Pressurizer:** A tank or vessel that acts as a head tank (or surge volume) to control the pressure in a pressurized water reactor.

**Prestoflex :** Prestoflex plastic belting has a connectorless construction, made up of plastic modules, which snap or unsnap together for quick and uncomplicated repairs.

**presymptomatic testing :** Genetic analysis of an asymptomatic or unaffected individual who is at risk of a specific genetic disorder.

**preterm birth :** The birth of a baby before 37 weeks of pregnancy. In humans, a normal pregnancy lasts about 40 weeks. The risk of preterm birth may be increased by certain health problems in the mother, such as

diabetes, heart disease, and kidney disease, or problems during pregnancy. Smoking cigarettes, being exposed to secondhand tobacco smoke, drinking alcohol, and taking certain drugs during pregnancy may also increase the risk of a preterm birth. Also called premature birth.

**pretracheal space :** The area in front of the trachea (windpipe).

**pretreatment:** any wastewater treatment process used to partially reduce pollution load before the wastewater is introduced into a main sewer system or delivered to a treatment plant; a substantial reduction of the pollution load. OR Processes for cleaning and conditioning a substrate to be coated. Next to the choice of coating, this may be the most important factor in the use of high-performance coatings. OR Usually used to indicate the chemical treatment of bare metal prior to painting.

**Prevacid :** A drug that reduces the amount of acid made in the stomach. It is used to treat stomach ulcers, gastroesophageal reflux disease (a condition in which acid from the stomach causes heartburn), and conditions in which the stomach makes too much acid. Prevacid is a type of proton pump inhibitor (PPI). Also called lansoprazole.

**prevailing westerlies:** planetary winds between 30° and 60° latitude; they guide weather systems for the United States (from SW to NE).

**prevalence:** The number of instances of a given disease or other condition in a given population at a designated time; sometimes used to mean prevalence rate. When used without qualification, the term usually refers to the situation at a specified point in time (point prevalence).

**prevalence rate (ratio):** The total number of individuals who have an attribute or disease at a particular time (or during a particular period) divided by the population at risk of having the attribute or disease at this point in time or midway through the period. A problem may arise with calculating period prevalence rates because of the difficulty of defining the most appropriate denominator (Last, 1988).

**prevalence, annual:** (an occasionally used index)The total number of persons with the disease or attribute at any time during a year. It includes cases of the disease arising before but extending into or through the year as well as those having their inception during the year.

**prevalence, lifetime:** The total number of persons known to have had the disease or attribute for at least part of their life.

**prevalence, period:** The total number of persons known to have had the disease or attribute at any time during a specified period.

**prevalence, point:** The number of persons with a disease or an attribute at a specified point in time (Last, 1988).

**prevascular space :** The area in the front part of the chest between the lungs. Also called anterior mediastinum.

**prevention :** In medicine, action taken to decrease the chance of getting a disease or condition. For example, cancer prevention includes avoiding risk factors (such as smoking, obesity, lack of exercise, and radiation exposure) and increasing protective factors (such as getting regular physical activity, staying at a healthy weight, and having a healthy diet).

**preventive :** Used to prevent disease.

**preventive mastectomy :** Surgery to reduce the risk of developing breast cancer by removing one or both breasts before disease develops. Also called prophylactic mastectomy.

**Pprevnar:** (Other name for: pneumococcal 7-valent conjugate vaccine)

**Pprevnar 13:** (Other name for: pneumococcal 13-valent conjugate vaccine)

**prexasertib:** An inhibitor of checkpoint kinase 1 (chk1) with potential antineoplastic activity. Upon administration, prexasertib selectively binds to chk1, thereby preventing activity of chk1 and abrogating the repair of damaged DNA. This may lead to an accumulation of damaged DNA and may promote genomic instability and apoptosis. Prexasertib may potentiate the cytotoxicity of DNA-damaging agents and reverse tumor cell resistance to chemotherapeutic agents. Chk1, a serine/threonine kinase, mediates cell cycle checkpoint control and is essential for DNA repair and plays a key role in resistance to chemotherapeutic agents.

**Prialt:** (Other name for: ziconotide)

**Prialt :** A drug used in the treatment of chronic pain. Also called SNX 111 and ziconotide.

**Pribnow box:** A promoter component of prokaryotic genes that has the consensus sequence 5'- TATAAA-3' located 10 base pairs downstream from the transcription start site.

**Prilosec:** (Other name for: omeprazole)

**PRIMA-1 analogue APR-246:** A methylated derivative and structural analog of PRIMA-1 (p53 re-activation and induction of massive apoptosis), with potential antineoplastic activity. Upon administration, PRIMA-1 analogue APR-246 covalently modifies the core domain of mutated forms of cellular tumor antigen p53 (p53) through the alkylation of thiol groups. These modifications restore both the wild-type conformation and function to mutant p53, which reconstitutes endogenous p53 activity, leading to cell cycle arrest and apoptosis in tumor cells. This agent may work synergistically with other antineoplastic agents. p53, a tumor suppressor and transcription factor normally activated upon DNA damage, is frequently mutated and overexpressed in cancer cells; it plays a key role in both DNA repair and the induction of apoptosis. Check for active clinical trials using this agent.

**primary (1°) carbon:** a carbon atom that is attached to one other carbon atom.

**primary amenorrhea:** failure of menses to occur by age 16

**primary cancer :** A term used to describe the original, or first, tumor in the body. Cancer cells from a primary cancer may spread to other parts of the body and form new, or secondary, tumors. This is called metastasis. These secondary tumors are the same type of cancer as the primary cancer. Also called primary tumor.

**primary carbocation:** a carbocation to which one alkyl group is bonded.

**primary care :** Health services that meet most basic health care needs over time. Primary care includes physical exams, treatment of common medical conditions, and preventive care such as immunizations and screenings. Primary care doctors are usually the first health professionals patients see for basic medical care. They may refer a patient to a specialist if needed.

**primary care doctor :** A doctor who manages a person's health care over time. A primary care doctor is able to give a wide range of care, including prevention and treatment, can discuss cancer treatment choices, and can refer a patient to a specialist.

**primary central nervous system lymphoma :** Cancer that forms in the lymph tissue of the brain, spinal cord, meninges (outer covering of the brain), or eye (called ocular lymphoma). Also called PCNSL and primary CNS lymphoma.

**primary CNS lymphoma :** Cancer that forms in the lymph tissue of the brain, spinal cord, meninges (outer covering of the brain), or eye (called ocular lymphoma). Also called PCNSL and primary central nervous system lymphoma.

**primary effusion lymphoma :** A rare, aggressive (fast-growing) type of B-cell non-Hodgkin lymphoma marked by an abnormal build-up of fluids in a body cavity. It usually occurs together with a human herpesvirus or Epstein-Barr virus in people who have weakened immune systems, such as in patients with HIV disease.

**primary endpoint :** The main result that is measured at the end of a study to see if a given treatment worked (e.g., the number of deaths or the difference in survival between the treatment group and the control group). What the primary endpoint will be is decided before the study begins.

**primary mediastinal large B-cell lymphoma :** An aggressive (fast-growing) type of B-cell non-Hodgkin lymphoma (cancer of the immune system). Primary mediastinal large B-cell lymphoma develops from B cells in the mediastinum (the area behind the breastbone). It may spread to organs and tissues such as the lungs, pericardium (sac around the heart), liver, gastrointestinal tract, ovaries, adrenal glands, and central nervous system. Most patients with primary mediastinal large B-cell lymphoma are women who are age 30 to 40 years but it may also occur in older children. Also known as primary mediastinal B-cell lymphoma.

**Primary messenger:** The information embodied in the interaction of ligand with its receptor molecule.

**primary myelofibrosis :** A progressive, chronic disease in which the bone marrow is replaced by fibrous tissue and blood is made in organs such as the liver and the spleen, instead of in the bone marrow. This disease is marked by an enlarged spleen and progressive anemia. Also called agnogenic myeloid metaplasia, chronic idiopathic myelofibrosis, idiopathic myelofibrosis, and myelosclerosis with myeloid metaplasia.

**Primary nucleation:** Nucleation in a system that does not contain crystalline matter.

**primary ovarian insufficiency :** A condition in which the ovaries stop working and menstrual periods stop before age 40. Natural menopause usually occurs around age 50. A woman is said to be in menopause when she hasn't had a period for 12 months in a row. Symptoms of menopause

include hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility. Primary ovarian insufficiency can be caused by some cancer treatments, surgery to remove the ovaries, and certain diseases or genetic conditions. Also called early menopause, premature menopause, and premature ovarian failure.

**primary peritoneal cancer :** Cancer that forms in the peritoneum (the tissue that lines the abdominal wall and covers organs in the abdomen), and has not spread there from another part of the body. Primary peritoneal cancer sometimes spreads to the ovary. It is similar to ovarian epithelial cancer and is staged and treated the same way.

**Primary production:** Digging stuff up and selling it. Also, growing stuff and selling it. Just about the entire Australian economy, really.

**primary productivity:** See gross primary production and net primary production.

**primary prostate cancer tissue/hTERT/survivin mRNA-loaded autologous dendritic cell vaccine:** An autologous dendritic cell (DCs) vaccine targeting prostate cancer with immunostimulating activity. The autologous DC vaccine is prepared via transfecting DCs with mRNAs extracted from primary prostate cancer tissue, and mRNAs of human telomerase reverse transcriptase (hTERT) and survivin. Upon administration, this DC vaccine may elicit a potent cytotoxic T-cell (CTL) response against prostate cancer cells, resulting in tumor cell death. Both hTERT and survivin are essential in neoplastic growth, and are considered to be universal tumor antigens.

**primary protection standard:** An accepted maximum level of a pollutant (or its indicator) in the target, or some part thereof, or an accepted maximum intake of a pollutant or nuisance into the target under specified circumstances (UN, 1972).

**primary standard:** A stable, high-purity material used in titrations and other chemical analyses to prepare solutions of precisely known concentration, or to determine the concentrations of substances which react with the primary standard material. For example, NaCl is a primary standard that can be used to determine the concentration of AgNO<sub>3</sub> in a solution by titration:  $\text{NaCl(aq)} + \text{AgNO}_3\text{(aq)} = \text{AgCl(s)} + \text{NaNO}_3\text{(aq)}$ .

**Primary structure:** In a polymer, the sequence of monomers and the covalent bonds. In proteins, it refers to the amino acid sequence. OR Usually

refers to the linear sequence of amino acids in a protein; more generally, the linear sequence of units that form a polymer. OR A description of the covalent backbone of a polymer (macromolecule), including the sequence of monomeric subunits and any interchain and intrachain covalent bonds.

**primary succession:** The natural development of vegetation and soil on a site that had not previously borne vegetation (e.g., a sand dune or lava flow), which vegetation will be replaced by other, successive plant communities.

**Primary system:** A term that may be used for referring to the reactor coolant system.

**primary therapy :** The first treatment given for a disease. It is often part of a standard set of treatments, such as surgery followed by chemotherapy and radiation. When used by itself, primary therapy is the one accepted as the best treatment. If it doesn't cure the disease or it causes severe side effects, other treatment may be added or used instead. Also called first-line therapy, induction therapy, and primary treatment.

**primary transcript:** The immediate RNA product of transcription before any posttranscriptional processing reactions.

**primary treatment :** The first treatment given for a disease. It is often part of a standard set of treatments, such as surgery followed by chemotherapy and radiation. When used by itself, primary treatment is the one accepted as the best treatment. If it doesn't cure the disease or it causes severe side effects, other treatment may be added or used instead. Also called first-line therapy, induction therapy, and primary therapy.

**primary tumor :** A term used to describe the original, or first, tumor in the body. Cancer cells from a primary tumor may spread to other parts of the body and form new, or secondary, tumors. This is called metastasis. These secondary tumors are the same type of cancer as the primary tumor. Also called primary cancer.

**Primase:** A specialized RNA polymerase that synthesizes the RNA primers for DNA synthesis.

**primase:** An enzyme that catalyzes the formation of RNA oligonucleotides used as primers by DNA polymerases.

**PRIME COAT OR PRIMER:** The first coat or undercoat that helps bind the topcoat to the substrate.

**prime meridian:** 0° longitude line, running through Greenwich, England.

**Primer:** First complete coat of paint of a painting system applied to a surface. Such paints are designed to provide adequate adhesion to new surfaces or are formulated to meet the special requirements of the surfaces. OR The first coat of paint applied to a surface which is then the foundation for subsequent coats. OR A structure that serves as a growing point for polymerization. Short primers of DNA are often used in sequencing and mutagenesis procedures. OR In the elongation of polymers, the initial segment of the polymer that is to be extended; elongation depends on the primer. OR A short oligomer (of sugars or nucleotides, for example) to which an enzyme adds additional monomeric subunits.

**primitive equations:** The Eulerian equations of fluid motion in which the primary dependent variables are the velocity components of the fluid. In meteorology, they can be specialized to apply directly to the cyclonic-scale motions.

**primitive neuroectodermal tumor :** One of a group of cancers that develop from the same type of early cells, and share certain biochemical and genetic features. Some primitive neuroectodermal tumors develop in the brain and central nervous system (CNS-PNET), and others develop in sites outside of the brain such as the limbs, pelvis, and chest wall (peripheral PNET). Also called PNET.

**Primitive space group:** A space group that contains only a single lattice point or a single unit of the repeated motif in a crystal lattice; symbolized by P (or R for rhombohedral crystals).

**primitives:** Also called "primitive functions." The individual gaussian functions that are summed to produce a contracted basis function (cGTO). So a set of p-functions is three basis functions, but may be many primitives ( $3n$ , where there are  $n$  primitives in the cGTO).

**Primosome:** A multiprotein complex that catalyzes synthesis of RNA primer at various points along the DNA template. OR A complex of proteins that facilitate the unwinding of DNA and the synthesis of RNA primers, thus initiating DNA synthesis.

**principal investigator :** The person(s) in charge of a clinical trial or a scientific research grant. The principal investigator prepares and carries out the clinical trial protocol (plan for the study) or research paid for by the

grant. The principal investigator also analyzes the data and reports the results of the trial or grant research. Also called PI.

**principal quantum number:**  $n$  the first number in Schrödinger's electron wave equation, which tells the location of an orbital relative to the atom's nucleus. OR The quantum number that determines the size and (in hydrogen atoms) the energy of an orbital.  $n$  is used to label electron shells.  $n$  may take on integer values from 1 to infinity.

**principal quantum number:** The number related to the amount of energy an electron has and therefore describing which shell the electron is in.

**PRINCIPAL QUANTUM NUMBER,  $n$ :** gives the energy of the orbital. This is determined by the distance of the electron from the nucleus.

**Prinivil :** A drug used to treat high blood pressure and certain heart conditions. It is also being studied in the prevention and treatment of side effects caused by some anticancer drugs. It blocks certain enzymes that cause blood vessels to constrict (narrow). It is a type of angiotensin-converting enzyme (ACE) inhibitor. Also called lisinopril and Zestril.

**prinomastat:** A synthetic hydroxamic acid derivative with potential antineoplastic activity. Prinomastat inhibits matrix metalloproteinases (MMPs) (specifically, MMP-2, 9, 13, and 14), thereby inducing extracellular matrix degradation, and inhibiting angiogenesis, tumor growth and invasion, and metastasis. As a lipophilic agent, prinomastat crosses the blood-brain barrier. or A substance that is being studied in the treatment of cancer. It is a matrix metalloproteinase inhibitor and belongs to the family of drugs called angiogenesis inhibitors. Also called AG3340.

**priority rules:** the rules in the Cahn-Ingold-Prelog notational system that allow atoms or groups around a chiral carbon atom to be ranked by atomic weight.

**prism:** a three-dimensional shape bounded by congruent parallel faces and a set of parallelograms formed by joining the corresponding vertices of the bases.

**Prismatic Habit:** A shape of a large group of crystals that is very geometric and orderly. Sometimes the crystals line up in one direction.

**Pristiq:** (Other name for: desvenlafaxine succinate)

**PRN Bags:** PRN refers to the Latin abbreviation for "take as needed". The PRN bags contain medication (usually pain or anti-nausea medicine) that

can be consumed by the patient on an "as needed" basis. The blue or orange color of this type of bag is provided as a preference -choice for the clinic to assign color code use.

**pro-oxidant** : A substance that can produce oxygen byproducts of metabolism that can cause damage to cells.

**Pro-Stat 101:** (Other name for: concentrated, fortified, collagen protein hydrolysate liquid supplement)

**Probabilistic risk analysis:** A systematic method for addressing the risk triplet as it relates to the performance of a complex system to understand likely outcomes, sensitivities, areas of importance, system interactions, and areas of uncertainty. The risk triplet is the set of three questions that the NRC uses to define "risk": (1) What can go wrong? (2) How likely is it? and (3) What are the consequences? NRC identifies important scenarios from such an assessment.

**Probabilistic risk assessment (PRA):** A systematic method for assessing three questions that the NRC uses to define "risk." These questions consider (1) what can go wrong, (2) how likely it is, and (3) what its consequences might be. These questions allow the NRC to understand likely outcomes, sensitivities, areas of importance, system interactions, and areas of uncertainty, which the staff can use to identify risk-significant scenarios. The NRC uses PRA to determine a numeric estimate of risk to provide insights into the strengths and weaknesses of the design and operation of a nuclear power plant. For additional detail, see Risk Assessment in Regulation and Probabilistic Risk Assessment.

**proband** : The individual through whom a family with a genetic disorder is ascertained. In males this is called a propositus, and in females it is called a proposita.

**probe:** A labeled fragment of nucleic acid containing a nucleotide sequence complementary to a gene or genomic sequence that one wishes to detect in a hybridization experiment.

**probenecid:** A benzoic acid derivative with antihyperuricemic property. Probenecid competitively inhibits the active reabsorption of urate at the proximal tubule in the kidney thereby increasing urinary excretion of uric acid and lowering serum urate concentrations. This prevents urate deposition and promotes resolution of existing urate deposits. In addition, probenecid modulates the transport of organic acids and acidic drugs at the

proximal and distal renal tubule, thereby increasing the drug serum concentration. or A drug that is used to treat gout and is used together with some antibiotics to make them work better. It is being studied in the treatment of cancer. It belongs to the family of drugs called antibiotic therapy adjuncts.

**probiotic** : A live microorganism used as a dietary supplement to help with digestion and normal bowel function. It may also help keep the gastrointestinal (GI) tract healthy. A bacterium found in yogurt called *Lactobacillus acidophilus*, is the most common probiotic.

**PROBLEM SOLVING:** can best be reviewed by working the examples in your chemistry notebook. Try them first without peeking at the solutions. Then spend your time on those that you failed to solve.

**procarbazine** : The active ingredient in a drug that is used to treat advanced Hodgkin lymphoma and is being studied in the treatment of other types of cancer. Procarbazine blocks cells from making proteins and damages DNA. It may kill cancer cells. It is a type of antineoplastic agent and a type of alkylating agent.

**procarbazine hydrochloride:** The hydrochloride salt of a methylhydrazine derivative with antineoplastic and mutagenic activities. Although the exact mode of cytotoxicity has not been elucidated, procarbazine, after metabolic activation, appears to inhibit the trans-methylation of methionine into transfer RNA (t-RNA), thereby preventing protein synthesis and consequently DNA and RNA synthesis. This agent may also undergo auto-oxidation, resulting in the formation of cytotoxic free radicals which damage DNA through an alkylation reaction. or A drug that is used to treat advanced Hodgkin lymphoma and is being studied in the treatment of other types of cancer. Procarbazine hydrochloride blocks cells from making proteins and damages DNA. It may kill cancer cells. It is a type of antineoplastic agent and a type of alkylating agent. Also called Matulane.

**procaspase activating compound-1 VO-100:** An orally bioavailable procaspase activating compound-1 (PAC-1), with potential proapoptotic and antineoplastic activities. Upon administration, VO-100 binds to and forms a chelating complex with zinc (Zn) ions inside cells, which prevents the binding of Zn ions to procaspase-3 (PC3) and abrogates the Zn-mediated inhibition of PC3. This allows for the proteolytic autoactivation of PC3 into

the active form caspase-3. This results in the selective caspase-3-mediated induction of apoptosis and cell death in cancer cells. In addition, VO-100 is able to cross the blood-brain-barrier (BBB). PC3, a Zn-inhibited proenzyme, is upregulated in a variety of cancer cell types, while its expression is minimal in normal healthy cells.

**Process Aid:** Additives used in the production of plastics to improve extrusion performance and reduce surface defects of film.

**Process chemical :** Process chemicals are chemicals used to improve the efficiency of the production process, but which have no direct effect on product properties. Process chemicals are, e.g., defoamers preventing foaming, biocides preventing microbial growth, dispersing agents and fixatives to prevent deposit forming, antiscalants to prevent inorganic scale forming and retention aids to improve fines retention on paper machine.

**process, biological:** the process by which the life activities of bacteria, and other microorganisms in the search for food, break down complex organic material into simple, more stable substances. Self-purification of sewage, polluted streams, sludge digestion, and all so-called secondary sewage treatments result from this process. Also called biochemical process.

**process, oxidation:** any method of sewage treatment for the oxidation of the decomposable organic matter that brings about the decomposition of such matter. The usual methods are biological filtration, and activated sludge processes.

**Processing:** An average value is given rather than the temperature range often specified by the manufacturer.

**Processing Aid:** An additive or component in a resin to facilitate processing. OR Some processing aids include thixotropic agents, flattening agents, and blocking and anticaking agents.

**Processing Methods:** The kind of processing (extruding, molding, casting, etc.) techniques recommended by the manufacturer.

**Processing Temperature:** An average value is given rather than the temperature range often specified by the manufacturer.

**Processivity:** A property of an enzyme that enables it to catalyze multiple rounds of elongation or the digestion of a polymer while the polymer stays bound to the enzyme. OR For any enzyme that catalyzes the synthesis of a

biological polymer, the property of adding multiple subunits to the polymer without dissociating from the substrate.

**Prochiral molecule:** A nonchiral molecule that lacks handedness and is optically inactive, but would become chiral by a change in one of the substituents at the chiral center. A prochiral molecule may react with an enzyme so that two groups that have a mirror-image relationship to each other are treated differently. OR A symmetric molecule that can react asymmetrically with an enzyme having an asymmetric active site, generating a chiral product.

**prochlorperazine:** A synthetic propylpiperazine derivative of phenothiazine with antiemetic, antipsychotic, antihistaminic, and anticholinergic activities. Prochlorperazine antagonizes the dopamine D2-receptor in the chemoreceptor trigger zone (CTZ) of the brain and may prevent chemotherapy-induced emesis. OR A drug used to prevent or reduce nausea and vomiting. It belongs to the family of drugs called antiemetics.

**Prochymal:** (Other name for: remestemcel-L)

**Procrit:** (Other name for: epoetin alfa)

**proctitis :** Inflammation of the mucous membrane that lines the rectum (the last several inches of the large intestine closest to the anus). Also called rectitis.

**Proctocort:** (Other name for: therapeutic hydrocortisone)

**proctoscope :** A thin, tube-like instrument used to look inside the anus and rectum. A proctoscope has a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**proctoscopy :** A procedure that uses a proctoscope to look inside the anus and rectum. A proctoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**proctosigmoidoscopy :** Examination of the lower colon using a sigmoidoscope, inserted into the rectum. A sigmoidoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called sigmoidoscopy.

**Prodiaben:** (Other name for: chlorpropamide)

**Prodrug:** Inactive derivatives of active drug molecules that are converted to parent drug molecules in the body.

**producers:** organisms within an ecosystem that trap energy (by photosynthesis).

**product:** A product is a substance formed in a chemical reaction. OR a substance on the right side of a chemical reaction. OR the substance that forms when reactants combine in a reaction. OR A substance formed as the result of a chemical reaction OR A substance that is produced during a chemical change. OR The new substance or substances that are formed during a chemical reaction.

**Production expense:** Production expense is one component of the cost of generating electric power, which includes costs associated with fuel, as well as plant operation and maintenance.

**products:** The compounds that are formed when a reaction goes to completion.

**Proellex:** (Other name for: telapristone acetate)

**Proenzyme:** A zymogen, or a catalytically inactive precursor of an enzyme; a proenzyme can be converted into the active form by the hydrolysis of one or a few peptide bonds.

**Profasi:** (Other name for: recombinant human chorionic gonadotropin)

**profile:** side view of land on a topographic map.

**proflavine hemisulfate:** The hemisulfate salt form of proflavine, an acridine-derived fluorescent contrast and disinfectant agent that can potentially be used for cellular imaging and antiseptic purposes. Upon topical application of proflavine hemisulfate, proflavine diffuses into cells and intercalates into DNA, thereby accumulating in and staining the nucleus. During fluorescence imaging, the cell nuclei can be visualized. This allows nuclear morphometry and the identification of cancer cells. In addition, proflavine exerts its antibacterial effect by binding to bacterial DNA, thereby disrupting DNA synthesis and halting bacterial cell growth.

**progenipoietin:** A recombinant, chimeric, dual-receptor agonist fusion protein with immunohematopoietic activity. Progenipoietin (ProGP) consists of portions of the ligands for granulocyte colony-stimulating factor (G-CSF) and human fetal liver tyrosine kinase-3 (FLT3); variants progenipoietin-1, 2 and 3 differ in the orientation of the two receptor

agonists. ProGP binds simultaneously to G-CSF and FLT3 receptors with receptor affinities approximately two- to three-fold higher than the respective native ligands. When administered in vivo, this agent may augment the number of circulating granulocytes and dendritic cells (DCs). ProGP may promote the proliferation of and prevent apoptosis in several human hematopoietic cell lineages, exhibiting the additive activities of a combination of C-GSF and FLT3.

**Progenta:** (Other name for: telapristone acetate)

**progeny :** Offspring; the product of reproduction or replication.

**Progestagen:** A class of steroid hormone, exemplified by progesterone, that prepares the uterus for implantation of the ovum; synthesized by the corpus luteum of the ovary.

**progesterone:** a hormone produced by the corpus luteum that regulates the buildup of tissue in the endometrium and inhibits the contractions of the uterus.

**progesterone :** A type of hormone made by the body that plays a role in the menstrual cycle and pregnancy. Progesterone can also be made in the laboratory. It may be used as a type of birth control and to treat menstrual disorders, infertility, symptoms of menopause, and other conditions.

**progesterone receptor :** A protein found inside the cells of the female reproductive tissue, some other types of tissue, and some cancer cells. The hormone progesterone will bind to the receptors inside the cells and may cause the cells to grow. Also called PR.

**progesterone receptor negative :** Describes cells that do not have a protein to which the hormone progesterone will bind. Cancer cells that are progesterone receptor negative do not need progesterone to grow, and usually do not stop growing when treated with hormones that block progesterone from binding. Also called PR-.

**progesterone receptor positive :** Describes cells that have a protein to which the hormone progesterone will bind. Cancer cells that are progesterone receptor positive need progesterone to grow and will usually stop growing when treated with hormones that block progesterone from binding. Also called PR+.

**progesterone receptor test :** A lab test to find out if cancer cells have progesterone receptors (proteins to which the hormone progesterone will

bind). If the cells have progesterone receptors, they may need progesterone to grow, and this can affect how the cancer is treated.

**progesterone vaginal insert:** A tablet preparation formulated for vaginal administration containing a micronized synthetic form of the endogenous steroid hormone progesterone with progesterone activity. Upon vaginal insertion, progesterone binds to the progesterone receptor, resulting in dissociation of heat shock proteins, receptor phosphorylation, and transcription activation through direct or indirect interaction with transcription factors. This agent exerts inhibitory effects on estrogen by decreasing the number of estrogen receptors and increasing its metabolism to inactive metabolites. Progesterone induces secretory changes in the endometrium, decreases uterine contractility during pregnancy, and maintains pregnancy.

**progestin :** Any natural or laboratory-made substance that has some or all of the biologic effects of progesterone, a female hormone.

**Proglycem:** (Other name for: diazoxide)

**prognosis :** The likely outcome or course of a disease; the chance of recovery or recurrence.

**prognostic factor :** A situation or condition, or a characteristic of a patient, that can be used to estimate the chance of recovery from a disease or the chance of the disease recurring (coming back).

**Prograf:** (Other name for: tacrolimus)

**Programmed cell death:** Refers to a cascade of proteolytic enzymes that result in controlled cell death in response to significant cell damage or specific development programs. Also called apoptosis. OR A type of cell death in which a series of molecular steps in a cell lead to its death. This is one method the body uses to get rid of unneeded or abnormal cells. The process of programmed cell death may be blocked in cancer cells. Also called apoptosis.

**Programming:** the extrusion of a parison which differs in thickness in the length direction in order to equalize wall thickness of the blown container. It can be done with a pneumatic or hydraulic device which activates the mandrel shaft and adjusts the mandrel position during parison extrusion (parison programmer, controller, or variator). It can also be done by varying extrusion speed on accumulator-type blow molding machines.

**progression** : In medicine, the course of a disease, such as cancer, as it becomes worse or spreads in the body.

**progression-free survival** : The length of time during and after the treatment of a disease, such as cancer, that a patient lives with the disease but it does not get worse. In a clinical trial, measuring the progression-free survival is one way to see how well a new treatment works. Also called PFS.

**progressive disease** : Cancer that is growing, spreading, or getting worse.

**progressive familial intrahepatic cholestasis** : A rare, inherited disorder marked by a buildup in the liver of bile (fluid that helps digest fat). This can lead to liver disease and liver failure. It may also increase the risk of liver cancer. Progressive familial intrahepatic cholestasis is caused by mutations (changes) in certain genes that make proteins needed to help the liver work the way it should. It usually occurs in infants and children. Also called PFIC.

**prohibitin-targeting peptide 1**: A chimeric, 25-mer peptide that targets prohibitin, with potential antineoplastic activity. Prohibitin-targeting peptide 1 (prohibitin-TP01) consists of a fat-targeting motif (CKGGRAKDC), two repeats of a proapoptotic peptide motif (KLAKLAK) and a GG linker. This peptide binds specifically to prohibitin in the white adipose vasculature; upon receptor-mediated cell internalization, the ligand/receptor complex triggers apoptosis and results in ablation of white fat. Destruction of white fat may potentially have positive consequences for men with prostate cancer since a high level of white fat has been implicated as a critical contributing factor in poor prostate cancer outcome. Prohibitin, a multifunctional membrane-associated protein that is thought to regulate cell survival and growth, has been shown by immunohistochemical analysis to be expressed in the membrane of endothelial cells in white adipose tissue.

**projection**: a drawing of a molecule.

**projection formulas**: A method for representing molecules to show the configuration of groups around chiral centers; also known as Fischer projection formulas.

**Prokaryote**: A unicellular organism that contains a single chromosome, no nucleus, no membrane-bound organelles, and has characteristic ribosomes and biochemistry. OR A bacterium; a unicellular organism with a single chromosome, no nuclear envelope, and no membranebounded organelles.

**prokaryotes:** cells that do not contain a nucleus or internal organelles; include bacteria, cyanobacteria, and archaeobacteria.

**Prokine:** (Other name for: sargramostim)

**prolactin :** A hormone that is made by the pituitary gland (a pea-sized organ in the center of the brain). Prolactin causes a woman's breasts to make milk during and after pregnancy, and has many other effects in the body.

**Prolarix:** (Other name for: caricotamide/tretazicar)

**Prolastin-C:** (Other name for: alpha-1-proteinase inhibitor human)

**Proleukin :** A drug used to treat some types of cancer. It is a form of interleukin-2, a cytokine made by leukocytes (white blood cells), that is made in the laboratory. Proleukin increases the activity and growth of white blood cells called T lymphocytes and B lymphocytes. It is a type of biological response modifier. Also called aldesleukin and recombinant human interleukin-2.

**Prolia:** (Other name for: denosumab)

**Prolia :** A drug used to prevent or treat certain bone problems. Under the brand name Xgeva, it is used to prevent broken bones and other bone problems caused by solid tumors that have spread to bone. It is also used in certain patients to treat giant cell tumor of the bone that cannot be removed by surgery. Under the brand name Prolia, it is used to treat osteoporosis (a decrease in bone mass and density) in postmenopausal women who have a high risk of breaking bones. Prolia is also being studied in the treatment of other conditions and types of cancer. It binds to a protein called RANKL, which keeps RANKL from binding to another protein called RANK on the surface of certain bone cells, including bone cancer cells. This may help keep bone from breaking down and cancer cells from growing. Prolia is a type of monoclonal antibody. Also called AMG 162, denosumab, and Xgeva.

**proliferating :** Multiplying or increasing in number. In biology, cell proliferation occurs by a process known as cell division.

**proliferative index :** A measure of the number of cells in a tumor that are dividing (proliferating). May be used with the S-phase fraction to give a more complete understanding of how fast a tumor is growing.

**proline:** A naturally occurring amino acid with a heterocyclic ring that is classified as nonessential in the diet.

**Prolixin:** (Other name for: fluphenazine hydrochloride)

**Prolutin:** (Other name for: therapeutic progesterone)

**prolymphocytic leukemia :** A type of chronic lymphocytic leukemia (CLL), in which too many immature white blood cells (prolymphocytes) are found in the blood and bone marrow. Prolymphocytic leukemia usually progresses more rapidly than classic CLL. Also called PLL.

**Promacta:** (Other name for: eltrombopag olamine)

**Promacta :** A drug used to treat thrombocytopenia (a lower-than-normal number of platelets in the blood) in patients with chronic immune thrombocytopenic purpura (a condition in which platelets are destroyed by the immune system). It is used in patients who did not get better with corticosteroids, immunoglobulins, or surgery to remove the spleen. It is also being studied in the treatment of other conditions and types of cancer. Promacta causes more platelets to be made in the bone marrow. It is a type of thrombopoietin receptor agonist. Also called eltrombopag olamine.

**promegapoeitin :** A drug given during chemotherapy to increase blood cell regeneration. Promegapoeitin is a colony-stimulating factor that stimulates the production of blood cells, especially platelets. It is a cytokine and belongs to the family of drugs called hematopoietic (blood-forming) agents.

**promethazine hydrochloride:** The hydrochloride salt form of promethazine, a phenothiazine derivative with antihistaminic, sedative and antiemetic properties. Promethazine hydrochloride selectively blocks peripheral H1 receptors thereby diminishing the effects of histamine on effector cells. Promethazine hydrochloride also blocks the central histaminergic receptors, thereby depressing the reticular system causing sedative and hypnotic effects. In addition, promethazine hydrochloride also has centrally acting anticholinergic properties and probably mediates nausea and vomiting by acting on the medullary chemoreceptive trigger zone.

**Promethium:** Symbol:"Pm" Atomic Number:"61" Atomic Mass: (145)amu. This is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. This

element is not found in nature and has only been created in a lab. You will not find many uses for it in real life.

**Promoter:** See Accelerator.

**Promoter:** That region of the gene that signals RNA polymerase binding and the initiation of transcription. OR A DNA sequence at which RNA polymerase may bind, leading to initiation of transcription.

**Promoter sites:** A specific sequence of DNA, usually just upstream of a gene, that specifies the site and extent of transcription of the associated gene.

**ProMune :** A substance that is being studied in the treatment of some types of cancer. It belongs to the family of drugs called biological response modifiers. Also called CpG 7909 and PF-3512676.

**promyelocytic leukemia :** An aggressive (fast-growing) type of acute myeloid leukemia in which there are too many immature blood-forming cells in the blood and bone marrow. It is usually marked by an exchange of parts of chromosomes 15 and 17. Also called acute promyelocytic leukemia and APL.

**pronase oral solution:** An oral solution containing a mixture of proteinases, which are produced by *Streptomyces griseus*, with mucolytic activity and potential diagnostic applications. Upon oral administration, pronase is able to cleave peptide chains of polypeptides into individual amino acids, thereby dissolving mucus. The removal of mucus may improve the visibility of parts of the digestive tract, such as the esophagus and the stomach, during endoscopy. Pre-treatment with pronase before endoscopic examination may help in the detection of certain cancers, such as esophageal and gastric cancer.

**pronoun:** a word that stands in for a noun.

**pronoun agreement:** a pronoun must agree with its antecedent in number (singular or plural) and gender (masculine or feminine).

**pronoun case:** refers to the way a pronoun is used in a sentence (see subjective, objective or possessive case).

**propacetamol:** A water-soluble para-aminophenol derivative and ester prodrug of acetaminophen in which acetaminophen is bound to the carboxylic acid diethylglycine, with analgesic and antipyretic activities. Upon intravenous administration, propacetamol is hydrolyzed by plasma

esterases into its active form acetaminophen. Although the exact mechanism of action has yet to be fully elucidated despite its widespread use, acetaminophen enters the central nervous system and acts centrally. This agent binds to cyclooxygenase (COX) and prevents the metabolism of arachidonic acid to prostaglandin. A reduction in prostaglandin formation relieves pain and reduces fever. Acetaminophen may also act centrally on cannabinoid receptors and on N-methyl-D-aspartate (NMDA) receptors.

**propagation step:** the step in a free radical reaction in which both a product and energy are produced. The energy keeps the reaction going.

**propagation step:** the step in a free-radical reaction in which both a product and energy are produced. The energy keeps the reaction going.

**Propane:** Propane is a member of the LPG (Liquified Petroleum Gases) and paraffin families, consisting of three saturated carbon atoms in a straight chain. The term liquified petroleum gas refers to its main production route as a liquified stream produced by the repressurisation of gas that separated from crude oil on extraction from underground. Propane is highly valued as a heating fuel, particularly in developing economies, and hence has a highly seasonal demand and pricing profile.

**propane<sup>38</sup>:** A colorless, odorless, flammable gas, found in petroleum and natural gas. It is used as a fuel and as a raw material for building more complex organic molecules. Propane is the third member of the alkane series.

**propellant:** 1. A mixture of fuel and oxidizing agent that reacts to produce a high-energy stream of product gases that can produce thrust. For examples, see What makes a good rocket fuel? 2. A compressed gas used to push a material through a nozzle, forming an aerosol or a foam. For example, nitrogen or propane are used as propellants for shaving cream; nitrous oxide is used as a propellant for whipped cream.

**PROPELLANT:** The gas used to expel materials from aerosol containers.

**Propeller twisting:** The twisting of base pairs in crystals of DNA from the coplanar conformation; enhances the stacking of bases within a strand.

**proper noun:** names a specific person or place, or a particular event or group and is always capitalized.

**property:** a characteristic of matter such as color, density, brittleness, etc..  
OR A feature of a substance that can be described or measured. Chemical

properties refer to how the substance behaves in a chemical reaction (eg it is an acid, it burns in air) while a physical property is to do with the substance itself (eg it is a hard, shiny solid with a melting point of 465°C).

**Prophage:** The silent phage genome. Some prophages integrate into the host genome; others replicate autonomously. The prophage state is maintained by a phage-encoded repressor. OR A bacteriophage in an inactive state in which the genome is either integrated into the chromosome of the host cell or (sometimes) replicated autonomously.

**prophase:** the first phase of mitosis; involves chromosomal condensation, nuclear membrane breakdown, and the migration of centrioles to opposite poles. OR The stage in meiosis or mitosis when chromosomes condense and become visible as refractile bodies.

**prophase I:** the first phase of meiotic division, during which crossing over takes place.

**prophase II:** the phase during meiosis II in which the chromatin material condenses and each chromosome contains two chromatids attached by the centromere.

**prophylactic :** In medicine, something that prevents or protects.

**prophylactic cranial irradiation :** Radiation therapy to the head to reduce the risk that cancer will spread to the brain.

**prophylactic mastectomy :** Surgery to reduce the risk of developing breast cancer by removing one or both breasts before disease develops. Also called preventive mastectomy.

**prophylactic oophorectomy :** Surgery intended to reduce the risk of ovarian cancer by removing the ovaries before disease develops.

**prophylactic surgery :** Surgery to remove an organ or gland that shows no signs of cancer, in an attempt to prevent development of cancer of that organ or gland. Prophylactic surgery is sometimes chosen by people who know they are at high risk for developing cancer.

**prophylaxis :** An attempt to prevent disease.

**Propionaldehyde or Propanal:** Propionaldehyde (or propanal) is a three-carbon aldehyde commonly produced by reacting syngas with ethylene. Its major use is in the manufacture of trimethylolethane via condensation with methanol. This is used in the manufacture of alkyd resins.

**Propionate (C<sub>2</sub>H<sub>5</sub>COO)** : A propionate (propionic acid minus one hydrogen ion) compound is a salt or ester of propionic acid.

**propofol**: A hypnotic alkylphenol derivative. Formulated for intravenous induction of sedation and hypnosis during anesthesia, propofol facilitates inhibitory neurotransmission mediated by gamma-aminobutyric acid (GABA). This agent is associated with minimal respiratory depression and has a short half-life with a duration of action of 2 to 10 minutes. Check for active clinical trials using this agent.

**proportion**: An equality between two ratios. OR Two ratios set equal to each other.

**Proportional counter**: A radiation instrument in which an electronic detection system receives pulses that are proportional to the number of ions formed in a gas-filled tube by ionizing radiation.

**Proportional Limit** : The greatest stress which a material is capable of sustaining without deviation from proportionality of stress and strain. (Hooke's Law).

**proportionate mortality rate, ratio (PMR)**: Number of deaths from a given cause in a specified time period, per 100 or 1000 total deaths in the same time period. Can give rise to misleading conclusions if used to compare mortality experience of populations with different distributions of causes of death (Last, 1988).

**proposita** : The female individual through whom a family with a genetic disorder is ascertained. In males this is called a propositus.

**propositus** : The male individual through whom a family with a genetic disorder is ascertained. In females this is called a proposita.

**propranolol hydrochloride**: The hydrochloride salt of propranolol, a synthetic beta-adrenergic receptor blocker with antianginal, antiarrhythmic, and antihypertensive properties. Propranolol competitively antagonizes beta-adrenergic receptors, thereby inhibiting beta-adrenergic reactions, such as vasodilation, and negative chronotropic and inotropic effects.

**propranolol hydrochloride** : A drug used under the brand name Hemangeol to treat infantile hemangioma (a benign blood vessel tumor). Propranolol hydrochloride is also used under other brand names to treat high blood pressure, including before surgery for pheochromocytoma, and to treat chest pain (angina), abnormal heartbeat (arrhythmia), and several

other conditions. It is also being studied in the treatment of other conditions and types of cancer. Propranolol hydrochloride blocks certain receptors on nerve cells and causes blood vessels to relax and dilate (widen). This allows blood to flow more easily and lowers blood pressure and heart rate. Propranolol hydrochloride may also help shrink certain types of vascular tumors. It is a type of beta blocker.

**Proprietary information:** Privately owned knowledge or data, such as that protected by a registered patent, copyright, or trademark.

**Proprotein:** A protein that is made in an active form, so that it requires processing to become functional.

**Propylene:** Propylene is the second member of the olefin chemical family, consisting of three hydrocarbons in a chain, linked by one double bond and one single bond. The double bond in propylene is less accessible and less reactive than that in ethylene and hence reaction conditions tend to be harsher for a given synthesis reaction. Propylene is also produced (to a lesser extent than ethylene) from the pyrolytic cracking in a steam cracker of a wide variety of hydrocarbons. Significant volumes of propylene are also produced from refinery FCC units.

**Propylene Glycol:** Mono, di and tri-propylene glycol are produced commercially. Monopropylene glycol (MPG) is the most widely used, and is found in cosmetics, foods, pharmaceuticals and laundry detergents, as well as substituting for monoethylene glycol in anti-freeze formulations where lower toxicity is required or chiefly to make unsaturated polyester resins used in fibreglass composites for construction applications. Most of polyester based fibreglass, however, are produced from propylene oxide. Di and tri-propylene glycol are mainly used in the production of resins and elastomers. A clear, viscous liquid at room temperature, propylene glycol is produced by the hydrolysis reaction of propylene oxide and water.

**Propylene oxide:** Propylene oxide is a chemical intermediate mainly used for the production of polyether polyols-which are in turn used in urethane foams, and also in production of propylene glycol, with the remainder consumed in glycol ethers. Propylene oxide is produced from propylene by two routes: mainly chlorohydrin route or to a lesser extent indirect route via hydroperoxidation of isobutane or ethylbenzene producing tertiary butyl alcohol (PO/TBA) or styrene monomer (PO/SM) as co-product respectively. Chlorohydrin route is more energy intensive, produces high

by-product yield of little application, and involved chlorine waste disposal. Nevertheless, it remains economically healthy, producing 40 to 50% of PO in the United States. Some propylene oxide is also produced from cumene. Propylene oxide production is widespread outside the Middle East, although projects are now under development in the Middle East.

**propylthiouracil:** A thiourea derivative with antithyroid property. Propylthiouracil (PTU) interferes with the oxidation of iodine possibly by interaction with peroxidase or a peroxidase-mediated complex reaction, thereby inhibiting synthesis of thyroid hormones tri-iodothyronine (T3) and thyroxine (T4). In addition, this agent inhibits the Type I 5'-deiodinase (D1), an enzyme involved in the peripheral conversion of thyroxine to tri-iodothyronine. This results in decreased plasma triiodothyronine concentrations and decreased entrance of thyroxine into cells thereby reducing thyroid hormone activity.

**Prorex:** (Other name for: promethazine hydrochloride)

**prosaposin:** precursor protein for the saposins; designated as SAP-A, -B, C, and -D

**Proscar:** (Other name for: finasteride)

**prospective :** In medicine, a study or clinical trial in which participants are identified and then followed forward in time.

**prospective cohort study :** A research study that follows over time groups of individuals who are alike in many ways but differ by a certain characteristic (for example, female nurses who smoke and those who do not smoke) and compares them for a particular outcome (such as lung cancer).

**Prost 30 :** A monoclonal antibody that is being studied in the detection and treatment of cancer. Monoclonal antibodies are produced in the laboratory and can locate and bind to cancer cells.

**Prostaglandin:** An oxygenated eicosanoid that has a hormonal function. Prostaglandins are unusual hormones in that they usually have effects only in that region of the organism where they are synthesized.

**prostaglandin :** One of several hormone-like substances made by the body. Different prostaglandins control blood pressure, contraction of smooth muscles, and other processes within tissues where they are made. Certain prostaglandins are being studied as cancer biomarkers. Also called PG.

**prostaglandin E1** : A drug that is used to treat impotence (inability to have an erection) and is being studied in the treatment of sexual problems in men who have had surgery for prostate cancer. It is a type of vasodilator. Also called alprostadil and PGE1.

**prostaglandin-endoperoxide synthase 2** : An enzyme that speeds up the formation of substances that cause inflammation and pain. It may also cause tumor cells to grow. Some tumors have high levels of prostaglandin-endoperoxide synthase 2 and blocking its activity may reduce tumor growth. Also called COX-2 and cyclooxygenase-2.

**prostaglandins**: A class of lipid-soluble, hormonelike regulatory molecules derived from arachidonate and other polyunsaturated fatty acids. OR A class of short-lived signal molecules that are 20-carbon fatty acids containing a five-membered ring. OR the hormones secreted by various tissue cells that produce their effects on smooth muscles, on various glands, and in reproductive physiology.

**ProstaMedix**: (Other name for: gallium Ga 68-labeled PSMA ligand Glu-urea-Lys(Ahx))

**ProstaScint** : A substance used to detect prostate cancer. It contains a monoclonal antibody that binds to prostate cells, linked to a substance that can bind radioisotopes. ProstaScint is combined with indium 111 and injected into the body. A gamma camera (a special camera that detects radioactivity) is used to find prostate cancer cells in the body. ProstaScint is a type of immunoconjugate. Also called capromab pendetide.

**ProstaScint scan** : An imaging test used to detect prostate cancer. The patient receives an injection of an indium 111-labeled form of ProstaScint, which contains a monoclonal antibody that binds to prostate cells. A gamma camera (a special camera that detects radioactivity) is used to find prostate cancer cells in the body.

**prostate** : A gland in the male reproductive system. The prostate surrounds the part of the urethra (the tube that empties the bladder) just below the bladder, and produces a fluid that forms part of the semen.

**prostate cancer** : Cancer that forms in tissues of the prostate (a gland in the male reproductive system found below the bladder and in front of the rectum). Prostate cancer usually occurs in older men.

**prostate cancer vaccine ONY-P1:** A cell-based vaccine derived from prostate cancer with potential immunopotentiating and antineoplastic activities. Prostate cancer vaccine ONY-P1 is derived from three irradiated allogeneic prostate cancer cell lines that represent different stages of prostate cancer and express a broad range of prostate and prostate cancer antigens. Upon administration, this vaccine may stimulate a host immune response against prostate cancer cells; in the vaccination schedule, the first two vaccinations are co-administered with bacillus Calmette-Guerin (BCG) as an adjuvant.

**Prostate Health Cocktail:** (Other name for: cholecalciferol/d-alpha tocopherol/L-selenomethionine/green tea extract/saw palmetto berry extract/daidzein/genistein/lycopene prostate health supplement)

**prostate tumor antigen-activated autologous dendritic cell vaccine:** A dendritic cell (DC)-based cancer vaccine composed of autologous dendritic cells (DCs) activated with a prostate tumor cell lysate containing tumor-associated antigens (TAAs) with potential immunostimulatory and antineoplastic activities. Upon administration, the prostate tumor antigen-activated autologous DC vaccine may stimulate an anti-tumoral cytotoxic T-lymphocyte (CTL) response against prostate cancer cells expressing prostate tumor cell-specific antigens, which may result in prostate tumor cell lysis.

**prostate-specific antigen :** A protein made by the prostate gland and found in the blood. Prostate-specific antigen blood levels may be higher than normal in men who have prostate cancer, benign prostatic hyperplasia (BPH), or infection or inflammation of the prostate gland. Also called PSA.

**prostate-specific antigen test :** A blood test that measures the level of prostate-specific antigen (PSA), a substance produced by the prostate and some other tissues in the body. Increased levels of PSA may be a sign of prostate cancer.

**prostatectomy :** Surgery to remove part or all of the prostate and some of the tissue around it. Nearby lymph nodes may also be removed. It may be done through an open prostatectomy, in which an incision (cut) is made in the wall of the lower abdomen or the perineum, or by using a laparoscope (a thin, tube-like instrument with a light and lens for viewing).

**prostatic acid phosphatase :** An enzyme produced by the prostate. It may be found in increased amounts in men who have prostate cancer. Also

called PAP.

**prostatic acid phosphatase-sargramostim fusion protein:** A genetically-engineered protein formed by the fusion of prostatic acid phosphatase (PAP) and sargramostim (GM-CSF). Vaccination with antigen-presenting cells (APC) loaded with prostatic acid phosphatase-sargramostim fusion protein may elicit a cytotoxic T-cell response against tumor cells that express PAP.

**prostatic intraepithelial neoplasia :** Noncancerous growth of the cells lining the internal and external surfaces of the prostate gland. Having high-grade prostatic intraepithelial neoplasia may increase the risk of developing prostate cancer. Also called PIN.

**prostatitis :** Inflammation of the prostate gland.

**prostatocystectomy :** Surgery to remove the bladder (the organ that holds urine) and the prostate. In a radical prostatocystectomy, the seminal vesicles are also removed. The prostate and seminal vesicles are glands in the male reproductive system that help make semen. Also called cystoprostatectomy.

**prosthesis :** A device, such as an artificial leg, that replaces a part of the body.

**Prosthetic group:** Synonymous with coenzyme except that a prosthetic group is usually more firmly attached to the enzyme it serves. OR A metal ion or an organic compound (other than an amino acid) that is covalently bound to a protein and is essential to its activity.

**prosthetist :** A person who has special training in making and fitting artificial body parts, such as arms or legs.

**prosthodontist :** A dentist who has special training in replacing missing teeth or other structures of the mouth to restore an individual's appearance, comfort, or health.

**prostration :** A condition in which a person is so tired or weak that he or she is unable to do anything.

**Protactinium:** Symbol:"Pa" Atomic Number:"91" Atomic Mass: 231.04amu. Protactinium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. It is a radioactive and unstable element and you will not find it in use anywhere.

**Protamines:** Highly basic, arginine-rich proteins found complexed to DNA in the sperm of many invertebrates and fish. OR Enzymes that degrade proteins by cleaving peptide bonds. OR Large protein complexes that carry out routine degradation of ubiquitinated cellular proteins as well as of those from pathogens.

**protease inhibitor :** A compound that interferes with the ability of certain enzymes to break down proteins. Some protease inhibitors can keep a virus from making copies of itself (for example, AIDS virus protease inhibitors), and some can prevent cancer cells from spreading.

**proteasome inhibitor :** A drug that blocks the action of proteasomes. A proteasome is a large protein complex that helps destroy other cellular proteins when they are no longer needed. Proteasome inhibitors are being studied in the treatment of cancer.

**protecting group:** a group that is formed on a molecule by the reaction of a reagent with a substituent on the molecule. The resulting group is less sensitive to further reaction than the original group, but it must be able to be easily reconverted to the original group.

**Protection of Human Subjects :** Laws set by the U.S. Department of Health and Human Services (DHHS) to protect a person from risks in research studies that any federal agency or department has a part in. Also called 45 CFR 46, 45 Code of Federal Regulations Part 46, and human participant protection regulations.

**protective factor :** Something that may decrease the chance of getting a certain disease. Some examples of protective factors for cancer are getting regular physical activity, staying at a healthy weight, and having a healthy diet.

**protegrin :** One of a family of small proteins found in white blood cells in pigs. Protegrins kill certain bacteria, fungi, and viruses by making holes in their outer membranes and causing them to burst. A protegrin is a type of antimicrobial peptide.

**protein:** A biological polymer formed by condensation reactions among a set of 20 different amino acids. OR A large molecule composed of one or more chains of amino acids in a specific order and folded shape determined by the sequence of nucleotides in the gene encoding the protein OR A biological macromolecule composed of a linear array of amino acids joined by peptide bonds; roles of proteins in biological processes include catalysis,

transport and storage, motion, mechanical support, immune protection, the generation and transmission of nerve impulses, and the control of growth and differentiation. OR A complex polymer made by linking together amino acid molecules. Proteins sometimes contain non-amino acid components such as metal ions or porphyrin rings embedded within. OR A macromolecule composed of one or more polypeptide chains, each with a characteristic sequence of amino acids linked by peptide bonds.

**protein :** A molecule made up of amino acids. Proteins are needed for the body to function properly. They are the basis of body structures, such as skin and hair, and of other substances such as enzymes, cytokines, and antibodies.

**Protein Data Bank (PDB):** A Web storage site for the coordinates of protein structures that have been solved by x-ray crystallography and NMR analysis. With the use of the coordinates, the structures can be accessed for visualization and analysis.

**Protein disulfide isomerase:** An enzyme that catalyzes the formation of correct disulfide pairings in nascent proteins; preferentially reacting with peptides that contain cysteine residues but otherwise indiscriminating, the enzyme speeds up the disulfide shuffling required for a protein to find the most thermodynamically stable disulfide pairings among those that can be formed.

**protein expression :** Refers to the production of proteins by cells. The study of protein expression in cancer cells may give information about a specific type of cancer, the best treatment to use, and how well a treatment works.

**protein expression profile :** Information about all proteins that are made in blood, other body fluids, or tissues, at certain times. A protein expression profile may be used to find and diagnose a disease or condition and to see how well the body responds to treatment. Also called protein signature and proteomic profile.

**Protein kinase A:** A protein kinase that consists of two catalytic subunits and two regulatory subunits that inhibit the catalytic subunits; on binding of camp, the regulatory subunits dissociate from the catalytic subunits, which then become active.

**protein kinase B :** A group of enzymes involved in several processes related to cell growth and survival. Protein kinase B enzymes help to

transfer signals inside cells. A protein kinase B enzyme is a type of serine/threonine protein kinase. Also called Akt.

**Protein kinase C:** A protein kinase that is activated by the binding of diacylglycerol.

**protein kinase C :** An enzyme found throughout the body's tissues and organs. Several forms of protein kinase C are involved in many cellular functions. Protein kinase C is being studied in the treatment of cancer. Also called PKC.

**protein kinase C inhibitor LXS196:** An orally available protein kinase C (PKC) inhibitor with potential immunosuppressive and antineoplastic activities. Upon oral administration, protein kinase C inhibitor LXS196 binds to and inhibits PKC, which prevents the activation of PKC-mediated signaling pathways. This may lead to the induction of cell cycle arrest and apoptosis in susceptible tumor cells. PKC, a serine/threonine protein kinase overexpressed in certain types of cancer cells, is involved in tumor cell differentiation, proliferation, invasion and survival.

**protein kinase inhibitor :** A substance that blocks the action of enzymes called protein kinases. There are many different types of protein kinases and they take part in many cell functions. These include cell signaling, growth, and division. Blocking certain protein kinases may help keep cancer cells from growing. Some protein kinase inhibitors, such as imatinib, vemurafenib, and gefitinib, are used to treat cancer.

**Protein kinases:** A class of enzymes that transfer a phosphoryl group from ATP to proteins; protein kinases are frequently found in regulatory pathways. OR Enzymes that phosphorylate certain amino acid residues in specific proteins.

**Protein phosphatase 1:** A protein phosphatase stimulated by insulin that inhibits glycogen degradation and stimulates glycogen synthesis.

**Protein phosphatase 2A:** An insulin-responsive phosphatase that activates acetyl coa carboxylase to stimulate fatty acid synthesis.

**protein phosphatase 2A inhibitor LB-100:** A water soluble inhibitor of the protein phosphatase 2A (PP2A), with potential chemo- and radiotherapy enhancing activity. Upon injection, PP2A inhibitor LB-100 inhibits the removal of phosphate groups from proteins essential for cell cycle progression. When used with radio- or chemotherapy treatment, this agent

prevents the activation of PP2A-mediated repair mechanisms and allows for malignant cells to progress through the cell cycle without having their damaged DNA repaired. This enhances the cytotoxic effect of the chemotherapeutic or radiotherapeutic agent and results in tumor cell apoptosis. PP2A, a serine/threonine phosphatase that plays a key role in the control of cell growth and DNA damage repair.

**Protein phosphatases:** Enzymes that hydrolyze phosphorylated serine and threonine residues in other proteins; protein phosphatase 1 reverses the regulatory effects of kinases on glycogen metabolism.

**protein signature :** Information about all proteins that are made in blood, other body fluids, or tissues, at certain times. A protein signature may be used to find and diagnose a disease or condition and to see how well the body responds to treatment. Also called protein expression profile and proteomic profile.

**protein stabilized liposomal docetaxel nanoparticles:** A formulation containing protein-stabilized liposome nanoparticles encapsulating the poorly water-soluble, second-generation taxane analog docetaxel with antineoplastic activity. Docetaxel binds to and stabilizes the beta-tubulin subunit, thereby inhibiting microtubule disassembly which results in cell-cycle arrest at the G2/M phase and cell death. This agent also inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and displays immunomodulatory and pro-inflammatory properties by inducing various mediators of the inflammatory response. Compared to the use of toxic carriers to increase solubilization of docetaxel, protein-stabilized liposomal docetaxel improves drug solubility while avoiding carrier-associated toxicity.

**Protein subunit:** One of the components or monomers of a multicomponent protein.

**Protein synthesis:** The process in which the genetic code carried by messenger RNA directs cellular organelles called ribosomes to produce proteins from amino acids

**protein targeting:** The process by which newly synthesized proteins are sorted and transported to their proper locations in the cell.

**protein-bound paclitaxel :** A drug used to treat breast cancer that has come back or spread to other parts of the body. It is also used with carboplatin to treat advanced non-small cell lung cancer in patients who are

not able to have surgery or radiation therapy. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that has spread to other parts of the body. It is being studied in the treatment of other types of cancer. Protein-bound paclitaxel is a form of the anticancer drug paclitaxel and may cause fewer side effects than paclitaxel. It stops cancer cells from growing and dividing, and may kill them. It is a type of mitotic inhibitor and a type of antimicrotubule agent. Also called ABI-007, Abraxane, nanoparticle paclitaxel, and paclitaxel albumin-stabilized nanoparticle formulation.

**proteinoids:** the primitive polymers formed by the unison of amino acids; able to act as enzymes and catalyze organic reactions.

**proteins:** long chains of amino acid units that are the main molecules from which living things are constructed.

**proteinuria :** Higher-than-normal amount of protein in the urine.

**Proteoglycan:** A protein-linked heteropolysaccharide in which the heteropolysaccharide is usually the major component. OR A hybrid macromolecule consisting of a heteropolysaccharide joined to a polypeptide; the polysaccharide is the major component. OR A molecule that contains both protein and glycosaminoglycans, which are a type of polysaccharide. Proteoglycans are found in cartilage and other connective tissues.

**Proteoglycans:** Proteins containing one or more covalently linked glycosaminoglycan chains; cartilage proteoglycan contains keratan sulfate and chondroitin chains linked to a polypeptide backbone.

**proteolytic enzymes:** Enzymes produced and secreted by the pancreas which aid in the proteolysis of proteins in the digestive tract. Pancreatic proteolytic enzymes include trypsin, chymotrypsin and carboxypeptidase; these enzymes are secreted as zymogens, inactive precursors of the enzymes, and are activated in the lumen of the digestive canal. Another proteolytic enzyme, enteropeptidase, is associated with the brush border of enterocytes; this enzyme catalyses the conversion of trypsinogen into trypsin which, in turn, can activate a number of other pancreatic zymogens.

**Proteome:** The functional representation of the genome that includes the types, functions, and interactions of proteins that are present in a cell; the proteome is not a fixed characteristic of a cell but will vary, depending on such factors as developmental stage or hormonal status. OR The complete

set of proteins made by an organism. Proteins are made in different amounts and at different times, depending on how they work, when they are needed, and how they interact with other proteins inside cells. Information about a proteome may be used to help find which proteins are involved in diseases, such as cancer. It may also be used to help develop drugs that block these proteins.

**proteomic profile :** Information about all proteins that are made in blood, other body fluids, or tissues, at certain times. A proteomic profile may be used to find and diagnose a disease or condition and to see how well the body responds to treatment. Also called protein expression profile and protein signature.

**proteomics :** The study of the structure and function of proteins, including the way they work and interact with each other inside cells.

**proteosome:** machinery in the cell for targeted destruction of proteins

**Protist:** A relatively undifferentiated organism that can survive as a single cell.

**Protista:** a kingdom that includes protozoa, one-celled algae, and slime molds.

**Proto-oncogene:** A cellular gene that can undergo modification to a cancer-causing gene (oncogene). OR A signal transduction protein that usually regulates cell growth in some fashion; when proto-oncogenes mutated, they become oncogenes and contribute to the development of cancer. OR A cellular gene, usually encoding a regulatory protein, that can be converted into an oncogene by mutation. OR A gene involved in normal cell growth. Mutations (changes) in a proto-oncogene may cause it to become an oncogene, which can cause the growth of cancer cells.

**Protocel :** A liquid that has been promoted as a treatment for a wide range of diseases, including cancer. The ingredients thought to be in Protocel have been tested, and none of them have been shown to be effective in treating any form of cancer. Protocel is not available in the United States. Also called 126-F, Cancell, Cantron, Jim's Juice, JS-101, JS-114, and Sheridan's Formula.

**protocells:** the first cells.

**protocol :** A detailed plan of a scientific or medical experiment, treatment, or procedure. In clinical trials, it states what the study will do, how it will

be done, and why it is being done. It explains how many people will be in the study, who is eligible to take part in it, what study drugs or other interventions will be given, what tests will be done and how often, and what information will be collected.

**proton:** a sub-atomic particle, positively charged, in the nucleus of atoms. OR Particle found in a nucleus with a positive charge. Number of these gives atomic number. OR A positively charged subatomic particle found in the nucleus. OR A proton is a particle found in the nucleus of every atom. It holds a positive charge (+). The mass of a proton is almost equal to the mass of a neutron. Electrons are much smaller than protons. OR is a basic particle with a charge of +1 and a mass of 1g/mol (amu). OR Every uncharged atom has an equal number of positively charged protons (which are relatively big and sit in the nucleus with the neutrons) and negatively-charged electrons, which whirl around on the outside and make chemistry. A proton weighs about  $1.6726 \times 10^{-27}$  kg, slightly less than a neutron. OR a heavy subatomic particle with a positive charge; found in an atomic nucleus. OR a positively charged particle in the nucleus of an atom. OR a particle in the center of the atom that has a positive charge. OR An elementary nuclear particle with a positive electric charge located in the nucleus of an atom.

**proton :** A small, positively charged particle of matter found in the atoms of all elements. Streams of protons generated by special equipment can be used for radiation treatment.

**Proton acceptor:** A functional group capable of accepting a proton from a proton donor molecule. OR An anionic compound capable of accepting a proton from a proton donor; that is, a base.

**proton beam radiation therapy :** A type of radiation therapy that uses streams of protons (tiny particles with a positive charge) to kill tumor cells. This type of treatment can reduce the amount of radiation damage to healthy tissue near a tumor. It is used to treat cancers of the head and neck and organs such as the brain, eye, lung, spine, and prostate. Proton beam radiation is different from x-ray radiation.

**proton donor:** The donor of a proton in an acid-base reaction; that is, an acid. OR Because a free  $H^+$  ion is technically a bare proton, acids are sometimes referred to as "proton donors" because they release hydrogen ions in solution. The term "proton donor" is misleading, since in aqueous

solution, the hydrogen ion is never a bare proton- it's covalently bound to a water molecule as an  $\text{H}_3\text{O}^+$  ion. Further, acids don't "donate" protons; they yield them to bases with a stronger affinity for them.

**Proton gradient:** The unequal distribution of protons across a proton-impermeable membrane; such gradients can be used to power various biochemical processes, such as the synthesis of ATP.

**proton magnetic resonance spectroscopic imaging :** A noninvasive imaging method that provides information about cellular activity (metabolic information). It is used along with magnetic resonance imaging (MRI) which provides information about the shape and size of the tumor (spatial information). Also called  $^1\text{H}$ -nuclear magnetic resonance spectroscopic imaging, magnetic resonance spectroscopic imaging, and MRSI.

**Proton motive force (:** DThe thermodynamic driving force for proton translocation.

**proton pump inhibitor :** A substance used to treat certain disorders of the stomach and intestines, such as heartburn and ulcers. Proton pump inhibitors block the actions of an enzyme in the stomach and reduce the amount of acid made in the stomach. Also called PPI.

**Proton-motive force:** The energy inherent in the proton gradient established during the functioning of the respiratory chain; consists of a membrane potential as well as a chemical gradient. OR The electrochemical potential inherent in a transmembrane gradient of  $\text{H}^+$  concentration; used in oxidative phosphorylation and photophosphorylation to drive ATP synthesis.

**proton+:** An elementary particle found the atomic nucleus with a positive charge equal and opposite that of the electron. Protons have a mass of 1.007276 daltons.

**protonated:** Having acquired an additional proton ( $\text{H}^+$ ).

**protonation:** the addition of a proton (a hydrogen ion) to a molecule.

**protons:** positively charged particles within the nucleus of an atom.

**protoplasm:** A general term referring to the entire contents of a living cell.

**Protoporphyrin:** An organic constituent of the heme prosthetic group; consists of four pyrrole rings joined by methylene bridges and contains various side chains.

**Prototype:** Original example of a product after it has been designed and thermoformed.

**Prototype mold:** a simplified mold construction often made from a light-casting alloy or from epoxy resin in order to obtain information for the final mold or part design.

**Prototype tool:** Also called a soft tool, a preliminary mold built to produce prototype parts and used to make adjustments to the final production tool.  
OR A preliminary mold built upon which the final mold will be based.

**protozoal :** Having to do with the simplest organisms in the animal kingdom. Protozoa are single-cell organisms, such as ameba, and are different from bacteria, which are not members of the animal kingdom. Some protozoa can be seen without a microscope.

**Prout–Tompkins kinetics:** The equation that treats a solid-state reaction as a process controlled by growing nuclei that branch into chains. The equation is: where  $a$  is the extent of reaction,  $k$  is the rate constant, and  $t$  is the time.

**Provecta:** (Other name for: PV-10)

**provenance area:** the source from which sediment originated.

**Provenge:** (Other name for: sipuleucel-T)

**Provenge :** A drug used to treat prostate cancer that has spread. It is made from immune system cells collected from a patient with prostate cancer. The cells are treated with a protein that is made by combining a protein found on prostate cancer cells with a growth factor. When the cells are injected back into the patient, they may stimulate T cells to kill prostate cancer cells. Provenge is a type of vaccine and a type of cellular adoptive immunotherapy. Also called APC8015 and sipuleucel-T.

**Proventil:** (Other name for: albuterol sulfate)

**Provera:** (Other name for: medroxyprogesterone)

**Provera Dosepak:** (Other name for: medroxyprogesterone)

**Provigan:** (Other name for: promethazine hydrochloride)

**Provigil:** (Other name for: modafinil)

**proximal :** In medicine, refers to a part of the body that is closer to the center of the body than another part. For example, the knee is proximal to the toes. The opposite is distal.

**proximal colon :** The first and middle parts of the colon. The proximal colon includes the cecum (a pouch that connects the small intestine to the colon), the ascending colon (the right side of the colon), and the transverse colon (the part of the colon that goes across the body between the right and left sides of the colon).

**proximal urethra :** The part of the urethra closest to the inside of the body. The urethra is the tube through which urine leaves the body. In women, the proximal urethra is the part near the bladder and in men it is the part that goes through the prostate gland.

**proximal urethral cancer :** A rare cancer that forms in the part of the urethra closest to the inside of the body. The cancer often has spread deeply into the tissue.

**Proxinium :** A substance being studied in the treatment of certain types of head and neck cancer. Proxinium is made by linking a monoclonal antibody fragment to a toxic protein that may kill cancer cells. It binds to EpCAM (a protein on the surface of epithelial cells and some types of cancer cells). Also called anti-EpCAM-Pseudomonas-exotoxin fusion protein and VB4-845.

**proxy climate indicators:** Dateable evidence of a biological or geological phenomenon whose condition, at least in part, is attributable to climatic conditions at the time of its formation. Proxy data are any material that provides an indirect measure of climate and include documentary evidence of crop yields, harvest dates, glacier movements, tree rings, varves, glaciers and snow lines, insect remains, pollen remains, marine microfauna, isotope measurements:  $^{18}\text{O}$ , in ice sheets,  $^{18}\text{O}$ ,  $^2\text{H}$ , and  $^{13}\text{C}$  in tree rings;  $\text{CaCO}_3$  in sediments; and speleothems. There are three main problems in using proxy data: (1) dating, (2) lag and response time, and (3) meteorological interpretation. Tree rings, pollen deposits from varved lakes, and ice cores are the most promising proxy data sources for reconstructing the climate of the last five millennia because the dating are precise on an annual basis while other proxy data sources may only be precise to +/- 100 years.

**pruritus :** Itching. Severe itching may be a side effect of some cancer treatments and a symptom of some types of cancers.

**PS:** Polystyrene

**PS-341:** A drug used to treat multiple myeloma. It is also used to treat mantle cell lymphoma in patients who have already received at least one

other type of treatment and is being studied in the treatment of other types of cancer. PS-341 blocks several molecular pathways in a cell and may cause cancer cells to die. It is a type of proteasome inhibitor and a type of dipeptidyl boronic acid. Also called bortezomib and velcade.

**PSA:** A protein made by the prostate gland and found in the blood. PSA blood levels may be higher than normal in men who have prostate cancer, benign prostatic hyperplasia (BPH), or infection or inflammation of the prostate gland. Also called prostate-specific antigen.

**PSA bounce :** A brief rise and then fall in the blood level of PSA (prostate-specific antigen) that occurs in some patients 1-3 years after receiving radiation treatment for prostate cancer. PSA bounce does not mean that the cancer has come back. It may be caused by the release of PSA from destroyed cancer cells or from normal prostate tissue exposed to the radiation treatment.

**PSA failure :** A rise in the blood level of PSA (prostate-specific antigen) in prostate cancer patients after treatment with surgery or radiation. PSA failure may occur in patients who do not have symptoms. It may mean that the cancer has come back. Also called biochemical recurrence and biochemical relapse.

**PSA prostate cancer vaccine:** A peptide vaccine containing the prostate specific antigen (PSA) with potential antineoplastic activity. PSA, a glycoprotein secreted by prostatic epithelial and ductal cells, is overexpressed in prostate cancer cells and is used as a tumor marker for both diagnosis and treatment evaluation. Vaccination with PSA peptide vaccine may produce anti-PSA antibodies as well as elicit a cytotoxic T-cell (CTL) response against prostate cancer cells expressing this antigen, thereby decreasing tumor cell growth.

**PSA RNA-pulsed dendritic cell vaccine:** An autologous dendritic cell vaccine with potential immunostimulatory activity. Dendritic cells harvested from a prostate cancer patient are transfected with the mRNA encoding for prostate specific antigen (PSA), a tumor marker secreted by prostatic epithelial and ductal cells. When reintroduced back to the patient, these PSA RNA pulsed autologous dendritic cells may elicit a cytotoxic T-cell (CTL) response against PSA-positive prostate cancer cells.

**PSA test :** A laboratory test that measures the amount of prostate-specific antigen (PSA) found in the blood. PSA is a protein made by the prostate

gland. The amount of PSA may be higher in men who have prostate cancer, benign prostatic hyperplasia (BPH), or infection or inflammation of the prostate.

**PSA velocity :** A measurement of how fast PSA levels in the blood increase over time. A high PSA velocity may be a sign of prostate cancer and may help find fast-growing prostate cancers.

**PSA-PAP/KLH-pulsed autologous dendritic cell vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with the prostate-specific tumor associated antigens (TAAs) prostate specific antigen (PSA) and prostate acid phosphatase (PAP), and conjugated to the immunostimulant keyhole limpet hemocyanin (KLH), with potential immunostimulatory and antineoplastic activities. Upon administration, prostate cancer antigen/KLH-pulsed autologous dendritic cell vaccine may stimulate the immune system to mount anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against prostate cancer cells expressing PSA and PAP, which may result in prostate cancer cell lysis. KLH is an immunogenic carrier and serves as an immunostimulant to improve antigenic immune recognition and T-cell responses and can be used to evaluate vaccine efficacy.

**PSA:154-163(155L) peptide vaccine:** A cancer vaccine comprised of a synthetic peptide with an amino acid sequence corresponding to positions 154-163 of the amino acid sequence for prostate-specific antigen (PSA) with a leucine substitution at position 155. Upon administration, PSA:154-163(155L) peptide vaccine may elicit a cytotoxic T-cell response against tumor cells that express PSA.

**PSA/IL-2/GM-CSF vaccine:** A prostate cancer vaccine containing prostate specific antigen (PSA) combined with the cytokines, interleukin-2 (IL-2) and granulocyte macrophage-colony-stimulating factor (GM-CSF), with potential antineoplastic activity. Upon intradermal vaccination, PSA/IL-2/GM-CSF vaccine may activate the immune system to induce a cytotoxic T-cell (CTL) response against prostate cancer cells expressing this antigen, thereby decreasing tumor cell growth. PSA, a glycoprotein secreted by prostatic epithelial and ductal cells, is overexpressed by prostate cancer cells. IL-2 stimulates natural killer (NK) cells and cytotoxic T-cells against the PSA-expressing tumor cells. GM-CSF promotes antigen presentation to

dendritic cells and further stimulates a tumor-specific cytotoxic T-lymphocyte (CTL) response.

**PSA/PSMA DNA plasmid INO-5150:** A plasmid DNA vaccine encoding the tumor-associated antigens (TAAs) prostate-specific antigen (PSA) and prostate-specific membrane antigen (PSMA), with potential immunoactivating and antineoplastic activities. Upon intramuscular delivery and electroporation of the PSA/PSMA DNA plasmid INO-5150, both PSA and PSMA are translated in cells which then activate the immune system. This induces cytotoxic T-lymphocyte (CTL) responses against tumor cells expressing PSA and PSMA. This may result in both immune-mediated tumor cell death and the inhibition of tumor cell proliferation. PSA and PSMA are overexpressed on a variety of cancer cell types. The DNA encoding the TAAs in INO-5150 is based on both human and other primate antigen gene sequences. As the plasmid genes differ from the human gene sequences encoding these antigens, INO-5150 may overcome immune tolerance to human TAAs.

**psammoma body :** A structure found in some benign (not cancer) or malignant (cancer) tumor cells. Psammoma bodies look like hardened concentric rings when viewed under a microscope. They can be a sign of chronic inflammation.

**PSC 833:** A substance that is being studied for its ability to prevent or overcome the resistance of tumor cells to some anticancer drugs. It belongs to the family of drugs called cyclosporine analogs.

**pseudocore:** Electrons in d or f subshells which are outside the noble gas core.

**Pseudocycle:** A sequence of reactions that can be arranged in a cycle but that usually do not function simultaneously in both directions. Also called a futile cycle, since the net result of simultaneous functioning in both directions would be the expenditure of energy without accomplishing any useful work.

**pseudogene :** A DNA sequence that resembles a gene but has been mutated into an inactive form over the course of evolution. It often lacks introns and other essential DNA sequences necessary for function. Though genetically similar to the original functional gene, pseudogenes do not result in functional proteins, although some may have regulatory effects.

**Pseudogenes:** Sequences of DNA that resemble actual genes but do not encode functional products.

**Pseudomonas aeruginosa preparation:** A preparation containing the inactivated *Pseudomonas aeruginosa* bacterium with potential immunomodulating activity. Upon inoculation, *Pseudomonas aeruginosa* preparation may stimulate the immune system, increasing macrophage and natural killer cell activity; it may be used thereby in cancer adjuvant treatments, and it may reduce the incidence of infection.

**pseudomyxoma peritonei :** A build-up of mucus in the peritoneal cavity. The mucus may come from ruptured ovarian cysts, from the appendix, or from other abdominal tissues. Mucus-secreting cells may attach to the peritoneal lining and continue to secrete mucus.

**PSEUDOPLASTIC FLOW:** This term is synonymous to shear thinning flow, i.e. viscosity decreases as the shear rate increases.

**Pseudopolymorph:** A polymorph that differs from a true polymorph by the incorporation of solvent.

**pseudopotential:** see ECP.

**Pseudosubstrate:** An amino acid sequence that resembles the actual substrate for an enzyme except that a crucial amino acid has been changed, converting the sequence into an inhibitor; the regulated binding of pseudosubstrates is sometimes used to control enzyme activity.

**psilocybin :** A substance being studied in the treatment of anxiety or depression in patients with advanced cancer. It is taken from the mushroom *Psilocybe mexicana*. Psilocybin acts on the brain to cause hallucinations (sights, sounds, smells, tastes, or touches that a person believes to be real but are not real). Also called psilocybine.

**psilocybine:** A tryptamine alkaloid, isolated from various genera of fungi including the genus *Psilocybe*, with hallucinogenic, anxiolytic, and psychoactive activities. In vivo, psilocybine is rapidly dephosphorylated into the active compound psilocin, which activates serotonin 2A (5-HT<sub>2A</sub>) receptors in the central nervous system (CNS), mimicking the effects of serotonin. or A substance being studied in the treatment of anxiety or depression in patients with advanced cancer. It is taken from the mushroom *Psilocybe mexicana*. Psilocybine acts on the brain to cause hallucinations

(sights, sounds, smells, tastes, or touches that a person believes to be real but are not real). Also called psilocybin.

**PSMA-targeted docetaxel nanoparticles BIND-014:** A proprietary preparation of polymeric nanoparticles containing the second-generation taxane docetaxel, targeted to prostate-specific membrane antigen (PSMA), with antineoplastic activity. PSMA-targeted docetaxel nanoparticles BIND-014 carry docetaxel within a matrix of polylactic acid covered with a coating of polyethylene glycol; embedded on the surface of the polyethylene glycol coating are ligands targeted to PSMA. BIND-014 allows gradual release of docetaxel upon degradation of the polylactic acid, and the PEG encapsulation escapes the host immune response while PSMA ligands on the surface restrict the cytotoxic effect to PSMA-expressing cells. Docetaxel binds to and stabilizes the beta-tubulin subunit, thereby inhibiting microtubule disassembly which results in cell-cycle arrest at the G2/M phase and cell death. PSMA is a cell-surface antigen that is abundantly present on the surface of cancer cells and on the neovasculature that feeds a wide variety of tumor types.

**PSMA-targeted tubulysin B-containing conjugate EC1169:** An injectable, water soluble, small molecule drug conjugate (SMDC) containing a ligand specific for prostate-specific membrane antigen (PSMA), conjugated via a stable, enzyme-cleavable linker to the cytotoxic agent tubulysin B hydrazide (TubBH), with potential antineoplastic activity. Upon administration of PSMA-targeted tubulysin B-containing conjugate EC1169, the PSMA ligand specifically targets and binds to PSMA, a protein which is abundantly expressed on the surface of metastatic and hormone-refractory prostate cancer cells as well as on the neovasculature of many solid tumors. This allows for the specific delivery of TubBH to PSMA-expressing cancer cells. Upon internalization and cleavage, tubulysin B binds to tubulin and inhibits microtubule polymerization, which blocks cell division and results in G2/M phase arrest, tumor cell apoptosis and a decrease in PSMA-expressing tumor cells.

**PSMA/TARP peptide vaccine:** A peptide-based cancer vaccine containing epitopes of T cell receptor gamma-chain alternate reading frame protein (TARP) and prostate-specific membrane antigen (PSMA) in combination with a Poly IC-LC immunoadjuvant, with potential antineoplastic activity. Upon administration, PSMA/TARP peptide vaccine may stimulate a host

cytotoxic T-cell (CTL) response against TARP- and PSMA-expressing tumor cells, resulting in tumor cell cytotoxicity. The nuclear protein TARP and PSMA are commonly expressed in prostate cancer cells.

**psoralen** : A substance from plants that is sensitive to light (or can be activated by light). Psoralens are used together with UV light to treat psoriasis, vitiligo, and skin nodules of cutaneous T-cell lymphoma. They are also being studied in the treatment of graft-versus-host disease. Psoralen is a type of furocoumarin. An example of a psoralen is methoxsalen.

**psoralen and ultraviolet A therapy** : A type of photodynamic therapy used to treat skin conditions such as psoriasis, vitiligo, and skin nodules of cutaneous T-cell lymphoma. The patient receives psoralen (a drug that becomes active when it is exposed to light) by mouth or applied to the skin, followed by ultraviolet A radiation. Psoralen and ultraviolet A therapy may increase the risk of getting skin cancer. Also called PUVA therapy.

**Psoria-Gold**: (Other name for: curcumin-based gel)

**psoriasis** : A chronic disease of the skin marked by red patches covered with white scales.

**psychiatrist** : A medical doctor who has special training in preventing, diagnosing, and treating mental, emotional, and behavioral disorders.

**psychological** : Having to do with how the mind works and how thoughts and feelings affect behavior.

**psychologist** : A specialist who can talk with patients and their families about emotional and personal matters, and can help them make decisions.

**psychology** : The study of how the mind works and how thoughts and feelings affect behavior.

**psychosis** : A severe mental disorder in which a person loses the ability to recognize reality or relate to others. The person is not able to cope with the demands of everyday life. Symptoms include being paranoid, having false ideas about what is taking place or who one is, and seeing, hearing, or feeling things that are not there.

**psychosocial** : In medicine, describes the psychological (emotional) and social parts of a disease and its treatment. Some of the psychosocial parts of cancer are its effects on patients' feelings, moods, beliefs, the way they cope, and relationships with family, friends, and co-workers.

**psychostimulant** : A drug that causes a sense of well-being, decreases fatigue and depression, and increases the desire to eat. These drugs can also cause mood changes and trouble with sleeping.

**psychotherapy** : Treatment of mental, emotional, personality, and behavioral disorders using methods such as discussion, insight, and counseling. Also called talk therapy.

**psychrometer**: an instrument with a dry-bulb thermometer and a wet-bulb thermometer; used to measure dewpoint and relative humidity.

**psyllium** : A plant with seeds that are used as a mild laxative. The outer layer of the seeds swells when wet. This increases the size of stool and helps it pass more easily through the intestines (lower part of the digestive tract). Psyllium is a type of bulk laxative.

**PT-100**: A substance being studied in the treatment of cancer, including certain types of lung, pancreas, and brain cancer. PT-100 may help the immune system block the growth of cancer cells. It may also increase the growth of new blood cells. It is a type of enzyme inhibitor. Also called talabostat and talabostat mesylate.

**PTC**: A procedure to x-ray the hepatic and common bile ducts. A contrasting agent is injected into the liver or bile duct, and the ducts are then x-rayed to find the point of obstruction. Also called percutaneous transhepatic cholangiography.

**PTCD**: A procedure to drain bile to relieve pressure in the bile ducts caused by a blockage. An x-ray of the liver and bile ducts locates the blockage of bile flow. Images made by ultrasound guide placement of a stent (tube), which remains in the liver. Bile drains through the stent into the small intestine or into a collection bag outside the body. This procedure may relieve jaundice before surgery. Also called percutaneous transhepatic biliary drainage and percutaneous transhepatic cholangiodrainage.

**PTEN**: A protein that helps control many cell functions, including cell division and cell death. Mutations (changes) in the gene that makes PTEN are found in many types of cancer and other diseases. It is a type of tumor suppressor protein. Also called PTEN tyrosine phosphatase.

**PTEN tyrosine phosphatase** : A protein that helps control many cell functions, including cell division and cell death. Mutations (changes) in the gene that makes PTEN tyrosine phosphatase are found in many types of

cancer and other diseases. It is a type of tumor suppressor protein. Also called PTEN.

**PTFE:** Polytetrafluoroethylene

**PTFE (polytetrafluoroethylene):** A thermoplastic member of the fluoropolymer family of plastics. PTFE has the lowest coefficient of friction of any known solid and the highest operating temperatures of the fluoropolymers.

**PTH:** A substance made by the parathyroid gland that helps the body store and use calcium. A higher-than-normal amount of PTH causes high levels of calcium in the blood and may be a sign of disease. Also called parathormone, parathyrin, and parathyroid hormone.

**PTK787/ZK 222584:** A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called protein tyrosine kinase inhibitors and VEGF receptor kinase inhibitors. Also called vatalanib.

**PTLD:** A condition in which a group of B-cells grow out of control after an organ transplant in patients with weakened immune systems. This usually happens if the patient has also been infected with Epstein-Barr virus. PTLD may progress to non-Hodgkin lymphoma. Also called post-transplant lymphoproliferative disorder.

**Ptolemy:** astronomer who developed the geocentric model.

**ptosis:** drooping eyelids OR Drooping of the upper eyelid.

**PTSD:** An anxiety disorder that develops in reaction to physical injury or severe mental or emotional distress, such as military combat, violent assault, natural disaster, or other life-threatening events. Having cancer may also lead to PTSD. Symptoms interfere with day-to-day living and include reliving the event in nightmares or flashbacks; avoiding people, places, and things connected to the event; feeling alone and losing interest in daily activities; and having trouble concentrating and sleeping. Also called post-traumatic stress disorder.

**pTVG-HP plasmid DNA vaccine:** A cancer vaccine containing plasmid DNA encoding human prostatic acid phosphatase (PAP) (pTVG-HP) with potential immunostimulatory and antineoplastic activities. Upon administration, pTVG-HP plasmid DNA vaccine may stimulate the host immune system to generate a cytotoxic T lymphocyte (CTL) response against PAP-expressing prostate cancer cells. PAP or prostatic specific acid

phosphatase (PSAP) is a tumor associated antigen (TAA) that may be overexpressed in prostate cancer.

**PU:** Polyurethane

**puberty :** The time of life when a child experiences physical and hormonal changes that mark a transition into adulthood. The child develops secondary sexual characteristics and becomes able to have children. Secondary sexual characteristics include growth of pubic, armpit, and leg hair; breast enlargement; and increased hip width in girls. In boys, they include growth of pubic, face, chest and armpit hair; voice changes; penis and testicle growth, and increased shoulder width.

**Public Dose:** The dose received by a member of the public from exposure to radiation or to radioactive material released by a licensee, or to any other source of radiation under the control of a licensee. Public dose does not include occupational dose or doses received from background radiation, from any medical administration the individual has received, from exposure to individuals administered radioactive materials and released in accordance with 10 CFR 35.75, or from voluntary participation in medical research programs.

**public health impact assessment:** Application of risk assessment procedures to a specific target population. The size of the populations needs to be known. The end product is a quantitative statement about the number of people affected in the specific target populations (WHO, 1988).

**PUHF:** Spin-projected UHF energy. An approximation intended to provide the energy that would result from a UHF calculation if it did not suffer spin-contamination. The PUHF energy is usually lower than the UHF energy because the contributions of higher-multiplicity states, which usually have high energies, have been (approximately) subtracted.

**Pulled Gate :** Area where the part was connected to the sprue or runner that has been drawn out or stretched from the surface.

**Pullwinding:** A variation of pultrusion where fibre is wound in the crosswise direction during the pultrusion process.

**pulmonary :** Having to do with the lungs.

**pulmonary artery:** the artery of the human circulatory system that pumps the blood from the right ventricle to the lungs for gas exchange.

**pulmonary disease :** A type of disease that affects the lungs and other parts of the respiratory system. Pulmonary diseases may be caused by infection, by smoking tobacco, or by breathing in secondhand tobacco smoke, radon, asbestos, or other forms of air pollution. Pulmonary diseases include asthma, chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, pneumonia, and lung cancer. Also called lung disorder and respiratory disease.

**pulmonary edema :** A buildup of fluid in the alveoli (air spaces) in the lungs. This keeps oxygen from getting into the blood. Pulmonary edema is usually caused by heart problems, but it can also be caused by high blood pressure, pneumonia, certain toxins and medicines, or living at a high altitude. Symptoms include coughing, shortness of breath, and trouble exercising.

**pulmonary function :** A term used to describe how well the lungs work in helping a person breathe. During breathing, oxygen is taken into the lungs, where it passes into the blood and travels to the body's tissues. Carbon dioxide, a waste product made by the body's tissues, is carried to the lungs, where it is breathed out. There are different tests to measure pulmonary function. Also called lung function.

**pulmonary function test :** A test used to measure how well the lungs work. It measures how much air the lungs can hold and how quickly air is moved into and out of the lungs. It also measures how much oxygen is used and how much carbon dioxide is given off during breathing. A pulmonary function test can be used to diagnose a lung disease and to see how well treatment for the disease is working. Also called lung function test and PFT.

**pulmonary rehabilitation education :** Education about behavior and lifestyle changes to help patients with chronic lung disease decrease breathing problems, return to daily activities, and improve quality of life. Education may include instruction about breathing exercises, nutrition, use of medicines, and ways for the patient to reduce stress and save energy.

**pulmonary specialist :** A doctor who has special training in diagnosing and treating diseases of the lungs. Also called pulmonologist.

**pulmonary sulcus tumor :** A type of lung cancer that begins in the upper part of a lung and spreads to nearby tissues such as the ribs and vertebrae. Most pulmonary sulcus tumors are non-small cell cancers. Also called Pancoast tumor.

**pulmonary vein:** the vein of the human circulatory system that returns oxygen-rich blood from the lungs to the left atrium.

**pulmonologist :** A doctor who has special training in diagnosing and treating diseases of the lungs. Also called pulmonary specialist.

**pulmonology :** A branch of medicine that specializes in diagnosing and treating diseases of the lungs and other parts of the respiratory system. These diseases include asthma, emphysema, tuberculosis, and pneumonia.

**Pulmozyme :** A drug given in an aerosol mist to decrease the thickness of mucus in the lungs of patients with cystic fibrosis. It is also being studied as a treatment to reduce the thickness of saliva in patients being treated for head and neck cancer. Pulmozyme contains an enzyme that breaks the DNA in mucus into small pieces and makes the mucus thinner. Also called dornase alfa inhalation solution.

**Pulp:** A form of cellulose obtained from wood or other vegetable matter by prolonged cooking with chemicals.

**Pulp molding:** Process by which a resin-impregnated pulp material is preformed by application of a vacuum and subsequently oven cured or molded.

**pulsar:** a star that sends energy out in pulses.

**pulse :** In medicine, the number of times the heart beats within a certain time period, usually a minute. The pulse can be felt at the wrist, side of the neck, back of the knees, top of the foot, groin, and other places in the body where an artery is close to the skin. The resting pulse is normally between 60 and 100 beats a minute in a healthy adult who is at rest. Measuring the pulse gives important information about a person's health. Also called heart rate.

**Pulse-chase:** An experiment in which a short labeling period is followed by the addition of an excess of the same, unlabeled compound to dilute out the labeled material Useful for observing time-dependent behavior of compounds.

**Pulsed-field electrophoresis:** An electrophoretic technique for separating large DNA molecules. Electric fields, oriented at 120 degrees to each other, are applied in an alternating fashion. Large molecules reorient more slowly than small ones and hence cannot follow the electric field as rapidly.

**Pultrusion:** A process for making continuous profiles of composite materials. Fibres that are impregnated with a thermosetting resin and pulled through a heated die where curing takes place.

**Pump:** A protein passage in a membrane that can transport a molecule from one compartment to another against a concentration gradient; pumps undergo a cycle of conformational changes that alter the affinity of the binding site for the transported molecule, and the eversion of the molecule during the cycle is driven by expenditure of free energy. Also called active transporters. OR A device used to propel a liquid or slurry from one location to another, usually through a pipe or tube. OR A device that is used to give a controlled amount of a liquid at a specific rate. For example, pumps are used to give drugs (such as chemotherapy or pain medicine) or nutrients.

**pUMVC3-hIGFBP-2 multi-epitope plasmid DNA vaccine:** A plasmid DNA vaccine containing mammalian expression vector pUMVC3, encoding epitopes of human insulin-like growth factor-binding protein 2 (hIGFBP-2) with potential immunostimulating and antineoplastic activities. Upon vaccination, pUMVC3-hIGFBP-2 multi-epitope plasmid DNA vaccine may activate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against hIGFBP-2-expressing cells. The tumor associated antigen (TAA) hIGFBP-2, a member of the insulin like growth factor receptor family, is overexpressed in a number of cancer cell types and its expression has been associated with increased invasiveness.

**pUMVC3-IGFBP2-HER2-IGF1R plasmid DNA vaccine:** A polyepitope plasmid DNA vaccine containing the mammalian expression vector pUMVC3 encoding epitopes derived from three tumor-associated antigens (TAAs): human insulin-like growth factor-binding protein 2 (IGFBP2), human epidermal growth factor receptor 2 (HER2; ERBB2) and insulin-like growth factor 1 receptor (IGF1R), with potential immunostimulating and antineoplastic activities. Upon intradermal vaccination, pUMVC3-IGFBP2-HER2-IGF1R plasmid DNA vaccine transfects local keratinocytes, which process the plasmid, express the epitopes and present them to antigen-presenting cells (APCs). This activates the immune system to mount a combined response from specific T helper type 1 (Th1) cells, memory T cells and cytotoxic T lymphocytes (CTL) against IGFBP2-, HER2-, and IGF1R-expressing tumor cells. IGFBP2, HER2, and IGF1R are tumor-

associated proteins overexpressed in certain tumor cell types, and play key roles in cellular proliferation and survival.

**punch biopsy :** A procedure in which a small round piece of tissue about the size of a pencil eraser is removed using a sharp, hollow, circular instrument. The tissue is then checked under a microscope for signs of disease. A punch biopsy may be used to check for certain types of cancer, including skin, vulvar, and cervical cancer. It may also be used to check for certain skin conditions and changes that may lead to cancer.

**punctuated equilibrium:** theory that organisms just "appear" on Earth.

**punctuation:** helps a reader make sense of what you write; punctuation devices include periods, question marks, exclamation points, commas, semicolons, colons, dashes, parentheses, and brackets.

**pupil :** The round opening in the center of the iris (the colored tissue that makes the "eye color" at the front of the eye). The pupil changes size to let light into the eye. It gets smaller in bright light and larger as the amount of light decreases.

**pure covalent bond:** a bond in which the shared electrons are equally available to both bonded atoms.

**pure substance:** A sample of matter that cannot be separated into simpler components without chemical change. Physical changes can alter the state of matter but not the chemical identity of a pure substance. Pure substances have fixed, characteristic elemental compositions and properties.

**Purging :** In extrusion or injection molding, the cleaning of one color or type of material from the machine by forcing it out with the new color or material to be used in subsequent production, or with another compatible purging material. OR Cleaning one color or type of material from the cylinder of an injection molding machine or extruder by forcing it out with the new color or material to be used in subsequent production. Purging materials are also available.

**Purified Terephthalic Acid (PTA):** Purified terephthalic acid (PTA) is produced by the oxidation of terephthalic acid (TA) in acetic acid, and its subsequent purification, often via crystallisation. Prior to the development of the purification process, the crude TA was esterified into DMT, which could then be purified. PTA is the main ingredient in the production of PET melt phase, although much smaller volumes are used in the production of

thermosetting resins and coatings. PTA production is highly capital intensive, and tends to be located close to demand centres.

**purine:** a type of nitrogenous base present in DNA molecules containing two fused rings of carbon and nitrogen atoms; two examples in DNA are adenine (A) and guanine (G). NPOR A heterocyclic ring structure with varying functional groups The purines adenine and guanine are found in both DNA and RNA. OR A nitrogenous base that includes a pyrimidine ring fused with a five-membered imidazole ring; the purine derivatives adenine and guanine are found in nucleotides and nucleic acids. OR A nitrogenous heterocyclic base found in nucleotides and nucleic acids; containing fused pyrimidine and imidazole rings. OR One of two chemical compounds that cells use to make the building blocks of DNA and RNA. Examples of purines are adenine and guanine. Purines are also found in meat and meat products. They are broken down by the body to form uric acid, which is passed in the urine. High levels of uric acid in the body may cause gout.

**Purinethol :** A drug used to treat acute lymphoblastic leukemia. It may also be used to treat certain other conditions, such as Crohn disease and ulcerative colitis. Purinethol stops cells from dividing and may kill cancer cells. It is a type of antimetabolite. Also called mercaptopurine and Purixan.

**Purixan:** (Other name for: mercaptopurine) or (Other name for: mercaptopurine oral suspension) or A drug used to treat acute lymphoblastic leukemia. It may also be used to treat certain other conditions, such as Crohn disease and ulcerative colitis. Purixan stops cells from dividing and may kill cancer cells. It is a type of antimetabolite. Also called mercaptopurine and Purinethol.

**Purkinje fibers:** the nerves that transfer amplified impulses to regions of the heart to control its function.

**Purlin:** Member laid horizontally across the main rafters or roof trusses and supporting the common rafters.

**Purlytin:** (Other name for: rostaporfin)

**Puromycin:** An antibiotic that inhibits polypeptide synthesis by competing with aminoacyl-tRNA for the ribosomal binding site A. OR An antibiotic that is an analog of the terminal aminoacyl-adenosine part of aminoacyltrna; in translation, it causes premature chain termination when its amino group joins the carboxyl group of the growing polypeptide chain

and the resulting adduct dissociates from the ribosomal complex. OR An antibiotic that inhibits polypeptide synthesis by being incorporated into a growing polypeptide chain, causing its premature termination.

**purple clover :** *Trifolium pratense*. A plant with flowers that has been used in some cultures to treat certain medical problems. It is being studied in the relief of menopausal symptoms and may have anticancer effects. Also called red clover, *Trifolium pratense*, and wild clover.

**purple coneflower :** An herb native to North America that has been used to prevent and treat the common cold and other respiratory infections. Purple coneflower may interfere with treatment that uses the immune system to fight cancer. The scientific names are *Echinacea purpurea* and *Echinacea angustifolia*. Also called echinacea.

**purple grape juice:** Juice made from dark, purple grapes that contain polyphenols with antioxidant and potential cardiovascular protecting activities. Purple grape juice contains high amounts of flavonoids that may increase antioxidant activity and reduce oxidative stress, reduce low-density lipoprotein (LDL), and improve nitric oxide formation, endothelial function and vasodilation.

**purpura fulminans:** hemorrhagic condition usually associated with infection or sepsis

**purpuric skin bleeding:** bleeding from purplish patches on the skin

**Push Up:** The bottom contour of a plastic container designed in such a manner as to allow an even bearing surface on the outside edge and to prevent the bottle from rocking. OR the contour of the bottom of the plastic container designed in such a manner as to allow an even bearing surface on outside edge and prevent the bottle from rocking.

**Putlog:** A short piece of timber or tube used in scaffolding to support the boards.

**putrefaction:** biological decomposition of organic matter accompanied by the production of a foul smell associated with anaerobic condition.

**Putty:** A composition usually made from linseed oil and whiting and used mainly for bedding glass into primed wooden window frames.

**PUVA therapy :** A type of photodynamic therapy used to treat skin conditions such as psoriasis, vitiligo, and skin nodules of cutaneous T-cell lymphoma. The patient receives psoralen (a drug that becomes active when

it is exposed to light) by mouth or applied to the skin, followed by ultraviolet A radiation. PUVA therapy may increase the risk of getting skin cancer. Also called psoralen and ultraviolet A therapy.

**PV-10:** An injectable ten percent solution of rose bengal disodium, an iodinated fluorescein derivative, with potential antineoplastic and radiosensitizing activities. When injected into tumor tissue, PV-10 specifically targets and concentrates in tumor cells, producing cytotoxic singlet oxygen when exposed to ionizing radiation. In addition, PV-10 may stimulate an anti-tumor immune response.

**PV, limiting PV (LPV) factor:** Mathematical limit of a coating's load-carrying ability and wear resistance under bearing conditions.

**PV701:** An attenuated, replication-competent, oncolytic strain of Newcastle disease virus. PV701 selectively lyses tumor cells. The selectivity of this agent is related to defects in the interferon-mediated antiviral response found in tumor cells. Check for active clinical trials using this agent. or A virus that is being studied in the treatment of cancer. It belongs to the family of viruses that cause Newcastle disease in birds.

**PVA:** Abbreviation for Polyvinyl Acetate which is used as a medium in emulsion paints.

**PVA microporous hydroospheres:** An embolic material composed of microspheres of polyvinyl alcohol (PVA) polymers. These water-soluble, compressible microspheres may be used to encapsulate various therapeutic agents; drug-loaded microspheres can then be used as a drug delivery vehicle during embolization of tumor vasculature.

**PVA microporous hydroospheres/doxorubicin hydrochloride:** An embolic material composed of microspheres of polyvinyl alcohol (PVA) polymers loaded with doxorubicin hydrochloride with antineoplastic activity. Doxorubicin hydrochloride-loaded microspheres may be used as a drug delivery vehicle during embolization of tumor vasculature. Doxorubicin intercalates DNA, interferes with catalytic activity of topoisomerase II, and causes DNA adducts and other DNA damage, resulting in tumor cell growth inhibition and apoptosis. When used in tumor vasculature embolization, this preparation may provide more tumor-specific treatment with doxorubicin compared to the systemic administration of doxorubicin, thereby reducing the systemic toxicity of doxorubicin.

**pVAXrcPSAv531 vaccine:** A cancer vaccine containing xenogenic DNA from rhesus macaque (*Macaca mulatta*) that encodes prostate specific antigen (PSA) with potential immunostimulating and antineoplastic activities. Upon repeated intradermal administration via electroporation, pVAXrcPSAv531 vaccine may induce a cytotoxic T-lymphocyte (CTL) response against PSA-expressing prostate cancer cells. Rhesus PSA is 89% homologous to human PSA. Check for active clinical trials using this agent.

**Pvc:** Pigment volume concentration. The ratio of the volume of pigment to the volume of total non-volatile material (i.e. pigment and binder) present in a coating. The figure is usually expressed as a percentage. OR Polyvinyl Chloride is a thermoplastic material composed of polymers of vinyl chloride. PVC is a versatile thermoplastic resin that can be formulated to be rigid or flexible. This material is durable and light, strong, fire resistant, with excellent insulating properties and low permeability. By varying the use of additives in the manufacturing of PVC products, features such as strength, rigidity, colour and transparency can be adjusted to meet most applications. PVC is used in a broad range of plastic extrusion applications. As a flexible it is used in wire and cable jacketing, flooring, garden hoses, and medical tubing. As a rigid it is used most commonly in building and constructions. For exterior siding, windows, pipe fitting, sprinkler systems and office furniture edging. It has outstanding resistance to water, alcohols, and concentrated acids and alkalis. Compounded with plasticizers it yields a flexible material superior to rubber in ageing properties. It is widely used for cable and wire coverings, in chemical plants, and in the manufacture of protective garments.

**PVC (Polyvinyl Chloride):** A thermoplastic vinyl polymer constructed of repeating vinyl groups (ethenyls) having one of their hydrogens replaced with a chloride group. Polyvinyl chloride is the third most widely produced plastic, after polyethylene and polypropylene.

**PVDF:** Polyvinylidene Fluoride

**PVDF (Polyvinylidene fluoride):** High-molecular weight thermoplastic of vinylidene fluoride with excellent strength, wear resistance and creep resistance.

**PVDF/sirolimus topical:** A topical formulation consisting of a polyvinylidene fluoride (PVDF) polymer resin containing the macrolide sirolimus (rapamycin), produced by the organism *Streptomyces*

hygroscopic, with immunosuppressive activity. Upon application of topical PVDF/sirolimus, sirolimus migrates from the PVDF polymer resin into the skin. Once inside cells, sirolimus binds to the immunophilin FK binding protein-12 (FKBP-12) and forms a sirolimus:FKBP-12 complex. This complex binds to and inhibits the activity of the serine/threonine kinase mammalian target of rapamycin (mTOR), which may result in the suppression of cytokine-driven T-cell activation and proliferation.

**PVF:** Polyvinyl Fluorid

**pV T diagram:** Polymer Melt follows law similar to famous gas law (Boyle's law). It is the relation ship between pressure, volume and temperature for plastic melt.

**pX:** this is exactly the same as pH but relates to the concentration (activity) of any other ion in solution. Because of the reduced sensitivity of other ionselective electrodes when compared with pH electrodes, the pX scale rarely extends below 7 (=  $10^{-7}$  mol/l).

**PXD101:** A drug used to treat peripheral T-cell lymphoma that has come back or has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. PXD101 blocks certain enzymes needed for cell division and may kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow and may help make cancer cells easier to kill with other anticancer drugs. It is a type of histone deacetylase (HDAC) inhibitor, a type of angiogenesis inhibitor, and a type of chemosensitizer. Also called Beleodaq and belinostat.

**pycnocline:** In the ocean, a region where the water density increases rapidly with depth.

**Pycnogenol:** (Other name for: French maritime pine bark extract)

**Pygas:** Pygas is the term given to the aromatic rich stream that is extracted within a steam cracker, immediately after the feedstream has been cracked and cooled. It is extracted by washing the stream with water, and is then separated from the water phase. Pygas composition varies according to both the cracker feedstock and the severity of operation, containing valuable quantities of benzene and gasoline components.

**pyogenic granuloma :** A benign (not cancer) blood vessel tumor that usually forms on the skin. It may also form on mucous membranes and inside capillaries (small blood vessels) or other places on the body.

Pyogenic granulomas usually appear as raised, bright red lesions that may grow quickly and bleed a lot. The lesions are sometimes caused by injury or use of certain medicines and often come back after treatment. They usually occur in older children and young adults but may occur at any age.

Pyogenic granulomas are a type of vascular tumor. Also called lobular capillary hemangioma.

**Pyranose:** A simple sugar containing the six-membered pyran ring. OR A six-membered heterocyclic ring formed when a monosaccharide cyclizes to form a hemiacetal or a hemiketal; the six-membered, oxygen-containing ring is similar to that of pyran. OR A simple sugar containing the six-membered pyran ring.

**pyrazinamide:** A synthetic pyrazinoic acid amide derivative with bactericidal property. Pyrazinamide is particularly active against slowly multiplying intracellular bacilli (unaffected by other drugs) by an unknown mechanism of action. Its bactericidal action is dependent upon the presence of bacterial pyrazinamidase, which removes the amide group to produce active pyrazinoic acid. Pyrazinamide is an important component of multidrug therapy for tuberculosis.

**pyrazine diazohydroxide:** A congener of pyridine 2-diazohydroxide. Pyrazine diazohydroxide forms DNA adducts via the reactive pyrazine diazonium ion, thereby inhibiting DNA synthesis. Or A substance that is being studied in the treatment of cancer.

**pyrazofurin:** A nucleoside analog. Pyrazofurin potently inhibits orotidine 5'-monophosphate (OMP) decarboxylase, thereby interfering with de novo synthesis of uridine nucleotides and resulting in cytotoxicity. This agent also causes a rapid depletion of the pyrimidine deoxynucleotide pool, thereby inhibiting DNA synthesis and cell replication. Check for active clinical trials using this agent.

**pyrazoloacridine:** A 9-methoxy acridine compound containing a reducible 5-nitro substituent. Pyrazoloacridine appears to intercalate into DNA and inhibit RNA synthesis, DNA synthesis, and the activities of topoisomerases I and II, thereby causing cytotoxicity. Or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called acridines.

**pyrgeometer:** An instrument that measures radiation from the earth's surface into space.

**pyridine nucleotide:** A nucleotide coenzyme containing the pyridine derivative nicotinamide; NAD or NADP.

**Pyridine nucleotides:** Nucleotides, such as NAD<sup>+</sup>, NADH, NADP<sup>+</sup>, and NADPH, that are employed in redox reactions; the functional group is nicotinamide, a derivative of pyridine.

**Pyridoxal phosphate:** A prosthetic group derived from vitamin B<sub>6</sub> (pyridoxine) that plays a key role in transamination reactions. OR A coenzyme containing the vitamin pyridoxine (vitamin B<sub>6</sub>); functions in reactions involving amino group transfer.

**pyridoxine :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Pyridoxine helps keep nerves and skin healthy, fight infections, keep blood sugar levels normal, produce red blood cells, and some enzymes work properly. Pyridoxine is a group of related compounds (pyridoxine, pyridoxal, and pyridoxamine) found in cereals, beans, peas, nuts, meat, poultry, fish, eggs, and bananas. It is water-soluble (can dissolve in water). Not enough pyridoxine can cause mouth and tongue sores and nervous disorders. Pyridoxine is being studied in the prevention of hand-foot syndrome (a disorder caused by certain anticancer drugs and marked by pain, swelling, numbness, tingling, or redness of the hands or feet). Also called vitamin B<sub>6</sub>.

**pyridoxine hydrochloride:** The hydrochloride salt of pyridoxine, a water-soluble B vitamin. Pyridoxine is converted in the liver into the metabolically active coenzyme form pyridoxal 5'-phosphate (P5P), an essential cofactor in many enzymatic reactions in amino acid metabolism, including transamination, deamination, and decarboxylation. P5P is required for glycogenolysis and the synthesis of sphingolipids and is essential to red blood cell, nervous system, and immune system functions.

**pyrimethamine:** A synthetic derivative of ethyl-pyrimidine with potent antimalarial properties. Pyrimethamine is a competitive inhibitor of dihydrofolate reductase (DHFR). DHFR is a key enzyme in the redox cycle for production of tetrahydrofolate, a cofactor that is required for the synthesis of DNA and proteins. This agent is often used in combination with other antimalarials for the treatment of uncomplicated falciparum malaria.

**pyrimidine:** a type of nitrogenous base in DNA molecules that has one ring containing carbon and nitrogen atoms; two examples in DNA are

cytosine (C) and thymine (T). OR A heterocyclic six-membered ring structure Cytosine and uracil are the main pyrimidines found in RNA, and cytosine and thymine are the main pyrimidines found in DNA. OR A nitrogenous base that is a six-membered heterocyclic ring containing two nitrogen atoms and four carbon atoms; the pyrimidine derivatives cytosine, uracil, and thymine are found in nucleotides and nucleic acids. OR A nitrogenous heterocyclic base found in nucleotides and nucleic acids.

**pyrimidine :** One of two chemical compounds that cells use to make the building blocks of DNA and RNA. Examples of pyrimidines are cytosine, thymine, and uracil. Cytosine and thymine are used to make DNA and cytosine and uracil are used to make RNA.

**pyrimidine dimer:** A covalently joined dimer of two adjacent pyrimidine residues in DNA, induced by absorption of UV light; most commonly derived from two adjacent thymines (a thymine dimer).

**Pyrimidine dimers:** Refers to a mutation in which exposure to ultraviolet light causes the covalent linkage of two adjacent pyrimidine residues.

**pyroclastic debris:** fragments of rock ejected from a volcano.

**pyroclastic flow:** a dense mixture of hot gas and pyroclastic debris.

**pyrolysis:** the application of high temperatures to a compound.

**PYROMETER:** A device for measuring high temperatures, usually by radiation. Radiation devices have the advantage of not having to touch the material being measured.

**pyrophoric:** Catches fire spontaneously when exposed to air at normal room temperature. For example, powdered potassium metal is pyrophoric

**pyrophosphatase:** See inorganic pyrophosphatase.

**Pyrophosphate:** A molecule formed by two phosphates in anhydride linkage.

**pyrotinib:** An orally bioavailable, dual kinase inhibitor of the epidermal growth factor receptor (EGFR or HER-1) and the human epidermal growth factor receptor 2 (ErbB2 or HER-2), with potential antineoplastic activity. Upon oral administration, pyrotinib binds to and inhibits both EGFR and HER2, which may result in the inhibition of tumor growth and angiogenesis, and tumor regression in EGFR/HER2-expressing tumor cells. EGFR and HER2 are receptor tyrosine kinases that are upregulated in

various tumor cell types and play major roles in tumor cell proliferation and tumor vascularization.

**pyroxamide:** A synthetic derivative of hydroxamic acid with antineoplastic properties, Pyroxamide inhibits histone deacetylases involved in transcription; induces hyperacetylation of core histones, modulating chromatin structure and affecting transcription of some genes that inhibit tumor growth; and induces growth arrest and apoptosis. Pyroxamide is used in clinical studies for cancer chemotherapy. or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called histone deacetylase inhibitors.

**Pyrrrole:** A five-membered heterocyclic diene ring compound in which the hetero atom is nitrogen; a building block of the heme group.

**pyrrolobenzodiazepine-based anti-CD19 antibody-drug conjugate**

**SGN-CD19B:** An antibody-drug conjugate (ADC) consisting of an anti-CD19 humanized monoclonal antibody (hBU12ec) with engineered cysteines (EC-mAb) conjugated, via a maleimidocaproyl-valine-alanine dipeptide protease-cleavable linker, to the cytotoxic, DNA minor-groove crosslinking agent pyrrolobenzodiazepine (PBD) dimer (SGD-1882), with potential antineoplastic activity. Upon administration of anti-CD19 ADC SGN-CD19B, the antibody moiety targets the cell surface antigen CD19, which is found on B-cell-derived cancers. Upon antibody/antigen binding, internalization and lysosome uptake, the cytotoxic PBD moiety is released. In turn, the imine groups of the PBD moiety bind to the N2 positions of guanines on opposite strands of DNA. This induces DNA strand breaks, inhibits DNA replication, leads to G2/M cell cycle arrest, induces cell death, and inhibits the proliferation of CD19-overexpressing tumor cells. CD19, a transmembrane receptor belonging to the immunoglobulin superfamily and a B-cell specific antigen, is expressed on B-cell-derived cancers. The cysteine engineering of the EC-mAb allows for a site-specific and stable conjugation of PBD to the antibody.

**Pyruvate:** A prominent intermediate in metabolism; a precursor for alanine and glucose and can be converted into lactate in anaerobic glycolysis; can also be oxidized to acetyl coa, which can be further oxidized to yield energy aerobically, converted into fats, or used to synthesize cholesterol and other steroids.

**Pyruvate carboxylase:** A biotin-dependent enzyme that catalyzes the formation of oxaloacetate from pyruvate and CO<sub>2</sub> at the expense of ATP; important in gluconeogenesis as well as in the replenishment of the citric acid cycle.

**Pyruvate dehydrogenase complex:** A large, complex mitochondrial enzyme that catalyzes the oxidative decarboxylation of pyruvate to form acetyl coa; this irreversible reaction is the link between glycolysis and the citric acid cycle.

**pyruvate kinase inhibitor TLN-232:** A synthetic cyclic heptapeptide with potential antineoplastic activity. Pyruvate kinase (PK) inhibitor TLN-232 targets pyruvate kinase M2 (M2PK), which may disrupt tumor cell anaerobic glycolysis. M2PK is a dimeric isoform of PK and the predominant PK isoform found in tumor cells.

**Pythagorean theorem:** a theorem that applies to right triangles. The sum of the squares of a right triangle's two legs equals the square of the hypotenuse ( $a^2 + b^2 = c^2$ ).

**Q cycle:** A set of reactions in which coenzyme Q cycles between the fully reduced state and the fully oxidized state through one-electron transfer reactions in which one of the electrons is temporarily stored in cytochrome b; provides a means of passing the two electrons of coenzyme Q to the single-electron carrier cytochrome c, one electron at a time.

**Q-cytochrome c oxidoreductase:** c A component of the respiratory chain, this oxidoreductase carries electrons from coenzyme Q to cytochrome c and, in the process, pumps protons out of the mitochondrial matrix to generate the proton-motive force. Also called cytochrome reductase or Complex III.

**Q10:** A nutrient that the body needs in small amounts to function and stay healthy. Q10 helps mitochondria (small structures in the cell) make energy. It is an antioxidant that helps prevent cell damage caused by free radicals (highly reactive chemicals). Q10 is fat-soluble (can dissolve in fats and oils) and is found in fatty fish, beef, soybeans, peanuts, and spinach. It is being studied in the prevention and treatment of some types of cancer and heart disease and in the relief of side effects caused by some cancer treatments. Also called coenzyme Q10, CoQ10, ubiquinone, and vitamin Q10.

**QA:** A process that looks at activities or products on a regular basis to make sure they are being done at the required level of excellence. In clinical

trials, QA makes sure that all parts of the trial follow the law and the Good Clinical Practice guidelines. Also called quality assurance.

**QCI:** Quadratic configuration interaction. A CI method to which terms have been added to confer size-consistency. May also be considered to be an approximation to coupled-cluster theory.

**QCISD:** Quadratic configuration interaction, singles and doubles.  
(See QCI.)

**QCISD(T):** QCISD with a correction for triples. This method is at the core of the popular G2 theory. Usually gives similar results as CCSD(T), of which it is a truncation.

**qi :** In traditional Chinese medicine, vital energy or life force that keeps a person's spiritual, emotional, mental, and physical health in balance.

**qigong :** A form of traditional Chinese mind/body exercise and meditation that uses slow and precise body movements with controlled breathing and mental focusing to improve balance, flexibility, muscle strength, and overall health.

**QS 9000:** Quality System model, used in conjunction with the ISO 9000 standard, for the automotive industry

**QS21:** A purified, natural saponin isolated from the soapbark tree *Quillaja saponaria* Molina with potential immunoadjuvant activity. When co-administered with vaccine peptides, QS21 may increase total antitumoral vaccine-specific antibody responses and cytotoxic T-cell responses. or A substance from plants that is being studied together with vaccine therapy for its ability to improve the way the immune system responds to disease. It belongs to the family of drugs called saponin adjuvants.

**Quadramet :** A drug used to treat bone pain caused by bone cancer and other cancers that have spread to the bone. It contains a radioactive substance called samarium SM 153. Quadramet collects in bone and gives off radiation that may kill cancer cells. It is a type of radiopharmaceutical. Also called samarium Sm 153 lexidronam pentasodium.

**quadrantectomy :** An operation to remove the cancer and some normal tissue around it, but not the breast itself. Some lymph nodes under the arm may be removed for biopsy. Part of the chest wall lining may also be removed if the cancer is near it. Also called breast-conserving surgery,

breast-sparing surgery, lumpectomy, partial mastectomy, and segmental mastectomy.

**quadrilateral:** a four-sided plane closed figure. The sum of its four angles equals  $360^\circ$ .

**quadrivalent human papillomavirus (types 6, 11, 16, 18) recombinant vaccine:** A non-infectious recombinant, quadrivalent vaccine prepared from the highly purified virus-like particles (VLPs) of the major capsid (L1) protein of human papillomavirus (HPV) Types 6, 11, 16, and 18 with immunoprophylactic activity. The immunoprophylactic efficacy of L1 VLP vaccines, such as quadrivalent human papillomavirus (types 6, 11, 16, 18) recombinant vaccine, appear to be mediated by the development of humoral immune responses. HPV Types 16 and 18 account for approximately 70% of cervical cancers and HPV Types 6 and 11 account for approximately 90% of genital warts.

**quadrivalent vaccine :** A vaccine that works by stimulating an immune response against four different antigens, such as four different viruses or other microorganisms. For example, Gardasil is a quadrivalent vaccine that helps protect the body against infection with four different types of human papillomaviruses (HPV).

**Qualitative:** Qualitative descriptions are those that describe qualities and characteristics. For example, it could be a color, a smell, or a feeling.

**qualitative analysis:** A chemical analysis that detects the presence of a substance in a sample.

**Qualitative Analysis:** In analytical chemistry, quantitative analysis is the determination of the presence or absence of a substance in a sample.

**quality assurance :** A process that looks at activities or products on a regular basis to make sure they are being done at the required level of excellence. In clinical trials, quality assurance makes sure that all parts of the trial follow the law and the Good Clinical Practice guidelines. Also called QA.

**Quality Assurance/Control:** Like any other industry the plastics sector has stringent industry regulations and standards. These require constant monitoring and have to be reflected in quality control systems right across the board, from the plastic resin suppliers through to the finished plastic extrusions or other plastic products and their application.

**Quality factor:** The factor by which the absorbed dose (rad or gray) is to be multiplied to obtain a quantity that expresses, on a common scale for all ionizing radiation, the biological damage (rem or sievert) to an exposed individual. It is used because some types of radiation, such as alpha particles, are more biologically damaging internally than other types.

**quality of life :** The overall enjoyment of life. Many clinical trials assess the effects of cancer and its treatment on the quality of life. These studies measure aspects of an individual's sense of well-being and ability to carry out various activities.

**quanta:** Plural of quantum.

**quantal effect:** An effect that can be expressed only as "occurring" or "not occurring" (Finney, 1971). Typical examples of quantal effects are death or occurrence of a tumour.

**Quantitative:** Quantitative descriptions are those that are based on numbers and exact figures, such as a weight or a temperature.

**quantitative analysis:** A chemical analysis that determines the concentration of a substance in a sample.

**quantitative analysis:** chemical determination of the amounts or proportions of constituents in a substance. OR In analytical chemistry, quantitative analysis is the determination of the concentration of a substance in a sample.

**quantitative structure-activity relationship:** A mathematical connection between chemical structure and biological activity, established by statistical analysis or pattern recognition techniques. OR Expresses the biological activity of a set of compounds as a function of physicochemical and/or structural parameters.

**Quantities:** A bill of quantities sets out the measurements and amounts of work to be done on a building contract and is divided into sections according to the trades.

**quantum:** Something which comes in discrete units, for example, money is quantized (divided into units); it comes in quanta (divisions) of one cent. OR The minimum energy change of an atom emitting or absorbing energy. OR The term quantum is used to describe the amount of energy in one photon of light. OR A discrete packet of energy. OR The ultimate unit of energy.

**quantum mechanics:** the study of the mathematical formulas that describe the electronic structure of atoms. OR A branch of physics that describes the behavior of objects of atomic and subatomic size.

**quantum number:** Indices that label quantized energy states. Quantum numbers are used to describe the state of a confined electron, e. g. an electron in an atom. OR Set of numbers used to completely describe an electron. OR describe the distance, shape, and orientation of the electronic orbitals.

**Quantum theory:** The concept that energy is radiated intermittently in units of definite magnitude, called quanta, and absorbed in a like manner.

**quarfloxacin:** A fluoroquinolone derivative with antineoplastic activity. Quarfloxin disrupts the interaction between the nucleolin protein and a G-quadruplex DNA structure in the ribosomal DNA (rDNA) template, a critical interaction for rRNA biogenesis that is overexpressed in cancer cells; disruption of this G-quadruplex DNA:protein interaction in aberrant rRNA biogenesis may result in the inhibition of ribosome synthesis and tumor cell apoptosis. Check for active clinical trials using this agent.

**quartz:** An abundant mineral consisting of silicon dioxide ( $\text{SiO}_2$ ) with a hardness of 7 on the Mohs' scale.

**Quartzite** : This is a metamorphic rock that is made by the action of heat and pressure on sandstone.

**Quasi-isothermal mode:** A thermogravimetric analytical technique in which the sample is heated at a fixed temperature to a constant mass and the process repeated stepwise at increasingly higher temperatures.

**Quaternary ammonium:** You are probably aware of the ammonium ion,  $\text{NH}_4^+$ . A molecule that is  $\text{NR}_4^+$ , where 'R' is any carbon compound, is called a 'quaternary ammonium' species. See amines.

**quaternary ammonium polyethylenimine nanoparticles:** A crosslinked nanoparticle formulation containing quaternary ammonium polyethylenimine (QA-PEI) with potential antibacterial activity. The cationic polymer PEI kills bacteria by rupturing their cell membranes without the development of resistance. Quaternary ammonium polyethylenimine nanoparticles can be incorporated into dental composite resins or silicon obturator prostheses and may prevent or delay bacterial growth.

**quaternary carbon:** a carbon atom that is directly attached to four other carbon atoms.

**Quaternary period:** The latest period of geologic time, covering the most-recent 2,000,000 years of the Earth's history. It is divided into two epochs: the Pleistocene - 2 million years ago to approximately 10,000 years ago - and the Holocene - the period from approximately 10,000 years ago to the present. The Quaternary period is the artificial division of time separating prehuman and human periods. It contains five ice ages and four interglacial ages, and temperature indicators seem to show sharp and abrupt changes by several degrees.

**Quaternary structure:** In a protein, the way in which the different folded subunits interact to form the multisubunit protein. OR In proteins containing more than one polypeptide chain, the spatial arrangements of those chains (subunits) and the nature of contacts among them. OR The three-dimensional structure of a multisubunit protein; particularly the manner in which the subunits fit together.

**quench:** Stopping a reaction quickly, first used to refer to harden steel by quickly putting red-hot steel into cold water.

**Quench Bath:** The cooling medium used to quench molten thermoplastic materials to the solid state

**quercetin:** A polyphenolic flavonoid with potential chemopreventive activity. Quercetin, ubiquitous in plant food sources and a major bioflavonoid in the human diet, may produce antiproliferative effects resulting from the modulation of either EGFR or estrogen-receptor mediated signal transduction pathways. Although the mechanism of action of action is not fully known, the following effects have been described with this agent in vitro: decreased expression of mutant p53 protein and p21-ras oncogene, induction of cell cycle arrest at the G1 phase and inhibition of heat shock protein synthesis. This compound also demonstrates synergy and reversal of the multidrug resistance phenotype, when combined with chemotherapeutic drugs, in vitro. Quercetin also produces anti-inflammatory and anti-allergy effects mediated through the inhibition of the lipoxygenase and cyclooxygenase pathways, thereby preventing the production of pro-inflammatory mediators.

**question mark:** used to end questions.

**Quick Cast:** An SLA build style that produces a thin shell with a honeycombed interior. This method is used mostly for investment castings when the SLA model will be used as a sacrificial mold

**quicklime:** A common name for calcium oxide.

**Quicklime** : Calcium oxide (it is formed by heating limestone (calcium carbonate) very strongly)

**Quicksilver** : An old name for mercury.

**quinacrine dihydrochloride:** The dihydrochloride salt of the 9-aminoacridine derivative quinacrine with potential antineoplastic and antiparasitic activities. Quinacrine may inhibit the transcription and activity of both basal and inducible nuclear factor-kappaB (NF-kappaB), which may result in the induction of tumor suppressor p53 transcription, the restoration of p53-dependent apoptotic pathways, and tumor cell apoptosis. Continuous NF-kappaB signaling, present in many tumors and in chronic inflammatory processes, promotes the expression of antiapoptotic proteins and cytokines while downregulating the expression of proapoptotic proteins, such as p53.

**Quinamed:** (Other name for: amonafide dihydrochloride)

**quinidine:** An alkaloid extracted from the bark of the Cinchona tree with class 1A antiarrhythmic and antimalarial effects. Quinidine stabilizes the neuronal membrane by binding to and inhibiting voltage-gated sodium channels, thereby inhibiting the sodium influx required for the initiation and conduction of impulses resulting in an increase of the threshold for excitation and decreased depolarization during phase 0 of the action potential. In addition, the effective refractory period (ERP), action potential duration (APD), and ERP/APD ratios are increased, resulting in decreased conduction velocity of nerve impulses. Quinidine exerts its antimalarial activity by acting primarily as an intra-erythrocytic schizonticide through association with the heme polymer (hemazoin) in the acidic food vacuole of the parasite thereby preventing further polymerization by heme polymerase enzyme. This results in accumulation of toxic heme and death of the parasite.

**quinine:** A quinidine alkaloid isolated from the bark of the cinchona tree. Quinine has many mechanisms of action, including reduction of oxygen intake and carbohydrate metabolism; disruption of DNA replication and transcription via DNA intercalation; and reduction of the excitability of muscle fibers via alteration of calcium distribution. This agent also inhibits

the drug efflux pump P-glycoprotein which is overexpressed in multi-drug resistant tumors and may improve the efficacy of some antineoplastic agents. Check for active clinical trials using this agent.

**quinone oxidoreductase 1 :** An enzyme inside cells that makes certain molecules less toxic. Also called quinone reductase.

**quinone reductase :** An enzyme inside cells that makes certain molecules less toxic. Also called quinone oxidoreductase 1.

**Quirk:** Properly a groove in a moulding between a convex member and a flat fillet but commonly used for any groove.

**quisinostat:** An orally bioavailable, second-generation, hydroxamic acid-based inhibitor of histone deacetylase (HDAC) with potential antineoplastic activity. Quisinostat inhibits HDAC leading to an accumulation of highly acetylated histones, which may result in an induction of chromatin remodeling; inhibition of the transcription of tumor suppressor genes; inhibition of tumor cell division; and the induction of tumor cell apoptosis. HDAC, an enzyme upregulated in many tumor types, deacetylates chromatin histone proteins. Compared to some first generation HDAC inhibitors, JNJ-26481585 may induce superior HSP70 upregulation and bcl-2 downregulation.

**Quixin:** (Other name for: levofloxacin)

**quizartinib:** An orally available small molecule with potential antineoplastic activity. Quizartinib selectively inhibits class III receptor tyrosine kinases, including FMS-related tyrosine kinase 3 (FLT3/STK1), colony-stimulating factor 1 receptor (CSF1R/FMS), stem cell factor receptor (SCFR/KIT), and platelet derived growth factor receptors (PDGFRs), resulting in inhibition of ligand-independent leukemic cell proliferation and apoptosis. Mutations in FLT3, resulting in constitutive activation, are the most frequent genetic alterations in acute myeloid leukemia (AML) and occur in approximately one-third of AML cases.

**Quoin:** The external angle of a building.

**quotation marks:** used to indicate to the reader that the words or sentences within the quotation marks are borrowed from another writer.

**Qvar:** (Other name for: beclomethasone dipropionate)

**R group:** Shorthand for the side chain of an amino acid. OR (1) Formally, an abbreviation denoting any alkyl group. (2) Occasionally, used in a more

general sense to denote virtually any organic substituent (the R groups of amino acids, for example). OR A triple-stranded structure in which RNA displaces a DNA strand by DNA-RNA hybrid formation in a region of the DNA.

**R-(-)-gossypol acetic acid:** The orally bioavailable solvate of the R-(-) enantiomer of gossypol and acetic acid with potential antineoplastic activity. As a BH3 mimetic, R-(-)-gossypol binds to the hydrophobic surface binding groove BH3 of the anti-apoptotic proteins Bcl-2 and Bcl-xL, blocking their heterodimerization with pro-apoptotic members of the Bcl-2 family of proteins such as Bad, Bid, and Bim; this may result in the inhibition of tumor cell proliferation and the induction of tumor cell apoptosis. Racemic gossypol is a polyphenolic compound isolated from cottonseed.

**R-CHOP :** An abbreviation for a chemotherapy combination that is used to treat non-Hodgkin lymphoma and mantle cell lymphoma and is being studied in the treatment of other types of cancer. It includes the drugs rituximab, cyclophosphamide, doxorubicin hydrochloride (hydroxydaunorubicin), vincristine sulfate (Oncovin), and prednisone. Also called R-CHOP regimen.

**R-CHOP regimen:** An immunochemotherapy regimen consisting of rituximab, cyclophosphamide, hydroxydaunorubicin hydrochloride (doxorubicin hydrochloride), vincristine (Oncovin) and prednisone used to treat both indolent and aggressive forms of non-Hodgkin lymphoma. Or An abbreviation for a chemotherapy combination that is used to treat non-Hodgkin lymphoma and mantle cell lymphoma and is being studied in the treatment of other types of cancer. It includes the drugs rituximab, cyclophosphamide, doxorubicin hydrochloride (hydroxydaunorubicin), vincristine sulfate (Oncovin), and prednisone. Also called R-CHOP.

**R-CVP:** An abbreviation for a chemotherapy combination used to treat indolent (slow-growing) non-Hodgkin lymphoma. It includes the drugs rituximab, cyclophosphamide, vincristine sulfate, and prednisone. Also called R-CVP regimen.

**R-CVP regimen:** A regimen consisting of rituximab, cyclophosphamide, vincristine, and prednisone used to treat indolent non-Hodgkin lymphoma. Or An abbreviation for a chemotherapy combination used to treat indolent

(slow-growing) non-Hodgkin lymphoma. It includes the drugs rituximab, cyclophosphamide, vincristine sulfate, and prednisone. Also called R-CVP.

**R-EPOCH:** An abbreviation for a chemotherapy combination used to treat certain types of non-Hodgkin lymphoma. It includes the drugs rituximab, etoposide phosphate, prednisone, vincristine sulfate (Oncovin), cyclophosphamide, and doxorubicin hydrochloride (hydroxydaunorubicin). Also called R-EPOCH regimen.

**R-EPOCH regimen:** A regimen consisting of rituximab, followed by a continuous infusion of etoposide, vincristine and doxorubicin, given with prednisone and a bolus dose of cyclophosphamide, used for the treatment of aggressive forms of non-Hodgkin's lymphoma, including mantle cell lymphoma. or An abbreviation for a chemotherapy combination used to treat certain types of non-Hodgkin lymphoma. It includes the drugs rituximab, etoposide phosphate, prednisone, vincristine sulfate (Oncovin), cyclophosphamide, and doxorubicin hydrochloride (hydroxydaunorubicin). Also called R-EPOCH.

**R-flurbiprofen :** A substance that is being studied as a treatment for cancer. It belongs to the family of drugs called nonsteroidal anti-inflammatory drugs (NSAIDs).

**R-ICE:** An abbreviation for a chemotherapy combination used to treat certain types of non-Hodgkin lymphoma. It includes the drugs rituximab, ifosfamide, carboplatin, and etoposide phosphate. Also called R-ICE regimen.

**R-ICE regimen:** A chemoimmunotherapy regimen consisting of rituximab, ifosfamide, carboplatin and etoposide used to treat indolent and aggressive forms of non-Hodgkin lymphoma; also used to treat relapsed and refractory non-Hodgkin lymphoma. Or An abbreviation for a chemotherapy combination used to treat certain types of non-Hodgkin lymphoma. It includes the drugs rituximab, ifosfamide, carboplatin, and etoposide phosphate. Also called R-ICE.

**r-metHuSCF:** A substance that causes blood stem cells (cells from which other types of cells develop) to change into different types of blood cells and increases the number and actions of these cells in the blood. It is being studied in the treatment of myelodysplasia. r-metHuSCF is a type of recombinant stem cell growth factor. Also called ancestim, recombinant human methionyl stem cell factor, and Stemgen.

**r-tPA:** A form of tissue plasminogen activator that is made in the laboratory. It helps dissolve blood clots and is used to treat heart attacks, strokes, and clots in the lungs. It is also being studied in the treatment of cancer. It is a type of systemic thrombolytic agent. Also called Activase, Alteplase, and recombinant tissue plasminogen activator.

**R(+)**XK469:**** The R-isomer of a synthetic quinoxaline phenoxypropionic acid derivative with proapoptotic and antiproliferative activities.

R(+)**XK469** selectively inhibits topoisomerase II-beta, blocks activation of MEK/MAPK signaling kinases, stimulates caspases, and upregulates p53-dependent proteins, including cyclins A and B1, thereby arresting cancer cells in the G2/M phase of the cell cycle. Both R(+) and S(-) isomers of this agent are cytotoxic, although the R-isomer is more potent.

**R1 Cooling Gel Plus R2 Moisturizing/Sun Protecting Lotion:** A skin care treatment system consisting of a cytokine-containing milk-based cooling gel and a cytokine-containing milk-based soothing lotion with hydrating and potential protective activity against radiation-induced dermatitis. Application of the R1 cooling gel immediately upon radiation treatment may hydrate the skin, provide cooling relief, and may protect the skin against radiation-induced dermatitis. The subsequent application of the R2 lotion moisturizes the skin while also protecting the skin against inflammation. In addition, R2 contains avobenzone, homosalate, octinoxate and octocrylene, which exert UVA and UVB skin protective activity. Check for active clinical trials using this agent.

**R101933:** A substance that is being studied for its ability to make cancer cells respond to drugs to which they have become resistant. It belongs to the family of drugs called multidrug resistance inhibitors.

**R115777:** A substance that is being studied in the treatment of acute myeloid leukemia (AML) and other types of cancer. It belongs to the family of drugs called farnesyltransferase inhibitors. Also called tipifarnib and Zarnestra.

**R1507:** A human monoclonal antibody being studied in the treatment of several types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. R1507 blocks the action of a protein needed for cell growth and may kill cancer cells. It is a type of insulin-like growth factor-1 receptor (IGF-1R) inhibitor.

**R788 sodium** : A substance being studied in the treatment of cancer and certain other diseases, such as rheumatoid arthritis. It may block tumor cell signaling and growth. It is a type of tyrosine kinase inhibitor. Also called fostamatinib disodium and Syk kinase inhibitor R-935788.

**rabeprazole sodium**: The sodium salt of the prodrug rabeprazole, a substituted benzimidazole proton pump inhibitor, with potential anti-ulcer activity. After protonation, accumulation, and transformation to the active sulfenamide within the acidic environment of gastric parietal cells, rabeprazole selectively and irreversibly binds to and inhibits the H<sup>+</sup>, K<sup>+</sup>ATPase (hydrogen-potassium adenosine triphosphatase) enzyme system located on the parietal cell secretory surface, inhibiting gastric acid secretion.

**rabies** : A disease of the nervous system caused by the rabies virus. Rabies is marked by an increase in saliva production, abnormal behavior, and eventual paralysis and death.

**RABINOWITSCH CORRECTION**: When viscosity data are obtained from a capillary viscometer, they require a correction to account for the fact that the viscosity decreases as the shear rate increases. Without this (RABINOWITSCH) correction the viscosity is referred to as APPARENT VISCOSITY. Errors up to 10-20% in viscosity are common when this correction has not been made. For the power-law viscosity model the Rabinowitsch correction gives (i.e. for  $n=0.45$   $m(\text{true}) = 0.89 m(\text{apparent})$ ).

**rabusertib**: An inhibitor of the cell cycle checkpoint kinase 2 (chk2) with potential chemopotentiating activity. Rabusertib binds to and inhibits the activity of chk2, which may prevent the repair of DNA caused by DNA-damaging agents, thus potentiating the antitumor efficacies of various chemotherapeutic agents. Chk2, an ATP-dependent serine-threonine kinase, is a key component in the DNA replication-monitoring checkpoint system and is activated by double-stranded breaks (DSBs); activated chk2 is overexpressed by a variety of cancer cell types.

**racemate**: another name for "racemic mixture"; a 1:1 mixture of enantiomers.

**Racemic**: A mixture is said to be racemic if the mixture contains equivalent amounts of the left and right-handed enantiomers of a molecule that is chiral. OR A mixture of equal parts of

the levorotatory and dextrorotatory isomers of the the same substance. Racemic mixtures are not optically active.

**racemic mixture:** a 1:1 mixture of enantiomers.

**racemic mixture (racemate):** An equimolar mixture of the D and L stereoisomers of an optically active compound.

**racemic XK469:** The racemic form of a synthetic quinoxaline phenoxypropionic acid derivative with antineoplastic properties. XK469R selectively inhibits topoisomerase II by stabilizing the enzyme-DNA intermediates in which topoisomerase subunits are covalently linked to DNA through 5-phosphotyrosyl linkages, thereby interfering with DNA repair and replication, RNA and protein synthesis. This agent possesses unusual solid tumor selectivity and activity against multidrug-resistant cancer cells. XK469R is more water soluble and active than the pure isomers, R(+)-XK469 and S(-)-XK469.

**rachitis :** A condition in children in which bones become soft and deformed because they don't have enough calcium and phosphorus. It is caused by not having enough vitamin D in the diet or by not getting enough sunlight. In adults, this condition is called osteomalacia. Also called infantile rickets, juvenile rickets, and rickets.

**RACI:** The Royal Australian Chemical Institute. RACI is the professional body for chemists in Australia. The Institute gives accreditation to people based on training and experience, organises conferences, career workshops and produces a monthly magazine Chemistry in Australia.

**racotumomab:** An anti-idiotypic murine monoclonal antibody (MoAb) specific to P3 MoAb with anti-metastatic effect. Racotumomab binds to the idiotype region of P3 MoAb and functionally mimics the three-dimensional structure of N-glycolyl ceramides of mono-sialyl lactose, the antigenic target of P3. As a result, this anti-idiotypic antibody may stimulate the host immune system to elicit humoral and cellular immune responses against tumor cells expressing NeuGc-GM3 gangliosides, which are expressed in a wide variety of tumor cells.

**Rad (radiation absorbed dose):** One of the two units used to measure the amount of radiation absorbed by an object or person, known as the "absorbed dose," which reflects the amount of energy that radioactive sources deposit in materials through which they pass. The radiation-absorbed dose (rad) is the amount of energy (from any type of ionizing

radiation) deposited in any medium (e.g., water, tissue, air). An absorbed dose of 1 rad means that 1 gram of material absorbed 100 ergs of energy (a small but measurable amount) as a result of exposure to radiation. The related international system unit is the gray (Gy), where 1 Gy is equivalent to 100 rad. For additional information, see *Doses in Our Daily Lives and Measuring Radiation*.

**rAD-p53:** A replication-defective, recombinant adenoviral vector encoding the wild-type human tumor-suppressor protein p53 gene with potential antineoplastic activity. Upon intratumoral administration, rAD-p53 binds to the coxsackie-and-adenovirus receptor (CAR) on tumor cells and enters cells selectively via receptor-mediated endocytosis, which may result in the overexpression of wild-type p53 intracellularly and p53-mediated tumor regression. In addition, this agent may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) immune response against tumor cells, may activate natural killer (NK) cells to exert antitumor ‘bystander effects’ and may downregulate the expression of various oncogenes. The p53 protein blocks tumor cell cycle progression and directly initiates apoptosis; the p53 gene, a tumor suppressor gene, is deleted or mutated in a significant number of cancers.

**rAd/p53:** A substance that has been studied in the treatment of some types of cancer. rAd/p53 is a weakened adenovirus that carries the p53 gene into tumor cells, causing them to die. It is a type of gene therapy. Also called ACN53, recombinant adenovirus-p53, and SCH-58500.

**RAD001:** A drug used with exemestane to treat some postmenopausal women with advanced breast cancer that is hormone-receptor positive and HER2 negative. It is also used to treat certain types of pancreatic, lung, and gastrointestinal neuroendocrine tumors that cannot be removed by surgery, are advanced, or have spread to other parts of the body. It is also used to treat advanced renal cell carcinoma (a type of kidney cancer) and subependymal giant cell astrocytoma in some patients, including children. RAD001 is being studied in the treatment of other types of cancer. It stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It also lowers the body’s immune response. RAD001 is a type of kinase inhibitor, a type of angiogenesis inhibitor, and a type of immunosuppressant. Also called Afinitor, Afinitor Disperz, and everolimus.

**radial drainage pattern:** a drainage pattern that resembles the spokes on a wheel; occurs when the streams originate on the flanks of conical mountains.

**Radial hole:** This is a hole formed by live tooling that is perpendicular to the axis of revolution of a turned part, and could be considered a side hole. The center line of these holes are not required to intersect the axis of revolution.

**Radial Seal:** Compression is applied perpendicular to the seal center-line

**radian:** An angle with vertex at the center of a circle of radius  $r$  that encompasses an arc of length  $r$ .

**radiant energy:** Energy which is transmitted away from its source, for example, energy that is emitted when electrons transition down from one level to another.

**radiant flux density:** The total flow of radiation received on a unit area of a given real or imaginary surface. Also called the irradiance.

**radiant intensity:** Energy of radiation striking a unit area per unit time. The SI unit of radiant power is  $\text{J m}^{-2} \text{s}^{-1}$ .

**RadiaPlex Rx Gel:** (Other name for: sodium hyaluronate topical hydrogel)

**radiation:** transfer of energy through a vacuum; the way in which the Sun supplies the Earth with energy.

**radiation:** Energy in the form of photons. OR Energy emitted from some object.

**radiation :** Energy released in the form of particle or electromagnetic waves. Common sources of radiation include radon gas, cosmic rays from outer space, medical x-rays, and energy given off by a radioisotope (unstable form of a chemical element that releases radiation as it breaks down and becomes more stable).

**Radiation (ionizing radiation):** Alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Radiation, as used in 10 CFR Part 20, does not include non-ionizing radiation, such as radio- or microwaves, or visible, infrared, or ultraviolet light (see also 10 CFR 20.1003). For additional detail, see Radiation, ionizing.

**Radiation area:** Any area with radiation levels greater than 5 millirems (0.05 millisievert) in one hour at 30 centimeters from the source or from

any surface through which the radiation penetrates.

**radiation balance:** The difference between the absorbed solar radiation and the net infrared radiation. Experimental data show that radiation from the earth's natural surfaces is rather close to the radiation from a black body at the corresponding temperature; the ratio of the observed values of radiation to black body radiation is generally 0.90 - 1.0.

**radiation brachytherapy :** A type of radiation therapy in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near a tumor. Also called brachytherapy, implant radiation therapy, and internal radiation therapy.

**radiation dermatitis :** A skin condition that is a common side effect of radiation therapy. The affected skin becomes painful, red, itchy, and blistered.

**Radiation detection instrument:** A device that detects and displays the characteristics of ionizing radiation.

**radiation enteritis :** Inflammation of the small intestine caused by radiation therapy to the abdomen, pelvis, or rectum. Symptoms include nausea, vomiting, abdominal pain and cramping, frequent bowel movements, watery or bloody diarrhea, fatty stools, and weight loss. Some of these symptoms may continue for a long time.

**radiation fibrosis :** The formation of scar tissue as a result of radiation therapy.

**radiation necrosis :** The death of healthy tissue caused by radiation therapy. Radiation necrosis is a side effect of radiation therapy given to kill cancer cells, and can occur after cancer treatment has ended.

**radiation nurse :** A health professional who specializes in caring for people who are receiving radiation therapy.

**radiation oncologist :** A doctor who has special training in using radiation to treat cancer.

**radiation physicist :** A person who makes sure that the radiation machine delivers the right amount of radiation to the correct site in the body. The physicist works with the radiation oncologist to choose the treatment schedule and dose that has the best chance of killing the most cancer cells.

**radiation poisoning :** Serious illness caused by being exposed to high doses of certain types of radiation, usually over a short period of time.

Symptoms of radiation poisoning usually occur right after exposure but they may happen over time, and they may come and go. Symptoms include nausea and vomiting, diarrhea, headache, dizziness, weakness, fatigue, bleeding, hair loss, swelling, itching, and redness of the skin, and other skin problems. Very large doses of radiation may cause death. Also called acute radiation sickness, acute radiation syndrome, radiation sickness, and radiation sickness syndrome.

**Radiation shielding:** Reduction of radiation by interposing a shield of absorbing material between any radioactive source and a person, work area, or radiation-sensitive device.

**radiation sickness :** Serious illness caused by being exposed to high doses of certain types of radiation, usually over a short period of time. Symptoms of radiation sickness usually occur right after exposure but they may happen over time, and they may come and go. Symptoms include nausea and vomiting, diarrhea, headache, dizziness, weakness, fatigue, bleeding, hair loss, swelling, itching, and redness of the skin, and other skin problems. Very large doses of radiation may cause death. Also called acute radiation sickness, acute radiation syndrome, radiation poisoning, and radiation sickness syndrome.

**Radiation sickness (syndrome):** The complex of symptoms characterizing the disease known as radiation injury, resulting from excessive exposure (greater than 200 rads or 2 gray) of the whole body (or large part) to ionizing radiation. The earliest of these symptoms are nausea, fatigue, vomiting, and diarrhea, which may be followed by loss of hair (epilation), hemorrhage, inflammation of the mouth and throat, and general loss of energy. In severe cases, where the radiation exposure has been approximately 1000 rad (10 gray) or more, death may occur within two to four weeks. Those who survive six weeks after the receipt of a single large dose of radiation to the whole body may generally be expected to recover.

**radiation sickness syndrome :** Serious illness caused by being exposed to high doses of certain types of radiation, usually over a short period of time. Symptoms of radiation sickness syndrome usually occur right after exposure but they may happen over time, and they may come and go. Symptoms include nausea and vomiting, diarrhea, headache, dizziness, weakness, fatigue, bleeding, hair loss, swelling, itching, and redness of the skin, and other skin problems. Very large doses of radiation may cause

death. Also called acute radiation sickness, acute radiation syndrome, radiation poisoning, and radiation sickness.

**Radiation source:** A radioactive material or byproduct that is specifically manufactured or obtained for the purpose of using the emitted radiation. Such sources are commonly used in teletherapy or industrial radiography; in various types of industrial gauges, irradiators, and gamma knives; and as power sources for batteries (such as those used in spacecraft). These sources usually consist of a known quantity of radioactive material, which is encased in a manmade capsule, sealed between layers of nonradioactive material, or firmly bonded to a nonradioactive substrate to prevent radiation leakage. Other radiation sources include devices such as accelerators and x-ray generators.

**Radiation standards:** Exposure limits; permissible concentrations; rules for safe handling; and regulations regarding receipt, possession, use, transportation, storage, disposal, and industrial control of radioactive material. For detail, see Title 10, Part 20, of the Code of Federal Regulations (10 CFR Part 20), "Standards for Protection Against Radiation."

**radiation surgery :** A type of external radiation therapy that uses special equipment to position the patient and precisely give a single large dose of radiation to a tumor. It is used to treat brain tumors and other brain disorders that cannot be treated by regular surgery. It is also being studied in the treatment of other types of cancer. Also called radiosurgery, stereotactic radiosurgery, and stereotaxic radiosurgery.

**radiation therapist :** A health professional who gives radiation treatment.

**radiation therapy :** The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy or brachytherapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that travels in the blood to tissues throughout the body. Also called irradiation and radiotherapy.

**Radiation therapy (radiotherapy):** The therapeutic use of ionizing radiation to treat disease in patients. Although most radiotherapy procedures are intended to kill cancerous tissue or reduce the size of a

tumor, therapeutic doses may also be used to reduce pain or treat benign conditions. For example, intervascular brachytherapy uses radiation to treat clogged blood vessels. Other common radiotherapy procedures include gamma stereotactic radiosurgery (gamma knife), teletherapy, and iodine treatment to correct an overactive thyroid gland. These procedures use radiation sources, regulated by the NRC and its Agreement States, that may be applied either inside or outside the body. In either case, the goal of radiotherapy is to deliver the required therapeutic or pain-relieving dose of radiation with high precision and for the required length of time, while preserving the surrounding healthy tissue.

**Radiation warning symbol:** An officially prescribed magenta or black trefoil on a yellow background, which must be displayed where certain quantities of radioactive materials are present or where certain doses of radiation could be received.

**Radiation, ionizing:** A form of radiation, which includes alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. Compared to non-ionizing radiation, such as radio- or microwaves, or visible, infrared, or ultraviolet light, ionizing radiation is considerably more energetic. When ionizing radiation passes through material such as air, water, or living tissue, it deposits enough energy to produce ions by breaking molecular bonds and displace (or remove) electrons from atoms or molecules. This electron displacement may lead to changes in living cells. Given this ability, ionizing radiation has a number of beneficial uses, including treating cancer or sterilizing medical equipment. However, ionizing radiation is potentially harmful if not used correctly, and high doses may result in severe skin or tissue damage. It is for this reason that the NRC strictly regulates commercial and institutional uses of the various types of ionizing radiation. Radiation, as used in 10 CFR Part 20, does not include non-ionizing radiation (see also 10 CFR 20.1003).

**Radiation, nuclear:** Energy given off by matter in the form of tiny fast-moving particles (alpha particles, beta particles, and neutrons) or pulsating electromagnetic rays or waves (gamma rays) emitted from the nuclei of unstable radioactive atoms. All matter is composed of atoms, which are made up of various parts; the nucleus contains minute particles called protons and neutrons, and the atom's outer shell contains other

particles called electrons. The nucleus carries a positive electrical charge, while the electrons carry a negative electrical charge. These forces work toward a strong, stable balance by getting rid of excess atomic energy (radioactivity). In that process, unstable radioactive nuclei may emit energy, and this spontaneous emission is called nuclear radiation. All types of nuclear radiation are also ionizing radiation, but the reverse is not necessarily true; for example, x-rays are a type of ionizing radiation, but they are not nuclear radiation because they do not originate from atomic nuclei. In addition, some elements are naturally radioactive, as their nuclei emit nuclear radiation as a result of radioactive decay, but others are induced to become radioactive by being irradiated in a reactor. Naturally occurring nuclear radiation is indistinguishable from induced radiation.

**radiative-convective models:** Thermodynamic models that determine the equilibrium temperature distribution for an atmospheric column and the underlying surface, subject to prescribed solar radiation at the top of the atmosphere and prescribed atmospheric composition and surface albedo. Submodels for the transfer of solar and terrestrial radiation, the heat exchange between the earth's surface and atmosphere, the vertical redistribution of heat within the atmosphere, the atmospheric water vapor content and clouds are included in these one-dimensional models. Abbreviated as RCM.

**radiatively active gases:** Gases that absorb incoming solar radiation or outgoing infrared radiation, thus affecting the vertical temperature profile of the atmosphere. Most frequently being cited as being radiatively active gases are water vapor, CO<sub>2</sub>, methane, nitrous oxide, chlorofluorocarbons, and ozone.

**radical:** an atom or group of atoms with at least one unpaired electron. OR A species with an odd number of electrons; formerly called free radical. OR A radical is a group of atoms that appear in a compound and act as a group. Functional groups are classified as radicals. Two examples are NaCl and NaOH. In these examples, the chlorine ion and hydroxide functional group bond in similar ways with the sodium atom. OR An atom or group of atoms possessing an unpaired electron; also called a free radical.

**radical cervicectomy :** Surgery to remove the cervix, nearby tissue and lymph nodes, and the upper part of the vagina. It may be used to treat women with early-stage cervical cancer who want to have children. After

the cervix is removed, the uterus is attached to the remaining part of the vagina. A special stitch or band is used to act as the cervix and create an opening to the uterus. The stitch or band may be opened or closed as needed. Also called radical trachelectomy.

**radical cystectomy :** Surgery to remove all of the bladder (the organ that holds urine) as well as nearby tissues and organs.

**radical hysterectomy :** Surgery to remove the uterus, cervix, and part of the vagina. The ovaries, fallopian tubes, and nearby lymph nodes may also be removed.

**radical local excision :** Surgery to remove a tumor and a large amount of normal tissue surrounding it. Nearby lymph nodes may also be removed.

**radical lymph node dissection :** A surgical procedure to remove most or all of the lymph nodes that drain lymph from the area around a tumor. The lymph nodes are then examined under a microscope to see if cancer cells have spread to them.

**radical mastectomy :** Surgery for breast cancer in which the breast, chest muscles, and all of the lymph nodes under the arm are removed. For many years, this was the breast cancer operation used most often, but it is used rarely now. Doctors consider radical mastectomy only when the tumor has spread to the chest muscles. Also called Halsted radical mastectomy. or Surgery to remove an entire kidney, nearby adrenal gland and lymph nodes, and other surrounding tissue.

**radical perineal prostatectomy :** Surgery to remove all of the prostate through an incision between the scrotum and the anus. Nearby lymph nodes are sometimes removed through a separate incision in the wall of the abdomen.

**radical prostatectomy :** Surgery to remove the entire prostate and some of the tissue around it. Nearby lymph nodes may also be removed. In a radical retropubic prostatectomy, an incision (cut) is made in the wall of the lower abdomen. In a radical perineal prostatectomy, an incision (cut) is made in the perineum (the area between the anus and scrotum). In a laparoscopic radical prostatectomy, several small incisions (cuts) are made in the wall of the abdomen. A laparoscope (a thin, tube-like instrument with a light and lens for viewing) is inserted through one opening to guide the surgery. Surgical instruments are inserted through the other openings to do the surgery.

**radical retropubic prostatectomy :** Surgery to remove all of the prostate and nearby lymph nodes through an incision in the wall of the abdomen.

**radical trachelectomy :** Surgery to remove the cervix, nearby tissue and lymph nodes, and the upper part of the vagina. It may be used to treat women with early-stage cervical cancer who want to have children. After the cervix is removed, the uterus is attached to the remaining part of the vagina. A special stitch or band is used to act as the cervix and create an opening to the uterus. The stitch or band may be opened or closed as needed. Also called radical cervicectomy.

**radical vulvectomy :** Surgery to remove the entire vulva (the external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina) and nearby lymph nodes.

**radii:** plural of radius.

**Radio Frequency Welding:** A method of welding thermoplastics using a radio frequency field to apply the necessary heat. Also known as high frequency welding.

**radio wave :** A type of wave made when an electric field and a magnetic field are combined. Radio waves are being studied in the treatment of several types of cancer and other conditions. The radio waves are sent through needles inserted into tumor tissue and may kill cancer cells. Radio waves are also used in MRI to create detailed images of areas inside the body.

**radioactive:** Substance containing an element which decays.

**radioactive :** Giving off radiation.

**Radioactive contamination:** Undesirable radioactive material (with a potentially harmful effect) that is either airborne or deposited in (or on the surface of) structures, objects, soil, water, or living organisms (people, animals, or plants) in a concentration that may harm people, equipment, or the environment.

**radioactive decay:** the spontaneous breakdown of isotopes that contain unstable nuclei. OR The spontaneous transformation of one radioisotope into one or more different isotopes (known as “decay products” or “daughter products”), accompanied by a decrease in radioactivity (compared to the parent material). This transformation takes place over a defined period of time (known as a “half-life”), as a result

of electron capture; fission; or the emission of alpha particles, beta particles, or photons (gamma radiation or x-rays) from the nucleus of an unstable atom. Each isotope in the sequence (known as a “decay chain”) decays to the next until it forms a stable, less energetic end product. In addition, radioactive decay may refer to gamma-ray and conversion electron emission, which only reduces the excitation energy of the nucleus.

**radioactive drug :** A drug that contains a radioactive substance and is used to diagnose or treat disease, including cancer. Also called radiopharmaceutical.

**radioactive element:** an atom that emits gamma rays, alpha particles, and beta particles; can be used to determine age.

**radioactive fallout :** Airborne radioactive particles that fall to the ground during and after an atomic bombing, nuclear weapons test, or nuclear plant accident.

**radioactive glucose :** A radioactive form of glucose (sugar) often used during a positive emission tomography (PET) scan, a type of imaging test. In PET, a small amount of radioactive glucose is injected into a vein, and a scanner makes a picture of where the glucose is being used in the body. Cancer cells show up brighter in the picture because they are more active and take up more glucose than normal cells do. When used with PET, radioactive glucose helps find cancer cells in the body.

**radioactive half-life:** (i) For a single radioactive decay process, the time required for the activity to decrease to half its value by that process (ISO, 1972); (ii) the time taken for the activity of an amount of radioactive nuclide to fall to half its initial value (ICRU, 1980).

**radioactive iodine :** A radioactive form of iodine, often used for imaging tests or to treat an overactive thyroid, thyroid cancer, and certain other cancers. For imaging tests, the patient takes a small dose of radioactive iodine that collects in thyroid cells and certain kinds of tumors and can be detected by a scanner. To treat thyroid cancer, the patient takes a large dose of radioactive iodine, which kills thyroid cells. Radioactive iodine is also used in internal radiation therapy for prostate cancer, intraocular (eye) melanoma, and carcinoid tumors. Radioactive iodine is given by mouth as a liquid or in capsules, by infusion, or sealed in seeds, which are placed in or near the tumor to kill cancer cells.

**radioactive isotope:** An isotopic form of an element with an unstable nucleus that stabilizes itself by emitting ionizing radiation.

**radioactive palladium :** A radioactive form of palladium (a metallic element that resembles platinum). When used to treat prostate cancer, radioactive seeds (small pellets that contain radioactive palladium) are placed in the prostate. Cancer cells are killed by the energy given off as the radioactive material breaks down and becomes more stable.

**radioactive seed :** A small, radioactive pellet that is placed in or near a tumor. Cancer cells are killed by the energy given off as the radioactive material breaks down and becomes more stable.

**Radioactive series:** A succession of nuclides, each of which transforms by radioactive disintegration into the next until a stable nuclide results. The first member is called the parent, the intermediate members are called daughters, and the final stable member is called the end product.

**radioactivity:** The spontaneous emission of particles and/or energy from atomic nuclei. OR Radioactivity occurs when the nucleus of an atom breaks up into two or more pieces. A neutron is often released during radioactive decay. OR the emission of subatomic particles from a nucleus. OR the breakdown or decay of the nucleus of an atom by the emission or giving off of particles. OR The property possessed by some elements (such as uranium) of spontaneously emitting energy in the form of radiation as a result of the decay(or disintegration) of an unstable atom. Radioactivity is also the term used to describe the rate at which radioactive material emits radiation. Radioactivity is measured in curies (Ci), becquerels (Bq), or disintegrations per second.. For related information, see Measuring Radiation. OR Spontaneous emission of particles or high-energy electromagnetic radiation from the nuclei of unstable atoms.

"Radiation" refers to the emissions, and "radioactive source" refers to the source of the radiation. OR The use of sealed sources of ionizing radiation for nondestructive examination of the structure of materials. When the radiation penetrates the material, it produces a shadow image by blackening a sheet of photographic film that has been placed behind the material, and the differences in blackening suggest flaws and unevenness in the material.

**radioembolization :** A type of radiation therapy used to treat liver cancer that is advanced or has come back. Tiny beads that hold the radioisotope

yttrium Y 90 are injected into the hepatic artery (the main blood vessel that carries blood to the liver). The beads collect in the tumor and the yttrium Y 90 gives off radiation. This destroys the blood vessels that the tumor needs to grow and kills the cancer cells. Radioembolization is a type of selective internal radiation therapy (SIRT). Also called intra-arterial brachytherapy.

**radiofrequency ablation :** A procedure that uses radio waves to heat and destroy abnormal cells. The radio waves travel through electrodes (small devices that carry electricity). Radiofrequency ablation may be used to treat cancer and other conditions.

**radioimaging :** A method that uses radioactive substances to make pictures of areas inside the body. The radioactive substance is injected into the body, and locates and binds to specific cells or tissues, including cancer cells. Images are made using a special machine that detects the radioactive substance. Also called nuclear medicine scan.

**radioimmunoassay:** A sensitive and quantitative method for detecting trace amounts of a biomolecule, based on its capacity to displace a radioactive form of the molecule from combination with its specific antibody.

**radioimmunoconjugate :** A radioactive substance that carries radiation directly to cancer cells. A radioimmunoconjugate is made by attaching a radioactive molecule to an immune substance, such as a monoclonal antibody, that can bind to cancer cells. This may help kill cancer cells without harming normal cells. Radioimmunoconjugates may also be used with imaging to help find cancer cells in the body.

**radioimmunodiagnostics :** The use of radiolabeled monoclonal antibodies to help diagnose diseases, including cancer. The radiolabeled monoclonal antibody locates and binds to substances in the body, including cancer cells. Images are made using a special machine that detects the radioactive monoclonal antibody.

**radioimmunoguided surgery :** A procedure that uses radioactive substances to locate tumors so that they can be removed by surgery.

**radioimmunotherapeutics :** The use of radiolabeled monoclonal antibodies to treat diseases, including cancer. The radiolabeled monoclonal antibody locates and binds to substances in the body, including cancer cells. Radiation given off by the radioisotope may help kill the cancer cells.

**radioimmunotherapy** : A type of radiation therapy in which a radioactive substance is linked to a monoclonal antibody and injected into the body. The monoclonal antibody can bind to substances in the body, including cancer cells. The radioactive substance gives off radiation, which may help kill cancer cells. Radioimmunotherapy is being used to treat some types of cancer, such as lymphoma.

**radioisotope**: Contraction for words "radioactive isotope" of an element. OR A radioactive isotope. For example, tritium is a radioisotope of hydrogen.

**radioisotope** : An unstable form of a chemical element that releases radiation as it breaks down and becomes more stable. Radioisotopes may occur in nature or be made in a laboratory. In medicine, they are used in imaging tests and in treatment. Also called radionuclide.

**Radioisotope (Radionuclide)**: An unstable isotope of an element that decays or disintegrates spontaneously, thereby emitting radiation. Approximately 5,000 natural and artificial radioisotopes have been identified.

**radiolabeled** : Any compound that has been joined with a radioactive substance.

**radiologic exam** : A test that uses radiation or other imaging procedures to find signs of cancer or other abnormalities.

**Radiological sabotage**: Any deliberate act directed against a plant or transport in which an activity licensed pursuant to 10 CFR Part 73 of NRC's regulations is conducted or against a component of such a plant or transport that could directly or indirectly endanger the public health and safety by exposure to radiation.

**Radiological survey**: The evaluation of the radiation hazards accompanying the production, use, or existence of radioactive materials under a specific set of conditions. Such evaluation customarily includes a physical survey of the disposition of materials and equipment, measurements or estimates of the levels of radiation that may be involved, and a sufficient knowledge of processes affecting these materials to predict hazards resulting from expected or possible changes in materials or equipment.

**radiologist** : A doctor who has special training in creating and interpreting pictures of areas inside the body. The pictures are made with x-rays, sound waves, or other types of energy.

**Radiology**: That branch of medicine dealing with the diagnostic and therapeutic applications of radiant energy, including x-rays and radioisotopes. OR The use of radiation (such as x-rays) or other imaging technologies (such as ultrasound and magnetic resonance imaging) to diagnose or treat disease.

**Radionuclide**: An unstable isotope of an element that decays or disintegrates spontaneously, thereby emitting radiation. Approximately 5,000 natural and artificial radioisotopes have been identified.

**radionuclide** : An unstable form of a chemical element that releases radiation as it breaks down and becomes more stable. Radionuclides may occur in nature or be made in a laboratory. In medicine, they are used in imaging tests and in treatment. Also called radioisotope.

**radionuclide scanning** : A procedure that produces pictures (scans) of structures inside the body, including areas where there are cancer cells. Radionuclide scanning is used to diagnose, stage, and monitor disease. A small amount of a radioactive chemical (radionuclide) is injected into a vein or swallowed. Different radionuclides travel through the blood to different organs. A machine with a special camera moves over the person lying on a table and detects the type of radiation given off by the radionuclides. A computer forms an image of the areas where the radionuclide builds up. These areas may contain cancer cells. Also called scintigraphy.

**Radiopharmaceutical**: A pharmaceutical drug that emits radiation and is used in diagnostic or therapeutic medical procedures. Radioisotopes that have short half-lives are generally preferred to minimize the radiation dose to the patient and the risk of prolonged exposure. In most cases, these short-lived radioisotopes decay to stable elements within minutes, hours, or days, allowing patients to be released from the hospital in a relatively short time.

**radiopharmaceutical** : A drug that contains a radioactive substance and is used to diagnose or treat disease, including cancer. Also called radioactive drug.

**Radiopharmaceuticals**: Medicinal compounds that contain a radioactive nuclide.

**radioprotective agent** : A type of drug that helps protect healthy tissue from some of the side effects caused by radiation therapy. For example, a drug called amifostine helps reduce dry mouth in patients receiving radiation therapy for head and neck cancer.

**Radiosensitivity:** The relative susceptibility of cells, tissues, organs, organisms, or other substances to the injurious action of radiation.

**radiosensitization** : The use of a drug that makes tumor cells more sensitive to radiation therapy.

**radiosensitizer** : Any substance that makes tumor cells easier to kill with radiation therapy. Some radiosensitizers are being studied in the treatment of cancer. Also called radiosensitizing agent.

**radiosensitizer RRx-001:** A dinitroazetidine derivative with potential radiosensitizing activity. Upon administration, RRx-001 is able to dilate blood vessels, thereby increasing tumor blood flow and thus improving oxygenation to the tumor site. By increasing oxygen levels, these tumor cells may be more susceptible to radiation therapy. Tumor hypoxia is correlated with tumor aggressiveness, metastasis and resistance to radiotherapy. Check for active clinical trials using this agent.

**radiosensitizing agent** : Any substance that makes tumor cells easier to kill with radiation therapy. Some radiosensitizing agents are being studied in the treatment of cancer. Also called radiosensitizer.

**radiosonde:** weather balloon that carries instruments to record data and transmit readings to a base unit. OR A balloon-borne instrument for the simultaneous measurement and transmission of meteorological data up to a height of approximately 30,000 meters (100,000 feet). The height of each pressure level of the observation is computed from data received via radio signals.

**radiosurgery** : A type of external radiation therapy that uses special equipment to position the patient and precisely give a single large dose of radiation to a tumor. It is used to treat brain tumors and other brain disorders that cannot be treated by regular surgery. It is also being studied in the treatment of other types of cancer. Also called radiation surgery, stereotactic radiosurgery, and stereotaxic radiosurgery.

**radiotherapy** : The use of high-energy radiation from x-rays, gamma rays, neutrons, protons, and other sources to kill cancer cells and shrink tumors.

Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body near cancer cells (internal radiation therapy or brachytherapy). Systemic radiotherapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that travels in the blood to tissues throughout the body. Also called irradiation and radiation therapy.

**Radium (Ra):** A radioactive metallic element with atomic number 88. As found in nature, the most common isotope has a mass number of 226. It occurs in minute quantities associated with uranium in pitchblende, camotite, and other minerals. OR Symbol:"Ra" Atomic Number:"88" Atomic Mass: 226.03amu. Radium is a member of the alkaline metals group. It was discovered by the Curies in 1898 and is a radioactive, white metal that is often luminescent (glowing). You will find it in use for medicine, glowing paints, and the creation of radon gas.

**radium 223 dichloride :** A drug used to treat prostate cancer that has spread to the bone and has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Radium 223 dichloride contains a radioactive substance called radium 223. Radium 223 collects in bone and gives off radiation that may kill cancer cells. Radium 223 dichloride is a type of radiopharmaceutical. Also called Xofigo.

**radium Ra 223 dichloride:** A radiopharmaceutical composed of the dichloride salt of the alpha-emitting isotope radium Ra 223, with antineoplastic activity. Like calcium, radium targets bone tissue and preferentially accumulates in osteoblastic lesions, such as those seen in areas of bone metastases. Radium Ra 223 forms complexes with hydroxyapatite and becomes incorporated into the bone matrix. The radioisotope Ra 223 kills bone cancer cells through local emission of high energy alpha particles, causing DNA double-strand breaks and tumor regression in the skeleton. The short range effects of alpha emission allows for localized DNA damage with limited toxicity to nearby healthy bone tissue.

**radius:** a line segment whose endpoints lie one at the center of a circle and one on the circle. Also, the length of this segment.

**Radius Weight :** This is a simplified formula for estimating the belt tension while in contact with the drum in a spiral system. It is another term used to describe the system tension.

**Radiused:** An edge or vertex that has been rounded. Typically, this occurs on part geometries as a natural result of the Protomold milling process. When a radius is intentionally added to an edge on a part, it is referred to as a fillet.

**Radix Angelicae sinensis/Radix Astragali herbal supplement:** A traditional Chinese medicine comprising of Radix Angelicae Sinensis (RAS) and Radix Astragali (RA), with potential anti-inflammatory, immunostimulatory, neuroprotective, anti-hepatotoxic and antineoplastic activities. The main chemical constituents of RAS include ferulic acid, Z-ligustilide, butylidenephthalide and various polysaccharides. RA is the dried root of *Astragalus membranaceus* with primary constituents such polysaccharides, triterpenoids as well as isoflavones. Though their mechanisms of action remain largely elusive, Radix Angelicae Sinensis/Radix Astragali herbal supplements are commonly used for the treatment of various health conditions affecting women including premenstrual syndrome, dysmenorrhea, pelvic pain, recovery from childbirth and menopausal symptoms. These agents are also used for alleviating constipation, preventing and treating anemia and allergic attacks, and for the management of hypertension, joint pain and ulcers.

**Radon:** Symbol:"Rn" Atomic Number:"86" Atomic Mass: (222)amu. It is one of the noble or inert gases. This element has not been found in nature and is a product of some nuclear reactions and the combustion of heavier elements. It is very dangerous and toxic to living organisms.

**radon :** A radioactive gas that is released by uranium, a substance found in soil and rock. Breathing in too much radon can damage lung cells and may lead to lung cancer.

**Radon (Rn):** A radioactive element that is one of the heaviest gases known. Its atomic number is 86. It is a daughter of radium.

**radotinib hydrochloride:** An orally available, hydrochloride salt form of radotinib, a second-generation tyrosine kinase inhibitor of Bcr-Abl fusion protein and the platelet-derived growth factor receptor (PDGFR), with potential antineoplastic activity. Upon administration, radotinib specifically inhibits the Bcr-Abl fusion protein, an abnormal enzyme expressed in Philadelphia chromosome-positive chronic myeloid leukemia (CML) cells. In addition, this agent also inhibits PDGFR thereby blocking PDGFR-mediated signal transduction pathways. The inhibitory effect of radotinib on

these specific tyrosine kinases may decrease cellular proliferation and inhibit angiogenesis. This agent has shown potent efficacy in CML cells that are resistant to the first-generation standard tyrosine kinase inhibitors, such as imatinib, nilotinib and dasatinib. PDGFR, upregulated in many tumor cell types, is a receptor tyrosine kinase essential to cell migration and the development of the microvasculature. Check for active clinical trials using this agent.

**Raf kinase inhibitor HM95573:** An orally available inhibitor of members of the Raf family of serine/threonine protein kinases, with potential antineoplastic activity. Upon administration, Raf kinase inhibitor HM95573 binds to and inhibits the B-Raf mutant V600E and C-Raf. This inhibits B-Raf V600E- and C-Raf-mediated signal transduction pathways, thereby inhibiting tumor cell growth of susceptible tumor cells. In addition, HM95573 may also inhibit mutated Ras proteins. Raf protein kinases play a key role in the Raf/mitogen-activated protein kinase kinase (MEK)/extracellular signal-related kinase (ERK) signaling pathway, which is often dysregulated in human cancers and plays a key role in tumor cell proliferation and survival. The Raf mutation B-Raf V600E, where the valine at residue 600 is substituted for glutamic acid, is frequently overexpressed in a variety of human tumors and results in the constitutive activation of the Raf/MEK/ERK signaling pathway. Check for active clinical trials using this agent.

**Raf kinase inhibitor LGX818:** An orally available Raf kinase inhibitor with potential antineoplastic activity. LGX818 specifically inhibits Raf kinase, a serine/threonine enzyme in the RAF/mitogen-activated protein kinase kinase (MEK)/extracellular signal-related kinase (ERK) signaling pathway. By inhibiting the activation of the RAF/MEK/ERK signaling pathway, the administration of LGX818 may result in a decrease in proliferation of tumor cells. The Raf mutation BRAF V600E is frequently upregulated in a variety of human tumors and results in the constitutive activation of the RAF/MEK/ERK signaling pathway that regulates cellular proliferation and survival.

**Raf kinase inhibitor XL281:** An orally active, small molecule with potential antineoplastic activity. XL281 specifically inhibits RAF kinases, located downstream from RAS in the RAS/RAF/MEK/ERK kinase signaling pathway, which may result in reduced proliferation of tumor cells.

RAS mutations may result in constitutive activation of the RAS/RAF/MEK/ERK kinase signaling pathway, and have been found to occur frequently in human tumors. Check for active clinical trials using this agent.

**Raf/MEK dual kinase inhibitor RO5126766:** A protein kinase inhibitor specific for the Raf and MEK mitogen-activated protein kinases (MAPKs) with potential anti-neoplastic activity. Raf/MEK dual kinase Inhibitor RO5126766 specifically inhibits the kinase activities of Raf and MEK, resulting in the inhibition of of target gene transcription that promotes malignant transformation of cells. Both Raf and MEK are serine/threonine-specific kinases that respond to extracellular stimuli, such as mitogens, and are involved in the regulation of cellular processes, such as gene expression, mitosis, differentiation, and apoptosis.

**Rafter:** A member in the roof structure running from the ridge to the eaves.

**Raftilose Synergy 1 :** A substance that is used to improve the health of the digestive system and bones and is being studied in the prevention of colon cancer. Raftilose Synergy 1 is made by combining two substances that occur naturally in many plants, including chicory root, wheat, bananas, onion, and garlic. Raftilose Synergy 1 helps healthy bacteria grow in the intestines and helps the body absorb calcium and magnesium. Also called oligofructose-enriched inulin.

**Rail:** Horizontal piece of timber in framing or panelling; any horizontal piece of timber. OR liquid precipitation larger than .02 cm in diameter.

**rain shadow:** an area on the lee side of a mountain range that is arid because most of the rain is precipitated on the other side of the range.

**Rain spotting:** Depressions or surface blemishes in a paint film caused by rain falling on the surface before the paint has fully dried. OR There's only one way to remove depressions or surface blemishes caused by rain spotting. Clean down the surfaces to remove all dirt, grease and surface contaminants. Then rub down the surfaces with Wet ' Dry abrasion, using water or a suitable solvent. Finally, rinse down and allow to dry thoroughly before applying a new coat of paint.

**Raised Ejector Site :** Where the ejector site is either heightened or raised above the surface of the component.

**Raking out:** The process of cutting out cracks in plaster or rendered surfaces to remove loose particles and to provide a key for the repair material.

**raloxifene :** The active ingredient in a drug used to reduce the risk of invasive breast cancer in postmenopausal women who are at high risk of the disease or who have osteoporosis. It is also used to prevent and treat osteoporosis in postmenopausal women. It is also being studied in the prevention of breast cancer in certain premenopausal women and in the prevention and treatment of other conditions. Raloxifene blocks the effects of the hormone estrogen in the breast and increases the amount of calcium in bone. It is a type of selective estrogen receptor modulator (SERM).

**raloxifene hydrochloride:** The hydrochloride salt form of raloxifene, a selective benzothiophene estrogen receptor modulator (SERM) with lipid lowering effects and activity against osteoporosis. Raloxifene hydrochloride specifically binds to estrogen receptors in responsive tissue, including liver, bone, breast, and endometrium. The resulting ligand-receptor complex is translocated to the nucleus where, depending on the tissue type, it promotes or suppresses the transcription of estrogen-regulated genes, thereby exerting its agonistic or antagonistic effects. This agent functions as an estrogen agonist in lipid metabolism, thereby decreasing total and LDL cholesterol levels. In tissue like bone, it decreases bone resorption and bone turnover and increases bone mineral density. Raloxifene hydrochloride acts as an estrogen antagonist in uterine and breast tissue. This agent also exerts an anti-proliferative effect on estrogen-sensitive breast cancer. OR A drug used to reduce the risk of invasive breast cancer in postmenopausal women who are at high risk of the disease or who have osteoporosis. It is also used to prevent and treat osteoporosis in postmenopausal women. It is also being studied in the prevention of breast cancer in certain premenopausal women and in the prevention and treatment of other conditions. Raloxifene hydrochloride blocks the effects of the hormone estrogen in the breast and increases the amount of calcium in bone. It is a type of selective estrogen receptor modulator (SERM). Also called Evista.

**raltegravir potassium:** The orally bioavailable potassium salt of a human immunodeficiency virus (HIV) integrase strand transfer inhibitor (HIV-1 INSTI) with HIV-1 antiviral activity. Raltegravir binds to and inhibits integrase, an HIV enzyme that inserts viral genetic material into the genetic

material of the infected human cell. Inhibition of integrase prevents insertion of HIV DNA into the human DNA genome, thus blocking HIV replication. Check for active clinical trials using this agent.

**raltitrexed:** A quinazoline folate analogue with antineoplastic activity. After transport into cells via the reduced folate carrier, raltitrexed undergoes intracellular polyglutamation and blocks the folate-binding site of thymidylate synthase, thereby inhibiting tetrahydrofolate activity and DNA replication and repair and resulting in cytotoxicity. or An anticancer drug that stops tumor cells from growing by blocking the ability of cells to make DNA. It belongs to the family of drugs called thymidylate synthase inhibitors. Also called ICI D1694.

**RAM:** The press member that enters the cavity block and exerts pressure on the molding compound designated as the "top force" or "bottom force" by position in the assembly. OR The forward motion of the screw in the plasticator barrel that forces the melt into the mold cavity.

**Ram Extruder:** A barrel with a temperature control, wherein a plunger pushes material in a melted state to the die.

**Ram Pressure -:** Used colloquially for the total force applied by a hydraulic ram, equal to the hydraulic pressure multiplied by the ram area.

**RAM TRAVEL:** Distance ram moves when operating a complete molding cycle.

**Ramachandran plot:** A steric contour diagram that depicts allowed ranges of the angles  $\phi$  and  $\psi$  for amino acid residues in polypeptide chains; for each residue, its conformation in the main chain of a polypeptide can be completely defined by  $\phi$  (the degree of rotation at the bond between the nitrogen atom and the  $\alpha$ -carbon atom) and  $\psi$  (the degree of rotation at the bond between the  $\alpha$ -carbon atom and the carbonyl carbon atom).

**ramelteon:** A synthetic melatonin analogue with hypnotic and circadian rhythm-modulating activities. Ramelteon binds to and activates melatonin receptors 1 and 2 in the suprachiasmatic nucleus (SCN) of the brain, thereby promoting the onset of sleep. Unlike the nonbenzodiazepine sedative hypnotics zolpidem and zaleplon, this agent does not activate GABA receptors and, so, produces no GABA receptor-mediated anxiolytic, myorelaxant, and amnesic effects.

**ramipril:** A prodrug and nonsulfhydryl angiotensin converting enzyme (ACE) inhibitor with antihypertensive activity. Ramipril is converted in the liver by de-esterification into its active form ramiprilat, which inhibits ACE, thereby blocking the conversion of angiotensin I to angiotensin II. This abolishes the potent vasoconstrictive actions of angiotensin II and leads to vasodilatation. This agent also causes an increase in bradykinin levels and a decrease in angiotensin II-induced aldosterone secretion by the adrenal cortex, thereby promoting diuresis and natriuresis.

**ramosetron hydrochloride:** The hydrochloride salt of ramosetron, a selective serotonin (5-HT) receptor antagonist with potential antiemetic activity. Upon administration, ramosetron selectively binds to and blocks the activity of 5-HT subtype 3 (5-HT<sub>3</sub>) receptors located in the vagus nerve terminal and in the vomiting center in the central nervous system (CNS), suppressing chemotherapy-induced nausea and vomiting.

**ramucirumab:** A recombinant, fully human monoclonal antibody directed against human vascular endothelial growth factor receptor 2 (VEGFR-2) with antiangiogenesis activity. Ramucirumab specifically binds to and inhibits VEGFR-2, which may result in an inhibition of tumor angiogenesis and a decrease in tumor nutrient supply. VEGFR-2 is a pro-angiogenic growth factor receptor tyrosine kinase expressed by endothelial cells. Check for active clinical trials using this agent. or A drug used with other drugs to treat colorectal cancer and non-small cell lung cancer that have spread to other parts of the body. It is used alone or with another drug to treat cancer of the stomach or gastroesophageal junction (area where the esophagus connects to the stomach) that is advanced or has spread to other parts of the body. It is also being studied in the treatment of other types of cancer. Ramucirumab binds to receptors for a protein called vascular endothelial growth factor (VEGF), which may be found on some types of cancer cells. This may prevent the growth of new blood vessels that tumors need to grow. Ramucirumab is a type of antiangiogenesis agent and a type of monoclonal antibody. Also called anti-VEGFR-2 fully human monoclonal antibody IMC-1121B, Cyramza, and IMC-1121B.

**RANDOM COPOLYMER:** A random copolymer occurs when one of the two monomers polymerized together to form a polymer is in a random or statistical distribution in the polymer chain.

**Random error:** a result of a measurement minus the mean that would result from an infinite number of measurements of the same measurand carried out under repeatability conditions. OR Random errors are errors that affect the precision of a set of measurements. Random error scatters measurements above and below the mean, with small random errors being more likely than large ones.

**Random-coil conformation:** The disordered, unfolded structure of a denatured macromolecule; many proteins that are not cross-linked lose their native three-dimensional structure as well as their biological function in the presence of unfolding agents such as urea.

**randomization :** When referring to an experiment or clinical trial, the process by which animal or human subjects are assigned by chance to separate groups that compare different treatments or other interventions. Randomization gives each participant an equal chance of being assigned to any of the groups.

**randomized clinical trial :** A study in which the participants are assigned by chance to separate groups that compare different treatments; neither the researchers nor the participants can choose which group. Using chance to assign people to groups means that the groups will be similar and that the treatments they receive can be compared objectively. At the time of the trial, it is not known which treatment is best. It is the patient's choice to be in a randomized trial.

**Ranexa:** (Other name for: ranolazine)

**ranibizumab:** A second-generation, recombinant humanized IgG1 kappa monoclonal antibody fragment directed against human vascular endothelial growth factor (VEGF) alpha. Ranibizumab binds to VEGF alpha and inhibits VEGF alpha binding to its receptors, VEGFR1 and VEGFR2, thereby preventing the growth and maintenance of tumor blood vessels. The molecular weight of this agent (48 kD) is much smaller than the molecular weight of bevacizumab (MW ~149 kD), allowing complete penetration of the retina and the subretinal space following intravitreal injection. In contrast to other anti-VEGF aptamers such as pegaptanib, ranibizumab has a high specificity and affinity for all soluble human isoforms of VEGF.

**ranimustine:** A chloroethylnitrosourea derivative that inhibits proliferation and growth of tumor cells by alkylation and cross-linkage of DNA strands of tumor cells. Check for active clinical trials using this agent.

**ranitidine hydrochloride/bismuth potassium citrate/sucralfate hydrate**

**formulation:** A formulation containing the hydrochloride salt form of the non-imidazole histamine H<sub>2</sub> receptor antagonist ranitidine, bismuth potassium citrate, and the hydrate form of sucralfate, a basic aluminum complex of sulfated sucrose, with potential antacid, radio- and cytoprotective activities. Upon oral administration of the ranitidine hydrochloride/bismuth potassium citrate/sucralfate hydrate formulation, ranitidine binds to and blocks the activity of the histamine H<sub>2</sub> receptors in the parietal cells in the stomach and in the gastrointestinal (GI) tract, thereby decreasing acid secretion. Sucralfate physically binds to the surface of damaged mucosa, thereby forming a protective barrier that shields the GI tract from stomach acid. It also neutralizes stomach acid. Bismuth inhibits peptic activity, increases mucosal secretions and acts as a barrier to prevent damage by acid. Altogether, this protects against ulcer formation and may help to heal existing ulcers.

**ranolazine:** An orally available, piperazine derivative with anti-anginal and potential antineoplastic activities. Ranolazine's mechanism of action for its anti-ischemic effects has yet to be fully elucidated but may involve the alteration of the trans-cellular late sodium current in the ischemic myocyte. By preventing the rise of intracellular sodium levels, ranolazine may affect the transport activity of sodium-dependent calcium channels and prevent the calcium overload during myocardial ischemia, thereby preventing cellular injury. Ranolazine's potential antineoplastic effect may depend on its inhibitory effect on fatty acid oxidation, which may sensitize tumor cells to apoptosis and decrease tumor cell proliferation; fatty acid oxidation provides energy and promotes tumor cell proliferation and survival. Check for active clinical trials using this agent.

**ranpirnase:** A natural homologue of ribonuclease A isolated from the eggs of the frog *Rana pipiens*. Ranpirnase primarily degrades cellular transfer RNA with a substrate specificity for uridine-guanidine base-pair sequences, resulting in inhibition of protein synthesis and cytotoxicity. This agent also activates caspase-9 in mitochondria, resulting in tumor cell apoptosis. orA substance being studied in the treatment of cancer. It is a type of ribonuclease enzyme. Also called Onconase.

**Raoult's Law:** This chemistry law shows that the vapor pressure above a mixture of two liquids is directly related to the amounts of the solute and

solvents in the solution. OR The vapor pressure of a solvent in an ideal solution equals the mole fraction of the solvent times the vapor pressure of the pure solvent.

**Rapaflo:** (Other name for: silodosin)

**Rapamune:** (Other name for: sirolimus) or A drug used to keep the body from rejecting organ and bone marrow transplants. Rapamune blocks certain white blood cells that can reject foreign tissues and organs. It also blocks a protein that is involved in cell division. It is a type of antibiotic, a type of immunosuppressant, and a type of serine/threonine kinase inhibitor. Rapamune was previously called rapamycin. Also called sirolimus.

**rapamycin :** A drug used to keep the body from rejecting organ and bone marrow transplants. Rapamycin blocks certain white blood cells that can reject foreign tissues and organs. It also blocks a protein that is involved in cell division. It is a type of antibiotic, a type of immunosuppressant, and a type of serine/threonine kinase inhibitor. Rapamycin is now called sirolimus.

**rapamycin-polarized Th1/Tc1 autologous T lymphocytes:** A population of T lymphocytes polarized by rapamycin with potential immunomodulating activity. The autologous T cells collected from the patient were co-stimulated with antibodies to the T-cell cell surface proteins CD3 and CD28 and expanded ex vivo in the presence of rapamycin, an immunosuppressive drug, and then infused back into the same patient. Both CD3 and CD28 are required for full T cell activation. These lymphocytes expressed anti-apoptotic bcl-2 family member proteins (reduced Bax, Bak; increased phospho-Bad); maintained mitochondrial membrane potentials; and displayed reduced apoptosis. Adoptive transfer of this type of T cell potentially induces an anti-apoptotic Th1/Tc1 effector phenotype by promoting autophagy.

**rapid eye movement sleep :** One of the five stages of sleep. During rapid eye movement sleep, the eyes move rapidly while closed and dreams occur. Rapid eye movement sleep is the lightest stage of sleep, during which a person may wake easily. During several hours of normal sleep, a person will go through several sleep cycles that include rapid eye movement sleep and the 4 stages of non-rapid eye movement (light to deep sleep). Also called REM sleep.

**rapid hormone cycling :** A procedure in which drugs that block the production of male hormones are alternated with male hormones and/or drugs that promote the production of male hormones. This procedure is being studied in the treatment of prostate cancer.

**Rapid Prototyping:** Fabrication of a physical, three-dimensional part of arbitrary shape directly from a numerical description, typically a CAD model, by a quick, highly automated and totally flexible process.

**rapid-onset opioid :** A substance that acts quickly to treat moderate to severe pain. Opioids are like opiates, such as morphine and codeine, but are not made from opium. Opioids bind to opioid receptors in the central nervous system. A rapid-onset opioid is a type of alkaloid.

**Rapid-start complex:** The complex that RNA polymerase forms at the promoter site just before initiation.

**RAPRA:** RAPRA technology Ltd., (UK,) is a leading rubber and plastics consultancy firm with over 75 years of experience. They offer conduct training courses in Rubber and Plastics.

**rare earth:** An oxide of a rare earth element.

**rare earth element:** A metallic element that belongs to Group 3B or to the lanthanide series.

**rare earths:** the elements from cerium to lutetium; lanthanides.

**ras gene family :** A family of genes that may cause cancer when they are mutated (changed). They make proteins that are involved in cell signaling pathways, cell growth, and apoptosis (cell death). Agents that block the actions of a mutated ras gene or its protein may stop the growth of cancer. Members of the ras gene family include Kras, Hras, and Nras.

**ras peptide :** A short piece of the ras protein, which is made by the ras gene. The ras gene has been found to cause cancer when it is mutated (changed).

**ras peptide cancer vaccine:** A cancer vaccine containing a RAS oncogene-encoded peptide with potential antineoplastic activity. RAS peptide cancer vaccine may stimulate a RAS peptide-specific antitumoral T-cell cytotoxic immune response, resulting in an inhibition of tumor cell proliferation and tumor cell death.

**rasburicase:** A recombinant urate oxidase enzyme isolated from a genetically-modified strain of *Saccharomyces cerevisiae*. Urate oxidase

catalyzes the oxidation of uric acid to the excretable metabolite allantoin, a molecule that is 5-10 times more water-soluble than uric acid. An enzyme that occurs endogenously in most mammals, urate oxidase is not found in humans. or A drug used to treat high blood levels of uric acid in patients with leukemia, lymphoma, and other types of cancer who are receiving certain types of cancer treatment. It is also being studied in the treatment of other medical conditions. Rasburicase is a type of recombinant enzyme and a type of urate-lowering drug. Also called Elitek and recombinant urate oxidase.

**rate:** A measure of the frequency of a phenomenon. An expression of the frequency with which an event occurs in a defined population (from Last, 1988).

**rate constant:** the proportionality constant of a reaction that reflects the concentration of reactants.

**rate constant:** A rate constant is a proportionality constant that appears in a rate law. For example,  $k$  is the rate constant in the rate law  $d[A]/dt = k[A]$ . Rate constants are independent of concentration but depend on other factors, most notably temperature.

**rate difference (RD):** The absolute difference between two rates, for example, the difference in incidence rate between a population group exposed to a causal factor and a population group not exposed to the factor:

**rate equation:** the mathematical formula that relates the rate of a reaction to the concentration of the reactants.

**rate law:** A rate law or rate equation relates reaction rate with the concentrations of reactants, catalysts, and inhibitors. For example, the rate law for the one-step reaction  $A + B \rightarrow C$  is  $d[C]/dt = k[A][B]$ .

**Rate of Diffusion:** This rate measurement is the speed at which molecules or atoms diffuse through a substance.

**rate of reaction:** the speed with which a reaction proceeds.

**rate ratio (RR):** The ratio of two rates. The term is used in epidemiologic research with a precise meaning, i.e., the ratio of the rate in the exposed population to the rate in the unexposed population:

**rate-determining step:** the step in a reaction's mechanism that requires the highest activation energy and is therefore the slowest.

**rate-limiting step:** (1) Generally, the step in an enzymatic reaction with the greatest activation energy or the transition state of highest free energy. (2) The slowest step in a metabolic pathway.

**ratio:** A comparison of two quantities by division.

**ratio:** The relative size of two quantities expressed as the quotient of one divided by the other; the ratio of a to b is written as a:b or a/b.

**Rational Drug Design:** The design of drugs to specifically work for their respective targets.

**rattlesnake root :** An eastern North American perennial herb. A substance obtained from the root of the plant has been used in some cultures to treat a number of medical problems. It is being studied in the treatment of hot flashes and other symptoms of menopause. The scientific name is *Cimicifuga racemosa*. Also called black cohosh, black snakeroot, bugbane, and bugwort.

**rauschpfeffer :** An herb native to islands in the South Pacific. Substances taken from the root have been used in some cultures to relieve stress, anxiety, tension, sleeplessness, and problems of menopause. Rauschpfeffer may increase the effect of alcohol and of certain drugs used to treat anxiety and depression. The U.S. Food and Drug Administration advises users that rauschpfeffer may cause severe liver damage. The scientific name is *Piper methysticum*. Also called intoxicating pepper, kava kava, tonga, and yangona.

**RAV12:** A monoclonal antibody that is being studied in the treatment of some types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to cancer cells. It binds to a carbohydrate (sugar) molecule that is found on gastric, colon, pancreatic, prostate, ovarian, breast, and kidney cancer cells.

**ravuconazole:** A triazole with antifungal activity. Ravuconazole inhibits 14a demethylase, an enzyme involved in sterol synthesis, resulting in lysis of the fungal cell wall and fungal cell death. Or A substance that is being studied in the treatment of infections caused by fungi. It belongs to the family of drugs called antifungal agents.

**Raw Materials:** Ingredients or constituents that are added or mixed together to form or manufacture a finished product. OR Raw materials are the starting materials for an industrial process, obtained from nature.

**ray:** a half-line. Continues forever in one direction. Has one endpoint.

**Rayaldee:** (Other name for: modified-release calcifediol capsule)

**RayGel:** (Other name for: reduced glutathione-L-cysteine-anthocyanins gel)

**Rayon:** The generic term for fibers, staple, and continuous filament yarns composed of regenerated cellulose but also frequently used to describe fibers obtained from cellulose acetate or cellulose triacetate. Rayon fibers are similar in chemical structure to natural cellulose fibers (e.g., cotton) except that the synthetic fiber contains shorter polymer units. Most rayon is made by the viscose process.

**Razadyne:** (Other name for: galantamine hydrobromide)

**razoxane:** An orally bioavailable bis-dioxopiperazine and a derivative of the chelating agent ethylenediaminetetraacetic acid (EDTA) with antineoplastic, antiangiogenic, and antimetastatic activities. Razoxane specifically inhibits the enzyme topoisomerase II without inducing DNA strand breaks, which may result in the inhibition of DNA synthesis and cell division in the premitotic and early mitotic phases of the cell cycle. This agent may also exhibit antiangiogenic and antimetastatic activities although the precise molecular mechanisms of these actions are unknown.

**RBC:** A type of blood cell that is made in the bone marrow and found in the blood. RBCs contain a protein called hemoglobin, which carries oxygen from the lungs to all parts of the body. Checking the number of RBCs in the blood is usually part of a complete blood cell (CBC) test. It may be used to look for conditions such as anemia, dehydration, malnutrition, and leukemia. Also called erythrocyte and red blood cell.

**Re-186 hydroxyethylidene diphosphonate:** An synthetic compound containing the organic phosphonate hydroxyethylidene diphosphonate (HEDP) labeled with the radioisotope rhenium Re 186. Re-186 hydroxyethylidene diphosphonate binds to hydroxyapatite in bone, delivering a cytotoxic dose of beta radiation to primary and metastatic bone tumors. Re-186 is a beta emitter with a short half-life, a radioisotope profile that provides localized antitumor radiocytotoxicity while sparing extramedullary bone marrow tissues.

**REACH :** REACH is the system for Registration, Evaluation and Assessment of Chemicals being proposed under the EU Chemicals Policy.

**Reactants** : The chemicals that react together to form the new materials. The word reagent is sometimes used instead. OR Substances initially present in a chemical reaction. OR A substance that is consumed during a chemical change. OR a starting material. OR a substance on the left side of a chemical reaction. OR A reactant is a substance we start with before a chemical reaction. OR A starting material in a chemical reaction.

**reaction:** the process of converting reactants into products. OR Any process involving a chemical or nuclear change.

**Reaction cavity:** A hypothetical volume wherein significant molecular motion, hence reaction, can take place within a solid.

**Reaction center:** In a photosynthetic unit, a specialized chlorophyll molecule that collects excitation energy from other chlorophyll molecules and mediates the transformation of light into chemical energy.

**reaction energy:** the difference between the energy of the reactants and that of the products.

**Reaction Injection:** A process that involves the high pressure impingement mixing of two or more reactive liquid components and injecting into a closed mold at low pressure.

**reaction intermediate:** Any chemical species in a reaction pathway that has a finite chemical lifetime.

**reaction mechanism:** A list of all elementary reactions that occur in the course of an overall chemical reaction.

**Reaction order:** The sum of the exponent of the reactants in the kinetics equation for a given reaction.

**reaction quotient:** The product of the concentrations of the products, divided by the product of the concentrations of the reactants, for a chemical reaction which is not necessarily at equilibrium. For example, the reaction quotient for  $A + B = C + D$  is equal to  $(C)(D) / ((A)(B))$ , where the parentheses indicate concentrations. Each concentration is raised to a power equal to its stoichiometric coefficient in the expression. The reaction quotient for  $A + 2B = 3C$  is equal to  $(C)^3 / ((A)(B)^2)$ . For gas phase reactions, partial pressures can be used in the reaction quotient in place of concentrations.

**Reaction rate:** A measure of how fast a chemical reaction occurs OR A reaction rate is the speed at which reactants are converted into products in a

chemical reaction. The reaction rate is given as the instantaneous rate of change for any reactant or product, and is usually written as a derivative (e. g.  $d[A]/dt$ ) with units of concentration per unit time (e. g.  $\text{mol L}^{-1} \text{s}^{-1}$ ).

**reactivate** : To make active again or make something work again. In medicine, an infection or a disease is described as reactivated when it comes back after a period with no signs of disease.

**Reactive** : A substance that is easily able to react. When considering metals, the reactive ones are at the bottom of the periodic table. When considering non-metals, the reactive ones are at the top.

**Reactive Element:** When an element is reactive, it is easily excited. It can combine with other elements very quickly and get involved in many chemical reactions.

**Reactive Inspection:** An inspection to examine the circumstances surrounding an operational problem or event occurring at a nuclear plant.

**reactive oxygen species** : A type of unstable molecule that contains oxygen and that easily reacts with other molecules in a cell. A build up of reactive oxygen species in cells may cause damage to DNA, RNA, and proteins, and may cause cell death. Reactive oxygen species are free radicals. Also called oxygen radical.

**Reactive resins:** Liquid resins which can be cured by catalysts and hardeners to form solid materials.

**reactivity:** The degree to which a substance will respond to a stimulus or interact with another substance. OR A term expressing the departure of a reactor system from criticality. A positive reactivity addition indicates a move toward supercriticality (power increase). A negative reactivity addition indicates a move toward subcriticality (power decrease).

**Reactivity Series:** The Reactivity Series is a list of metals in order of their reactivity. OR A list of metals or non-metals that has the most reactive at the top. Sometimes hydrogen and carbon are included in the metal series. Carbon is included because of the importance of carbon in the reduction of metal oxides. Hydrogen is included because only metals more reactive than it can release hydrogen from an acid.

**Reactor coolant system:** The system used to remove energy from the reactor core and transfer that energy either directly or indirectly to the steam turbine.

**Reactor core:** The central portion of a nuclear reactor, which contains the fuel assemblies, moderator, neutron poisons, control rods, and support structures. The reactor core is where fission takes place.

**Reactor Oversight Process (ROP):** The process by which the NRC monitors and evaluates the performance of commercial nuclear power plants. Designed to focus on those plant activities that are most important to safety, the process uses inspection findings and performance indicators to assess each plant's safety performance. For additional detail, see Reactor Oversight Process (ROP).

**Reactor, nuclear:** The heart of a nuclear power plant or nonpower reactor, in which nuclear fission may be initiated and controlled in a self-sustaining chain reaction to generate energy or produce useful radiation. Although there are many types of nuclear reactors, they all incorporate certain essential features, including the use of fissionable material as fuel, a moderator (such as water) to increase the likelihood of fission (unless reactor operation relies on fast neutrons), a reflector to conserve escaping neutrons, coolant provisions for heat removal, instruments for monitoring and controlling reactor operation, and protective devices (such as control rods and shielding). For additional detail, see Nuclear Reactors.

**Reading frame:** A group of three nonoverlapping nucleotides that is read as a codon during protein synthesis; the reading frame begins with the initiator codon AUG. OR A contiguous and nonoverlapping set of three-nucleotide codons in DNA or RNA.

**reagent:** the chemicals that ordinarily produce reaction products. OR A substance or mixture that is useful in chemical analysis or synthesis. OR a chemical substance used to cause a reaction for the purpose of chemical analysis.

**reagent :** A substance used to carry out a laboratory test. Reagents may be used in a chemical reaction to detect, measure, or make other substances.

**Reagent Resistance:** The ability of a plastic to withstand exposure to chemicals.

**Reagents :** The chemicals that react together to form the new materials. The word reactant is sometimes used instead.

**Real Gas:** A real gas is one that you find in the real world. They have unique properties depending on the temperature and pressure. A perfect gas

would be called an ideal gas.

**realgar-Indigo naturalis formulation:** An orally bioavailable, traditional Chinese medicine (TCM)-based formulation composed of Realgar-Indigo naturalis formula (RIF) with potential antineoplastic activity. The main constituents in RIF are realgar, Indigo naturalis, and Salvia miltiorrhiza, with tetraarsenic tetrasulfide (As<sub>4</sub>S<sub>4</sub>), indirubin and tanshinone IIA as the main active ingredients, respectively, which appear to exert synergistic effects on cancer cells. Tetraarsenic tetrasulfide specifically induces the ubiquitination and degradation of the oncoprotein promyelocytic leukemia retinoic acid receptor alpha (PML-RARalpha). In addition, the active ingredients in the Realgar-Indigo naturalis formulation enhance the expression of myeloid differentiation genes, and induce G(1)/G(0) cell cycle arrest. PML-RARalpha, an acute promyelocytic leukemia (APL)-specific fusion gene, inhibits differentiation and promotes survival of myeloid precursor cells.

**Rearrangement reaction:** A chemical reaction in which covalent bonds are made and broken, but in which the molecular formula remains the same. OR a reaction that causes the skeletal structure of the reactant to undergo change in converting to the product. OR A reaction in which a reactant and product are isomers of each other. Chemical bonds within the reactant are broken and reformed to produce the product.

**Reasonable:** Rational, sensible, or resulting from sound judgment.

**rebamipide:** A quinolinone derivative with anti-ulcer and anti-inflammatory activities. Rebamipide induces cyclooxygenase 2 (COX2) synthesis which results in an increase in endogenous prostaglandin synthesis in the gastric mucosa. This agent also inhibits H. pylori-induced production of tumor necrosis factor (TNF) alpha and subsequent inflammation of the gastric mucosa. In addition, rebamipide scavenges oxygen-derived free radicals that potentially cause mucosal injury, and stimulates prostaglandin EP4 receptor gene expression followed by mucous secretion, thereby enhancing the gastric mucosal defense.

**rebastinib tosylate:** An orally bioavailable small-molecule inhibitor of multiple tyrosine kinases with potential antineoplastic activity. Rebastinib binds to and inhibits the Bcr-Abl fusion oncoprotein by changing the conformation of the folded protein to disallow ligand-dependent and ligand-independent activation; in addition, this agent binds to and inhibits Src

family kinases LYN, HCK and FGR and the receptor tyrosine kinases TIE-2 and VEGFR-2. Rebastinib may exhibit more potent activity against T315I Bcr-Abl gatekeeper mutant kinases than other Bcr-Abl kinase inhibitors. The TIE-2 and VEGFR-2 receptor tyrosine kinases regulate angiogenesis, respectively, while the Src family kinases Abl, LYN, and HCK Src regulate a variety of cellular responses including differentiation, division, adhesion, and the stress response. Check for active clinical trials using this agent.

**Rebate:** A recess cut into a piece of timber so as to fit into another piece to form a joint; a recess in a frame to accommodate a door panel or window. Also spelt 'rabbet'.

**rebeccamycin :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called antineoplastic antibiotics.

**rebeccamycin analog :** A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called antitumor antibiotics and topoisomerase inhibitors. Also called NSC 655649.

**Rebetol:** (Other name for: ribavirin)

**Rebif:** (Other name for: recombinant interferon beta)

**rebimastat:** A sulfhydryl-based second-generation matrix metalloproteinase (MMP) inhibitor with potential antineoplastic activity. Rebimastat selectively inhibits several MMPs (MMP 1, 2, 8, 9, and 14), thereby inducing extracellular matrix degradation, and inhibiting angiogenesis, tumor growth and invasion, and metastasis.

**Reblend:** The process of “reusing” or reapplying material in the manufacturing process. This is often pursued when a resulting product meets performance requirements and specifications, but may be “off specification”, such as slight variations in color. This product can then be “reblended” into another manufacturing lot or batch, reducing potential waste from the process.

**receding glacier:** a glacier that, although it can move downslope, cannot overtake its rate of uphill recession.

**Recentin :** A substance being studied in the treatment of some types of cancer. Recentin may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of antiangiogenesis agent and a type of vascular endothelial growth factor (VEGF) receptor tyrosine kinase inhibitor. Also called AZD2171 and cediranib maleate.

**receptor:** Protein molecules on the surface of cell membranes used for communication between cells. OR Proteins which ligands can bind to and elicit a biological response. OR A molecule or surface in a cell that recognizes and binds to a specific messenger molecule, leading to a biological response.

**receptor :** A molecule inside or on the surface of a cell that binds to a specific substance and causes a specific effect in the cell.

**Receptor part:** according to the IUPAC definition of chemical sensor one of the two principal components of the chemical sensor, which converts chemical information into a form of energy.

**Receptor tyrosine kinases:** Transmembrane receptor proteins that, when bound to the appropriate signal molecules, display intracellular protein kinase activity, phosphorylating proteins at tyrosine residues.

**Receptor-mediated endocytosis:** A means of importing specific proteins into a cell by their binding to plasma-membrane receptors and their subsequent endocytosis and inclusion into vesicles.

**Recess:** An indentation in the plastic part caused by the impact of the ejector pins.

**recessional moraine:** a moraine that develops at the front of a receding glacier.

**recessive:** the allele overshadowed by the dominant allele.

**recharge:** the period of time during the water-budget cycle when the water in the ground is being replenished. OR the process by which new water is added to the saturated zone, replenishing water that is lost. OR The process by which water is added to a reservoir or zone of saturation, often by runoff or percolation from the soil surface.

**recipient :** In medicine, a person who receives blood, cells, tissue, or an organ from another person, such as in a blood transfusion or an organ transplant.

**RECIPROCATING SCREW:** A combination injection and plasticizing unit in which an extrusion device with a reciprocating screw is used to plasticize the material. Injection of material into a mold can take place by direct extrusion into the mold, or by reciprocating the screw as an injection plunger, or by a combination of the two. When the screw serves as an injection plunger, this unit acts as a holding, measuring, and injection

chamber. OR A helical flighted, metal shaft that rotates within the heating cylinder of a molding machine, shearing, blending, and advancing the plastic material. After rotating, the screw is pushed forward which injects the plastic into the mold. Also, simply referred to as "the screw." OR An extruder system in which the screw when rotating is pushed backwards by the molten polymer which collects in front of the screw. When sufficient material has been collected, the screw moves forward and forces the material through the head and die at a high speed.

**Reciprocating Seal:** Seals used in moving piston and rod situations

**RECIST :** A standard way to measure how well a cancer patient responds to treatment. It is based on whether tumors shrink, stay the same, or get bigger. To use RECIST, there must be at least one tumor that can be measured on x-rays, CT scans, or MRI scans. The types of response a patient can have are a complete response (CR), a partial response (PR), progressive disease (PD), and stable disease (SD). Also called Response Evaluation Criteria In Solid Tumors.

**recombinant :** In genetics, describes DNA, proteins, cells, or organisms that are made by combining genetic material from two different sources. Recombinant substances are made in the laboratory and are being studied in the treatment of cancer and for many other uses.

**recombinant 70-kD heat-shock protein:** A recombinant peptide that is chemically identical to or similar to the endogenous 70-kD heat shock protein (HSP70). HSP70 is a molecular chaperone that prevents physiologic stress-induced cell death by inhibiting both caspase-dependent and caspase-independent apoptosis. Because this peptide is often overexpressed in tumor cells, autologous vaccination with HSP70 derived from tumor cells may stimulate the host immune system to mount a tumoricidal cytotoxic T lymphocyte (CTL) response. Check for active clinical trials using this agent.

**recombinant adenovirus-hIFN-beta:** A recombinant replication-defective adenovirus which encodes the gene for the cytokine human interferon-beta (IFN-beta). Once inserted into and replicating in host tumor cells, recombinant adenovirus-hIFN-beta expresses human IFN-beta, which may stimulate an antiproliferative natural killer (NK) cell response against tumor cells and induce caspase-mediated tumor cell apoptosis.

**recombinant adenovirus-interferon SCH 721015:** A replication-deficient recombinant adenovirus encoding human interferon alpha-2b with potential

antineoplastic activity. Upon intravesical administration, recombinant adenovirus-interferon SCH 721015 infects nearby tumor cells and expresses INF alpha-2b intracellularly which activates the transcription and translation of genes whose products mediate antiviral, antiproliferative, antitumor, and immune-modulating effects.

**recombinant adenovirus-interferon/Syn3:** A non-replicating recombinant adenovirus type 5 (Ad5)-vector encoding the gene for interferon alpha-2b (IFN $\alpha$ 2b) and the gene transfer enhancement agent Syn 3, with potential antineoplastic activity. Upon intravesical administration, recombinant adenovirus-interferon with Syn3 transfects both cancerous and normal bladder cells, and the adenovirus secretes interferon (IFN $\alpha$ 2b) into the bladder. IFN exerts a direct antitumor killing effect and a bystander effect, thereby killing adjacent, non-transfected cancerous bladder cells. Syn 3 enhances the ability of the adenoviral vector to transfect cells.

**recombinant adenovirus-L523S vaccine:** A replication-defective adenovirus containing a gene that encodes the human protein L523S with potential antineoplastic activity. Upon administration, recombinant adenovirus-L523S vaccine expresses L523S, which may stimulate antibody and cytotoxic T lymphocyte (CTL) responses against tumor cells expressing L523S. L523S is an RNA-binding protein that belongs to the KOC (K homology domain containing protein over-expressed in cancer) family of proteins. As an oncofetal protein, L523S is normally expressed in early embryonic tissues and certain normal adult tissues such as colon, fallopian tube, gall bladder, and ovary tissues but may be overexpressed in squamous cell cancers of the lung. Check for active clinical trials using this agent.

**recombinant adenovirus-p53 :** A substance that has been studied in the treatment of some types of cancer. Recombinant adenovirus-p53 is a weakened adenovirus that carries the p53 gene into tumor cells, causing them to die. It is a type of gene therapy. Also called ACN53, rAd/p53, and SCH-58500.

**recombinant adenovirus-p53 SCH-58500:** A genetically-engineered adenovirus that contains the gene that encodes the human tumor-suppressor protein p53 with potential antineoplastic activity. Recombinant adenovirus-p53 SCH-58500 delivers p53 into tumor cells, which may result in p53-mediated cell cycle arrest and apoptosis.

**recombinant attenuated Salmonella typhimurium expressing IL-2:** An orally available, genetically engineered Salmonella typhimurium strain expressing a truncated form of the human cytokine interleukin-2 (IL-2) gene, with antitumor activity. Upon administration of recombinant attenuated S. typhimurium expressing IL-2 (SalpIL2), this Salmonella strain may selectively accumulate and divide in a variety of tumor types, and express IL-2. In turn, IL-2 may induce natural killer (NK) cell proliferation thereby enhancing their activity. This may inhibit the growth of tumor cells.

**recombinant B. pertussis adenylate cyclase toxin-tyrosinase A2 epitope vaccine:** A recombinant vaccine containing a genetically detoxified adenylate cyclase toxin (CyaA) of Bordetella pertussis coupled, through its catalytic site, to the melanoma tyrosinase A2 epitope YMDGTMSQV, with potential antineoplastic activity. Via the toxin moiety, the recombinant B. pertussis adenylate cyclase toxin-tyrosinase A2 epitope specifically binds to the alphaMbeta2 integrin (CD11b/CD18) located on CD11b-positive antigen-presenting cells (APC). Upon processing and presentation of the melanoma-specific epitope by MHC class I molecules to the surface of these APCs, a specific cytotoxic T-cell (CTL) response against tumor cells expressing tyrosinase may be initiated, resulting in decreased tumor growth and cell lysis. Check for active clinical trials using this agent.

**recombinant bispecific single-chain antibody rM28:** A recombinant, bispecific, single chain antibody directed against both the T-cell surface-associated costimulatory molecule CD28 and a melanoma-associated proteoglycan (MAPG) with potential antitumor activity. By targeting both CD28 and MAPG, recombinant bispecific single-chain antibody rM28 enhances cytotoxic T-cell recognition of melanoma cells, which may result in immune effector cell-mediated tumor cell death and a decrease in distant metastases. This agent appears to have a long serum half-life secondary to the formation of dimers. When activated, CD28 facilitates interactions between T-cells and other immune effector cells resulting in cytotoxic T-lymphocyte responses; MAPG is a surface antigen expressed on the majority of melanomas, including primary cutaneous, ocular and metastatic melanomas.

**recombinant CD40-ligand:** A recombinant therapeutic agent which is chemically identical to or similar to CD40-ligand. CD40-ligand, also known as CD40L/TRAP and CD154, is a type II membrane protein which binds to

CD40, a cell surface receptor that belongs to the tumor necrosis factor receptor family; CD40 is expressed on B lymphocytes, monocytes, dendritic cells (DC), hematopoietic progenitors, endothelial cells and epithelial cells. Recombinant CD40-ligand may be used to activate DC ex vivo via CD40 binding; CD40-ligand-activated DC may provide or augment a protective antitumor immunity when administered in dendritic cell cancer vaccines.

**recombinant cell-surface anchored sialidase DAS181:** A recombinant sialidase fusion protein composed of a sialidase catalytic domain derived from *Actinomyces viscosus*, a constituent of the normal oral and gastrointestinal flora in humans, fused to a cell surface-anchoring domain, with potential anti-viral activity. Following administration by oral inhalation, DAS181 proteolytically removes sialic acid from the airway epithelium, which inhibits viral binding to and internalization by cells of the respiratory epithelium and prevents viral replication. The cell surface anchoring-domain of this agent may increase retention time and drug potency. Sialic acids in the respiratory tract are used by influenza and parainfluenza viruses to invade airway epithelial cells.

**recombinant dHER2 vaccine:** A cancer vaccine consisting of a truncated recombinant HER2 peptide (dHER2) with potential antineoplastic activity. Upon administration, recombinant dHER2 vaccine may stimulate the host immune response to mount a cytotoxic T-lymphocyte response against tumor cells that overexpress the HER2 protein, resulting in tumor cell lysis. The HER2 protein is a tumor-associated antigen (TAA) that is overexpressed in a variety of cancers. dHER2 includes the extracellular domain (ECD) and a part of the intracellular domain (ICD) of the HER2 protein.

**recombinant DNA:** DNA molecules that have been altered in some way during the process of genetic engineering or biotechnology. OR DNA formed by the joining of genes into new combinations.

**Recombinant DNA technology:** An array of techniques used to analyze and manipulate DNA; these methods include the specific modification of genes as well as the construction of new ones, gene cloning and amplification, and the expression of new and modified genes to yield protein products. OR An enzyme that catalyzes the exchange of genetic material when two DNA molecules recombine. OR The transfer to offspring

of genes not found together in either of the parents. OR The formation of new arrangements of genes or gene sequences by movement of DNA.

**recombinant DNA-L523S vaccine:** A plasmid DNA encoding human L523S, an RNA-binding protein that belongs to the KOC (K homology domain containing protein overexpressed in cancer) family, with potential antineoplastic activity. Vaccination with L523S DNA may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells that express the L523S protein. As an oncofetal protein, L523S is normally expressed in early embryonic tissue, but is overexpressed in certain cancer cell types.

**recombinant EphB4-HSA fusion protein:** A recombinant fusion protein composed of the full-length extracellular domain (soluble) of human receptor tyrosine kinase ephrin type-B receptor 4 (sEphB4) and fused, at its C-terminus, to full-length human serum albumin (HSA), with potential antineoplastic and anti-angiogenic activities. sEphB4-HSA functions as a decoy receptor for the membrane-bound ligand Ephrin-B2 (Efnb2) and interferes with the binding of Efnb2 to its native receptors, including EphB4 and EphA3. This may result in a reduction of angiogenesis and a reduction in cell growth of Efnb2 and/or EphB4 over-expressing tumor cells. In addition, this agent also prevents the angiogenic effects of numerous growth factors due to interactions between Efnb2 and EphB4. Efnb2 and EphB4 are overexpressed in a variety of tumor cell types; the bi-directional signaling of Efnb2-EphB4 plays an important role in angiogenesis and tumor cell migration, invasion, and proliferation. Albumin reduces this agent's degradation, improves circulation time and may thus improve efficacy. Check for active clinical trials using this agent.

**recombinant flt3 ligand:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous cytokine Flt3. Flt3 ligand binds to the Flt3 tyrosine kinase receptor and, synergistically with other growth factors, stimulates the proliferation and mobilization of certain bone marrow precursor cells, including CD34+ cells, and dendritic cells. When proteolytically cleaved, the transmembrane isoform of Flt3 ligand generates the soluble form soluble Flt3 ligand, which is also biologically active. Check for active clinical trials using this agent.

**recombinant fowlpox GM-CSF vaccine adjuvant:** A cancer vaccine adjuvant consisting of a recombinant fowlpox virus encoding human granulocyte-macrophage colony-stimulating factor (GM-CSF). GM-CSF

binds to specific cell surface receptors on various immuno-hematopoietic cell types, enhancing their proliferation and differentiation and stimulating macrophage and dendritic cell functions in antigen presentation and antitumor cell-mediated immunity. Administration of recombinant fowlpox GM-CSF vaccine adjuvant may induce an immune response against tumor cells. Fowlpox virus is an attractive vector because its genome is easy to manipulate and it is replication incompetent in mammalian cells.

**recombinant fowlpox-B7.1 vaccine:** A cancer vaccine comprised of a recombinant fowlpox virus vector encoding the stimulatory molecule transgene B7-1. Recombinant fowlpox-B7.1 (rF-B7.1) vaccine may enhance antigen presentation and activate antitumoral cytotoxic T-cells.

**recombinant fowlpox-CEA-MUC-1-TRICOM vaccine :** A cancer vaccine made with a form of a chicken virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins that may help immune cells in the body kill tumor cells. Also called falimarev.

**recombinant fowlpox-CEA(6D)/TRICOM vaccine:** A cancer vaccine comprised of a recombinant fowlpox virus vector encoding the carcinoembryonic antigen (CEA) and a TRIad of COstimulatory Molecules (B7-1, ICAM-1 and LFA-3) (TRICOM). This agent may enhance CEA presentation to antigen presenting cells (APC) and activate cytotoxic T-cells against CEA-expressing tumors.

**recombinant fowlpox-prostate specific antigen vaccine:** A cancer vaccine consisting of a recombinant fowlpox virus encoding human prostate-specific antigen (PSA). Administration of this agent may stimulate a cytotoxic T cell response against PSA-expressing tumor cells. Fowlpox virus is an attractive vector because its genome is easy to manipulate and it is replication incompetent in mammalian cells.

**recombinant fowlpox-PSA(L-155)TRICOM vaccine:** A cancer vaccine consisting of a recombinant fowlpox virus encoding fragment of human prostate-specific antigen (PSA), PSA:154-163 (155L), and a TRIad of COstimulatory Molecules (B7-1, ICAM-1 and LFA-3) (TRICOM). Administration of this agent may induce a cytotoxic T cell response against PSA-expressing tumor cells. Dendritic cells infected with TRICOM vectors greatly enhance naive T-cell activation and peptide-specific T-cell

stimulation. Fowlpox virus is an attractive vector because its genome is easy to manipulate and it is replication incompetent in mammalian cells.

**recombinant fowlpox-TRICOM vaccine:** A cancer vaccine comprised of a recombinant fowlpox virus vector encoding TRICOM. TRICOM is comprised of three co-stimulatory molecule transgenes (B7-1, ICAM-1 and LFA-3) that may enhance antigen presentation and activate cytotoxic T-cells. Fowlpox virus is an attractive vector because its genome is easy to manipulate and it is replication incompetent in mammalian cells.

**recombinant fowlpox-TRICOM vaccine :** A cancer vaccine made with a form of a chicken virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins that may help immune cells in the body kill tumor cells. Also called rF-TRICOM.

**recombinant fowlpox-tyrosinase vaccine:** A recombinant fowlpox virus vaccine with potential antineoplastic activity. Binding to the melanoma antigen tyrosinase, recombinant fowlpox-tyrosinase vaccine generates cellular immune responses against melanoma cells expressing the tyrosinase antigen; this effect is enhanced by the co-administration of interleukin 2 (IL-2). Fowlpox virus is an attractive vector because its genome is easy to manipulate and it is replication incompetent in mammalian cells.

**recombinant hsp110-gp100 chaperone complex vaccine:** A recombinant chaperone-peptide complex-based vaccine composed of a complex between heat shock protein hsp110 and the human melanoma-associated antigen gp100, with potential antineoplastic activity. Upon vaccination, recombinant hsp110-gp100 chaperone complex activates the immune system to exert a cytotoxic T cell immune response and antigen-specific interferon-gamma production against gp100-overexpressing cancer cells. Gp100, is overexpressed in a variety of cancer cell types. Hsp110, binds to and chaperones full-length proteins during heat shock; as an immunoadjuvant it is able to enhance an immune response against antigen(s) and stimulate T-lymphocyte activation.

**recombinant human 6Ckine:** A therapeutic recombinant analogue of a member of the endogenous CC chemokines with potential antineoplastic activity. Expressed by various lymphoid tissues, endogenous 6Ckine is chemotactic for B and T lymphocytes and dendritic cells.

**recombinant human adenovirus type 5 H101:** A replication selective, recombinant, E1B and partial E3 gene deleted form of human adenovirus type 5, with potential antineoplastic activity. Upon intratumoral injection of recombinant human adenovirus type 5, the adenovirus selectively replicates in cancer cells while preventing viral replication in normal, healthy cells. This induces a selective adenovirus-mediated cytotoxicity in cancer cells, which leads to cancer cell lysis. In addition, viral spread to adjacent cells, following lysis of infected cells, may activate the immune system to kill the infected tumor cells. The E1B protein causes p53 inactivation, which promotes viral replication; deletion of E1B allows for p53 activation in normal cells, which prevents viral replication in normal, healthy cells. The mutation and subsequent inactivation of p53 in cancer cells enables the E1B-deleted adenovirus to selectively replicate in cancer cells. Partial deletion of E3, encoding the adenovirus death protein, enhances the safety profile of the administered adenovirus. Check for active clinical trials using this agent.

**recombinant human albumin-human granulocyte colony-stimulating factor:** A long-acting recombinant fusion protein incorporating human serum albumin (HSA)-derived and human granulocyte colony stimulating factor (G-CSF)-derived moieties with potential granulopoietic activity. G-CSF, a naturally occurring cytokine, stimulates the production of granulocytes and stem cells in the bone marrow and their release into the blood; it also stimulates the differentiation, function, and survival of neutrophil precursors and mature neutrophils. Albumin fusion may promote an increased serum half-life and bioavailability of the G-CSF moiety of this fusion protein. Check for active clinical trials using this agent.

**recombinant human angiotensin converting enzyme 2 APN01:** A recombinant, soluble glycosylated form of human angiotensin converting enzyme 2 (rhACE2) with antihypertensive and potential antineoplastic activities. Recombinant human angiotensin converting enzyme 2 APN01 may normalize ACE2 levels, cleaving angiotensin II to create angiotensin-(1-7) and restoring the function of the renin-angiotensin system (RAS). ACE2, a homolog of ACE1, appears to function as a negative regulator of the RAS system by converting angiotensin II to angiotensin-(1-7), a peptide with actions that counteract the cardiovascular actions of angiotensin II. In addition, angiotensin-(1-7) may inhibit cyclooxygenase 2 (COX-2) and the production of proinflammatory prostaglandins and may activate the

angiotensin-(1-7) G protein-coupled receptor Mas, resulting in diminished tumor cell proliferation. ACE2 levels may be reduced in malignancy and diabetes and in liver, cardiovascular and lung diseases.

**recombinant human chorionic gonadotropin:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous glycoprotein hormone human chorionic gonadotropin (HCG). HCG binds to cells of the corpus luteum, thereby stimulating progesterone production and helping to maintain a secretory endometrium.

**recombinant human EGF-rP64K/Montanide ISA 51 vaccine:** A peptide vaccine preparation, containing recombinant human epidermal growth factor (rEGF) linked to the Neisseria meningitidis-derived recombinant immunogenic carrier protein P64k (rP64k) and mixed with the immunoadjuvant Montanide ISA 51, with potential active immunotherapy activity. Recombinant human EGF-rP64K/Montanide ISA 51 vaccine may trigger a humoral immune response against vaccine rEGF and rP64K and, so, against endogenous EGF. Antibody-mediated inhibition of endogenous EGF binding to its receptor, epithelial growth factor receptor (EGFR), may result in the inhibition of tumor cell proliferation.

**recombinant human endostatin:** A recombinant human proteolytic fragment of the C-terminal end of type XVIII collagen. Endostatin induces microvascular endothelial cell apoptosis and inhibits endothelial proliferation and angiogenesis, which may result in a reduction in tumor burden. This agent also may decrease hepatic metastasis by inhibiting proinflammatory cytokines and vascular cell adhesion molecule (VCAM)-dependent cell attachment to the hepatic microvasculature.

**recombinant human epidermal growth factor:** A recombinant form of the naturally-occurring polypeptide human epidermal growth factor with potential epithelial regenerative and cytoprotective activities. Upon topical application, recombinant human epidermal growth factor (rhEGF) may stimulate epithelial proliferation, differentiation and migration, which may result in the acceleration of epithelial regeneration and wound healing. In addition, rhEGF may attenuate epithelial cytotoxicities related to chemotherapy and/or radiotherapy. Check for active clinical trials using this agent.

**recombinant human fusion protein L19TNFalpha:** An immunocytokine consisting of human pro-inflammatory cytokine tumor necrosis factor alpha

(TNF $\alpha$ ) fused to a human single-chain variable fragment (scFv) directed against the extra-domain B (ED-B) of fibronectin (L19), with potential immunopotentiating and antineoplastic activities. The L19 moiety of recombinant human fusion protein L19TNF $\alpha$  binds to the ED-B domain of fibronectin on tumor cells in the tumor neovasculature. In turn, the TNF $\alpha$  moiety may locally induce an immune response against ED-B fibronectin-expressing tumor cells and may specifically decrease the proliferation of ED-B-expressing tumor cells. ED-B is predominantly expressed during angiogenesis and tumor growth.

**recombinant human granulocyte colony-stimulating factor:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous cytokine granulocyte colony-stimulating factor (G-CSF). Secreted by monocytes, macrophages and neutrophils and other cells after activation, G-CSF stimulates the proliferation and differentiation of hematopoietic progenitor cells committed to the neutrophil/ granulocyte lineage.

**recombinant human hyaluronidase:** A human recombinant form of the naturally occurring human enzyme hyaluronidase with potential chemoadjuvant activity. Upon local administration, recombinant human hyaluronidase hydrolyzes hyaluronic acid, a glucosaminoglycan responsible for the viscosity of the interstitial barrier. The digestion of hyaluronic acid lowers the viscosity in the interstitial space, thereby increasing permeability and facilitating local penetration of chemotherapeutic agents into cancer cells.

**recombinant human interleukin-11 :** A drug used to increase the number of blood cells, especially platelets, in some cancer patients receiving chemotherapy. Recombinant human interleukin-11 is a form of interleukin-11 (a cytokine normally made by support cells in the bone marrow) that is made in the laboratory. It is a type of biological response modifier. Also called Neumega, oprelvekin, and rhIL-11.

**recombinant human interleukin-15:** A recombinant agent that is chemically identical or similar to the endogenous cytokine interleukin-15 (IL-15) with immunomodulating activity. IL-15, secreted by mononuclear phagocytes (and some other cell types) following viral infection, regulates T and natural killer cell activation and proliferation. This cytokine induces activation of transcription activators STAT3, STAT5, and STAT6 via JAK

kinase signal transduction pathways in mast cells, T cells, and dendritic epidermal T cells. IL-15 and interleukin-2 (IL-2) are structurally similar and share many biological activities; both may bind to common hematopoietin receptor subunits, negatively regulating each other's activity. CD8<sup>+</sup> memory T cell number has been shown to be regulated by a balance between IL-15 and IL-2.

**recombinant human interleukin-2 :** A drug used to treat some types of cancer. It is a form of interleukin-2, a cytokine made by leukocytes (white blood cells), that is made in the laboratory. Recombinant human interleukin-2 increases the activity and growth of white blood cells called T lymphocytes and B lymphocytes. It is a type of biological response modifier. Also called aldesleukin and Proleukin.

**recombinant human mannose-binding lectin:** A recombinant protein similar or identical to human mannan-binding lectin (MBL) with opsonin activity. MBL, a soluble pattern recognition receptor (PRR) collectin in the C-type lectin superfamily, is a plasma protein that plays an important role in innate immunity; MBL contains a carbohydrate recognition domain at one end and a collagen-like stalk domain at the other. Upon MBL binding to mannose residues on mannose-containing polysaccharides (mannans) on the surfaces of a microorganisms, activation of the complement system results in the deposition of complement components (opsonization) and the clearance of the opsonized microorganisms by phagocytic cells. MBL is part of the mannan-binding lectin pathway (also known as the Ali/Krueger pathway), which has similarities to the classical complement pathway in that activation of C4 and C2 produce activated complement proteins further down the complement cascade. However, unlike the classical complement pathway, activation of this pathway is not antibody dependent.

**recombinant human methionyl stem cell factor :** A substance that causes blood stem cells (cells from which other types of cells develop) to change into different types of blood cells and increases the number and actions of these cells in the blood. It is being studied in the treatment of myelodysplasia. Recombinant human methionyl stem cell factor is a type of recombinant stem cell growth factor. Also called ancestim, r-metHuSCF, and Stemgen.

**recombinant human papillomavirus bivalent vaccine :** A vaccine used to prevent cervical cancer caused by human papillomavirus (HPV) types 16

and 18. Recombinant human papillomavirus bivalent vaccine is approved for use in females aged 9 to 25 years. It is a type of bivalent vaccine (a vaccine that works against two different viruses or other microorganisms). Also called Cervarix.

**recombinant human papillomavirus nonavalent vaccine:** A non-infectious, recombinant, nonavalent vaccine prepared from highly purified virus-like particles (VLPs) comprised of the major capsid (L1) proteins from human papillomavirus (HPV) types 6, 11, 16, 18, 31, 33, 45, 52, and 58, with active immunizing activity. Upon administration, the recombinant HPV nonavalent vaccine activates the immune system to produce antibodies against the 9 HPV types. This protects against HPV infection and HPV-related cancers. Altogether, HPV types 6, 11, 16, 18, 31, 33, 45, 52, and 58 account for the majority of the HPV types that cause cervical, vulvar, vaginal and anal cancers. Check for active clinical trials using this agent.

**recombinant human papillomavirus nonavalent vaccine :** A vaccine used to prevent anal, cervical, vulvar, and vaginal cancer caused by human papillomavirus (HPV) types 16, 18, 31, 33, 45, 52 and 58 and genital warts caused by HPV types 6 and 11. Recombinant human papillomavirus nonavalent vaccine is approved for use in males aged 9 to 15 years and females aged 9 to 26 years. It is a type of nonavalent vaccine (a vaccine that works against nine different viruses or other microorganisms). Also called Gardasil 9.

**recombinant human papillomavirus quadrivalent vaccine :** A vaccine used to prevent anal, cervical, vulvar, and vaginal cancer caused by human papillomavirus (HPV) types 16 and 18 and genital warts caused by HPV types 6 and 11. Recombinant human papillomavirus quadrivalent vaccine is approved for use in males and females aged 9 to 26 years. It is a type of quadrivalent vaccine (a vaccine that works against four different viruses or other microorganisms). Also called Gardasil.

**recombinant human serum amyloid P/pentraxin 2:** A fully recombinant form of the human pentraxin 2 (PTX2) protein with potential antifibrotic activity. Upon intravenous administration, recombinant human serum amyloid P/pentraxin 2 (PRM-151) may inhibit myofibroblast generation by preventing the differentiation of circulating monocytes into fibrocytes and profibrotic macrophages. PTX2 is a circulating plasma protein that belongs

to the class of pattern recognition receptors (PRR) of the innate immune system.

**recombinant human stem cell factor:** A therapeutic glycoprotein cytokine chemically identical to or similar to endogenous human stem cell factor with hematopoietic activity. Recombinant human stem cell factor (rhSCF) binds to the receptor tyrosine kinase c-kit, which may stimulate the growth of peripheral blood progenitor cells (PBPCs). This agent works synergistically with other hematopoietic growth factors. rhSCF may promote bone marrow recovery after myeloablative therapies and procedures.

**recombinant interferon:** One of a group of recombinant therapeutic glycoprotein cytokines with antiviral, anti-proliferative, and immunomodulating activities. Interferons bind to specific cell-surface receptors, leading to the transcription and translation of genes with interferon-specific response elements (ISREs). The resultant proteins mediate many complex effects, ultimately leading to inhibition of viral protein synthesis and cellular growth, alteration of cellular differentiation, interference with oncogene expression, activation of natural killer cells, alteration of cell surface antigen expression, and augmentation of lymphocyte and macrophage cytotoxicity. The production of endogenous interferons is induced in response to foreign agents such as bacteria, viruses and parasites and to tumor cells.

**recombinant interferon alfa:** A class of naturally-isolated or recombinant therapeutic peptides used as antiviral and anti-tumor agents. Alpha interferons are cytokines produced by nucleated cells (predominantly natural killer (NK) leukocytes) upon exposure to live or inactivated virus, double-stranded RNA or bacterial products. These agents bind to specific cell-surface receptors, resulting in the transcription and translation of genes containing an interferon-specific response element. The proteins so produced mediate many complex effects, including antiviral effects (viral protein synthesis); antiproliferative effects (cellular growth inhibition and alteration of cellular differentiation); anticancer effects (interference with oncogene expression); and immune-modulating effects (natural killer cell activation, alteration of cell surface antigen expression, and augmentation of lymphocyte and macrophage cytotoxicity).

**recombinant interferon alfa-2b:** A non-glycosylated recombinant interferon with antiviral and antineoplastic activities. Alfa interferons bind to specific cell-surface receptors, resulting in the transcription and translation of genes whose protein products mediate antiviral, antiproliferative, anticancer, and immune-modulating effects. or A drug used to treat AIDS-related Kaposi sarcoma in certain patients, hairy cell leukemia, and melanoma that has been removed by surgery. It is also used with other anticancer drugs to treat a certain type of non-Hodgkin lymphoma. Recombinant interferon alfa-2b is also used to treat some infections caused by viruses, such as the hepatitis C virus. It is being studied in the treatment of other types of cancer and other conditions. Recombinant interferon alfa-2b is a form of interferon alfa (a substance normally made by cells in the immune system) and is made in the laboratory. It is a type of cytokine and a type of biological response modifier. Also called IFN alpha-2B, interferon alfa-2b, and Intron A.

**recombinant interferon Alpha 2b-like protein:** A proprietary recombinant protein highly resembling human interferon alpha 2b (IFN-a2b), with potential anti-tumor, anti-inflammatory, immunomodulating and antiviral activities. Upon injection, recombinant IFN alpha 2b-like protein binds to specific IFN alpha cell surface receptors. This activates interferon-mediated signal transduction pathways and induces the transcription and translation of genes with interferon-specific response elements (ISREs). This may activate the immune system, including the activation of natural killer cells (NKs) and may result in an inhibition of tumor cell proliferation, tumor angiogenesis, metastasis and an induction of apoptosis. Compared to human IFN-a2b (HuINF-a2b), this agent exhibits enhanced antiviral and antiproliferative activities. In addition, this agent exhibits antiviral activity against a variety of viruses, including hepatitis B and C viruses, human immunodeficiency virus (HIV) and Avian Influenza.

**recombinant interferon alpha-1b:** The non-glycosylated recombinant interferon alpha, subtype 1b, with immunostimulatory and antineoplastic activities. Alpha interferon-1b binds to specific cell-surface receptors, resulting in the transcription and translation of genes whose protein products mediate antiviral, antiproliferative, anticancer, and immune-modulating effects.

**recombinant interferon alpha-2a:** A non-glycosylated recombinant human alpha interferon, subtype 2a, produced in the bacterium *E. coli*. Interferon alpha-2a binds to its specific cell-surface receptor, resulting in the transcription and translation of genes whose protein products have antiviral, antiproliferative, anticancer, and immune modulating effects. Check for active clinical trials using this agent.

**recombinant interferon beta:** A recombinant protein which is chemically identical to or similar to endogenous interferon beta with antiviral and anti-tumor activities. Endogenous interferons beta are cytokines produced by nucleated cells (predominantly natural killer cells) upon exposure to live or inactivated virus, double-stranded RNA or bacterial products. These agents bind to specific cell-surface receptors, resulting in the transcription and translation of genes with an interferon-specific response element. The proteins so produced mediate many complex effects, including antiviral (the most important being inhibition of viral protein synthesis), antiproliferative and immune modulating effects. The recombinant therapeutic forms of interferon beta are interferon beta 1-a and interferon beta 1-b.

**recombinant interferon gamma:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous lymphokine interferon gamma (IFN-gamma) with antineoplastic, immunoregulatory, and antiviral activities. Therapeutic IFN-gamma binds to and activates the cell-surface IFN-gamma receptor, stimulating antibody-dependent cytotoxicity and enhances natural killer cell attachment to tumor cells. This agent also activates caspases, thereby inducing apoptosis in malignant cells.

**recombinant interleukin-1-alpha:** A recombinant agent which is chemically identical to or similar to the endogenous protein cytokine interleukin-1 (IL-1). The IL-1 precursor is produced by monocytes, activated macrophages, and other cell types; mature IL-1 is generated by proteolytic cleavage by proteases such as IL-1-beta converting enzyme (ICE). This agent enhances T cell proliferation and B cell growth and differentiation and induces the expression of proinflammatory cytokines.

**recombinant interleukin-1-beta:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous protein cytokine interleukin 1 (IL-1)-beta. Produced by monocytes and activated macrophages, endogenous mature IL-1 is generated through proteolytic cleavage by proteases such as IL-1-beta converting enzyme (ICE). This

agent promotes angiogenesis, fibroblast proliferation, and neutrophil chemotaxis; it also regulates the functions of lymphocytes and epithelial cells and is involved in the 'acute phase response' to infection.

**recombinant interleukin-12:** A recombinant form of the endogenous heterodimeric cytokine interleukin-12 with potential antineoplastic activity. Recombinant interleukin-12 binds to and activates its cell-surface receptor, stimulating the production of interferon-gamma (IFN) which, in turn, induces IFN-gamma-inducible protein-10 (IP-10) and so inhibits tumor angiogenesis.

**recombinant interleukin-18:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous cytokine interleukin-18 (IL-18). Produced primarily by macrophages, IL-18 induces the production of interferon-gamma (IFN-gamma), and enhances the activity of natural killer (NK) and cytotoxic T lymphocytes (CTL). As a potential immunotherapeutic agent, IL-18 displays antitumor effects in vitro and in animal models.

**recombinant interleukin-3:** A recombinant form of interleukin-3, a cytokine produced by activated T-cells and mast cells involved in intercellular communication, hematopoiesis, and inflammation. IL-3 binds and activates specific receptors on hematopoietic cells and in the nervous system, triggering expression of specific genes via the Ras signaling pathway and through Jak2 activation. This agent stimulates the proliferation of pluripotent hematopoietic progenitor cells.

**recombinant interleukin-4:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous cytokine interleukin-4 (IL-4). Produced primarily by activated T-cells, IL-4 binds to and activates its cell-surface receptor, stimulating the proliferation and differentiation of activated B-cells and enhancing their ability to present antigens to T-cells. As a potential immunotherapeutic agent, recombinant IL-4 also augments the effects of other cytokines on dendritic cells (DC), cytotoxic T lymphocytes (CTL), and tumor-infiltrating lymphocytes (TIL).

**recombinant interleukin-6:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous cytokine interleukin-6 (IL-6) with antiapoptotic, proinflammatory, antiinflammatory, proliferative and proangiogenic activities. IL-6 binds to its receptor (IL-6R), activating a receptor-CD130 receptor complex; the CD130 portion of

the complex is a signal transduction protein that activates JAK kinases and ras-mediated signaling pathways, which in turn activate downstream signaling pathways, resulting in the activation of various transcription factors (STAT, ELK-1, NF-IL-6, etc.) and gene transcription. The physiological effects of IL-6 are complex and varied and include hematopoietic, pyrogenic and thermogenic, proinflammatory, antiinflammatory, proliferative (anti-apoptotic), and angiogenic effects. Check for active clinical trials using this agent.

**recombinant interleukin-7:** A recombinant protein which is chemically identical to or similar to endogenous interleukin-7 (IL-7) with hematopoietic and immunopotentiating properties. Produced by bone marrow, thymic stromal, and spleen cells, the cytokine interleukin-7 is a hematopoietic growth factor for progenitor B cells and T cells and stimulates proliferation and differentiation of mature T-cells and natural killer cells. Check for active clinical trials using this agent.

**recombinant leukocyte interleukin:** A cocktail preparation of synthetic interleukin (IL) -1, IL-2, IL-6, tumor necrosis factor (TNF)-alpha, interferon gamma and other cytokines that are chemically identical to or similar to signaling molecules secreted by leukocyte cells. Leukocyte interleukins are essential in many immune responses, such as antibodies production, modulating secretion of other cytokines, and activation of bone marrow stem cells. Check for active clinical trials using this agent.

**recombinant macrophage colony-stimulating factor:** A recombinant therapeutic agent which is chemically identical to or similar to the endogenous protein cytokine macrophage colony-stimulating factor (M-CSF). Synthesized endogenously by mesenchymal cells, M-CSF stimulates the survival, proliferation, and differentiation of hematopoietic cells of the monocyte-macrophage series and can reverse treatment-related neutropenias. Recombinant M-CSF may also enhance antigen presentation and activate antitumoral cytotoxic T-cells.

**recombinant MAGE-3.1 antigen:** A recombinant tumor-specific melanoma antigen. Vaccination with recombinant MAGE-3.1 antigen may induce a host immune response against MAGE-expressing cells, resulting in antitumoral T cell-mediated cytotoxicity. MAGE-expressing cells are found in melanoma, non-small-cell lung carcinoma (NSCLC), head and

neck squamous cell carcinoma, transitional cell carcinoma of the bladder, and esophageal carcinoma.

**recombinant MIP1-alpha variant ECI301:** A recombinant form of a human macrophage inflammatory protein-1 alpha (MIP1-alpha) with a substitution of aspartate to alanine at position 26, with potential immunomodulating and radiotherapy potentiating activity. Intravenous administration of recombinant MIP1-alpha variant ECI301 after local tumor irradiation enhances the anti-tumor effect of ionizing radiation at the irradiated site as well as the antitumor effect at non-irradiated tumor sites (known as the abscopal effect). The abscopal effect appears to be attributed to this agent's ability to recruit and activate leukocytes, such as monocytes, dendritic cells, natural killer cells and T lymphocytes, thereby initiating an anti-tumor immune response against cancer cells. MIP1-alpha, also known as chemokine (C-C motif) ligand 3, is a ligand for the chemokine receptors CCR1, CCR4 and CCR5 that are involved in immune and inflammatory responses.

**recombinant modified vaccinia Ankara-5T4 vaccine:** A cancer vaccine comprised of a recombinant modified vaccinia Ankara (MVA) viral vector encoding the 5T4 fetal oncoprotein (MVA-h5T4). Vaccination with recombinant modified vaccinia Ankara-5T4 vaccine may stimulate the host immune system to mount a humoral and cytotoxic T lymphocyte (CTL) response against tumor cells expressing 5T4 fetal oncoprotein antigen, resulting in tumor cell lysis. The MVA viral vector, derived from the replication-competent strain Ankara, is a highly attenuated, replication-defective vaccinia strain incapable of virion assembly.

**recombinant nematode anticoagulant protein c2:** An 85-amino acid recombinant peptide derived from protein c2 of the hemophagocytic hookworm *Ancylostoma caninum* (a common canine parasite) with anticoagulant activity. Recombinant nematode anticoagulant protein c2 (rNAPc2) binds to circulating activated factor X (FXa) or zymogen factor X (FX) to form a binary complex which subsequently binds to and inhibits membrane-bound activated factor VII/tissue factor complex (FVIIa/TF). When administered prophylactically, this agent may reduce the incidence of deep venous thrombosis without hemostatic compromise. Because rNAPc2 inhibits the formation of the FVIIa/TF protease complex, which may play a

role in the cellular signaling of both metastatic and angiogenic processes, it may impede tumor progression.

**recombinant oncolytic poliovirus PVS-RIPO:** A recombinant, live attenuated, nonpathogenic oncolytic virus containing the oral poliovirus Sabin type 1 in which the internal ribosomal entry site (IRES) is replaced with the IRES from human rhinovirus type 2 (HRV2), with potential antineoplastic activity. Upon intratumoral administration of recombinant oncolytic poliovirus PVS-RIPO, the poliovirus is selectively taken up by and replicates in tumor cells expressing CD155 (poliovirus receptor, PVR or NECL5) eventually causing tumor cell lysis. CD155, an oncofetal cell adhesion molecule and tumor antigen, is ectopically expressed in certain cancers, such as glioblastoma multiforme (GBM), and plays an important role in tumor cell migration, invasion, and metastasis. Due to the heterologous HRV2 IRES in this recombinant virus, PVS-RIPO only propagates in susceptible, nonneuronal cells (e.g., GBM). Check for active clinical trials using this agent.

**recombinant oxytocin:** A synthetic cyclic peptide form of the naturally occurring posterior pituitary hormone oxytocin. Oxytocin binds to oxytocin receptors in the uterine myometrium, which triggers the G-protein coupled receptor signal transduction cascade that causes increased intracellular calcium concentrations. Increased calcium concentration levels activate myosin light chain kinase which, in turn, induces the formation of the contractile protein actomyosin. This stimulates uterine smooth muscle contractions. This agent also stimulates smooth muscles in the mammary glands, thereby causing lactation. Check for active clinical trials using this agent.

**recombinant parathyroid hormone:** A recombinant therapeutic agent that is identical or similar to an 84-amino-acid polypeptide produced by the parathyroid gland which functions to maintain a constant concentration of calcium ions ( $\text{Ca}^{2+}$ ) in the extracellular fluid. In target tissues, parathyroid hormone (PTH) binds to and activates the parathyroid hormone receptor (PTHr), a cell surface G protein-coupled receptor; there are two types of receptors, parathyroid hormone receptor 1 (PTH1R) found in bone and the kidney and parathyroid hormone receptor 2 (PTH2R) found primarily in the central nervous system (CNS), pancreas, testis, and placenta. Activation of PTHr results in the activation of adenylyl cyclase and phospholipase C in

target tissue cells, which, depending upon the specific target tissue, results in the enhancement of intestinal Ca<sup>2+</sup> absorption, mobilization of bone Ca<sup>2+</sup>, and renal Ca<sup>2+</sup> reabsorption.

**recombinant platelet factor 4:** A recombinant form of the endogenous chemokine platelet factor 4 with potential antiangiogenesis and antineoplastic activities. As a heparin-binding tetramer, recombinant platelet factor 4 inhibits growth factor-stimulated endothelial cell proliferation, migration, and angiogenesis; it has been shown that this agent inhibits fibroblast growth factor 2 (FGF2) angiogenic activity downstream from the FGF2 receptor. Its activity is antagonized by heparin. Recombinant platelet factor 4 may also directly inhibit the proliferation of some tumor cell types.

**recombinant PRAME protein plus AS15 adjuvant GSK2302025A:** A recombinant form of the human PRAME (Preferentially Expressed Antigen of Melanoma) protein combined with the AS15 adjuvant, with potential immunostimulatory and antineoplastic activities. Upon intramuscular administration, GSK2302025A may stimulate the host immune response to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells that overexpress the PRAME protein, resulting in tumor cell lysis. The tumor-associated antigen PRAME is often overexpressed by a variety of tumor cell types. AS15 is a potent adjuvant liposomal formulation that contains CpG 7909, monophosphoryl lipid, and QS-21.

**recombinant Saccharomyces cerevisia-CEA(610D) vaccine GI-6207:** A whole, heat-killed, recombinant *Saccharomyces cerevisiae* yeast-based vaccine genetically altered to express the carcinoembryonic antigen (CEA) peptide 610D with potential immunostimulating and antineoplastic activities. Upon administration, recombinant *Saccharomyces cerevisia*-CEA(610D) vaccine GI-6207 may stimulate a host cytotoxic T-lymphocyte (CTL) response against CEA-expressing tumor cells, which may result in tumor cell lysis. CEA, a tumor associated antigen, is overexpressed on a wide variety of human cancer cells including colorectal, gastric, lung, breast and pancreatic cancer cells. CEA 610D encodes for 9 amino acids (605-613) in which aspartate is substituted for asparagine at position 610 (610D) in order to strengthen the induction of the CTL response against CEA-expressing tumor cells.

**recombinant soluble human CD4 protein:** A recombinant human soluble CD4 with antiviral activity. Recombinant human soluble CD4 has the amino terminus but not the T-cell binding domain of the endogenous CD4 antigen. This soluble CD4 protein competitively binds to envelope glycoprotein (gp120) of human immunodeficiency virus (HIV) resulting in inhibition of interaction between gp120 and the endogenous CD4 antigen, thereby blocking viral recognition of CD4 and subsequent entry of HIV into CD4 bearing cells.

**recombinant super-compound interferon:** A recombinant form of the naturally-occurring cytokine interferon-alpha (IFN-a) that has a modified spatial configuration, with immunomodulating, antiviral and antineoplastic activities. Upon administration of recombinant super-compound interferon (rSIFN-co), this agent binds to IFN-specific cell surface receptors, resulting in the transcription and translation of genes whose protein products have antiviral, antiproliferative, anticancer, and immune-modulating effects. The 3-dimensional conformational change improves efficacy and causes fewer side effects compared to IFN-a. Check for active clinical trials using this agent.

**recombinant thymosin:** A recombinant form of a polypeptide chemically identical to or similar to the hormone secreted by the thymus gland. Thymosin is generally known to have functions in the preprocessing of T cells and the development of B cells to plasma cells to produce antibodies. In particular, the predominant form of thymosin, beta 4 thymosin, is the principal actin-sequestering protein that plays an important role in functions that involve actin molecules, such as maintenance of cell shape, cytoplasmic organization, cell movement, and cell division.

**recombinant thyroid-stimulating hormone:** A peptide hormone secreted by the anterior pituitary. It promotes the growth of the thyroid gland and stimulates the synthesis of thyroid hormones and the release of thyroxine by the thyroid gland.

**recombinant thyrotropin alfa:** A recombinant form of the human anterior pituitary glycoprotein thyroid stimulating hormone (TSH) with use in the diagnostic setting. With an amino acid sequence identical to that of human TSH, thyrotropin alfa binds to TSH receptors on normal thyroid epithelial cells or well-differentiated thyroid cancer cells, stimulating iodine uptake

and organification, synthesis and secretion of thyroglobulin (Tg), triiodothyronine (T3), and thyroxine (T4).

**recombinant tissue plasminogen activator :** A form of tissue plasminogen activator that is made in the laboratory. It helps dissolve blood clots and is used to treat heart attacks, strokes, and clots in the lungs. It is also being studied in the treatment of cancer. It is a type of systemic thrombolytic agent. Also called Activase, Alteplase, and r-tPA.

**recombinant transforming growth factor-beta-2:** A recombinant polypeptide chemically identical to or similar to the endogenous cytokine transforming growth factor-beta-2 (TGF-beta-2). TGF-beta-2 modulates cell growth and immune function and may promote or inhibit tumor growth, depending on the tumor cell type. TGF-beta-2 may also suppress host immune system recognition of and/or response to tumor cells.

**recombinant tumor necrosis factor family protein:** A recombinant therapeutic agent which is chemically identical to or similar to one of a number of endogenous tumor necrosis factor (TNF) proteins. TNF family cytokines bind to and activate specific cell-surface receptors, thereby mediating inflammatory processes, cell proliferation, immunity, angiogenesis, and tumor cell cytotoxicity. One primary antitumor effect of TNFs involves stimulation of T cell-mediated antitumor cytotoxicity. Check for active clinical trials using this agent.

**recombinant tyrosinase-related protein-2:** A recombinant therapeutic agent which is chemically identical to or similar to an endogenous non-mutated melanocyte differentiation antigen expressed by both normal and malignant melanocytes. Vaccinations with recombinant tyrosinase-related protein-2 may elicit an antitumoral cytotoxic T-cell response against tumor cells and some normal cells that express tyrosinase-related protein-2.

**recombinant urate oxidase :** A drug used to treat high blood levels of uric acid in patients with leukemia, lymphoma, and other types of cancer who are receiving certain types of cancer treatment. It is also being studied in the treatment of other medical conditions. Recombinant urate oxidase is a type of recombinant enzyme and a type of urate-lowering drug. Also called Elitek and rasburicase.

**recombinant vaccinia prostate-specific antigen vaccine:** A vaccine consisting of recombinant vaccinia virus encoding prostate specific antigen (PSA). Vaccination with recombinant vaccinia prostate-specific antigen

vaccine stimulates the host immune system to mount a cytotoxic T-cell response against tumor cells expressing PSA.

**recombinant vaccinia viral vector RO5217790:** A vaccine consisting of recombinant modified vaccinia Ankara (MVA) viral vector encoding mutated forms of the genes for the viral oncoproteins E6 and E7 derived from the human papillomavirus (HPV) type 16 and the human cytokine interleukin-2 (hIL2), with potential immunomodulating and antineoplastic activities. Upon subcutaneous administration, recombinant vaccinia viral vector RO5217790 may stimulate the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against cells expressing HPV E6 and E7, resulting in tumor cell lysis. Oncoproteins E6 and E7 have been implicated in the tumorigenesis of cervical carcinoma.

**recombinant vaccinia-B7.1 vaccine:** A recombinant vaccinia virus encoding the T-cell co-stimulatory molecule B7-1. Co-administration of recombinant vaccinia-B7.1 and a tumor-associated antigen in a cancer vaccine may enhance tumor-associated antigen-specific T-cell responses.

**recombinant vaccinia-CEA-MUC-1-TRICOM vaccine :** A cancer vaccine made with a form of vaccinia virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins, including the tumor markers called CEA and MUC-1, that may help immune cells in the body kill tumor cells. Also called inalimarev and PANVAC-V.

**recombinant vaccinia-CEA(6D)-TRICOM vaccine:** A vaccine consisting of recombinant vaccinia virus encoding the tumor-associated antigen carcinoembryonic antigen (CEA) and a TRIad of COstimulatory Molecules (B7-1, ICAM-1, and LFA-3; also called TRICOM). Vaccination with recombinant vaccinia-CEA(6D)-TRICOM vaccine stimulates the host immune system to mount a T-cell response against tumor cells expressing the CEA antigen. The use of TRICOM in the vaccine may elicit a greater antitumor cytotoxic T lymphocyte (CTL) immune response compared to the use of vaccinia-CEA alone.

**recombinant vaccinia-MUC1 vaccine:** A vaccine containing a recombinant vaccinia virus that encodes the gene for human mucin-1, a tumor-associated antigen. Upon administration, recombinant vaccinia-MUC-1 vaccine may elicit a MUC-1-specific cytotoxic T cell response against tumor cells bearing MUC-1.

### **recombinant vaccinia-multiplepeptide melanoma peptides-B7.1-B7.2**

**vaccine:** A cancer vaccine consisting of an inactivated recombinant vaccinia virus encoding epitope peptides derived from melanoma-related HLA-A2-restricted tumor-associated antigens (TAAs), including Melan-A(27-35), gp100(280-288) and tyrosinase(1-9), and two co-stimulatory B7 proteins, B7.1 (CD80) and B7.2 (CD86). Upon administration, recombinant vaccinia-multiplepeptide melanoma peptides-B7.1-B7.2 vaccine may stimulate a cytotoxic T-lymphocyte response against melanoma cells that express TAAs which share epitopes with the epitope peptides expressed by the vaccine viral vector, resulting in tumor cell lysis; vaccine viral vector-expressed co-stimulatory proteins B7.1 and B7.2 may enhance the cytotoxic T-lymphocyte immune response to the TAAs.

**recombinant vaccinia-NY-ESO-1 vaccine:** A cancer vaccine consisting of a recombinant vaccinia viral vector encoding an immunogenic peptide derived from the cancer-testis antigen NY-ESO-1, an antigen found in normal testis and various tumors, including bladder, breast, hepatocellular, melanoma, and prostate cancers. Vaccination with recombinant vaccinia-NY-ESO-1 peptide vaccine may stimulate the host immune system to mount a humoral and cytotoxic T lymphocyte (CTL) response against tumor cells expressing NY-ESO-1 antigen, resulting in tumor cell lysis.

**recombinant vaccinia-TRICOM vaccine:** A vaccine consisting of recombinant vaccinia virus encoding a triad of costimulatory molecules (B7-1, ICAM-1, and LFA-3; also called TRICOM). Vaccination with recombinant vaccinia-TRICOM vaccine stimulates the host immune system to mount a non-specific T-cell response. With the addition of a tumor-associated antigen peptide, this vaccine may enhance a tumor-specific immune response.

**recombinant vaccinia-TRICOM vaccine :** A cancer vaccine made with a form of a vaccinia virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins that may help immune cells in the body kill tumor cells. Also called rV-TRICOM and vaccinia-TRICOM vaccine.

**recombinant vesicular stomatitis virus-expressing interferon-beta:** A recombinant, replicating oncolytic vesicular stomatitis virus (VSV) carrying the human interferon-beta (IFN- $\beta$ ) gene, with potential immunomodulating and antineoplastic activities. Upon intratumoral administration,

recombinant VSV expressing IFN- $\beta$  replicates in the tumor environment specifically, partially due to defective innate antiviral host defense mechanisms in tumor cells, involving type I IFNs, and exerts its cytolytic activity towards the tumor cells. By expressing human IFN- $\beta$ , an IFN- $\beta$ -mediated antiviral immune response in surrounding normal cells is activated which protects normal cells against virus replication and VSV-mediated cell lysis. However, tumor cells have a defective IFN- $\beta$ -mediated innate antiviral immune response allowing for VSV to replicate in these cells without interference. In addition, the IFN- $\beta$  produced by VSV may activate an immune response in surrounding normal cells and may activate T-lymphocytes, dendritic cells and natural killer cells; thus, inducing an anti-tumor immune response against the tumor cells. VSV, a single-stranded RNA virus belonging to the genus Vesiculovirus of the family Rhabdoviridae, is relatively nonpathogenic to healthy humans.

**Recombination synapse:** The initial stage in the recombination process in which four molecules of recombinase and their associated DNA molecules come together.

**Recombivax HB:** (Other name for: hepatitis B vaccine (recombinant))

**reconstructive surgeon :** A doctor who can surgically reshape or rebuild (reconstruct) a part of the body, such as a woman's breast after surgery for breast cancer.

**reconstructive surgery :** Surgery that is done to reshape or rebuild (reconstruct) a part of the body changed by previous surgery.

**recorder:** a device that makes a graph or other automatic record of the stage, pressure, depth, velocity, or the movement or position of water controlling devices, usually as a function of time.

**Recormon:** (Other name for: epoetin beta)

**recover :** To become well and healthy again.

**Recovery Time:** The length of time for the screw to rotate, create a shot, and return to original position.

**RECP:** Relativistic effective core potential. The core electrons have been replaced by an effective potential that is based upon relativistic quantum calculations of the free atoms. Saves cost because of fewer explicit electrons and also includes some relativistic effects, especially the contraction of core s- and p-orbitals.

**recreational therapy :** A type of therapy that uses activities to help meet the physical and emotional needs of patients with an illness or disability and help them develop skills for daily living. These activities include arts and crafts, music, spending time with animals, sports, and drama. Recreational therapy is being studied as a way to relieve distress in cancer patients who are being treated for pain.

**recrystallization:** a process based on solubility in which a substance is dissolved in a minimum amount of hot solvent, which is then cooled to allow new, purer crystals to form.

**rectal :** By or having to do with the rectum. The rectum is the last several inches of the large intestine closest to the anus.

**rectal cancer :** Cancer that forms in the tissues of the rectum (the last several inches of the large intestine closest to the anus).

**rectal reconstruction :** Surgery to rebuild the rectum (the last several inches of the large intestine before the anus) using a section of the colon. This may be done when the rectum has been removed to treat cancer or other diseases.

**rectangle:** A four-sided closed figure in which the opposite sides are parallel and of equal length. All pairs of adjacent sides of a rectangle meet at right angles. OR a four-sided plane closed figure having opposite sides equal and parallel and four right angles.

**rectangular drainage pattern:** a drainage pattern created in bedrock that is regularly fractured or jointed in 90-degree angles.

**RECTILINEAR PROPAGATION:** is the principle that electromagnetic radiations like light travel in straight lines.

**rectitis :** Inflammation of the mucous membrane that lines the rectum (the last several inches of the large intestine closest to the anus). Also called proctitis.

**Rectoid:** (Other name for: therapeutic hydrocortisone)

**rectum :** The last several inches of the large intestine closest to the anus.

**recumbent fold:** a fold so overturned that its limbs are essentially horizontal and parallel.

**recur :** To come back or to return.

**recurrence :** Cancer that has recurred (come back), usually after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrent cancer.

**recurrence risk :** In genetics, the likelihood that a hereditary trait or disorder present in one family member will occur again in other family members. This is distinguished from recurrence risk for cancer, which is the chance that a cancer that has been treated will recur.

**recurrent cancer :** Cancer that has recurred (come back), usually after a period of time during which the cancer could not be detected. The cancer may come back to the same place as the original (primary) tumor or to another place in the body. Also called recurrence.

**Recycled Plastic:** A plastic prepared from used articles which have been cleaned and reground, then re-introduced into the manufacturing process. See also Regrind, Rechip or Reprocessed. OR A plastic prepared from used articles which have been cleaned and reground.

**recycling:** To treat or process waste materials so as to make them suitable for reuse. The key to successful recycling of materials contained in refuse lies in the separation of recyclable components from the main bulk of the waste.

**Recycling Markets:** These markets are made up of individuals or businesses that purchase post-consumer plastic and/or post-industrial recyclable materials. Markets specify what kind of recyclables they purchase, what price the material is worth and in what form the material is needed. Recycling markets for plastics fall into two broad categories: (Waste Reduction Strategies for Rural Communities, prepared by the MaCC Group, with support from Tennessee Valley Authority, March 1994). OR The series of activities by which discarded materials are collected, sorted, processed and converted into raw materials and used in the production of new products. OR Metals (and other things like plastics and paper) can be re-used. Think about an aluminium drinks can. Recycling involves the can being melted and re-shaped into another object. This requires some energy. If the same amount of aluminium had to be extracted from its ore, that would require a huge amount more energy. So, recycling aluminium makes economic sense.

**red blood cell :** also known as erythrocytes; cells that contain hemoglobin to transport oxygen. OR A type of blood cell that is made in the bone marrow and found in the blood. Red blood cells contain a protein called hemoglobin, which carries oxygen from the lungs to all parts of the body. Checking the number of red blood cells in the blood is usually part of a complete blood cell (CBC) test. It may be used to look for conditions such as anemia, dehydration, malnutrition, and leukemia. Also called erythrocyte and RBC.

**red cedar :** A type of evergreen tree with hard fragrant wood that is a member of the cypress family. The oil from the wood is used in soaps, shampoos, bath salts, perfumes, aromatherapy, and to keep insects away. The scientific name is *Juniperus virginiana*. Also called cedarwood and Eastern red cedar.

**red clover :** *Trifolium pratense*. A plant with flowers that has been used in some cultures to treat certain medical problems. It is being studied in the relief of menopausal symptoms and may have anticancer effects. Also called purple clover, *Trifolium pratense*, and wild clover.

**red date :** The fruit of the jujube plant. It has been used in some cultures to treat certain medical problems.

**red elm :** The inner bark of this plant has been used in some cultures to treat certain medical problems. It may have antioxidant effects. Also called gray elm, Indian elm, slippery elm, sweet elm, *Ulmus fulva*, and *Ulmus rubra*.

**red giant:** stage of the life cycle of a star in which it expands and cools.

**red shift:** apparent lengthening of starlight as it moves away from you (Doppler).

**red tomato juice:** Tomato juice derived from red tomatoes, with potential antioxidant and chemopreventive activities. Red tomato juice contains higher levels of the trans-isomer of lycopene (trans-LYC) compared to the cis-isomer (cis-LYC). Lycopene, a linear, unsaturated hydrocarbon carotenoid, is the major red pigment in certain fruits such as tomatoes, pink grapefruit, apricots, red oranges, watermelon, rosehips, and guava. As an antioxidant, lycopene scavenges free radicals which may both inhibit cellular oxidation and prevent free radical damage to cells. cis-LYC is better absorbed than its trans form.

**Redemption Center:** A centrally located depot to which consumers bring recyclables that provides payment for delivered materials. (The Blueprint for Plastics Recycling, The Council for Solid Waste Solutions, 1991).

**redox:** refers to a reaction in which simultaneous reduction and oxidation occur.

**redox :** A chemical reaction that takes place between an oxidizing substance and a reducing substance. The oxidizing substance loses electrons in the reaction, and the reducing substance gains electrons. For example, rust forms when there is a redox reaction between oxygen contained in water or moist air (an oxidizing substance) and iron (a reducing substance). Redox reactions also occur when glucose (a type of sugar) and fat are broken down in the body to make energy. Also called oxidation-reduction.

**Redox couple:** An electron donor and its corresponding oxidized form.

**Redox electrode:** a metallic electrode, usually made of platinum, which is used to monitor reversible reduction/oxidation reactions. The potential difference developed between the redox electrode and a reference electrode is a Nernstian function of the ratio of two different oxidation states of a species in solution.

**redox indicator:** An organic molecule that has reduced and oxidized forms with different colors; interconversion of the reduced and oxidized forms of the indicator must be reversible. Ferroin is an example.

**redox pair:** An electron donor and its corresponding oxidized form; for example, NADH and NAD<sup>+</sup>.

**Redox potential:** the potential developed by a metallic electrode when placed in a solution containing a species in two oxidation states in reversible equilibrium. The redox potential is a measure of the tendency for the reduction reaction to occur. Standard redox potentials range from about -3 volts to +3 volts. The more positive the value the more likely it is that reduction will occur. Negative values indicate that oxidation is more likely.

**Redox potential (E):** The relative tendency of a pair of molecules to release or accept an electron. The standard redox potential (E<sup>0</sup>) is the redox potential of a solution containing the oxidant and reductant of the couple at standard concentrations.

**redox reaction:** A reaction that involves transfer of electrons from one substance to another. Redox reactions always involve a change in oxidation

number for at least two elements in the reactants. OR See oxidation-reduction reaction.

**redox titration:** A titration based on a redox reaction. For example, iron in water can be determined by converting dissolved iron to  $\text{Fe}^{2+}$  and titrating the solution with potassium permanganate ( $\text{KMnO}_4$ ), a powerful oxidizing agent.

**reduced glutathione-L-cysteine-anthocyanins gel:** A gel formulation containing reduced glutathione, L-cysteine, and anthocyanins with potential antioxidant, immunostimulating, and chemoprotective activities. Reduced glutathione is the primary cellular antioxidant and plays important roles in the antioxidation of reactive oxygen species and free radicals and, as a thiol-containing co-enzyme, in the detoxification of xenobiotic compounds. In addition, glutathione affects DNA synthesis and repair and exerts immunostimulating activity by increasing the production of interleukin-2 (IL-2), promoting antigen presentation, and stimulating T-suppressor/cytotoxic (CD8 cells) cells. The flavonoid anthocyanins, derived from various blue and purple flowering plants, are potent scavengers of reactive oxygen species.

**Reduced Radius Omni-Grid :** Smallest turn radius available with no center link assembled into the belt.

**reducing:** The gain of electrons by an atom, ion, or molecule.

**reducing agent:** A reducing agent is an element or compound that removes oxygen from a compound (or provides electrons in a reaction). OR A reducing agent is a substance that reduce another substance by supplying electrons to it. Reducing agents cause other substances to be reduced in chemical reactions while they themselves are oxidized. For example, tin(II) is a reducing agent in the following reaction:
$$\text{Sn}^{2+}(\text{aq}) + 2 \text{Fe}^{3+}(\text{aq}) \rightarrow \text{Sn}^{4+}(\text{aq}) + 2 \text{Fe}^{2+}(\text{aq})$$

**reducing agent (reductant):** The electron donor in an oxidation-reduction reaction.

**reducing end:** The end of a polysaccharide having a terminal sugar with a free anomeric carbon; the terminal residue can act as a reducing sugar.

**reducing equivalent:** A general or neutral term for an electron or an electron equivalent in the form of a hydrogen atom or a hydride ion.

**reducing sugar:** A sugar in which the carbonyl (anomeric) carbon is not involved in a glycosidic bond and can therefore undergo oxidation.

**Reducing sugars:** Sugars that convert into a form with a free aldehyde group that is readily oxidized and can thus reduce another compound.

**Reductase:** An enzyme that catalyzes the reduction of a functional group, often using NADPH as an electron donor; a type of oxidoreductase.

**reduction:** The gain of electrons by a compound or ion. OR Reduction is gain of one or more electrons by an atom, molecule, or ion. Reduction is accompanied by a decrease in oxidation number. OR the gaining of electrons by an atom or molecule. In organic compounds, a reduction is an increase in the number of hydrogen atoms in a molecule. OR the gain of electrons by a species. OR Reduction is the removal of oxygen from a compound (or the addition of electrons to an atom or ion). OR A gain of electrons; a decrease in oxidation state. OR chemical reaction in which an atom or molecule gains an electron; decrease in positive valence; addition of hydrogen to a molecule.

**reduction :** A chemical reaction that takes place when a substance comes into contact with hydrogen or another reducing substance.

**Reduction 2 :** The addition of one or more electrons, especially in terms of an electrode reaction during electrolysis. An example would be  $\text{Na}^+$  gaining an electron at the cathode to form Na.

**reduction half reaction:** That part of a redox reaction that involves gain of electrons. In the oxidation half reaction, the oxidation number of one or more atoms within the reactants is reduced.

**reduction reaction:** A reaction in which a substance gains at least one electron.

**reduction treatment:** the opposite of oxidation treatment wherein a reductant is used to lower the valence state of a pollutant to a less toxic form; e.g. the use of  $\text{SO}_2$  to reduce  $\text{Cr}^{6+}$  to  $\text{Cr}^{3+}$  in an acidic solution.

**Reduction1 :** The removal of oxygen from a substance. This is the main process when metals are extracted from their ores.

**Reductive biosynthesis:** Refers to anabolic pathways that require hydride ion donors to reduce carbon atoms in metabolic intermediates; NADPH serves as an electron donor in many such pathways, including the biosynthesis of palmitoyl coa.

**redundancy:** the unnecessary repetition of words, phrases, or ideas in writing.

**redundant internal coordinates:** Internal coordinates that overdetermine the molecular geometry, i.e., are more numerous than  $3N-6$  for non-linear molecules or  $3N-5$  for linear molecules.

**Reed-Sternberg cell :** A type of cell that appears in people with Hodgkin disease. The number of these cells increases as the disease advances.

**reef:** an accumulation of organisms (typically corals and algae) that forms in warm, shallow ocean environments; resistant ridge that rims islands, lagoons, and other shorelines.

**refametinib:** An orally bioavailable selective MEK inhibitor with potential antineoplastic activity. Refametinib specifically inhibits mitogen-activated protein kinase kinase 1 (MAP2K1 or MAPK/ERK kinase 1), resulting in inhibition of growth factor-mediated cell signaling and tumor cell proliferation. MEK, a dual specificity threonine/tyrosine kinase, is a key component of the RAS/RAF/MEK/ERK signaling pathway that regulates cell growth; constitutive activation of this pathway has been implicated in many cancers. Check for active clinical trials using this agent.

**reference:** As in "single-reference" or "multi-reference," refers to the number of configurations (or really Slater determinants) in the 0th-order description of the wavefunction. Most methods that don't begin with "MR," "MC," or "CAS" are single-reference methods.

**Reference electrode:** the half of an electrode pair which provides a constant potential, regardless of the sample composition. The potential developed by a sensing electrode is measured against this reference to give a signal, which can be converted to the activity of ion under analysis. Single junction reference electrodes have a single chamber generally filled with a potassium chloride solution saturated with silver chloride, which contacts with the sample solution through a single liquid junction by means of a semiporous ceramic plug or fritted disc. Double junction reference electrodes have two chambers with the internal reference system having a liquid junction with an intermediary salt bridge and then a second liquid junction to the external sample. The outer filling solution is chosen to avoid contamination of the sample and minimize the effects of the liquid junction potential.

**Reference internal element:** the part of a reference electrode, which reacts with the filling solution to produce a constant reference potential. The most common element is silver/silver chloride.

**reference interval :** In medicine, a set of values that a doctor uses to interpret a patient's test results. The reference interval for a given test is based on the results that are seen in 95% of the healthy population. Sometimes patients whose test results are outside of the reference interval may be healthy, and some patients whose test results are within the reference interval may have a health problem. The reference interval for a test may be different for different groups of people (for example, men and women). Also called normal range, reference range, and reference values.

**Reference man:** A person with the anatomical and physiological characteristics of an average individual that is used in calculations assessing internal dose (also may be called "standard man").

**reference population:** The standard against which a population that is being studied can be compared (Last, 1988).

**reference range :** In medicine, a set of values that a doctor uses to interpret a patient's test results. The reference range for a given test is based on the results that are seen in 95% of the healthy population. Sometimes patients whose test results are outside of the reference range may be healthy, and some patients whose test results are within the reference range may have a health problem. The reference range for a test may be different for different groups of people (for example, men and women). Also called normal range, reference interval, and reference values.

**reference values :** In medicine, a set of values that a doctor uses to interpret a patient's test results. The reference values for a given test are based on the results that are seen in 95% of the healthy population. Sometimes patients whose test results are outside of the reference values may be healthy, and some patients whose test results are within the reference values may have a health problem. The reference values for a test may be different for different groups of people (for example, men and women). Also called normal range, reference interval, and reference range.

**referral :** In medicine, the act of a doctor in which a patient is sent to another doctor for additional healthcare services.

**REFET (reference field effect transistor):** one of the possible solution of a miniaturized reference electrode based on FET transducer. Up to now

none of the constructions were put into practice mainly because of material and technological problems.

**Refined Products:** Refined products is the term given to the output streams produced by a refinery. These products differ from petrochemical products in that they generally consist of a mixture of chemicals, whose value is based on their combined physical properties rather than their chemistry. Refined products are used as energy sources across all areas of economic activity, with the petrochemical industry accounting for only a small percentage of total demand.

**Refinery Propylene:** Refinery propylene refers to a mixture of propylene and propane (typically 75 percent propylene) that is produced by refineries for sale to petrochemical producers or for use as a feedstock to make gasoline components. Refinery propylene can be upgraded to propylene by distillation in a propylene splitter. Refinery propylene can also be used directly as a feedstock for production of cumene.

**Reflectance :** an operation mode of fiber optic chemical sensors. In this mode the detector measures the changes in spectral properties of the light beam reflected (after interaction) from the optomembrane (chemooptical interface).

**Reflected light:** Used to observe gross properties of particles (cf., transmitted light).

**Reflective goniometry:** A technique by which the interfacial angles of a single crystal can be determined.

**reflectivity:** The ratio of the energy carried by a wave that is reflected from a surface to the energy of a wave incident on the surface.

**Reflector:** A layer of material immediately surrounding a reactor core that scatters back (or reflects) into the core many neutrons that would otherwise escape. The returned neutrons can then cause more fissions and improve the neutron economy of the reactor. Common reflector materials are graphite, beryllium, water, and natural uranium.

**reflex arc:** the simplest unit of nervous activity; involved in the detection of a stimulus in the environment by sensory nerve endings, followed by impulses that travel via the sensory neurons to the spinal cord.

**reflexive (intensive) pronoun:** combines a personal pronoun with -self or -selves in order to reflect nouns or pronouns, or to provide emphasis

**reflexology** : A type of massage in which different amounts of pressure are applied to specific points on the feet or hands. These points are believed to match up with certain other parts of the body. Reflexology is claimed to cause relaxation and healing in those parts of the body, but this has not been proven.

**Refludan:** (Other name for: lepirudin)

**reflux** : The backward flow of liquid from the stomach into the esophagus.

**Reformate:** Reformate is the term given to the side stream produced by refinery reformers. These units are designed to produce higher value gasoline components from highly aromatic naphtha streams. Reformate is produced from naphtha in continuous catalytic reformers and semi-regenerative reformers and is a mixture of aromatic and aliphatic hydrocarbons. Its composition can be controlled within limits by the aromatics producer. It is the major source of aromatics in most of the world.

**Reformulated Plastic:** Recycled plastic that has been upgraded to alter or improve performance capability or to change characteristics through use of plasticizers, fillers, stabilizers, pigments, etc.

**Refractive index:** The ratios of the velocities of light in a medium and in air under the same conditions. Measured by the ratio of the sines of the angles of incidence and refraction. OR The ratio of the speed of radiation (as light) in one medium (as a vacuum) to that in another medium. In optical coating applications, differences in refractive indexes of coatings and substrates can result in birefringence. OR For a particular substance, the speed of light in a vacuum divided by the speed of light in that substance. This gives rise to the bending of light as it travels from one transparent material to another. OR The deviation caused by the material when a light beam passes through a transparent specimen.

**Refractive Index, Sodium D:** The ratio of the velocity and light in a vacuum to its velocity in the material.

**refractory** : In medicine, describes a disease or condition that does not respond to treatment.

**refractory cancer** : Cancer that does not respond to treatment. The cancer may be resistant at the beginning of treatment or it may become resistant during treatment. Also called resistant cancer.

**refrigerant:** A chemical used in refrigeration, to keep substances cool.

**regadenoson:** An adenosine derivative and selective A<sub>2A</sub> adenosine receptor agonist with coronary vasodilating activity. Upon administration, regadenoson selectively binds to and activates the A<sub>2A</sub> adenosine receptor, which induces coronary vasodilation. This leads to an increase in coronary blood flow and enhances myocardial perfusion. Compared to adenosine, regadenoson has a longer half-life and shows higher selectivity towards the A<sub>2A</sub> adenosine receptor. This agent is a very weak agonist for the A<sub>1</sub> adenosine receptor and has negligible affinity for the A<sub>2B</sub> and A<sub>3</sub> adenosine receptors. Check for active clinical trials using this agent.

**REGELATION:** is the process of melting ice by pressure. Inasmuch as water expands upon freezing, pressure will reverse the process, forcing water to melt. Then when the pressure is released, the water re-freezes (re-gells).

**Regenecare :** A substance being studied in the treatment of certain types of skin rash and skin pain in cancer patients. The ingredients of Regenecare are collagen, aloe vera, vitamin E, and lidocaine. It may help stop bleeding, form new blood vessels, keep the skin moist, and relieve pain and itching. It is a type of topical anesthetic and a type of wound repair agent.

**regeneration :** In biology, regrowth of damaged or destroyed tissue or body part.

**regimen :** A treatment plan that specifies the dosage, the schedule, and the duration of treatment.

**regional :** In oncology, describes the body area right around a tumor.

**regional anesthesia :** A temporary loss of feeling or awareness in a part of the body, such as an arm or a leg, caused by special drugs or other substances called anesthetics. The patient stays awake but has no feeling in the part of the body treated with the anesthetic.

**regional cancer :** Refers to cancer that has grown beyond the original (primary) tumor to nearby lymph nodes or organs and tissues.

**regional chemotherapy :** Treatment with anticancer drugs directed to a specific area of the body.

**regional enteritis :** A condition in which the gastrointestinal tract is inflamed over a long period of time. Regional enteritis usually affects the small intestine and colon. Symptoms include fever, diarrhea, stomach cramps, vomiting, and weight loss. Regional enteritis increases the risk of

colorectal cancer and small intestine cancer. It is a type of inflammatory bowel disease (IBD). Also called Crohn disease.

**regional lymph node :** In oncology, a lymph node that drains lymph from the region around a tumor.

**regional lymph node dissection :** A surgical procedure to remove some of the lymph nodes that drain lymph from the area around a tumor. The lymph nodes are then examined under a microscope to see if cancer cells have spread to them.

**regional metamorphism:** metamorphism of rocks typically exposed to tectonic forces and associated high pressures and temperatures. OR Metamorphic rocks that have been formed in areas where heat and pressure combined to create the rock. Mountain areas are locations of regional metamorphism.

**regionally metamorphic:** rock that undergoes intense heat and pressure over large areas.

**registered dietitian :** A health professional with special training in the use of diet and nutrition to keep the body healthy. A registered dietitian may help the medical team improve the nutritional health of a patient.

**Regitine:** (Other name for: phentolamine mesylate)

**Reglan :** A drug that increases the motility (movements and contractions) of the stomach and upper intestine. It is used to treat certain stomach problems and nausea and vomiting caused by chemotherapy. It is a type of antiemetic and a type of motility agent. Also called metoclopramide.

**regolith:** the interface between bedrock and overlying sedimentary material; consists of solid fragments of weathered rock.

**regorafenib:** An orally bioavailable small molecule with potential antiangiogenic and antineoplastic activities. Regorafenib binds to and inhibits vascular endothelial growth factor receptors (VEGFRs) 2 and 3, and Ret, Kit, PDGFR and Raf kinases, which may result in the inhibition of tumor angiogenesis and tumor cell proliferation. VEGFRs are receptor tyrosine kinases that play important roles in tumor angiogenesis; the receptor tyrosine kinases RET, KIT, and PDGFR, and the serine/threonine-specific Raf kinase are involved in tumor cell signaling. or A drug used to treat colorectal cancer that has spread to other parts of the body and has not gotten better with other treatment. It is also used to treat gastrointestinal

stromal tumors (GIST) that cannot be removed by surgery or have spread to other parts of the body and have not gotten better with other anticancer drugs. It is being studied in the treatment of other types of cancer.

Regorafenib blocks the action of certain proteins, which may help keep cancer cells from growing and may kill them. It may also prevent the growth of new blood vessels that tumors need to grow. Regorafenib is a type of kinase inhibitor and a type of antiangiogenesis agent. Also called Stivarga.

**regression :** A decrease in the size of a tumor or in the extent of cancer in the body.

**Regrind:** plastic material that has been gone through one or more melting processes after initial polymerization. All reprocessed plastic material is technically regrind, and can come from a variety of sources. The term regrind most commonly refers to the material that is created when scrap plastic material (rejected or unused parts, runners, sprues, etc) is chopped or ground into small pieces. Note: Each time a polymer molecule goes through a thermal cycle, (solid/molten/solid), the molecular composition (chain length and chemistry) changes. Changes can also occur in the additives. OR Waste material such as sprues, runners, excess parison material and reject parts from injection molding, blow molding and extrusion, which has been reclaimed by shredding or granulating. Regrind is usually mixed with virgin compound at a predetermined percentage for remolding.

**Regrind Waste:** Material from injection molding, blow molding and extrusion operations, which has been reclaimed by shredding or granulating.

**Regrind/Rechip:** Recycled plastic material which has been reclaimed by shredding or granulating from all fabrication processes including plastic extrusion manufacture. Regrind is often mixed with a percentage of virgin compound for re-use.

**Regular Novolin R:** (Other name for: insulin, regular)

**regular polygon:** a polygon in which sides and angles are all equal. For example, a regular pentagon has five equal angles and five equal sides.

**Regulation:** A meeting between the NRC and a reactor licensee to discuss an inspection finding that was preliminarily assessed as greater-than-Green in significance to gather more information before a final decision on significance is made by the agency.

**Regulatory Conference:** A meeting between the NRC and a reactor licensee to discuss an inspection finding that was preliminarily assessed as greater-than-Green in significance to gather more information before a final decision on significance is made by the agency.

**Regulatory enzyme:** An enzyme in which the active site is subject to regulation by factors other than the enzyme substrate. The enzyme frequently contains a nonoverlapping site for binding the regulatory factor that affects the activity of the active site. OR An enzyme having a regulatory function through its capacity to undergo a change in catalytic activity by allosteric mechanisms or by covalent modification.

**Regulatory gene:** A gene whose principal product is a protein designed to regulate the synthesis of other genes. OR A gene that gives rise to a product involved in the regulation of the expression of another gene; for example, a gene coding for a repressor protein.

**Regulatory Information Conference:** An annual NRC conference that brings together NRC staff, regulated utilities, materials users, and other interested stakeholders to discuss nuclear safety topics and significant and timely regulatory activities through informal dialogue to ensure an open regulatory process.

**Regulatory proteins:** Proteins that bind to enzymes and regulate their catalytic activity.

**regulatory sequence:** A DNA sequence involved in regulating the expression of a gene; for example, a promoter or operator.

**regulatory T cell :** A type of immune cell that blocks the actions of some other types of lymphocytes, to keep the immune system from becoming over-active. Regulatory T cells are being studied in the treatment of cancer. A regulatory T cell is a type of white blood cell and a type of lymphocyte. Also called suppressor T cell, T reg, and T-regulatory cell.

**regulon:** A group of genes or operons that are coordinately regulated even though some, or all, may be spatially distant within the chromosome or genome.

**rehabilitation :** In medicine, a process to restore mental and/or physical abilities lost to injury or disease, in order to function in a normal or near-normal way.

**rehabilitation services :** Special healthcare services that help a person regain physical, mental, and/or cognitive (thinking and learning) abilities that have been lost or impaired as a result of disease, injury, or treatment. Rehabilitation services help people return to daily life and live in a normal or near-normal way. These services may include physical therapy, occupational therapy, speech and language therapy, cognitive therapy, and mental health rehabilitation services.

**rehabilitation specialist :** A healthcare professional who helps people recover from an illness or injury and return to daily life. Examples of rehabilitation specialists are physical therapists and occupational therapists.

**Reinforced concrete:** Concrete work in which steel bars (reinforcement) are embedded to impart additional strength. Should not be confused with a load-bearing steel structure, clad or covered with concrete.

**REINFORCED MOLDING COMPOUND:** A material reinforced with special fillers to meet specific requirements (glass, carbon, etc.) OR Compound supplied by raw material produced in the form of ready-to-use materials; as distinguished from premix.

**Reinforced Plastic:** A plastic with high-strength fibers embedded in the polymer matrix, resulting in increased strength properties superior to those of the base resin. The term is used to designate any polymer that is a basic material for plastics. OR These plastic materials consist of base resins to which fibrous reinforcements have been added to increase the strength of the finished plastic products.

**Reinforced resin:** Refers to base resins with fillers added for strength. They are particularly susceptible to warp because the fiber orientation tends to follow flow lines, resulting in asymmetric stresses. These resins are typically harder and stronger but also more brittle (i.e. less tough).

**REINFORCEMENT:** A strong inert material bound into a plastic to improve its strength, stiffness, and impact resistance. Reinforcements are usually long fibers of glass, sisal, cotton, etc. — in woven or nonwoven form. OR a substance added to a polymer to enhance the performance properties of the final parts. These substances form a chemical bond with the base polymer. Typical reinforcements include glass, carbon, and other synthetic fibers, and mineral flakes. OR An inert fibrous or non-fibrous material incorporated in a plastic to improve or modify mechanical or physical properties. OR Material used to reinforce, strengthen or give

dimensional stability to another material; can be chopped, woven or braided. OR An inert fibrous or non-fibrous material incorporated in a plastic to improve or modify mechanical or physical properties.

**Reinforcing Rod :** A rod of any shape (usually round) inserted through the bends of the spirals for the purpose of strengthening the fabric, and which does not join spirals or serve as a connector.

**relapse :** The return of a disease or the signs and symptoms of a disease after a period of improvement. Relapse also refers to returning to the use of an addictive substance or behavior, such as cigarette smoking.

**relapse-free survival :** In cancer, the length of time after primary treatment for a cancer ends that the patient survives without any signs or symptoms of that cancer. In a clinical trial, measuring the relapse-free survival is one way to see how well a new treatment works. Also called DFS, disease-free survival, and RFS.

**relative atomic mass:** The relative atomic mass,  $A_r$ , is the mass of one mole of atoms of an element (taking into account the proportions of each isotope in a naturally occurring sample of the element).

**relative clause:** a clause that begins with a relative pronoun and functions as an adjective.

**Relative Density:** When the absolute density of a gas is compared to the density of air. The comparison of two values makes it relative. Air has a relative density of 1.0.

**relative error:** The uncertainty in a measurement compared to the size of the measurement. For example, if three replicate weights for an object are 2.00 g, 2.05 g, and 1.95 g, the absolute error can be expressed as  $\pm 0.05$  g and the relative error is  $\pm 0.05 \text{ g} / 2.00 \text{ g} = 0.025 = 2.5\%$ .

**relative formula mass:** The relative formula mass is the sum of the relative atomic masses of the elements indicated by a chemical formula. For example, the relative formula mass of  $\text{Na}_2\text{O} = 2 \times A_r(\text{Na}) + 1 \times A_r(\text{O})$ .  
Symbol = Mr.

**relative humidity:** a measure of how much water is in the air compared to how much it can hold, given as a percentage. OR Ratio of the quantity of water vapor present in the air to the quantity which would saturate it at any given temperature.

**relative odds :** A measure of the odds of an event happening in one group compared to the odds of the same event happening in another group. In cancer research, relative odds are most often used in case-control (backward looking) studies to find out if being exposed to a certain substance or other factor increases the risk of cancer. For example, researchers may study a group of individuals with cancer (cases) and another group without cancer (controls) to see how many people in each group were exposed to a certain substance or factor. They calculate the odds of exposure in both groups and then compare the odds. A relative odds of one means that both groups had the same odds of exposure and, therefore, the exposure probably does not increase the risk of cancer. A relative odds of greater than one means that the exposure may increase the risk of cancer, and a relative odds of less than one means that the exposure may reduce the risk of cancer. Also called odds ratio.

**relative pronoun:** (who, whom, which, that) introduce clauses that describe nouns or pronouns.

**relative risk:** (i) The ratio of the risk of disease or death among the exposed to the risk among the unexposed; this usage is synonymous with risk ratio; (ii) alternatively, the ratio of the cumulative incidence rate in the exposed to the cumulative incidence rate in the unexposed, i.e., the cumulative incidence ratio, and (iii) the term "relative risk" has also been used synonymously with "odds ratio" and, in some biostatistical articles, has been used for the ratio of forces of morbidity. The use of the term "relative risk" for several different quantities arises from the fact that for "rare" diseases (e.g., most cancers) all the quantities approximate one another. For common occurrences (e.g., neonatal mortality in infants under 1500g birth weight), the approximations do not hold (Last, 1988).

**relative risk :** A measure of the risk of a certain event happening in one group compared to the risk of the same event happening in another group. In cancer research, relative risk is used in prospective (forward looking) studies, such as cohort studies and clinical trials. A relative risk of one means there is no difference between two groups in terms of their risk of cancer, based on whether or not they were exposed to a certain substance or factor, or how they responded to two treatments being compared. A relative risk of greater than one or of less than one usually means that being exposed to a certain substance or factor either increases (relative risk

greater than one) or decreases (relative risk less than one) the risk of cancer, or that the treatments being compared do not have the same effects. Also called risk ratio.

**relative sea level:** The height of the boundary between sea and air as measured in relationship to a fixed reference point on land.

**relative standard deviation:** The relative standard deviation is a measure of precision, calculated by dividing the standard deviation for a series of measurements by the average measurement.

**relative survival rate :** A way of comparing the survival of people who have a specific disease with those who don't, over a certain period of time. This is usually five years from the date of diagnosis or the start of treatment for those with the disease. It is calculated by dividing the percentage of patients with the disease who are still alive at the end of the period of time by the percentage of people in the general population of the same sex and age who are alive at the end of the same time period. The relative survival rate shows whether the disease shortens life.

**Relative Viscosity:** The relative viscosity of a polymer in solution is the ratio of the absolute viscosities of the solution (of stated concentration) and of the pure solvent at the same temperature.

**RELAXATION:** Whenever polymer melts are subjected to mechanical work they develop stresses which do not become immediately zero when the mechanical influence is removed. The time required for the stresses to relax is referred to as RELAXATION TIME. There is no universally accepted definition of the most characteristic relaxation time for a polymer melt. Some authors use the  $\lambda$  of the Carreau or Cross viscosity models, but this is considered a poor choice by theoreticians. The best choice is perhaps the "longest relaxation time" determined in dynamic measurements as where  $G'$  is the storage modulus,  $h'$  is the dynamic viscosity and  $w$  is the frequency. Polymers with higher molecular weights have long relaxation times. When the polymer solidifies without the stresses having been relaxed, the product includes FROZEN-IN STRESSES which will be released when the plastic part is reheated. The accompanying changes in dimensions, shrinkage or warpage may be significant.

**relaxation technique :** A method used to help reduce muscle tension and stress, lower blood pressure, and control pain. Examples of relaxation techniques include tensing and relaxing muscles throughout the body,

guided imagery (focusing the mind on positive images), meditation (focusing thoughts), and deep breathing exercises.

**relaxation therapy :** A type of therapy that helps reduce muscle tension and stress, lowers blood pressure, and controls pain. It may involve tensing and relaxing muscles throughout the body. It may be used with guided imagery (focusing the mind on positive images) and meditation (focusing thoughts).

**Relaxed DNA:** A circular DNA molecule that has no superhelical turns.

**Relay helix:** A long helix that connects the switch regions of the S1 fragment to the lever arm; the nature of the nucleotide in the S1 fragment (ATP or ADP) allows the relay helix to change position, resulting in a reorientation of the lever arm.

**Release agent:** a lubricant, often wax, used to coat a mold cavity to prevent the molded piece from sticking to it, and thus to facilitate its removal from the mold. OR a lubricant, often wax, used to coat a mold cavity to prevent the molded piece from sticking to it, and thus to facilitate its removal from the mold. OR A substance which prevents a moulding from sticking to the mould surface, thus facilitating its release from the mould after curing. It may be chemical compound or a solid material such as a plastic film. Also know as a Parting agent. OR A compound, which is sprayed on the mold, or as an additive, molded into the part to help facilitate the release of the part.

**Release factor:** One of a set of proteins that recognize stop codons on mRNA at the A site on the ribosome, which leads to the release of the completed protein from the tRNA in the P site of the ribosome. OR See termination factors. OR Hypothalamic hormones that stimulate release of other hormones by the pituitary gland.

**Relenza :** A drug used to prevent and to treat influenza virus infections. It blocks the release of the virus from infected cells. It is a type of antiviral agent. Also called zanamivir.

**Relieved and Reinforced Turned-up Fabric :** A retaining edge similar to a relieved turned-up fabric except that hair-pin reinforcements are inserted in the disconnected spirals.

**Relieved Turned-up Fabric :** A retaining edge similar to a turned-up fabric edge providing flexibility by the omission of connectors or rod

reinforcements in the turned up portion of the mesh at prescribed spacing.

**religion** : A set of beliefs and practices that center on questions about the meaning of life and may involve the worship of a supreme being.

**Relistor** : A drug used to relieve certain side effects caused by treatment with opioids (pain killers similar to morphine), such as constipation (hard, dry stools), itching, and low urine flow. Relistor binds to opioid receptors outside the brain and may block the side effects of opioid drugs without affecting their ability to relieve pain. Relistor is a type of peripheral opioid receptor antagonist. Also called methylnaltrexone bromide.

**REM (Roentgen equivalent man)**: One of the two standard units used to measure the dose equivalent (or effective dose), which combines the amount of energy (from any type of ionizing radiation that is deposited in human tissue), along with the medical effects of the given type of radiation. For beta and gamma radiation, the dose equivalent is the same as the absorbed dose. By contrast, the dose equivalent is larger than the absorbed dose for alpha and neutron radiation, because these types of radiation are more damaging to the human body. Thus, the dose equivalent (in rems) is equal to the absorbed dose (in rads) multiplied by the quality factor of the type of radiation [see Title 10, Section 20.1004, of the Code of Federal Regulations (10 CFR 20.1004), "Units of Radiation Dose"]. The related international system unit is the sievert (Sv), where 100 rem is equivalent to 1 Sv. For additional information, see Doses in Our Daily Lives and Measuring Radiation.

**REM sleep** : One of the five stages of sleep. During REM sleep, the eyes move rapidly while closed and dreams occur. REM sleep is the lightest stage of sleep, during which a person may wake easily. During several hours of normal sleep, a person will go through several sleep cycles that include REM sleep and the 4 stages of non-REM (light to deep sleep). Also called rapid eye movement sleep.

**Remeron**: (Other name for: mirtazapine)

**Remeron** : A drug used to treat depression. Remeron increases the levels of the chemicals serotonin and norepinephrine in the brain, which helps improve mood. It is a type of antidepressant. Also called mirtazapine.

**remestemcel-L**: Human mesenchymal stem cells (MSCs) harvested from bone marrow of healthy adult donors and expanded ex vivo, with potential immunosuppressive activity. Remestemcel-L cells are hypo-immunogenic

due to lack of major histocompatibility II (MHC II) molecule expression, eliciting little, if any, host immune response upon intravenous infusion. Infusion of allogeneic MSCs may result in: a) increased production of anti-inflammatory cytokines, such as interleukin-10, prostaglandin E, and hepatocyte growth factor; b) decreased mononuclear phagocyte expression of indoleamine 2,3,-dioxygenase, which catabolizes L-tryptophan into its pro-inflammatory metabolites; and c) modulated dendritic cell (DC) maturation and disrupted activities of natural killer (NK) cells and CD8+ and CD4+ T cells. In addition, pluripotent MSCs, upon administration, may be recruited to damaged tissue sites, differentiating along specific lineages when stimulated.

**Remicade:** (Other name for: infliximab)

**Remifemin:** (Other name for: black cohosh)

**remifentanil hydrochloride:** The hydrochloride salt form of remifentanil, a synthetic anilidopiperidine derivative and short-acting opiate agonist with analgesic and anesthetic properties. Remifentanil selectively binds to and activates the mu-opioid receptor, thereby producing analgesia, respiratory depression, miosis, reduced gastrointestinal motility, and euphoria. Check for active clinical trials using this agent.

**Reminyl:** (Other name for: galantamine hydrobromide)

**remission :** A decrease in or disappearance of signs and symptoms of cancer. In partial remission, some, but not all, signs and symptoms of cancer have disappeared. In complete remission, all signs and symptoms of cancer have disappeared, although cancer still may be in the body.

**remission induction therapy :** Initial treatment with anticancer drugs to decrease the signs or symptoms of cancer or make them disappear.

**Remitogen:** (Other name for: apolizumab)

**remote brachytherapy :** A type of internal radiation treatment in which the radioactive source is removed between treatments. Also called high-dose-rate remote brachytherapy and high-dose-rate remote radiation therapy.

**REMOVERS:** Substances used to soften old varnish or paint so they may be removed easily.

**renal arteries:** arteries in which blood enters the kidney.

**renal artery :** The main blood vessel that supplies blood to a kidney and its nearby adrenal gland and ureter. There is a renal artery for each kidney.

**renal capsule :** The fibrous connective tissue that surrounds each kidney.

**renal cell adenocarcinoma :** The most common type of kidney cancer. It begins in the lining of the renal tubules in the kidney. The renal tubules filter the blood and produce urine. Also called hypernephroma, renal cell cancer, and renal cell carcinoma.

**renal cell cancer :** The most common type of kidney cancer. It begins in the lining of the renal tubules in the kidney. The renal tubules filter the blood and produce urine. Also called hypernephroma, renal cell adenocarcinoma, and renal cell carcinoma.

**renal cell carcinoma :** The most common type of kidney cancer. It begins in the lining of the renal tubules in the kidney. The renal tubules filter the blood and produce urine. Also called hypernephroma, renal cell adenocarcinoma, and renal cell cancer.

**renal cell carcinoma peptides vaccine IMA901:** A multi-peptide cancer vaccine targeting renal cell carcinoma with potential immunopotentiating activity. Renal cell carcinoma peptides vaccine IMA901 consists of 10 different synthetic tumor-associated peptide (TUMAP) antigens (9 HLA-class I-binding and 1 HLA class II-binding); endogenously, these TUMAPs are expressed by the majority of renal cell carcinomas. Vaccination with this agent may significantly increase host cytotoxic T-lymphocyte (CTL) immune responses against tumor cells expressing these peptide antigens.

**renal cell carcinoma/CD40L RNA-transfected autologous dendritic cell vaccine AGS-003:** A cancer vaccine in which autologous dendritic cells are transfected with patient-specific renal cell carcinoma (RCC) RNA and a synthetic, truncated human CD40 ligand (CD40L) RNA with potential immunostimulatory and antineoplastic activities. Individual RCC-specific RNA, encoding a unique repertoire of tumor-associated antigens (TAAs) (including telomerase reverse transcriptase, G250, and oncofetal antigen) is electroporated into autologous dendritic cells (DCs), transfected with synthetic RNA that encodes a truncated version of the T-cell protein CD40L; the transfected autologous DCs express and process both patient-specific RCC TAAs and the truncated CD40L protein. When reintroduced back to the patient, renal cell carcinoma/CD40L RNA-transfected autologous dendritic cell vaccine AGS-003 may elicit a highly specific

cytotoxic T-cell (CTL) response against RCC cells expressing the patient-specific RCC TAA repertoire. The signal cascade initiated by stimulation of the truncated, ectopically expressed co-stimulatory molecule CD40L results in the secretion of the inflammatory cytokine IL-12 downstream.

**renal collecting tubule :** The last part of a long, twisting tube that collects urine from the nephrons (cellular structures in the kidney that filter blood and form urine) and moves it into the renal pelvis and ureters. Also called collecting duct.

**renal elimination:** Excretion of a substance through the kidneys

**renal failure :** A condition in which the kidneys stop working and are not able to remove waste and extra water from the blood or keep body chemicals in balance. Acute or severe renal failure happens suddenly (for example, after an injury) and may be treated and cured. Chronic renal failure develops over many years, may be caused by conditions like high blood pressure or diabetes, and cannot be cured. Chronic renal failure may lead to total and long-lasting renal failure, called end-stage renal disease (ESRD). A person in ESRD needs dialysis (the process of cleaning the blood by passing it through a membrane or filter) or a kidney transplant. Also called kidney failure.

**renal fascia :** A fibrous envelope of tissue that surrounds the kidney. Also called Gerota's capsule and Gerota's fascia.

**renal function :** A term used to describe how well the kidneys work. The kidneys remove waste and extra water from the blood (as urine) and help keep chemicals (such as sodium, potassium, and calcium) balanced in the body. They also make hormones that help control blood pressure and stimulate bone marrow to make red blood cells. Also called kidney function.

**renal function test :** A test in which blood or urine samples are checked for the amounts of certain substances released by the kidneys. A higher- or lower-than-normal amount of a substance can be a sign that the kidneys are not working the way they should. Also called kidney function test.

**renal glomerulus :** A tiny, round cluster of blood vessels within the kidneys. It filters the blood to reabsorb useful materials and remove waste as urine.

**renal pelvis :** The area at the center of the kidney. Urine collects here and is funneled into the ureter, the tube that connects the kidney to the bladder.

**renal tubular acidosis :** A rare disorder in which structures in the kidney that filter the blood are impaired, producing urine that is more acid than normal.

**renal veins:** veins in which blood exits the kidney.

**Renaturation:** The process of returning a denatured structure to its original native structure, as when two single strands of DNA are reunited to form a regular duplex, or an unfolded polypeptide chain is returned to its normal folded three-dimensional structure. OR Refolding of an unfolded (denatured) globular protein so as to restore native structure and protein function.

**Rencarex:** (Other name for: girentuximab)

**Rendering:** The first rough coat of a plastering system usually composed of lime and/or cement and sand; External 'plastering' on walls and application to all coats in the system -also 'cement rendering'.

**Renewable Materials:** A material is considered to be renewable if it is replaced by nature at the same or faster rate than it is used or consumed by humans.

**renewable resource:** a resource or commodity that can be replenished, such as trees and crops. OR energy sources or other natural resources that are replenished shortly after being used.

**Renewable resources:** Natural, but limited, energy resources that can be replenished, including biomass, hydro, geothermal, solar, and wind. These resources are virtually inexhaustible but limited in the amount of energy that is available per unit of time. In the future, renewable resources could also include the use of ocean thermal, wave, and tidal action technologies. Utility renewable resource applications include bulk electricity generation, onsite electricity generation, distributed electricity generation, nongrid-connected generation, and demand-reduction (energy efficiency) technologies. The Information Digest has included conventional hydroelectric and storage hydroelectric in a separate category from other resources.

**Reniform Habit:** A shape of a large crystal which has the arrangement of several small rounded balls stuck together. Think about some of those

computer generated structures of molecules for this example.

**Renova :** A topical preparation of tretinoin that is used to treat acne. Tretinoin is a form of vitamin A.

**REOLYSIN:** (Other name for: wild-type reovirus)

**repaglinide:** A nonsulfonylurea insulin secretagogue belonging to the melgitinide class with hypoglycemic activity. Repaglinide is rapidly absorbed and has a rapid onset and short duration of action. This agent is metabolized in the liver by CYP2C8 and CYP3A4 and its metabolites are excreted in the bile. Repaglinide has a half-life of one hour. Check for active clinical trials using this agent.

**Repair:** The restoration of the normal structure and sequence of a gene after damage from ultraviolet light or chemical agents.

**Repair synthesis:** DNA synthesis following excision (cutting out) of damaged DNA.

**reparixin:** An orally available inhibitor of CXC chemokine receptor types 1 (CXCR1) and 2 (CXCR2), with potential antineoplastic activity. Upon administration, reparixin allosterically binds to CXCR1 and prevents CXCR1 activation by its ligand interleukin 8 (IL-8 or CXCL8). This may cause cancer stem cell (CSC) apoptosis and may inhibit tumor cell progression and metastasis. CXCR1, overexpressed on CSCs, plays a key role in CSC survival and the ability of CSC to self-renew; it is also linked to tumor resistance to chemotherapy. Inhibition of the IL-8/CXCR1 interaction also potentiates the cytotoxic effect of chemotherapeutic agents. In addition, reparixin inhibits CXCR2 activation and may reduce both neutrophil recruitment and vascular permeability during inflammation or injury. Check for active clinical trials using this agent.

**Repeatability:** Repeatability is closeness of agreement of a tool movement position from one part to another when cutting several copies of the same part.

**Repetitive DNA:** A DNA sequence that is present in many copies per genome.

**Replica plating:** A technique in which an impression of a culture is taken from a master plate and transferred to a fresh plate. The impression can be of bacterial clones or phage plaques.

**replicate :** To make a copy or duplicate of something.

**replicate sampling:** The act of taking several samples concurrently under comparable conditions (WHO, 1979).

**replication:** During the course of an experiment or survey, replication is the determination of a value more than once, so as to obtain a better estimation of the variation. Replication should be distinguished from repetition by the fact that replication of an experiment denotes repeated determinations carried out, as far as possible, at one place and one period of time. The successive determinations, including the first, are called replicates (ISO, 1977).

**replication:** Synthesis of a daughter duplex DNA molecule identical to the parental duplex DNA.

**replication cycle :** In biology, refers to the reproduction cycle of viruses. A replication cycle begins with the infection of a host cell and ends with the release of mature progeny virus particles.

**Replication fork:** The Y-shaped region of DNA at the site of DNA synthesis; also called a growth fork. OR The site of DNA synthesis where the parental strands are separated and daughter strands complementary to each parent are synthesized.

**Replicon:** A genetic element that behaves as an autonomous replicating unit. It can be a plasmid, phage, or bacterial chromosome. OR A segment of DNA that carries its own origin of replication and can replicate autonomously; bacterial plasmids are replicons.

**replisome:** The multiprotein complex that promotes DNA synthesis at the replication fork.

**repressible enzyme:** In bacteria, an enzyme whose synthesis is inhibited when its reaction product is readily available to the cell.

**repression:** A decrease in the expression of a gene in response to a change in the activity of a regulatory protein.

**repressor:** Pur A protein regulator of the pur operon, which encodes genes taking part in purine biosynthesis; the pur repressor binds to operator DNA only when bound to a small molecule (guanine or hypoxanthin) called a corepressor. OR A regulatory protein that inhibits transcription from one or more genes. It can combine with an inducer (resulting in specific enzyme induction) or with an operator element (resulting in repression). OR A protein that binds to an operator sequence and inhibits the transcription of

the structural genes in the operon. OR The protein that binds to the regulatory sequence or operator for a gene, blocking its transcription.

**Reprocessed Plastic:** A thermoplastic prepared from scrap industrial plastic by other than the original processor (see also regrind, recycled plastic).

**Reproducibility:** the closeness of replicate measurements on the same sample, using the same measuring technique, under the same conditions. Reproducibility can be limited by many factors, including instrument or electrode stability, loss of the substance being measured during sample operation and contamination.

**reproductive cell :** An egg or sperm cell. Each mature reproductive cell carries a single set of 23 chromosomes.

**reproductive effects:** The adverse effects of a chemical on any aspects of reproduction in an organism (WHO, 1979).

**reproductive endocrinologist :** A doctor who has special training in the diagnosis and treatment of infertility. A reproductive endocrinologist may use surgery, medicine, or procedures, such as in vitro fertilization (IVF), to treat infertility.

**reproductive medicine :** A branch of medicine that specializes in fertility preservation, diagnosing and treating infertility, and other reproductive problems. Reproductive medicine also deals with issues related to puberty, menopause, contraception (birth control), and certain sexual problems.

**reproductive system :** The organs involved in producing offspring. In women, this system includes the ovaries, the fallopian tubes, the uterus, the cervix, and the vagina. In men, it includes the prostate, the testes, and the penis.

**Requip:** (Other name for: ropinirole hydrochloride)

**rescue transplant :** A method of replacing blood-forming stem cells that were destroyed by treatment with high doses of anticancer drugs or radiation therapy. The stem cells help the bone marrow recover and make healthy blood cells. A rescue transplant may allow more chemotherapy or radiation therapy to be given so that more cancer cells are killed. It is usually done using the patient's own stem cells that were saved before treatment. Also called stem cell rescue.

**Research:** Finding out stuff. Finding out stuff that has never been found out before is the most exciting kind of research. The more stuff you have found out, the more power you have to do good things, and bad things. The country that finds out the most stuff wins. Also, it takes money to find out stuff, especially stuff that has never been found out before.

**research advocate :** A person who serves as a link between patients and scientific researchers. Research advocates help patients understand scientific information and research findings that may help them. They may also bring a patient perspective on research activities to scientific advisory boards and committees. For example, research advocates use their own experiences and the experiences of patients to work with researchers to help develop clinical trials that are safe and meet the needs of patients. They also help teach patients and their families about clinical trials and recruit patients to clinical trials.

**research base :** Refers to the institutions, clinical staff, and patients that can take part in a clinical trial.

**research study :** A scientific study of nature that sometimes includes processes involved in health and disease. For example, clinical trials are research studies that involve people. These studies may be related to new ways to screen, prevent, diagnose, and treat disease. They may also study certain outcomes and certain groups of people by looking at data collected in the past or future.

**resectable :** Able to be removed by surgery.

**resected :** Removed by surgery.

**resection :** Surgery to remove tissue or part or all of an organ.

**Resectisol:** (Other name for: mannitol)

**resectoscope :** A thin, tube-like instrument used to remove tissue from inside the body. A resectoscope has a light and lens for viewing. It also has a tool to remove tissue using an electrical current. It is inserted through the urethra to treat prostate disease in men and through the vagina and cervix to treat abnormal uterine bleeding in women.

**reserves:** that subgroup of a resource that has been discovered and can be extracted at a profit.

**reservoir:** Any natural or artificial holding area used to store, regulate, or control a substance.

**reservoir rock:** a rock with the required permeability and porosity to hold large accumulations of petroleum.

**residence time:** The size of any specific reservoir or pool of mass (e.g., carbon) divided by the total flux of mass into or out of that pool. OR

Residence time is the length of time that the material is held at melt range temperatures in the barrel.

**Resident Inspector:** An NRC inspector assigned to inspect a nuclear plant on a full-time basis. Each site has at least two resident inspectors who have an office on site.

**residual chlorine:** chlorine remaining in water or wastewater at the end of specified contact period as combined or free chlorine.

**residual disease :** Cancer cells that remain after attempts to remove the cancer have been made.

**residual soil:** soil developed from the weathering of the underlying bedrock.

**Residual Stress / Moulded-in Stress:** Residual stress is a term that describes the level and pattern of stress, which is left in the part after it is removed from the machine. It can be due to unbalanced flow, non uniform freezing of melt and over packing.

**residue:** 1. The substances left after an evaporation or distillation. 2. A recognizable molecular fragment embedded in a larger molecule; for example, amino acid "residues" within a protein.

**residue:** A single unit within a polymer; for example, an amino acid within a polypeptide chain. The term reflects the fact that sugars, nucleotides, and amino acids lose a few atoms (generally the elements of water) when incorporated in their respective polymers.

**Resimmune:** (Other name for: anti-CD3 immunotoxin A-dmDT390-bisFv(UCHT1))

**RESIN:** A natural or synthetic material that is the main ingredient of paint and that binds ingredients together. It also aids adhesion to the surface. Thermoforming OR This is a short term for Polyethylene (PE) resin. The three types of PE resins are LDPE, LLDPE and HMW-HDPE (see below). Other plastic resins include vinyl, polypropylene, styrene and nylon. LDPE (Low Density Polyethylene) - This resin was used with older can liner technology. Resin has good clarity but weak film strength. Today

it is used primarily for Food and Utility bags. LLDPE (Linear Low Density Polyethylene) - This is the primary type of resin used in modern can liner manufacturing technology. Bags made from LLDPE film provide excellent combination of film strength, puncture resistance and tear resistance. HMW-HDPE (High Molecular Weight - High Density Polyethylene) Bags made from HMW-HDPE resin provide excellent film strength and puncture resistance, but less tear resistance than LLDPE. Butene - One of three types of LLDPE resin. Butene has weaker film-strength properties than Hexene or Octene. Hexene - One of three types of LLDPE resin. Some manufacturers use a Higher Alpha Olefin (High Grade Hexene) in the manufacturing of can liners. Properties include high film strength and increased tear resistance. Octene - One of three types of LLDPE resin. Used in other applications because of its excellent physical properties. Prime Resin - Refers to the usage of high-quality, "fresh from the reactor", resin. Blended Resin - Refers to the combination of two or more types of resin. Reprocessed Resin - Refers to resin that has been used at least once before. Can be post-industrial (scrap) or post-consumer (recycling). Property of resin is decreased each time it is reused OR A pseudosolid or solid organic material often of high molecular weight. It has a tendency to flow when subjected to stress, usually has a softening or melting range, and usually fractured conchoidally. OR 1) a substance that is polymeric in structure and predominantly amorphous. 2) an alternative term, like polymer, to the predominately used name of plastic. OR A thick substance that comes from plants or can be made in the laboratory from certain chemicals. Resins do not dissolve in water, and are used in plastics, varnishes, printing inks, medicine, and to make fabrics stiff.

**Resin (Synthetic):** The term is used to designate any polymer that is a basic material for plastics.

**Resin Category :** – a term to loosely define the purity of the resin, or the amount of secondary re-processing. Typical categories include prime, wide-spec, off-spec, virgin, regrind, industrial recycle, consumer recycle, etc.

**Resin Pocket:** An apparent accumulation of excess resin in a small, localized section visible on cut edges of molded surfaces.

**Resin transfer moulding (RTM):** A moulding process in which catalysed resin is injected into a closed mould already containing the preformed reinforcement.

**resiniferatoxin:** A naturally occurring capsaicin analog found in the latex of the cactus *Euphorbia resinifera* with analgesic activity. Resiniferatoxin (RTX) binds to and activates the transient receptor potential vanilloid 1 (TRPV1), a non-selective cation channel in the plasma membrane of primary afferent sensory neurons. This increases the permeability to cations, and leads to an influx of calcium and sodium ions. This results in membrane depolarization, causing an irritant effect, followed by desensitization of the sensory neurons thereby inhibiting signal conduction in afferent pain pathways and causing analgesia. TRPV1, a member of the transient receptor potential channel (TRP) superfamily, is a heat- and chemo-sensitive calcium/sodium ion channel that is selectively expressed in a subpopulation of pain-sensing primary afferent neurons.

**resiquimod:** An imidazoquinolinamine Toll-like receptor (TLR) agonist with potential immunostimulatory activity. Resiquimod binds to and activates TLRs 7 and 8, mainly on dendritic cells (DCs), macrophages, and B-lymphocytes, which results in the activation of the TLR signaling pathway and nuclear translocation of the transcription activator NF- $\kappa$ B and other transcription factors; subsequently, the production of cytokines, especially interferon-alpha (INF- $\alpha$ ), increases, enhancing T-helper 1 (Th1) immune responses. In addition, topical application of resiquimod appears to activate Langerhans cells, which may result in enhanced activation of T-lymphocytes. Due to its immunostimulatory activity, this agent may potentially be useful as a vaccine adjuvant.

**resiquimod :** A substance being studied in the treatment of some types of skin cancer. When put on the skin, resiquimod causes some immune cells to make certain chemicals that may help them kill tumor cells. It is also being studied to find out if adding it to a tumor vaccine improves the antitumor immune response. It is a type of imidazoquinoline and a type of immunomodulator.

**resiquimod topical gel:** A topical gel containing the Toll-like receptor (TLR) agonist resiquimod, an imidazoquinolinamine and with potential immunomodulating activity. Resiquimod binds to TLR7 and 8, mainly on dendritic cells, macrophages, and B-lymphocytes, and activates the TLR signaling pathway, resulting in the induction of the nuclear translocation of transcription activator NF- $\kappa$ B and activation of other transcription factors; subsequently, gene expression increases and the production of cytokines

increases, especially interferon-alpha (INF-a), resulting in the enhancement of T-helper 1 (Th1) immune responses. In addition, topical application of resiquimod appears to activate epidermal Langerhans cells, leading to an enhanced activation of T-lymphocytes.

**Resistance:** property of a conductor that opposed the current flow produced by a given difference of potential. The ohm is the practical unit of resistance. OR The ability of a material to resist passage of electrical current either through its bulk or on a surface. The unit of volume resistivity is the ohm-cm., of surface resistivity, the ohm. OR the opposition which a device or material offers to the flow of current; measured in ohms. OR The opposition of a substance to the passage through it of a steady electric current. From Ohm's Law,  $R = E/I$ , the resistance equals the voltage of the cell divided by the current flow.

**Resistance (electrical):** The opposition offered by a coating to the passage of an electric current through it.

**Resistance transfer factor:** A DNA sequence that allows a plasmid carrying genes for drug resistance to be transferred to other bacteria by conjugation.

**resistant cancer :** Cancer that does not respond to treatment. The cancer may be resistant at the beginning of treatment, or it may become resistant during treatment. Also called refractory cancer.

**resistant starch:** A form of dietary fiber that resists degradation in the small intestine by gastrointestinal (GI) enzymes with potential chemopreventive and prebiotic activity. Upon consumption of resistant starch, the fiber is not metabolized or absorbed in the small intestine and enters the colon unaltered. Once in the colon, the starch is fermented by anaerobic colonic bacteria and produces short-chain fatty acids (SCFA), including butyrate, which has anti-inflammatory and immunoregulatory activities. In addition, butyrate appears to exert antitumor effects by inhibiting tumor cell proliferation, inducing tumor cell differentiation and apoptosis in colorectal cancer cells.

**resistor:** a component of an electrical circuit intended to offer resistance to electrical current flow.

**resminostat:** An orally bioavailable inhibitor of histone deacetylases (HDACs) with potential antineoplastic activity. Resminostat binds to and inhibits HDACs leading to an accumulation of highly acetylated histones.

This may result in an induction of chromatin remodeling, inhibition of the transcription of tumor suppressor genes, inhibition of tumor cell division and the induction of tumor cell apoptosis. HDACs, upregulated in many tumor types, are a class of enzymes that deacetylate chromatin histone proteins.

**resolution:** to resolve; the process of separating enantiomers from a racemic mixture. OR The level of printed detail achieved on parts built through additive manufacturing. Processes like stereolithography and direct metal laser sintering allow for extremely fine resolutions with the smallest of features.

**resolvin Rv:** eicosanoid derivatives that have anti-inflammatory actions that lead to the resolution of the inflammatory cycle, hence the derivation of their names as resolvins

**resonance:** the process by which a substituent either removes electrons from or gives electrons to a  $\pi$  bond in a molecule; a delocalization of electrical charge in a molecule.

**resonance:** the process by which a substituent either removes electrons from or gives electrons to a  $\pi$  bond in a molecule; a delocalization of electrical charge in a molecule. OR Description of the ground state of a molecule with delocalized electrons as an average of several Lewis structures. The actual ground state doesn't switch rapidly between the separate structures: it is an average.

**resonance effect:** If electron density at a particular point in a molecule is higher or lower than what you'd expect from a single Lewis structure, and various canonical structures can be drawn to show how electron delocalization will explain the discrepancy, the difference in electron density is called a "resonance effect" or "mesomeric effect".

**resonance energy:** the difference in energy between the calculated energy content of a resonance structure and the actual energy content of the hybrid structure.

**resonance hybrid:** the actual structure of a molecule that shows resonance. A resonance hybrid possesses the characteristics of all possible drawn structures (and consequently cannot be drawn). It is lower in energy than any structure that can be drawn for the molecule and thus more stable than any of them. OR A molecular structure that is a hybrid of two structures that differ in the locations of some of the electrons. For example,

the benzene ring can be drawn in two ways, with double bonds in different positions. The actual structure of benzene is in-between these two equivalent structures.

**resonance structure:** Possible structures of a molecule for which more than one electron-dot structure can be written, which differ in the bond pairs between atoms. OR various intermediate structures of one molecule that differ from each other only in the positions of their electrons. None of the drawn resonance structures is correct, and the best representation is a hybrid of all the drawn structures.

**resonance structures:** various intermediate structures of one molecule that differ only in the location of the electrons. OR Alternative covalent bonding patterns for a molecule that are equally likely or nearly so.

**resorption :** A process in which a substance, such as tissue, is lost by being destroyed and then absorbed by the body.

**resource:** that amount of a geologic commodity that exists in both discovered and undiscovered deposits.

**Respbid:** (Other name for: theophylline)

**Respiration :** All living cells carry out this reaction. Glucose and oxygen are converted to carbon dioxide and water releasing energy. The energy is used to carry out useful reactions in the cell. OR The catabolic process in which electrons are removed from nutrient molecules and passed through a chain of carriers to oxygen. OR A biochemical process by which living organisms take up oxygen from the environment and consume organic matter, releasing both carbon dioxide and heat. In plants, the organic matter in photosynthate produced during daylight hours. OR An ATP-generating process in which an inorganic compound, such as O<sub>2</sub>, serves as the ultimate electron acceptor; the electron donor can be either an organic compound or an inorganic one.

**respirator :** In medicine, a machine used to help a patient breathe. Also called ventilator.

**respiratory acidosis:** abnormal decrease in the pH of the blood (acidosis) due to decreased ventilation of the pulmonary alveoli, leading to elevated arterial carbon dioxide concentration; primarily caused by alveolar hypoventilation

**respiratory alkalosis:** results from increased alveolar respiration (hyperventilation) leading to decreased plasma carbon dioxide concentration which leads to decreased hydrogen ion and freely ionized blood calcium concentrations

**Respiratory chain:** The path that electrons travel in going from NADH or FADH<sub>2</sub> to O<sub>2</sub>; consists of three complexes that pump protons as a result of the electron transport and two mobile electron carriers. Also called the . OR The electron transfer chain; a sequence of electron-carrying proteins that transfer electrons from substrates to molecular oxygen in aerobic cells.

**Respiratory control:** Tight coupling or coordination of the oxidation of reduced cofactors (NADH and FADH<sub>2</sub>) in the electron-transport chain and the phosphorylation of ADP to yield ATP in the mitochondrion; such control ensures that the rate of the citric acid cycle, where reduced cofactors are generated, corresponds to the demand for ATP.

**respiratory disease :** A type of disease that affects the lungs and other parts of the respiratory system. Respiratory diseases may be caused by infection, by smoking tobacco, or by breathing in secondhand tobacco smoke, radon, asbestos, or other forms of air pollution. Respiratory diseases include asthma, chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, pneumonia, and lung cancer. Also called lung disorder and pulmonary disease.

**respiratory syncytial virus :** A virus that causes respiratory infections with cold-like symptoms. Also called RSV.

**respiratory system :** The organs that are involved in breathing. These include the nose, throat, larynx, trachea, bronchi, and lungs. Also called respiratory tract.

**respiratory therapist :** A health professional trained to evaluate and treat people who have breathing problems or other lung disorders.

**respiratory therapy :** Exercises and treatments that help improve or restore lung function.

**respiratory tract :** The organs that are involved in breathing. These include the nose, throat, larynx, trachea, bronchi, and lungs. Also called respiratory system.

**respite care :** Temporary care given to a person who is unable to care for himself or herself so that the usual caregivers can have a break. Respite care

may include in-home care, adult daycare, or nursing home care.

**response:** The proportion of an exposed population with an effect or the proportion of a group of individuals that demonstrate a defined effect in a given time (e.g., death) (WHO, 1979).

**response :** In medicine, an improvement related to treatment.

**Response Evaluation Criteria In Solid Tumors :** A standard way to measure how well a cancer patient responds to treatment. It is based on whether tumors shrink, stay the same, or get bigger. To use Response Evaluation Criteria In Solid Tumors, there must be at least one tumor that can be measured on x-rays, CT scans, or MRI scans. The types of response a patient can have are a complete response (CR), a partial response (PR), progressive disease (PD), and stable disease (SD). Also called RECIST.

**response rate :** The percentage of patients whose cancer shrinks or disappears after treatment.

**Response time:** the length of time necessary to obtain a stable electrode potential when the electrode is removed from one solution and placed into another of different concentration or temperature. Response time depends on the electrode type, the measuring solution, the magnitude and direction of the concentration change, temperature, and the presence of electrode, if any. The response time can be expressed as the time at which the output reaches 63% ( $1/e$ ) or 95% of its final value, in response to a step changes in concentration.

**responsiveness:** the ability of living things to respond to stimuli in the external environment.

**restaging :** A process used to find out the amount or spread of cancer in the body if it comes back or gets worse after treatment. Restaging may also be done to find out how the cancer responded to treatment. If restaging is done and a new stage is assigned, the new stage will be marked with an “r” in front of it to show that it’s different from the original stage. Usually, the original stage stays the same, even if the cancer comes back or gets worse. The same tests that were done to diagnose the cancer are usually done again. Restaging helps doctors plan the best treatment for cancer that has come back or gotten worse.

**Restasis:** (Other name for: cyclosporine ophthalmic emulsion)

**resting :** In biology, refers to a cell that is not dividing.

**resting potential:** the inactive state of a neuron in which the cytoplasm is negatively charged with respect to the outside of the cell.

**restless legs syndrome :** A condition in which a person has a strong urge to move his or her legs in order to stop uncomfortable sensations. These include burning, itching, creeping, tugging, crawling, or pain. These feelings usually happen when a person is lying or sitting down, and are worse at night. They can also occur in other parts of the body. Also called RLS.

**Restricted area:** Any area to which access is controlled for the protection of individuals from exposure to radiation and radioactive materials.

**Restricted Gate:** A very small orifice between runner and cavity in an injection mold. When the part is ejected, this gate readily breaks free of the runner system. Generally, the part drops through one chute and the runner system through another leading to a granulator and scrap reclaim system.

**restriction endonucleases:** Site-specific endodeoxyribonucleases causing cleavage of both strands of DNA at points within or near the specific site recognized by the enzyme; important tools in genetic engineering.

**restriction enzymes:** catalyze the opening of a DNA molecule at a "restriction" point; many leave dangling ends of DNA molecules at the point where the DNA has been opened.

**Restriction enzymes:** Endonuclease enzymes that recognize specific base sequences in double-stranded DNA and cleave both strands of the duplex at specific places.

**restriction fragment:** A segment of double-stranded DNA produced by the action of a restriction endonuclease on a larger DNA.

**restriction fragment length polymorphisms (RFLPs):** Variations, among individuals in a population, in the length of certain restriction fragments within which certain genomic sequences occur. These variations result from rare sequence changes that create or destroy restriction sites in the genome. OR The genetic diversity within a population indicated by mutations within specific sites in DNA; such mutations alter the position of restriction fragments in electrophoretic gel analysis.

**Restriction-modification system:** A pair of enzymes found in most bacteria (but not eukaryotic cells) The restriction enzyme recognizes a certain sequence in duplex DNA and makes one cut in each unmodified

DNA strand at or near the recognition sequence. The modification enzyme methylates (or modifies) the same sequence, thus protecting it from the action of the restriction enzyme. OR A system such that, for each restriction enzyme that a prokaryote produces, the cell also produces a corresponding methylase that marks the host DNA and prevents its degradation.

**Result of measurement:** a value attributed to a measurand, obtained by measurement.

**resveratrol:** A phytoalexin derived from grapes and other food products with antioxidant and potential chemopreventive activities. Resveratrol induces phase II drug-metabolizing enzymes (anti-initiation activity); mediates anti-inflammatory effects and inhibits cyclooxygenase and hydroperoxidase functions (anti-promotion activity); and induces promyelocytic leukemia cell differentiation (anti-progression activity), thereby exhibiting activities in three major steps of carcinogenesis. This agent may inhibit TNF-induced activation of NF-kappaB in a dose- and time-dependent manner.

**resveratrol :** A substance found in the skins of grapes and in certain other plants, fruits, and seeds. It is made by various plants to help defend against invading fungi, stress, injury, infection, and too much sunlight. It is being studied in the prevention of cancer and heart disease. It is a type of antioxidant and a type of polyphenol.

**resveratrol formulation SRT501:** A proprietary formulation of resveratrol, a polyphenolic phytoalexin derived from grapes and other food products with potential antioxidant, anti-obesity, antidiabetic and chemopreventive activities. Resveratrol may activate sirtuin subtype 1 (SIRT-1). SIRT1 activation has been reported to inhibit tumorigenesis and tumor cell proliferation. SIRT-1 is a member of the silent information regulator 2 (SIR2) (or sirtuin) family of enzymes that plays an important role in mitochondrial activity and acts as a protein deacetylase. SIRT1 appears to be involved in the regulation of numerous transcription factors such as Nf-kB and p53.

**RETAINER PLATE:** The plate on which demountable pieces, such as mold cavities, ejector pins, guide pins, and bushings are mounted during molding: usually drilled for water lines. OR A plate onto which the removable parts of the mold are mounted. OR The plate on which

demountable pieces, such as mold cavities, ejector pins, guide pins, and bushings are mounted during molding; usually drilled for steam or water. OR The plate on which demountable pieces, such as mold cavities, ejector pins, guide pins, and bushings are mounted during molding: usually drilled for water lines. OR The plate on which demountable pieces, such as mold cavities, ejector pins, guide pins and bushings are mounted during molding.

**retaspimycin hydrochloride:** The hydrochloride salt of a small-molecule inhibitor of heat shock protein 90 (HSP90) with antiproliferative and antineoplastic activities. Retaspimycin binds to and inhibits the cytosolic chaperone functions of HSP90, which maintains the stability and functional shape of many oncogenic signaling proteins and may be overexpressed or overactive in tumor cells. Retaspimycin-mediated inhibition of HSP90 promotes the proteasomal degradation of oncogenic signaling proteins in susceptible tumor cell populations, which may result in the induction of apoptosis.

**retch :** The action of the stomach and esophagus to try to vomit (eject some or all of the contents of the stomach). Retching that does not cause vomiting is called dry heaves.

**retention:** The amount of substance that is left of the deposited amount after a certain time. If the retention follows a course in relation to time that is a first-order process, it may be described in terms of biological half-life (WHO, 1979).

**reticular dermis :** The thick bottom layer of the dermis (the inner layer of the skin). The reticular dermis has blood vessels and connective tissue that supports the skin. Hair follicles, oil and sweat glands, and other structures are also found in the reticular dermis.

**retiform hemangioendothelioma :** A rare, slow-growing tumor that usually forms on or under the skin of the arms, legs, and trunk. The tumor has blood vessels that branch out like a tree. Retiform hemangioendotheliomas can spread to nearby tissue and often come back after treatment. They usually do not spread to other parts of the body. They occur in young adults and sometimes children. Retiform hemangioendotheliomas are a type of vascular tumor.

**Retin-A:** (Other name for: tretinoin)

**Retin-A :** A topical preparation of tretinoin that is used to treat acne. Tretinoin is a form of vitamin A.

**Retin-A MICRO:** (Other name for: tretinoin)

**Retin-A-Micro :** A topical preparation of tretinoin that is used to treat acne. Tretinoin is a form of vitamin A.

**retina:** a single layer containing nerve cells within the eye. OR The light-sensitive layers of nerve tissue at the back of the eye that receive images and sends them as electric signals through the optic nerve to the brain.

**Retinal:** The prosthetic group of rhodopsin that, upon absorbing light, undergoes an isomerization from 11-cis-retinal to all-trans-retinal, initiating the visual signal transduction pathway.

**retinoblastoma :** Cancer that forms in the tissues of the retina (the light-sensitive layers of nerve tissue at the back of the eye). Retinoblastoma usually occurs in children younger than 5 years. It may be hereditary or nonhereditary (sporadic).

**retinoic acid :** A nutrient that the body needs in small amounts to function and stay healthy. Retinoic acid is made in the body from vitamin A and helps cells to grow and develop, especially in the embryo. A form of retinoic acid made in the laboratory is put on the skin to treat conditions such as acne and is taken by mouth to treat acute promyelocytic leukemia (a fast-growing cancer in which there are too many immature blood-forming cells in the blood and bone marrow). Retinoic acid is being studied in the prevention and treatment of other types of cancer. Also called all-trans retinoic acid, ATRA, tretinoin, and vitamin A acid.

**retinoid :** Vitamin A or a vitamin A-like compound.

**retinoid 9cUAB30:** A synthetic analogue of 9-cis retinoic acid with potential antineoplastic and chemopreventive activities. Retinoid 9cUAB30 binds to and activates retinoid X receptor (RXR) homodimers and/or and retinoic acid receptor (RAR)/RXR heterodimers, which may result in the dissociation of corepressor protein and the recruitment of coactivator protein, followed by transcription of downstream target genes into mRNAs and protein translation. Gene transcription regulated by these transcription factors may result in inhibition of cell proliferation, induction of cell differentiation, and apoptosis of both normal cells and tumor cells.

**retinoid analogue NRX 195183:** An orally bioavailable retinoid acid receptor (RAR) alpha agonist with potential antineoplastic activity. Retinoid analogue NRX 195183 binds to and activates RAR alpha, modulating the

transcription of genes responsible for cell differentiation and proliferation, which may result in cell differentiation, decreased cell proliferation, and the inhibition of tumorigenesis. Encoded by the RARA gene, RAR alpha is a nuclear receptor and a member of the steroid receptor superfamily.

**retinol:** The fat soluble vitamin retinol. Vitamin A binds to and activates retinoid receptors (RARs), thereby inducing cell differentiation and apoptosis of some cancer cell types and inhibiting carcinogenesis. Vitamin A plays an essential role in many physiologic processes, including proper functioning of the retina, growth and differentiation of target tissues, proper functioning of the reproductive organs, and modulation of immune function. Check for active clinical trials using this agent. or A nutrient that the body needs in small amounts to function and stay healthy. Retinol helps in vision, bone growth, reproduction, growth of epithelium (cells that line the internal and external surfaces of the body), and fighting infections. It is fat-soluble (can dissolve in fats and oils). Retinol is found in liver, egg yolks, and whole milk dairy products from animals and in fish oils. It can also be made in the body from a substance found in some fruits and vegetables, such as cantaloupes, carrots, spinach, and sweet potatoes. Retinol is being studied in the prevention and treatment of some types of cancer. Also called vitamin A.

**retinyl acetate:** A naturally-occurring fatty acid ester form of retinol (vitamin A) with potential antineoplastic and chemopreventive activities. Retinyl acetate binds to and activates retinoid receptors, inducing cell differentiation and decreasing cell proliferation. This agent also inhibits carcinogen-induced neoplastic transformation in some cancer cell types and exhibits immunomodulatory properties.

**retinyl palmitate :** A drug that is being studied in the prevention of cancer. It belongs to the family of drugs called retinoids.

**Retractable Cores :** Used when molding parts in cavities not perpendicular to the direction in which the part is ejected from the mold. The cores are automatically pulled from the mold prior to the mold opening and reinserted when the mold closes again and prior to injection.

**Retracted Length:** The length of a coil when it is not in use. (antonym“working length)

**retrograde motion:** the apparent backward movement of a celestial object.

**Retrograde transport:** The cytoplasmic dynein-driven transport of organelles from the periphery to the center of a cell.

**retromolar trigone :** The small area behind the wisdom teeth.

**retroperitoneal :** Having to do with the area outside or behind the peritoneum (the tissue that lines the abdominal wall and covers most of the organs in the abdomen).

**retropubic prostatectomy :** Surgery to remove part or all of the prostate and some of the tissue around it. Nearby lymph nodes may also be removed. A retropubic prostatectomy may be done through an incision (cut) made in the wall of the lower abdomen, or it may be done using a laparoscope. A laparoscope is a thin, tube-like instrument with a light and lens for viewing. Several small incisions (cuts) are made in the wall of the abdomen, and the laparoscope is inserted through one opening to guide the surgery. Surgical instruments are inserted through the other openings to do the surgery.

**retrospective :** Looking back at events that have already taken place.

**retrospective cohort study :** A research study in which the medical records of groups of individuals who are alike in many ways but differ by a certain characteristic (for example, female nurses who smoke and those who do not smoke) are compared for a particular outcome (such as lung cancer). Also called historic cohort study.

**retrospective study:** A research design which is used to test etiologic hypotheses in which inferences about exposure to the putative causal factor(s) are derived from data relating to characteristics of the persons under study or to events or experiences in their past. The essential feature is that some of the persons under study have the disease or other outcome condition of interest, and their characteristics and past experiences are compared with those of other, unaffected persons. Persons who differ in the severity of the disease may also be compared (from Last, 1983).

**retrospective study :** A study that compares two groups of people: those with the disease or condition under study (cases) and a very similar group of people who do not have the disease or condition (controls). Researchers study the medical and lifestyle histories of the people in each group to learn what factors may be associated with the disease or condition. For example, one group may have been exposed to a particular substance that the other was not. Also called case-control study.

**Retrosynthesis:** In synthetic organic chemistry, is a problem-solving technique used to transform a typically more complex target molecule into simpler, commercially available precursor structures.

**retrovector encoding mutant anti-cyclin G1:** A replication-incompetent, pathotropic, tumor matrix (collagen)-targeted, retroviral vector encoding an N-terminal deletion mutant form of the cyclin G1 gene with potential antineoplastic activity. Under the control of a hybrid long-terminal repeat/cytomegalovirus (CMV) promoter, retrovector encoding mutant anti-cyclin G expresses the mutant cyclin G1 construct, resulting in disruption of tumor cell cyclin G1 activity and decreased cellular proliferation and angiogenesis. This agent preferentially targets collagen of the tumor matrix because of the incorporation of the collagen-binding domain of von Willebrand factor (vWF) on the retrovector surface. Exploiting the collagen-targeting mechanism of vWF permits delivery of the retrovector to tumor sites where angiogenesis and collagen matrix exposure occur.

**Retrovir:** (Other name for: zidovudine)

**retroviral vector :** RNA from a virus that is used to insert genetic material into cells.

**Retrovirus:** A virus that contains an RNA genome but that replicates through the intermediacy of double-stranded DNA that is integrated into the host-cell genome. OR An RNA virus containing a reverse transcriptase. OR A type of virus that has RNA instead of DNA as its genetic material. It uses an enzyme called reverse transcriptase to become part of the host cells' DNA. This allows many copies of the virus to be made in the host cells. The virus that causes AIDS, the human immunodeficiency virus (HIV), is a type of retrovirus.

**Return Path :** The path the belt takes in moving from the discharge back to the infeed.

**Reveal:** The interior surfaces of a bay are the reveals; also used to describe a 'return' of a wall into a window or door opening.

**Revelle factor:** The ratio of the instantaneous fractional change in the partial pressure of CO<sub>2</sub> (pCO<sub>2</sub>) exerted by seawater to the fractional change in total CO<sub>2</sub> dissolved in the ocean waters. The buffer factor relates the partial pressure of CO<sub>2</sub> in the ocean to the total ocean CO<sub>2</sub> concentration at constant temperature, alkalinity and salinity. The Revelle factor is a useful parameter for examining the distribution of CO<sub>2</sub> between the atmosphere

and the ocean, and measures in part the amount of CO<sub>2</sub> that can be dissolved in the mixed surface layer.

**reverse dip-slip fault:** a dip-slip fault in which the hanging wall block has moved upward relative to the footwall block.

**reverse fault:** rocks that crack and are thrust upward, forming an overhang; caused by the compression of rocks.

**reverse osmosis:** Solvent molecules flow spontaneously from a dilute solution through a semipermeable membrane to a more concentrated solution (osmosis). In reverse osmosis, pressure is applied to the more concentrated solution to force the flow of solvent to go from more concentrated to more dilute solution. Reverse osmosis is used to produce fresh water from sea water.

**Reverse transcriptase:** An enzyme that synthesizes DNA from an RNA template, using deoxyribonucleotide triphosphates. OR An enzyme that synthesizes DNA by using an RNA template. OR An RNA-directed DNA polymerase in retroviruses; capable of making DNA complementary to an RNA. OR In biology, the process in cells by which an enzyme makes a copy of DNA from RNA. The enzyme that makes the DNA copy is called reverse transcriptase and is found in retroviruses, such as the human immunodeficiency virus (HIV). Reverse transcription can also be carried out in the laboratory.

**reversible:** thermo (A process or reaction that can be reversed by an infinitesimally small change in conditions. For example, ice and water coexist at 1 atm and 0°C; a very slight temperature increase causes the ice to melt; a tiny temperature decrease causes the water to freeze. Melting or freezing under these conditions can be considered reversible. Reversible processes are infinitesimally close to equilibrium. ) reversible process; reversible reaction. Compare with irreversible and irreversible process.

**Reversible change** : A change that can be undone fairly easily. Often called a physical change or a temporary change.

**Reversible reaction** : Some chemical reactions can be undone. An example is the removal of water from copper sulfate crystals. Heating the crystals (blue) loses water and the crystals become a white powder. If the powder is left to cool and then cold water is added, the powder turns blue and gets very hot. The reaction is reversed and the energy change is

reversed too. Reversible reactions in a closed system can set up an equilibrium. This is usually studied in the context of the Haber process.

**reversible reactions:** Reversible reactions are reactions in which reactants form products and the products can also react with each other to re-form the reactants.

**ReVia :** A drug that blocks the action of opiates (drugs used to treat pain). It may be used in the treatment of intravenous opiate addiction or alcohol dependence. ReVia is also being studied in the treatment of breast cancer. It may block the effects of the hormone estrogen, which causes some breast cancer cells to grow, or block the blood flow to tumors. It is a type of opiate antagonist. Also called naltrexone, naltrexone hydrochloride, and Vivitrol.

**Revimmune:** (Other name for: cyclophosphamide)

**Revival:** (Other name for: soy protein isolate)

**Revlimid :** A drug that is similar to thalidomide, and is used to treat multiple myeloma and certain types of anemia. It is also used to treat mantle cell lymphoma that has come back or has not gotten better after other treatment. It is being studied in the treatment of other conditions and types of cancer. Revlimid may help the immune system kill abnormal blood cells or cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of immunomodulating agent. Also called CC-5013 and lenalidomide.

**RevM10 gene:** RevM10 is a dominant-negative mutant of HIV-1 Rev gene, which encodes a RNA-binding protein involving in nuclear trafficking of unspliced viral mRNAs. Due to the fact that Rev is essential for HIV-1 replication makes it an attractive target for antiviral approaches. Based on the notion of intracellular immunization, in vitro studies that introducing RevM10 gene into stem cells have demonstrated its ability to combat HIV-1 infection in human hematopoietic cells. or An antiviral gene that is being studied in the treatment of cancer in patients who have HIV, the virus that causes AIDS.

**REXIN-G:** (Other name for: retrovector encoding mutant anti-cyclin G1)

**rexinoid NRX194204:** An orally bioavailable synthetic retinoid X receptor (RXR) agonist with potential antineoplastic and anti-inflammatory activities. Rexinoid NRX 194204 selectively binds to and activates RXRs. Because RXRs can form heterodimers with several nuclear receptors (NRs),

RXR activation by this agent may result in a broad range of gene expression depending on the effector DNA response elements activated. Rexinoid NRX 194204 may inhibit the tumor-necrosis factor (TNF)-mediated release of nitric oxide (NO) and interleukin 6 (IL6) and may inhibit tumor cell proliferation. This agent appears to be less toxic than RAR-selective ligands.

**Reye syndrome :** A rare disease that damages the brain and liver and causes death if not treated. It occurs most often in children younger than 15 years who have had a fever-causing virus, such as chickenpox or flu. Taking aspirin during a viral illness may increase the risk of Reye syndrome.

**REYNOLDS NUMBER:** A dimensionless quantity defined as which is equivalent to the ratio of INERTIA forces to VISCOUS forces. The flow is turbulent when the Reynolds number is more than 2100 for tubes. Below 2100 the flow is laminar (i.e. streamlines without disturbances). For molten polymer flow, the Reynolds Number is usually in the range  $10^{-4}$  to  $10^{-2}$  (see also CREEPING FLOW).

**Rezulin:** (Other name for: troglitazone)

**RF:** Radio-Frequency

**rF-TRICOM :** A cancer vaccine made with a form of a chicken virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins that may help immune cells in the body kill tumor cells. Also called recombinant fowlpox-TRICOM vaccine.

**RFLP:** restriction fragment length polymorphism; a technique using small bits of DNA fragments linked to various diseases.

**RFS:** In cancer, the length of time after primary treatment for a cancer ends that the patient survives without any signs or symptoms of that cancer. In a clinical trial, measuring the RFS is one way to see how well a new treatment works. Also called DFS, disease-free survival, and relapse-free survival.

**RFT5-dgA immunotoxin:** A recombinant immunotoxin consisting of the anti-CD25 monoclonal antibody RFT5 fused to the deglycosylated ricin A-chain (dgA) with potential antitumor activity. The monoclonal antibody moiety of RFT5-dgA immunotoxin attaches to CD25 (the alpha chain of the IL-2 receptor complex) on the cell membrane; after internalization, the dgA

moiety cleaves the N-glycosidic bond between the ribose and adenine base at position 4324 in 28S ribosomal RNA, resulting in ribosome inactivation, inhibition of protein synthesis, and cell death. CD25 is expressed on activated normal T and B cells and macrophages and is frequently upregulated in many hematologic malignancies. or A monoclonal antibody linked to a toxic substance. It is being studied in the treatment of melanoma that has spread to distant parts of the body. RFT5-dgA immunotoxin is made in the laboratory. It can find and kill certain white blood cells that prevent the immune system from killing cancer cells. Also called IgG-RFT5-dgA.

**RG7204:** A drug used to treat advanced melanoma that has a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. RG7204 blocks this mutated protein, which may stop the growth of cancer cells. It is a type of kinase inhibitor and a type of targeted therapy agent. Also called BRAF (V600E) kinase inhibitor RO5185426, PLX4032, vemurafenib, and Zelboraf.

**rhabdoid tumor :** A malignant tumor of either the central nervous system (CNS) or the kidney. Malignant rhabdoid tumors of the CNS often have an abnormality of chromosome 22. These tumors usually occur in children younger than 2 years.

**rhabdomyosarcoma :** Cancer that forms in the soft tissues in a type of muscle called striated muscle. Rhabdomyosarcoma can occur anywhere in the body.

**rhEndostatin:** (Other name for: recombinant human endostatin)

**Rhenium:** Symbol:"Re" Atomic Number:"75" Atomic Mass: 186.21amu. This is one of the transition elements. Rhenium is never found free in nature, always bonded to other elements. This silvery-white metal is used in many alloys, flash photography, and even experiments with superconductivity.

**rhenium Re 188 BMEDA-liposome:** A liposome-based preparation consisting of the beta- and gamma-emitting radionuclide rhenium Re 188 (Re 188) linked to the chelator N,N-bis (2-mercaptoethyl)-N',N'-diethylethylenediamine (BMEDA) and encapsulated in liposomes, with potential tumor imaging and antineoplastic activities. Upon intravenous infusion of rhenium Re 188 BMEDA-labeled liposomes, the liposomes selectively target tumor cells, facilitate the retention of the radioisotope by

those cells, and cause localized antitumor radiocytotoxicity while sparing surrounding normal, healthy cells. In addition, Re 188 BMEDA-labeled liposomes can be used for imaging purposes. Re 188 has a short half-life and a short path length, which further contribute to limiting the radiotoxicity to the tumor cells. Check for active clinical trials using this agent.

**rhodium Re 188 ethiodized oil:** A rhodium (Re) 188 conjugate of ethiodized oil (lipiodol), an iodinated ethyl ester derived from poppy seed oil, with potential antineoplastic activity. Upon hepatic intra-arterial injection rhodium Re 188 ethiodized oil accumulates in hepatocellular carcinoma (HCC) tumor cells, thereby delivering a cytotoxic dose of radiation through Re 188 directly to the tumor cells. This may kill tumor cells while sparing surrounding normal cells and tissues. Compared to iodine I 131, Re 188 has a shorter half-life.

**RHEOLOGY:** The study of the behavior of materials as they are deformed. OR The science of deformation and flow of materials including polymers. Viscosity, elongational viscosity, normal stresses, relaxation time,  $G'$ ,  $G''$ , etc. are rheological properties. OR Study of the deformation and flow of matter in terms of stress, strain and time.

**rheumatism :** A group of disorders marked by inflammation or pain in the connective tissue structures of the body. These structures include bone, cartilage, and fat.

**rheumatoid arthritis :** An autoimmune disease that causes pain, swelling, and stiffness in the joints, and may cause severe joint damage, loss of function, and disability. The disease may last from months to a lifetime, and symptoms may improve and worsen over time.

**Rheumatex :** A drug used to treat some types of cancer, rheumatoid arthritis, and severe skin conditions, such as psoriasis. Rheumatex stops cells from making DNA and may kill cancer cells. It is a type of antimetabolite. Also called amethopterin, methotrexate, and MTX.

**RHF:** Spin-restricted Hartree-Fock. Closed-shell singlet with two electrons in each occupied orbital.

**rhIL-11:** A drug used to increase the number of blood cells, especially platelets, in some cancer patients receiving chemotherapy. rhIL-11 is a form of interleukin-11 (a cytokine normally made by support cells in the bone marrow) that is made in the laboratory. It is a type of biological response

modifier. Also called Neumega, oprelvekin, and recombinant human interleukin-11.

**rhinoscope** : A thin, tube-like instrument used to examine the inside of the nose. A rhinoscope has a light and a lens for viewing and may have a tool to remove tissue. Also called nasoscope.

**rhinoscopy** : Examination of the inside of the nose using a rhinoscope. A rhinoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called nasoscopy.

**rhizoxin**: A macrocyclic lactone. Rhizoxin binds to tubulin and inhibits microtubule assembly, thereby inducing cytotoxicity. This agent also may inhibit endothelial cell-induced angiogenic activity, which may result in decreased tumor cell proliferation.

**rhizoxin** : A substance that is being studied in the treatment of cancer. It comes from a fungus and is similar to vinca alkaloid drugs. It belongs to the family of drugs called antimitotic agents.

**Rho factor**: A protein involved in the termination of transcription of some messenger RNAs.

**Rho protein**: An ATP-dependent bacterial helicase that breaks the RNA-DNA hybrid at the transcription bubble, and thereby terminates transcription.

**Rhodium**: Symbol:"Rh" Atomic Number:"45" Atomic Mass: 102.91amu. Rhodium is one of the transition elements and in the platinum family. Rhodium is often used to harden platinum and found in spark plugs and highly reflective materials.

**rhodopsin**: a light-sensitive pigment of the eye that functions in the detection of light. OR The photoreceptor of rod cells. It is composed of the protein opsin and the prosthetic group 11-cis-retinal.

**Rhodopsin kinase**: An enzyme that phosphorylates activated rhodopsin at multiple serine and threonine residues to provide a binding site for the inhibitory protein arrestin.

**Rhombohedral crystal class**: A subclass of the trigonal crystal class containing a three-fold rotation axis along a diagonal of the unit cell. This class contains 7 space groups and has two restrictions: 1) the lengths of the

three axes are equal, and 2) the three angles are equal, but need not equal  $90^\circ$ .

**rhombus:** a parallelogram with four equal sides.

**rhubarb :** The root of this plant has been used in some cultures to treat certain medical problems. It may have anti-inflammatory and anticancer effects. The scientific name is *Rheum palmatum* or *Rheum officinale*. Also called Chinese rhubarb, da-huang, Indian rhubarb, and Turkish rhubarb.

**rhubarb/licorice herbal supplement:** A decoction of rhubarb root (Da Huang) and licorice root (Gan Cao) used in Chinese Herbal Medicine. Upon ingestion, the rhubarb/licorice herbal supplement may help improve appetite. Check for active clinical trials using this agent.

**ribavirin:** A synthetic nucleoside analogue of ribofuranosyl with antiviral activity. Ribavirin incorporates into viral nucleic acid, inhibits viral ribonucleic acid (RNA) synthesis, induces viral genome mutations, and inhibits normal viral replication. Ribavirin shows activity against a variety of RNA viruses, especially hepatitis C virus. Check for active clinical trials using this agent. or A drug used to treat respiratory syncytial virus (RSV) infection in the lungs.

**ribociclib:** An orally available cyclin-dependent kinase (CDK) inhibitor targeting cyclin D1/CDK4 and cyclin D3/CDK6 cell cycle pathway, with potential antineoplastic activity. Ribociclib specifically inhibits CDK4 and 6, thereby inhibiting retinoblastoma (Rb) protein phosphorylation. Inhibition of Rb phosphorylation prevents CDK-mediated G1-S phase transition, thereby arresting the cell cycle in the G1 phase, suppressing DNA synthesis and inhibiting cancer cell growth. Overexpression of CDK4/6, as seen in certain types of cancer, causes cell cycle deregulation.

**Riboflavin:** A vitamin component of the electron-transfer coenzymes FAD, FADH<sub>2</sub>, FMN, and FMNH<sub>2</sub>. Also called vitamin B<sub>2</sub>. OR An essential human nutrient that is a heat-stable and water-soluble flavin belonging to the vitamin B family. Riboflavin is a precursor of the coenzymes flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD). These coenzymes are of vital importance in normal tissue respiration, pyridoxine activation, tryptophan to niacin conversion, fat, carbohydrate, and protein metabolism, and glutathione reductase mediated detoxification. Riboflavin may also be involved in maintaining erythrocyte integrity. This vitamin is essential for healthy skin, nails, and hair. or A

nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Riboflavin helps make red blood cells, helps some enzymes work properly, and keeps skin, nails, and hair healthy. It is found in milk, eggs, malted barley, organ meats, yeast, and leafy vegetables. Riboflavin is water-soluble (can dissolve in water) and must be taken in every day. Not enough riboflavin can cause anemia (a low number of red blood cells), mouth sores, and skin problems. Amounts of riboflavin may be higher in the blood of patients with some types of cancer. Also called vitamin B2.

**ribonuclease:** A nuclease that catalyzes the hydrolysis of certain internucleotide linkages of RNA.

**ribonuclease QBI-139:** A nuclease of mammalian origin that cleaves the phosphodiester bond between nucleotides of ribonucleic acids with potential antineoplastic activity. Ribonuclease QBI-139 catalyzes the hydrolysis and degradation of RNA leading to the inhibition of protein synthesis and cell death.

**ribonucleic acid :** One of two types of nucleic acid made by cells. Ribonucleic acid contains information that has been copied from DNA (the other type of nucleic acid). Cells make several different forms of ribonucleic acid, and each form has a specific job in the cell. Many forms of ribonucleic acid have functions related to making proteins. Ribonucleic acid is also the genetic material of some viruses instead of DNA. Ribonucleic acid can be made in the laboratory and used in research studies. Also called RNA.

**Ribonucleoproteins:** Macromolecular complexes whose optimal activity depends on the presence of specific rnas and proteins; ribosomes are ribonucleoproteins.

**Ribonucleotide:** A nucleotide that contains a purine or pyrimidine base covalently linked to a ribose, which is in turn linked to one or more phosphate groups. OR A nucleotide containing n-ribose as its pentose component.

**Ribonucleotide reductase:** An enzyme that catalyzes the reduction of all four ribonucleotides to deoxyribonucleotides.

**ribonucleotide reductase inhibitor :** A family of anticancer drugs that interfere with the growth of tumor cells by blocking the formation of deoxyribonucleotides (building blocks of DNA).

**Ribose:** The five-carbon sugar found in RNA. OR A five-carbon monosaccharide (C<sub>5</sub>H<sub>10</sub>O<sub>5</sub>) that constitutes the carbohydrate moiety of ATP, other ribonucleosides and ribonucleotides, and cofactors such as NAD and coenzyme A.

**Ribosomal RNA:** The RNA component of a ribosome, the site of protein synthesis. OR The RNA parts of the ribosome. OR A class of RNA molecules serving as components of ribosomes.

**Ribosome:** A large ribonucleoprotein assembly that catalyzes the formation of peptide bonds; a molecular machine that coordinates protein synthesis. OR organelle bodies that may be bound to the ER that are the sites of protein synthesis in eukaryotic cells; the bodies in which amino acids are bound together to form proteins. OR Small cellular particles made up of ribosomal RNA and protein. They are the site, together with mRNA, of protein synthesis.

**ribosome:** A supramolecular complex of rRNAs and proteins, approximately 18 to 22 nm in diameter; the site of protein synthesis.

**ribosome :** In biology, a structure found inside cells that is involved in making proteins. Ribosomes help link amino acids together to form proteins.

**ribosome-inactivating protein CY503:** A recombinant protein that inactivates the ribosome with potential antineoplastic and immunomodulating activities. Ribosome-inactivating protein CY503 binds to the cell surface sialyltransferase CD75 and is internalized; intracellularly, CY503 cleaves an adenine-specific N-glycosidic bond on the 28S ribosomal subunit, which may result in tumor cell apoptosis. This agent has also been shown to activate natural killer (NK) cells, induce cytokine receptor expression, and stimulate the release of cytokines. CD75 is expressed on mature B-cells and subsets of T-cells and erythrocytes.

**Riboxamide:** (Other name for: tiazofurin)

**Ribs:** A thin support features (usually triangle shape) on a part that are used for strengthening wall sections and bosses. OR A thin, wall-like feature parallel to the mold opening direction, common on plastic parts and used to add support to walls or bosses. OR A reinforcing member of a fabricated or molded part. OR A reinforcing member of a fabricated or molded part.

**rice bran:** The nutrient-rich hard outer layer of the rice cereal grain, with potential chemopreventive, antioxidant, iron chelating, anticholesterol and anti-inflammatory activities. Rice bran is rich in fiber, such as beta-glucan, pectin and gum; it also comprises vitamins and minerals, such as iron, magnesium and phosphorus, and essential fatty acids. In addition, Rice bran contains various bioactive components, including ferulic acid, tricin, beta-sitosterol, gamma-oryzanol, phytic acid, and inositol hexaphosphate (IP6). The potential anticancer activity of rice bran may be due to the synergistic effects of these phytochemicals on their ability to induce apoptosis, inhibit cell proliferation, and alter cell cycle progression in cancer cells. Rice bran's bioactive components also protect against tissue damage by scavenging free radicals and blocking chronic inflammatory responses. In addition, they are able to modulate the gut microflora and carcinogen-metabolizing enzymes, thereby further exerting a chemopreventive effect.

**Richter scale:** a numerical scale that lists earthquake magnitude in logarithmic increments from about 2 to 8.6. OR scale for measuring earthquakes based on energy released.

**Richter syndrome :** A rare condition in which chronic lymphocytic leukemia (CLL) changes into a fast-growing type of lymphoma. Symptoms of Richter syndrome include fever, loss of weight and muscle mass, and other health problems. Also called Richter transformation.

**Richter transformation :** A rare condition in which chronic lymphocytic leukemia (CLL) changes into a fast-growing type of lymphoma. Symptoms of Richter transformation include fever, loss of weight and muscle mass, and other health problems. Also called Richter syndrome.

**Rickets:** A disease caused by the insufficient formation of vitamin D, resulting in the inadequate calcification of cartilage and bone. OR A condition in children in which bones become soft and deformed because they don't have enough calcium and phosphorus. It is caused by not having enough vitamin D in the diet or by not getting enough sunlight. In adults, this condition is called osteomalacia. Also called infantile rickets, juvenile rickets, and rachitis.

**ricolinostat:** An orally bioavailable, specific inhibitor of histone deacetylase 6 (HDAC6) with potential antineoplastic activity. Ricolinostat selectively targets and binds to HDAC6, thereby disrupting the Hsp90 protein chaperone system through hyperacetylation of Hsp90 and

preventing the subsequent aggresomal protein degradation. This leads to an accumulation of unfolded and misfolded ubiquitinated proteins and may eventually induce cancer cell apoptosis, and inhibition of cancer cell growth. HDAC6, a class II HDAC deacetylase located in the cytoplasm, appears to play a key role in the formation and activation of the aggresomes needed for degradation of misfolded proteins. Compared to non-selective HDAC inhibitor, ricolinostat is able to reduce the toxic effects on normal, healthy cells.

**ridaforolimus:** A small molecule and non-prodrug analogue of the lipophilic macrolide antibiotic rapamycin with potential antitumor activity. Ridaforolimus binds to and inhibits the mammalian target of rapamycin (mTOR), which may result in cell cycle arrest and, consequently, the inhibition of tumor cell growth and proliferation. Upregulated in some tumors, mTOR is a serine/threonine kinase involved in regulating cellular proliferation, motility, and survival that is located downstream of the PI3K/Akt signaling pathway. or A substance being studied in the treatment of soft tissue and bone cancers. It is also being studied in the treatment of other solid tumors and hematologic cancer. Ridaforolimus stops cells from dividing and may cause cancer cells to die. It is a type of mTOR inhibitor. Also called AP23573.

**Ridaura:** (Other name for: auranofin)

**ridge-push:** a term that refers to the cooling and sinking of new crust as it moves away from a midoceanic ridge along a deeper lithospheric plane of weakness.

**Rieske center:** An unusual 2Fe-2S center in that one of the iron ions is coordinated by two histidine residues rather than by two cysteine residues.

**Rietveld method:** A computational treatment of diffraction data that creates an effective separation of the overlapping data in a typical powder X-ray diffraction pattern, thereby often allowing an accurate determination of the structure without the need of single-crystal data.

**rifabutin:** A semisynthetic ansamycin antibiotic with potent antimycobacterial properties. Rifabutin inhibits bacterial DNA-dependent RNA polymerase, thereby suppressing the initiation of RNA formation and leading to inhibition of RNA synthesis and transcription. Check for active clinical trials using this agent. or A drug used to prevent the spread of a bacterium called in patients with advanced HIV (the virus that causes

AIDS) infection. It blocks an enzyme that the bacteria need to grow. It is a type of antibiotic. Also called Mycobutin.

**rifampin :** A drug used in the treatment of infections caused by bacteria. It belongs to the family of drugs called antibiotics. OR An orally administered, semi-synthetic, nonsystemic antibiotic derived from rifamycin SV with antibacterial activity. Rifaximin binds to the beta-subunit of bacterial DNA-dependent RNA polymerase, inhibiting bacterial RNA synthesis and bacterial cell growth. As rifaximin is not well absorbed, its antibacterial activity is largely localized to the gastrointestinal tract.

**Rifamycin:** An antibiotic isolated from *Streptomyces* that inhibits the initiation of RNA synthesis by blocking the formation of the first phosphodiester bond.

**rift eruption:** lava flows in long, narrow cracks of the Earth's crust.

**rift valley:** a large crack in the crest of a midoceanic ridge that typically forms a graben-type valley. OR the space between diverging plates.

**right angle:** An angle that measures 90 degrees. OR an angle whose measure is equal to  $90^\circ$ .

**right atrium:** the chamber of the human heart in which oxygen-poor blood enters through a major vein called the vena cava.

**right circular cylinder:** a solid shaped like a can. Base meets side at a right angle.

**right triangle:** A triangle with one right angle. OR a triangle containing a  $90^\circ$  angle.

**right ventricle:** the pumping chamber of the human heart from which blood exits.

**right-lateral strike-slip fault:** a strike-slip fault in which the block across the fault appears to have moved to the right.

**Rigid Plastics:** For purpose of general classification, a plastic that has a modulus of elasticity either in flexure or in tension greater than 100,000 psi at 23 degrees C and 50% relative humidity when tested in accordance with ASTM Methods D 747 or D 790 Test for stiffness of plastics.

**Rigid PVC:** Polyvinyl chloride or a polyvinyl chloride/acetate copolymer characterized by a relatively high degree of hardness; it may be formulated with or without a small percentage of plasticizer.

**Rigid Resin:** Having a modulus high enough to be of practical importance, e.g., 10,000 psi or greater.

**Rigidification:** Drug design technique used to restrict free rotation about rotatable bonds.

**rigosertib sodium:** A synthetic benzyl styryl sulfone analogue with potential antineoplastic activity. Rigosertib sodium inhibits polo-like kinase1 (Plk1), inducing selective G2/M arrest followed by apoptosis in a variety of tumor cells while causing reversible cell arrest at the G1 and G2 stage without apoptosis in normal cells. This agent may exhibit synergistic antitumor activity in combination with other chemotherapeutic agents. Plk1, named after the polo gene of *Drosophila melanogaster*, is a serine/threonine protein kinase involved in regulating mitotic spindle function in a non-ATP competitive manner.

**rilimogene galvacirepvec:** A vaccine formulation consisting of recombinant vaccinia virus encoding prostate specific antigen (PSA) and recombinant vaccinia virus encoding three co-stimulatory molecule transgenes B7.1, ICAM-1, and LFA-3 (TRICOM). Vaccination with PSA in combination with TRICOM may enhance antigen presentation, resulting in the augmentation of a cytotoxic T cell (CTL) immune response against tumor cells expressing PSA.

**rill:** a concentration of sheetwash into a small channel; rills merge to form larger streams.

**rilotumumab:** A fully human IgG2 monoclonal antibody directed against the human hepatocyte growth factor (HGF) with potential antineoplastic activity. Rilotumumab binds to and neutralizes HGF, preventing the binding of HGF to its receptor c-Met and so c-Met activation; inhibition of c-Met-mediated signal transduction may result in the induction of apoptosis in cells expressing c-Met. c-Met (HGF receptor or HGFR), a receptor tyrosine kinase overexpressed or mutated in a variety of epithelial cancer cell types, plays a key role in cancer cell growth, survival, angiogenesis, invasion, and metastasis.

**Rilutek :** A drug used to treat a nerve disease called amyotrophic lateral sclerosis (ALS). It is also being studied in the treatment of melanoma (a type of skin cancer). Rilutek blocks the release of a substance that melanoma cells need to grow. It is a type of glutamate release inhibitor. Also called riluzole.

**riluzole:** A benzothiazole derivative with neuroprotective and potential anti-depressant and anxiolytic activities. While the mechanism of action of riluzole is unknown, its pharmacological activities in motor neurons include the following, some of which may be related to its effect: 1) an inhibitory effect on glutamate release, 2) inactivation of voltage-dependent sodium channels, and 3) interference with intracellular events that follow transmitter binding at excitatory amino acid receptors. In animal models, this agent has been shown to exhibit myorelaxant and sedative activities, apparently due to the blockade of glutamatergic neurotransmission. or A drug used to treat a nerve disease called amyotrophic lateral sclerosis (ALS). It is also being studied in the treatment of melanoma (a type of skin cancer). Riluzole blocks the release of a substance that melanoma cells need to grow. It is a type of glutamate release inhibitor. Also called Rilutek.

**rimiducid:** A lipid-permeable tacrolimus analogue with homodimerizing activity. Rimiducid homodimerizes an analogue of human protein FKBP12 (Fv) which contains a single acid substitution (Phe36Val) so that AP1903 binds to wild-type FKBP12 with 1000-fold lower affinity. This agent is used to homodimerize the Fv-containing drug-binding domains of genetically engineered receptors such as the iCD40 receptor of the autologous dendritic cell vaccine BP-GMAX-CD1, resulting in receptor activation. Check for active clinical trials using this agent.

**rindopepimut:** A cancer vaccine consisting of a human epidermal growth factor receptor variant III (EGFRvIII)-specific peptide conjugated to the non-specific immunomodulator keyhole limpet hemocyanin (KLH) with potential antineoplastic activity. Vaccination with rindopepimut may elicit a cytotoxic T-lymphocyte (CTL) immune response against tumor cells expressing EGFRvIII. EGFRvIII, a functional variant of EGFR that is not expressed in normal tissues, was originally discovered in glioblastoma multiforme (GBM) and has also been found in various other cancers such as breast, ovarian, metastatic prostate, colorectal, and head and neck cancers. EGFRvIII contains an 83 amino acid deletion in its extracellular domain and has been shown to transform NIH/3T3 mouse embryonic fibroblast cells in vitro.

**Ring Gate:** Used on some cylindrical shapes. This gate encircles the core to permit the melt to first move around the core before filling the cavity.

**ring structure:** a molecule in which the end atoms have bonded, forming a ring rather than a straight chain. OR a molecule in which the end atoms have bonded, forming a ring rather than a straight chain.

**ring-opening reaction:** a reaction that causes a cyclic structure to form a straight chain.

**rintatolimod:** A synthetic derivative of inosinic acid with antiretroviral and immunomodulatory activities. Rintatolimod acts through a number of pathways to stimulate the antiviral activity of the immune system. This agent stimulates interferon production; activates the oligoadenylate synthase-RNase L pathway; stimulates natural killer cell activity; and acts as a non-mitogenic stimulator of the immune system. Rintatolimod also inhibits replication of the human immunodeficiency virus (HIV) in vitro.

**Riomet:** (Other name for: metformin hydrochloride)

**rip current:** a narrow channel of water that flows straight back out to sea after its waves have broken on the beach.

**rip currents:** strong surface currents that move like small rivers perpendicular to the shoreline, caused by water returning from the beach to the ocean.

**ripple marks:** gentle, repeated ridges, usually in sand or silt, that form perpendicular to the flow of wind or water.

**risedronate :** A substance that is being studied in the prevention and treatment of osteoporosis. It belongs to the family of drugs called bone resorption inhibitors.

**risedronate sodium:** The hemipentahydrate monosodium salt of risedronic acid, a synthetic pyridinyl bisphosphonate. Risedronic acid binds to hydroxyapatite crystals in bone and inhibits osteoclast-dependent bone resorption.

**Riser:** The vertical face of a step or stair.

**risk:** The probability that an event will occur, e.g., that an individual will become ill or die within a stated period of time or age. Also, a nontechnical term encompassing a variety of measures of the probability of a (generally) unfavourable outcome (Last, 1988). Risk should not be confused with the term "hazard". Risk is most correctly applied to predicted or actual frequency of occurrence of an adverse effect of a chemical or other hazard. OR The combined answer to three questions that consider (1) what can go

wrong, (2) how likely it is, and (3) what its consequences might be. These three questions allow the NRC to understand likely outcomes, sensitivities, areas of importance, system interactions, and areas of uncertainty, which can be used to identify risk-significant scenarios. For additional detail, see Risk Assessment in Regulation and the Fact Sheet on Nuclear Reactor Risk.

**risk assessment:** A combination of hazard identification, quantification of risk resulting from a specific use or occurrence of a chemical, taking into account the possible harmful effects on individual people or society of using the chemical in the amount and manner proposed and all the possible routes of exposure. Quantification ideally requires the establishment of dose-effect and dose-response relationships in likely target individuals and populations. Compare "risk evaluation".

**risk assessment :** The quantitative or qualitative assessment of an individual's risk of carrying a certain gene mutation, or developing a particular disorder, or of having a child with a certain disorder; sometimes done by using mathematical or statistical models incorporating such factors as personal health history, family medical history and ethnic background. OR A process used to estimate the risk that a certain event will happen. In medicine, this may include a person's risk of having a child with a certain condition or disease, such as cancer. It may also be used to estimate the risk of carrying a certain gene mutation (change), or of having an adverse event (unexpected medical problem) in response to certain types of drugs or other substances. A risk assessment may be done by collecting information about a person's age, sex, personal and family medical history, ethnic background, lifestyle, and other factors and using statistics tools to calculate risk.

**risk assessment management process:** A global term for the whole activity from hazard identification to risk management (WHO, 1988).

**risk characterization:** The outcome of hazards identification and risk estimation applied to a specific use or occurrence of an environmental health hazard (e.g., a chemical compound). The assessment requires quantitative data on the human exposure in the specific situation. The end product is a quantitative statement about the proportion of affected people in a target population (WHO, 1988).

**risk estimation:** The quantification of dose-effect and dose-response relationships for a given environmental agent, showing the probability and

nature of the health effects of exposure to the agent (WHO, 1988).

**risk evaluation:** Risk evaluation involves the establishment of qualitative or quantitative relationship between risks and benefits, involving the complex process of determining the significance of identified hazards and estimated risks to those organisms or people concerned with or affected by them.

**risk factor :** Something that increases the chance of developing a disease. Some examples of risk factors for cancer are age, a family history of certain cancers, use of tobacco products, being exposed to radiation or certain chemicals, infection with certain viruses or bacteria, and certain genetic changes.

**risk group :** In medicine, risk groups are used to describe people who are alike in important ways. For example, patients with the same type of cancer may be divided into different risk groups that depend on certain aspects of their disease. These risk groups may be based on the patients' chance of being cured (good versus poor) or the chance that their disease will come back (high versus low). Treatment may be based on which risk group a patient falls into. Risk groups can also be used to describe people who share traits and behaviors that affect their chance of developing a disease. For example, people who do not smoke are in a lower risk group for lung cancer than people who smoke.

**risk management:** The managerial, decision-making and control process to deal with those environmental agents for which risk evaluation has indicated that the risk is too high (WHO, 1988).

**risk marker :** An attribute that is associated with an increased probability of occurrence of a disease or other specified outcome and that can be used as an indicator of this increased risk. Not necessarily a causal factor (Last, 1988).

**risk monitoring:** The process of following up decisions and actions within risk management in order to check whether the aims of reduced exposure and risk are achieved (WHO, 1988).

**risk ratio :** A measure of the risk of a certain event happening in one group compared to the risk of the same event happening in another group. In cancer research, risk ratios are used in prospective (forward looking) studies, such as cohort studies and clinical trials. A risk ratio of one means there is no difference between two groups in terms of their risk of cancer,

based on whether or not they were exposed to a certain substance or factor, or how they responded to two treatments being compared. A risk ratio of greater than one or of less than one usually means that being exposed to a certain substance or factor either increases (risk ratio greater than one) or decreases (risk ratio less than one) the risk of cancer, or that the treatments being compared do not have the same effects. Also called relative risk.

**Risk-based decisionmaking:** An approach to regulatory decisionmaking that considers only the results of a probabilistic risk assessment. For additional detail, see Risk Assessment in Regulation and the Fact Sheet on Nuclear Reactor Risk.

**Risk-informed decisionmaking:** An approach to regulatory decisionmaking, in which insights from probabilistic risk assessment are considered with other engineering insights. For additional detail, see Risk Assessment in Regulation and the Fact Sheet on Nuclear Reactor Risk.

**Risk-informed regulation:** An approach to regulation taken by the NRC, which incorporates an assessment of safety significance or relative risk. This approach ensures that the regulatory burden imposed by an individual regulation or process is appropriate to its importance in protecting the health and safety of the public and the environment. For additional detail, see Risk Assessment in Regulation and the Fact Sheet on Nuclear Reactor Risk.

**Risk-significant:** "Risk-significant" can refer to a facility's system, structure, component, or accident sequence that exceeds a predetermined limit for contributing to the risk associated with the facility. The term also describes a level of risk exceeding a predetermined "significance" level. For additional detail, see Risk Assessment in Regulation and the Fact Sheet on Nuclear Reactor Risk.

**Risperdal :** A drug used to treat certain mental disorders, such as schizophrenia and bipolar disease. It may also be used to treat certain behavior problems in children. Risperdal blocks the action of certain chemicals in the brain. It is a type of antipsychotic. Also called risperidone.

**risperidone :** A drug used to treat certain mental disorders, such as schizophrenia and bipolar disease. It may also be used to treat certain behavior problems in children. Risperidone blocks the action of certain chemicals in the brain. It is a type of antipsychotic. Also called Risperdal.

**ristocetin:** an antibiotic isolated from *Amycolasis lurida* that used to be used to treat staphylococcal infections. Ristocetin induces binding of von Willebrand factor to platelet glycoprotein Ib (GPIb)

**Ritalin :** A drug used to treat certain behavior disorders, such as attention deficit hyperactivity disorder (ADHD). It is also being studied as a way to improve brain function in patients treated with anticancer drugs. Ritalin acts on certain parts of the brain. It is a type of central nervous system stimulant. Also called Concerta and methylphenidate hydrochloride.

**ritonavir:** A synthetic aromatic derivative with antiviral properties. Ritonavir is a peptidomimetic agent that inhibits both HIV-1 and HIV-2 proteases, thereby preventing the cleavage of Gag-Pol polyproteins and resulting in the production of noninfectious viral particles. This agent is more active against HIV-1. Because ritonavir targets the HIV replication cycle after translation and before assembly, it is active in chronically infected cells that generally are not affected by nucleoside reverse transcriptase inhibitors. Check for active clinical trials using this agent. or A drug used to treat infection with HIV (the virus that causes AIDS). It is also being studied in the treatment of some types of cancer. Ritonavir blocks the ability of HIV to make copies of itself and may block the growth of cancer cells. It is a type of anti-HIV agent and a type of protease inhibitor. Also called Norvir.

**ritual :** An action or series of actions that is repeated, often in a religious or social setting. In medicine, it may describe a repeated action (such as hand washing) done to relieve feelings of fear, dread, and uneasiness in people who have an obsessive-compulsive disorder.

**Rituxan :** A drug used to treat certain types of B-cell non-Hodgkin lymphoma. It is also used with other drugs to treat chronic lymphocytic leukemia and rheumatoid arthritis. It is being studied in the treatment of other types of cancer and other conditions. Rituxan binds to a protein called CD20, which is found on B-cells, and may kill cancer cells. It is a type of monoclonal antibody. Also called rituximab.

**rituximab:** A recombinant chimeric murine/human antibody directed against the CD20 antigen, a hydrophobic transmembrane protein located on normal pre-B and mature B lymphocytes. Following binding, rituximab triggers a host cytotoxic immune response against CD20-positive cells. or A drug used to treat certain types of B-cell non-Hodgkin lymphoma. It is also

used with other drugs to treat chronic lymphocytic leukemia and rheumatoid arthritis. It is being studied in the treatment of other types of cancer and other conditions. Rituximab binds to a protein called CD20, which is found on B-cells, and may kill cancer cells. It is a type of monoclonal antibody. Also called Rituxan.

**rivaroxaban:** An orally bioavailable oxazolidinone derivative and direct inhibitor of the coagulation factor Xa with anticoagulant activity. Upon oral administration, rivaroxaban selectively binds to both free factor Xa and factor Xa bound in the prothrombinase complex. This interferes with the conversion of prothrombin (factor II) to thrombin and eventually prevents the formation of cross-linked fibrin clots. Rivaroxaban does not affect existing thrombin levels.

**rivastigmine tartrate:** The tartrate salt form of rivastigmine, a phenylcarbamate derivative exhibiting cognitive stimulating property. Although the mechanism of action has not been fully elucidated, rivastigmine tartrate may bind reversibly to cholinesterase, thereby decreasing the breakdown of acetylcholine and enhancing cholinergic function.

**rizatriptan benzoate:** The benzoate salt form of rizatriptan, a member of the triptan class agents with anti-migraine property. Rizatriptan benzoate selectively binds to and activates serotonin (5-HT) 1B receptors expressed in intracranial arteries, and to 5-HT 1D receptors located on peripheral trigeminal sensory nerve terminals in the meninges and central terminals in brain stem sensory nuclei. Receptor binding results in constriction of cranial vessels and inhibition of nociceptive transmission, thereby providing relief of migraine headaches. Rizatriptan benzoate may also relieve migraine headaches by inhibition of pro-inflammatory neuropeptide release.

**RK-0202:** An oral polymer matrix-based rinse formulation that contains N-acetylcysteine, an antioxidant amino acid derivative with antiinflammatory properties. RK-0202 may alleviate symptoms of radiation-induced oral mucositis. Or A substance that is being studied in the prevention of oral mucositis in patients receiving radiation therapy or chemotherapy for head and neck cancer.

**RLS:** A condition in which a person has a strong urge to move his or her legs in order to stop uncomfortable sensations. These include burning, itching, creeping, tugging, crawling, or pain. These feelings usually happen

when a person is lying or sitting down, and are worse at night. They can also occur in other parts of the body. Also called restless legs syndrome.

**RMP-7:** A substance that is being studied for its ability to help other drugs reach the brain. It belongs to the family of drugs called bradykinin agonists. Also called lobradimil.

**RNA:** ribonucleic acid; a nucleic acid produced during transcription that is complementary to a DNA strand; similar to DNA in structure but contains the carbohydrate ribose and the pyrimidine uracil rather than thymine. OR A nucleic acid with D-ribose as the sugar component in its nucleotides. OR One of two types of nucleic acid made by cells. RNA contains information that has been copied from DNA (the other type of nucleic acid). Cells make several different forms of RNA, and each form has a specific job in the cell. Many forms of RNA have functions related to making proteins. RNA is also the genetic material of some viruses instead of DNA. RNA can be made in the laboratory and used in research studies. Also called ribonucleic acid.

**RNA (ribonucleic acid):** A chemical found in cells that serves as an intermediate in the synthesis of proteins OR A polynucleotide in which the sugar is ribose.

**RNA editing:** A change, after transcription, in the information content of RNA by processes other than RNA splicing.

**RNA electroporated CD19CAR-CD3zeta-4-1BB-expressing autologous T lymphocytes:** Autologous, genetically engineered T lymphocytes that have been electroporated with an mRNA encoding for an anti-CD19 chimeric antigen receptor (CAR) consisting of an anti-CD19 single chain variable fragment (scFv) coupled to the co-stimulatory signaling domain of 4-1BB (CD137) and the zeta chain of the T-cell receptor CD3 complex (CD3-zeta), with potential immunomodulating and antineoplastic activities. Upon transfusion, the RNA electroporated CD19CAR-CD3zeta-4-1BB-expressing autologous T-lymphocytes attach to cancer cells expressing CD19. This induces selective toxicity against CD19-expressing tumor cells and causes tumor cell lysis. The 4-1BB co-stimulatory molecule signaling domain enhances T-cell activation and signaling after recognition of CD19. CD19 antigen is a B-cell specific cell surface antigen, which is expressed in all B-cell lineage malignancies.

**RNA enzymes:** RNA molecules that act as enzymes. Also called ribozymes.

**RNA polymerase:** the enzyme that moves along the DNA strand, reads the nucleotides one by one, and synthesizes a complementary mRNA molecule according to the principle of complementary base pairing. OR An enzyme that catalyzes the formation of RNA from ribonucleotide triphosphates, using DNA as a template. OR An enzyme that catalyzes the formation of RNA from ribonucleoside 5'-triphosphates, using a strand of DNA or RNA as a template. OR A class of enzymes that synthesize RNA molecules complementary to a DNA template.

**RNA primers:** Small pieces of RNA that base-pair with the template strand of DNA and serve as primers for primer-dependent DNA synthesis; the RNA is later removed and replaced by DNA.

**RNA processing:** Any alteration of a precursor RNA molecule, such as splicing or polyadenylation, that yields a mature RNA molecule.

**RNA splicing:** The excision of a segment of RNA, followed by a rejoining of the remaining fragments. OR Removal of introns and joining of exons in a primary transcript.

**RNA world:** A theoretical time early in evolution in which RNA molecules served both as the genetic material and as catalysts for biochemical reactions.

**RNR inhibitor COH29:** An orally available, aromatically substituted thiazole and inhibitor of the human ribonucleotide reductase (RNR), with potential antineoplastic activity. Upon oral administration, the RNR inhibitor COH29 binds to the ligand-binding pocket of the RNR M2 subunit (hRRM2) near the C-terminal tail. This blocks the interaction between the hRRM1 and hRRM2 subunits and interferes with the assembly of the active hRRM1/hRRM2 complex of RNR. Inhibition of RNR activity decreases the pool of deoxyribonucleotide triphosphates available for DNA synthesis. The resulting decrease in DNA synthesis causes cell cycle arrest and growth inhibition. In addition, this agent may inhibit the nuclear enzyme poly (ADP-ribose) polymerase (PARP) 1, which prevents the repair of damaged DNA, and causes both the accumulation of single and double strand DNA breaks and the induction of apoptosis. RNR, an enzyme that catalyzes the conversion of ribonucleoside diphosphate to deoxyribonucleoside diphosphate, is essential for de novo DNA synthesis and plays an important

role in cell growth; it is overexpressed in many cancer cell types and is associated with increased drug resistance, cancer cell growth and metastasis.

**Ro 31-7453:** A substance that is being studied in the treatment of cancer. It may prevent cancer cells from dividing. It belongs to the family of drugs called cell cycle inhibitors.

**Ro 50-3821:** A substance that is being studied in the treatment of anemia in patients who are receiving chemotherapy. It is a form of erythropoietin (a substance produced in the kidneys that stimulates the production of red blood cells) that has been changed in the laboratory. Also called methoxypolyethylene glycol epoetin beta.

**RO4929097:** A substance being studied in the treatment of cancer. It blocks certain enzymes that are needed for cell growth. This may slow the growth of cancer cells. It may also decrease the growth of new blood vessels that tumors need to grow. It is a type of gamma-secretase inhibitor and a type of Notch signaling inhibitor.

**robatumumab:** A recombinant, fully human monoclonal antibody directed against the insulin-like growth factor 1 receptor (IGF-1R) with potential antineoplastic activity. Robatumumab binds to membrane-bound IGF-1R, preventing binding of the ligand IGF-1 and the subsequent triggering of the PI3K/Akt signaling pathway; downregulation of this survival pathway may result in the induction of apoptosis and decreased cellular proliferation. The activation of IGF-1R, a tyrosine kinase and a member of the insulin receptor family, stimulates cell proliferation, enables oncogenic transformation, and suppresses apoptosis; IGF-1R signaling has been highly implicated in tumorigenesis and metastasis.

**Robimycin:** (Other name for: erythromycin)

**Robinul:** (Other name for: glycopyrrolate)

**Robot:** Automated devices for removing parts upon ejection from an open mold rather than letting the parts drop. Also see parts picker. Robots also can perform secondary functions, such as inspection, degating, precise placement of parts on a conveyor, etc. OR

**Rocaltrol:** (Other name for: calcitriol)

**Rocephin:** (Other name for: ceftriaxone sodium)

**rociletinib:** An orally available small molecule, irreversible inhibitor of epidermal growth factor receptor (EGFR) with potential antineoplastic activity. Rociletinib binds to and inhibits mutant forms of EGFR, including T790M, thereby leading to cell death of resistant tumor cells. Compared to other EGFR inhibitors, CO-1686 inhibits T790M, a secondary acquired resistance mutation, as well as other mutant EGFRs and may have therapeutic benefits in tumors with T790M-mediated resistance to other EGFR tyrosine kinase inhibitors. This agent shows minimal activity against wild-type EGFR, hence does not cause certain dose-limiting toxicities. Check for active clinical trials using this agent.

**rock:** a solid aggregate of bonded mineral crystals. OR A rock is a group of minerals in a mixture. Volcanic rocks are excellent examples of rocks created by the super-heated mixing of many minerals.

**rock avalanche:** the rapid descent of a mass of variously sized rock fragments.

**rock cycle:** the continuous flow from one type of rock to another. OR the various interrelated ways rock types form from geological processes. OR The interconversion of igneous, metamorphic and sedimentary rocks and all the processes such as weathering, transport and cementation are all part of the rock cycle.

**rock formation:** an occurrence of rock with a set of characteristics that distinguishes it from the rocks above or below it.

**rock slide:** the rapid movement of loose rock along an inclined plane.

**rock-basin lake:** a depression that is scoured out by an advancing glacier and later fills with water.

**rocketsonde:** A rocket-borne instrument for measurement and transmission of upper-air meteorological data in the lower 76,000 meters (250,000 feet) of the atmosphere, especially that portion inaccessible to radiosonde techniques.

**Rockwell:** (Hardness) A measure of the surface hardness of a material. A value derived from the increase in depth of an impression as the load of a steel indenter is increased from a fixed minimum value to a higher value and then returned to the minimum value. The values are quoted with a letter prefix corresponding to a scale relating to a given combination of load and indenter. OR Rockwell hardness is the resistance of a material to

indentation of a defined steel ball. Three scales exist (R, L and M) with different ball diameters and different levels of loading for testing materials of different hardness.

**Rockwell Hardness:** A standard method for measuring the hardness of metals. The hardness is expressed as a number related to the depth of residual penetration of a steel ball or diamond cone after a minor load of 10 kilograms has been applied to hold the penetrator in position, designated by letters varying from "A" to "H" the "B" and "C" scales are most commonly in use. OR A measure of the surface hardness of a material. A value derived from the increasing depth of an impression as the load of a steel indenter is increased from a fixed minimum value to a higher value and then returned to the minimum value. The values are quoted with a letter prefix corresponding to a scale relating to a given combination of load and indenter. OR A test for hardness (resistance to indentation) in which a hardened steel ball or diamond point is pressed into the material under test. OR A durometer measuring scale developed by the Rockwell Corporation. Hardness is measured by testing the resistance that a material has to being punctured. See "durometer" and "shore hardness." OR A measure of the surface hardness of a material. The Rockwell hardness test method consists of indenting the test material with a diamond cone or hardened steel ball indenter. See also Shore Hardness.

**rocuronium bromide:** The bromide salt form of rocuronium, an intermediate-acting quaternary aminosteroid with muscle relaxant property. Rocuronium bromide competitively binds to the nicotinic receptor at the motor end plate, and antagonizes acetylcholine binding, which results in skeletal muscle relaxation and paralysis.

**Rod:** A long, slender photoreceptor cell that functions in dim light but does not perceive color.

**rod cells:** the cells of the eye that permit vision in dim light.

**Rod Lock (Modular Belting) :** Extended rod cap, about 1-1/2 inches (38 mm) long, inserted into the module along both edges of the belt to secure rod position. The rod snaps into a notch in the outermost knuckle of the module.

**Rod Looped Edge :** An edge finish similar to the ladder edge except that reinforcing wires or connectors are extended and knuckled on themselves.

**Rod Reinforced Weave :** Fabric constructed in the same manner as Conventional Weave, and reinforced by insertion of a rod through the hinging point of the spirals.

**rodenticide:** A chemical used to kill rodents (rats).

**Rodex:** (Other name for: warfarin)

**Roentgen (R):** A unit of exposure to ionizing radiation. It is the amount of gamma or x-rays required to produce ions resulting in a charge of 0.000258 coulombs/kilogram of air under standard conditions. Named after Wilhelm Roentgen, the German scientist who discovered x-rays in 1895.

**rofecoxib:** A synthetic, nonsteroidal derivative of phenyl-furanone with antiinflammatory, antipyretic and analgesic properties and potential antineoplastic properties. Rofecoxib binds to and inhibits the enzyme cyclooxygenase-2 (COX-2), resulting in an inhibition of the conversion of arachidonic acid to prostaglandins. COX-related metabolic pathways may represent key regulators of cell proliferation and neo-angiogenesis. Some epithelial tumor cell types overexpress pro-angiogenic COX-2. or A drug that was being used for pain relief and was being studied for its ability to prevent cancer and to prevent the growth of new blood vessels that tumors need to grow. It is a type of nonsteroidal anti-inflammatory drug and a type of antiangiogenesis agent. Rofecoxib was taken off the market in the U.S. because of safety concerns. Also called Vioxx.

**Roferon-A:** (Other name for: recombinant interferon alfa)

**roflumilast:** An orally available, long-acting inhibitor of phosphodiesterase (PDE) type 4 (PDE4), with anti-inflammatory and potential antineoplastic activities. Upon administration, roflumilast and its active metabolite roflumilast N-oxide selectively and competitively bind to and inhibit PDE4, which leads to an increase of both intracellular levels of cyclic-3',5'-adenosine monophosphate (cAMP) and cAMP-mediated signaling. cAMP prevents phosphorylation of spleen tyrosine kinase (SYK) and abrogates activation of the PI3K/AKT/mTOR signaling pathway, which may result in the induction of apoptosis. PDE4, a member of the PDE superfamily that hydrolyses cAMP and 3'5'-cyclic guanosine monophosphate (cGMP) to their inactive 5' monophosphates, is upregulated in a variety of cancers and may contribute to chemoresistance; it also plays a key role in inflammation, especially in inflammatory airway diseases. Check for active clinical trials using this agent.

**ROHF:** Spin-restricted open-shell Hartree-Fock. For open-shell molecules. Except for the odd electron(s), there are two electrons in each occupied orbital. (See UHF.)

**rolapitant hydrochloride:** The hydrochloride salt form of rolapitant, an orally bioavailable, centrally-acting, selective, neurokinin 1 receptor (NK1-receptor) antagonist with potential antiemetic activity. Upon oral administration, rolapitant competitively binds to and blocks the activity of the NK1-receptor in the central nervous system, thereby inhibiting the binding of the endogenous ligand, substance P (SP). This may prevent both SP-induced emesis and chemotherapy-induced nausea and vomiting (CINV). The interaction of SP with the NK1-receptor plays a key role in the induction of nausea and vomiting caused by emetogenic cancer chemotherapy. Compared to other NK1-receptor antagonists, rolapitant has both a more rapid onset of action and a much longer half-life. or A drug used with other drugs to prevent nausea and vomiting caused by chemotherapy. Rolapitant hydrochloride blocks the action of chemicals in the central nervous system (CNS) that may trigger nausea and vomiting. It is a type of antiemetic. Also called Varubi.

**Rolling circle replication:** A mechanism for the replication of circular DNA. A nick in one strand allows the 3' end to be extended, displacing the strand with the 5' end, which is also replicated, to generate a double-stranded tail that can become larger than the unit size of the circular DNA.

**Roman chamomile :** A type of chamomile plant with daisy-like white flowers that is found in Europe, North America, and Argentina. The dried flowers are used in teas to calm and relax, to improve sleep, and to help with stomach problems. Its essential oil (scented liquid taken from plants) is used in perfumes, shampoos, face creams, lotions, and aromatherapy. The scientific names are *Chamaemelum nobile* and *Anthemis nobilis*. Also called English chamomile.

**romidepsin:** A bicyclic depsipeptide antibiotic isolated from the bacterium *Chromobacterium violaceum* with antineoplastic activity. After intracellular activation, romidepsin binds to and inhibits histone deacetylase (HDAC), resulting in alterations in gene expression and the induction of cell differentiation, cell cycle arrest, and apoptosis. This agent also inhibits hypoxia-induced angiogenesis and depletes several heat shock protein 90 (Hsp90)-dependent oncoproteins. or A drug used to treat cutaneous T-cell

lymphoma in patients who have been treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Romidepsin blocks certain enzymes, which may help kill cancer cells. It is a type of depsipeptide and a type of histone deacetylase inhibitor. Also called FR901228 and Istodax.

**romiplostim:** A recombinant protein with megakaryopoiesis stimulating activity. Romiplostim mimics endogenous thrombopoietin (TPO), directly binding to and activating the platelet thrombopoietin receptor (TpoR, Mpl, or CD110 antigen), a cytokine receptor belonging to the hematopoietin receptor superfamily. Activation of TpoR stimulates the proliferation and differentiation of megakaryocytes, resulting in an increase in the production of blood platelets. or A drug used to treat patients with immune thrombocytopenic purpura (ITP) who do not get better with other forms of treatment. In ITP, platelets (cells that cause blood clots to form) are destroyed by the immune system. Romiplostim is being studied as a way to treat low platelet counts caused by chemotherapy. It binds to the thrombopoietin receptor and causes the bone marrow to make more platelets. Romiplostim is also being studied in the treatment of myelodysplastic syndromes (a group of diseases in which the bone marrow does not make enough healthy blood cells). It is a type of thrombopoietin agonist. Also called AMG 531 and Nplate.

**ROMOLD, Inc.:** American mold builders in Western NY, with cutting edge equipment, excellent technical skills, and unique abilities in design and manufacturing of plastic injection molds and die cast tools. ISO 9001:2008 quality management system, ITAR registered.

**Romozin:** (Other name for: troglitazone)

**roniciclib:** An orally bioavailable cyclin dependent kinase (CDK) inhibitor with potential antineoplastic activity. Roniciclib selectively binds to and inhibits the activity of CDK1/Cyclin B, CDK2/Cyclin E, CDK4/Cyclin D1, and CDK9/Cyclin T1, serine/threonine kinases that play key roles in the regulation of the cell cycle progression and cellular proliferation. Inhibition of these kinases leads to cell cycle arrest during the G1/S transition, thereby leading to an induction of apoptosis, and inhibition of tumor cell proliferation. CDKs are often dysregulated in cancerous cells.

**Roof light:** Any form of skylight usually in a pitched roof but also sometimes used as a general term for any window or light in a roof.

**roots:** the structures of vascular plants that anchor them to the ground and take in water and minerals from the soil.

**ropidoxuridine:** An orally available 5-substituted 2-pyrimidinone-2'-deoxyribonucleoside analogue and prodrug of 5-iododeoxyuridine (IUdR), an iodinated analogue of deoxyuridine, with radiosensitizing activity. Upon oral administration, ropidoxuridine (IPdR) is efficiently converted to idoxuridine (IUdR) by a hepatic aldehyde oxidase. In turn, IUdR is incorporated into DNA during replication, thereby sensitizing cells to ionizing radiation by increasing DNA strand breaks. Compared to IUdR, ropidoxuridine is associated with a lower toxicity profile and improved anti-tumor activity.

**Ropiness:** The appearance of a paint film which shows coarse or heavy brush marks. OR Coarse or heavy brush marks are most likely caused either by painting onto a very porous surface, or applying paint in warm conditions. To get rid of the marks, first clean down the surfaces to remove all dirt, grease and surface contaminants. Rub down with Wet ' Dry abrasion, using water or a suitable solvent. Finally, rinse down and allow to dry thoroughly before applying a new coat of paint.

**ropinirole hydrochloride:** The hydrochloride salt form of ropinirole, a non-ergot dopamine agonist with antiparkinsonian property. Acting as a substitute for dopamine, ropinirole hydrochloride binds to and activates dopamine D2 and D3 receptors within the caudate putamen in the brain, thereby improving motor function.

**ropivacaine :** A drug used to control pain and to cause a temporary loss of feeling in one part of the body, during and after surgery. It is also being studied for pain control after cancer surgery. It is a type of local anesthetic. Also called Naropin and ropivacaine hydrochloride.

**ropivacaine hydrochloride:** The hydrochloride salt of ropivacaine, a local anesthetic of the amide type with analgesic activity. Ropivacaine binds to voltage-gated sodium ion channels in the neuronal membrane, thereby preventing the permeability of sodium ions and resulting in a stabilization of the neuronal membrane and inhibition of depolarization; nerve impulse generation and propagation are blocked, resulting in a reversible loss of sensation. or A drug used to control pain and to cause a temporary loss of feeling in one part of the body, during and after surgery. It is also being

studied for pain control after cancer surgery. It is a type of local anesthetic. Also called Naropin and ropivacaine.

**roquinimex:** A quinoline-3-carboxamide with potential antineoplastic activity. Roquinimex inhibits endothelial cell proliferation, migration, and basement membrane invasion; reduces the secretion of the angiogenic factor tumor necrosis factor alpha by tumor-associated macrophages (TAMs); and inhibits angiogenesis. This agent is also an immune modulator that appears to alter cytokine profiles and enhance the activity of T cells, natural killer cells, and macrophages.

**ROR1 CAR-specific autologous T lymphocytes:** A mixture of two T-lymphocyte preparations expressing a chimeric antigen receptor (CAR) consisting of an anti-receptor tyrosine kinase-like orphan receptor 1 (ROR1) single chain variable fragment (scFv) fused to either the co-stimulatory signaling domain cluster of differentiation 28 (CD28), and the zeta chain of the T-cell receptor (TCR)/CD3 complex (CD3-zeta) (ROR1CD28zeta), or the co-stimulatory signaling domain cluster of differentiation 137 (CD137; 4-1BB), and the zeta chain of the T-cell receptor (TCR)/CD3 complex (CD3-zeta) (ROR1CD137zeta), with potential immunomodulating and antineoplastic activities. Upon simultaneous administration of the two T lymphocyte populations ROR1CD28zeta and ROR1CD137zeta, the ROR1 CAR-specific autologous T-lymphocytes are directed to tumor cells expressing ROR1, which may result in a selective toxicity against, and lysis of ROR1-expressing tumor cells. CD28, a T-cell surface-associated co-stimulatory molecule, is required for full T-cell activation, proliferation, and survival. The 4-1BB co-stimulatory molecule signaling domain enhances activation and signaling after recognition of ROR1. ROR1, also known as neurotrophic tyrosine kinase, receptor-related 1, is expressed during embryogenesis and by certain leukemias. Check for active clinical trials using this agent.

**ROS1 gene :** A gene that makes a protein called ROS1, which is involved in sending signals in cells and in cell growth. Mutated (changed) forms of the ROS1 gene have been found in some types of cancer, including non-small cell lung cancer (NSCLC), a type of brain cancer called glioblastoma multiforme, and cancers of the bile duct, ovary, stomach, colon, and rectum. ROS1 is a type of receptor tyrosine kinase.

**rosiglitazone** : The active ingredient in a drug that helps control the amount of glucose (sugar) in the blood and is being studied in the prevention and treatment of some types of cancer. Rosiglitazone stops cells from growing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of thiazolidinedione and a type of antiangiogenesis agent.

**rosiglitazone maleate**: The maleate salt of rosiglitazone, an orally-active thiazolidinedione with antidiabetic properties and potential antineoplastic activity. Rosiglitazone activates peroxisome proliferator-activated receptor gamma (PPAR-gamma), a ligand-activated transcription factor, thereby inducing cell differentiation and inhibiting cell growth and angiogenesis. This agent also modulates the transcription of insulin-responsive genes, inhibits macrophage and monocyte activation, and stimulates adipocyte differentiation. Check for active clinical trials using this agent. or A drug that helps control the amount of glucose (sugar) in the blood and is being studied in the prevention and treatment of some types of cancer. Rosiglitazone maleate stops cells from growing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of thiazolidinedione and a type of antiangiogenesis agent. Also called Avandia.

**Rosin**: Rosin, also colophony, hard, brittle, translucent, usually amber-colored resin, that is obtained as the residue in the distillation of turpentine. The rosin prepared from exuded, or gum, turpentine is called gum rosin; that obtained from extracted, or wood, turpentine is called wood rosin. Rosin has a specific gravity of about 1.08. It is soluble in alcohol, ether, and other organic solvents and is insoluble in water. Rosin softens when heated to about 80° C (about 176° F) and melts between 120° and 135° C (248° and 275° F). It is one of the most important resins commercially and is used extensively in making varnishes, paints, and soaps; in the manufacture of linoleum; in sizing paper; as a drier in oils; as a flux for solder; and as an adulterant of more costly resins. It is also used to treat violin bows and dancing slippers. OR The hard resin, amber to black in color, left after the distillation of turpentine.

**Rosita Beati Natta**: Inventor of the nomenclature used to describe the stereochemistry of polymers - atactic, for polymers with no long range order; isotactic, for polymers in which all the side groups are on the same

side of the backbone chain; and syndiotactic, for polymers in which the side groups alternate from one side to another.

**rostaporfin:** A synthetic purpurin with photosensitizing activity.

Rostaporfin preferentially accumulates in tumor cells due to an increased rate of metabolism. Upon exposure to a light source, this agent absorbs light, forming an extended high energy conformational state that produces high quantum yields of singlet oxygen with local cytotoxic effects. Check for active clinical trials using this agent.

**rosuvastatin calcium:** The calcium salt form of rosuvastatin, a statin with antilipidemic activity. Rosuvastatin selectively and competitively binds to and inhibits hepatic hydroxymethyl-glutaryl coenzyme A (HMG-CoA) reductase, the enzyme which catalyzes the conversion of HMG-CoA to mevalonate, a precursor of cholesterol. This leads to a decrease in hepatic cholesterol levels and increase in uptake of LDL cholesterol. Check for active clinical trials using this agent. or A drug used to lower the amount of cholesterol and other harmful substances, such as triglycerides, in the blood. It is also being studied in the prevention and treatment of some types of cancer and other conditions. Rosuvastatin calcium blocks an enzyme that helps make cholesterol in the body and it helps break down cholesterol. It also may cause cancer cells to die and may inhibit the growth of blood vessels that cancer cells need to grow. It is a type of HMG-CoA reductase inhibitor and a type of statin. Also called Crestor.

**Roswell Park regimen :** A chemotherapy combination used to treat colorectal cancer. It is also used with radiation therapy to treat esophageal cancer and stomach cancer. It includes the drugs fluorouracil and leucovorin calcium.

**Rotarix:** (Other name for: rotavirus vaccine)

**Rotary Forming:** A thermoforming process consisting of multiple stations on a rotary table.

**Rotary Seal:** Seals for rotating shafts, with the turning shaft protruding through the I.D. (hole) of the O-ring

**rotation:** the ability of carbon atoms attached by single bonds to freely turn, which gives the molecule an infinite number of conformations.

**Rotation axis:** A symmetry element involving an n-fold rotation about an axis.

**Rotational Molding:** A process also known as rotomolding or rotational casting is used for the manufacture of hollow plastics including large storage tanks. It involves placing a thermoplastic powder into a mold, heating the mold in an oven while rotating the mold into perpendicular axes simultaneously. OR A process also known as rotomolding or rotational casting is used for the manufacture of hollow plastics including large storage tanks. It involves placing a thermoplastic powder into a mold, heating the mold in an oven while rotating the mold into perpendicular axes simultaneously.

**rotationplasty :** Surgery used to remove a tumor in or near the knee joint, often in young people who are still growing. The knee and part of the thigh are removed. The part of the leg that remains below the knee is then attached to the part of the leg above the knee, with the foot facing backward and the ankle joint acting as a new knee. The patient is then fitted with an artificial lower leg and foot.

**Rotatory-inversion axis:** A symmetry element involving an n-fold rotation followed by an inversion. Also called a center of symmetry.

**rotavirus vaccine:** A viral vaccine that prevents against rotavirus infection, the leading cause of severe acute gastroenteritis.

**Rotenone:** A plant toxin that inhibits electron transfer in the NADH-Q reductase complex; used as a fish and insect poison.

**Rothmund-Thomson syndrome :** A rare inherited disorder that affects the skin and many other parts of the body, including the bones, eyes, nose, hair, nails, teeth, testes, and ovaries. People with Rothmund-Thomson syndrome have an increased risk of osteosarcoma (bone cancer). Also called RTS.

**Rotten wood:** Simply run a pen knife blade across the grain. This will only make a small indentation on sound timber, but on rotten timber the blade will sink in. The only cure is to cut out all the rotten wood and replace with sound timber.

**Rough cast:** A term often used incorrectly for rough-surfaced rendering; correctly the term applied to a final coating of small stones or chippings mixed with a liquid mixture of mortar or cement and sand, and 'cast' or thrown onto the wall or rendering to produce a rough-textured finish.

**rough endoplasmic reticulum:** ER studded with ribosomes; the site of protein synthesis in eukaryotic cells.

**Round:** Describes a heavy-bodied paint or one having good build and opacity.

**Round coat:** Usually refers to the liberal application of a full coat of paint.

**Round Square:** Particular shape of a container which has sides of equal width with well-rounded corners and shoulders.

**Round Wire Sizes :** Round wire sizes generally referred to are the nearest American Steel and Wire or W & M gauge number with its decimal equivalent and are supplied within the standard wire tolerances of wire manufacturers.

**rounding:** the smoothing of rock fragments during transportation.

**Roundtable for Sustainable Palm Oil (RSPO):** An organization formed in 2004 to help promote sustainable agriculture and address the environmental impact of palm oil. This organization is comprised of many stakeholders, including government agencies, NGO groups, plantation owners and growers, and oil traders.

**rovalpituzumab tesirine:** An antibody-drug conjugate (ADC) containing an antibody (SC16) directed against an as of yet undisclosed protein and conjugated to the cytotoxic agent D6.5, with potential antineoplastic activity. Upon administration, the antibody moiety of rovalpituzumab tesirine selectively binds to the target on tumor cell surfaces. Upon internalization, the D6.5 moiety is released and causes DNA damage, which may result in the inhibition of proliferation of tumor cells that overexpress this target.

**Roving:** Endless glass fibre bundles. A collection of parallel strands (assembled roving) or parallel filaments (direct roving) assembled without intentional twist.

**Rowasa:** (Other name for: mesalamine)

**Roxanol:** (Other name for: morphine sulfate)

**Roxicodone:** (Other name for: oxycodone hydrochloride)

**Rozerem:** (Other name for: ramelteon)

**RP-Mycin:** (Other name for: erythromycin)

**RPI.4610:** A substance being studied in the treatment of cancer. RPI.4610 is a special type of RNA made in the laboratory. It stops a protein called vascular endothelial growth factor receptor (VEGFR) from being made.

This may prevent the growth of new blood vessels that tumors need to grow. It is a type of angiogenesis inhibitor and a type of ribozyme. Also called Angiozyme.

**RPR 109881A:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called taxanes.

**rRNA:** ribosomal RNA; RNA molecules that function to manufacture ribosomes. OR See ribosomal RNA.

**RSJ:** Rolled steel joist.

**RSR13:** A substance being studied in the treatment of brain tumors and some other types of cancer. It increases the amount of oxygen in tumor tissues, which may make the tumor cells easier to kill with radiation therapy. RSR13 is a type of radiosensitizing agent. Also called efaproxiral.

**RSV:** A virus that causes respiratory infections with cold-like symptoms. Also called respiratory syncytial virus.

**RSV fusion inhibitor GS-5806:** An orally available inhibitor of human respiratory syncytial virus (RSV) fusion protein (F protein), with potential antiviral activity. Upon oral administration of GS-5806, this agent specifically binds to F protein on the viral surface, which inhibits RSV F protein-mediated fusion with the host cell membrane and prevents viral entry. This blocks RSV replication, reduces viral load, and decreases the severity of the disease. RSV F protein, a viral surface glycoprotein, plays a key role in RSV fusion with and entry into target cells.

**RTA 744:** A substance being studied in the treatment of adult brain tumors. RTA 744 crosses the blood-brain barrier and blocks an enzyme needed for cancer growth. It is a type of topoisomerase inhibitor. Also called topoisomerase II inhibitor RTA 744.

**RTS:** A rare inherited disorder that affects the skin and many other parts of the body, including the bones, eyes, nose, hair, nails, teeth, testes, and ovaries. People with RTS have an increased risk of osteosarcoma (bone cancer). Also called Rothmund-Thomson syndrome.

**RTV Molding:** A procedure where a part is molded in a silicone mold to reproduce up to twenty urethane parts

**RU 486:** A drug used to end early pregnancies. It is also being studied in the treatment of some types of cancer and other conditions. RU 486 blocks

the action of progesterone, a hormone that helps some cancers grow. It is a type of antiprogesterone. Also called Mifeprex and mifepristone.

**RUBBER:** An elastomer capable of rapid elastic recovery after being stretched to at least twice its length at temperatures from 0 to 150°F at any humidity. OR A common name for both naturally occurring and synthetically made elastomers like liquid silicone rubber OR An elastomer capable of rapid elastic recovery after being stretched to at least twice its length at temperatures from 0 to 150 degrees F, at any humidity.

Specifically, heavy or natural rubber, the standard of comparison for elastomers. OR An elastomer capable of rapid elastic recovery after being stretched to at least twice its length at temperatures from 0 to 150°F at any humidity. OR An amorphous material somewhat above its glass transition temperature and having a rubbery consistency.

**Rubber Synthetic:** Man-made elastomers such as Nitrile, Fluorocarbon, Silicone and liquid Silicone rubber

**Rubber-Natural:** A natural product of the juices of certain tropical plants (latex), improved through heat treating with sulfur (vulcanization)

**Rubbery state:** The state of an amorphous material at a temperature above its glass transition temperature and below the temperature of liquefaction.

**Rubbing down:** Preparation of a surface by use of abrasive materials, e.g. glasspaper to obtain a smooth surface for painting over or to provide a 'key' for subsequent coats.

**Rubblization:** A decommissioning technique involving demolition and burial of formerly operating nuclear facilities. All equipment from buildings is removed and the surfaces are decontaminated. Above-grade structures are demolished into rubble and buried in the structure's foundation below ground. The site surface is then covered, regraded and, landscaped for unrestricted use.

**Rubidium:** Symbol:"Rb" Atomic Number:"37" Atomic Mass: 85.47amu. One of the alkali metal group. This silvery-white, metallic element can be found in many alloys and amalgams.

**Rubinstein-Taybi syndrome :** A rare, genetic disorder marked by being short, having wide big toes and thumbs, certain facial features, and problems in developing and learning. Other problems may include heart and kidney defects, eye and dental problems, and obesity. People with

Rubinstein syndrome have an increased risk of some types of leukemia and brain tumors.

**Rubisco (ribulose 1,5-bisphosphate carboxylase/oxygenase):** An enzyme that catalyzes the reaction of carbon dioxide with ribulose 1,5-bisphosphate to form two molecules of 3-phosphoglycerate.

**rubitecan:** A semisynthetic agent related to camptothecin with potent antitumor and antiviral properties. Rubitecan binds to and inhibits the enzyme topoisomerase I and induces protein-linked DNA single-strand breaks, thereby blocking DNA and RNA synthesis in dividing cells; this agent also prevents repair of reversible single-strand DNA breaks.

**rucaparib:** A tricyclic indole poly(ADP-Ribose) polymerase (PARP1) inhibitor with potential chemosensitizing, radiosensitizing, and antineoplastic activities. Rucaparib selectively binds to PARP1 and inhibits PARP1-mediated DNA repair, thereby enhancing the accumulation of DNA strand breaks and promoting genomic instability and apoptosis. This may enhance the cytotoxicity of DNA-damaging agents and reverse tumor cell resistance to chemotherapy and radiation therapy. PARP1 catalyzes post-translational ADP-ribosylation of nuclear proteins and is activated by single-strand DNA (ssDNA) breaks.

**run-on sentence:** or comma splice is an error in which two independent clauses are joined without the proper punctuation.

**Runner:** Grooves or channels cut into either or both halves of the injection mold to provide a path for the molten plastic material, which is to be carried from the sprue to the gate(s) of the cavity. OR In an injection mold, the feed channel, usually of circular cross section, that connects the sprue with the cavity gate. The term is also used for the plastic piece formed in this channel. OR A channel that resin passes through from the sprue to the gate/s. Typically, runners are parallel to, and contained within, the parting surfaces of the mold. OR In an injection or transfer mold, the channel, usually circular, that connects the spruce with the gate to the cavity. OR In an injection or transfer mold, the channel that connects the sprue with the gate to the cavity. OR In an injection or transfer mold, the channel that connects the sprue with the gate to the cavity.

**Runner Balancing:** Developing a runner system which delivers the required amount of melt to each cavity with the correct pressure to finish filling all the cavities simultaneously at the correct temperature for the part.

**Runner Design :** using the runner as a flow control device (positioning the gate and using the size of the runner to control the filling pattern within the cavity) in addition to getting the melt into the cavity.

**Runner Layout:** It is the channels used to get the melt from the machine nozzle to the gates.

**Runner System :** This term is sometimes used for the entire resin feeding system, including sprues, runners and gates, in injection molding. OR The term usually applied to all the material in the form of sprues, runners and gates which lead material from the nozzle of an injection machine or the pot of a transfer mold to the mold cavity.

**Runnerless Molding:** (also see Hot-Runner Mold or Insulated Runner) A mold in which the runners are insulated from the chilled cavities and are kept hot. Hot-runner molds make parts that have no scrap.

**Runnerless Molding (also known as Hot-Runner Mold or Insulated Runner):** A mold in which the runners are insulated from the chilled cavities and are kept hot. Hot-runner molds make parts that have no scrap.

**Runnerm:** The channel that connects the sprue with the gate for transferring the molten liquid silicone rubber to the cavities

**runoff:** That part of precipitation, snowmelt, or irrigation water that flows from the land to streams or other surface waters.

**Runs:** Narrow dribbles or tears of paint caused by excess flowing out of crevices and quirks or from edges or corners and usually due to insufficient spreading or care during application. OR Blemished film caused by excessive flow of coating.

**Rust :** When iron reacts with water and oxygen, rust is formed. Chemically it could be called hydrated iron oxide. Although other metals may corrode, only iron can be said to rust. The need for water AND oxygen can be demonstrated in an experiment using boiled water to provide water but no oxygen and using a sealed test tube containing anhydrous calcium chloride to provide air with no trace of water. Prevention of rust is an important topic. Techniques include coating the iron (eg paint, oil, grease etc) or using electrical protection (such as sacrificial anode).

**RUST PREVENTATIVE:** A compound or formulated system used for coating metal surfaces to produce a film which protects against rust formation

**RUST PREVENTATIVE PAINT:** The first coat of paint applied directly to iron or steel structures to slow down or prevent rust.

**Rustic brick:** Bricks having a rough-textured surface, often multi-coloured and probably derived from rusticated masonry which is composed of unhewn stones.

**rusting:** Rusting is a reaction between iron (or steel) with oxygen and water resulting in corrosion.

**Ruthenium:** Symbol:"Ru" Atomic Number:"44" Atomic Mass: 101.07amu. Ruthenium is one of the transition elements. One of the members of the platinum group, this white metal can be found in alloys and corrosion resistant metals.

**ruthenium Ru 106:** A radioactive isotope of the rare element ruthenium, a member of the light platinum group. A radioactive plaque containing ruthenium 106 may be inserted into the eye to irradiate ophthalmic tumors.

**ruthenium-based transferrin targeting agent NKP-1339:** A ruthenium-containing cancer agent targeting transferrin with potential antineoplastic activity. Upon intravenous administration, NKP-1339 (Ru<sup>3+</sup>) binds to transferrin (Tf) and is taken up via Tf receptors (TfR), which are overexpressed on cancer cells. Once inside the cell, NKP-1339 is released from Tf and is reduced, within the acidic environment of the endosomes, to its active form NKP-119 (Ru<sup>2+</sup>). In turn, the active form induces a redox reaction, thereby leading to the formation of reactive oxygen species (ROS) which inhibits GRP78 and SOD, endoplasmic reticulum-stress modulating molecules as well as BAG4 and ERK, program cell death regulating molecules. This eventually induces caspase-dependent apoptosis. Check for active clinical trials using this agent.

**Rutherfordium:** Symbol:"Rf" Atomic Number:"104" Atomic Mass: (261)amu One of the postactinide elements. Scientists have created these in labs and may have found only a few atoms of the element. You will not find these in use anywhere.

**ruxolitinib phosphate:** The phosphate salt form of ruxolitinib, an orally bioavailable Janus-associated kinase (JAK) inhibitor with potential antineoplastic and immunomodulating activities. Ruxolitinib specifically binds to and inhibits protein tyrosine kinases JAK 1 and 2, which may lead to a reduction in inflammation and an inhibition of cellular proliferation. The JAK-STAT (signal transducer and activator of transcription) pathway

plays a key role in the signaling of many cytokines and growth factors and is involved in cellular proliferation, growth, hematopoiesis, and the immune response; JAK kinases may be upregulated in inflammatory diseases, myeloproliferative disorders, and various malignancies. Check for active clinical trials using this agent. or A drug used to treat polycythemia vera in patients who cannot be treated with or have not gotten better with hydroxyurea. It is also used to treat certain types of myelofibrosis. It is being studied in the treatment of other blood diseases and some types of cancer. Ruxolitinib phosphate blocks a protein called JAK, which may help keep abnormal blood cells or cancer cells from growing. It is a type of tyrosine kinase inhibitor. Also called Jakafi.

**rV-TRICOM :** A cancer vaccine made with a form of a vaccinia virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins that may help immune cells in the body kill tumor cells. Also called recombinant vaccinia-TRICOM vaccine and vaccinia-TRICOM vaccine.

**RWH:** Rain water head; the hopper or box at the top of a rainwater pipe into which several gutters or pipes discharge.

**RWP:** Rain water pipe.

**S body wave:** a body wave, only about half as fast as a P wave, that causes rock to vibrate perpendicularly to the direction of wave travel.

**S phase:** the phase within the cell division cycle in which DNA is replicated.

**S-1:** A drug that is being studied for its ability to enhance the effectiveness of fluorouracil and prevent gastrointestinal side effects caused by fluorouracil. It belongs to the family of drugs called antimetabolites.

**S-3304:** An orally-agent agent with potential antineoplastic activity. S-3304 inhibits matrix metalloproteinases (MMPs), thereby inducing extracellular matrix degradation, and inhibiting angiogenesis, tumor growth and invasion, and metastasis.

**S-adenosyl-L-methionine disulfate p-toluene-sulfonate:** The disulfate salt of the stable p-toluene-sulfonate complex of s-adenosyl-L-methionine (SAME) with chemopreventive activity. SAME disulfate p-toluene-sulfonate undergoes hydrolytic conversion to its active compound SAME within cells.

Although the mechanism of action is largely unknown, SAMe attenuates experimental liver damage and prevents experimental hepatocarcinogenesis. In addition, SAMe may reduce mitochondrial cytochrome C release, caspase 3 activation, and poly(ADP-ribose) polymerase cleavage, and attenuate okadaic acid-mediated hepatocyte apoptosis in a dose-dependent manner. SAMe is an essential compound in cellular transmethylation reactions and a precursor of polyamine and glutathione synthesis in the liver; SAMe deficiency is associated with chronic liver disease-associated decreases in the activity of methionine adenosyltransferase 1A (MAT1A), the enzyme that catalyzes the production of SAMe as the first step in methionine catabolism.

**S-adenosylmethionine:** The active sulfonium form of methionine that is formed when methionine reacts with ATP and which acts as a methyl group donor in various transmethylation reactions. Check for active clinical trials using this agent.

**S-adenosylmethionine (adoMet):** An enzymatic cofactor involved in methyl group transfers.

**S-equol:** An orally bioavailable, non-steroidal estrogen naturally produced by the metabolism of the isoflavonoid daidzein by human intestinal microflora, with potential chemoprotective and estrogen receptor (ER) modulating activities. S-equol preferentially binds to and activates the beta isoform of ER in certain target tissues, while having an antagonistic effect in other tissues. This modulates the expression of ER-responsive genes in a tissue-specific manner. This agent may increase bone mineral density, affect vasomotor symptoms, and may decrease the proliferation rate of susceptible cancer cells. In addition, this agent interferes with the activity of enzymes involved in steroid biosynthesis. S-equol inhibits dihydrotestosterone (DHT) production and may inhibit the proliferation of androgen-driven prostate cancer. S-equol is the biologically active enantiomer while R-equol is essentially inactive and has a weak affinity for alpha-ER.

**S-phase fraction :** A measure of the percentage of cells in a tumor that are in the phase of the cell cycle during which DNA is synthesized. The S-phase fraction may be used with the proliferative index to give a more complete understanding of how fast a tumor is growing.

**S-wave shadow zone:** the area on the earth's surface in which S waves from an earthquake cannot be detected.

**S-waves:** secondary waves created by an earthquake; these shearing waves move at right angles to the path of travel and are stronger than P-waves, but only move through solids.

**S1 fragments:** Proteolytic digestion products of myosin that are the force-generating units of the intact myosin molecule; the S1 fragment contains the atpase and actin-binding sites.

**S1 heads:** Proteolytic digestion products of myosin that are the force-generating units of the intact myosin molecule; contain the atpase and actin-binding sites; S1 heads are smaller than heavy meromyosin.

**S100 calcium binding protein A8 :** A protein that is made by many different types of cells and is involved in processes that take place both inside and outside of the cell. It is made in larger amounts in inflammatory diseases such as rheumatoid arthritis, and in some types of cancer. It is being studied as a biomarker for breast cancer. Also called calgranulin A.

**S100 calcium binding protein A9 :** A protein that is made by many different types of cells and is involved in processes that take place both inside and outside of the cell. It is made in larger amounts in inflammatory diseases such as rheumatoid arthritis, and in some types of cancer. It is being studied as a biomarker for breast cancer. Also called calgranulin B.

**S1P receptor agonist KRP203:** The hydrochloride salt form of 2-amino-2 propanediol (KRP-203), a sphingosine 1-phosphate (S1P) receptor agonist, with potential immunosuppressive activity. Upon administration of S1P receptor agonist KRP203, this agent binds to S1P receptors on lymphocytes, which prevents binding of serum S1P to S1P receptors and leads to S1P receptor internalization. This reduces the number of circulating blood leukocytes and accelerates lymphocyte homing into peripheral lymph nodes, thereby preventing their infiltration into peripheral inflammatory sites. This agent also decreases the production of inflammatory cytokines by lymphocytes, such as interferon gamma (IFN-g), interleukin-12 (IL-12), and tumor necrosis factor (TNF). Check for active clinical trials using this agent.

**SAB:** A temporary loss of feeling in the abdomen and/or the lower part of the body. Special drugs called anesthetics are injected into the fluid in the lower part of the spinal column to cause the loss of feeling. The patient stays awake during the procedure. It is a type of regional anesthesia. Also called spinal anesthesia, spinal block, and subarachnoid block.

**sabarubicin:** A disaccharide analogue of the anthracycline antineoplastic antibiotic doxorubicin. Sabarubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. This agent also induces apoptosis through a p53-independent mechanism. Sabarubicin is less cardiotoxic than doxorubicin.

**Saccharide:** A simple saccharide, or sugar, is a molecule that is simply lousy with alcohol groups so that it has the general chemical formula  $C_nO_nH_{2n}$ . There are big chemical differences between them depending on the exact geometry of the hydroxyl groups, so there are a lot more different kinds than you think. We tend to give them trivial names, like 'glucose' and 'galactose', since all their structures look pretty much the same and their systematic names would be too... These 'monosaccharides' can join together to form disaccharides (two sugars joined together) or larger chemical structures.

**saccharin:** A compound,  $C_7H_5NO_3S$ , that is several hundred times sweeter than can sugar and is used as a calorie-free sweetener.

**Saccharomyces boulardii probiotic supplement:** A probiotic containing the non-pathogenic yeast *Saccharomyces boulardii* with antidiarrheal and potential anti-inflammatory, antimicrobial and immunomodulating activities. As a dietary supplement, *S. boulardii* may improve digestion and help maintain adequate colonization of the gastrointestinal (GI) tract by modulating the composition of the normal intestinal microflora. During colonization of the GI tract, *S. boulardii* forms a protective barrier that helps maintain the integrity of the epithelial barrier. This prevents attachment of pathogens to the intestinal mucosa. In addition, this probiotic secretes a protease that binds to and degrades toxins A and B produced by *Clostridium difficile*, thereby preventing their harmful effects. Dietary supplementation with this microorganism may reduce the secretion of proinflammatory cytokines and may potentiate natural and acquired immunity.

**sacituzumab govitecan:** An antibody-drug conjugate containing the humanized monoclonal antibody, hRS7, against tumor-associated calcium signal transducer 2 (TACSTD2 or TROP2) and linked to the active metabolite of irinotecan, 7-ethyl-10-hydroxycamptothecin (SN-38), with potential antineoplastic activity. The antibody moiety of sacituzumab govitecan selectively binds to TROP2. After internalization and proteolytic

cleavage, SN-38 selectively stabilizes topoisomerase I-DNA covalent complexes, resulting in DNA breaks that inhibit DNA replication and trigger apoptosis. TROP2, also known as epithelial glycoprotein-1 (EGP-1), is a transmembrane calcium signal transducer that is overexpressed by a variety of human epithelial carcinomas; this antigen is involved in the regulation of cell-cell adhesion and its expression is associated with increased cancer growth, aggressiveness and metastasis.

**Sacrificial anode** : Iron can be protected from rusting by connecting a more reactive metal (such as magnesium) to it. The magnesium reacts in preference to the iron and, if the magnesium is placed in an easily accessible location, it can be replaced more easily than the iron structure.

**sacrificial protection:** Sacrificial protection is the use of a metal more reactive than iron to protect an iron object from rusting.

**sacrum** : The large, triangle-shaped bone in the lower spine that forms part of the pelvis. It is made of 5 fused bones of the spine.

**Safe shutdown earthquake:** Is the maximum earthquake potential for which certain structures, systems, and components, important to safety, are designed to sustain and remain functional.

**Safeguards:** The use of material control and accounting programs to verify that all special nuclear material is properly controlled and accounted for, as well as the physical protection (or physical security) equipment and security forces. As used by the International Atomic Energy Agency, this term also means verifying that the peaceful use commitments made in binding nonproliferation agreements, both bilateral and multilateral, are honored. For additional detail, see Nuclear Security and Safeguards.

**Safeguards information (SGI):** A special category of sensitive unclassified information that must be protected. Safeguards information concerns the physical protection of operating power reactors, spent fuel shipments, strategic special nuclear material, or other radioactive material. For additional detail, see Information Security.

**Safety Conscious Work Environment:** A working environment in which employees are encouraged to report safety concerns without fear of criticism or retaliation from their supervisors because they raised the issue.

**safety factors (in food additives and contaminants):** A factor applied to the no-observed-effect level to derive acceptable daily intake (ADI) (the no-

observed-effect level is divided by the safety factor to calculate the ADI). The value of the safety factor depends on the nature of the toxic effect, the size and type of population to be protected, and the quality of the toxicological information available (WHO, 1987).

**Safety injection:** The rapid insertion of a chemically soluble neutron poison (such as boric acid) into the reactor coolant system to ensure reactor shutdown.

**Safety limit:** A restriction or range placed upon important process variables that are necessary to reasonably protect the integrity of the physical barriers that guard against the uncontrolled release of radioactivity.

**Safety-related:** In the regulatory arena, this term applies to systems, structures, components, procedures, and controls (of a facility or process) that are relied upon to remain functional during and following design-basis events. Their functionality ensures that key regulatory criteria, such as levels of radioactivity released, are met. Examples of safety-related functions include shutting down a nuclear reactor and maintaining it in a safe-shutdown condition.

**Safety-significant:** When used to qualify an object, such as a system, structure, component, or accident sequence, this term identifies that object as having an impact on safety, whether determined through risk analysis or other means, that exceeds a predetermined significance criterion.

**Saffir-Simpson scale:** scale for measuring hurricane intensity, from Category I to Category V.

**safingol:** A saturated derivative of sphingosine. As an inhibitor of protein kinase C (PKC), safingol competitively binds to the regulatory phorbol-binding domain of PKC, a kinase involved in tumorigenesis. This agent has been shown to act synergistically with other chemotherapeutic agents and may potentiate chemotherapy drug-induced apoptosis in vitro and in vivo. or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called protein kinase inhibitors. Also called L-threo-dihydro-sphingosine.

**SAFSTOR:** A method of decommissioning in which a nuclear facility is placed and maintained in a condition that allows the facility to be safely stored and subsequently decontaminated (deferred decontamination) to levels that permit release for unrestricted use.

**Sagging (curtaining):** Usually occurs on vertical surfaces where paint has been too thickly and unevenly applied resulting in 'horizontal runs' with a thick lower edge.

**sagopilone:** A fully synthetic low-molecular-weight epothilone with potential antineoplastic activity. Sagopilone binds to tubulin and induces microtubule polymerization while stabilizing microtubules against depolymerization, which may result in the inhibition of cell division, the induction of G2/M arrest, and apoptosis. The agent is not a substrate for the P-glycoprotein (P-gp) efflux pump and so may exhibit activity in multidrug-resistant (MDR) tumors. The epothilone class of metabolites was originally isolated from the myxobacterium *Solangium cellulosum*.

**SAGS:** Excessive flow, causing runs or sagging in paint film during application. Usually caused by applying too heavy a coat of paint or thinning too much.

**Sags and runs on new paintwork:** This is usually caused by uneven paint application on broad, flat surfaces, or by over-applying on mouldings or rough-contoured surfaces. Also, failing to join up 'wet edges' before they have set can cause excessive film thickness, resulting in sagging and running. When the paint film is thoroughly dry rub down the sags/runs using wet and dry abrasive paper (or waterproof silicon carbide) together with warm water and detergent. To prevent sags/runs when painting broad, flat areas, work systematically and cross-brush each section into the next; finally using vertical strokes to gently lay off along the length of the surface.

**SAHA :** A drug that is used to treat cutaneous T-cell lymphoma that does not get better, gets worse, or comes back during or after treatment with other drugs. It is also being studied in the treatment of other types of cancer. SAHA is a type of histone deacetylase inhibitor. Also called suberoylanilide hydroxamic acid, vorinostat, and Zolinza.

**Salagen:** (Other name for: pilocarpine hydrochloride)

**salifiable:** Capable of reacting with an acid to form a salt. Lavoisier classified lime, baryta, alumina, and silica as "salifiable earths".

**saline :** A solution of salt and water.

**salinity:** (1) the relative concentration of salts, usually sodium chloride, in a given water. It is usually expressed in terms of the number of ppm of

chloride. (2) a measure of the concentration of dissolved mineral substances in water. OR amount of dissolved salts in water. OR The degree of salt in water.

**salirasib:** A salicylic acid derivative with potential antineoplastic activity. Salirasib dislodges all Ras isoforms from their membrane-anchoring sites, thereby preventing activation of RAS signaling cascades that mediated cell proliferation, differentiation, and senescence. RAS signaling is believed to be abnormally activated in one-third of human cancers, including cancers of the pancreas, colon, lung and breast.

**saliva :** The watery fluid in the mouth made by the salivary glands. Saliva moistens food to help digestion and it helps protect the mouth against infections.

**salivary gland :** A gland in the mouth that produces saliva. OR the parotid glands, the submaxillary glands, and the sublingual glands that secrete saliva into the mouth.

**salivary gland cancer :** A rare cancer that forms in tissues of a salivary gland (gland in the mouth that makes saliva). Most salivary gland cancers occur in older people.

**salmonella VNP20009:** A genetically stable Salmonella typhimurium strain, attenuated by chromosomal deletion of the purI and msbB genes, with tumor-targeting activity. In rodent models, salmonella VNP20009 has been shown to selectively accumulate and grow in a variety of tumor types, inhibiting the growth of primary and metastatic tumors. This agent may be genetically engineered to contain transgenes that express therapeutic agents or cell surface tumor-associated antigen-specific antibodies, such as CEA-specific antibodies, which may improve its tumor targeting and therapeutic potential.

**salpingo-oophorectomy :** Surgical removal of the fallopian tubes and ovaries.

**salt:** any compound formed by combination of any negative ion (except hydroxide) with any positive ion (except hydrogen or hydronium); the precipitate produced as the result of neutralization of an acid with a base. OR An ionic compound with a positive ion that comes from a base and a negative ion that comes from an acid. OR When you mix an acid and a base, the ionic compounds dissociate. In solution, the H and OH ions combine to form water. The other two ions combine to create a salt. A good

example of a salt is NaCl when it is formed by solutions of NaOH (base) and HCl (acid). OR a solid compound composed of both metallic and nonmetallic elements, often as ions.

**Salt bridge:** a technique for isolating the reference element of a reference electrode from the sample solution by use of an intermediate solution containing noninterfering ions. Formerly a U tube filled with saturated KCl (often gelled with agar) was commonly used. In the double junction reference electrode, the outer filling solution serves as a salt bridge. OR A tube (often filled with ion-laced agar) that allows two solutions to be in electrical contact without mixing in an electrochemical cell.

**salt dome:** a vertical column of rock salt that extends upward through a sedimentary sequence, creating folds and faults that trap petroleum.

**salt flat:** a flat surface area covered by salt that precipitated by evaporation.

**Salt staining on plywood:** Salt staining can appear on wood stained exterior grade plywood, especially on eaves and soffits. Salts are contained in the adhesive used to bond the layers of plywood together. Because wood stains are very permeable, they can bring these salts to the surface of the wood. Rainwater will normally remove these salty deposits, except in sheltered areas such as soffits and eaves. The only way to remove these deposits is to wash them down until they no longer appear. For further guidance, see BS 6150 Section 26.

**SALT THICKENING:** The increase in viscosity of a micellar solution on the addition of an electrolyte, such as sodium chloride. This is a similar effect to that seen with THICKENERS, but by a different mechanism.

**salt water intrusion:** The invasion of fresh, surface, or groundwater by salt water.

**saltation:** of water, the process in which turbulent or eddying currents temporarily lift larger sediment grains into the overlying flow of water. OR of wind, the process in which air currents temporarily lift larger sediment grains into the air.

**Salting in:** The increase in solubility that is displayed by typical globular proteins upon the addition of small amounts of certain salts, such as ammonium sulfate.

**Salting out:** The decrease in protein solubility that occurs when salts such as ammonium sulfate are present at high concentrations. OR A protein purification technique based on the fact that the solubility of most proteins is lowered at higher salt concentrations; consequently, different proteins will precipitate at varying salt concentrations.

**salts:** Ionic compounds that can be formed by replacing one or more of the hydrogen ions of an acid with another positive ion. OR Salts are compounds formed in neutralization reactions. They are ionic compounds, containing positive metal ions (or ammonium ions) bonded to negatively charged ions originating from an acid. Examples include sodium chloride, zinc nitrate, and copper sulfate.

**Salvage pathway:** A family of reactions that permits, for instance, nucleosides as well as purine and pyrimidine bases resulting from the partial breakdown of nucleic acids to be re-utilized in nucleic acid synthesis. OR In general, a pathway that synthesizes the final product from preformed components; nucleotides can be synthesized in a salvage pathway by attaching purine bases to PRPP. OR Synthesis of a biomolecule, such as a nucleotide, from intermediates in the degradative pathway for the biomolecule; a recycling pathway, as distinct from a de novo pathway.

**salvage therapy :** Treatment that is given after the cancer has not responded to other treatments.

**Salvia hispanica seed:** The edible seed of the flowering plant *Salvia hispanica* (chia) used as a nutritional supplement, with potential immunomodulating activity. Upon ingestion, chia seed supplies essential fatty acids, including alpha linolenic acid (an omega-3) and linoleic acid (an omega-6), B vitamins, especially niacin (B3) and thiamine (B1), and several minerals, including calcium, zinc, manganese, magnesium, phosphorus and iron; it also contains high levels of antioxidants and dietary soluble fiber. When used as a dietary supplement, this agent may improve a patient's nutrient intake and may balance their intestinal microbiome.

**Salvia officinalis extract tablet:** An oral tablet containing an extract of the plant *Salvia officinalis* (common sage) with reported antihydrotic, antibiotic, antihypertensive, anti-inflammatory, antioxidant, astringent, antispasmodic, estrogenic, and hypoglycemic properties. The primary biologically active component of common sage appears to be its essential oil which contains mainly cineol, borneol, and alpha- and beta-thujone. In

addition, sage leaf contains numerous other substances including tannic acid; resins with oleic, ursolic, and ursolic acids; bitter substances with coumarin and coumaric acid; fumaric, chlorogenic, caffeic and nicotinic acids; nicotinamide; flavones; flavone glycosides; and estrogenic substances. However, the mechanism(s) of action of common sage in the treatment of various disorders is unclear.

**SAM-e Complete:** (Other name for: S-adenosyl-L-methionine disulfate p-toluene-sulfonate)

**Sam68 modulator CWP232291:** A small molecule and prodrug of CWP232204 targeting Src associated in mitosis, of 68 kDa (Sam68 or KHDRBS1), with potential antineoplastic activity. CWP232291 is converted in serum into its active form CWP232204 which binds to Sam68, thereby resulting in the induction of apoptosis in selective cancer cells. Due to the multimodular structure of Sam68, the apoptosis mediated by CWP232204-Sam68 interaction can be attributed to 1) activation of transcription factor NF- $\kappa$ B induced by tumor necrosis factor alpha signaling, 2) alternative splicing of BCL-2 apoptosis gene, driving the balance towards pro-apoptotic as opposed to anti-apoptotic isoforms, 3) down-regulation of the anti-apoptotic protein survivin via Wnt signaling. Sam68, a KH domain RNA-binding protein belonging to the signal transduction and activation of RNA (STAR) family, plays a key role in various cellular processes including cell cycle progression and apoptosis; it is upregulated in many types of cancer cells and its expression is associated with increased cell proliferation and survival.

**Samarium:** Symbol:"Sm" Atomic Number:"62" Atomic Mass: 150.40amu. This is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. This silvery metal has many uses in metallic alloys. You may find it in nuclear reactors and even audio equipment.

**samarium 153 :** A radioactive substance used in the treatment of bone cancer and bone metastases (cancers that have spread from the original tumor to the bone). Samarium 153 is a radioactive form of the element samarium. It collects in bone, where it releases radiation that may kill cancer cells. It is a type of radioisotope.

**samarium Sm 153 leixidronam pentasodium:** The pentasodium salt of samarium Sm 153 leixidronam, a therapeutic agent consisting of a medium

energy beta- and gamma-emitting radioisotope, samarium Sm 153, and a teraphosphonate chelator, ethylenediaminetetramethylene phosphonic acid (EDTMP). The chelator moiety of samarium Sm 153 lexidronam associates with hydroxyapatite crystals concentrated in areas of bone turnover, thereby selectively delivering samarium Sm 153-mediated cytotoxic radiation to osteoblastic bone metastases. Check for active clinical trials using this agent. or A drug used to treat bone pain caused by bone cancer and other cancers that have spread to the bone. It contains a radioactive substance called samarium SM 153. Samarium Sm 153 lexidronam pentasodium collects in bone and gives off radiation that may kill cancer cells. It is a type of radiopharmaceutical. Also called Quadramet.

**Samcyprone:** (Other name for: diphenacyprone)

**sample:** One or more items taken from a population and intended to provide information on the population, and possibly to serve as a basis for a decision on the population or on the process which had produced it (ISO, 1977).

**sampling:** The procedure used to constitute a sample (ISO, 1977).

**sampling error:** Part of the total estimation error of a parameter due to the random nature of the sample (ISO, 1977).

**SAN:** Styrene-acrylonitrile

**Sancuso:** (Other name for: granisetron transdermal system)

**Sand blasting:** Grit and sand-blasting are processes used in the preparation and cleaning of steel to remove millscale and corrosion products. They are highly specialised processes.

**sand dune:** a heap of loose sand deposited by wind action.

**sand fall:** a mass of sand that dislodges and falls in a submarine canyon.

**Sandimmun:** (Other name for: cyclosporine)

**Sandimmune:** (Other name for: cyclosporine)

**Sanding:** The use of an abrasive to level a surface prior to painting. The more common term used by painters is 'rubbing down'.

**SANDING SURFACES:** A heavily pigmented finishing material used for building the surface to a smooth condition. It is sanded after drying.

**Sandoglobulin:** (Other name for: therapeutic immune globulin)

**Sandostatin:** (Other name for: octreotide acetate)

**Sandostatin Lar Depot:** (Other name for: octreotide acetate)

**Sandostatin pamoate:** (Other name for: octreotide pamoate)

**Sandostatin pamoate LAR:** (Other name for: octreotide pamoate)

**Sandstone** : Grains of sand can be formed into this sedimentary rock by the processes of deposition and cementation.

**SangCya:** (Other name for: cyclosporine)

**Sanger dideoxy method:** A DNA-sequencing technique that employs controlled interruption of enzymatic replication of the molecule to be analyzed. DNA polymerase I is used with a primer, the four deoxynucleoside triphosphates, and a 2',3'-dideoxy analog of one of them. Fragments of various lengths are produced in which the dideoxy analog is at the 3' end. Four sets of chain-terminated fragments (one for each analog) are then displayed by electrophoresis and autoradiography, and the base sequence can be read from the four lanes of the gel.

**Sanger sequencing** : A low-throughput method used to determine a portion of the nucleotide sequence of an individual's genome. This technique uses polymerase chain reaction (PCR) amplification of genetic regions of interest followed by sequencing of PCR products.

**sapacitabine:** An orally bioavailable pyrimidine analogue prodrug with potential antineoplastic activity. Sapacitabine is hydrolyzed by amidases to the deoxycytosine analogue CNDAC (2'-Cyano-2'-deoxyarabino-furanosylcytosine), which is then phosphorylated into the active triphosphate form. As an analogue of deoxycytidine triphosphate, CNDAC triphosphate incorporates into DNA strands during replication, resulting in single-stranded DNA breaks during polymerization due to beta-elimination during the fidelity checkpoint process; cell cycle arrest in the G2 phase and apoptosis ensue. The unmetabolized prodrug may exhibit antineoplastic activity as well.

**sapanisertib:** An orally bioavailable inhibitor of raptor-mTOR (TOR complex 1 or TORC1) and rictor-mTOR (TOR complex 2 or TORC2) with potential antineoplastic activity. Sapanisertib binds to and inhibits both TORC1 and TORC2 complexes of mTOR, which may result in tumor cell apoptosis and a decrease in tumor cell proliferation. TORC1 and 2 are upregulated in some tumors and play an important role in the

PI3K/Akt/mTOR signaling pathway, which is frequently dysregulated in human cancers.

**sapitinib:** An erbB receptor tyrosine kinase inhibitor with potential antineoplastic activity. Sapitinib binds to and inhibits erbB tyrosine receptor kinases, which may result in the inhibition of cellular proliferation and angiogenesis in tumors expressing erbB. The erbB protein family, also called the epidermal growth factor receptor (EGFR) family, plays major roles in tumor cell proliferation and tumor vascularization.

**Saponification:** A saponification reaction is the reverse of the esterification reaction. The term "saponification" is normally only used in the context of the making of soaps from the reaction.

**Saponification:** In the paint trade it refers to the chemical attack of the paint media by alkali usually from the substrate. e.g. the alkali reacts with the oil content of an oil based paint and turns it into a soap, resulting in disintegration of the paint. Oil based paints are very susceptible to saponification whereas emulsion paints generally have good resistance to alkali attack. OR The hydrolysis of esters using hot sodium hydroxide solution to produce the salt of a carboxylic acid. Usually saponification refers to the hydrolysis of esters of fatty acids to manufacture soaps. OR Alkaline hydrolysis of triacylglycerols to yield fatty acids as soaps.

**Saponification of oil-based paints on plaster:** Saponification occurs when oil-based paints are softened and liquefied by the alkali in plaster when moisture is present. Materials containing Portland cement or lime are strongly alkaline; gypsum plasters are usually not, but can become alkaline if gauged with lime or if it is brought forward from the backing during the drying phase. For these reasons, never use oil (solvent) based paints on plaster or masonry surfaces until they are completely dry in depth, then prime the surfaces with Dulux Alkali Resisting Primer. Where saponification has occurred, completely remove the defective coating, wash down the surface and rinse with clean water. Allow to dry then prime with Dulux Alkali Resisting Primer.

**saponin :** A substance found in soybeans and many other plants. Saponins may help lower cholesterol and may have anticancer effects.

**saponin-based immunoadjuvant OBI-821:** A purified, natural saponin isolated from the soapbark tree *Quillaja saponaria* Molina with potential

immunoadjuvant activity. When co-administered with a vaccine, OBI-821 may increase antibody and cytotoxic T-lymphocyte (CTL) responses against the vaccine's targeted antigen(s).

**saponin-cholesterol-phospholipid adjuvant:** An adjuvant comprised of saponin, derived from the bark of *Quillaja saponaria* Molina, cholesterol and phospholipid with antigen-delivery and immunostimulatory activities. This saponin-based adjuvant in combination with various antigens, including those for human papilloma virus (HPV), hepatitis C virus (HCV), and the human cancer antigen NY-ESO-1, may result in potent antibody, CD4+ T-helper-cell, and CD8+ cytotoxic T-cell responses against the targeted antigen. In addition, this agent may reduce the amount of antigen necessary to induce an efficient immune response in the host.

**saposin:** any member of a small glycoprotein family required for the hydrolysis of sphingolipids by specific lysosomal hydrolases; identified as SAP-A, -B, -C, and -D

**saquinavir mesylate:** The mesylate salt form of saquinavir, a synthetic peptidomimetic substrate with antiviral property. Saquinavir selectively binds to and inhibits human immunodeficiency virus type 1 (HIV-1) protease, an aspartic protease that cleaves viral gag and gag-pol polyprotein (precursors for viral proteases, reverse transcriptase, and integrase). Inhibition of HIV-1 protease prevents functional viral proteins to be cleaved from the viral polyprotein precursor and results in the release of immature, noninfectious virions.

**saquinavir mesylate :** A drug that belongs to the family of drugs called protease inhibitors. It interferes with the ability of a virus to make copies of itself.

**saracatinib:** An orally available 5-, 7-substituted anilinoquinazoline with anti-invasive and anti-tumor activities. Saracatinib is a dual-specific inhibitor of Src and Abl, protein tyrosine kinases that are overexpressed in chronic myeloid leukemia cells. This agent binds to and inhibits these tyrosine kinases and their effects on cell motility, cell migration, adhesion, invasion, proliferation, differentiation, and survival. Specifically, saracatinib inhibits Src kinase-mediated osteoclast bone resorption.

**Sarasar:** (Other name for: lonafarnib)

**SarCNU:** An alkylating chloroethylnitrosourea with antineoplastic activity. Selectively accumulating in some tumor cells, SarCNU forms covalent

linkages with nucleophilic centers in DNA, causing depurination, base pair miscoding, strand scission, and DNA-DNA cross-linking, which may result in cytotoxicity. or A substance being studied in the treatment of cancer. It is a type of alkylating agent. Also called sarcosinamide nitrosourea.

**sarcoid** : An inflammatory disease marked by the formation of granulomas (small nodules of immune cells) in the lungs, lymph nodes, and other organs. Sarcoid may be acute and go away by itself, or it may be chronic and progressive. Also called sarcoidosis.

**sarcoidosis** : An inflammatory disease marked by the formation of granulomas (small nodules of immune cells) in the lungs, lymph nodes, and other organs. Sarcoidosis may be acute and go away by itself, or it may be chronic and progressive. Also called sarcoid.

**sarcolemma**: the muscle cell membrane.

**sarcoma** : A type of cancer that begins in bone or in the soft tissues of the body, including cartilage, fat, muscle, blood vessels, fibrous tissue, or other connective or supportive tissue. Different types of sarcoma are based on where the cancer forms. For example, osteosarcoma forms in bone, liposarcoma forms in fat, and rhabdomyosarcoma forms in muscle. Treatment and prognosis depend on the type and grade of the cancer (how abnormal the cancer cells look under a microscope and how quickly the cancer is likely to grow and spread). Sarcoma occurs in both adults and children.

**sarcomatoid carcinoma** : A type of cancer that looks like a mixture of carcinoma (cancer that begins in the skin or in tissues that line or cover internal organs in the body) and sarcoma (cancer of the bone, cartilage, fat, muscle, blood vessels, or other connective or supportive tissue). The sarcoma-like cells are often spindle cells. Under a microscope, spindle cells look long and slender.

**sarcomere**: the functional unit of the muscle that contains thin actin filaments and thick myosin filaments. OR The functional unit of a myofibril; its distinct repeating structure is due to the overlapping of thick protein filaments, composed of myosin, and thin filaments, composed of actin and other proteins, which contract through the use of a sliding-filament method. OR A functional and structural unit of the muscle contractile system.

**Sarcoplasmic reticulum:** An extensive intracellular compartment in muscle cells that sequesters  $\text{Ca}^{2+}$  and releases it in response to a nerve impulse, thereby initiating muscle contraction.

**sarcosinamide nitrosourea :** A substance being studied in the treatment of cancer. It is a type of alkylating agent. Also called sarCNU.

**sargramostim:** A recombinant therapeutic agent which is chemically identical to or similar to endogenous human GM-CSF. Binding to specific cell surface receptors, sargramostim modulates the proliferation and differentiation of a variety of hematopoietic progenitor cells with some specificity towards stimulation of leukocyte production and may reverse treatment-induced neutropenias. This agent also promotes antigen presentation, up-regulates antibody-dependent cellular cytotoxicity (ADCC), and increases interleukin-2-mediated lymphokine-activated killer cell function; it may also augment host antitumoral immunity. Check for active clinical trials using this agent.

**sargramostim :** A substance that helps make more white blood cells, especially granulocytes, macrophages, and cells that become platelets. It is a cytokine that is a type of hematopoietic (blood-forming) agent. Also called GM-CSF and granulocyte-macrophage colony-stimulating factor.

**sargramostim plasmid DNA hepatocellular carcinoma vaccine adjuvant:** A vaccine adjuvant consisting of a plasmid DNA encoding sargramostim (granulocyte-macrophage colony-stimulating factor). Upon administration, expressed sargramostim may stimulate a cytotoxic T cell response enhancing the host immune response to a concomitantly administered hepatocellular carcinoma vaccine.

**sargramostim plasmid DNA melanoma vaccine adjuvant:** A vaccine adjuvant consisting of a plasmid DNA encoding sargramostim (a granulocyte macrophage-colony stimulating factor). Upon administration, expressed sargramostim may stimulate a cytotoxic T cell response enhancing the host immune response to a concomitantly administered melanoma vaccine.

**sargramostim plasmid DNA pancreatic tumor cell vaccine:** A whole cell vaccine comprised of irradiated allogenic pancreatic tumor cells transfected with a plasmid DNA encoding human sargramostim (GM-CSF). Vaccination results in expression of GM-CSF, which induces proliferation and differentiation hematopoietic lineage cells as well as stimulating

macrophage and dendritic cell functions in antigen presentation and antitumor cell-mediated immunity. Furthermore, administration of this pancreatic tumor cell vaccine may elicit a cytotoxic T lymphocyte (CTL) response against similar host tumor cells, resulting in decreased tumor growth. Check for active clinical trials using this agent.

**Sarking:** A bituminous underlay placed beneath tiles or slates.

**Sash window:** A window in which the opening parts slide up and down in the frame.

**Satellite DNA:** A DNA fraction whose base composition differs from that of the main component of DNA, as revealed by the fact that it bands at a different density in a CsCl gradient. Usually repetitive DNA or organelle DNA. OR Highly repeated, nontranslated segments of DNA in eukaryotic chromosomes; most often associated with the centromeric region. Its function is not clear.

**satellite tumor :** A type of skin cancer on or under the skin that has spread from the primary tumor through the lymph system and is not more than 2 centimeters away from the original tumor.

**SATIN FINISH:** See Semi-Gloss

**Sativex:** (Other name for: nabiximols)

**SATP:** Used to describe a substance at standard pressure and a temperature of 25°C (298.15 K).

**satraplatin:** An orally administered third generation platinum compound with potential antineoplastic activity. Satraplatin forms highly reactive, charged, platinum complexes which bind to nucleophilic groups in DNA, inducing intrastrand and interstrand DNA cross-links, as well as DNA-protein cross-links. These cross-links result in cell growth inhibition and apoptosis.

**satraplatin :** A substance being studied in the treatment of prostate and other types of cancer. It contains the metal platinum and may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called BMS-182751 and JM 216.

**Satric:** (Other name for: metronidazole hydrochloride)

**saturated:** (1) in organics, a chemical compound with all carbon bonds satisfied; it does not contain double or triple bonds and thus cannot add elements or compounds. (2) in liquids, a solution that contains enough of a

dissolved solid, liquid, or gas so that no more will dissolve into the solution at a given temperature and pressure. OR A solution in which the maximum amount of solute has been dissolved in the solvent. As you dissolve sugar in a glass of water there will come a point when you can dissolve no more sugar. The solution has become saturated. Steam from a boiling pot of water can also saturate the surrounding air. OR describes a solution that holds as much solute as possible. OR cannot hold any more water, as in groundwater or air (humidity). OR This has many different meanings depending on the context.1. Saturated solutions cannot dissolve any more solute at that temperature.2.Saturated hydrocarbons (alkanes) have only carbon and hydrogen atoms and use only single bonds.

**saturated (saturation) zone:** rock and soil in which all the porosity is filled with water.

**saturated compound:** a compound containing all single bonds.

**saturated fat:** A lipid that contains no carbon-carbon double bonds. Animal fats like butter and lard are composed of saturated fat. Saturated fats tend to be waxy or greasy solids. OR A type of fat with certain chemical properties that is usually solid at room temperature. Most saturated fats come from animal food products, but some plant oils, such as palm and coconut oil, also contain high levels. Eating saturated fat increases the level of cholesterol in the blood and the risk of heart disease.

**saturated fatty acid:** A fatty acid containing a fully saturated alkyl chain.

**saturated solution:** A solution which does not dissolve any more solute. When a saturated solution is placed in contact with additional solute, solute neither dissolves nor is deposited from a saturated solution.

**Saturation:** The concentration of a solution in which a solute is at its equilibrium solubility in the respective solvent. OR the condition of a molecule containing the most atoms possible; a molecule made up of single bonds.

**saw palmetto :** A shrub that is a member of the palm tree family. An extract made from the berries of this shrub has been studied in the treatment of certain urinary and prostate disorders. The scientific name is *Serenoa repens*.

**saw palmetto berry extract supplement:** An herbal supplement used commonly to alleviate symptoms of benign prostatic hyperplasia. In vitro

studies show that it may also have anti-cancer properties specific for prostate cancer. Check for active clinical trials using this agent.

**sawhorse projection:** a line drawing that is centered on two of the carbon atoms in a molecule and that shows, through perspective, the three-dimensional structure about them. Carbon atoms are represented by the intersection of bond lines. The arrangement resembles a carpenter's sawhorse.

**saxagliptin hydrochloride:** The hydrochloride salt form of saxagliptin, an orally bioavailable, potent, selective and competitive, cyanopyrrolidine-based inhibitor of dipeptidyl peptidase 4 (DPP-4), with hypoglycemic activity. Saxagliptin is metabolized into an, although less potent, active mono-hydroxy metabolite.

**SB-715992:** A substance being studied in the treatment of cancer. SB-715992 blocks a protein that tumor cells need to divide. It is a type of mitotic inhibitor. Also called ispinesib.

**SB-743921:** A synthetic small molecule with potential antineoplastic properties. SB-743921 selectively inhibits kinesin spindle protein (KSP), an important protein involved in the early stages of mitosis that is expressed in proliferating cells. Inhibition of KSP results in inhibition of mitotic spindle assembly and interrupts cell division, thereby causing cell cycle arrest and induction of apoptosis.

**SB-AS02B adjuvant:** A proprietary oil-in-water emulsion specifically designed for combining protein preparations used in vaccines. SB-AS02B adjuvant contains monophosphoryl lipid A and QS21, a saponin extracted from the South American tree *Quillaja saponaria* Molina. This agent may be used for formulating cancer-specific vaccine preparations such as those containing MAGE-3 melanoma protein.

**SB-AS15 adjuvant:** A vaccine adjuvant containing CpG 7909, monophosphoryl lipid, and QS-21 with potential antineoplastic and immunostimulatory activities. CpG 7909 is a synthetic 24-mer oligonucleotide containing 3 CpG motifs that selectively targets Toll-like receptor 9 (TLR9), thereby activating dendritic and B cells and stimulating cytotoxic T cell and antibody responses against tumor cells bearing tumor antigens. Monophosphoryl lipid is a detoxified derivative of lipid A, a component of *Salmonella minnesota* lipopolysaccharide (LPS); this agent may enhance humoral and cellular responses to various antigens. QS-21 is a

purified, naturally occurring saponin derived from the South American tree *Quillaja saponaria* Molina and exhibits various immunostimulatory activities. Combinations of monophosphoryl lipid and QS-21 may be synergistic in inducing humoral and cellular immune responses.

**SB939:** A substance being studied in the treatment of several types of cancer. SB939 blocks the action of an enzyme called histone deacetylase (HDAC) and may stop tumor cells from dividing. It is a type of HDAC inhibitor.

**SBR:** Styrene-butadiene (rubber)

**SC-70935:** A substance being studied for its ability to stimulate the production of blood cells during chemotherapy. It is a type of colony-stimulating factor. Also called leridistim.

**SC-PEG E. coli L-asparaginase :** A drug used to treat acute lymphoblastic leukemia (ALL). It is a form of the anticancer drug PEG-asparaginase that stays in the body longer. SC-PEG E. coli L-asparaginase is an enzyme that breaks down the amino acid asparagine and may block the growth of tumor cells that need asparagine to grow. It is a type of protein synthesis inhibitor. Also called EZN-2285 and Oncaspar-IV.

**scalar:** field values that measure magnitude.

**scale:** the precipitate that forms on surfaces in contact with water as the results of a physical or chemical change, often due to the presence of calcium carbonate ( $\text{CaCO}_3$ ) or magnesium carbonate ( $\text{MgCO}_3$ ). OR the proportion of a model in relation to the original.

**Scale inhibitor :** A chemical treatment used to control or prevent scale deposition

**scalene triangle:** a triangle having none of its sides equal (or angles equal). OR A triangle with all three sides of different lengths.

**scaling:** Multiplying calculated results by an empirical fudge factor in the hope of getting a more accurate prediction. Very often done for vibrational frequencies computed at the HF/6-31G\* level, for which the accepted scaling factor is 0.893 (17).

**scalpel :** A small, thin knife used for surgery.

**scan :** A type of test that makes detailed pictures of areas inside the body. A scan may also refer to the picture that gets made during the test. Scans may be used to help diagnose disease, plan treatment, or find out how well

treatment is working. There are many different types of scans, including computed tomography (CT) scans, magnetic resonance imaging (MRI) scans, and nuclear medicine scans (such as bone scans and liver scans). CT scans are done with an x-ray machine linked to a computer. MRI scans are done with radio waves and a powerful magnet linked to a computer. Nuclear medicine scans are done with small amounts of radioactive substances that are injected into the body and a special machine that detects the radioactive substance.

**Scandium:** Symbol:"Sc" Atomic Number:"21" Atomic Mass: 44.96amu. Scandium is one of the transition elements from the fourth period. Scandium can be found in stars, crystals of aquamarine, in other minerals, and has possible uses in spacecrafts of the future.

**scanner :** In medicine, an instrument that takes pictures of the inside of the body.

**Scanning electron microscopy (SEM):** A microscope in which a focused beam of electrons is directed on a sample to produce several interactions of which secondary electrons and backscattered electrons are the basis of the image. Resolution is typically 100 Å and has a large depth of field.

**scapula :** One of a pair of triangular bones at the back of the shoulder. The scapula connects the collarbone with the upper arm bone. Also called shoulder blade.

**Scar:** A characteristic mark on plastic containers which is confined mostly to the bottom. It is caused by the pinch-off operation and is often referred to as the length of the pinch-off.

**scar tissue :** Fibrous tissue that forms when normal tissue is destroyed by disease, injury, or surgery. For example, scar tissue forms when a wound heals after a cut, sore, burn, or other skin condition, or when an incision (cut) is made into the skin during surgery. It may also form inside the body when certain conditions, such as cirrhosis, cause normal tissue to become fibrous tissue.

**scarp:** a steep hillside or cliff that typically results from faulting or mass wasting.

**scatter radiation :** Radiation that spreads out in different directions from a radiation beam when the beam interacts with a substance, such as body tissue. For example, during x-ray mammography, very small amounts of

radiation may be scattered to areas away from the breast, such as the head and neck, sternum, and thyroid gland. The energy of scatter radiation is usually much lower than that of the original radiation beam.

**Scattered radiation:** Radiation that, during its passage through a substance, has been changed in direction. It may also have been modified by a decrease in energy. It is one form of secondary radiation.

**SCF:** Self-consistent field. The orbitals (i.e., the coefficients of the atomic basis functions in each molecular orbital) are adjusted until they are optimal in the mean electric field that they imply. Implicit for Hartree-Fock calculations. Sometimes the term "SCF" is used interchangeably with "HF," but it also applies to most DFT calculations and to all MCSCF calculations. OR A substance that causes blood stem cells (cells from which other types of cells develop) to change into different types of blood cells and increases the number and actions of these cells in the blood. SCF is a type of cytokine and a type of growth factor. Also called kit ligand and stem cell factor.

**SCH 54031:** A drug used to treat melanoma and hepatitis C. It is also being studied in the treatment of other types of cancer. It is used under the brand name Sylatron to treat melanoma in patients who have had surgery to remove cancer that has spread to lymph nodes. It is used under the brand name PEG-Intron to treat hepatitis C infections. SCH 54031 is a form of interferon alfa (a substance normally made by cells in the immune system) linked to a substance called PEG, which makes the drug stay in the body longer. SCH 54031 is made in the laboratory. It is a type of cytokine and a type of biological response modifier. Also called peginterferon alfa-2b.

**SCH 66336:** An anticancer drug that belongs to the family of drugs called enzyme inhibitors. Also called lonafarnib.

**SCH-58500:** A substance that has been studied in the treatment of some types of cancer. SCH-58500 is a weakened adenovirus that carries the p53 gene into tumor cells, causing them to die. It is a type of gene therapy. Also called ACN53, rAd/p53, and recombinant adenovirus-p53.

**Schedule :** A system of pipe sizes that provides for standardized outside diameters and wall thicknesses

**Schiff base:** An intermediate formed when an amine reacts with an aldehyde or a ketone from a nitrogen compound analogous to a carbonyl

compound; Schiff bases are intermediates in a number of enzymecatalyzed reactions.

**Schiller test** : A test in which iodine is applied to the cervix. The iodine colors healthy cells brown; abnormal cells remain unstained, usually appearing white or yellow.

**schistosome** : A parasitic worm that can cause diseases of the liver, bladder, and gastrointestinal tract. One type of schistosome has been linked to bladder cancer. Schistosomes are found in Africa, the Middle East, East Asia, the Caribbean, and South America.

**schizophrenia** : A group of severe mental disorders in which a person has trouble telling the difference between real and unreal experiences, thinking logically, having normal emotional responses to others, and behaving normally in social situations. Symptoms include seeing, hearing, feeling things that are not there, having false ideas about what is taking place or who one is, nonsense speech, unusual behavior, lack of emotion, and social withdrawal.

**school liaison** : A person who helps a child return to school after a serious illness, such as cancer, or a long hospital stay. A school liaison may also arrange for education services in the child's home or at the hospital if the child is not able to return to school. School liaisons help parents, teachers, and other students understand special issues that the child may have in returning to the classroom as a result of the illness or its treatment. This may help in planning extra education services and support that the child may need.

**SCHROEDINGER'S WAVE EQUATION**: explains the shapes of the orbitals of the electrons around an atom. They are probability distributions. That is, there is a probability of finding an electron's position in a "cloud" around an atomic nucleus. The electron appears to be "spread out" as it orbits, filling its cloud.

**Schwann cell** : A type of glial cell of the peripheral nervous system that helps separate and insulate nerve cells.

**schwannoma** : A tumor of the peripheral nervous system that arises in the nerve sheath (protective covering). It is almost always benign, but rare malignant schwannomas have been reported.

**SCID :** A rare, inherited disease that is marked by a lack of B lymphocytes (white blood cells that make antibodies and help fight infections) and a lack of T lymphocytes (white blood cells that attack virus-infected cells, foreign cells, and cancer cells). Patients with this disease have a high risk of developing viral, bacterial, and fungal infections. Also called severe combined immunodeficiency disease.

**scientific method:** an orderly process of gaining information about the biological world. OR An inefficient but highly successful method of knowledge construction based on experimental testing of hypotheses.

**scientific notation:** a method of converting very large or very small numbers into a convenient value using exponents. OR A system for reporting very small or very large numbers by writing the number as a decimal number between 1 and 10, multiplied by a power of 10. For example, 602000000000000000000000 is written in scientific notation as  $6.02 \times 10^{23}$ . 0.000323 is written in scientific notation as  $3.23 \times 10^{-4}$ .

**scientific review committee :** A group of doctors, scientists, and other experts that reviews the detailed plan of a clinical trial for scientific quality and correct study design. There is a scientific review committee at every health care facility that does clinical research. Most clinical trials are reviewed by the scientific review committee before they go to the facility's Institutional Review Board (IRB) for approval. Also called scientific review panel.

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**scientist :** A person who has studied science, especially one who is active in a particular field of investigation.

**scintigraphy :** A procedure that produces pictures (scans) of structures inside the body, including areas where there are cancer cells. Scintigraphy is used to diagnose, stage, and monitor disease. A small amount of a radioactive chemical (radionuclide) is injected into a vein or swallowed. Different radionuclides travel through the blood to different organs. A machine with a special camera moves over the person lying on a table and

detects the type of radiation given off by the radionuclides. A computer forms an image of the areas where the radionuclide builds up. These areas may contain cancer cells. Also called radionuclide scanning.

**Scintillation detector:** The combination of phosphor, photomultiplier tube, and associated electronic circuits for counting light emissions produced in the phosphor by ionizing radiation.

**scintimammography :** A type of breast imaging test that is used to detect cancer cells in the breasts of some women who have had abnormal mammograms, or who have dense breast tissue. It is not used for screening or in place of a mammogram. In this test, a woman receives an injection of a small amount of a radioactive substance called technetium 99, which is taken up by cancer cells, and a gamma camera is used to take pictures of the breasts. Also called Miraluma test and sestamibi breast imaging.

**Scissile bond:** The bond in a substrate molecule that is cleaved by the enzyme.

**sclera :** The white layer of the eye that covers most of the outside of the eyeball.

**scleroderma :** A chronic disorder marked by hardening and thickening of the skin. Scleroderma can be localized or it can affect the entire body (systemic).

**sclerosing adenosis :** A benign condition in which scar-like tissue is found in a gland, such as the breast lobules or the prostate. A biopsy may be needed to tell the difference between the abnormal tissue and cancer. Women with sclerosing adenosis of the breast may have a slightly increased risk of breast cancer.

**Sclerosol Intrapleural Aerosol:** (Other name for: talc)

**scoliosis:** a medical condition in which a person's spine is curved from side to side, shaped like an "S" OR A condition marked by a side-to-side curve of the backbone. The curve is usually shaped like an S or a C. In most cases, the cause of scoliosis is not known. In some cases, scoliosis may be present at birth or it may be caused by muscle spasms, inflammation, tumors, or certain other disorders. It may also occur at some point in time after radiation therapy to the backbone.

**Scram:** The sudden shutting down of a nuclear reactor, usually by rapid insertion of control rods, either automatically or manually by the reactor

operator. Also known as a "reactor trip".

**Scrap:** Any output of a mold that is not usable as the primary product. OR All products of a processing operation which are not present in the primary finished articles. Scrap from operations can usually be reclaimed for reuse in the processor's plant or for sale to a commercial reclaimer. OR Any product of a molding operation that is not part of the primary product. In compression molding, this includes flash, culls, runners, and is not reusable as a molding compound. Injection molding and extrusion scrap (runners, rejected parts, spruces, etc.) can usually be reground and remolded. OR Any waste plastic product that is not useable as the primary product. A certain amount of scrap is usually generated during plastic extrusion manufacture and other plastic manufacturing processes. This scrap can normally be recycled. OR Any output of a mold that is not usable as the primary product.

**Scratch resistance:** A surface's resistance to damage by scratching and abrasion. In the coating industry, usually measured by pencil hardness.

**Screed:** A band of plaster or mortar laid on the surface of the wall as a guide to the thickness or level of the plaster to be applied. Therefore also used for the coat itself and for the levelling coat on flooring.

**SCREEN:** Woven metal screens are installed across the flow of plastic in an extruder. They are located between the tip of the screw and the die. Supported by a breaker plate, the screens strain out contaminants and increase back pressure.

**Screen (pack):** Woven metal screens installed across the flow of plastic in a plastic extruder. Supported by a breaker plate, the screens strain out contaminants and increase back pressure.

**Screen printing):** a printing technique involving the passage of printing medium, such as ink, through a web or fabric, which has been stretched on a frame, to which a refined form of stencil has been applied. The stencil openings determine the form and dimensions of the imprint thus produced.

**screening:** The presumptive identification of unrecognized disease or defect by the application of tests, examinations, or other procedures which can be applied rapidly. A screening test is not intended to be diagnostic. Persons with positive or suspicious findings must be referred to their physicians for diagnosis and necessary treatment.

**screening :** Clinical evaluation of an asymptomatic individual in the general population aimed at identifying abnormalities which might signal the presence of a specific medical condition. The intent is to find diseases at the earliest possible stage in their development in order to improve the chances for cure or reduce morbidity. or Checking for disease when there are no symptoms. Since screening may find diseases at an early stage, there may be a better chance of curing the disease. Examples of cancer screening tests are the mammogram (breast), colonoscopy (colon), and the Pap test and HPV test (cervix). Screening can also include checking for a person's risk of developing an inherited disease by doing a genetic test.

**screening mammogram :** X-rays of the breasts taken to check for breast cancer in the absence of signs or symptoms.

**Screw:** A helically grooved rotating element inside the barrel of a screw extruder. The main purpose of a screw is to melt and feed raw material from the feeder to the die, also homogenizing, compressing and pressurizing the material. OR In extrusion, the shaft provided with helical grooves which conveys the material from the hopper outlet through the barrel and forces it out through the die. OR A device in the barrel that compacts resin pellets to pressurize and melt them prior to injection. OR The plastic extrusion feed screw, which can be single or twin screw, is part of the plastic extrusion machine. It sits in the barrel of the machine forcing the plastic material along the barrel. OR A rotating auger that uses a helical thread and a varying channel depth to convey, melt, mix, and pump resin. Consists of a feed section, transition zone, metering section and in some cases a mixing zone/zones.

**Screw axis:** A symmetry element involving an n-fold rotation followed by translation parallel to the axis of rotation. It may be visualized as a screw.

**Screw diameter:** The diameter developed by the rotating flight land around the screw axis.

**Screw dislocation:** A defect in a crystal having a screw-type appearance as observed with an electron microscope or atomic force microscope.

**Screw Extruder:** A machine comprised of a barrel with a temperature control, housing one or more rotating screws which pass plastic material from the feed aperture and move it in the form of melt under pressure through a die.

**SCREW FLIGHT:** The helical metal thread of a screw in an extruder or injection molding machine.

**SCREW PLASTICATING INJECTION MOLDING:** A technique in which the plastic is converted from pellets to a viscose melt by means of an extruder screw which is an integral part of the molding machine. Machines are either single stage (in which plastication and injection are done in the same cylinder) or double stage in which the material is plasticated in one cylinder and then fed to a second for injection into a mold.

**Screw speed:** The rotating speed of the screw as it augers new material towards the metering zone. It is expressed in rpm (revolutions per minute). OR The rate of revolution (in RPM) of an extruder or injection molding machine screw.

**Screw Travel:** The distance the screw travels forward when filling the mold cavity.

**SCRF:** Self-consistent reaction field. A continuum method for treating solvation. The simplest formulation involves placing the molecule in a spherical hole in a polarizable (dielectric) continuum. The molecule polarizes the solvent, which in turn affects the electron distribution in the molecule; this is iterated to self-consistency.

**scrotum:** a pouch outside the male body that contains the testes. OR In males, the external sac that contains the testicles.

**Scrubber:** An absorption column designed to remove an undesirable component from a gas stream.

**Scumbling:** A technique in painting where by the final coat is patterned or partly removed to expose the undercoat or ground in order to obtain colour variety or movement.

**Scurvy:** A disease caused by a deficiency of ascorbate (vitamin C), which results in the formation of unstable collagen.

**Scutellaria barbata :** An herb that belongs to a group of herbs named the Scutellaria species or scullcap. Both the root and the above-ground part have been used to make herbal medicines. The root has been used in traditional Chinese medicine to treat lung cancer and other medical problems.

**SDCI:** See CISD.

**SDF-1-targeted agent NOX-A12:** A 45-mer L-stereoisomer RNA oligonucleotide linked to a 40 kDa polyethyleneglycol that targets the small chemokine stromal cell-derived factor 1 (SDF-1 or CXCL12) with potential antineoplastic and hematopoietic stem cell-mobilization activities. SDF-1 targeted agent NOX-A12 specifically binds to SDF-1 thereby preventing the binding of SDF-1 to its receptors CXCR4 and CXCR7, and blocking the subsequent receptor activation. This may prevent angiogenesis, tumor cell proliferation, invasion and metastasis and could sensitize tumor cells to chemotherapy. In addition, inhibition of SDF-1/CXCR4 interaction may induce mobilization of hematopoietic cells from the bone marrow into blood. The unique mirror-image configuration of this agent renders it resistant to hydrolysis and does not hybridize with native nucleic acids. Furthermore, this agent does not induce the innate immune response and has shown a favorable immunogenicity profile. Check for active clinical trials using this agent.

**SDR:** The aunts, uncles, grandparents, grandchildren, nieces, nephews, or half-siblings of an individual. Also called second-degree relative. Or An aunt, uncle, grandparent, grandchild, niece, nephew, or half-brother or -sister. Also called second-degree relative.

**SDS:** A rare, inherited disorder in which the pancreas and bone marrow do not work the way they should. Symptoms include problems digesting food, a low number of neutrophils (a type of white blood cell), bone problems, and being short. Infants with the disorder get bacterial infections and are at an increased risk of aplastic anemia, myelodysplastic syndrome, and leukemia. Also called Shwachman syndrome and Shwachman-Diamond syndrome.

**SDS-polyacrylamide gel electrophoresis:** The electrophoresis of proteins in a polyacrylamide medium; the detergent SDS renders the movement of the proteins inversely proportional to molecular weight (see also electrophoresis).

**SDX-102:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called antimetabolites. Also called alanosine.

**Se-methyl-seleno-L-cysteine:** A naturally occurring organoselenium compound found in many plants, including garlic, onions, and broccoli, with potential antioxidant and chemopreventive activities. Se-Methyl-seleno-L-cysteine (MSC) is an amino acid analogue of cysteine in which a

methylselenium moiety replaces the sulphur atom of cysteine. This agent acts as an antioxidant when incorporated into glutathione peroxidase and has been shown to exhibit potent chemopreventive activity in animal models. or A substance that contains the element selenium (a nutrient that protects cells against damage) and is found in certain plants such as garlic and broccoli. Se-methyl-seleno-L-cysteine can act as an antioxidant and may help prevent or slow the growth of cancer cells. It is a type of amino acid.

**sea arch:** a stack whose center has been eroded through, producing a bridgelike shape, because the rock is softer or more fractured.

**sea breeze:** local wind that develops during the day along a beach due to uneven heating of land and water; wind moves from water to land.

**sea cave:** a cavity eroded into a sea cliff in the wave zone.

**sea cliff:** a steep slope along a coastline that results from the slope's base being eroded by waves.

**sea floor spreading:** the process by which new basaltic oceanic crust forms at a midoceanic ridge and is slowly pushed away on both sides toward the continents as more new crust is produced.

**sea surface temperature:** The temperature of the layer of seawater (approximately 0.5 m deep) nearest the atmosphere.

**sea surface temperature anomalies:** Temperature of emitted energy from the sea surface. SST anomaly = (SST - SST mean).

**Seaborgium:** Symbol:"Sg" Atomic Number:"106" Atomic Mass: (263)amu. This is one of the postactinide elements. Scientists have created these in labs and may have only found a few atoms of the element. You will not find these in use anywhere.

**Seal:** Any device used to prevent the passage of a fluid, liquid or fine particles

**Seal Initiation Temperature:** Measure of lowest temperature at which the required hot tack and seal strength levels are both achieved.

**Seal Off:** A feature on two liquid silicone mold halves or cavity inserts seal off the cavity with the exception of the silicone injection gate and air venting ports

**Sealed source:** Any radioactive material or byproduct encased in a capsule designed to prevent leakage or escape of the material.

**SEALER:** A thin liquid applied to seal a surface, to prevent previous paint from bleeding through from the surface or to prevent undue absorption of the topcoat into the substrate.

**Sealing bead:** a bead of material that is molded onto the top of the land area completely around the top of the neck finish in order to further enhance the sealing capabilities of the component.

**Sealing Plane:** The plane on the inside of a bottle cap along the sealing surface.

**Sealing surface:** the lip portion of the finish that makes contact with the sealing gasket or liner to form a seal. OR The surface of the finish of the container on which the closure forms the seal.

**seamount:** a conical, usually basaltic volcanic mountain that forms on the ocean floor. OR underwater mountain.

**seasonal variation:** The change in a set of meteorological parameters averaged over three months. Seasonal variation is the largest climatic variation, and temperature is the most frequently observed meteorological parameter. Often, monthly averaged data are grouped into seasons, according to the prescribed definition.

**Seat:** indentations on the base of a bottle that help align bottles on filling and decorating lines so that the bottles are oriented correctly during these processes.

**sebum :** An oily substance produced by certain glands in the skin.

**Secant Modulus:** Measure of film stiffness.

**second:** The second (s) is the base unit of time in the SI system of units, defined as the duration of 9,192,631,770 cycles of the radiation associated with a certain color of light emitted by the cesium atom.

**second ionization energy:** The energy needed to remove an electron from an isolated +1 ion. The third ionization energy would be the energy required to remove an electron from an isolated +2 ion, and so on.

**second law:** The second law states that every spontaneous process causes a net increase in the entropy of the universe. Many alternative statements are possible, including: Heat cannot be converted to work via an isothermal cycle. Heat cannot be converted to work with 100% efficiency. Heat cannot flow from a cold object to a warmer object without doing outside work.

**second law of thermodynamics:** The law stating that in any chemical or physical process, the entropy of the universe tends to increase.

**Second messenger:** A diffusible small molecule, such as cAMP, that is formed at the inner surface of the plasma membrane in response to a hormonal signal. OR A small signal molecule whose concentration changes in response to a primary messenger. OR An effector molecule synthesized within a cell in response to an external signal (first messenger) such as a hormone.

**second opinion :** In medicine, the opinion of a doctor other than the patient's current doctor. The second doctor reviews the patient's medical records and gives an opinion about the patient's health problem and how it should be treated. A second opinion may confirm or question the first doctor's diagnosis and treatment plan, give more information about the patient's disease or condition, and offer other treatment options.

**second order reaction:** A reaction with a rate law that is proportional to either the concentration of a reactant squared, or the product of concentrations of two reactants.

**second primary cancer :** A term used to describe a new primary cancer that occurs in a person who has had cancer in the past. Second primary cancers may occur months or years after the original (primary) cancer was diagnosed and treated. Certain types of cancer treatment, such as chemotherapy and radiation therapy, may increase the risk of a second primary cancer. Having certain inherited gene mutations (changes) and being exposed to certain cancer-causing substances, such as tobacco smoke, may also increase the risk of a second primary cancer.

**SECOND QUANTUM NUMBER, l:** describes sublevels. The sublevels are called, s, p, d, f. s orbitals are spherical in shape. p orbitals are dumbbell shaped.

**second-degree relative :** The aunts, uncles, grandparents, grandchildren, nieces, nephews, or half-siblings of an individual. Also called SDR. Or An aunt, uncle, grandparent, grandchild, niece, nephew, or half-brother or -sister. Also called SDR.

**second-line therapy :** Treatment that is given when initial treatment (first-line therapy) doesn't work, or stops working.

**second-look surgery :** Surgery performed after primary treatment to determine whether tumor cells remain.

**secondary (2°) carbon:** a carbon atom that is directly attached to two other carbon atoms.

**secondary cancer :** A term used to describe cancer that has spread (metastasized) from the place where it first started to another part of the body. Secondary cancers are the same type of cancer as the original (primary) cancer. For example, cancer cells may spread from the breast (primary cancer) to form new tumors in the lung (secondary cancer). The cancer cells in the lung are just like the ones in the breast. Also called secondary tumor.

**secondary carbocation:** a carbocation to which two alkyl groups are bonded.

**secondary metabolism:** Pathways that lead to specialized products not found in every living cell.

**Secondary nucleation:** The occurrence of crystal nuclei brought about by operations such as stirring and impact after the system has undergone primary nucleation.

**Secondary operation:** Any activity performed after the molding process required to produce a finished product suitable for its designed purpose. OR In many applications, additional manufacturing steps will be required after molding thermoplastic parts. Parts made from thermoplastic materials lend themselves to a number of ways of machining, assembly and finishing.

**Secondary radiation:** Radiation originating as the result of absorption of other radiation in matter. It may be either electromagnetic or particulate in nature.

**Secondary structure:** The residue-by-residue conformation of the backbone of a polymer. OR In a protein or a nucleic acid, any repetitive folded pattern that results from the interaction of the corresponding polymeric chains. In proteins, the most common are  $\beta$ -strands (sheets) and  $\alpha$ -helices. OR In a protein, the spatial arrangement of amino acid residues that are relatively close to one another in the linear sequence; the  $\alpha$  helix and the  $\beta$  strand are both elements of primary structure.

**Secondary system:** The steam generator tubes, steam turbine, condenser, and associated pipes, pumps, and heaters used to convert the heat energy of

the reactor coolant system into mechanical energy for electrical generation. Most commonly used in reference to pressurized water reactors.

**Secondary transporter:** A transporter that uses the energy of the downhill (exergonic) flow of one ion or molecule to power the uphill (endergonic) flow of another. Also called cotransporter.

**secondary tumor :** A term used to describe cancer that has spread (metastasized) from the place where it first started to another part of the body. Secondary tumors are the same type of cancer as the original (primary) cancer. For example, cancer cells may spread from the breast (primary cancer) to form new tumors in the lung (secondary tumor). The cancer cells in the lung are just like the ones in the breast. Also called secondary cancer.

**secondhand smoke :** Smoke that comes from the burning of a tobacco product and smoke that is exhaled by smokers. Inhaling secondhand smoke is called involuntary or passive smoking. Also called environmental tobacco smoke and ETS.

**secrete :** To form and release a substance. In the body, cells secrete substances, such as sweat that cools the body or hormones that act in other parts of the body.

**secretin:** a hormone produced by digestive glands that influences digestive processes.

**secretin :** A hormone released into the blood by cells in the inner layer of the small intestine. It is released when partly digested food moves from the stomach into the small intestine. Secretin causes the pancreas, liver, and stomach to release other substances that help digest food. Secretin may also be made in the laboratory.

**secretin human :** A drug used to help diagnose gastrinomas (tumors that cause too much gastric acid to be made) and other problems with the pancreas. It is also used to increase secretions from the pancreas and to help identify a duct called the ampulla of Vater. Secretin human is a form of secretin that is made in the laboratory. Secretin causes the pancreas, liver, and stomach to release substances that help digest food. Also called ChiRhoStim and synthetic human secretin.

**secretin stimulation test :** A test used to measure the ability of the pancreas to respond to a hormone called secretin. Secretin causes the

pancreas, liver, and stomach to release substances that help digest food. During a secretin stimulation test, a tube is inserted through the nose or throat into the stomach and small intestine. Secretin is given to the patient by injection into a vein. After a certain amount of time, samples of fluid are taken from the small intestine through the tube and sent to a lab to test for a response. A secretin stimulation test may be used to help diagnose problems that affect the pancreas, such as pancreatitis, cystic fibrosis, and a type of pancreatic tumor called a gastrinoma. Also called pancreatic function test.

**Section:** Any outline drawing showing the shape of a moulding structure or object as it would appear if cut along a line and viewed at right-angles to the cut; particularly refers to the drawing of a building prepared in this way as opposed to a plan or elevation.

**Sectional Weave :** A fabric consisting of alternating sections of right and left conventional weave usually joined by means of straight or crimped wires.

**secular carbon dioxide trend:** The fairly uniform and accelerating increase of carbon dioxide concentration in the atmosphere, as illustrated by the Mauna Loa record. The secular trend reflects the increase in global atmospheric carbon dioxide concentrations produced by combustion of fossil fuels, kilning of limestone, and possibly a net biospheric release of carbon dioxide resulting from deforestation.

**sedation :** A state of calmness, relaxation, or sleepiness caused by certain drugs. Sedation may be used to help relieve anxiety during medical or surgical procedures or to help cope with very stressful events. Drugs that relieve pain may be used at the same time.

**sedative :** A drug or substance used to calm a person down, relieve anxiety, or help a person sleep.

**sediment:** Material that occurs on the bottom of a water stream and is the result of sedimentation of suspended matter (WHO, 1979). OR The grains of rock or animal remains that are dropped to the bottom of a river, lake or sea.

**sedimentary:** rock formed from the compaction and cementation of fragments from other rocks. OR rock formed from layers of sediment after the grains of sediment have been squashed together and have undergone cementation.

**Sedimentary Rock:** A rock type that has been created by the deposit and compression of sediment. This type of rock is created over millions of years while igneous rock can be created overnight. Sandstone is a good example of a sedimentary rock. The three main types of rock are igneous, sedimentary, and metamorphic. OR a rock that is composed of sediment grains that have been compacted and lithified. OR Sedimentary rock is rock formed from layers of sediment by compaction (pressure) and cementation (by insoluble minerals that bind the particles of sediment together).

**sedimentary structures:** features that were part of sediments when they were deposited and which were preserved when the sediments became lithified.

**sedimentation:** Separation of a dense material (usually a solid) from a less dense material (usually a liquid) by allowing the denser material to settle out of the mixture. OR The effect of gravitational forces resulting in the separation of particles from the fluid in which they are suspended (ISO, 1979) OR the deposition of suspended matter carried by water, wastewater, or other liquids, by gravity. It is usually accomplished by reducing the velocity of the liquid below the point at which it can transport the suspended material. Also called settling.

**Sedimentation coefficient:** The velocity at which a macromolecule moves in a centrifugal field divided by the strength of the centrifugal field; usually expressed in Svedberg units.

**sedimentation coefficient:** A physical constant specifying the rate of sedimentation of a particle in a centrifugal field under specified conditions.

**sedimentation rate :** The distance red blood cells travel in one hour in a sample of blood as they settle to the bottom of a test tube. The sedimentation rate is increased in inflammation, infection, cancer, rheumatic diseases, and diseases of the blood and bone marrow. Also called erythrocyte sedimentation rate and ESR.

**Sedimentation-equilibrium centrifugation:** An ultracentrifugation technique that can be used to determine the mass of a protein; centrifugation is at a relatively slow speed so that sedimentation is counterbalanced by diffusion.

**sedoxantrone trihydrochloride:** The trihydrochloride salt of the anthrapyrazole antineoplastic antibiotic sedoxantrone with potential antineoplastic activity. Sedoxantrone intercalates into DNA and interacts

with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis.

**sedoxantrone trihydrochloride** : A substance being studied in the treatment of some types of cancer. Sedoxantrone trihydrochloride binds to DNA and stops cells, including cancer cells, from repairing damage to DNA and from making more DNA, RNA, and protein. It is a type of DNA intercalator. Also called CI-958.

**Seediness**: The appearance of very small particles in the dried paint film.  
OR There's really only one solution to this one: thoroughly clean down the surface to remove all dirt, grease and surface contaminants. Rub down with a suitable abrasive, dust off, and re-paint the affected area.

**Seeding**: The addition of solid particles, usually of the desired phase, to a crystallization process in order to induce crystal nucleation under controlled conditions.

**seedless vascular plants**: the division Pteridophyta that includes the ferns.

**SEEDS**: Small, undesirable particles or granules other than dust found in paint, varnish or lacquer.

**SEGA** : A benign (not cancer), slow-growing tumor that usually forms in the walls of fluid-filled spaces in the brain. The tumors are made up of large, star-shaped cells called astrocytes. SEGAs are common in patients with tuberous sclerosis (an inherited disorder in which benign tumors form in the brain and other parts of the body). Also called subependymal giant cell astrocytoma.

**segmental cystectomy** : Surgery to remove part of the bladder (the organ that holds urine). Also called partial cystectomy.

**Segmental flexibility**: Mobility imparted to IgG antibodies by a flexible polypeptide that joins the Fc and the two Fab units. Such mobility enhances the formation of antibody-antigen complexes.

**segmental mastectomy** : An operation to remove the cancer and some normal tissue around it, but not the breast itself. Some lymph nodes under the arm may be removed for biopsy. Part of the chest wall lining may also be removed if the cancer is near it. Also called breast-conserving surgery, breast-sparing surgery, lumpectomy, partial mastectomy, and quadrantectomy.

**segmental resection** : Surgery to remove part of an organ or gland. It may also be used to remove a tumor and normal tissue around it. In lung cancer surgery, segmental resection refers to removing a section of a lobe of the lung. Also called segmentectomy.

**segmentectomy** : Surgery to remove part of an organ or gland. It may also be used to remove a tumor and normal tissue around it. In lung cancer surgery, segmentectomy refers to removing a section of a lobe of the lung. Also called segmental resection.

**segmented:** See "contraction."

**SEGREGATION:** A separation of components in a molded article usually denoted by wavy lines and color striations in thermoplastics. In thermosets, usually meaning segregation of resin and filler on surface.

**segregation analysis** : The process of fitting formal genetic models to data on expressed disease characteristics (phenotype) in biological family members in order to determine the most likely mode of inheritance for the trait or disease under study.

**Seigen:** (Other name for: lactobacillus fermented extract)

**Seismic category I:** Structures, systems, and components that are designed and built to withstand the maximum potential earthquake stresses for the particular region where a nuclear plant is sited.

**seismic gap:** a stretch along an active fault zone that has not produced earthquakes for a significant time.

**seismic reflection:** the return of some of the energy from seismic waves that have penetrated downward from the surface or nearsurface, hit a rock boundary, and bounded back to the surface. OR a change in the direction of travel of a seismic wave as it passes through different mediums; occurs only if the mediums have different densities or strengths, which change the velocity of the seismic wave.

**seismic wave:** a wave of energy that is released by an earthquake.

**seismogram:** paper record graphing earthquake motions, created by a seismograph. OR the series of squiggly lines recorded by a seismograph.

**seismograph:** a device used to record the motion of a seismometer during an earthquake. OR machine that detects earthquakes.

**seismometer:** a suspended pendulumlike device used to detect seismic waves.

**Seizing:** Act of holding or grasping suddenly or forcibly.

**seizure :** Sudden, uncontrolled body movements and changes in behavior that occur because of abnormal electrical activity in the brain. Symptoms include loss of awareness, changes in emotion, loss of muscle control, and shaking. Seizures may be caused by drugs, high fevers, head injuries, and certain diseases, such as epilepsy.

**selatinib ditosilate:** An orally bioavailable ditosilate salt form of selatinib, an analog of the quinazoline lapatinib and dual inhibitor of epidermal growth factor receptor (EGFR) and Human Epidermal Growth Factor Receptor 2 (ErbB-2 or HER-2), with potential antineoplastic activity. Upon administration, selatinib reversibly blocks phosphorylation of both EGFR and ErbB2, thereby suppressing tumor growth in EGFR/ErbB-2-overexpressing tumor cells. The tyrosine kinases EGFR and ErbB2 have been implicated in the growth of various tumor types.

**Selectins:** Carbohydrate-binding proteins that constrain immune-system cells to the site of injury in an inflammatory response.

**selection bias :** An error in choosing the individuals or groups to take part in a study. Ideally, the subjects in a study should be very similar to one another and to the larger population from which they are drawn (for example, all individuals with the same disease or condition). If there are important differences, the results of the study may not be valid.

**selective androgen receptor modulator LY2452473:** An orally bioavailable selective androgen receptor modulator (SARM), with potential tissue-selective androgenic/anti-androgenic activity. Upon oral administration, LY2452473 acts as an agonist in select tissues and organs, including skeletal muscle, bone and the penis, thereby binding to and activating androgen receptor (AR) while acting as an antagonist in the prostate, thereby blocking AR activation and AR-mediated cellular proliferation. This may improve muscle mass and strength, bone formation, and erectile dysfunction while not stimulating growth of the prostate.

**selective estrogen receptor degrader ARN-810:** An orally available, nonsteroidal selective estrogen receptor degrader (SERD), with potential antineoplastic activity. Upon oral administration, SERD ARN-810 binds to the estrogen receptor and induces a conformational change that results in the degradation of the receptor. This may inhibit the growth and survival of ER-expressing cancer cells.

**selective estrogen receptor degrader AZD9496:** An orally available selective estrogen receptor degrader (SERD), with potential antineoplastic activity. Upon administration, SERD AZD9496 binds to the estrogen receptor (ER) and induces a conformational change that results in the degradation of the receptor. This prevents ER-mediated signaling and inhibits the growth and survival of ER-expressing cancer cells.

**selective estrogen receptor degrader SRN-927:** An orally available, nonsteroidal selective estrogen receptor degrader (SERD), with potential antineoplastic activity. Upon oral administration, SERD SRN-927 specifically binds to the estrogen receptor (ER) and induces a conformational change that results in the degradation of the receptor. This prevents ER-mediated signaling and inhibits the growth and survival of ER-expressing cancer cells.

**selective estrogen receptor degrader/modulator RAD1901:** An orally available, selective estrogen receptor degrader (SERD) and selective estrogen receptor modulator (SERM), with potential antineoplastic and estrogen-like activities. Upon oral administration of higher doses of RAD1901, this agent acts as a SERD, which binds to the estrogen receptor (ER) and induces a conformational change that results in the degradation of the receptor. This may inhibit the growth and survival of ER-expressing cancer cells. At lower doses of this agent, RAD1901 acts as a SERM and has estrogen-like effects in certain tissues, which can both reduce hot flashes and protect against bone loss. In addition, RAD1901 is able to cross the blood-brain barrier (BBB).

**selective estrogen receptor degraderLSZ102:** A selective estrogen receptor (ER) degrader (SERD), with potential antineoplastic activity. Upon administration of LSZ102, this agent binds to the ER and induces the degradation of the receptor. This prevents ER activation and ER-mediated signaling, and inhibits the growth and survival of ER-expressing cancer cells. Check for active clinical trials using this agent.

**selective estrogen receptor modulator :** A drug that acts like estrogen on some tissues but blocks the effect of estrogen on other tissues. Tamoxifen and raloxifene are selective estrogen receptor modulators. Also called SERM.

**Selective laser sintering (SLS):** During the SLS process, a CO2 laser draws onto a hot bed of thermoplastic powder, where it lightly sinters

(fuses) the powder into a solid. After each layer, a roller lays a fresh layer of powder on top of the bed and the process repeats. OR This method of rapid prototyping utilizes a laser to soften a powdered material, (typically metal), and binding it together into a form pre-defined by a 3D-model.

**selective serotonin reuptake inhibitor :** A type of drug that is used to treat depression. Selective serotonin reuptake inhibitors slow the process by which serotonin (a substance that nerves use to send messages to one another) is reused by nerve cells that make it. This increases the amount of serotonin available for stimulating other nerves. Also called SSRI.

**Selectivity:** the ability of the device to measure one chemical component in the presence of others in the sample. For example ionselective electrodes are not 100% ionspecific. Most are sensitive to some other ions to some extent. Some ISEs cannot be used in the presence of certain other interfering ions or can only tolerate very low contributions from these ions. Special techniques are available for removing or compensating for interfering ions

**Selectivity coefficient:** an expression of the extent to which an ionselective electrode reacts with an interfering ion in proportion to the measured ion. A selectivity coefficient of 0.1 implies, that the electrode is ten times more responsive to the primary ion than to the interfering ion (i.e. if a solution contains equal concentrations of both ions, the interfering ion will contribute about 10% to the total change in electrode signal produced, when the electrode is immersed in the test solution). The selectivity coefficient is not constant but depends on a number of factors including the total ionic strength of the solution, the concentration of both ions, and the temperature. The performance of an ISE in the presence of an interfering ion is quantified by the selectivity coefficient:  $K_{A,B}$  (where A is the primary ion and B is the interfering ion. The higher the  $K_{A,B}$  the greater the effect of the interference from B. At  $K_{A,B} = 1$  there is an equal response to both ions. A modified form of the Nernst equation (see Nikolski equation) gives the total potential developed.

**Selectivity filter:** A region of ion-channel proteins that determines the specificity of a particular channel.

**selenium:** A nonmetallic chemical element found in trace amounts in human body. Selenium primarily occurs in vivo as selenocompounds, mostly selenoproteins such as glutathione peroxidase and thioredoxin

reductase (enzymes responsible for detoxification). Alone or in combination with Vitamin E, selenocompounds act as antioxidants. These agents scavenge free radicals; prevent blood clots by inhibiting platelet aggregation; strengthen the immune system; and have been shown, in some instances, to inhibit chromosomal damage and mutations. Exhibiting chemopreventive activity, selenocompounds also inhibit the induction of protein kinase C. or A mineral that is needed by the body to stay healthy. It is being studied in the prevention and treatment of some types of cancer. Selenium is a type of antioxidant.

**Selenium:** Symbol:"Se" Atomic Number:"34" Atomic Mass: 78.96amu. It is classified as a non-metal. Selenium is found in many forms. It may have red crystals or a grayish metal color. The element is used in solar cells, photocopiers, and it is a trace element in your diet. Too much selenium is poisonous.

**Self-diagonal plot:** A tool used to search for amino acid sequence repeats within a protein. The protein sequence is displayed on both the vertical and the horizontal axes, running from amino to carboxyl terminis. A dot is placed at each point at which the amino acid along the horizontal axis is the same as that on the vertical axis. Internal repeats are seen as lines parallel to the central diagonal line, which represents the sequence aligned with itself.

**self-esteem :** A feeling of self-worth, self-confidence, and self-respect.

**SELF-EXTINGUISHING:** The term applied to a flammable material that will cease burning when the source of heat is removed. Usually expressed in time elapsed. OR A somewhat loosely-used term describing the ability of a material to cease burning once the source of flame has been removed.

**Self-referential:** Referring to itself; for example. "This sentence no verb", is a good example of a self-referential sentence.

**Self-splicing RNA:** Refers to introns that have the ability to remove themselves from the precursor RNA and assist in the splicing of exons to form mature RNA.

**seliciclib:** An orally bioavailable, small-molecule cyclin-dependent kinase (CDK) inhibitor with potential proapoptotic and antineoplastic activities. Seliciclib primarily inhibits CDK2/E, CDK2/A, CDK7 and CDK9 by competing for their ATP binding sites, leading to a disruption of cell cycle progression. In addition, this agent appears to interfere with CDK-mediated phosphorylation of the carboxy-terminal domain of RNA polymerase II,

inhibiting RNA polymerase II-dependent transcription, which may result in the down-regulation of antiapoptotic proteins such as induced myeloid leukemia cell differentiation protein Mcl-1. CDKs, serine/threonine kinases that play an important role in cell cycle regulation, are overexpressed in various malignancies. Mcl-1 belongs to the Bcl-2 family of antiapoptotic proteins and is a protein crucial to the survival of a range of tumor cell types. Check for active clinical trials using this agent.

**selinexor:** An orally available, small molecule inhibitor of CRM1 (chromosome region maintenance 1 protein, exportin 1 or XPO1), with potential antineoplastic activity. Selinexor modifies the essential CRM1-cargo binding residue cysteine-528, thereby irreversibly inactivating CRM1-mediated nuclear export of cargo proteins such as tumor suppressor proteins (TSPs), including p53, p21, BRCA1/2, pRB, FOXO, and other growth regulatory proteins. As a result, this agent, via the approach of selective inhibition of nuclear export (SINE), restores endogenous tumor suppressing processes to selectively eliminate tumor cells while sparing normal cells. CRM1, the major export factor for proteins from the nucleus to the cytoplasm, is overexpressed in a variety of cancer cell types. Check for active clinical trials using this agent.

**sella turcica :** A depression of the bone at the base of the skull where the pituitary gland is located.

**selumetinib:** An orally active, small molecule with potential antineoplastic activity. Selumetinib is an ATP-independent inhibitor of mitogen-activated protein kinase kinase (MEK or MAPK/ERK kinase) 1 and 2. MEK 1 and 2 are dual-specificity kinases that are essential mediators in the activation of the RAS/RAF/MEK/ERK pathway, are often upregulated in various cancer cells, and are drivers of diverse cellular responses, including proliferation. Inhibition of both MEK1 and 2 by selumetinib prevents the activation of MEK1/2 dependent effector proteins and transcription factors, thereby leading to an inhibition of cellular proliferation in various cancers. or A substance being studied in the treatment of several types of cancer. Selumetinib blocks proteins needed for cell growth and may kill cancer cells. It is a type of protein kinase inhibitor. Also called AZD6244 and MEK inhibitor AZD6244.

**Selzentry:** (Other name for: maraviroc)

**semaxanib:** A quinolone derivative with potential antineoplastic activity. Semaxanib reversibly inhibits ATP binding to the tyrosine kinase domain of vascular endothelial growth factor receptor 2 (VEGFR2), which may inhibit VEGF-stimulated endothelial cell migration and proliferation and reduce the tumor microvasculature. This agent also inhibits the phosphorylation of the stem cell factor receptor tyrosine kinase c-kit, often expressed in acute myelogenous leukemia cells. or A substance that has been studied in the treatment of cancer. It belongs to the families of drugs called angiogenesis inhibitors and tyrosine kinase inhibitors. Also called SU5416.

**semen:** a fluid secretion containing sperm and secretions from the prostate gland, seminal vesicles, and Cowper's glands. OR The fluid that is released through the penis during orgasm. Semen is made up of sperm from the testicles and fluid from the prostate and other sex glands.

**SEMI-AUTOMATIC MOLDING MACHINE:** A molding machine in which only part of the operation is controlled by the direct action of a human. The automatic part of the operation is controlled by the machine according to a predetermined program.

**Semi-automatic operation:** The term used to define the mode in which a molding machine is operating when there is a need for an operator to start each cycle.

**semi-empirical:** An approximate version of Hartree-Fock theory in which the more computationally expensive integrals are replaced by adjustable parameters, which are determined by fitting experimental atomic and molecular data. Different choices of parameterization lead to different specific theories (e.g., MNDO, AM1, PM3). Semiempirical calculations are much faster than ab initio calculations.

**Semi-gloss:** An intermediate level of gloss between a 'full gloss' and an 'eggshell' finish. OR Having a luster between full and flat.

**Semi-gloss Finish:** Finish that has a low luster sheen. Semi-gloss paints are formulated to give this result (usually 35-70 degrees on a 60-degree meter).

**SEMI-TRANSPARENT:** A degree of hiding greater than transparent but less than opaque.

**semicolon:** punctuation device used to join independent clauses between items in a series.

**Semiconservative replication:** Duplication of DNA in which the daughter duplex carries one old strand and one new strand. OR In the duplication of DNA, one of the strands of each daughter molecule is newly synthesized, whereas the other is unchanged from the parental DNA double helix.

**semilunar valves:** two valves found in the pulmonary artery and the aorta.

**Semimicro hygostat:** A small chamber in which a sample is suspended over a saturated-salt solution that provides a determined relative humidity. The chamber can be disassembled with a minimum of exposure of the sample to the atmosphere while weighing to determine the increase or decrease in mass of the sample.

**seminal fluid :** Fluid from the prostate and other sex glands that helps transport sperm out of the man's body during orgasm. Seminal fluid contains sugar as an energy source for sperm.

**seminal vesicle :** A gland that helps produce semen.

**seminal vesicle biopsy :** The removal of fluid or tissue with a needle from the seminal vesicles for examination under a microscope. The seminal vesicles are glands in the male reproductive tract that produce a part of semen.

**seminiferous tubules:** coiled passageways in which sperm production takes place.

**seminoma :** A type of cancer that begins in cells that make sperm or eggs. Seminomas occur most often in the testicles or the ovaries. They may also occur in other organs, such as the brain, chest, or abdomen. This happens when cells that have the ability to form sperm or eggs are found in other parts of the body. Seminomas grow and spread slowly.

**semiparasitic :** In botany, a plant that gets food from a host but also contains chlorophyll and is capable of photosynthesis.

**Semipermeable:** The characteristic of allowing only some molecules, usually smaller or uncharged ones, to pass through.

**semipermeable membrane:** A membrane that allows some but not all of the components in a mixture to pass through it. Semipermeable membranes are used in dialysis.

**Semipositive Mold:** A mold which allows a small amount of excess material to escape when it is closed.

**Semirigid Plastic:** For purpose of general classification, a plastic that has a modulus of elasticity either in flexure or in tension of between 10,000 and 100,000 psi at 23 degrees C and 50% relative humidity when tested in accordance with ASTM Method D747 or D790 Test for Stiffness of Plastics.

**semuloparin:** An ultralow-molecular-weight heparin (ULMWH) (Mw: 2000-3000 daltons) consisting of a polydisperse mixture of oligomeric heparin fragments with potential anticoagulant activity. Semuloparin binds to and activates antithrombin III (ATIII), which may result in the inhibition of activated factor Xa and, to a much lesser extent, factor IIa (thrombin) and so the inhibition of fibrin formation. Compared to low-molecular-weight heparins (LMWHs), AVE5026 exhibits an even higher ratio of anti-Factor Xa to anti-Factor IIa activity (>30:1). Compared to unfractionated heparins, the use of LMWHs is associated with lower incidences of major bleeding, osteoporosis and heparin-induced thrombocytopenia. Like LMWHs, this agent may inhibit tumor growth by regulating angiogenesis and apoptosis. AVE5026 is prepared by partial depolymerization of unfractionated porcine mucosal heparin.

**semustine:** A methylated derivative of carmustine with antineoplastic activity. As an alkylating agent, semustine forms covalent linkages with nucleophilic centers in DNA, causing depurination, base-pair miscoding, strand scission, and DNA-DNA cross-linking, which may result in cytotoxicity. or A substance that has been studied in the treatment of some types of cancer. Semustine damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent and a type of nitrosourea.

**Seneca Valley virus-001:** A native, replication-competent oncolytic picornavirus with potential antineoplastic activity. Administered systemically, Seneca Valley virus-001 (SVV-001) specifically targets and infects tumor cells with neuroendocrine characteristics. Upon infection, this agent replicates intracellularly, resulting in tumor cell lysis and reduced tumor cell proliferation. The selective tropism of virus replication may involve receptor-mediated internalization. or A virus being studied in the treatment of neuroendocrine tumors and other types of cancer. Neuroendocrine tumors form from cells that release hormones in response to a signal from the nervous system. The virus infects and breaks down

these tumor cells but not normal cells. It is a type of oncolytic virus. Also called NTX-010 and SVV-001.

**senega root :** The root of an herb called Polygala senega. It has been used in some cultures to treat certain medical problems, including problems of the respiratory system.

**senile keratosis :** A thick, scaly patch of skin that may become cancer. It usually forms on areas exposed to the sun, such as the face, scalp, back of the hands, or chest. It is most common in people with fair skin. Also called actinic keratosis and solar keratosis.

**senna extract:** An extract made from the dried leaflets on the pods of *Cassia angustifolia* or *Cassia acutifolia* with cathartic activity. Dimeric glycosides in dried senna extract are converted to the active monoanthrones by bacterial action in the colon. Through direct effects on enterocytes, enteric neurons, and muscle, monoanthrones produce giant migrating colonic contractions in addition to water and electrolyte secretion. As do other stimulant laxatives, monoanthrones may induce a limited low-grade inflammation in the colon through activation of prostaglandin/cyclic AMP and nitric oxide/cyclic GMP pathways and perhaps inhibition of Na<sup>+</sup>, K<sup>+</sup>-ATPase.

**senna fruit:** The fruit of *Cassia acutifolia* and *Cassia angustifolia* (*Cassia*) with laxative and purgative activities. The active ingredients in senna fruit include the hydroxyanthracene glycosides sennosides A and B (rhein dianthrones) and sennosides C and D (rhein aloe-emodin heterodianthrones). Sennosides irritate the bowel lining and stimulate the bowel muscular coat, particularly in the colon, resulting in accelerated bowel transit and evacuation.

**sensible heat:** The excess radiative energy that has passed from the Earth's surface to the atmosphere through advection, conduction, and convection processes.

**Sensipar:** (Other name for: cinacalcet hydrochloride)

**Sensitive unclassified nonsafeguards information (SUNSI):** Information that is generally not publicly available and that encompasses a wide variety of categories, such as proprietary information, personal and private information, or information subject to attorney-client privilege. For additional detail, see Information Security.

**Sensitivity:** the slope of the response (calibration) curve expressed as output per unit concentration.

**sensitivity :** The frequency with which a test yields a true positive result among individuals who actually have the disease or the gene mutation in question. A test with high sensitivity has a low false-negative rate and thus does a good job of correctly identifying affected individuals. or In medicine, sensitivity may describe how well a test can detect a specific disease or condition in people who actually have the disease or condition. No test has 100% sensitivity because some people who have the disease or condition will not be identified by the test (false-negative test result). Sensitivity may also refer to the way the body reacts to the environment or to drugs, chemicals, or other substances. For example, a person who is sensitive to the sun may have skin that burns easily or get a rash when exposed to the sun. A person who is sensitive to caffeine may need only small amounts of it to feel its effects.

**sensitivity (in chemical analysis):** For a simple procedure, the slope of the analytical calibration curve, i.e., the differential of the measure (x) with respect to concentration (c) (i.e.,  $dx/dc$ ). The greater the value of this derivative, the greater the sensitivity. Sensitivity should not be confused with limit of detection (IUPAC, 1976).

**sensitivity and specificity (of a screening test):** Sensitivity is the proportion of truly diseased persons in the screened population who are identified as diseased by the screening test. Sensitivity is a measure of the probability of correctly diagnosing a case, or the probability that any given case will be identified by the test (synonym true positive rate).

**sensitization:** This term is applied to the exposure to a substance (allergen) which provokes a response in the immune system such that disease symptoms will ensue on subsequent encounters with the same substance. See hypersensitivity, immune system.

**Sensor:** a device for transducing information about the concentration of a chemical species into a readily accessible signal (usually electrical). The device responds directly to the amount of a given environmental component. Ion selective electrodes are sensors, which respond to the concentration of particular dissolved ions in a solution. pH electrodes respond to hydrogen ions.

**sensor** : A device that responds to a stimulus, such as heat, light, or pressure, and generates a signal that can be measured or interpreted.

**Sensor array** : a set of sensors with different sensitivity and limited selectivity. Sensors array provide multiple data points per sample (vector of data) that carry out additional chemical information to differentiate analytes and discriminates against interferences. The pattern of response (distinct for different compounds) of an array of sensors can be applied to identify the unknown component. Suitable patternrecognition algorithms are used to interpret the results of multielement arrays.

**Sensorcaine** : A drug used to relieve pain by blocking signals at nerve endings. It is being studied in the relief of pain following surgery for cancer. It is a type of local anesthetic. Also called bupivacaine, bupivacaine hydrochloride, and Marcaine.

**Sensorcaine-MPF**: (Other name for: bupivacaine hydrochloride)

**sensory** : Having to do with the senses.

**sensory neurons**: neurons that receive stimuli from the external environment.

**sensory somatic system**: a subdivision of the peripheral nervous system that carries impulses from the external environment and the senses.

**sentence**: a group of words containing a subject and a predicate and expressing a complete thought.

**sentence fragment**: a group of words that is missing a subject, a predicate, or does not express a complete thought.

**sentinel lymph node** : The first lymph node to which cancer is likely to spread from the primary tumor. When cancer spreads, the cancer cells may appear first in the sentinel node before spreading to other lymph nodes.

**sentinel lymph node biopsy** : Removal and examination of the sentinel node(s) (the first lymph node(s) to which cancer cells are likely to spread from a primary tumor). To identify the sentinel lymph node(s), the surgeon injects a radioactive substance, blue dye, or both near the tumor. The surgeon then uses a probe to find the sentinel lymph node(s) containing the radioactive substance or looks for the lymph node(s) stained with dye. The surgeon then removes the sentinel node(s) to check for the presence of cancer cells.

**sentinel lymph node mapping :** The use of dyes and radioactive substances to identify the first lymph node to which cancer is likely to spread from the primary tumor. Cancer cells may appear first in the sentinel node before spreading to other lymph nodes and other places in the body.

**seocalcitol :** A substance that is being studied as a treatment for cancer. It belongs to the family of drugs called vitamin D analogs.

**sepals:** modified leaves that enclose and protect a growing bud in flowers.

**sepantronium bromide:** A small-molecule proapoptotic agent with potential antineoplastic activity. Sepantronium bromide selectively inhibits survivin expression in tumor cells, resulting in inhibition of survivin antiapoptotic activity (via the extrinsic or intrinsic apoptotic pathways) and tumor cell apoptosis. Survivin, a member of the inhibitor of apoptosis (IAP) gene family, is expressed during embryonal development and is absent in most normal, terminally differentiated tissues; upregulated in a variety of human cancers, its expression in tumors is associated with a more aggressive phenotype, shorter survival times, and a decreased response to chemotherapy.

**Separating compound:** See Release agent.

**separation technique:** a process by which products are isolated from each other and from impurities.

**sepsis :** The presence of bacteria or their toxins in the blood or tissues.

**septate :** An organ or structure that is divided into compartments.

**septicemia :** Disease caused by the spread of bacteria and their toxins in the bloodstream. Also called blood poisoning and toxemia.

**Septra:** (Other name for: trimethoprim-sulfamethoxazole)

**sequence rules:** the rules for establishing the order of atoms or groups in the Cahn-Ingold-Prelog notational system.

**Sequence templates:** Conserved residues that are structurally and functionally important and are characteristic of particular families of proteins.

**sequential AC/Taxol-Trastuzumab regimen :** An abbreviation for a chemotherapy combination used to treat breast cancer. It includes the drugs doxorubicin hydrochloride (Adriamycin) and cyclophosphamide, followed by treatment with paclitaxel (Taxol) and trastuzumab (Herceptin). Also called AC-T-T, AC-T-T regimen, and AC-TH regimen.

**Sequential displacement reaction:** A reaction having multiple reactants, in which all substrates bind to the enzyme before any product is released. Thus, in a reaction with two substrates, a ternary complex of the enzyme and both substrates forms.

**Sequential model:** A model for explaining allosteric enzymes in which the binding of one substrate influences the substrate affinity of neighboring active sites without necessarily inducing a transition encompassing the entire enzyme.

**sequential treatment :** One treatment after the other.

**seribantumab:** A fully human monoclonal antibody directed against the human epidermal growth factor receptor ErbB3 (Her3) with potential antineoplastic activity. Seribantumab binds to and inhibits ErbB3 activation, which may result in inhibition of ErbB3-dependent PI3K/Akt signaling and so inhibition of cellular proliferation and differentiation. ErbB3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in solid tumors, including breast, lung, and colorectal tumors of epithelial origin; it has no active kinase domain itself but is activated through heterodimerization with other members of the EGFR receptor family that do. Check for active clinical trials using this agent.

**serine protease inhibitor WX-671:** An orally bioavailable, 3-amidinophenylalanine-derived, second generation serine protease inhibitor prodrug targeting the human urokinase plasminogen activator (uPA) system with potential antineoplastic and antimetastatic activities. After oral administration, serine protease inhibitor WX-671 is converted to the active  $N\alpha$ -(2,4,6-triisopropylphenylsulfonyl)-3-amidino-(L)-phenylalanine-4-ethoxycarbonylpiperazide (WX-UK1), which inhibits several serine proteases, particularly uPA; inhibition of uPA may result in the inhibition of tumor growth and metastasis. uPA is a serine protease involved in degradation of the extracellular matrix and tumor cell migration and proliferation.

**Serine proteases:** A class of protein-degrading enzymes whose activity depends on the presence of serine at the active site; chymotrypsin and trypsin are examples.

**serine/threonine kinase inhibitor XL418:** A selective, orally active small molecule, targeting protein kinase B (PKB or AKT) and ribosomal protein

S6 Kinase (p70S6K), with potential antineoplastic activity. XL418 inhibits the activities of PKB and p70S6K, both acting downstream of phosphoinositide-3 kinase (PI3K). These kinases are often upregulated in a variety of cancers. Inhibition of PKB by this agent will induce apoptosis, while inhibition of p70S6K will result in the inhibition of translation within tumor cells.

**serine**: A naturally occurring amino acid with a hydroxyl group on its side chain.

**SERM** : A drug that acts like estrogen on some tissues but blocks the effect of estrogen on other tissues. Tamoxifen and raloxifene are SERMs. Also called selective estrogen receptor modulator.

**seroma** : A mass or lump caused by a buildup of clear fluid in a tissue, organ, or body cavity. It usually goes away on its own but may need to be drained with a needle. It often occurs after breast surgery.

**Seromycin**: (Other name for: D-cycloserine)

**Seromycin** : A drug used to treat tuberculosis. It is also being studied in the treatment of pain and nerve problems (numbness, tingling) caused by chemotherapy and in the treatment of low back pain, autism, certain anxiety disorders, and schizophrenia. Seromycin is a type of antibiotic. Also called D-cycloserine.

**Serophene**: (Other name for: clomiphene citrate)

**serosa** : The outer lining of organs and body cavities of the abdomen and chest, including the stomach. Also called serous membrane.

**serotonin** : A hormone found in the brain, platelets, digestive tract, and pineal gland. It acts both as a neurotransmitter (a substance that nerves use to send messages to one another) and a vasoconstrictor (a substance that causes blood vessels to narrow). A lack of serotonin in the brain is thought to be a cause of depression. Also called 5-hydroxytryptamine.

**serotonin-norepinephrine reuptake inhibitor** : A type of drug that is used to treat depression and certain other disorders. Serotonin-norepinephrine reuptake inhibitors increase the levels of the chemicals serotonin and norepinephrine in the brain. Nerves use these chemicals to send messages to one another. Increasing their levels in the brain helps improve mood. Also called SNRI.

**serous** : Having to do with serum, the clear liquid part of blood.

**serous membrane :** The outer lining of organs and body cavities of the abdomen and chest, including the stomach. Also called serosa.

**Sertoli-Leydig cell tumor of the ovary :** A rare type of ovarian tumor in which the tumor cells secrete a male sex hormone. This may cause virilization (the appearance of male physical characteristics in females). Also called androblastoma and arrhenoblastoma.

**sertraline :** A drug used to treat depression. It is a type of selective serotonin reuptake inhibitor (SSRI). Also called Zoloft.

**sertraline hydrochloride:** The hydrochloride salt of sertraline, a synthetic derivative of naphthalenamine with anti-serotonergic and anti-depressant properties. Sertraline appears to selectively inhibit the neuronal uptake of serotonin, raising serotonin levels in the CNS.

**serum:** plasma from which clotting proteins have been removed.

**serum :** The clear liquid part of the blood that remains after blood cells and clotting proteins have been removed.

**serum albumin :** The main protein in blood plasma. Low levels of serum albumin occur in people with malnutrition, inflammation, and serious liver and kidney disease.

**serum glutamate pyruvate transaminase :** An enzyme found in the liver and other tissues. A high level of serum glutamate pyruvate transaminase released into the blood may be a sign of liver damage, cancer, or other diseases. Also called alanine transferase and SGPT.

**serum glutamic-oxaloacetic transaminase :** An enzyme found in the liver, heart, and other tissues. A high level of serum glutamic-oxaloacetic transaminase released into the blood may be a sign of liver or heart damage, cancer, or other diseases. Also called aspartate transaminase and SGOT.

**serum tumor marker test :** A blood test that measures the amount of substances called tumor markers (or biomarkers). Tumor markers are released into the blood by tumor cells or by other cells in response to tumor cells. A high level of a tumor marker may be a sign of cancer.

**serum-derived bovine immunoglobulin protein isolate:** A nutritional supplement composed of serum-derived bovine protein concentrate containing high levels of immunoglobulins (Ig), particularly IgG, with the potential to improve nutritional status. Upon oral administration of SBI, the Ig promotes gastrointestinal (GI) health by improving the composition of

the GI microflora, enhancing digestive processes, and increasing gut barrier integrity and function. SBI may also improve immune function, maintain immune homeostasis, bind to and neutralize bacterial toxins and antigens, and decrease intestinal inflammation. Altogether, this may enhance the functioning of the GI tract, improve both the digestion and absorption of nutrients, and increase weight gain. Check for active clinical trials using this agent.

**Serzone :** A drug used to treat depression. It belongs to the family of drugs called antidepressant agents. Also called nefazodone.

**Sesquihydrate:** A crystal form containing one and one-half moles of water per mole of compound.

**sesquiterpene lactone :** A substance found in some plants. Sesquiterpene lactones may have anti-inflammatory and anticancer effects. Plants containing sesquiterpene lactones have been used in some cultures to treat certain medical problems.

**sestamibi breast imaging :** A type of breast imaging test that is used to detect cancer cells in the breasts of some women who have had abnormal mammograms, or who have dense breast tissue. It is not used for screening or in place of a mammogram. In this test, a woman receives an injection of a small amount of a radioactive substance called technetium 99, which is taken up by cancer cells, and a gamma camera is used to take pictures of the breasts. Also called Miraluma test and scintimammography.

**sestamibi scan :** An imaging test used to find overactive parathyroid glands (four pea-sized glands found on the thyroid) and breast cancer cells, and to diagnose heart disease. The patient receives an injection of a small amount of a radioactive substance called technetium which is bound to another substance called sestamibi. This substance collects in overactive glands, cancer cells, heart muscle, or other tissues and a picture is taken by a gamma camera (a special camera that detects radioactivity).

**Set:** The condition of a paint coating when it has ceased to flow.

**SET UP:** A film that has dried so that it is firm is said to have “set up”.

**Setting coat:** The final coat in a plastering process usually consisting of about one-eighth of an inch of fine plaster.

**Setting Temperature:** The temperature to which a liquid resin, an adhesive, or products or assemblies involving either is subjected to set the

resin or adhesive.

**Setting Time:** The period of time during which a molded or extruded product, an assembly, etc., is subjected to heat and/or pressure to set the resin or adhesive.

**settleable solids:** particles of debris and fine matter heavy enough to settle out of wastewater.

**Settler:** see decanter

**SETTLING:** Paint separation in which pigments accumulate at the bottom of the container.

**Settling:** The deposition of the solid particles of a paint to the bottom of the container.

**sevacizumab:** A monoclonal antibody directed against the human vascular endothelial growth factor (VEGF), with potential antiangiogenic activity. Upon administration, sevacizumab specifically binds to and inhibits VEGF, thereby preventing its binding to VEGF receptors (VEGFRs). This prevents VEGF/VEGFR-mediated signaling and inhibits the proliferation of vascular endothelial cells and tumor cells. VEGF, overexpressed in a variety of cancer cells, is associated with increased invasiveness and decreased survival.

**Seven-transmembrane-helix (7TM) receptors:** A class of integral membrane proteins typified by transducin in which the intramembrane part consists of seven helical regions; these receptors are always coupled to G proteins.

**seven-transmembrane-helix receptors:** A pile or stack of thylakoid membranes in the chloroplast.

**Severe accident:** A type of accident that may challenge safety systems at a level much higher than expected.

**severe combined immunodeficiency disease :** A rare, inherited disease that is marked by a lack of B lymphocytes (white blood cells that make antibodies and help fight infections) and a lack of T lymphocytes (white blood cells that attack virus-infected cells, foreign cells, and cancer cells). Patients with this disease have a high risk of developing viral, bacterial, and fungal infections. Also called SCID.

**severe myelosuppression :** A severe form of myelosuppression. Myelosuppression is a condition in which bone marrow activity is

decreased, resulting in fewer red blood cells, white blood cells, and platelets. It is a side effect of some cancer treatments. Also called myeloablation.

**severe thunderstorm:** thunderstorm that has winds in excess of 50 mph and can produce large hail.

**sevoflurane:** A fluorinated isopropyl ether with general anesthetic activity. Although the mechanism of action has not been fully elucidated, sevoflurane may interfere with the release and re-uptake of neurotransmitters at post-synaptic terminals, and/or alter ionic conductance following receptor activation by a neurotransmitter. This agent may also interact directly with the lipid matrix of neuronal membranes, thereby affecting gating properties of ion channels. In addition, sevoflurane may activate gamma-aminobutyric acid (GABA) receptors, hyperpolarizing cell membranes and resulting in a general anesthetic effect, a decrease in myocardial contractility and mean arterial pressure, and an increased respiratory rate.

**sewage:** the total of organic waste and wastewater generated by residential and commercial establishments.

**sewage, combined:** a sewage containing both sanitary sewage and surface or storm water with or without industrial wastes.

**sewage, dilute:** sewage containing less than 150 ppm of suspended solids and BOD (weak sewage).

**sewage, industrial:** sewage in which industrial wastes predominate.

**sewage, raw:** sewage prior to receiving any treatment.

**sewage, settled:** sewage from which most of the settleable solids have been removed by sedimentation.

**sewage, storm:** liquid flowing in sewers during or following a period of heavy rainfall.

**sex chromosomes:** one pair among the 23 pairs of human chromosomes; the X and Y chromosomes.

**sex cord tumor :** A rare type of cancer that forms in the tissues that support the ovaries or testes. These tumors may release sex hormones. Sex cord tumors include granulosa cell, Sertoli cell, and Leydig cell tumors. Also called sex cord-gonadal stromal tumor and sex cord-stromal tumor.

**sex cord-gonadal stromal tumor :** A rare type of cancer that forms in the tissues that support the ovaries or testes. These tumors may release sex hormones. Sex cord-gonadal stromal tumors include granulosa cell, Sertoli cell, and Leydig cell tumors. Also called sex cord tumor and sex cord-stromal tumor.

**sex cord-stromal tumor :** A rare type of cancer that forms in the tissues that support the ovaries or testes. These tumors may release sex hormones. Sex cord-stromal tumors include granulosa cell, Sertoli cell, and Leydig cell tumors. Also called sex cord tumor and sex cord-gonadal stromal tumor.

**sex drive :** The need for sex. Also called sexual drive.

**sexual drive :** The need for sex. Also called sex drive.

**sexuality :** A person's behaviors, desires, and attitudes related to sex and physical intimacy with others.

**Sezary syndrome :** A cancer that affects the skin. It is a form of cutaneous T-cell lymphoma.

**SGN-00101:** A substance that is being studied in the prevention of cancer. It belongs to the family of drugs called fusion proteins.

**SGN-30:** A monoclonal antibody that binds to cells that have the CD30 antigen on their surface, including Hodgkin disease cells and cells from anaplastic large cell lymphoma, and cutaneous T-cell lymphoma. SGN-30 is being studied in the treatment of cancer. It is a type of monoclonal antibody.

**SGN-35:** A drug used to treat Hodgkin lymphoma in patients who did not get better with other treatment, cannot be treated with autologous stem cell transplant (ASCT), or have a high risk that the cancer will come back or get worse after ASCT. It is also used to treat systemic anaplastic large cell lymphoma that did not get better with other treatment. It is also being studied in the treatment of other types of lymphoma. SGN-35 is made up of a monoclonal antibody linked to an anticancer drug. It binds to a protein called CD30, which is on the surface of some lymphoma cells, and may kill cancer cells. SGN-35 is a type of antibody-drug conjugate. Also called Adcetris and brentuximab vedotin.

**SGN-40:** A monoclonal antibody that binds to cells that have the CD40 antigen on their surface, including cells from multiple myeloma, non-Hodgkin lymphoma, and chronic lymphocytic leukemia. SGN-40 is being studied in the treatment of cancer. It is a type of monoclonal antibody.

**SGOT:** An enzyme found in the liver, heart, and other tissues. A high level of SGOT released into the blood may be a sign of liver or heart damage, cancer, or other diseases. Also called aspartate transaminase and serum glutamic-oxaloacetic transaminase.

**SGPT:** An enzyme found in the liver and other tissues. A high level of SGPT released into the blood may be a sign of liver damage, cancer, or other diseases. Also called alanine transferase and serum glutamate pyruvate transaminase.

**SH2 domain (Src homology domain):** A domain of approximately 100 amino acids that binds to phosphotyrosine residues.

**SH3 domain (Src homology domain):** A domain that binds proline-rich stretches of polypeptide.

**shadow zone:** area of the Earth shielded from earthquake waves by the outer core (where S-waves are absorbed and P-waves are refracted).

**Shaft work:** All work transferred between a continuous system and its surroundings other than that done by or on the process fluid at the system entrance and exit.

**SHAKE PAINTER:** A rectangular-shaped flat pad with an attached handle that is used to paint shingles, shakes and other special surfaces and areas.

**Shallow-Dose Equivalent (SDE):** The external exposure dose equivalent to the skin or an extremity at a tissue depth of 0.007 centimeters (7 mg/cm<sup>2</sup>) averaged over an area of 1 square centimeter.

**sham therapy :** An inactive treatment or procedure that is intended to mimic as closely as possible a therapy in a clinical trial. Also called placebo therapy.

**Shape memory alloys :** These can be bent into a variety of shapes but will return to their original shape when heated. They can be used for medical applications where even the warmth of the body can cause a row of sutures made of them to pull a wound together.

**shark cartilage:** A nutritional supplement gleaned from the exoskeleton of the shark. Shark cartilage inhibits metalloproteinases (MMPs) and possesses antiangiogenic and antimetastatic properties.

**shark cartilage extract AE-941:** A multifunctional antiangiogenic agent derived from shark cartilage with potential antineoplastic activity. Shark cartilage extract AE-941 competitively inhibits the binding of pro-

angiogenic vascular endothelial growth factor (VEGF) to its cell receptor, thereby inhibiting endothelial cell proliferation. This agent also inhibits matrix metalloproteinases (MMPs), stimulates tissue plasminogen activator (tPA), and activates caspase-mediated apoptotic pathways in endothelial cells.

**Shark Skin:** A surface irregularity of a container in the form of finely-spaced sharp ridges caused by a relaxation effect of the melt at the die exit.

**SHARKSKIN:** A surface irregularity of a blow molded container or film during extrusion. See Melt Fracture.

**SHARKSKIN (also known as SURFACE MATTNESS):** The failure of an extrudate to exhibit smooth and glossy appearance. The surface usually exhibits a repetitious wavy or ridged surface pattern perpendicular to the flow direction.

**Sharp coat:** Strictly speaking it is an application of a white lead/linseed oil paint liberally thinned with white spirit or turpentine. By dint of, this 'sharp' has come to be used for any thin and/or quick drying paint.

**shave biopsy :** A procedure in which a skin abnormality and a thin layer of surrounding skin are removed with a small blade for examination under a microscope. Stitches are not needed with this procedure.

**Shear:** Refers to when plastic enters into the mold and the melt is maintained by friction produced by speed and pressure. Too much shear can cause the plastic material to burn, too little can cause the material to freeze off causing short shot. OR Shear is the product of shear rate and resistance time. It is often used to describe the degree of mixing experienced by a material. OR The force between layers of resin as they slide against each other or the surface of the mold. The resulting friction causes some heating of the resin.

**SHEAR FLOW:** The sliding of imaginary fluid slices parallel to each other, like a deck of cards. Shearing occurs whenever fluids flow through tubes and channels. The velocity is zero right at the wall surface and maximum at the center. So the fluid is being sheared as it flows through a tube or channel.

**shear force:** force that is parallel to the surface of the slope.

**SHEAR HEATING:** Heat generated within the plastic melt as the polymer is sheared. It is caused by viscous dissipation of work. OR Shear heating is

due to friction caused by flow of melt through narrow passages in the mould during filling phase.

**shear plane:** the surface along which shearing occurs.

**SHEAR RATE:** The velocity gradient, i.e., velocity divided by the gap measured in reciprocal seconds, s<sup>-1</sup>. In screw extruder channels, the shear rate can usually reach 100 s<sup>-1</sup> or more. In flow through extrusion dies, it might reach 500 s<sup>-1</sup> or more, and in injection molding more than 5000 s<sup>-1</sup>. OR The overall velocity over the cross section of a channel with which molten polymer layers are gliding along each other or along the wall in laminar flow. OR the rate at which a layer of melt slides over the layer below. Shear rate is velocity-related rather than force-related. OR Shear rate is a way to describe how quickly the velocity of the melt changes from the mould surface to the center of flow for a given cross section. The size of the shear rate gives an indication of the shape of the velocity profile for a given situation.

**shear strength:** an object's resistance to movement that needs to be overcome in order to make it move. OR The maximum load required to shear the specimen in such a manner that the moving portion has completely cleared the stationary portion. Sheet Sheets are distinguished from films in the plastics industry only according to their thickness. In general, sheets have thicknesses greater than .040". OR the shearing force divided by the area. It is always a maximum at the outside of the flow channel. As it is force-related, it depends on the viscosity of the material, which in turn depends on the material and molding conditions. The maximum allowable stress level is usually taken as 1% of the tensile strength of the material. High shear stress is unimportant at gates, and in sprues and runners. OR A tangential force divided by the area (FORCE/AREA) on which it is applied. The shear stress is equal to the viscosity multiplied by the shear rate (measured in units of pressure, i.e., MPa or psi). At the die lips under usual production conditions, the shear stress may reach values of 0.2 MPa (29.0 psi) or more. The usually accepted value for the onset of sharkskin in capillaries is 0.14 MPa (20.3 psi), although higher values are reported in industrial production. With additives the critical shear stress value might be pushed up to 0.5 MPa (72.5 psi).

**shear stress:** stress that results when forces from opposite directions create a shear plane in an area in which the forces run parallel to one another.

**Shear Thinning:** Shear thinning is a the description for the physical effects of orientation and affect the flow behavior of the polymer. Shear thinning causes the melts viscosity to drop when it is made to flow within a certain shear rate range.

**SHEAR THINNING:** The reduction of the viscosity as the shear rate increases, which is exhibited by polymeric liquids. Shear thinning is due to molecular chain alignments in the direction of flow and disentanglements.

**SHEAR VISCOSITY:** The ordinary viscosity that is the ratio of shear stress to the shear rate (see also VISCOSITY).

**Sheariness:** A variation of sheen or gloss in a dried paint coating producing an uneven patchy appearance. OR This variation of sheen or gloss in dried paint is known as 'sheariness' and is often seen in brushed emulsion paints when viewed from a shallow angle. To correct this condition, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. The scrape back all areas of poorly adhering or defective coatings to a firm edge, rub down to "feather" broken edges, dust off and repaint.

**shearing:** the sliding motion that is parallel to and results from compressive forces applied to a rock mass.

**Sheary:** An irregularity in gloss or sheen on a surface.

**shedase inhibitor INCB007839:** An orally bioavailable inhibitor of the ADAM (A Disintegrin And Metalloprotease) family of multifunctional membrane-bound proteins with potential antineoplastic activity. Shedase inhibitor INCB007839 represses the metalloproteinase "shedase" activities of ADAM10 and ADAM17, which may result in the inhibition of tumor cell proliferation. The metalloproteinase domains of ADAMs cleave cell surface proteins at extracellular sites proximal to the cell membrane, releasing or "shedding" soluble protein ectodomains from the cell surface; the disintegrin domains of these multifunctional proteins interact with various components of the extracellular matrix (ECM). ADAM10 processes particular epithelial growth factor receptor (EGFR) ligands and appears to regulate Notch signaling through the cleavage of Notch and its related ligand delta-like ligand-1 (Dll-1). ADAM17 (also known as Tumor necrosis

factor-Converting Enzyme or TACE) is involved in processing tumor necrosis factor (TNF) from its membrane bound precursor to its soluble circulating form and in processing ligands for the epidermal growth factor receptor (EGFR) family.

**Sheen:** The degree in gloss of a low gloss or matt type finish. OR The degree of luster of a dried paint film.

**SHEEN UNIFORMITY:** The even distribution of luster over the entire surface of an applied finish.

**sheep sorrel :** A plant that has been used in some cultures to treat certain medical problems. It may have anticancer effects. The scientific name is *Rumex acetosella*. Also called dock and sorrel.

**Sheet:** Sheets are made of continuous phase plastic in a form in which the thickness is very small in proportion to length and width. The thickness is greater than 0.25 millimeters. OR In the plastics and packaging industries, sheets are usually considered to be a web greater than 10 mils (0.010 inch or 250 microns) thick. Webs smaller than 10 mils are considered films. OR Sheets are made of continuous phase plastic in a form in which the thickness is very small in proportion to length and width. The thickness is greater than 0.25 millimeters.

**Sheet (thermoplastic):** A flat section of a thermoplastic resin with the length considerably greater than the width and 10 mils or greater in thickness.

**sheet joint:** a crack that parallels the outer surface of a rock.

**Sheet Train:** The entire assembly necessary to produce sheet which includes extruder, die, polish rolls, conveyer, draw rolls, cutter and stacker.

**Sheet,  $\beta$ :** A common structural motif in proteins, in which two or more  $\beta$  strands are associated as stacks of chains, stabilized by interchain hydrogen bonds; several  $\beta$  strands running in the same direction form a  $\beta$  pleated sheet, whereas such strands running in opposite directions form an antiparallel pleated sheet.

**Sheeting:** A term often used in the film industry as an abbreviation for single wound sheeting. Actually, a web under 10 mils (.010 inch) thick is usually called a film, whereas a web 10 mils and over in thickness is usually called a sheet. OR Sheets are distinguished from films in the plastics industry only according to the thickness. Plastic sheeting is most commonly

made by sheet extrusion and casting in the plastics industry. Post extrusion processes for plastic sheet is thermoforming and vacuum forming.

**sheetwash:** a thin layer of unchanneled water that flows downhill during very heavy rains.

**Shelf life:** the period of time during which a product can be stored under specified temperature and humidity conditions and remain suitable for use. Shelf life is sometimes called storage life. OR An expression to describe the time a molding compound can be stored without losing any of its original physical or molding properties.

**Shelf life (or storage life):** The time period a product can be stored under specified temperature conditions and still remain usable.

**shell:** a set of electron orbitals with the same principal quantum number. OR A set of electrons with the same principal quantum number. The number of electrons permitted in a shell is equal to  $2n^2$ . A shell contains  $n^2$  orbitals, and  $n$  subshells.

**Shellac:** A coating made from purified lac dissolved in alcohol, often bleached white. OR Derived from a resinous substance called Lac. Used as a sealer and finish for floors, for sealing knots and other purposes. A natural resin, usually in the form of thin flakes.

**shells:** Where the electrons generally are. These shells are composed of 4 types of electron subshells: s, p, d and f subshells. OR A shell is the area around the center of an atom. The atom holds its electrons in these shells. There can be up to seven shells that hold 110 electrons. We're only going to look at the first 3 shells.

**Sheng-Mai San:** A Chinese herbal medicine composed of extracts from the roots of Panax ginseng (ren shen) and Ophiopogon japonicas (mai men dong), and the berries of Schisandra chinensis (wu wei zi) with potential protective activity. Ginseng contains a complex mixture of saponins, ginsenosides and panaxosides; homoisoflavonoids isolated from Ophiopogon show anti-inflammatory properties; Schisandra contains abundant amounts of phytoestrogen lignans with antioxidant activity. Although the mechanism of action maybe inexplicit or complex, these phytochemicals work synergistically and may improve symptoms such as shortness of breath, sweating, cough, thirst, dry mouth, and palpitations as well as have an effect on chemotherapy or radiotherapy-induced fatigue, weakness, and neutropenia.

**Sheng-Yu-Tang:** A traditional Chinese medicine (TCM) containing Radix rehmanniae preparata, Radix paeoniae alba, Radix astragali, Radix ginseng, Radix angelicae sinensis, and Rhizoma chuanxiong, with potential immunomodulating activity. Although the exact mechanism of action through which Sheng-Yu-Tang exerts its effect has yet to be fully elucidated, upon oral administration, this TCM may have a beneficial effect on the immune system.

**Sheridan's Formula :** A liquid that has been promoted as a treatment for a wide range of diseases, including cancer. The ingredients thought to be in Sheridan's Formula have been tested, and none of them have been shown to be effective in treating any form of cancer. Sheridan's Formula is not available in the United States. Also called 126-F, Cancell, Cantron, Jim's Juice, JS-101, JS-114, and Protocol.

**Shi Pi Yin herbal decoction:** A traditional Chinese medicine (TCM) decoction containing a mixture of Aconiti lateral root, Zingiberis (ginger) root, Fu Ling (Poria), Atractylodis macrocephalae, Chaenomelis fruit (flowering quince fruit), magnolia bark, Aucklandia costus root, Arecae pericarpium, Tsao-Ko (cardamon) fruit, and licorice root, and may also contain Arecae seeds and Ziziphus jujuba fruit (red date), which may be used to treat edema. Although the exact mechanism(s) of action through which Shi Pi Yin decoction exerts its effect has yet to be fully elucidated, upon oral administration, this TCM may reduce edema.

**shield cone:** broad cone of a volcano resulting from smooth lava flows.

**shield volcano:** a broad, cone-shaped hill or mountain made from solidified lava flows.

**shielding:** an effect, in NMR spectroscopy, caused by the movement of  $\sigma$  and  $\pi$  electrons within the molecule. Shielding causes chemical shifts to appear at higher magnetic fields (upfield). OR Any material or obstruction that absorbs radiation and thus tends to protect personnel or materials from the effects of ionizing radiation. OR Electrons in orbitals with high penetration can shield the nucleus from less penetrating electrons. Because they are closer to the nucleus on average, they repel those farther away and lessen the effective nuclear charge for the more distant electrons.

**shiitake mushroom :** A dark oriental mushroom widely used as a food. Several anticancer substances have been found in shiitake mushrooms,

including lentinan, which has been studied in Japan as a treatment for stomach and colorectal cancer. The scientific name is *Lentinus edodes*.

**shinbone :** The larger of two bones between the knee and ankle. Also called tibia.

**Shine-Dalgarno sequence:** In messenger RNA, a purine-rich region about 10 nucleotides on the 5' side of an initiator codon that pairs with the 3' end of 16S RNA in the 30S ribosomal subunit; helps to determine where translation is initiated on an mRNA molecule. OR A sequence in an mRNA required for binding prokaryotic ribosomes.

**Shingle Style Guard Edge :** A retaining edge consisting of overlapping flat plates which have one edge of the plate on the outside of the preceding plate, and the other edge on the inside.

**Sho-saiko-to :** A Japanese formulation of seven Chinese herbs that is being studied as a treatment for cancer.

**Shop priming:** Factory application of primers to wood or metal, etc.

**Shore:** Shore hardness values are measured by using calibrated durometers: Shore A for softest and Shore D for harder materials. The material is penetrated with a steel rod of predefined dimensions – different for Shore A and for Shore D. The values show no correlation with other hardness measurement values.

**Shore :** Shore hardness values are measured by using calibrated durometers: Shore A for softest and Shore D for harder materials. The material is penetrated with a steel rod of predefined dimensions - different for Shore A and for Shore D. The values show no correlation with other hardness measurement values.

**Shore A:** A hardness scale used to measure the hardness of molded silicone rubber. The Shore A scale is most effectively used to measure liquid silicone rubber with a hardness from 10 to 95 Shore A

**Shore Hardness:** A method of determining the hardness of a plastic material using a scleroscope or durometer. The Shore Scleroscope measures hardness in terms of the elasticity of the material. The device consists of a small conical hammer fitted with a diamond point which falls inside a glass tube. The hammer is made to strike the material under test and the degree of rebound is noted on a graduated scale. Generally, the harder the material the greater will be the rebound. See also durometer. OR Two different

durometer measuring scales (Shore A and Shore D) developed by the Shore Instrument Company. The measuring tool utilizes a hammer striking the material and measuring rebound. See “durometer” and “Rockwell hardness.”

**short chain fatty acid HQK-1004:** A short chain fatty acid (SCFA) with potential herpes simplex virus thymidine kinase gene (HSV-TK)-inducing activity. Upon administration, short chain fatty acid HQK-1004 may induce the expression of thymidine kinase (TK) by a silenced HSV-TK, which may activate a co-administered antiviral prodrug such as ganciclovir, resulting in the destruction of virally-infected cancer cells.

**Short oil:** The term used to describe a varnish or paint medium which contains a low proportion of oil in relation to its resin content.

**Short shot:** A condition where there is insufficient liquid silicone rubber is introduced into a LSR mold cavity to completely fill the cavity, resulting in a partially formed part

**Short Shot (also known as Non-Fill):** Failure to completely fill the mold or cavities of the mold. Edges may appear melted.

**short term exposure limit (STEL):** According to American Conference of Government Industrial Hygienists, this is the time-weighted average (TWA) airborne concentration to which workers may be exposed for periods up to 15 minutes, which no more than 4 such excursions per day and at least 60 minutes between them. See time-weighted average.

**short term memory:** Short term memory is a mechanism for storing temporary information, such as where you parked your car or numbers in a simple arithmetic problems.

**short-term side effect :** A problem that is caused by treatment of a disease but usually goes away after treatment ends. Short-term side effects of cancer treatment include nausea, vomiting, diarrhea, hair loss, fatigue, and mouth sores.

**shortwave radiation:** The radiation received from the sun and emitted in the spectral wavelengths less than 4  $\mu$  m. It is also called solar radiation.

**Shot:** A molded part produced when the mold has not been filled completely.

**Shot:** A term given to the total amount of plastic material that is injected (or shot) into a mold in a single cycle. OR The yield from one complete

molding cycle, including scrap. OR One complete cycle of a molding machine. OR The yield from one complete molding cycle, including cull, runner, and flash.

**Shot Capacity:** The maximum weight of material which an accumulator can push out with one forward stroke of the ram. OR The maximum weight of material which a machine can produce from one forward motion of the plunger or screw. OR Generally based on polystyrene, this is the maximum weight of plastic that can be displaced or injected by a single injection stroke. Generally expressed as ounces of polystyrene.

**Shot Composition:** The shot size setting and the switch over point give the machine information about how the melt has to be injected into the mould. The stroke positions correspond to volumes of melt that play a role in different portions of the moulding cycle. While the settings relate to the machine barrel, they correspond with the actual events that happen during the cycle.

**Shot size Setting:** Shot size setting is control setting which limit how far back the screw will travel as it rotates in the cooling phase of the cycle. The shot size setting is measured as a distance from the front of the barrel.

**Shoulder:** the sloped area of a bottle or jar between the neck area and the body of the bottle.

**shoulder blade :** One of a pair of triangular bones at the back of the shoulder. The shoulder blade connects the collarbone with the upper arm bone. Also called scapula.

**Shrink:** The change in part size as it cools during the molding process. This is anticipated based on material manufacturer recommendations and built into the mold design before manufacturing.

**SHRINK FILM:** A term sometimes used for pre-stretched or oriented film used in SHRINK PACKAGING.

**SHRINK FIXTURE:** See COOLING FIXTURE.

**SHRINK PACKAGING:** An item or group of items packaged by wrapping in a film or bag, which when heated fits tightly around the contained article.

**Shrink Rate:** The dimensional differences between a molded part and the actual mold dimensions.

**Shrink Wrapping:** A technique of packaging in which the strains in a plastic film are released by raising the temperature of the film thus causing it to shrink over the package. These shrink characteristics are built into the film during its manufacture by stretching it under controlled temperatures to produce orientation of the molecules. Upon cooling, the film retains its stretched condition, but reverts toward its original dimensions when it is heated. Shrink film gives good protection to the products packaged and has excellent clarity.

**Shrinkage:** It is the deviation of dimensions of the moulded part from the dimensions of cavity when measured on moulded part after certain hours. Compressibility, thermal expansion and pVT characteristics influence the dimensions of moulded part.

**Shrinkage:** Contraction upon cooling of all or areas of the part. Shrinkage occurs less in disorientated material and more across chains of molecules than along their lengths. Lower pack area have lower areas of orientation and shrinkage. OR A measurement of the percent of film shrinkage in the machine direction or transverse direction at a specified temperature and time. OR The percentage of reduction in overall part dimensions. Shrinkage occurs during the cooling phase of the process. OR contraction upon cooling of all or areas of the part. Shrinkage occurs less in disorientated material and more across chains of molecules than along their lengths. Lower pack area have lower areas of orientation and shrinkage.

**Shrinkage Allowance:** The dimensional allowance which must be made in molds to compensate for shrinkage of the plastic compound on cooling.

**Shrivelling:** The overall fine-surface wrinkling of a glossy paint film.

**Shrivelling (or rivelling) on new paintwork:** Known as 'shrivelling' or 'rivelling', this wrinkling effect can occur when paint dries too quickly, forming a surface skin before the paint underneath can dry properly.

Overcoating a previous undercoat or gloss too soon can also cause shrivelling, as can applying oil-based coatings at low temperatures. Before attempting to smooth out the wrinkles, allow the surface to dry and harden, then rub down using wet and dry abrasive paper with warm water and detergent. Rinse thoroughly with clean water and allow to dry before repainting.

**shunt :** In medicine, a passage that is made to allow blood or other fluid to move from one part of the body to another. For example, a surgeon may

implant a tube to drain cerebrospinal fluid from the brain to the abdomen. A surgeon may also change normal blood flow by making a passage that leads from one blood vessel to another.

**Shut-Off Nozzle:** A device attached to the front of the molding machine barrel or hot manifold system. It opens to allow resin flow into the mold cavity. It closes after injection to help prevent drooling.

**Shutdown:** A decrease in the rate of fission (and heat/energy production) in a reactor (usually by the insertion of control rods into the core).

**Shutdown margin:** The instantaneous amount of reactivity by which the reactor is subcritical or would be subcritical from its present condition assuming all full-length rod cluster assemblies (shutdown and control) are fully inserted except for the single rod cluster assembly of highest reactivity worth that is assumed to be fully withdrawn.

**Shutoff:** A feature that forms an internal through-hole in a part by bringing the A-side and B-side in contact, preventing the flow of resin into the through-hole.

**Shutoff land:** A raised area of the mold surface surrounding the cavity image. This area is usually between 0.002 and 0.003 inch high, approximately 1/2 inch wide and is used to focus clamping pressure on the mold. The use of a shutoff land reduces the amount of tonnage required to keep a mold closed against injection pressure.

**Shuttering:** The general term for temporary supporting structures for concrete while it is setting. Also from work.

**shuttle vector:** A recombinant DNA vector that can be replicated in two or more different host species. See also vector.

**Shwachman syndrome :** A rare, inherited disorder in which the pancreas and bone marrow do not work the way they should. Symptoms include problems digesting food, a low number of neutrophils (a type of white blood cell), bone problems, and being short. Infants with the disorder get bacterial infections and are at an increased risk of aplastic anemia, myelodysplastic syndrome, and leukemia. Also called SDS and Shwachman-Diamond syndrome.

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white blood cell), bone problems, and being short. Infants with the disorder get bacterial infections and are at an increased risk of aplastic anemia, myelodysplastic syndrome, and leukemia. Also called SDS and Shwachman syndrome.

**SI:** Le Système Internationale (SI) is a system of units introduced to remove barriers to international trade, based on the older metric system. It is now used in science and technical communications worldwide.

**SI System:** International System of Units. A system of measurement used in science. It includes the metric system and other measures. Standard units include the kilogram, liter, meter, and seconds.

**SI Unit:** Stands for Systeme International d'Unites, a international system which established a uniform set of measurement units. OR "Systeme International" units, established in 1960, based partly on the metric system, which was used in Europe for a long time. In SI the six base units are metre (length), kilogram (mass), second (time), ampere (electric current), degree Kelvin (temperature) and candela (luminous intensity). OR The International System of Units (Systems International) is a modernized version of the metric system established by international agreement. It provides a logical and interconnected framework for all measurements in science, industry and commerce. Officially abbreviated SI, the system is built upon a foundation of seven base units.

**sialic acid :** Any of a group of simple sugar molecules.

**sialyl Lewis<sup>a</sup>-keyhole limpet hemocyanin conjugate vaccine:** A vaccine consisting of the oligosaccharide antigen sialyl Lewis<sup>a</sup> (CA19-9) conjugated to the nonspecific immunomodulator keyhole limpet hemocyanin (KLH), with potential antineoplastic activity. Upon administration, sialyl Lewis<sup>a</sup>-keyhole limpet hemocyanin conjugate vaccine may induce production of IgG and IgM antibodies as well as trigger an antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells expressing the sialyl Lewis<sup>a</sup> antigen. Sialyl Lewis<sup>a</sup> is a blood group antigen and a tumor-associated antigen associated with epithelial cancers such as breast cancer and various digestive cancers. Sialyl Lewis<sup>a</sup> serves as a ligand for the cytokine-inducible cell adhesion molecule (CAM) E-selectin, an endothelial cell-specific type I transmembrane surface protein, thus facilitating hematogenous metastasis by mediating the adhesion of circulating cancer cells to vascular endothelium.

**sialyl Tn-KLH :** A vaccine composed of a substance that enhances immunity plus an antigen found on some tumors of the colon, breast, lung, ovary, pancreas, and stomach.

**sibling :** A person's brother or sister who has the same parents.

**sickle cell anemia :** An inherited disease in which the red blood cells have an abnormal crescent shape, block small blood vessels, and do not last as long as normal red blood cells. Sickle cell anemia is caused by a mutation (change) in one of the genes for hemoglobin (the substance inside red blood cells that binds to oxygen and carries it from the lungs to the tissues). It is most common in people of West and Central African descent. Also called sickle cell disease.

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**sickle-cell anemia:** A human disease characterized by defective hemoglobin molecules; caused by a homozygous allele coding for the  $\beta$  chain of hemoglobin.

**sickle-cell trait:** A human condition recognized by the sickling of erythrocytes when exposed to low oxygen tension; occurs in individuals heterozygous for the allele responsible for sickle-cell anemia.

**Sickness Bags:** These bags are intended for use as a vomit receptacle when patients do not have the ability to get to a restroom. The bags are made of durable high-density polyethylene material and are much stronger than the conventional lined paper bags. Adhesive and wire fold-over closures are available.

**Side chain:** The distinctive R group bonded to the  $\alpha$ -carbon atom of an amino acid.

**SIDE CORING OR SIDE DRAW PINS:** Projections used to core a hole in a direction other than the line of closing of a mold, and which must be withdrawn before the part is ejected from the mold.

**Side Draw Pins:** Projections used to core a hole in a direction other than the line of closing of a mold, and which must be withdrawn before the part is ejected from the mold.

**side effect :** A problem that occurs when treatment affects healthy tissues or organs. Some common side effects of cancer treatment are fatigue, pain, nausea, vomiting, decreased blood cell counts, hair loss, and mouth sores.

**Side groups:** All the carbon based polymers you will find mentioned on this site have the structure -C-C-C-C-C-C- etc. Anything hanging off that centre chain that is not a hydrogen atom is a side group.

**Side Travel :** The continuous movement of a belt in a direction either right or left of the centerline of the conveyor. (Also see Waver)

**Side-action:** A portion of the mold that is pushed into place as the mold closes, using a cam-actuated slide. Typically, side-actions are used to resolve an undercut, or sometimes to allow an undrafted outside wall. As the mold opens, the side action pulls away from the part, allowing the part to be ejected. Also called a “cam.”

**Side-Draw Pins :** Projections used to core a hole in a direction other than the line of closing of a mold and which must be withdrawn before the part is ejected from the mold. See also Retractable Cores.

**Side-Gusset Bag:** A bag with gussets on both sides, with a fin-seal running from top to bottom and sealed horizontally at the bottom and the top. Commonly used in the coffee industry.

**side-to-end coloanal anastomosis :** A surgical procedure in which the side of the colon is attached to the anus after the rectum has been removed. A section of the colon about 2 inches long is formed into a mini-pouch in order to replace the function of the rectum and store stool until it can be eliminated. This procedure is similar to the J-pouch coloanal anastomosis but a much smaller pouch is formed.

**sideropenic dysphagia :** A disorder marked by anemia caused by iron deficiency, and a web-like growth of membranes in the throat that makes swallowing difficult. Having sideropenic dysphagia may increase the risk of developing esophageal cancer. Also called Paterson-Kelly syndrome and Plummer-Vinson syndrome.

**sidestream smoke:** The smoke that is given off from the cigarette (pipe, cigar) between puffs and is not directly inhaled by the smoker. OR Smoke

that comes from the lighted end of a burning tobacco product, such as a cigarette, pipe, or cigar. Sidestream smoke can be a form of secondhand smoke. It contains nicotine and many harmful, cancer-causing chemicals. Inhaling sidestream smoke increases the risk of lung cancer and may increase the risk of other types of cancer. Inhaling it also increases the risk of other health problems, such as heart disease and lung disease.

**SIDS :** A disorder marked by the sudden and unexpected death of a healthy child who is younger than one year old, usually during sleep. The cause of SIDS is not known. Also called crib death and sudden infant death syndrome.

**Siemen:** The reciprocal of an ohm, which is a measure of resistance to the flow of electrical charge. OR The SI unit of electrical conductance. A material has a conductance of one siemens if one ampere of electric current can pass through it per volt of electric potential.

**Sievert (Sv):** The international system (SI) unit for dose equivalent equal to 1 Joule/kilogram. 1 sievert = 100 rem. Named for physicist Rolf Sievert.

**Sifter top:** perforated top on a container or fitting designed to dispense contents.

**siG12D LODER:** A proprietary, miniature biodegradable polymeric matrix containing small-interfering RNAs for the mutated KRAS oncogene, KRASG12D, (siG12D), with potential antitumor activity. Upon intratumoral injection, siG12D is released locally, thereby preventing translation of KRAS proteins and potentially inhibiting growth of tumor cells overexpressing KRAS. KRAS, a member of the small GTPase superfamily, is mutated in over 90% of human pancreatic ductal adenocarcinomas (PDAC) and is associated with tumor cell proliferation and reduced survival.

**sigma bond:** In the valence bond theory, a sigma bond is a valence bond that is symmetrical around the imaginary line between the bonded atoms. Most single bonds are sigma bonds. OR A type of covalent bond in which most of the electrons are located in between the nuclei.

**Sigma factor:** A subunit of RNA polymerase that recognizes specific sites on DNA for initiation of RNA synthesis.

**Sigma subunit:** A component of bacterial RNA polymerase that enables the core RNA polymerase to recognize promoter sites.

**Sigma-Bond:** A chemical bond formed by the direct "Head-to-Head" overlap of two atomic orbitals. I don't think I actually want to get into this , but the two bonds in a double bond are not the same; one is a sigma bond and is considerably stronger than the second one, which is a pi-bond formed by the indirect overlap of two atomic orbitals....

**sigmoid colon :** The S-shaped section of the colon that connects to the rectum.

**sigmoidoscope :** A thin, tube-like instrument used to examine the inside of the colon. A sigmoidoscope has a light and a lens for viewing and may have a tool to remove tissue. Or Examination of the lower colon using a sigmoidoscope, inserted into the rectum. A sigmoidoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called proctosigmoidoscopy.

**sign:** In medicine, a sign is something found during a physical exam or from a laboratory test that shows that a person may have a condition or disease. Some examples of signs are fever, swelling, skin rash, high blood pressure, and high blood glucose.

**Signal sequence:** A (usually N-terminal) sequence of a protein that directs its processing or localization within the cell. OR A n amino-terminal sequence that signals the cellular fate or destination of a newly synthesized protein. OR A sequence of amino acid residues ranging in size fr 13 to 36 residues, usually at the amino terminus of the nascent polypeptide chain, that marks the protein for translocation across the rough endoplasmic reticulum.

**signal transduction:** The process by which an extracellular signal (chemical, mechanical, or electrical) is amplified and converted to a cellular response.

**signal transduction :** The process by which a cell responds to substances in its environment. The binding of a substance to a molecule on the surface of a cell causes signals to be passed from one molecule to another inside the cell. These signals can affect many functions of the cell, including cell division and cell death. Cells that have permanent changes in signal transduction molecules may develop into cancer.

**signal transduction inhibitor :** A substance that blocks signals passed from one molecule to another inside a cell. Blocking these signals can affect

many functions of the cell, including cell division and cell death, and may kill cancer cells. Certain signal transduction inhibitors are being studied in the treatment of cancer.

**signal-to-noise ratio:** A quantitative measure of the statistical detectability of a signal, expressed as a ratio of the magnitude of the signal relative to the variability. For first detection of a CO<sub>2</sub>-induced climate change, the model signal is the mean change or anomaly in some climatic variable, usually surface air temperature, attributed by a numerical model to increased concentrations of carbon dioxide. Observed noise is the standard deviation or natural variability computed from observations of that variable and adjusted for sample size, autocorrelation, and time averaging.

**signaling pathway :** Describes a group of molecules in a cell that work together to control one or more cell functions, such as cell division or cell death. After the first molecule in a pathway receives a signal, it activates another molecule. This process is repeated until the last molecule is activated and the cell function is carried out. Abnormal activation of signaling pathways can lead to cancer, and drugs are being developed to block these pathways. These drugs may help block cancer cell growth and kill cancer cells.

**signature molecule :** A biological molecule found in blood, other body fluids, or tissues that is a sign of a normal or abnormal process, or of a condition or disease. A signature molecule may be used to see how well the body responds to a treatment for a disease or condition. Also called biomarker and molecular marker.

**signet ring cell carcinoma :** A highly malignant type of cancer typically found in glandular cells that line the digestive organs. The cells resemble signet rings when examined under a microscope.

**Significance Determination Process:** The process used by the NRC staff to evaluate inspection findings to determine their safety significance. This involves assessing how the inspection findings affect the risk of a nuclear plant accident, either as a cause of the accident or the ability of plant safety systems or personnel to respond to the accident.

**significant :** In statistics, describes a mathematical measure of difference between groups. The difference is said to be significant if it is greater than what might be expected to happen by chance alone. Also called statistically significant.

**SIGNIFICANT DIGITS:** those that can be accurately measured. An answer can have no more significant digits than the least number of them in the data.

**significant figure:** A convention for recording measurements.

Measurements are rounded so that they contain only the digits up to and including the first uncertain digit, when the number is written in scientific notation. OR If you measure one side of a cube with a ruler marked in cm and find it is 26 cm long, then its volume should be 17576 cm<sup>3</sup>, right?

Wrong! You have only put two meaningful digits into your calculation - the cube could be anywhere from about 25.50001 to 26.49999 cm long on a side, and if you say it has a volume of 17576 cm<sup>3</sup> you are claiming accuracy that you don't really have. The correct answer is  $1.8 \times 10^4$ , keeping the same number of meaningful digits in the answer as you started with. The proper name for 'meaningful digit' is 'significant figure'.

**Sigosix:** (Other name for: recombinant interleukin-6)

**SIL:** A general term for the abnormal growth of squamous cells on the surface of the cervix. The changes in the cells are described as low grade or high grade, depending on how much of the cervix is affected and how abnormal the cells appear. Also called squamous intraepithelial lesion.

**silatecan AR-67:** A synthetic, highly lipophilic derivative of camptothecin, with potential antineoplastic and radiosensitizing activities. Silatecan DB-67 binds to and stabilizes the topoisomerase I-DNA covalent complex, inhibiting the religation of topoisomerase I-mediated single-stranded DNA breaks and producing lethal double-stranded DNA breaks when encountered by the DNA replication machinery; inhibition of DNA replication and apoptosis follow. Camptothecin readily undergoes hydrolysis at physiological pH, changing its conformation from the active lactone structure to an inactive carboxylate form. Modifications on the E ring of camptothecin prevent binding of human serum albumin, which prefers the inactive carboxylate form, thereby enhancing the stability of the active lactone structure and resulting in prolonged agent activity. In addition, this agent may radiosensitize tumor cells.

**sildenafil :** A drug used to treat erectile dysfunction. Sildenafil relaxes the smooth muscle of the penis to allow increased blood flow and erection. It is a type of phosphodiesterase inhibitor. Also called Viagra.

**sildenafil citrate:** The citrate salt of a pyrazolopyrimidinone derivative structurally related to zaprinast. Sildenafil selectively inhibits cyclic guanosine monophosphate (cGMP)-specific type 5 phosphodiesterase, resulting in vasodilation in the corpus cavernosum of the penis and penile erection.

**silent mutation:** A mutation in a gene that causes no detectable change in the biological characteristics of the gene product.

**silica:** Silica is the common name for silicon dioxide,  $\text{SiO}_2$ . It exists in nature as crystalline quartz.

**silica tetrahedron:** four oxygen atoms connected to a smaller, central silicon atom.

**silicate:** 1. A negatively charged ion containing silicon and oxygen, usually  $\text{SiO}_3^{2-}$ ,  $\text{Si}_2\text{O}_7^{6-}$ , and  $\text{Si}_3\text{O}_7^{2-}$ . 2. A compound containing positively charged metal ions combined with negatively charged ions made of silicon and oxygen.

**Silicate Mineral:** A mineral that is made up of compounds with a silicon oxide group or silicon atom bonded to a metal. Topaz is a good example of a silicate mineral.

**silicates:** group of minerals with silicon and oxygen as a base.

**Silicon:** Symbol: "Si" Atomic Number: "14" Atomic Mass: 28.09amu.

Silicon is a delicate, non-metallic element. It is delicate because it is brittle. There is more silicon in the Earth's crust than any other element except oxygen. You will also find silicon in glass, pottery, computer chips, and bricks. OR A resin used in the binders of coatings. Also used as an additive to provide specific properties, e.g., defoamer. Paints containing silicone are very slick and resist dirt, graffiti and bacterial growth, and are stable in high heat. OR One of the family of polymeric materials in which the recurring chemical group contains silicon and oxygen atoms as links in the main chain. At present these compounds are derived from silica (sand) and methyl chloride. The various forms obtainable are characterized by their resistance to heat. Silicones are used in the following applications: (a) Greases for lubrication. (b) Rubber-like sheeting for gaskets, etc. (c) Heat stable fluids and compounds for waterproofing, insulating, etc. (d) Thermosetting insulating varnishes and resins for both coating and laminating. OR A plastic with high thermal stability, water resistance, flexibility and low toxicity. Commonly used in medical tubing and cooking

applications. OR Chemical derived from silica used in molding as a release agent and general lubricant.

**silicon phthalocyanine 4:** A synthetic photosensitizer agent containing a large macrocyclic ring chelated with silicon. Silicon phthalocyanine 4 localizes primarily in mitochondrial cytosolic membranes and, after photoexcitation, forms reactive oxygen species that induce apoptosis. Check for active clinical trials using this agent. or A substance being studied in the treatment of cancer. When absorbed by cancer cells and exposed to light, it becomes active and kills the cancer cells. It is a type of photodynamic therapy agent.

**silicone :** A synthetic gel that is used as an outer coating on breast implants and as the inside filling of some implants.

**silicosis:** Damage to the lungs caused by exposure to materials containing crystalline silicon dioxide which is found in three different forms quartz, tridymite and cristobalite.

**Silk or satin finish:** A finish with a low to medium degree of sheen or gloss.

**SILK SCREEN PRINTING:** This printing method, in its basic form, involves laying a pattern of an insoluble material, in outline, on a finely woven fabric, so that when ink is drawn across it. it is able to pass through the screen only in the desired areas. Also called "Screen Process Decorating."

**Sill:** The lowest timber or member in a structure frame or opening. The timber or stone at the bottom of a door or window opening. OR an intrusive body formed from magma that entered country rock parallel to the bedding and is thus concordant with the country rock.

**silmitasertib:** An orally bioavailable small-molecule inhibitor of CK2 with potential antineoplastic activity. Silmitasertib selectively binds to and inhibits the enzyme casein kinase II (CK2), which may lead to an inhibition of cellular proliferation. CK2, a protein kinase often overexpressed in a variety of cancer cell types, appears to be correlated with malignant transformation, tumor growth and survival.

**silodosin:** An orally available, alpha-1 adrenoreceptor (alpha-1a) selective antagonist that can be used to relieve symptoms of benign prostate hyperplasia (BPH). Upon administration, silodosin selectively binds alpha-

1a receptors located in the human prostate and bladder with high affinity and blocks signaling pathways mediated by alpha-1a. Blockade of these receptors causes smooth muscle relaxation, lowers intraurethral pressure, and results in improved urine flow and a reduction in the symptoms of BPH, such as difficulty with urinating, painful urination, urinary frequency and incomplete bladder emptying. In addition, silodosin may be used to improve lower urinary tract symptoms, which can occur after receiving radiation therapy for prostate cancer.

**siltuximab:** A chimeric, human-murine, monoclonal antibody targeting the pro-inflammatory cytokine interleukin 6 (IL-6), with antitumor and anti-inflammatory activities. Upon intravenous administration of siltuximab, this agent targets and binds to IL-6. This inhibits the binding of IL-6 to the IL-6 receptor (IL-6R), which results in the blockade of the IL-6/IL-6R-mediated signal transduction pathway. This inhibits cancer cell growth in tumors overexpressing IL-6. or A drug used to treat a rare condition called Castleman disease in patients who do not have HIV or human herpesvirus 8. It is also being studied in the treatment of multiple myeloma. Siltuximab binds to a protein called interleukin-6 (IL-6), which is made by some white blood cells and other cells in the body. Siltuximab may help reduce inflammation and stop the growth of cancer cells or abnormal blood cells. It is a type of monoclonal antibody. Also called anti-IL-6 chimeric monoclonal antibody, cCLB8, CNTO 328, and Sylvant.

**Silvadene:** (Other name for: silver sulfadiazine)

**Silver:** Symbol:"Ag" Atomic Number:"47" Atomic Mass: 107.87amu. It is one of the transition elements. Silver is one of man's precious metals and has been used for thousands of years. It has the highest thermal and electrical conductivity of any metal. You will find it used in photography, dentistry, electronics, mirrors, and explosives.

**silver nitrate:** An inorganic chemical with antiseptic activity. Silver nitrate can potentially be used as a cauterizing or sclerosing agent.

**silver sulfadiazine:** A sulfonamide-based topical agent with antibacterial and antifungal activity. Silver sulfadiazine may act through a combination of the activity of silver and sulfadiazine. When this agent interacts with sodium chloride-containing body fluids, silver ions are released slowly and sustainably into wounded areas. Ionized silver atoms catalyze the formation of disulfide bonds leading to protein structural changes and inactivating

thiol-containing enzymes; silver ions may also intercalate DNA thereby interfering with replication and transcription of bacteria. As a competitive inhibitor of para-aminobenzoic acid (PABA), sulfadiazine inhibits bacterial dihydropteroate synthase, thereby resulting in disruption of folic acid metabolism and ultimately DNA synthesis.

**silviculture:** Management of forest land for timber.

**Silybin-Phytosome:** (Other name for: phosphatidylcholine-bound silybin)

**Silybum marianum :** A plant that has been used in some cultures to treat certain medical problems, including stomach, liver, and gallbladder disorders. The active extract of Silybum marianum seeds is called silymarin. It is being studied in the prevention of liver damage caused by some cancer treatments. Also called milk thistle.

**silymarin:** A mixture of flavonolignans isolated from the milk thistle plant Silybum marianum. Silymarin may act as an antioxidant, protecting hepatic cells from chemotherapy-related free radical damage. This agent may also promote the growth of new hepatic cells. or A substance obtained from milk thistle seeds that is being studied in the prevention of liver damage caused by certain cancer treatments.

**simethicone:** A mixture of polydimethylsiloxanes with antifoaming and anti-bloating effects. Simethicone reduces the surface tension of gas bubbles causing them to coalesce into larger bubbles that can be passed more easily by belching or flatulence.

**simian virus 40 :** A virus that infects some types of monkeys. It may also infect humans, and was found in some polio vaccines tested in the early 1960s. Although the virus has been shown to cause cancer in laboratory animals, there is no evidence that it causes cancer in people. Also called SV40.

**similar:** having the same shape but not the same size, in proportion.

**similar sequences, often as a product of genetic recombination**

**heteropolysaccharide:** A polysaccharide containing more than one type of sugar.

**simmitecan hydrochloride:** The hydrochloride salt form of simmitecan, an ester prodrug of chimmitecan, a 9-alkyl-substituted camptothecin derivative with potential antineoplastic activity. Upon intravenous administration, simmitecan is hydrolyzed by carboxylesterase and the

activated form, chimmitecan, is produced. Chimmitecan inhibits topoisomerase I, stabilizes covalent topoisomerase I-DNA complexes, and inhibits the religation of topoisomerase I-mediated single-strand DNA breaks. Furthermore, the covalent topoisomerase I-DNA complexes interfere and block the DNA replication machinery, resulting in the production of potentially lethal double-strand DNA breaks. This leads to an inhibition of DNA replication and the induction of apoptosis. The modification at position 9 yields improved cytotoxicity compared to some other camptothecin analogues. Check for active clinical trials using this agent.

**Simmons-Smith reaction:** the formation of a cyclopropane molecule via reaction of an alkene with iodomethylzinc iodide ( $\text{ICH}_2\text{ZnI}$ ), the Simmons-Smith reagent.

**simo decoction:** A traditional Chinese medicine (TCM) containing simo decoction which contains Fructus aurantii, Radix Aucklandiae, Semen arecae and Radix Linderae, that can potentially be used to improve gastrointestinal (GI) function following surgery. Upon oral intake of simo decoction, this TCM may stimulate mainly muscarinic M3 receptors, but also muscarinic M2 receptors, calcium channels and nicotinic receptors triggering a release of nitric oxide (NO), while inhibiting adrenergic receptors. Altogether, this stimulates the contraction of antral circular smooth muscle, thereby abrogating GI hypomotility and enhancing the return of GI function after surgery.

**simple diffusion:** The movement of solute molecules across a membrane to a region of lower concentration, unassisted by a protein transporter.

**Simple Elements:** These are elements in the periodic table that have only one shell that is missing electrons. These simple elements include many of the first 18 elements. Carbon, oxygen, nitrogen are examples of simple elements.

**simple mastectomy :** Surgery to remove the whole breast. Some of the lymph nodes under the arm may also be removed. Also called total mastectomy.

**simple nephrectomy :** Surgery to remove one kidney.

**simple predicate:** a verb or verb phrase.

**simple protein:** A protein yielding only amino acids on hydrolysis.

**simple sentence:** has one independent clause and no subordinate clauses.

**simple subject:** a noun or pronoun.

**simple vulvectomy :** Surgery to remove the entire vulva (the external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina).

**simplex case :** A single, isolated occurrence of an inherited condition in a family. Simplex cases can result from certain inheritance patterns or be caused by de novo mutations or reduced penetrance within the family. It can also result from nongenetic causes such as adoption or alternate paternity.

**Simplification:** Drug design technique used when the lead compound is structurally complex. The use of simpler analogues eases synthesis.

**simplified:** An algebraic expression is simplified by using the distributive property and combining like terms.

**simulation :** In cancer treatment, a process used to plan radiation therapy so that the target area is precisely located and marked.

**Simulect:** (Other name for: basiliximab)

**simvastatin:** A lipid-lowering agent derived synthetically from a fermentation product of the fungus *Aspergillus terreus*. Hydrolyzed in vivo to an active metabolite, simvastatin competitively inhibits hepatic hydroxymethyl-glutaryl coenzyme A (HMG-CoA) reductase, the enzyme which catalyzes the conversion of HMG-CoA to mevalonate, a key step in cholesterol synthesis. This agent lowers plasma cholesterol and lipoprotein levels, and modulates immune responses by suppressing MHC II (major histocompatibility complex II) on interferon gamma-stimulated, antigen-presenting cells such as human vascular endothelial cells.

**simvastatin :** A drug used to lower the amount of cholesterol and other harmful substances in the blood, such as triglycerides. It is also being studied in the treatment of cancer and other conditions. Simvastatin blocks an enzyme that helps make cholesterol in the body. It is a type of HMG-CoA reductase inhibitor and a type of statin. Also called Zocor.

**Sinequan:** (Other name for: doxepin hydrochloride)

**single blind study :** A type of clinical trial in which only the doctor knows whether a patient is taking the standard treatment or the new treatment being tested. This helps prevent bias in treatment studies.

**single bond:** When an electron pair is shared by two atoms.

**Single Cavity Mold:** Produces one part with each cycle. OR A silicone injection mold having only one cavity and producing only one finished part per cycle OR An injection mold having only one cavity in the body of the mold, as opposed to a multiple cavity mold or family mold which have numerous cavities.

**Single crystal:** A crystal consisting of a non-interrupted repetition of the unit cell in three dimensions. The structure of a single crystal can be determined by single-crystal X-ray diffraction.

**single displacement:** single replacement reaction; single displacement reaction; single replacement. Compare with double displacement. A reaction of the form  $A + BC = B + AC$ . For example, zinc displaces hydrogen from hydrochloric acid in the following reaction:  $Zn(s) + 2 HCl(aq) = ZnCl_2(aq) + H_2(g)$ .

**single nucleotide polymorphism :** DNA sequence variations that occur when a single nucleotide (adenine, thymine, cytosine, or guanine) in the genome sequence is altered; usually present in at least 1% of the population. Also called SNP.

**single nucleotide polymorphism :** The most common type of change in DNA (molecules inside cells that carry genetic information). Single nucleotide polymorphisms occur when a single nucleotide (building block of DNA) is replaced with another. These changes may cause disease, and may affect how a person reacts to bacteria, viruses, drugs, and other substances. Also called SNP.

**SINGLE WOUND SHEETING (SWS):** A single layer of plastic film that is wound on a roll.

**Single-copy DNA:** A region of the genome whose sequence is present only once per haploid complement.

**single-photon emission computed tomography :** A special type of computed tomography (CT) scan in which a small amount of a radioactive drug is injected into a vein and a scanner is used to make detailed images of areas inside the body where the radioactive material is taken up by the cells. Single-photon emission computed tomography can give information about blood flow to tissues and chemical reactions (metabolism) in the body. Also called SPECT.

**single-stranded conformation polymorphism analysis :** A laboratory test used to separate single-stranded nucleic acids based on subtle differences in their DNA sequence, often a single base pair, which results in a different secondary structure and a measurable difference in mobility through a gel. Also called SSCP analysis.

**single-stranded conformational polymorphism :** A type of mutation scanning; the identification of abnormally-migrating single-stranded DNA segments on gel electrophoresis. Also called SSCP.

**Singlet oxygen:** An oxygen atom in its singlet excited state. Singlet oxygen usually gives products resulting from cycloaddition.

**Singlet-oxygen sensitizer:** An organic compound (e.g., the dye rose bengal) that converts triplet oxygen to singlet oxygen by transfer of energy.

**Singulair :** A drug used to treat symptoms of asthma, such as trouble breathing, tight chest, wheezing, coughing, and runny nose. Singulair blocks the action of a substance that causes airways in the lungs to narrow and causes other symptoms of asthma. It is a type of leukotriene receptor antagonist and a type of antiasthmatic agent. Also called montelukast sodium.

**Sink:** Dimples or other distortion in the surface of the part as different areas of the part cool at different rates. These are most commonly caused by excessive material thickness. OR A depression on the part surface over a thick wall feature i.e., a rib, boss, thick sprue gate or change in wall section. Caused by the delayed cooling effects of the center of the thick area. When the hot center cools, it shrinks and pulls down the skin on the surface.

**Sink condition:** Conditions during a dissolution or solubility experiment where the concentration in solution is much less than the solubility.

**SINK MARK:** A depression or dimple on the surface of an injection molded part due to collapsing of the surface following local internal shrinkage after the gate seals. May also be caused by a short shot. OR A depression on the surface of moulded part caused by differential shrinkage. OR An indentation on the surface of the part as a result of significant local change in wall section. The mark will occur in the thicker area.

**Sinkage:** Loss of gloss or colour due to the absorption of the medium by the undercoat or surface beneath. OR When the gloss or colour of the coating has been absorbed by the undercoat or the surface beneath the

coating, first thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Then rub down with a suitable abrasive and dust off before priming all over with a suitable primer for the finishing system.

**sinkhole:** a basinlike depression at the surface caused when a portion of a cave system collapses.

**sinter:** a build-up of ledgelike layers, generally of calcite or silica, around a hot spring.

**Sintering:** A process where the temperature of PTFE is raised to the point where PTFE particles soften and form a bond with each other. OR In forming articles from fusible powders, e.g.. nylon, the process of holding the pressed-powder article at a temperature just below its melting point for about 1/2 hour. Particles are fused (sintered) together, but the mass, as a whole, does not melt. OR The partial welding together of powder particles at temperature near the melting point.

**sinus :** A cavity, space, or channel in the body. Examples include hollow spaces in the bones at the front of the skull, and channels for blood and lymph. Sinuses may also be found in the heart, brain, and other organs.

**sinusoidal obstruction syndrome :** A condition in which some of the veins in the liver are blocked. This causes a decrease in blood flow inside the liver and may lead to liver damage. Signs and symptoms include weight gain, yellowing of the skin and whites of the eyes, dark-colored urine, and increased liver size. It may occur at some point in time after radiation therapy to the liver and bile ducts or after high-dose anticancer drugs were given before a stem cell transplant. Also called hepatic veno-occlusive disease.

**siplizumab:** A monoclonal immunoglobulin G1 antibody with potential antineoplastic activity. Siplizumab binds to CD2, a specific receptor found in T cells and NK cells, thereby triggering a host immune response that results in lysis of CD2+ cells, selective suppression of the immune system, and control of activated T cell growth. Check for active clinical trials using this agent. or A substance being studied in the treatment of certain types of T-cell lymphoma. It is also being studied in the prevention of organ or tissue rejection after a kidney and/or bone marrow transplant. Siplizumab binds to a protein called CD2, which is found on some types of immune cells and cancer cells. This may help suppress the body's immune response

and it may help kill cancer cells. Siplizumab is a type of monoclonal antibody. Also called MEDI-507.

**Sipple syndrome :** A rare, genetic disorder that affects the endocrine glands and causes a type of thyroid cancer called medullary thyroid cancer, pheochromocytoma, and parathyroid gland cancer. It may also cause benign (noncancerous) tumors in the parathyroid glands and adrenal glands. The affected endocrine glands may make high levels of hormones, which can lead to other medical problems such as high blood pressure and kidney stones. An itchy skin condition may also occur. Sipple syndrome is caused by a mutation (change) in a gene called RET. Also called MEN2A, MEN2A syndrome, multiple endocrine adenomatosis type 2A, and multiple endocrine neoplasia type 2A syndrome.

**sipuleucel-T:** A cell-based vaccine composed of autologous antigen-presenting peripheral blood mononuclear cells (enriched for a dendritic cell fraction) that have been exposed to a recombinant protein consisting of granulocyte-macrophage colony-stimulating factor (GM-CSF) fused to prostatic-acid phosphatase (PAP), a protein expressed by prostate cancer cells. Upon administration, the vaccine may stimulate an antitumor T-cell response against tumor cells expressing PAP. or A drug used to treat prostate cancer that has spread. It is made from immune system cells collected from a patient with prostate cancer. The cells are treated with a protein that is made by combining a protein found on prostate cancer cells with a growth factor. When the cells are injected back into the patient, they may stimulate T cells to kill prostate cancer cells. Sipuleucel-T is a type of vaccine and a type of cellular adoptive immunotherapy. Also called APC8015 and Provenge.

**SIR JJ THOMPSON'S "J":** tube determined the charge to mass ratio of electrons and ions. This led to the discovery of isotopes.

**Sirapite:** A common type of hardwall plaster. It may or may not be mixed with lime.

**siRNA-expressing SV40 vector:** A simian virus 40 (SV40)-based shuttle vector, encoding small interfering RNA (siRNA), with potential antineoplastic activity. The expression of siRNA in target tumor cells transfected with an siRNA-expressing SV40 vector may result in siRNA-mediated silencing of target oncogenes and, so, the inhibition of tumor cell growth and the induction of tumor cell death.

**siRNA-transfected peripheral blood mononuclear cells APN401:**

Autologous peripheral blood mononuclear cells (PBMCs) transfected ex vivo with small-interfering ribonucleic acid (siRNA) directed against the E3 ubiquitin ligase casitas B-lineage lymphoma-b gene (Cbl-b), with potential immunoactivating and antineoplastic activities. The Cbl-b gene is silenced ex vivo through the binding of Cbl-b siRNA to Cbl-b mRNA, which prevents the translation of the Cbl-b protein in T-lymphocytes. Upon infusion, the activated, Cbl-b-silenced T-lymphocytes are able to increase the production of cytokines, proliferate and activate the immune system, which leads to cancer cell eradication. Cbl-b, a negative regulator of the immune system, is mutated in a variety of cancer cell types. Its expression is inversely correlated with activation of T-lymphocytes and tumor cell eradication.

**sirolimus:** A natural macrocyclic lactone produced by the bacterium *Streptomyces hygroscopicus*, with immunosuppressant properties. In cells, sirolimus binds to the immunophilin FK Binding Protein-12 (FKBP-12) to generate an immunosuppressive complex that binds to and inhibits the activation of the mammalian target of rapamycin (mTOR), a key regulatory kinase. This results in inhibition of T lymphocyte activation and proliferation that occurs in response to antigenic and cytokine (IL-2, IL-4, and IL-15) stimulation and inhibition of antibody production. or A drug used to keep the body from rejecting organ and bone marrow transplants. Sirolimus blocks certain white blood cells that can reject foreign tissues and organs. It also blocks a protein that is involved in cell division. It is a type of antibiotic, a type of immunosuppressant, and a type of serine/threonine kinase inhibitor. Sirolimus was previously called rapamycin. Also called Rapamune.

**SIRPa-Fc fusion protein TTI-621:** A soluble recombinant antibody-like fusion protein composed of the N-terminal CD47 binding domain of human signal-regulatory protein alpha (SIRPa) linked to the Fc domain of human immunoglobulin G1 (IgG1), with potential immune checkpoint inhibitory and antineoplastic activities. Upon administration, the SIRPa-Fc fusion protein TTI-621 selectively targets and binds to CD47 expressed on tumor cells and blocks the interaction of CD47 with endogenous SIRPa, a cell surface protein expressed on macrophages. This prevents CD47/SIRPa-mediated signaling and abrogates the CD47/SIRPa-mediated inhibition of macrophage activation and phagocytosis of cancer cells. This induces pro-

phagocytic signaling mediated by the binding of calreticulin (CRT), which is specifically expressed on the surface of tumor cells, to low-density lipoprotein (LDL) receptor-related protein-1 (LRP-1), expressed on macrophages, and results in macrophage activation and the specific phagocytosis of tumor cells. CD47, also called integrin-associated protein (IAP), is a tumor-associated antigen (TAA) expressed on normal, healthy hematopoietic stem cells (HSC) and overexpressed on the surface of a variety of cancer cells. Expression of CD47, and its interaction with SIRP $\alpha$ , leads to the inhibition of macrophage activation and protects cancer cells from phagocytosis, thereby allowing cancer cells to proliferate.

**SIRS:** A serious condition in which there is inflammation throughout the whole body. It may be caused by a severe bacterial infection (sepsis), trauma, or pancreatitis. It is marked by fast heart rate, low blood pressure, low or high body temperature, and low or high white blood cell count. The condition may lead to multiple organ failure and shock. Also called systemic inflammatory response syndrome.

**sirtuin:** human homolog of yeast silent information regulator 2, Sir2

**Site-directed mutagenesis:** An intentional alteration in a DNA sequence that can be genetically inherited. OR A set of methods used to create specific alterations in the sequence of a gene.

**Site-specific Drug Delivery:** Comprises of methods of delivering pharmaceutical agents at higher concentrations to the desired part of the body

**Site-specific mutagenesis:** The use of recombinant DNA technology to create specific deletions, insertions, or substitutions in vitro in a particular gene; this technique allows the production of proteins having any desired amino acid at any position.

**Site-specific recombination:** The exchange of two specific but not always homologous DNA sequences.

**site-specific recombination:** A type of genetic recombination that occurs only at specific ssquences.

**sivifene gel:** The phenylhydrazone 4,4'-dihydroxybenzophenone-2,4-dinitrophenylhydrazone formulated as a topical agent with immunomodulating and potential antineoplastic activities. Applied topically

as a gel, sivifene may stimulate a local immune response against human papillomavirus (HPV)-induced cervical intraepithelial neoplasia (CIN).

**Sixofilan:** (Other name for: sizofiran)

**Size:** A mixture of glue and water. OR A coating applied to glass fibres or filaments during manufacture, to improve handling and protect from abrasion.

**Size distribution:** See particle-size distribution.

**SIZE OF THE ATOM:** can be measured by oil slick experiments or by calculating how many atoms lie along the side of a cube of a known number of moles of atoms.

**SIZE OF THE NUCLEUS:** was measured by Lord Rutherford using the scattering patterns of alpha particles passing through gold foil. It is 10-15 meter.

**size-consistent:** Describes a calculation that gives the same energy for two atoms (or molecular fragments) separated by a large distance as is obtained from summing the energies for the atoms (or molecular fragments) computed separately. So for a size-consistent method, the bond energy in N<sub>2</sub> is  $D_e = 2E(N) - E(N_2)$ . For a method that is not size-consistent, a "supermolecule" calculation with a big distance (e.g., 100  $\text{\AA}$ ) is required:  $D_e = E(N \dots N) - E(N_2)$ .

**Sizing:** The process of applying a material to a surface to fill pores and thus reduce the absorption of the subsequently applied adhesive or coating or to otherwise modify the surface. Also, the surface treatment applied to glass fibers used in reinforced plastics. The material used is sometimes called Size.

**sizofiran:** A soluble beta-D-glucan produced by the Basidiomycetes fungus, *Schizophyllum commune* Fries, with potential immunomodulating and antitumor activities. Although sizofiran's exact mechanism of action has yet to be fully elucidated, this agent appears to stimulate the immune system by increasing cytokine production, activating macrophages and enhancing the activity of polymorphonuclear leukocytes (PML) and natural killer (NK) cells.

**SJG-136:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called DNA cross-linking agents.

**Sjögren syndrome** : An autoimmune disease that affects the tear glands and salivary glands, and may affect glands in the stomach, pancreas, and intestines. The disease causes dry eyes and mouth, and may cause dryness in the nose, throat, air passages, skin, and vagina. It may also cause inflammation in the joints, muscles, and skin; pneumonia; tingling in the fingers and toes; and fatigue. It often occurs with rheumatoid arthritis or other connective tissue diseases.

**SK-Diphenhydramine:** (Other name for: diphenhydramine hydrochloride)

**SK-Furosemide:** (Other name for: furosemide)

**SK-Probenecid:** (Other name for: probenecid)

**SK&F106615:** A substance being studied in the treatment of certain multiple myelomas and other advanced cancers. SK&F106615 may block the growth of tumors and may prevent the growth of new blood vessels that tumors need to grow. SK&F106615 is a type of signal transduction inhibitor and a type of antiangiogenesis agent. Also called atiprimod and azaspirane.

**skeletal** : Having to do with the skeleton (bones of the body).

**skeletal structure:** the carbon backbone of a molecule.

**skeleton** : The framework that supports the soft tissues of vertebrate animals and protects many of their internal organs. The skeletons of vertebrates are made of bone and/or cartilage.

**Skeleton Equation:** A chemical equation that is not balanced, with an unequal number of atoms on each side of the reaction. You may start with a hydrogen molecule on one side of the equation (two atoms) and create a compound that has eight hydrogen atoms. Although the formulas are correct, the equation is not balanced.

**SKIN:** Tough covering that forms on paints if container is not tightly sealed. OR A relatively dense layer at the surface of a cellular material.

**skin cancer** : Cancer that forms in the tissues of the skin. There are several types of skin cancer. Skin cancer that forms in melanocytes (skin cells that make pigment) is called melanoma. Skin cancer that forms in the lower part of the epidermis (the outer layer of the skin) is called basal cell carcinoma. Skin cancer that forms in squamous cells (flat cells that form the surface of the skin) is called squamous cell carcinoma. Skin cancer that forms in neuroendocrine cells (cells that release hormones in response to signals from the nervous system) is called neuroendocrine carcinoma of the skin.

Most skin cancers form in older people on parts of the body exposed to the sun or in people who have weakened immune systems.

**skin conduction** : A change in the heat and electricity passed through the skin by nerves and sweat. Skin conduction increases in certain emotional states and during hot flashes that happen with menopause. Also called electrodermal response and galvanic skin response.

**skin graft** : Skin that is moved from one part of the body to another.

**Skin Pack**: A type of carded packaging where a product (or products) is placed on a piece of paperboard, and a thin sheet of transparent plastic is placed over the product and paperboard.

**skin patch** : A bandage-like patch that releases medicine into the body through the skin. The medicine enters the blood slowly and steadily.

**skin stimulation** : The process of applying pressure, friction, temperature change, or chemical substances to the skin to lessen or block a feeling of pain.

**skin tag** : A small, benign skin growth that may have a stalk (peduncle). Skin tags most commonly appear on the neck, axillary, groin, and inframammary regions. Also called acrochordon.

**skin test** : A test for an immune response to a compound by placing it on or under the skin.

**skin vesicle** : A fluid-filled sac in the outer layer of skin. It can be caused by rubbing, heat, or diseases of the skin. Also called blister.

**skinning vulvectomy** : Surgery to remove the top layer of skin of the vulva (the external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina). A skin graft may be used to replace the skin that was removed.

**Skirting**: A board or member at the base of a wall, probably a corruption of 'wainscotting'.

**skull** : The bones that form the head. The skull is made up of cranial bones (bones that surround and protect the brain) and facial bones (bones that form the eye sockets, nose, cheeks, jaw, and other parts of the face). An opening at the base of the skull is where the spinal cord connects to the brain. Also called cranium.

**SL-11047**: A substance that is being studied in the treatment of lymphoma. It belongs to the family of drugs called polyamine analogs.

**slab-pull:** a term that refers to the result of the cold edge of a plate subducting at a steep angle through the mantle, its downward motion tending to pull the plate away from the ridge crest.

**slag:** Slag is the solid waste product from the extraction of iron and manufacture of steel.

**Slaked lime** : Calcium hydroxide, it is made by adding a limited amount of water to quicklime (calcium oxide). It can be used as a soil additive to reduce the acidity of soil.

**slang:** conversational or informal language, which should generally be avoided in formal writing.

**SLE:** A chronic, inflammatory, connective tissue disease that can affect many organs including the joints, skin, heart, lungs, kidneys, and nervous system. It is marked by many different symptoms; however, not everyone with SLE has all of the symptoms. Also called lupus and systemic lupus erythematosus.

**sleep apnea** : A sleep disorder that is marked by pauses in breathing of 10 seconds or more during sleep, and causes unrestful sleep. Symptoms include loud or abnormal snoring, daytime sleepiness, irritability, and depression.

**sleep disorder** : A disturbance of normal sleep patterns. There are a number of sleep disorders that range from trouble falling asleep, to nightmares, sleepwalking, and sleep apnea (problems with breathing that cause loud snoring). Poor sleep may also be caused by diseases such as heart disease, lung disease, or nerve disorders.

**sleep stage** : One of 5 parts or stages of the sleep cycle based on the type of brain activity that occurs during the stage. During stages 1 to 4, a person will feel drowsy, fall asleep, and move into a deep, dreamless sleep. Stage 5 is called rapid eye movement (REM) sleep, and it is during this stage that dreams occur. During several hours of normal sleep, a person will go through several sleep cycles that include REM sleep and the 4 stages of non-REM sleep (light to deep sleep).

**Sleepiness:** Condition of a recently-dried glossy paint film which has lost its initial gloss slightly. OR Apply another coat of paint, after first cleaning down the surfaces to remove all dirt, grease and surface contaminants. Then rub down with a suitable abrasive, dust off and repaint.

**Sleepy:** The description of a recently applied gloss paint which has a 'hazy' appearance or lower than normal gloss.

**sleeve lobectomy :** Surgery to remove a lung tumor in a lobe of the lung and a part of the main bronchus (airway). The ends of the bronchus are rejoined and any remaining lobes are reattached to the bronchus. This surgery is done to save part of the lung. Also called sleeve resection.

**sleeve resection :** Surgery to remove a lung tumor in a lobe of the lung and a part of the main bronchus (airway). The ends of the bronchus are rejoined and any remaining lobes are reattached to the bronchus. This surgery is done to save part of the lung. Also called sleeve lobectomy.

**slide:** a mass-wasting movement that moves along a surface parallel to the slope of the surface. OR Projection in the mold used to form the geometry of the part, which is not in the direction of the closing of the mold and must be withdrawn before the part can be ejected. OR A section of the mold that is made to travel at an angle to the normal movement of the mold. It is used for providing undercuts, recesses, etc. OR Area of the custom plastic injection molds that is used for creating undercuts. Required for automatic injection molds

**Slide Action:** A sliding mechanism in the mold designed for the molding of parts with undercuts. The undercut-steel fixture is held in place during the injection process and then slides out of the way prior to ejection.

**Sliding Core:** A pin on a mold that automatically retracts when the mold opens

**sliding plate boundary:** region where plates move next to each other.

**slime molds (cellular):** amoeba-like cells that live independently and unite with other cellular slime molds to form a single, large, flat cell with many nuclei.

**slime molds (true):** single, flat, very large cells with many nuclei.

**sling psychrometer:** a handheld psychrometer that spins around, used to measure dewpoint and relative humidity.

**slip:** a mass-wasting movement in which the mass moves as a single unit along a well-defined surface or plane. OR Slip is an agent most commonly an erucamide or oleamide added to polyethylene resin to make it lower the films coefficient of friction (COF).

**Slip Additive:** A modifier that acts as an internal lubricant which exudes to the surface of the plastic during and immediately after processing. In other words, a non-visible coating blooms to the surface to provide the necessary lubricity to reduce coefficient of friction and thereby improve slip characteristics.

**Slip Agent:** Additive used to provide lubrication during and immediately following processing of plastics. OR An additive that provides surface lubrication during and immediately following processing of the plastic material. It acts as an internal lubricant which will eventually migrate to the surfaces. OR Additive used to provide lubrication during and immediately after the processing of plastics.

**Slip dislocation:** A type of defect in which the crystal planes have slipped relative to each other. A slip dislocation can bring molecules into intermolecular interactions that are not found in the bulk crystal.

**slip face:** the back side of a sand dune. OR the steeper, downwind slope of a sand dune.

**Slip Forming:** Sheet forming technique in which some of the plastic sheet material is allowed to slip through the mechanically operated clamping rings during a stretch-forming operation.

**Slip-plane:** Plane within transparent material visible in reflected light, due to poor welding and shrinkage on cooling.

**SLIP, SLIPPAGE:** When fluids flow it is assumed that the velocity at a surface is zero (or equal to the surface velocity if the surface moves).

Virtually all polymer melts exhibit some slippage on the surface, especially when the shear stress levels are high, e.g., over 0.1 MPa (14.5 psi). Stick-slip phenomena are responsible for the onset of sharkskin whenever polymers are extruded at shear stresses higher than 0.14 MPa (20.3 psi). Some additives and processing aids promote slippage. Slippage is beneficial for delaying the appearance of sharkskin at higher throughput rates.

**slippery elm :** The inner bark of this plant has been used in some cultures to treat certain medical problems. It may have antioxidant effects. Also called gray elm, Indian elm, red elm, sweet elm, *Ulmus fulva*, and *Ulmus rubra*.

**slit-lamp biomicroscopy :** An eye exam using an instrument that combines a low-power microscope with a light source that makes a narrow beam of

light. The instrument may be used to examine the retina, optic nerve, and other parts of the eye. Also called slit-lamp eye exam.

**slit-lamp eye exam :** An eye exam using an instrument that combines a low-power microscope with a light source that makes a narrow beam of light. The instrument may be used to examine the retina, optic nerve, and other parts of the eye. Also called slit-lamp biomicroscopy.

**SLL:** An indolent (slow-growing) type of lymphoma in which too many immature lymphocytes (white blood cells) are found mostly in the lymph nodes. This causes the lymph nodes to become larger than normal. Sometimes cancer cells are found in the blood and bone marrow, and the disease is called chronic lymphocytic leukemia. The disease is most often seen in people older than 50 years. SLL is a type of non-Hodgkin Lymphoma. Also called small lymphocytic lymphoma and well-differentiated lymphocytic lymphoma.

**Slo-bid:** (Other name for: theophylline)

**Slo-Phyllin:** (Other name for: theophylline)

**Slope:** the gradient of the line formed by plotting the change in the electrode response against change in activity of the ion measured. Theoretical Nernstian slope at 25°C is 59.16 mV per decade change in activity for a monovalent ion and 29.58 mV per decade change for a divalent ion. Slope values are often stated in % efficiency terms (an ideal slope of 59.16 mV for a monovalent ion 100% slope efficiency). Slope values of less than 90% efficiency may be indicative of electrode contamination. However, many other factors will contribute to a loss of system performance.

**slot canyon:** a vertical-walled canyon where mass-wasting processes have been very limited.

**Slow drying of gloss/varnish on new paintwork:** With solvent-based paints, it's usually surface contamination as the result of a poorly prepared surface. Water-based paints can be slow to dry in damp, cold conditions, or when applied to timbers that are oily by nature, such as teak. Wet solvent-based paint may be removed using cloths soaked in white spirit. If this is unsuccessful, completely remove the coating using a hot air gun or a suitable chemical-based remover. To remove slow-drying water-based paints, simply wash off with warm water and detergent solution.

**sludge:** the solids (and accompanying water and organic matter) which are separated from sewage or industrial wastewater in treatment plant facilities. Sludge separation and disposal is one of the major expenses in wastewater treatment operations.

**sludge conditioning:** a process employed to prepare sludge for final disposal, e.g., thickening, digesting, heat treatment or other procedures.

**Sludge dewatering :** Sludge dewatering is one of the key unit processes in sludge management. Sludge contains usually more than 95 percent of water even after thickening and the goal of sludge dewatering is to separate as much water as possible from the sludge, so that the volume for further treatment or final disposal is minimized. Sludge dewatering takes place usually with equipment like centrifuge, belt filter press, screw press, chamber press or equal. Polymers are often used as dewatering aid to improve water separation.

**sludge digestion:** the process by which organic or volatile matter in sludge is gasified, liquefied, mineralized, or converted into more stable organic matter through the activities of either anaerobic or aerobic organisms.

**sludge disposal:** the final disposal of solid wastes including the use of sewage sludge as fertilizers and soil builders, and fill for low-lying lands.

**Sludge management :** Sludge management refers to variety of means of treatment, which are required to be able to finally dispose the excess sludge from the system. The sludge usually originates from biological (aerobic) waste water treatment, where primary and secondary sludges are collected and treated before disposal. Sludge management can include selected unit processes of: stabilization, thickening, dewatering, drying, composting or digestion or incineration and final disposal.

**sludge thickening:** the increase in solids concentrations of sludge in the sedimentation of digestion tank.

**slump:** a mass-wasting movement along a curved surface where the downward movement of the upper part of the mass leaves a steep scarp and the bottom part is pushed outward along a more horizontal plane. OR rock material that is moved downhill as a block of land is uplifted

**slurry:** a watery mixture or suspension of solids. OR A thin paste produced by mixing some materials, especially Portland cement with water. OR a watery mixture of insoluble matter. OR the medium within which a

substance is dissolved; most commonly applied to liquids used to bring particular solids into solution, e.g., acetone is a solvent for PVC. OR the medium within which a substance is dissolved; most commonly applied to liquids used to bring particular solids into solution, e.g., acetone is a solvent for PVC. a watery mixture of insoluble matter.

**SMA:** Styrene maleic anhydride

**Smac mimetic CUDC-427:** An orally available, monovalent mimetic of second mitochondrial-derived activator of caspases (Smac/DIABLO) and inhibitor of IAPs (Inhibitor of Apoptosis Proteins) with potential antineoplastic activity. Smac mimetic CUDC-427 binds to the Smac binding groove on IAPs, including the direct caspase inhibitor X chromosome-linked IAP (XIAP) and the cellular IAPs 1 and 2. This inhibits the activities of these IAPs and promotes the induction of apoptosis through apoptotic signaling pathways. IAPs are overexpressed by many cancer cell types and suppress apoptosis by binding to and inhibiting active caspases-3, -7 and -9 via their baculoviral IAP repeat (BIR) domains.

**Smac mimetic GDC-0152:** A second mitochondrial activator of caspases (Smac) mimetic inhibitor of IAPs (Inhibitor of Apoptosis Proteins) with potential antineoplastic activity. Smac mimetic GDC-0152 binds to the Smac binding groove on IAPs, including the direct caspase inhibitor X chromosome-linked IAP (XIAP) and the cellular IAPs 1 and 2, which may inhibit their activities and promote the induction of apoptosis through apoptotic signaling pathways. IAPs are overexpressed by many cancer cell types and suppress apoptosis by binding to and inhibiting active caspases-3, -7 and -9 via their baculoviral IAP repeat (BIR) domains. Smac, the endogenous IAP antagonist, relies on its N-terminal four amino-acid motif for binding to IAPs.

**SMAC mimetic LCL161:** An orally bioavailable second mitochondrial-derived activator of caspases (SMAC) mimetic and inhibitor of IAP (Inhibitor of Apoptosis Protein) family of proteins, with potential antineoplastic activity. SMAC mimetic LCL161 binds to IAPs, such as X chromosome-linked IAP (XIAP) and cellular IAPs 1 and 2. Since IAPs shield cancer cells from the apoptosis process, this agent may restore and promote the induction of apoptosis through apoptotic signaling pathways in cancer cells. IAPs are overexpressed by many cancer cell types and suppress apoptosis by binding and inhibiting active caspases-3, -7 and -9,

which play essential roles in apoptosis (programmed cell death), necrosis and inflammation. Check for active clinical trials using this agent.

**small cell lung cancer :** An aggressive (fast-growing) cancer that forms in tissues of the lung and can spread to other parts of the body. The cancer cells look small and oval-shaped when looked at under a microscope.

**Small G protein:** A monomeric guanyl nucleotide binding protein that is active when bound to GTP and inactive when bound to GDP; has inherent gtpase activity.

**small intestine:** the site of chemical digestion; includes the duodenum, jejunum, and ileum.

**small intestine :** A long tube-like organ that connects the stomach and the large intestine. It is about 20 feet long and folds many times to fit inside the abdomen. The small intestine has three parts: the duodenum, jejunum, and ileum. It helps to further digest food coming from the stomach. It absorbs nutrients (vitamins, minerals, carbohydrates, fats, proteins) and water from food so they can be used by the body. The small intestine is part of the digestive system.

**small intestine cancer :** A rare cancer that forms in tissues of the small intestine (the part of the digestive tract between the stomach and the large intestine). The most common type is adenocarcinoma (cancer that begins in cells that make and release mucus and other fluids). Other types of small intestine cancer include sarcoma (cancer that begins in connective or supportive tissue), carcinoid tumor (a slow-growing type of cancer), gastrointestinal stromal tumor (a type of soft tissue sarcoma), and lymphoma (cancer that begins in immune system cells).

**small lymphocytic lymphoma :** An indolent (slow-growing) type of lymphoma in which too many immature lymphocytes (white blood cells) are found mostly in the lymph nodes. This causes the lymph nodes to become larger than normal. Sometimes cancer cells are found in the blood and bone marrow, and the disease is called chronic lymphocytic leukemia. The disease is most often seen in people older than 50 years. Small lymphocytic lymphoma is a type of non-Hodgkin Lymphoma. Also called SLL and well-differentiated lymphocytic lymphoma.

**small nuclear RNA (snRNA):** Any of several small RNA molecules in the nucleus; most have a role in the splicing reactions that remove introns from mRNA, tRNA, and rRNA molecules.

**Small nuclear rnas (snrnas):** A class of small rnas confined to the nucleus; some play a role in splicing.

**Small Radius Omni-Grid (3/4" & 1" ) :** Belt consists of an assembly of rods and links. A center row of heavy duty non-collapsing links forms two product lanes; for 3/4" pitch - standard links on inside and outside belt edges; for 1" pitch - standard collapsing links on inside edge with 1.75" (44.5mm) pitch collapsing links on the outside edge. All belts are double welded.

**small-molecule drug :** A substance that is able to enter cells easily because it has a low molecular weight. Once inside the cells, it can affect other molecules, such as proteins, and may cause cancer cells to die. This is different from drugs that have a large molecular weight, such as monoclonal antibodies, which are not able to get inside cells very easily. Many targeted therapies are small-molecule drugs or small molecule inhibitors.

**SMC:** See Sheet moulding compound.

**Smelting :** The extraction of a metal from its ore.

**SMO antagonist BMS 833923:** An orally bioavailable small-molecule SMO (Smoothened) inhibitor with potential antineoplastic activity. SMO antagonist BMS-833923 inhibits the sonic hedgehog (SHH) pathway protein SMO, which may result in a suppression of the SHH signaling pathway. SMO is a G-protein coupled receptor that lies just downstream of the SHH ligand cell surface receptor Patched-1 in the SHH pathway; in the absence of ligand Patched-1 inhibits SMO and ligand binding to Patched-1 results in increased levels of SMO. The SHH signaling pathway plays an important role in cellular growth, differentiation and repair; constitutive activation of this pathway is associated with uncontrolled cellular proliferation and has been observed in a variety of cancers.

**smog:** A fog containing fumes, or a photochemical haze caused by the action of ultraviolet radiation on hydrocarbons and NOx from automobile exhaust. OR Air pollution associated with oxidants.

**smoke:** Particles suspended in air after incomplete combustion of materials.

**smoked plum:** The fruit of the Prunus mume tree that is used as a traditional Chinese medicine (TCM) called Wu Mei, which may be used to promote hydration and improve bowel function. Although the exact

mechanism(s) of action through which this TCM exerts its effect has yet to be fully elucidated, upon oral administration, this TCM may reduce dehydration and improve peristalsis in the bowel.

**smokeless tobacco:** Tobacco that is not smoked but used in another form such as chewing tobacco or snuff. Or A type of tobacco that is not smoked or burned. It may be used as chewing tobacco or moist snuff, or inhaled through the nose as dry snuff. Smokeless tobacco contains nicotine and many harmful, cancer-causing chemicals. Using it can lead to nicotine addiction and can cause cancers of the mouth, esophagus, and pancreas. It may also cause heart disease, gum disease, and other health problems.

**smoking cessation :** To quit smoking. Smoking cessation lowers the risk of cancer and other serious health problems. Counseling, behavior therapy, medicines, and nicotine-containing products, such as nicotine patches, gum, lozenges, inhalers, and nasal sprays, may be used to help a person quit smoking.

**smoldering myeloma :** A very slow-growing type of myeloma in which abnormal plasma cells (a type of white blood cell) make too much of a single type of monoclonal antibody (a protein). This protein builds up in the blood or is passed in the urine. Patients with smoldering myeloma usually have no symptoms, but need to be checked often for signs of progression to fully developed multiple myeloma.

**smooth endoplasmic reticulum:** ER with no ribosomes attached.

**smooth muscle:** found in the linings of the blood vessels, along the gastrointestinal tract, in the respiratory tract, and in the urinary bladder; contains few actin and myosin filaments; also called involuntary muscle.

**Smoothened antagonist LDE225 topical:** A topical formulation of the small-molecule Smoothened (Smo) antagonist LDE225 with potential antineoplastic activity. Upon topical application, smoothened antagonist LDE225 topically selectively binds to the Hedgehog (Hh)-ligand cell surface receptor Smo, which may result in the suppression of the Hh signaling pathway and, so, the inhibition of tumor cells in which this pathway is abnormally activated. The Hh signaling pathway plays an important role in cellular growth, differentiation and repair. Inappropriate activation of Hh pathway signaling and uncontrolled cellular proliferation, as is observed in a variety of cancers, may be associated with mutations in the Hh-ligand cell surface receptor Smo.

**Smoothened antagonist LEQ506:** An orally bioavailable small-molecule Smoothened (Smo) antagonist with potential antineoplastic activity. Smoothened antagonist LEQ506 selectively binds to the Hedgehog (Hh)-ligand cell surface receptor Smo, which may result in the suppression of the Hh signaling pathway, thereby inhibiting tumor cell growth. The Hh signaling pathway plays an important role in cellular growth, differentiation and repair. Dysregulated activation of Hh pathway signaling and uncontrolled cellular proliferation, as is observed in a variety of cancers, may be associated with mutations in the Hh-ligand cell surface receptor Smo.

**Smudge:** A term used for a mixture of paint with remainders of all types and colours.

**SN-38 liposome :** A form of the anticancer drug irinotecan that is contained in very tiny, fat-like particles. It may have fewer side effects and work better than irinotecan alone. SN-38 liposome is being studied in the treatment of advanced colorectal cancer and other types of cancer. SN-38 liposome blocks the ability of cells to divide and grow. It may stop the growth of tumor cells. It is a type of topoisomerase inhibitor and a type of irinotecan (CPT-11) derivative. Also called liposomal SN-38.

**SN-38-loaded polymeric micelles NK012:** A formulation consisting of polymeric micelles loaded with the irinotecan metabolite SN-38 with potential antineoplastic activity. SN-38-loaded polymeric micelles NK012 is an SN-38-releasing nanodevice constructed by covalently attaching SN-38 to the block copolymer PEG-PGlu, followed by self-assembly of amphiphilic block copolymers in an aqueous milieu. SN-38 (7-ethyl-10-hydroxy-camptothecin), a biological active metabolite of the prodrug irinotecan (CPT-11), binds to and inhibits topoisomerase I by stabilizing the cleavable complex between topoisomerase I and DNA, resulting in DNA breaks, inhibition of DNA replication, and apoptosis. SN-38 has been reported to exhibit up to 1,000-fold more cytotoxic activity against various cancer cells in vitro than irinotecan. This formulation increases the water-solubility of SN-38 and allows the delivery of higher doses of SN-38 than those achievable with SN-38 alone.

**SN1:** N a substitution reaction mechanism in which the slow step is a self ionization of a molecule to form a carbocation. Thus, the rate controlling step is unimolecular.

**SN2:** A substitution reaction mechanism in which the rate controlling step is a simultaneous attack by a nucleophile and a departure of a leaving group from a molecule. Thus, the rate controlling step is bimolecular.

**Snap-back Forming:** Sheet forming technique in which an extended heated plastic sheet is allowed to contract over a male form shaped to the desired contours.

**SNDX-275:** A substance being studied in the treatment of several types of cancer. It blocks enzymes needed for cell division and may kill cancer cells. It is a type of histone deacetylase (HDAC) inhibitor. Also called entinostat and HDAC inhibitor SNDX-275.

**SnET2:** An anticancer drug that is also used in cancer prevention. It belongs to the family of drugs called photosensitizing agents. Also called tin ethyl etiopurpurin.

**snow line:** of a glacier, the irregular boundary between the zone of accumulation and the zone of wastage.

**SNP :** DNA sequence variations that occur when a single nucleotide (adenine, thymine, cytosine, or guanine) in the genome sequence is altered; usually present in at least 1% of the population. Also called single nucleotide polymorphism.

**SNP :** The most common type of change in DNA (molecules inside cells that carry genetic information). SNPs occur when a single nucleotide (building block of DNA) is replaced with another. These changes may cause disease, and may affect how a person reacts to bacteria, viruses, drugs, and other substances. Also called single nucleotide polymorphism.

**SNRI:** A type of drug that is used to treat depression and certain other disorders. SNRIs increase the levels of the chemicals serotonin and norepinephrine in the brain. Nerves use these chemicals to send messages to one another. Increasing their levels in the brain helps improve mood. Also called serotonin-norepinephrine reuptake inhibitor.

**SNS01-T nanoparticles:** A colloidal mixture of nanoparticles consisting of small interfering RNA (siRNA) targeting the native eukaryotic translation initiation factor 5A (eIF5A), plasmids expressing a pro-apoptotic mutant of eIF5A under the control of a B-cell specific promoter (B29), and a synthetic cationic polymer polyethylenimine (PEI) as a delivery vehicle, with potential antineoplastic activity. Upon administration, the siRNA

component of SNS01-T suppresses eIF5A expression, thereby interfering with translation of eIF5A and reducing levels of hypusinated eIF5A in cancer cells. In turn, this inhibits activation of the transcription factor NF- $\kappa$ B and induces apoptosis. In addition, the B-cell specific plasmid component expresses an arginine substituted form of eIF5A, eIF5AK50R, which can not be hypusinated, thus leads to a selective induction of apoptosis in B-cells. The native unhyposinated form of eIF5A is pro-apoptotic and can be modified at the lysine residue, by deoxyhypusine synthase (DHS) and subsequently deoxyhypusine hydroxylase (DHH), to the anti-apoptotic hypusinated form which is associated with tumor cell growth and survival. The delivery vehicle protects the siRNA and plasmid from degradation. Check for active clinical trials using this agent.

**snuff tobacco :** A type of smokeless tobacco that is made of finely ground or shredded tobacco leaves. It may have different scents and flavors and may be moist or dry. Moist snuff tobacco is placed in the mouth, usually between the cheek and gum or behind the upper or lower lip. Dry snuff tobacco is inhaled through the nose. Snuff tobacco contains nicotine and many harmful, cancer-causing chemicals. Using it can lead to nicotine addiction and can cause cancers of the mouth, esophagus, and pancreas. Snuff tobacco use may also cause gum disease, heart disease, stroke, and other health problems. Using snuff tobacco is also called “dipping.”

**SNX 111:** A drug used in the treatment of chronic pain. Also called Prialt and ziconotide.

**SNX-5422:** A substance being studied in the treatment of cancer. SNX-5422 blocks a protein needed for cells to grow and may kill cancer cells. It is a type of heat shock protein 90 inhibitor.

**SNX-5422 mesylate :** A substance being studied in the treatment of cancer. SNX-5422 mesylate blocks a protein needed for cells to grow and may kill cancer cells. It is a type of heat shock protein 90 inhibitor.

**Soap:** A soap is a type of surfactant that is derived from the saponification reaction (hydrolysis) of a vegetable oil. A soap has a carboxylate group on the end which can form a complex with calcium ions in hard water. (This causes soaps to form precipitates giving rise to a "soap scum".) Soaps are often called fatty acid salts. Common soaps are: OR A salt of a fatty acid. For example, sodium stearate is a soap made by neutralizing stearic acid. Commercial soaps are mixtures of fatty acid salts.

**soblidotin:** A dolastatin-10 derivative. Soblidotin inhibits tubulin polymerization, resulting in cell cycle arrest and induction of apoptosis. Or A substance being studied in the treatment of cancer. It is a type of tubulin inhibitor. Also called TZT-1027.

**social service :** A community resource that helps people in need. Services may include help getting to and from medical appointments, home delivery of medication and meals, in-home nursing care, help paying medical costs not covered by insurance, loaning medical equipment, and housekeeping help.

**social support :** A network of family, friends, neighbors, and community members that is available in times of need to give psychological, physical, and financial help.

**social worker :** A professional trained to talk with people and their families about emotional or physical needs, and to find them support services.

**SOD1 inhibitor ATN-224:** An orally bioavailable, second-generation tetrathiomolybdate analog with potential antiangiogenic and antineoplastic activities. SOD1 inhibitor ATN-224 selectively chelates the copper ion in copper-zinc superoxide dismutase 1 (SOD1), inhibiting SOD1 activity; this may result in a decrease in intra-cellular H<sub>2</sub>O<sub>2</sub> levels and, in turn, increased activity of intracellular phosphatases. The ATN-224-mediated increase in phosphatase activity may interfere with the activation of multiple kinase signaling pathways required for cellular proliferation and angiogenesis. This agent has been shown to inhibit VEGF and FGF-2 signaling in endothelial cells, IGF-1, EGF, NF-κB, and integrin signaling in tumor cells, and PDGF signaling in pericytes.

**SOD1 inhibitor ATN-224 :** A substance being studied in the treatment of cancer. It may prevent the growth of new blood vessels that tumors need to grow. SOD1 inhibitor ATN-224 also blocks enzymes that cells need to divide and grow, and it may kill cancer cells. It is a type of antiangiogenesis agent and a type of superoxide dismutase inhibitor. Also called ATN-224.

**soda ash:** a common water treating chemical, sodium carbonate.

**Sodium:** Symbol:"Na" Atomic Number:"11" Atomic Mass: 23.00amu. One of the alkali metal family. Sodium is a light, metallic element. It is very reactive and almost explodes if put in water. You will find sodium in salt, glass making, paper-making, salt, developing photos, and fertilizers.

**sodium :** A mineral needed by the body to keep body fluids in balance. Sodium is found in table salt and in many processed foods. Too much sodium can cause the body to retain water.

**sodium alginate microspheres:** An embolic agent containing microporous hydrospheres of sodium alginate with potential arterial occlusive activity. In transarterial chemoembolization (TACE), the sodium alginate microspheres (KMG) are administered into blood vessels that feed the tumor, occluding tumor blood vessels and inducing ischemic tumor necrosis. In addition, these microspheres may be used to encapsulate various therapeutic agents.

**sodium bicarbonate:** The monosodium salt of carbonic acid with alkalinizing and electrolyte replacement properties. Upon dissociation, sodium bicarbonate forms sodium and bicarbonate ions. Ion formation increases plasma bicarbonate and buffers excess hydrogen ion concentration, resulting in raised blood pH. Check for active clinical trials using this agent.

**sodium bicarbonate solution:** An aqueous oral mouthwash solution containing the monosodium salt of carbonic acid with alkalinizing and antimucositis activities. Upon introduction into the mouth, the sodium bicarbonate dissociates, forming sodium and bicarbonate ions, which buffer excess hydrogen ion and elevates the oral pH. An alkaline oral environment is less prone to colonization with yeast and aciduric bacteria. In addition, this solution may help relieve mucositis and mucositis-induced pain by diluting human saliva, and cleansing and lubricating mucosal tissues of the mouth, tongue and oropharynx.

**sodium bicarbonate/potassium bicarbonate/anhydrous citric acid:** A combination preparation containing sodium bicarbonate, potassium bicarbonate, and anhydrous citric acid, with acid-neutralizing properties. This combination in water principally contains the antacids potassium citrate and sodium citrate, and is used for the relief of acid indigestion and heartburn. This combination does not contain aspirin, and therefore does not exert aspirin's analgesic or anti-inflammatory effects.

**sodium biphosphate/sodium phosphate oral laxative:** An oral hyperosmotic saline laxative containing sodium biphosphate and sodium phosphate. Sodium phosphate/sodium biphosphate oral laxative promotes retention of water in the bowel, thereby increasing stool water content and

volume, which results in increased gastrointestinal motility and stool transit time and evacuation of colonic contents.

**sodium borocaptate:** A boron-carrying compound. After parenteral administration, borocaptate sodium accumulates preferentially in tumor cells. When exposed to neutron irradiation, borocaptate absorbs neutrons and self-destructs releasing short-range alpha radiation and 'recoil' lithium in tumor cells, resulting in alpha radiation-induced tumor cell death. This highly selective, localized radiotargeting of tumor cells, known as boron neutron capture therapy (BNCT), spares adjacent normal tissues. or A substance used in a type of radiation therapy called boron neutron capture therapy. Sodium borocaptate is injected into a vein and becomes concentrated in tumor cells. The patient then receives radiation treatment with atomic particles called neutrons. The neutrons react with the boron in sodium borocaptate and make radioactive particles that kill the tumor cells without harming normal cells. Also called BSH.

**sodium carboxymethylcellulose dressing:** A textile fiber dressing composed of sodium carboxymethylcellulose with potential wound-healing activity. Sodium carboxymethylcellulose dressing protects the wound site from external factors that may cause pain, promote infection, or slow the natural wound healing process. Sodium carboxymethylcellulose is a non-toxic, non-allergenic, anionic water-soluble polymer derived from cellulose.

**Sodium chlorate(NaClO<sub>3</sub>) :** An efficient oxidizer and bleaching chemical.

**sodium citrate:** The sodium salt of citrate with alkalizing activity. Upon absorption, sodium citrate dissociates into sodium cations and citrate anions; organic citrate ions are metabolized to bicarbonate ions, resulting in an increase in the plasma bicarbonate concentration, the buffering of excess hydrogen ion, the raising of blood pH, and potentially the reversal of acidosis. In addition, increases in free sodium load due to sodium citrate administration may increase intravascular blood volume, facilitating the excretion of bicarbonate compounds and an anti-urolithic effect.

**sodium dichloroacetate:** The sodium salt of dichloroacetic acid with potential antineoplastic activity. Dichloroacetate ion inhibits pyruvate dehydrogenase kinase, resulting in the inhibition of glycolysis and a decrease in lactate production. This agent may stimulate apoptosis in cancer cells by restoring normal mitochondrial-induced apoptotic signaling. Check for active clinical trials using this agent.

**Sodium dodecyl sulfate:** Sodium dodecyl sulfate is one of the most common surfactants. It can also be called sodium lauryl sulfate, depending on whether it is made from petrochemicals (dodecyl) or plants (lauryl). But they're the same molecule:

**sodium ferric gluconate :** A form of the mineral iron that is used to treat anemia caused by low amounts of iron in the blood. Anemia is a condition in which the number of red blood cells is below normal. Sodium ferric gluconate is a type of hematinic and a dietary supplement. Also called Ferrlecit.

**sodium ferric gluconate complex in sucrose:** A compound containing elemental iron as the sodium salt of a ferric ion carbohydrate complex in an alkaline aqueous solution with approximately 20% sucrose w/v in water for injection, used to replete the total body content of iron. Iron is critical for normal hemoglobin and myoglobin syntheses to maintain oxygen transport and various enzymatic processes, including the biosynthesis of deoxyribonucleotides catalyzed by ribonucleotide reductase (RNR).

**sodium fluoride:** An inorganic salt of fluoride used topically or in municipal water fluoridation systems to prevent dental caries. Fluoride appears to bind to calcium ions in the hydroxyapatite of surface tooth enamel, preventing corrosion of tooth enamel by acids. This agent may also inhibit acid production by commensal oral bacteria.

**sodium glycididazole:** The sodium salt of glycididazole with potential radiosensitizing activity. Due to its low redox potential, glycididazole is selectively activated via bioreduction in hypoxic tumor cells and may sensitize hypoxic tumor cells to the cytotoxic effects of ionizing radiation.

**sodium hyaluronate topical hydrogel:** A proprietary topical gel formulation containing sodium hyaluronate with wound repair and skin moisturizing properties. Upon application, sodium hyaluronate topical hydrogel adheres to injured tissues, hydrates skin, and provides protection from further chemical or mechanical irritation. Hyaluronate, a non-sulfated glucosaminoglycan, is a chief component of the extracellular matrix in connective, epithelial, and neural tissues and contributes significantly to cell proliferation and migration. Check for active clinical trials using this agent.

**Sodium hydroxide (NaOH) :** Also known as caustic soda. It is used in many industries, mostly as a strong chemical base in the manufacture of, e.g., pulp and paper, textiles, drinking water.

**sodium iodide I-131:** A radiopharmaceutical containing the beta- and gamma-emitting radioisotope I-131. After absorption, the iodide is distributed through the extracellular fluid of the body and accumulates in the thyroid gland, thereby allowing the imaging of the thyroid. Check for active clinical trials using this agent.

**sodium metaarsenite:** A highly soluble, orally available trivalent arsenic-containing telomerase inhibitor with potential antitumor activity. Although the exact mechanism through which sodium metaarsenite exerts its effect has yet to be fully elucidated, this agent appears to target and bind to telomeric sequences, specifically TTAGGG repeats, leading to a shortening of telomeres, and subsequent induction of apoptosis and inhibition of tumor cell growth. In addition, sodium metaarsenite also leads to the translocation of the catalytic subunit of telomerase into the cytoplasm and inhibition of the activity of telomerase. Telomerase is active in most tumor cells and is responsible for the maintenance of telomere length and plays a key role in cellular proliferation, but is quiescent in normal, healthy cells. The susceptibility to sodium metaarsenite seems to be inversely correlated with initial length of telomeres.

**sodium phenylbutyrate:** The sodium salt of phenylbutyrate, a derivative of the short-chain fatty acid butyrate, with potential antineoplastic activity. Phenylbutyrate reversibly inhibits class I and II histone deacetylases (HDACs), which may result in a global increase in gene expression, decreased cellular proliferation, increased cell differentiation, and the induction of apoptosis in susceptible tumor cell populations.

**sodium phosphate:** An inorganic compound used as a laxative, dietary supplement and for electrolyte-replacement purposes. Phosphate, a predominant intracellular anion, plays an important role in energy storage, osteoblastic and osteoclastic activities, regulating serum calcium concentrations, and numerous cellular phosphate-transfer reactions. Sodium phosphate increases fluidity of the intestinal contents by retention of water by osmotic forces, thereby indirectly inducing intestinal smooth muscle constriction. Sodium phosphate is also used in the renal excretion of hydrogen ions while promoting the reabsorption of sodium ions.

**sodium picosulfate/magnesium oxide/citric acid oral laxative:** An oral laxative formulation containing the stimulant cathartic sodium picosulfate as the primary active ingredient. Picosulfate acts on the enteric nerves in

the intestinal wall to increase muscle contractions, thereby stimulating peristaltic action and promoting defecation. Other active ingredients are osmotic agents that increase stool water content.

**sodium salicylate:** The sodium salt of salicylic acid. As a nonsteroidal anti-inflammatory drug (NSAID), sodium salicylate irreversibly acetylates cyclooxygenases I and II, thereby inhibiting prostaglandin synthesis and associated inflammation and pain. This agent may also activate mitogen-activated protein kinase (p38MAPK), thereby inducing apoptosis in cancer cells. Check for active clinical trials using this agent.

**sodium salicylate :** A drug that is a type of nonsteroidal anti-inflammatory drug. Sodium salicylate may be tolerated by people who are sensitive to aspirin.

**sodium selenite:** An inorganic form of the trace element selenium with potential antineoplastic activity. Selenium, administered in the form of sodium selenite, is reduced to hydrogen selenide ( $H_2Se$ ) in the presence of glutathione (GSH) and subsequently generates superoxide radicals upon reaction with oxygen. This may inhibit the expression and activity of the transcription factor Sp1; in turn Sp1 down-regulates androgen receptor (AR) expression and blocks AR signaling. Eventually, selenium may induce apoptosis in prostate cancer cells and inhibit tumor cell proliferation.

**sodium stibogluconate:** Pentavalent antimony (Sb) in differential complex formation with gluconic acid with leishmanicidal and potential antineoplastic activities. The Sb moiety of sodium stibogluconate (SSG) may inhibit protein tyrosine phosphatases (PTPases) by covalently modifying sulfhydryl groups in PTPase cysteine residues, resulting in specific inactivation of SH2 domain-containing tyrosine phosphatases-1 and -2 (SHP-1 and SHP-2), PTPases which negatively regulate interferon (IFN) signaling; enhancement of IFN-induced Stat1 tyrosine phosphorylation; and induction of cellular protein tyrosine phosphorylation. SSG in combination with IFN-alpha may synergize to overcome tumor cell resistance to IFN-alpha-mediated apoptosis.

**sodium stibogluconate :** A substance being studied in the treatment of certain solid tumors, lymphoma, and myeloma. Sodium stibogluconate may block enzymes needed for cancer growth. It is a type of pentavalent antimonial. Also called SSG.

**sodium sulfate/potassium sulfate/magnesium sulfate-based laxative:** An oral preparation containing sodium sulfate, potassium sulfate and magnesium sulfate, with osmotic laxative activity. Upon oral administration of the sodium sulfate/potassium sulfate/magnesium sulfate-based laxative, this osmotic laxative promotes the retention of water in the bowel. This increases the water content of stool, which results in increased gastrointestinal motility and facilitates the evacuation of colonic contents. This results in a complete cleansing of the colon.

**Sodium sulfide (Na<sub>2</sub>S) :** The name used to refer to the chemical compound Na<sub>2</sub>S but more commonly it refers to hydrate Na<sub>2</sub>S.9H<sub>2</sub>O. Both are colorless water-soluble salts that give strongly alkaline solutions. When exposed to moist air, Na<sub>2</sub>S and its hydrates emit hydrogen sulfide.

**sodium sulfite :** A chemical used in photography, paper making, water treatment, and for other purposes.

**sodium thiosulfate:** A water soluble salt and reducing agent that reacts with oxidizing agents. Although its exact mechanism of action is unknown, thiosulfate likely provides an exogenous source of sulfur, thereby hastening the detoxification of cyanide through the enzyme rhodanese (thiosulfate cyanide sulfurtransferase) which converts cyanide to the relatively nontoxic, excretable thiocyanate ion. In addition, this agent neutralizes the reactive alkylating species of nitrogen mustard, thereby decreasing skin toxicity related to nitrogen mustard extravasation.

**sodium thiosulfate :** A substance that is used in medicine as an antidote to cyanide poisoning and to decrease side effects of the anticancer drug cisplatin.

**Sodium-potassium pump:** An enzyme that uses the energy of ATP hydrolysis to pump sodium out of the cell and potassium into the cell. Also called sodium-potassium atpase.

**Sodolithol:** (Other name for: sodium thiosulfate)

**Soffit:** The underside of a staircase or of the head of an opening such as a door window or arch. Hence also used for the underface of a beam or for any small ceiling at a different level to a main ceiling.

**sofosbuvir:** An orally available nucleotide prodrug and a hepatitis C virus (HCV) NS5B polymerase inhibitor with potential HCV inhibiting activity. Upon oral administration, sofosbuvir is metabolized to 2'-deoxy-2'-alpha-

fluoro-beta-C-methyluridine-5'-monophosphate, which is then converted into the active triphosphate nucleotide that inhibits the NS5B polymerase, thereby preventing viral replication. The HCV NS5B protein, an RNA-dependent RNA polymerase, is essential for the replication of the viral HCV RNA genome. Check for active clinical trials using this agent.

**soft diet :** A diet consisting of bland foods that are softened by cooking, mashing, pureeing, or blending.

**Soft Drug:** Drugs that undergo biotransformations in vivo to metabolites that are generally inactive and non-toxic.

**soft palate :** The back, muscular (not bony) part of the roof of the mouth.

**soft tissue :** Refers to muscle, fat, fibrous tissue, blood vessels, or other supporting tissue of the body.

**soft tissue sarcoma :** A cancer that begins in the muscle, fat, fibrous tissue, blood vessels, or other supporting tissue of the body.

**softening:** the removal of hardness—calcium and magnesium—from water.

**Softwood timber:** Timber from trees with needle shaped leaves mostly evergreen e.g. conifer. This term has no relationship to the actual hardness of the wood. This timber is most commonly used in house construction.

**SOIL:** In the surfactant world - any material, solid, liquid or paste contaminant adsorbed onto a substrate. OR layers of weathered, unconsolidated particles of earth material that contain organic material and can support vegetation.

**soil carbon:** A major component of the terrestrial biosphere pool in the carbon cycle. Organic soil carbon estimates, rather than total soil carbon, are generally quoted. The amount of carbon in the soil is a function of historical vegetative cover and productivity, which in turn is dependent upon climatic variables.

**soil horizon:** one of the three layers of mature soil.

**Soil pipe:** A vertical lead or cast iron pipe conveying waste matter from WCs, etc. to the drains. Unlike a rainwater pipe it will have sealed joints and is usually continued above eaves level to form a ventilator.

**sol:** A colloid with solid particles suspended in a liquid. Examples are protoplasm, starch in water, and gels.

**sol:** A liquid colloidal dispersion; a fluid colloidal system in which solid particles are dispersed in a liquid colloidal solution.

**solar constant:** The rate at which solar energy is received just outside the Earth's atmosphere on a surface that is normal to the incident radiation and at the mean distance of the Earth from the sun. The current value is 0.140 watt/cm<sup>2</sup>.

**solar cycle:** The periodic change in sunspot numbers. It is the interval between successive minima and is about 11.1 years.

**solar eclipse:** event in which the view of the Sun is blocked by the Moon during a New Moon phase, when the Moon's shadow reaches the Earth.

**Solar Heat Gain Coefficient (SHGC):** The fraction of incident solar radiation admitted through a window, both admitted through a window, both directly transmitted, and absorbed and subsequently released inward. SHGC is expressed as a number between 0 and 1. The lower a window's solar heat gain coefficient, the less solar heat it transmits.

**solar keratosis :** A thick, scaly patch of skin that may become cancer. It usually forms on areas exposed to the sun, such as the face, scalp, back of the hands, or chest. It is most common in people with fair skin. Also called actinic keratosis and senile keratosis.

**solar noon:** the highest point of the Sun on any day.

**solar prominence:** flame-like arc extending out from the Sun.

**Solaraze:** (Other name for: diclofenac sodium gel)

**Solatene:** (Other name for: beta carotene)

**solder:** an alloy of lead/tin used for making permanent electrical connections between parts and wire.

**Solid:** One characteristic of a solid is that it might be hard. In the same way that a solid holds its shape, the atoms inside of a solid are not allowed to move around. The solid atoms and molecules are trapped in their places. OR a state of matter in which the molecules are touching and possessing rigid shape and is not compressible. OR A solid is a relatively dense, rigid state of matter, with a definite volume and shape. Molecules in solids are often packed close together in regularly repeating patterns, and vibrate around fixed positions.

**Solid form:** A general term used to describe polymorphs, pseudopolymorphs, or amorphous forms; synonymous with solid

modification.

**solid geometry:** the study of shapes and figures in three dimensions: length, width, and thickness.

**Solid solution:** The random distribution of one solid in another.

**solid tumor :** An abnormal mass of tissue that usually does not contain cysts or liquid areas. Solid tumors may be benign (not cancer), or malignant (cancer). Different types of solid tumors are named for the type of cells that form them. Examples of solid tumors are sarcomas, carcinomas, and lymphomas. Leukemias (cancers of the blood) generally do not form solid tumors.

**Solid-gas reaction:** A reaction of a solid with a gas (e.g., the reaction of acid crystals with ammonia) or a reaction producing a gas and a solid as products (e.g., decarboxylation reactions).

**Solid-phase method:** A means of synthesizing discrete peptides in which amino acids are added step-by-step to a growing peptide chain that is anchored to an insoluble matrix.

**Solid-solid reactions:** Reactions between two solids without the involvement of a solvent, generally involving four steps: 1) loosening of the molecules at the reaction site, 2) molecular change, 3) solid solution formation, and 4) separation of the product phase.

**Solid-state hydrolysis:** A solid-state reaction in which water hydrolyzes a compound (e.g., hydrolysis of acetylsalicylic acid to form acetic acid and salicylic acid).

**Solid-state oxidation reactions:** A class of solid-gas reactions involving the reaction of a solid with oxygen.

**Solid-state photochemical reactions:** Reactions that proceed by absorption of light by the molecule and subsequent bond formation or breakage. The products of these reactions differ from those in solution.

**Solid-state thermal reactions:** Solid-state reactions that are heat induced. Solid-state rearrangement reactions are important members of this class.

**Solids:** The part of the coating that remains on a surface after the vehicle has evaporated. The dried paint film. Also called Nonvolatile. Or See Nonvolatile. Or  $v$ The amount, in weight %, of non-volatile material in a solution or formulation. Solids content is a specification in a number of blends and formulations.

**SOLIDS CONVEYING ZONE:** The single screw extrusion process consists of three functional zones the SOLIDS CONVEYING ZONE where the polymer pellets or powder are compacted and transported forward, the MELTING ZONE, where the polymer melts mainly under the action of shear on the barrel wall and the METERING ZONE (PUMPING ZONE) where the polymer is transported forward by DRAG FLOW caused by the rotating action of the screw.

**Solidstate electrode :** a miniaturized version of an electrochemical sensor e.g. potentiometric or amperometric. Solidstate electrode can be constructed using MEMS technology.

**solifluction:** a variety of earthflow in which the flow of watersaturated earth is over an impermeable surface such as permafrost; usually occurs in bitterly cold regions.

**Soliris :** A drug used to prevent red blood cells from being destroyed in patients with a rare red blood cell disorder called paroxysmal nocturnal hemoglobinuria (PNH). It is also used to treat another rare disorder called atypical hemolytic urea syndrome (aHUS), in which blood clots form in small blood vessels. Soliris binds to an immune system protein called C5. This helps keep red blood cells from breaking down and helps keep blood clots from forming. Soliris is a type of monoclonal antibody. Also called eculizumab.

**solitomab:** A recombinant bispecific monoclonal antibody directed against both CD3 and epithelial cell adhesion molecule (EpCAM) with potential immunomodulating and antineoplastic activities. Solitomab attaches to both CD3-expressing T lymphocytes and EpCAM-expressing tumor cells, thereby selectively cross-linking tumor and T lymphocytes; this may result in the recruitment of cytotoxic T lymphocytes (CTL) to T lymphocyte/tumor cell aggregates and the CTL-mediated death of EpCAM-expressing tumor cells. CD3 is an antigen expressed on mature T cells; EpCAM, a cell surface protein, is expressed by a variety of tumor cells and is frequently found in head and neck cancers.

**Solu-Cortef:** (Other name for: hydrocortisone sodium succinate)

**Solu-Medrol:** (Other name for: methylprednisolone)

**solubility:** the upper limit of concentration of a solute. OR A measure of how much solute can be dissolved in a specific solvent. Solubility can change with changes in pressure and temperature. Water has specific

solubility for sugar at room temperature. As water is heated, you may dissolve more sugar in the same amount of water. Its solubility has increased with the increase in temperature. OR The amount of solute dissolved in a unit volume of a solvent at equilibrium at a given temperature and pressure. Each form of a substance has a characteristic solubility. OR The maximum amount of a substance that will dissolve in a given amount of solvent at a given temperature. OR The solubility of a substance is its concentration in a saturated solution. Substances with solubilities much less than 1 g/100 mL of solvent are usually considered insoluble. The solubility is sometimes called "equilibrium solubility" because the rates at which solute dissolves and is deposited out of solution are equal at this concentration.

**solubility product:** the constant obtained by multiplying the ion concentrations in a saturated solution.

**solubility productsp:** The equilibrium constant for a reaction in which a solid ionic compound dissolves to give its constituent ions in solution.

**solubilizing group:** A group or substructure on a molecule that increases the molecule's solubility. Solubilizing groups usually make the molecule they are attached to ionic or polar. For example, hydrocarbon chains can be made water-soluble by attaching a carboxylic acid group to the molecule.

**Soluble:** Soluble is the ability of a substance to dissolve in another substance. Not all solutes are soluble in all solvents. Sugar and salt are compounds that are soluble in water. Or Capable of being dissolved in a solvent (usually water).

**soluble :** Able to be dissolved in a liquid.

**SOLUBLE OIL:** An oil that readily forms a stable emulsion or colloidal suspension in water.

**Soluble protein:** Soluble protein. See globular protein.

**soluble salt:** An ionic compound that dissolves in a solvent (usually water).

**solum:** the O, A, and B soil horizons.

**solute:** The substance (solid, liquid, or gas) dissolved in a solution, for example, the salt in saltwater. Or the substance that is dissolved to form a solution. Or The substance dissolved in a solution; substance present in a lesser amount in a solution. Or A solute is the substance to be dissolved. Sugar would be the solute when you are dissolving sugar in water. or the

substance that is dissolved in a solution. or A substance dissolved in a solvent to make a solution.

**solution:** a liquid (solvent) that contains a dissolved substance (solute). Or Mixture of a solid and a liquid where the solid never settles out, for example, saltwater. Or A homogeneous mixture of two or more substances. Or A sample of matter consisting of more than one pure substance with properties that do not vary within the sample. Also called a homogeneous mixture. or a mixture of two or more in which two or more materials are dissolved in another material. or a homogeneous mixture consisting of a solvent and one or more solutes.

**solution weathering:** the process by which certain minerals are completely dissolved by acidic solutions.

**Solvate:** A crystal form that contains either stoichiometric or nonstoichiometric amounts of solvent. Or a liquid used to dissolve another substance. Or Liquid in which something is dissolved, for example, the water in saltwater. Or The substance present in the largest amount in a solution; often the liquid component. or A solvent is a liquid that dissolves another substance. or A liquid component used in paint to bring it to a suitable consistency for use and which evaporates from the paint after application. Also a liquid which will dissolve dried paint, e.g. cellulose thinners on cellulose; chlorinated rubber paint thinners on chlorinated rubber paint. or Any liquid which can dissolve a resin. Generally refers to the liquid portion of paints and coatings that evaporates as the coating dries. or The volatile part of paint composition that evaporates during drying. or the host substance of dominant abundance in a solution. or The most abundant component in a solution. or Any substance, usually a liquid, which dissolves other substances. OR b) ball indentation hardness (also useable on profiled surfaces because of bigger measuring devices). OR Any substance, usually a liquid, which dissolves other substances. or Any substance (usually a liquid) which dissolves other substances.

**solvent :** A liquid that is able to dissolve a solid.

**Solvent Bonding:** Process in which the surfaces of parts to be joined are treated with a solvent. OR Process for forming thermoplastic articles by dipping a male mold in a solution or dispersion of the resin and drawing off the solvent to leave a layer of plastic film adhering to the mold.

**solvent extraction:** Solvent extraction is a method for separating mixtures by exploiting differences in the solubilities of the components. For example, a coffee machine extracts the soluble components of ground coffee with water, and leaves the insoluble components behind. The sample is shaken or mixed with solvent (or with two immiscible solvents) to effect the separation. The "like dissolves like" is a useful guide for selecting solvents to use in the extraction. Nonpolar substances are usually successfully extracted into nonpolar solvents like hexane or methylene chloride. Polar and ionic substances are often extracted with water.

**somatic :** Having to do with the body.

**Somatic cell:** Any of the body cells except the reproductive (germ) cells. OR Any cell of an organism that cannot contribute its genes to a later generation. Or Any cell of an organism that cannot contribute its genes to a later generation. Or All body cells except the germ-line cells.

**Somatic effects of radiation:** Effects of radiation limited to the exposed individual, as distinguished from genetic effects, that may also affect subsequent unexposed generations.

**Somatic mutation:** Refers to the introduction of a mutation after V-D-J recombination to further increase antibody diversity. OR An alteration in DNA that occurs after conception. Somatic mutations can occur in any of the cells of the body except the germ cells (sperm and egg) and therefore are not passed on to children. These alterations can (but do not always) cause cancer or other diseases.

**somatic variant :** An alteration in DNA that occurs after conception and is not present within the germline. Somatic variants can occur in any of the cells of the body except the germ cells (sperm and egg) and therefore are not passed on to children. Somatic variants can (but do not always) cause cancer or other diseases.

**somatomedin :** A protein made by the body that stimulates the growth of many types of cells. Somatomedin is similar to insulin (a hormone made in the pancreas). There are two forms of somatomedin called IGF-1 and IGF-2. Higher than normal levels of IGF-1 may increase the risk of several types of cancer. Somatomedin is a type of growth factor and a type of cytokine. Also called IGF and insulin-like growth factor.

**somatostatin receptor scintigraphy :** A type of radionuclide scan used to find carcinoid and other types of tumors. Radioactive octreotide, a drug

similar to somatostatin, is injected into a vein and travels through the bloodstream. The radioactive octreotide attaches to tumor cells that have receptors for somatostatin. A radiation-measuring device detects the radioactive octreotide, and makes pictures showing where the tumor cells are in the body. Also called octreotide scan and SRS.

**somatotropin:** A recombinant form of endogenous human growth hormone (GH), a polypeptide produced by the anterior lobe of the human pituitary gland. GH exhibits growth-promoting effects and metabolic effects on carbohydrate, fat, protein and bone metabolism. GH stimulates protein synthesis and the uptake of amino acids into cells, and induces lipolysis in adipose tissues. The secretion of GH increases with sexual maturation and then declines steadily. or A protein made by the pituitary gland that helps control body growth and the use of glucose and fat in the body. Also called growth hormone.

**Somatuline Depot :** A drug used to treat gastroenteropancreatic neuroendocrine tumors that are advanced or have spread to other parts of the body. These tumors form in the stomach, small and large intestines, rectum, and pancreas. Somatuline Depot is used for tumors that cannot be removed by surgery. It is also used to treat some patients with acromegaly (a condition in which the pituitary gland makes too much growth hormone). Somatuline Depot is like somatostatin (a hormone made by the body), and may help stop the body from making extra amounts of certain hormones, including growth hormone, insulin, glucagon, and hormones that affect digestion. It may also help keep certain types of tumor cells from growing. Somatuline Depot is a type of somatostatin analog. Also called lanreotide acetate.

**Somavert:** (Other name for: pegvisomant)

**somnolence syndrome :** Periods of drowsiness, lethargy, loss of appetite, and irritability in children following radiation therapy treatments to the head.

**SOMO:** Singly-occupied molecular orbital (for radicals).

**Somophyllin-CRT:** (Other name for: theophylline)

**Somophyllin-T:** (Other name for: theophylline)

**sonpcizumab:** A humanized monoclonal antibody directed against sphingosine 1-phosphate (S1P) with potential antiangiogenic and

antineoplastic activities. Upon administration, sonopcizumab binds S1P, which may result in the inhibition of tumor angiogenesis. S1P is the extracellular ligand for the G protein-coupled lysophospholipid receptor EDG-1 (endothelial differentiation gene-1).

**sonidegib:** An orally bioavailable small-molecule smoothed (Smo) antagonist with potential antineoplastic activity. Sonidegib selectively binds to the hedgehog (Hh)-ligand cell surface receptor Smo, which may result in the suppression of the Hh signaling pathway and, so, the inhibition of tumor cells in which this pathway is abnormally activated. The Hh signaling pathway plays an important role in cellular growth, differentiation and repair. Inappropriate activation of Hh pathway signaling and uncontrolled cellular proliferation, as is observed in a variety of cancers, may be associated with mutations in the Hh-ligand cell surface receptor Smo. or A drug used to treat locally advanced basal cell carcinoma (BCC) that has come back after surgery or radiation therapy. It is also used in patients who cannot be treated with surgery or radiation therapy. Sonidegib is also being studied in the treatment of other types of cancer. Sonidegib blocks a type of protein involved in tissue growth and repair and may block the growth of cancer cells. It is a type of hedgehog signaling pathway antagonist. Also called erismodegib, LDE225, and Odomzo.

**sonogram :** A computer picture of areas inside the body created by high-energy sound waves. The sound waves are bounced off internal tissues or organs and make echoes. The echoes form a picture of the body tissues on a computer screen. A sonogram may be used to help diagnose disease, such as cancer. It may also be used during pregnancy to check the fetus (unborn baby) and during medical procedures, such as biopsies. Also called ultrasonogram.

**sonorous:** A sonorous material makes a 'ringing' sound when struck with a hard object.

**SOP:** Written instructions for doing a specific task in a certain way. In clinical trials, SOPs are set up to store records, collect data, screen and enroll subjects, and submit Institutional Review Board (IRB) applications and renewals. Also called Standard Operating Procedure.

**sorafenib tosylate:** The tosylate salt of sorafenib, a synthetic compound targeting growth signaling and angiogenesis. Sorafenib blocks the enzyme RAF kinase, a critical component of the RAF/MEK/ERK signaling pathway

that controls cell division and proliferation; in addition, sorafenib inhibits the VEGFR-2/PDGFR-beta signaling cascade, thereby blocking tumor angiogenesis.

**sorafenib tosylate :** A drug used to treat advanced kidney cancer and a type of liver cancer that cannot be removed by surgery. It is also used to treat a type of advanced thyroid cancer that did not get better with radioactive iodine treatment. It is being studied in the treatment of other types of cancer. Sorafenib tosylate stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of kinase inhibitor and a type of antiangiogenesis agent. Also called BAY 43-9006 and Nexavar.

**Sorghum bicolor supplement:** An herbal-based nutritional supplement containing the leaf sheaths of the plant *Sorghum bicolor*, with potential antioxidant, anti-inflammatory, chemopreventive and immunomodulating activities. Sorghum bicolor supplement contains various phytochemicals, including phenolic acids and polyphenols such as proanthocyanidins. Sorghum bicolor supplement is particularly rich in 3-deoxyanthocyanins, such as luteolinidin and apigeninidin, and appears to induce apoptosis and inhibit cell proliferation in cancer cells through the stimulation of various apoptosis promoter genes and the downregulation of certain apoptosis inhibitor genes. In addition, due to the strong antioxidant nature of the phytochemicals, these compounds are able to scavenge free radicals and prevent tissue damage. Also, intake of this supplement modulates the immune system by both increasing the activity of natural killer (NK) cells and initiating the activation of macrophages. Check for active clinical trials using this agent.

**Soriatane:** (Other name for: acitretin)

**sorivudine :** An antiviral drug that is being studied as a treatment for herpesvirus. It belongs to the family of drugs called nucleic acid synthesis inhibitors.

**sorption:** Assimilation of molecules of one substance by a material in a different phase. Adsorption (sorption on a surface) and absorption (sorption into bulk material) are two types of sorption phenomena.

**sorrel :** A plant that has been used in some cultures to treat certain medical problems. It may have anticancer effects. The scientific name is *Rumex acetosella*. Also called dock and sheep sorrel.

**sorting:** the process by which large, coarse, angular pieces of sediment are deposited near a source area, while progressively smaller and smoother sediments are carried farther.

**SOS response:** In bacteria, a coordinated induction of a variety of genes as a response to high levels of DNA damage. Or A set of DNA repair enzymes and regulatory proteins that regulate their synthesis so that maximum synthesis occurs when the DNA is damaged. Or A set of DNA repair enzymes and regulatory proteins that regulate their synthesis so that maximum synthesis occurs when the DNA is damaged.

**sotagliflozin:** An orally bioavailable inhibitor of the sodium-glucose co-transporter subtypes 1 (SGLT1) and 2 (SGLT2), with potential antihyperglycemic activity. Upon oral administration, sotagliflozin binds to and blocks both SGLT1 in the gastrointestinal (GI) tract and SGLT2 in the kidneys, thereby suppressing the absorption of glucose from the GI tract and the reabsorption of glucose by the proximal tubule into the bloodstream, respectively. This decreases glucose uptake and enhances the urinary excretion of glucose, which lowers and/or normalizes blood glucose levels. SGLT1 is the primary transporter responsible for glucose absorption from the GI tract. SGLT2, a transport protein exclusively expressed in the proximal renal tubules, mediates approximately 90% of renal glucose reabsorption from tubular fluid.

**sotatercept:** A soluble fusion protein composed of the extracellular domain of the activin receptor type IIA (ActRIIA) linked to the Fc portion of human IgG1 with anabolic bone activity. Sotatercept selectively binds to activin, inhibiting its binding to ActRIIA and ActRIIA signaling, resulting in the stimulation of osteoblast activity and the inhibition of osteoclast activity and so normal bone formation and increased bone mineral density and strength. The Fc moiety of this fusion protein binds to the salvage receptor FcRN, preventing its lysosomal degradation and so extending its half-life in the circulatory system.

**sotrastaurin acetate:** The acetate salt form of sotrastaurin, an orally available pan-protein kinase C (PKC) inhibitor with potential immunosuppressive and antineoplastic activities. Sotrastaurin inhibits both T- and B-cell activations via PKC theta and beta isozymes, respectively. Both PKCs are important in the activation of nuclear factor-kappaB (NF- $\kappa$ B). Inhibition of PKC beta in B-cells results in prevention of NF- $\kappa$ B-

mediated signaling and down regulation of NF-kB target genes. This may eventually lead to an induction of G1 cell cycle arrest and tumor cell apoptosis in susceptible tumor cells. This agent may act synergistically with other chemotherapeutic agents. PKC, a family of serine/threonine protein kinases overexpressed in certain types of cancer cells, is involved in cell differentiation, mitogenesis, inflammation, and the activation and survival of lymphocytes. Check for active clinical trials using this agent.

**Sotret:** (Other name for: isotretinoin)

**sound:** a disturbance that travels through air, land, water that can be heard.

**Sour Crude:** Sour Crude is the term used for crudes with a higher sulphur content. Tightening emissions legislation has meant that refiners need to add considerable desulphurisation capacity in order to process Sour Crude.

**Source material:** Uranium or thorium, or any combination thereof, in any physical or chemical form, or ores that contain, by weight, one-twentieth of one percent (0.05 percent) or more of (1) uranium, (2) thorium, or (3) any combination thereof. Source material does not include special nuclear material. For additional detail, see Source Material.

**Source term:** Types and amounts of radioactive or hazardous material released to the environment following an accident.

**Southern blot:** A DNA hybridization procedure in which one or more specific DNA fragments are detected in a larger population by means of hybridization to a complementary, labeled nucleic acid probe. OR Electrophoresis-based technique used in genetic testing to detect large deletions in DNA that can be missed by PCR-based genetic testing methods.

**Southern blotting:** A method for detecting a specific DNA restriction fragment, developed by Edward Southern. DNA from a gel electrophoresis pattern is blotted onto nitrocellulose paper; then the DNA is denatured and fixed on the paper. Subsequently the pattern of specific sequences in the Southern blot can be determined by hybridization to a suitable probe and autoradiography. A Northern blot is similar, except that RNA is blotted instead onto the nitrocellulose paper. or A technique used to locate and identify a DNA fragment containing a specific sequence; a mixture of fragments is separated by electrophoresis, transferred to a nitrocellulose sheet, hybridized to a radioactively labeled DNA probe complementary to the desired sequence, and visualized by autoradiography. or A method for

detecting a specific DNA restriction fragment, developed by Edward Southern. DNA from a gel electrophoresis pattern is blotted onto nitrocellulose paper; then the DNA is denatured and fixed on the paper. Subsequently the pattern of specific sequences in the Southern blot can be determined by hybridization to a suitable probe and autoradiography. A Northern blot is similar, except that RNA is blotted instead onto the nitrocellulose paper.

**Southern Oscillation:** A large-scale atmospheric and hydrospheric fluctuation centered in the equatorial Pacific Ocean. It exhibits a nearly annual pressure anomaly, alternatively high over the Indian Ocean and high over the South Pacific. Its period is slightly variable, averaging 2.33 years. The variation in pressure is accompanied by variations in wind strengths, ocean currents, sea-surface temperatures, and precipitation in the surrounding areas. El Nino occurrences are associated with the phenomenon.

**Southern Oscillation Index:** An indicator based on the pressure gradient between the quasi-stationary low pressure region and the center of a subtropical high pressure cell. A positive index corresponds to an anomalously high pressure difference between the two centers of action.

**soy :** A product from a plant of Asian origin that produces beans used in many food products. Soy contains isoflavones (estrogen-like substances) that are being studied for the prevention of cancer, hot flashes that occur with menopause, and osteoporosis (loss of bone density). Soy in the diet may lower cholesterol levels and reduce the risk of heart disease. Also called Glycine max, soya, and soybean.

**soy isoflavones:** A dietary supplement isolated from soybeans containing phytoestrogen isoflavones. Although the mechanism of action is unclear, soy isoflavones mimic estrogen action mediated through estrogen receptors. In addition, this agent also modulates estrogen metabolism. As a result, soy isoflavones have been shown to reduce tumor cell proliferation and induce tumor cell apoptosis, as well as to be able to regulate hormone balance and reduce the risks of breast cancer, heart disease, and osteoporosis. Check for active clinical trials using this agent.

**soy lecithin/glycerol dioleate-based oral spray:** An oral spray containing soy phospholipid and glycerol dioleate, with protective, analgesic and anti-mucositic activities. Upon spraying onto the oral mucosal surface and

contact with saliva, the soy lecithin/glycerol dioleate-based oral spray forms a gel and adheres to the mucosal surfaces thereby forming a lipid film. This provides a protective barrier and an analgesic effect within the oral cavity. In addition, the lipid barrier prevents bacterial growth at affected areas thereby decreasing infection risk. Check for active clinical trials using this agent.

**soy protein isolate:** A dietary protein isolated from soybeans that contains isoflavone phytoestrogens. Soy protein isolate has been shown to reduce tumor incidence and growth in some animal studies, possibly by modulating estrogen metabolism, reducing tumor cell proliferation, and inducing tumor cell apoptosis. Soy protein isolate may also inhibit endothelial cell proliferation. Isoflavone phytoestrogens display mild estrogen-like activities which may regulate hormone balance and reduce the risks of breast cancer, heart disease, and osteoporosis.

**soya :** A product from a plant of Asian origin that produces beans used in many food products. Soya contains isoflavones (estrogen-like substances) that are being studied for the prevention of cancer, hot flashes that occur with menopause, and osteoporosis (loss of bone density). Soya in the diet may lower cholesterol levels and reduce the risk of heart disease. Also called Glycine max, soy, and soybean.

**soybean :** A product from a plant of Asian origin that produces beans used in many food products. Soybean contains isoflavones (estrogen-like substances) that are being studied for the prevention of cancer, hot flashes that occur with menopause, and osteoporosis (loss of bone density). Soybean in the diet may lower cholesterol levels and reduce the risk of heart disease. Also called Glycine max, soy, and soya.

**Space group:** One of 230 possible three-dimensional arrangements of molecules in a crystal. A listing of all of the space groups can be found in International Tables for Crystallography, Volume 1.

**Space Saver Omni-Grid (3/4" & 1" ):** Belt consists of an assembly of rods and links. A dual row of heavy duty, non-collapsing links is used on the inside edge, a long pitch expanding link is used on the outside edge.

**Spacing:** The spacing between lattice planes in a crystal. d-spacing is measured by a diffraction experiment and is defined by Bragg's law.

**SPACKLING COMPOUND:** A material used as crack filler for preparing surfaces before painting.

**Span:** The horizontal distance between the supports of an arch roof or beam, etc.

**Spandrel:** The triangular area formed between an arch and the horizontal member it supports, hence "spandrel panel"™ - the shaped panel formed in the spandrel.

**sparfosic acid:** A stable transition state analogue for an aspartate transcarbamylase- catalyzed reaction with antineoplastic activity. Sparfosic acid is a stable transition analogue of the activated complex for the reaction catalyzed by aspartate transcarbamylase, the first step in the pyrimidine biosynthetic pathway. This agent inhibits de novo pyrimidine biosynthesis and increases the extent to which fluorouracil metabolites are incorporated into RNA. Check for active clinical trials using this agent.

**spasm :** A sudden contraction of a muscle or group of muscles, such as a cramp.

**spastic colon :** A disorder of the intestines commonly marked by abdominal pain, bloating, and changes in a person's bowel habits. This may include diarrhea or constipation, or both, with one occurring after the other. Also called IBS, irritable bowel syndrome, irritable colon, and mucus colitis.

**spastic paraparesis:** characterized by spasms associated with weakness in the lower extremities

**SPATTER:** Small particles or drips of liquid paint thrown or expelled when applying paint.

**spatter cone:** a smaller feature usually associated with an already extruded and cooling lava flow from a shield volcano.

**Splattering:** Droplets of paint that spin or mist off the roller as paint is being applied.

**SPC:** (Statistical Process Control) Methods of controlling our processes to prevent defects from being made

**SPE:** Abbreviation for Society of Plastics Engineers.

**Special nuclear material:** Plutonium, uranium-233, or uranium enriched in the isotopes uranium-233 or uranium-235. For additional detail, see Special Nuclear Material.

**Special pair:** In a photosynthetic reaction center, the pair of chlorophyll molecules that collect excitation energy from antenna chlorophyll

molecules and then transfer high-energy electrons to other electron acceptors.

**specialist :** In medicine, a doctor or other health care professional who is trained and licensed in a special area of practice. Examples of medical specialists include oncologists (cancer specialists) and hematologists (blood specialists).

**species:** a group of individuals that share features and are able to interbreed under natural conditions to yield fertile offspring.

**Specific activity:** A measure of the activity of a protein sample relative to the amount of protein present in the sample, usually presented as activity units per milligram of protein; assessed at each step of a protein purification procedure as a measure of the effectiveness of the purification. or The number of micromoles ( $\mu\text{mol}$ ) of a substrate transformed by an enzyme preparation per minute per milligram of protein at  $25^{\circ}\text{C}$ ; a measure of enzyme purity. or a comparison by weight to an equal volume of pure water, at a standard temperature. or The specific gravity is a comparison of the mass of a substance to the mass of water with the same volume. If you fill a cup with mercury, it has a greater mass than the same cup filled with water. Specific gravity is usually used to measure and compare the masses of liquids. Density is usually used to measure and compare the masses of solids. or The ratio of the density of a material to that of a standard material at a specified temperature, usually water at  $4^{\circ}\text{C}$ . or the relative density of a mineral, compared to water. or The mass of a unit volume of a substance relative to the mass of a unit volume of water. Temperature must be specified when reporting specific gravities, since the density of the substance and of water change with temperature. Specific gravities are often reported relative to water at  $4^{\circ}\text{C}$ ; at that temperature, water has a density of  $1.00000\text{ g/mL}$  and the specific gravity of a substance is equal to its density in  $\text{g/mL}$ . or ratio of the mass of a body to the mass of an equal volume of water at  $4^{\circ}\text{C}$ , or some other specified temperature. OR The ratio of the density of a material as compared to the density of water at standard atmospheric pressure (1 ATM) and room temperature (73F). OR SG is the ratio of the density of a material compared to the density of water at standard atmospheric pressure (1 ATM) and room temperature

**specific heat:** The amount of heat it takes for a substance to be raised  $1^{\circ}\text{C}$ . or The amount of heat required to raise one kilogram of a substance 1

degree in temperature. Or The heat required to raise the temperature of 1 g of a substance by 1°C is called the specific heat of the substance. Specific heat is an intensive property with units of J g<sup>-1</sup> K<sup>-1</sup>. or The amount of energy (in joules or calories) needed to raise the temperature of 1 g of a pure substance by 1 °C. or The amount of heat needed to raise one gram of material one 1/2°C in temperature. Equals "heat capacity" or "Cp." OR The amount of heat required to raise a specified mass by one unit of a specified temperature. OR Temperature is measure of heat energy level whereas heat is a measure of total internal energy contained in a body. When the same quantity of heat is given to equal masses of different substances, they do not result in the same rise in temperature. The specific heat is defined as the quantity of heat energy which will rise the temperature of unit mass (1kg) of a substance by 10C. Heat = mass x specific heat x Temperature rise.

**specific heat capacity:** the amount of heat required to raise 1 gram of a substance 1 degree Celsius.

**specific humidity:** ) a measure of how much water is actually in the air.

**specific immune cell :** An immune cell such as a T or B lymphocyte that responds to a single, specific antigen.

**specific rotation:** The rotation, in degrees, of the plane of plane-polarized light (D-line of sodium) by an optically active compound at 25 °C, with a specified concentration and light path.

**Specific surface area:** The characterization of a powder by determining the surface area per unit weight.

**specific volume:** The volume of a unit mass of substance. For example, the specific volume of water at 4°C is 1.00000 mL/g. Specific volume is the reciprocal of density. Or The volume of a unit of weight of a material; the reciprocal of density.

**specificity:** The ability of an enzyme or receptor to discriminate among competing substrates or ligands.

**specificity :** The frequency with which a test yields a true negative result among individuals who do not have the disease or the gene mutation in question. A test with high specificity has a low false-positive rate and thus does a good job of correctly classifying unaffected individuals. or When referring to a medical test, specificity refers to the percentage of people who test negative for a specific disease among a group of people who do not

have the disease. No test is 100% specific because some people who do not have the disease will test positive for it (false positive).

**specificity (in chemical analysis):** The degree to which a given analytical procedure detects a specified component but not other components that may be present in the sample (WHO, 1979).

**SPECT :** A special type of computed tomography (CT) scan in which a small amount of a radioactive drug is injected into a vein and a scanner is used to make detailed images of areas inside the body where the radioactive material is taken up by the cells. SPECT can give information about blood flow to tissues and chemical reactions (metabolism) in the body. Also called single-photon emission computed tomography.

**spectator ion:** A spectator ion is an ion that appears as both a reactant and a product in an ionic equation. For example, in the ionic equation  $\text{Ag}^+(\text{aq}) + \text{NO}_3^-(\text{aq}) + \text{Na}^+(\text{aq}) + \text{Cl}^-(\text{aq}) = \text{AgCl}(\text{s}) + \text{Na}^+(\text{aq}) + \text{NO}_3^-(\text{aq})$  the sodium and nitrate ions are spectator ions.

**spectator ions:** Spectator ions are ions that do not change in a reaction. They do not appear in the ionic equation for the reaction.

**spectrometer:** An instrument for measuring the emission or absorption of light of a particular wavelength.

**spectrophotometer:** An instrument for measuring the amount of light absorbed by a sample. Or An instrument used to measure the intensity of wavelengths in a spectrum of light compared with the intensity of light from a standard source. Or Determination of the concentration of a material in a sample by measurement of the amount of light the sample absorbs.

**spectroscope:** instrument for separating visible light into colors. Or An instrument for measuring the spectrum of light or radiation. Or The science that deals with the use of the spectroscope and with spectrum analysis. A spectroscope is an optical device for producing and observing a spectrum of light or radiation from any source. or is the analysis of the lines of light emitted from excited atoms as the electrons drop back through their orbitals. These lines give the energy and distances of the electronic orbitals. or Spectroscopy is analysis of the interaction between electromagnetic radiation and matter. Different types of radiation interact in characteristic ways with different samples of matter; the interaction is often unique and serves as a diagnostic "fingerprint" for the presence of a particular material

in a sample. Spectroscopy is also a sensitive quantitative technique that can determine trace concentrations of substances.

**spectroscopy :** The study of the amount of light that is taken up, given off, or scattered (reflected) by an object. Spectroscopy breaks down light and measures different wavelengths of visible and non-visible light. In medicine, different types of spectroscopy are being used to study tissues and to help make a diagnosis.

**spectrum:** 1. A sequence of colors produced by passing light through a prism or diffraction grating. 2. A range of wavelengths of electromagnetic radiation. 3. A plot that shows how some intensity-related property of a beam of radiation or particles depends on another property that is related to dispersal of the beam by a prism, a magnet, or some other device. For example, a plot of light absorbance vs. wavelength is an absorption spectrum; a plot of ion abundance vs. mass is a mass spectrum.

**Specular Gloss:** Mirror-like finish (usually 60 degrees on a 60-degree meter).

**Specular Transmittance:** The transmittance value obtained when the measured transmitted flux includes only that transmitted in essentially the same direction as the incident flux.

**speculum :** An instrument used to widen an opening of the body to make it easier to look inside.

**speech pathologist :** A specialist who evaluates and treats people with communication and swallowing problems. Also called speech therapist.

**speech therapist :** A specialist who evaluates and treats people with communication and swallowing problems. Also called speech pathologist.

**Speed profile:** Injection speed set up with respect to stroke positions for the filling phase so that melt front speed remains near constant during filling phase.

**Spent (depleted or used) nuclear fuel:** Nuclear reactor fuel that has been used to the extent that it can no longer effectively sustain a chain reaction. For related information, see Storage of Spent Nuclear Fuel and Transportation of Spent Nuclear Fuel.

**Spent fuel pool:** An underwater storage and cooling facility for spent (depleted) fuel assemblies that have been removed from a reactor. For

related information, see Storage of Spent Nuclear Fuel and Spent Fuel Pools.

**Spent nuclear fuel:** Nuclear reactor fuel that has been used to the extent that it can no longer effectively sustain a chain reaction. For related information, see Storage of Spent Nuclear Fuel and Transportation of Spent Nuclear Fuel.

**sperm :** The male reproductive cell, formed in the testicle. A sperm unites with an egg to form an embryo.

**sperm banking :** The process of freezing sperm and storing it for future use. Samples of semen are collected and checked under a microscope in the laboratory to count sperm cells and find out how healthy they are. The sperm cells are then frozen and stored. Sperm banking is often used for men who want to have children after having treatment that may cause infertility, such as certain cancer treatments. Sperm banking is a type of fertility preservation. Also called sperm cryopreservation.

**sperm cells:** haploid cells within the male testes.

**sperm count :** A count of the number of sperm in a sample of semen. A sperm count may be used as a measure of fertility.

**sperm cryopreservation :** The process of freezing sperm and storing it for future use. Samples of semen are collected and checked under a microscope in the laboratory to count sperm cells and find out how healthy they are. The sperm cells are then frozen and stored. Sperm cryopreservation is often used for men who want to have children after having treatment that may cause infertility, such as certain cancer treatments. Sperm cryopreservation is a type of fertility preservation. Also called sperm banking.

**sperm retrieval :** Removal of sperm from a man's testis or epididymis by a doctor using a fine needle or other instrument.

**spermatic cord :** A cord-like structure in the male reproductive system that contains nerves, blood and lymph vessels, and the vas deferens (a coiled tube that carries sperm out of the testicle). It runs from the abdomen to the testicle, and connects to the testicle in the scrotum (external sac). Also called testicular cord.

**spermatogonia:** primitive cells within the seminiferous tubules that undergo a series of changes and then meiosis to yield sperm cells.

**spermicide** : A chemical substance that kills sperm and is used as a type of birth control. It is available over-the-counter (without a doctor's order) and comes in many different forms such as cream, gel, foam, and suppository. Spermicides can be used alone or with another birth control method such as a condom or diaphragm. They do not protect against sexually transmitted diseases (STDs).

**SPF**: A scale for rating the level of sunburn protection in sunscreen products. The higher the SPF, the more sunburn protection it gives. Sunscreens with a value of 2 through 11 give minimal protection against sunburns. Sunscreens with a value of 12 through 29 give moderate protection. SPFs of 30 or higher give high protection against sunburn. Also called sun protection factor.

**sphenoid sinus** : A type of paranasal sinus (a hollow space in the bones around the nose). There are two large sphenoid sinuses in the sphenoid bone, which is behind the nose between the eyes. The sphenoid sinuses are lined with cells that make mucus to keep the nose from drying out.

**spherical weathering**: weathering that occurs when the corners of an angular rock are broken down more quickly than the flat surfaces, forming rounded shapes.

**Spherulites**: Spherical crystalline body of radiating crystal fibers.

**sphincter** : A ring-shaped muscle that relaxes or tightens to open or close a passage or opening in the body. Examples are the anal sphincter (around the opening of the anus) and the pyloric sphincter (at the lower opening of the stomach).

**sphingolipid**: An amphipathic lipid with a sphingosine backbone to which are attached a long-chain fatty acid and a polar alcohol.

**Sphingomyelin**: Common in brain tissue, a sphingolipid in which the terminal hydroxyl group of ceramide has a phosphorylcholine substituent.

**Sphingosine**: An amino alcohol containing a long, unsaturated hydrocarbon chain that is a component of the phospholipid sphingomyelin as well as glycolipids; serves a role analogous to that of glycerol in phosphoglycerides.

**sphingosine kinase-2 inhibitor ABC294640**: An orally available, aryladamantane compound and selective inhibitor of sphingosine kinase-2 (SK2) with potential antineoplastic activity. Upon administration,

ABC294640 competitively binds to and inhibits SK2, thereby preventing the phosphorylation of the pro-apoptotic amino alcohol sphingosine to sphingosine 1-phosphate (S1P), the lipid mediator that is pro-survival and critical for immunomodulation. This may eventually lead to the induction of apoptosis and may result in an inhibition of cell proliferation in cancer cells overexpressing SK2. SK2 and its isoenzyme SK1 are overexpressed in numerous cancer cell types.

**SPI:** Abbreviation for Society of Plastics Industry.

**spiculated mass :** A lump of tissue with spikes or points on the surface.

**Spider:** (1) In a molding press, that part of an injector mechanism which operates the ejector pins. (2) In extrusion, a term used to denote the membranes supporting a mandrel within the head/die assembly.

**SPIDER GATE:** Multi-gating of a part through a system of radial runners from the sprue.

**Spider Lines:** Vertical marks on the parison (container) caused by improper welding of several melt flow fronts formed by the legs with which the torpedo is fixed in the extruder head.

**SPIE:** The International Society for Optical Engineering.

**spin:** The spin of an electron is designated by  $m_s$ , the electron spin quantum number, which can have values of  $+1/2$  and  $-1/2$ . In the presence of an external magnetic field an electron in an orbital can have one of two possible energy states, which depend on whether the magnetic field associated with the electron is aligned with or against the external magnetic field. or Electrons have an intrinsic angular momentum that is similar to what would be observed if they were spinning. Electron spin is sometimes called a "twoness" property because it can have two values, referred to as "spin up" and "spin down". Nuclei can have spins of their own.

**spin density:** The amount of excess alpha (over beta) spin; useful for identifying the location of unpaired electrons in radicals and for interpreting ESR experiments.

**Spin locked:** A technique in NMR in which the magnetization is locked along the y axis by the rf field. A means of effectively preventing chemical shift evolution by using a high-power rf field during an NMR experiment.

**spin pair:** ( ) paired spins; electron pair; paired electrons. Compare with unpaired spin. Two electrons with opposite spins, usually occupying

the same orbital.

**spin quantum number (ms) :** ms the fourth number in Schrödinger's electron wave equation, which tells the direction of spin on an electron.

**SPIN WELDING:** A process of fusing two objects together by forcing them together while one of the pair is spinning, until frictional heat melts the interface. Spinning is then stopped and pressure held until they are frozen together.

**spin-contamination:** See UHF.

**spin-polarized:** See UHF.

**spin-spin splitting:** the splitting of NMR signals caused by the coupling of nuclear spins on neighboring nonequivalent hydrogens.

**spin-unrestricted:** See UHF.

**spinal anesthesia :** A temporary loss of feeling in the abdomen and/or the lower part of the body. Special drugs called anesthetics are injected into the fluid in the lower part of the spinal column to cause the loss of feeling. The patient stays awake during the procedure. It is a type of regional anesthesia. Also called SAB, spinal block, and subarachnoid block.

**spinal block :** A temporary loss of feeling in the abdomen and/or the lower part of the body. Special drugs called anesthetics are injected into the fluid in the lower part of the spinal column to cause the loss of feeling. The patient stays awake during the procedure. It is a type of regional anesthesia. Also called SAB, spinal anesthesia, and subarachnoid block.

**spinal canal :** The narrow, fluid-filled space in the spinal column (the bones, muscles, tendons, and other tissues that reach from the base of the skull to the tailbone). The spinal cord runs through the spinal canal.

**spinal column :** The bones, muscles, tendons, and other tissues that reach from the base of the skull to the tailbone. The spinal column encloses the spinal cord and the fluid surrounding the spinal cord. Also called backbone, spine, and vertebral column.

**spinal cord:** the white cord of tissue passing through the bony tunnel made by the vertebrae.

**spinal cord :** A column of nerve tissue that runs from the base of the skull down the center of the back. It is covered by three thin layers of protective tissue called membranes. The spinal cord and membranes are surrounded by the vertebrae (back bones). The spinal cord and the brain make up the

central nervous system (CNS). Spinal cord nerves carry messages between the brain and the rest of the body.

**spinal cord compression :** Pressure on the spinal cord that may be caused by a tumor, a spinal fracture, or other conditions. Spinal cord compression may cause pain, weakness, loss of feeling, paralysis, incontinence (inability to control urine or stool), or impotence (inability to have an erection of the penis).

**spinal tap :** A procedure in which a thin needle called a spinal needle is put into the lower part of the spinal column to collect cerebrospinal fluid or to give drugs. Also called lumbar puncture.

**spindle cell hemangioma :** A benign (not cancer) blood vessel tumor that forms on or under the skin. Spindle cell hemangiomas have cells called spindle cells that look long and slender under a microscope. These tumors are painful red-brown or bluish lesions that usually appear on the arms or legs. One or more lesions may form, and they can sometimes rupture (break open) and bleed. Spindle cell hemangiomas usually occur in young adults but can sometimes occur in children. They are a type of vascular tumor.

**spindle cell sarcoma :** A type of sarcoma that contains spindle cells. Under a microscope, spindle cells look long and slender. Sarcomas are cancers that begin in muscle, fat, fibrous tissue, or other connective or supportive tissue in the body. Spindle cell sarcomas usually occur in adults.

**spindle cell tumor :** A type of tumor that contains cells called spindle cells, based on their shape. Under a microscope, spindle cells look long and slender. Spindle cell tumors may be sarcomas or carcinomas.

**spine :** The bones, muscles, tendons, and other tissues that reach from the base of the skull to the tailbone. The spine encloses the spinal cord and the fluid surrounding the spinal cord. Also called backbone, spinal column, and vertebral column.

**spine cancer :** Cancer that begins in the spinal column (backbone) or spinal cord. The spinal column is made up of linked bones, called vertebrae. The spinal cord is a column of nerve tissue that runs from the base of the skull down the back. It is surrounded by three protective membranes, and is enclosed within the vertebrae. Many different types of cancer may form in the bones, tissues, fluid, or nerves of the spine.

**Spinneret:** A type of extrusion die, i.e., a metal plate with many tiny holes, through which a plastic melt is forced to make fine fibers and filaments. Filaments may be hardened by cooling in air, water, etc., or by chemical action.

**Spinning:** Process of making fibers by forcing plastic melt through a spinneret.

**spiracles:** a series of openings on the body surface of terrestrial arthropods that open into tiny air tubes that assist in gas exchange.

**spiral CT scan :** A procedure that uses a computer linked to an x-ray machine to make a series of detailed pictures of areas inside the body. The x-ray machine scans the body in a spiral path. This allows more images to be made in a shorter time than with older CT methods. A dye may be injected into a vein or swallowed to help the organs or tissues show up more clearly on the x-ray. Spiral CT scan also creates more detailed pictures and may be better at finding small abnormal areas inside the body. It may be used to help diagnose disease, plan treatment, or find out how well treatment is working. Also called helical computed tomography.

**Spiral Flow :** Test performed by injection molding a sample into a spiral mold and used to compare the processability of different resins.

**Spiral Flow Test:** A method for determining the flow properties of a thermoplastic resin in which the resin flows along the path of a spiral cavity. The length of the material which flows into the cavity and its weight gives a relative indication of the flow properties of the resin.

**spiral galaxy:** galaxy with bands of stars that rotate around the center.

**Spiral Mold Cooling:** A method of cooling injection molds or similar molds wherein the cooling medium flows through a spiral cavity in the body of the mold. In injection molds, the cooling medium is introduced at the center of the spiral, near the spruce section, as more heat is localized in this section.

**Spiral Twist:** A type of seal failure resulting from a twisting action that strains or ruptures the rubber

**spirilla:** flexible spiral bacteria (singular, spirillum).

**spirituality :** Having to do with deep, often religious, feelings and beliefs, including a person's sense of peace, purpose, connection to others, and beliefs about the meaning of life.

**Spiriva:** (Other name for: tiotropium bromide monohydrate)

**spirochetes:** rigid spiral bacteria.

**spirogermanium:** A synthetic organometallic compound containing the element germanium with possible antineoplastic activity. Spirogermanium exhibits significant toxicity, particularly neurotoxicity.

**spiromustine:** A bifunctional nitrogen alkylating agent with antineoplastic activity and lipophilic properties. Containing a lipophilic hydantoin group that serves as a carrier to cross the blood brain barrier, spiromustine forms covalent linkages with nucleophilic centers in DNA, causing depurination, base-pair miscoding, strand scission, and DNA-DNA cross-linking, which may result in cytotoxicity.

**spironolactone:** A synthetic 17-spironolactone corticosteroid with potassium-sparing diuretic, antihypertensive, and antiandrogen activities. Spironolactone competitively inhibits adrenocortical hormone aldosterone activity in the distal renal tubules, myocardium, and vasculature. This agent may inhibit the pathophysiologic effects of aldosterone produced in excess by various types of malignant and benign tumors. Check for active clinical trials using this agent.

**spiroplatin:** A synthetic derivative of cyclohexane sulfatoplatinum with antineoplastic properties. Spiroplatin induces DNA cross-links, thereby inhibiting DNA replication and RNA and protein synthesis. Similar to other platinum compounds, this agent has been shown to be mutagenic and carcinogenic.

**spit:** a fingerlike ridge of sand that projects into a bay.

**spit tobacco :** A type of smokeless tobacco made from cured tobacco leaves. It may be sweetened and flavored with licorice and other substances. It comes in the form of loose tobacco leaves, pellets or “bits” (leaf tobacco rolled into small pellets), plugs (leaf tobacco pressed and held together with some type of sweetener), or twists (leaf tobacco rolled into rope-like strands and twisted). It is placed in the mouth, usually between the cheek and lower lip, and may be chewed. Spit tobacco contains nicotine and many harmful, cancer-causing chemicals. Using it can lead to nicotine addiction and can cause cancers of the mouth, throat, esophagus, and pancreas. Spit tobacco use may also cause gum disease, heart disease, stroke, and other health problems. Also called chewing tobacco.

**Splay:** A defect in the surface of a molded part that is usually small in size, shiny, and may have the appearance of a lightly tinted or silver streaks. OR Discolored, visible streaks in the part, typically caused by moisture in the resin.

**Splay Marks:** Marks or droplet-type imperfections found on the surface of the finished parts that may be caused by the spraying of the melt through the gates and into the cool cavity OR Lines found in part after molding, usually due to flow of material in mold.

**spleen:** the site where red blood cells are destroyed; a reserve blood supply for the body.

**spleen :** An organ that is part of the lymphatic system. The spleen makes lymphocytes, filters the blood, stores blood cells, and destroys old blood cells. It is located on the left side of the abdomen near the stomach.

**spleen tyrosine kinase inhibitor TAK-659:** An inhibitor of spleen tyrosine kinase (syk), with potential anti-inflammatory, immunomodulating, and antineoplastic activities. Spleen tyrosine kinase inhibitor TAK-659 may inhibit the activity of syk, which abrogates downstream B-cell receptor (BCR) signaling and leads to an inhibition of B-cell activation, chemotaxis, adhesion and proliferation. Syk, a BCR-associated non-receptor tyrosine kinase that mediates diverse cellular responses, including proliferation, differentiation, and phagocytosis, is expressed in hematopoietic tissues and is often overexpressed in hematopoietic malignancies.

**splenectomy :** An operation to remove the spleen.

**splenic :** Having to do with the spleen (an organ in the abdomen that makes immune cells, filters the blood, stores blood cells, and destroys old blood cells).

**splenomegaly :** Enlarged spleen.

**splice-site mutation :** An alteration in the DNA sequence that occurs at the boundary of an exon and an intron (splice site). This change can disrupt RNA splicing resulting in the loss of exons or the inclusion of introns and an altered protein-coding sequence.

**Spliceosome:** An assembly of proteins and small nuclear rnas that splices primary transcripts to form mature mrna.

**Splicing:** The removal of introns and the ligation of exons from precursors of RNA to form mature RNA. or See gene splicing; RNA splicing.

**splicing :** The process by which introns, the noncoding regions of genes, are excised out of the primary messenger RNA transcript, and the exons (i.e., coding regions) are joined together to generate mature messenger RNA. The latter serves as the template for synthesis of a specific protein.

**split infinitives:** breaking up an infinitive with one or more adverbs.

**Split Points:** Split points are locations in the a mould cavity where a melt front will split up and advance in more than one direction at the same time. It is also referred as flow junctions, branch points, or nodes.

**Split-Ring Mold :** A mold in which a split cavity block is assembled in a channel to permit the forming of undercuts in a molded piece. These parts are ejected from the mold and then separated from the piece.

**split-valence:** Refers to a basis set that is more than minimal (see MBS) for the valence orbitals, i.e., at least VDZ. 3-21G is one example of a split-valence basis. 6-311G might be called a triple-split-valence basis.

**spontaneous:** A spontaneous process occurs because of internal forces; no external forces are required to keep the process going, although external forces may be required to get the process started. For example, the burning of wood is spontaneous once the fire is started. The combination of water and carbon dioxide to reform the wood and oxygen is NOT spontaneous!

**spontaneous reaction:** A reaction that will proceed without any outside energy. Or A process that proceeds irreversibly toward equilibrium and is accompanied by an increase in disorder, or entropy.

**sporadic cancer :** This term has two meanings. It is sometimes used to differentiate cancers occurring in people who do not have a germline mutation that confers increased susceptibility to cancer from cancers occurring in people who are known to carry a mutation. Cancer developing in people who do not carry a high-risk mutation is referred to as sporadic cancer. The distinction is not absolute, because genetic background may influence the likelihood of cancer even in the absence of a specific predisposing mutation. Alternatively, sporadic is also sometimes used to describe cancer occurring in individuals without a family history of cancer. or Cancer that occurs in people who do not have a family history of that cancer or an inherited change in their DNA that would increase their risk for that cancer.

**Sporanox:** (Other name for: itraconazole)

**Sporulation:** Formation from vegetative cells of metabolically inactive cells that can resist extreme environmental conditions.

**SPOT PRIMING:** A method of protecting localized spots. The only areas primed are those that require additional protection due to rusting or peeling of the former coat.

**Spot priming:** The priming of localised bare timber surfaces when 'bringing forward' prior to stopping up and/or painting.

**spotted thistle :** A plant whose leaves, stems, and flowers have been used in some cultures to treat certain medical problems. Spotted thistle may have anti-inflammatory and anticancer effects. The scientific name is *Cnicus benedictus*. Also called blessed thistle, cardin, holy thistle, and St. Benedict's thistle.

**Spray coating:** a saran or pvc film, applied to pet, that dramatically improves gas barrier properties and allows for lightweight of containers. OR Usually accomplished on continuous webs by a set of reciprocating spray nozzles traveling laterally across the web as it moves.

**Spray-up:** Covers a number of techniques in which a spray gun is used as the processing tool. In reinforced plastics, for example, fibrous glass and resin can be simultaneously deposited in a mold. In essence, roving is fed through a chopper and ejected into a resin stream which is directed at the mold by either of two spray systems. In foamed plastics, very fast-reacting urethane foams or epoxy foams are used in liquid streams to the gun are sprayed on the surface. On contact, the liquid starts to foam. OR A process for manufacturing FRP parts in which continuous glass roving is fed into a special 'gun' which chops the fibres into short lengths and simultaneously mixes them with a resin (usually polyester) that is then sprayed onto the tool. Manual compaction with rollers is used to compact the lay-up.

**Sprayed Metal Molds:** Mold made by spraying molten metal onto a master until a shell of predetermined thickness is achieved. Shell is then removed and backed up with plaster, cement, casting resin, or other suitable material. Used primarily as a mold in sheet-forming processes.

**SPRAYING:** A method of application in which the coating material is broken up into a fine mist that is directed onto the surface to be coated.

**Spraying:** Application of paint by a spray gun. Two types of spray are available: 'conventional' which is operated by compressed air, and 'airless'

operated by hydraulically compressing the paint.

**Spreader:** A streamline metal block placed in the path of flow of the plastic material in the heating cylinder of extruders and injection molding machines to spread it into thin layers, thus forcing it into intimate contact with the heating areas.

**Spreading:** The action of applying paint by brush in a uniform coat over a surface; colouring bare wood by means of a dye or stain; discolouration of a paint film.

**spreading center:** a divergent boundary (midoceanic ridge) along which new oceanic crust is formed and pushed outward.

**SPREADING RATE:** The area to which paint can be spread; usually expressed as square feet per gallon.

**Spreading rate:** The area which a given quantity of paint will cover, e.g. the spreading rate of a particular paint may be quoted as '15m<sup>2</sup> per litre on smooth surfaces of average porosity'.

**spring tide:** extreme tides during Full and New Moon phases.

**spring tides:** tides that occur at the times of the new and full moons; spring tides exhibit the greatest difference in tidal elevations.

**Sprockets :** Manufacturers supply sprockets for positive drive. These sprockets are generally cast from carbon or stainless steel, and are finished in sizes suitable for application.

**Spruce:** The main feed channel that connects the mold-filling orifice with the runners leading to each gravity gate. Spruce is also the piece of plastic material formed in this channel.

**Spruce Bushing:** A hardened steel insert in an injection mold which contains the tapered spruce hole and has a suitable seat for the nozzle of the injection cylinder. Sometimes called an Adapter.

**Spruce Gate:** The passage through which molten resin flows from the nozzle to the mold cavity.

**Spruce Lock:** In injection molding, a portion of the plastic composition which is held in the cold slug well by an undercut; used to pull the spruce out of the bushing as the mold is opened. The spruce lock itself is pushed out of the mold by an ejector pin. When the undercut occurs on the cavity block retainer plate, this pin is called the Spruce Ejector Pin.

**Sprue:** The first stage in the resin distribution system, where the resin enters the mold. The sprue is perpendicular to the parting faces of the mold and brings resin to the runners, which are typically in the parting surfaces of the mold. OR The primary feed channel that runs from the outer face of a silicone injection mold to the mold runner and gates OR Feed opening provided in the injection or transfer mold; also the slug formed at this hole. OR The opening feed that conveys material from the nozzle to runner system in the mold. OR The plastic material that connects the runner system to the nozzle of the heating cylinder of the molding machine. It is formed by the internal surface of a bushing that joins the mold to the machine's nozzle.

**Sprue Bushing:** A hardened steel insert in the silicone injection mold that accepts the silicone molding machine nozzle and provides an opening for transferring the silicone or molten plastic OR A hardened-steel insert in the mold that accepts the nozzle and provides an opening for transferring the melt. OR A hardened-steel insert in the mold that accepts the nozzle and provides an opening for transferring the melt. OR A hardened bushing that connects the mold to the molding machine nozzle and allows molten plastic to enter the runner system.

**Sprue Gate:** A passageway through which melt flows from the nozzle to the mold cavity.

**Sprue Lock :** The portion of resin retained in the cold-slug well by an undercut. This lock is used to pull the sprue out of the bushing as the mold opens. The sprue lock itself is pushed out of the mold by an ejector pin.

**SPRUE LOCK OR PULLER:** In injection molding, a portion of the plastic composition which is held in the cold slug well by an undercut; used to pull the sprue out of the bushing as the mold is opened. The sprue lock itself is pushed out of the mold by an ejector pin. When the undercut occurs on the cavity block retainer plate, this pin is called the Sprue Ejector Pin.

**SPRUE-BUSHING:** A hardened steel insert in an injection mold which contains the tapered sprue hold and has a suitable seat for the nozzle of the injection cylinder.

**Sprycel :** A drug used to treat certain types of chronic myeloid leukemia and acute lymphoblastic leukemia. Sprycel is also being studied in the treatment of certain other blood diseases and types of cancer. Sprycel binds to and blocks BCR-ABL and other proteins that help cancer cells grow. It is a type of tyrosine kinase inhibitor. Also called BMS-354825 and dasatinib.

**SPS:** Syndiotactic Polystyrene :High heat resistant thermoplastic material with crystalline structure. Generally glass filled. Used in under hood-automotive or other high heat applications i.e. sterilization cassettes and electrical connectors. Casco Bay Molding has extensive experience injection molding and ultrasonically welding SPS.

**sputum :** Mucus and other matter brought up from the lungs by coughing.

**sputum cytology :** Examination under a microscope of cells found in sputum (mucus and other matter brought up from the lungs by coughing). The test checks for abnormal cells, such as lung cancer cells.

**spyrine:** (Other name for: trientine hydrochloride)

**squalamine lactate :** A drug that belongs to the family of drugs called angiogenesis inhibitors. It prevents the growth of new blood vessels into a solid tumor.

**squamous cell :** Flat cell that looks like a fish scale under a microscope. These cells are found in the tissues that form the surface of the skin, the passages of the respiratory and digestive tracts, and the lining of the hollow organs of the body (such as the bladder, kidney, and uterus, including the cervix).

**squamous cell carcinoma :** Cancer that begins in squamous cells. Squamous cells are thin, flat cells that look like fish scales, and are found in the tissue that forms the surface of the skin, the lining of the hollow organs of the body, and the lining of the respiratory and digestive tracts. Most cancers of the anus, cervix, head and neck, and vagina are squamous cell carcinomas. Also called epidermoid carcinoma.

**squamous cell carcinoma of the head and neck :** Cancer of the head and neck that begins in squamous cells (thin, flat cells that form the surface of the skin, eyes, various internal organs, and the lining of hollow organs and ducts of some glands). Squamous cell carcinoma of the head and neck includes cancers of the nasal cavity, sinuses, lips, mouth, salivary glands, throat, and larynx (voice box). Most head and neck cancers are squamous cell carcinomas.

**squamous intraepithelial lesion :** A general term for the abnormal growth of squamous cells on the surface of the cervix. The changes in the cells are described as low grade or high grade, depending on how much of the cervix is affected and how abnormal the cells appear. Also called SIL.

**square:** a four-sided plane closed figure having equal sides and four right angles. Its opposite sides are parallel. Or A square is a special type of rectangle in which all sides are equal in length.

**SR-29142:** A drug that may protect healthy tissue from the toxic effects of anticancer drugs.

**SR-45023A:** An anticancer drug that belongs to the family of drugs called bisphosphonates. It affects cancer cell receptors governing cell growth and cell death.

**SR-T100 gel:** A cutaneous gel preparation containing an extract from *Solanum incanum* with potential antineoplastic activity. SR-T100 gel contains high amounts of the steroidal alkaloid glycoside solamargine. Solamargine is able to upregulate expression of tumor necrosis factor receptors 1 (TNFR1) and 6 (TNFRSF6 or Fas), and their signaling adaptors TNFR1-associated death domain, and Fas-associated death domain. In addition, this agent is able to upregulate expression of apoptosis promoter Bax, and suppress the expression of the anti-apoptotic proteins Bcl-xL and Bcl-2. Altogether, this induces apoptosis in tumor cells and may lead to an inhibition of tumor cell proliferation. Check for active clinical trials using this agent.

**SR31747A:** A synthetic peripheral sigma receptor ligand with immunomodulatory and potential antitumor activities. Although the exact mechanism by which SR31747A exerts its antitumor effects has not been fully established, SR31747A binds to and inhibits the sigma1 receptor (SR31747A-binding protein-1 or SR-BP1), human sterol isomerase (emopamil-binding protein) and the sigma2 receptor, which may result in a reduction in tumor cell proliferation and tumor cell apoptosis. In addition, this agent inhibits the production of pro-inflammatory cytokines while increasing anti-inflammatory cytokines. Upregulated in various cancers, the sigma1 and sigma2 receptors and human sterol isomerase are proteins that are involved in the regulation of cell proliferation and survival. Check for active clinical trials using this agent.

**SR49059:** A substance being studied in the treatment of cancer. It inhibits a hormone growth factor that causes some cancer cells to divide. It is a type of vasopressin receptor antagonist.

**Src kinase inhibitor KX2-391:** An orally bioavailable small molecule Src kinase inhibitor with potential antineoplastic activity. Unlike other Src

kinase inhibitors which bind to the ATP-binding site, Src kinase inhibitor KX2-391 specifically binds to the peptide substrate binding site of Src kinase; inhibition of kinase activity may result in the inhibition of primary tumor growth and the suppression of metastasis. Src tyrosine kinases are upregulated in many tumor cells and play important roles in tumor cell proliferation and metastasis.

**Src kinase inhibitor KX2-391 ointment:** An ointment containing an inhibitor for both Src tyrosine kinase and tubulin polymerization, with potential antineoplastic activity. Unlike other Src kinase inhibitors which bind to the ATP-binding site, Src kinase inhibitor KX2-391 binds to the peptide substrate binding site of Src kinase, upon topical application. This inhibits both downstream signaling and the proliferation of tumor cells overexpressing Src. Src tyrosine kinase, a non-receptor tyrosine kinase upregulated in many tumor cell types, plays an important role in tumor cell proliferation, motility, invasiveness and survival. KX2-391 also binds to tubulin heterodimers and inhibits microtubule polymerization, which disrupts microtubule formation and mitosis, leading to further inhibition of cell proliferation. In addition, KX2-391 inhibits T-cell migration.

**Src/Abl kinase inhibitor AZD0424:** An orally bioavailable small molecule tyrosine kinase inhibitor that targets both Abl and Src kinases with potential antineoplastic activity. Upon oral administration, AZD0424 selectively inhibits both Src and Abl kinase activity which may result in the inhibition of tumor growth in susceptible tumor cells. Src and Abl kinases are upregulated in certain tumor cells and play important roles in tumor cell proliferation and metastasis.

**src/tubulin inhibitor KX02:** A lipophilic, orally available inhibitor of both Src kinase activity and tubulin polymerization, with potential antineoplastic activity. Upon oral administration, src/tubulin inhibitor KX02 binds to and inhibits the activity of Src kinase. This inhibits both downstream signaling and the proliferation of Src kinase-expressing tumor cells. KX02 also binds to tubulin heterodimers and inhibits microtubule polymerization, thereby disrupting microtubule formation, mitosis, and further proliferation. Src, a non-receptor tyrosine kinase, is overexpressed in a variety of tumor cell types and plays a key role in tumor cell proliferation, angiogenesis, migration, and metastasis.

**SRS:** A type of radionuclide scan used to find carcinoid and other types of tumors. Radioactive octreotide, a drug similar to somatostatin, is injected into a vein and travels through the bloodstream. The radioactive octreotide attaches to tumor cells that have receptors for somatostatin. A radiation-measuring device detects the radioactive octreotide, and makes pictures showing where the tumor cells are in the body. Also called octreotide scan and somatostatin receptor scintigraphy.

**SS1(dsFv)-PE38 immunotoxin:** A recombinant immunotoxin consisting of the single chain anti-mesothelin monoclonal antibody SS1(dsFv) linked to Pseudomonas exotoxin PE-38. The monoclonal antibody moiety of the agent binds to cells that express mesothelin, a cell surface glycoprotein which may be overexpressed in ovarian cancer, mesotheliomas, and some squamous cell carcinomas; after internalization, the exotoxin moiety inactivates eukaryotic translation elongation factor 2, thereby disrupting tumor cell protein synthesis.

**SSCP:** A type of mutation scanning; the identification of abnormally-migrating single-stranded DNA segments on gel electrophoresis. Also called single-stranded conformational polymorphism.

**SSCP analysis :** A laboratory test used to separate single-stranded nucleic acids based on subtle differences in their DNA sequence, often a single base pair, which results in a different secondary structure and a measurable difference in mobility through a gel. Also called single-stranded conformation polymorphism analysis.

**SSD:** (Other name for: silver sulfadiazine)

**SSG:** A substance being studied in the treatment of certain solid tumors, lymphoma, and myeloma. SSG may block enzymes needed for cancer growth. It is a type of pentavalent antimonial. Also called sodium stibogluconate.

**SSRI:** A type of drug that is used to treat depression. SSRIs slow the process by which serotonin (a substance that nerves use to send messages to one another) is reused by nerve cells that make it. This increases the amount of serotonin available for stimulating other nerves. Also called selective serotonin reuptake inhibitor.

**St. Benedict's thistle :** A plant whose leaves, stems, and flowers have been used in some cultures to treat certain medical problems. St. Benedict's thistle may have anti-inflammatory and anticancer effects. The scientific

name is *Cnicus benedictus*. Also called blessed thistle, cardin, holy thistle, and spotted thistle.

**St. John's wort:** An herbal extract prepared from the plant *Hypericum perforatum* (St. John's wort) with photodynamic, antineoplastic, and antidepressant activities. Hypericin, one of the active compounds found in *Hypericum perforatum*, is a photosensitizer that, when exposed to a particular wavelength and intensity of light, may induce tumor cell apoptosis. Another compound, hyperforin, induces caspase-dependent apoptosis in certain tumor cell lines. *Hypericum perforatum* preparations may also stimulate the activity of cytochrome P450 enzymes and P-glycoprotein drug transporters, resulting in increased metabolism and decreased efficacy of various chemotherapeutic agents and other drugs. or An herbal product sold as an over-the-counter treatment for depression. It is being studied for its ability to lessen certain side effects of cancer treatment. Also called *Hypericum perforatum*.

**ST1481:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called topoisomerase inhibitors. Also called gimatecan.

**Stability:** A term used to describe the resistance of a solid drug or solution of a drug to reaction. Or the percent of change of the baseline and/or sensitivity in time.

**stability field:** the ranges of temperature and pressure in which a particular mineral is stable.

**stabilized sulphur hexafluoride microbubble-based contrast agent:** An injectable ultrasound contrast media formulation composed of microbubbles of stabilized sulphur hexafluoride (SF<sub>6</sub>) in sodium chloride solution. With stabilized sulphur hexafluoride microbubble-based contrast agent, ultrasound waves are scattered and reflected at the microbubble-blood interface during ultrasound imaging, thereby enhancing blood vessel visualization and the contrast between blood vessels and adjacent tissues.

**stabilizer:** A substance that makes a mixture more stable. Antioxidants and antiozonants are examples of stabilizers; stabilizers are added to paints to prevent the components of the mixture from separating over time. Or An ingredient used in the formulation of some plastics to assist in maintaining the physical and chemical properties of the compounded materials at their initial values throughout the processing and

service life of the material. OR A substance used in the formulation of plastics to help maintaining the properties of the material during processing and service life. OR Ingredient used in the formulation of some polymer plastics to assist in maintaining the physical and chemical properties of the compounded plastic materials. OR A substance used in the formulation of plastics to help maintaining the properties of the material during processing and service life.

**Stabilizers & Surface Modifiers:** Some additives included in this category include antioxidants and antizonants, antistats, biocides and fungicides, heat stabilizers, light, and UV stabilizers and absorbers.

**stable disease :** Cancer that is neither decreasing nor increasing in extent or severity.

**Stable form:** The solid form of a substance having the highest thermodynamic stability (e.g., lowest solubility) among all the forms that might be encountered under the given conditions.

**Stable isotope:** An isotope that does not undergo radioactive decay.

**stack:** an erosional remnant of a sea cliff; a stack is rooted to the wave-cut platform and stands above the surface of the water.

**Stack Molds :** Two or more molds of a similar type that are positioned one behind the other to allow for additional parts to be manufactured during a cycle.

**Stacking energy:** The energy of interaction that favors the face-to-face packing of purine and pyrimidine base pairs.

**stage :** The extent of a cancer in the body. Staging is usually based on the size of the tumor, whether lymph nodes contain cancer, and whether the cancer has spread from the original site to other parts of the body.

**stage 0 anal carcinoma in situ :** Abnormal cells are found in the innermost lining of the anus. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 bladder carcinoma in situ :** Abnormal cells are found in tissue lining the inside of the bladder. These abnormal cells may become cancer and spread into nearby normal tissue. Stage 0 is divided into stage 0a (papillary carcinoma) and stage 0is (carcinoma in situ), depending on the type of tumor. Stage 0a may look like tiny mushrooms growing from the

lining of the bladder. Stage 0 is is a flat tumor on the tissue lining the inside of the bladder.

**stage 0 breast carcinoma in situ :** There are 3 types of stage 0 breast carcinoma in situ: ductal carcinoma in situ (DCIS), lobular carcinoma in situ (LCIS), and Paget disease of the nipple. DCIS is a noninvasive condition in which abnormal cells are found in the lining of a breast duct. The abnormal cells have not spread outside the duct to other tissues in the breast. In some cases, DCIS may become invasive cancer and spread to other tissues. At this time, there is no way to know which lesions could become invasive. LCIS is a condition in which abnormal cells are found in the lobules of the breast. This condition seldom becomes invasive cancer. However, having LCIS in one breast increases the risk of developing breast cancer in either breast. Paget disease of the nipple is a condition in which abnormal cells are found in the nipple only. Also called breast carcinoma in situ.

**stage 0 cervical carcinoma in situ :** Severely abnormal cells are found on the surface of the cervix. Stage 0 cervical carcinoma in situ is usually caused by certain types of human papillomavirus (HPV) and is found when a cervical biopsy is done. If not treated, these abnormal cells may become cancer and spread to nearby normal tissue. Treatment for stage 0 cervical carcinoma in situ may include cryotherapy, laser therapy, loop electrosurgical procedure (LEEP), or cone biopsy to remove or destroy the abnormal tissue. Stage 0 cervical carcinoma in situ is sometimes called high-grade or severe dysplasia. Also called cervical squamous intraepithelial neoplasia 3 and CIN 3.

**stage 0 chronic lymphocytic leukemia :** There are too many lymphocytes in the blood, but there are no other symptoms of leukemia. Stage 0 is indolent (slow-growing).

**stage 0 colorectal carcinoma in situ :** Abnormal cells are found in the mucosa (innermost layer) of the colon and/or rectal wall. These abnormal cells may become cancer.

**stage 0 disease :** A group of abnormal cells that remain in the place where they first formed. They have not spread. These abnormal cells may become cancer and spread into nearby normal tissue. Also called carcinoma in situ.

**stage 0 distal extrahepatic bile duct carcinoma in situ :** Abnormal cells are found in the innermost layer of tissue lining the distal extrahepatic bile

duct (where the bile duct empties into the small intestine). These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 esophageal carcinoma in situ :** Abnormal cells are found in the mucosa or submucosa layer of the esophagus wall. These abnormal cells may become cancer and spread into nearby normal tissue. Stage 0 is also called high-grade dysplasia.

**stage 0 gallbladder carcinoma in situ :** Abnormal cells are found in the inner (mucosal) layer of the gallbladder. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 gastric carcinoma in situ :** Abnormal cells are found in the inside lining of the mucosa (innermost layer) of the stomach wall. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 hypopharyngeal carcinoma in situ :** Abnormal cells are found in the lining of the hypopharynx. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 laryngeal carcinoma in situ :** Abnormal cells are found in the lining of the larynx. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 lip and oral cavity carcinoma in situ :** Abnormal cells are found in the lining of the lips and oral cavity. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 maxillary sinus carcinoma in situ :** Abnormal cells are found in the innermost lining of the maxillary sinus. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 medullary thyroid carcinoma in situ :** No tumor is found in the thyroid but abnormal cells are found by screening tests. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 melanoma :** Abnormal melanocytes (cells that make melanin, the pigment that gives skin its color) are found in the epidermis (outer layer of the skin). These abnormal melanocytes may become cancer and spread into nearby normal tissue. Also called melanoma in situ.

**stage 0 Merkel cell carcinoma in situ :** Abnormal cells are found in the place where they first formed and have not spread. These abnormal cells may become cancer and spread to lymph nodes or distant parts of the body.

**stage 0 nasal cavity and ethmoid sinus carcinoma in situ :** Abnormal cells are found in the innermost lining of the nasal cavity or ethmoid sinus. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 nasopharyngeal carcinoma in situ :** Abnormal cells are found in the lining of the nasopharynx. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 non-small cell lung carcinoma in situ :** Abnormal cells are found in the lining of the airways. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 nonmelanoma skin carcinoma in situ :** Abnormal cells are found in the squamous cell or basal cell layer of the epidermis (topmost layer of the skin). These abnormal cells may become cancer and spread into nearby normal tissue. Also called nonmelanoma carcinoma in situ.

**stage 0 nonmelanoma skin carcinoma in situ on the eyelid :** Abnormal cells are found in the epidermis (topmost layer of the skin). These abnormal cells may become cancer and spread into nearby normal tissue. Also called nonmelanoma skin carcinoma in situ on the eyelid.

**stage 0 oropharyngeal carcinoma in situ :** Abnormal cells are found in the lining of the oropharynx. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 pancreatic carcinoma in situ :** Abnormal cells are found in the lining of the pancreas. These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 penile carcinoma in situ :** Abnormal cells or growths that look like warts are found on the surface of the skin of the penis. These abnormal cells or growths may become cancer and spread into nearby normal tissue.

**stage 0 perihilar extrahepatic bile duct carcinoma in situ :** Abnormal cells are found in the innermost layer of tissue lining the perihilar extrahepatic bile duct (where the bile duct leaves the liver). These abnormal cells may become cancer and spread into nearby normal tissue.

**stage 0 testicular carcinoma in situ :** Abnormal cells are found in the tiny tubules where the sperm cells begin to develop. These abnormal cells may become cancer and spread into nearby normal tissue. All tumor marker

levels are normal. Also called testicular intraepithelial neoplasia and testicular intratubular germ cell neoplasia.

**stage 0 transitional cell carcinoma in situ of the renal pelvis and ureter :** Abnormal cells are found in tissue lining the inside of the renal pelvis or ureter. These abnormal cells may become cancer and spread into nearby normal tissue. Stage 0 is divided into stages 0a (noninvasive papillary carcinoma) and 0is (carcinoma in situ), depending on the type of tumor. Stage 0a may look like tiny mushrooms growing from the tissue lining the inside of the renal pelvis or ureter. Stage 0is is a flat tumor on the tissue lining the inside of the renal pelvis or ureter.

**stage 0 urethral carcinoma in situ :** Abnormal cells are found on the inside lining of the urethra. These abnormal cells may become cancer and spread into nearby normal tissue.

**Stage 1 metabolism:** A stage in which large molecules are broken into smaller units; glycogen, for instance, is converted into glucose.

**stage 1 neuroblastoma :** Tumor is only found in one area; all of the tumor that can be seen is completely removed during surgery.

**Stage 2 metabolism:** A stage in which small molecules are degraded to a few key intermediates, such as acetyl coa, in metabolism.

**stage 2 neuroblastoma :** Stage 2 is divided into stages 2A and 2B. In stage 2A, the tumor is in one area only and not all of the tumor that can be seen can be completely removed during surgery. In stage 2B, the tumor is in one area only and all of the tumor that can be seen may be completely removed during surgery, but cancer cells are found in nearby lymph nodes.

**Stage 3 metabolism:** A stage consisting of the citric acid cycle and oxidative phosphorylation; the final common pathway for the oxidation of fuel molecules.

**stage 3 neuroblastoma :** In stage 3 neuroblastoma, the tumor (1) cannot be completely removed during surgery and has spread from one side of the body to the other side and may also have spread to nearby lymph nodes; or (2) is in one area of one side of the body only, but has spread to lymph nodes on the other side of the body; or (3) is in the middle of the body and has spread to tissues or lymph nodes on both sides of the body, and the tumor cannot be removed by surgery.

**stage 4 neuroblastoma :** Stage 4 neuroblastoma is divided into stages 4 and 4S. In stage 4, the tumor has spread to distant lymph nodes, the skin, and/or other parts of the body. In stage 4S, (1) the child is younger than 1 year; and (2) the cancer has spread to the skin, liver, and/or bone marrow; and (3) the tumor is in one area only and all of the tumor that can be seen may be completely removed during surgery; and/or (4) cancer cells may be found in the lymph nodes near the tumor.

**stage A prostate cancer :** A prostate cancer stage defined by the Jewett staging system. Stage A prostate cancer is cancer that began in the prostate and is found in the prostate only. It is usually found during surgery for other reasons, such as benign prostatic hyperplasia (a condition in which an overgrowth of prostate tissue occurs). Stage A is divided into stages A1 and A2. In stage A1, the cancer cells do not look very different from normal cells. In stage A2, the cancer cells look more abnormal or are in several areas in the prostate.

**stage B prostate cancer :** A prostate cancer stage defined by the Jewett staging system. Stage B prostate cancer is cancer that began in the prostate and is more advanced than stage A, but has not spread outside the prostate. Stage B is divided into stages B0, B1, and B2. In stage B0, the cancer is detected only by increased blood levels of PSA (prostate-specific antigen). In stage B1, cancer is in one area of one lobe of the prostate. In stage B2, there is more cancer in one or both lobes of the prostate.

**stage C prostate cancer :** A prostate cancer stage defined by the Jewett staging system. Stage C prostate cancer is cancer that began in the prostate, has grown beyond the outer layer of the prostate to nearby tissues, and may be found in the seminal vesicles (glands that help produce semen). Stage C is divided into stages C1 and C2. In stage C1, the cancer has grown outside the prostate but has not spread to lymph nodes or other places in the body. In stage C2, the cancer has grown outside the prostate and blocks urine flow from the bladder or through the ureters.

**stage D prostate cancer :** A prostate cancer stage defined by the Jewett staging system. Stage D prostate cancer is cancer that began in the prostate and has spread to lymph nodes near or far from the prostate, or to other parts of the body, often to the bones. Stage D is divided into stages D0, D1, D2, and D3. In stage D0, the level of prostatic acid phosphatase (PAP) is high. In stage D1, the cancer has spread to local lymph nodes only. In stage

D2, the cancer has spread to distant lymph nodes and to bones or internal organs. In stage D3, prostate cancer has come back in patients who had received hormone therapy.

**stage I adrenocortical cancer :** The tumor is 5 centimeters or smaller and is found in the adrenal gland only.

**stage I adult Hodgkin lymphoma :** Stage I is divided into stages I and IE. In stage I, cancer is found in one of the following places in the lymph system: (1) one or more lymph nodes in one lymph node group; (2) Waldeyer's ring; (3) thymus; or (4) spleen. In stage IE, cancer is found outside the lymph system in one organ or area.

**stage I adult non-Hodgkin lymphoma :** Stage I is divided into stages I and IE. In stage I, cancer is found in one lymphatic area (lymph nodes, tonsils, thymus, or spleen). In stage IE, cancer is found in one organ or area outside the lymph nodes.

**stage I adult primary liver cancer :** There is one tumor and it has not spread to nearby blood vessels.

**stage I AIDS-related lymphoma :** Stage I is divided into stages I and IE. In stage I, cancer is found in one lymphatic area (lymph node group, tonsils and nearby tissue, thymus, or spleen). In stage IE, cancer is found in one organ or area outside the lymph nodes.

**stage I anal cancer :** The tumor is no larger than 2 centimeters.

**stage I bladder cancer :** Cancer has spread to the layer of connective tissue next to the inner lining of the bladder.

**stage I breast cancer :** Stage I is divided into stages IA and IB. In stage IA, the tumor is 2 centimeters or smaller. Cancer has not spread outside the breast. In stage IB, small clusters of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes and either: (1) no tumor is found in the breast; or (2) the tumor is 2 centimeters or smaller.

**stage I cancer of the uterus :** Cancer found in only the main part of the uterus, not the cervix.

**stage I cervical cancer :** Cancer is found in the cervix only. Stage I is divided into stages IA and IB, based on the amount of cancer that is found. In stage IA, a very small amount of cancer that can only be seen with a microscope is found in the tissues of the cervix. Stage IA is divided into

stages IA1 and IA2, based on the size of the tumor. In stage IA1, the cancer is not more than 3 millimeters deep and not more than 7 millimeters wide. In stage IA2, the cancer is more than 3 but not more than 5 millimeters deep, and not more than 7 millimeters wide. Stage IB is divided into stages IB1 and IB2, based on the size of the tumor. In stage IB1, (1) the cancer can only be seen with a microscope and is more than 5 millimeters deep and more than 7 millimeters wide; or (2) the cancer can be seen without a microscope and is not more than 4 centimeters. In stage IB2, the cancer can be seen without a microscope and is more than 4 centimeters.

**stage I childhood Hodgkin lymphoma :** Stage I is divided into stages I and IE. In stage I, cancer is found in one of the following places in the lymph system: (1) one or more lymph nodes in one lymph node group; (2) Waldeyer's ring; (3) thymus; or (4) spleen. In stage IE, cancer is found outside the lymph system in one organ or area.

**stage I childhood liver cancer :** The tumor was in the liver only and all of the cancer was removed by surgery.

**stage I childhood non-Hodgkin lymphoma :** Cancer is found (1) in one group of lymph nodes; or (2) in one area outside the lymph nodes. No cancer is found in the abdomen or mediastinum (area between the lungs).

**stage I chronic lymphocytic leukemia :** There are too many lymphocytes in the blood and the lymph nodes are larger than normal.

**stage I colorectal cancer :** Cancer has spread from the mucosa (innermost layer) of the colon and/or rectal wall to the submucosa (layer of tissue under the mucosa) of the colon and/or rectal wall. Cancer may have spread to the muscle layer of the colon and/or rectal wall. Also called Dukes A colorectal cancer.

**stage I cutaneous T-cell lymphoma :** May be either of the following: (1) stage IA cancer affecting less than 10% of the skin's surface and appearing as red, dry, scaly patches; (2) stage IB cancer affecting 10% or more of the skin's surface and appearing as red, dry, scaly patches.

**stage I distal extrahepatic bile duct cancer :** Stage I is divided into stages IA and IB. In stage IA, cancer is found in the distal extrahepatic bile duct (where the bile duct empties into the small intestine) only. In stage IB, cancer has spread all the way through the wall of the distal bile duct.

**stage I endometrial cancer :** Cancer is found in the uterus only. Stage I is divided into stages IA and IB, based on how far the cancer has spread. In stage IA, cancer is in the endometrium only or less than halfway through the myometrium (muscle layer of the uterus). In stage IB, cancer has spread halfway or more into the myometrium.

**stage I esophageal adenocarcinoma :** Stage I is divided into stages IA and IB, depending on where the cancer is found. In stage IA, cancer has formed in the mucosa or submucosa layer of the esophagus wall. The cancer cells are grade 1 or 2. Grade 1 and 2 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 3 cancer cells. In stage IB, cancer has formed (1) in the mucosa or submucosa layer of the esophagus wall, and the cancer cells are grade 3. Grade 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 and 2 cancer cells; or (2) in the mucosa or submucosa layer and spread into the muscle layer of the esophagus wall, and the cancer cells are grade 1 or 2.

**stage I esophageal squamous cell carcinoma :** Stage I is divided into stages IA and IB, depending on where the cancer is found. In stage IA, cancer has formed in the mucosa or submucosa layer of the esophagus wall. The cancer cells are grade 1. Grade 1 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 2 and 3 cancer cells. In stage IB, cancer has formed (1) in the mucosa or submucosa layer of the esophagus wall, and the cancer cells are grade 2 and 3. Grade 2 and 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 cancer cells; or (2) in the mucosa or submucosa layer and spread into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 1. The tumor is in the lower esophagus or it is not known where the tumor is.

**stage I gallbladder cancer :** Cancer has spread beyond the inner (mucosal) layer to a layer of tissue with blood vessels or to the muscle layer.

**stage I gastric cancer :** Cancer has formed in the inside lining of the mucosa (innermost layer) of the stomach wall. Stage I is divided into stages IA and IB, depending on where the cancer has spread. In stage IA, cancer may have spread into the submucosa (layer of tissue next to the mucosa) of

the stomach wall. In stage IB, cancer (1) may have spread into the submucosa (layer of tissue next to the mucosa) of the stomach wall and is found in 1 or 2 lymph nodes near the tumor; or (2) has spread to the muscle layer of the stomach wall.

**stage I gestational trophoblastic neoplasia :** The tumor is in the uterus only.

**stage I hypopharyngeal cancer :** Cancer is found in one area of the hypopharynx only and/or the tumor is 2 centimeters or smaller.

**stage I intraocular melanoma of the ciliary body and choroid :** The tumor is in the choroid only and is size category 1 (not more than 12 millimeters wide and not more than 3 millimeters thick; or not more than 9 millimeters wide and 3.1 to 6 millimeters thick).

**stage I intraocular melanoma of the iris :** The tumor is in the iris only and is not more than one fourth the size of the iris.

**stage I kidney cancer :** The tumor is 7 centimeters or smaller and is found in the kidney only. Also called stage I renal cell cancer.

**stage I laryngeal cancer :** Cancer is found only in the area where it started. Stage I laryngeal cancer depends on where cancer is found in the larynx. If it started in the supraglottis, then cancer is in one area of the supraglottis only and the vocal cords can move normally. If it started in the glottis, then cancer is in one or both vocal cords and the vocal cords can move normally. If it started in the subglottis, then cancer is in the subglottis only.

**stage I lip and oral cavity cancer :** The tumor is 2 centimeters or smaller. Cancer has not spread to lymph nodes.

**stage I malignant mesothelioma :** Stage I is divided into stages IA and IB. In stage IA, cancer is found in one side of the chest in the lining of the chest wall and may also be found in the lining of the chest cavity between the lungs and/or the lining that covers the diaphragm. Cancer has not spread to the lining that covers the lung. In stage IB, cancer is found in one side of the chest in the lining of the chest wall and the lining that covers the lung. Cancer may also be found in the lining of the chest cavity between the lungs and/or the lining that covers the diaphragm.

**stage I maxillary sinus cancer :** Cancer has formed in the mucous membranes of the maxillary sinus.

**stage I melanoma :** Stage I is divided into stages IA and IB. In stage IA, the tumor is not more than 1 millimeter thick, with no ulceration (a break in the skin). In stage IB, (1) the tumor is not more than 1 millimeter thick and it has ulceration; or (2) the tumor is more than 1 but not more than 2 millimeters thick, with no ulceration.

**stage I Merkel cell carcinoma :** Stage I Merkel cell carcinoma is divided into stages IA and IB. In stage IA, the tumor is 2 centimeters or smaller at its widest point and no cancer is found when the lymph nodes are checked under a microscope. In stage IB, the tumor is 2 centimeters or smaller at its widest point and no swollen lymph nodes are found by a physical exam or imaging tests.

**stage I multiple myeloma :** Relatively few cancer cells have spread throughout the body. There may be no symptoms of disease.

**stage I mycosis fungoides :** Stage I is divided into stages IA and IB. In stage IA, less than 10% of the skin surface is covered with patches, papules, and/or plaques. In stage IB, 10% or more of the skin surface is covered with patches, papules, and/or plaques. In stages IA and IB, there may be abnormal lymphocytes in the blood but they are not cancerous.

**stage I nasal cavity and ethmoid sinus cancer :** Cancer is found in only one area (of either the nasal cavity or the ethmoid sinus) and may have spread into bone.

**stage I nasopharyngeal cancer :** Cancer (1) is found in the nasopharynx only; or (2) has spread from the nasopharynx to the oropharynx (the middle part of the throat, including the soft palate, base of the tongue, and tonsils) and/or to the nasal cavity.

**stage I nonmelanoma skin cancer :** The tumor is not larger than 2 centimeters at its widest point and may have one of the following high-risk features: (1) is thicker than 2 millimeters; (2) has spread into the lower layer of the dermis or into the layer of fat below the skin; (3) has grown and spread along nerve pathways; (4) began on an ear or on a lip that has hair on it; or (5) has cells that look very different from normal cells under a microscope.

**stage I nonmelanoma skin cancer on the eyelid :** Stage I is divided into stages IA, IB, and IC. In stage IA, the tumor is 5 millimeters or smaller and has not spread to the connective tissue of the eyelid or to the edge of the eyelid where the lashes are. In stage IB, the tumor is larger than 5

millimeters but not larger than 10 millimeters or has spread to the connective tissue of the eyelid or to the edge of the eyelid where the lashes are. In stage IC, the tumor is larger than 10 millimeters but not larger than 20 millimeters or has spread through the full thickness of the eyelid.

**stage I oropharyngeal cancer :** Cancer is 2 centimeters or smaller and is found in the oropharynx only.

**stage I ovarian epithelial and fallopian tube cancer :** Cancer is found in one or both ovaries or fallopian tubes. Stage I is divided into stages IA, IB, and IC. In stage IA, cancer is found inside a single ovary or fallopian tube. In stage IB, cancer is found inside both ovaries or fallopian tubes. In stage IC, cancer is found inside one or both ovaries or fallopian tubes and one of the following is true: (1) cancer is also found on the outside surface of one or both ovaries or fallopian tubes; or (2) the capsule (outer covering) of the ovary has ruptured (broken open); or (3) cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

**stage I ovarian germ cell tumor :** Cancer is found in one or both ovaries. Stage I is divided into stages IA, IB, and IC. In stage IA, cancer is found inside a single ovary. In stage IB, cancer is found inside both ovaries. In stage IC, cancer is found inside one or both ovaries and one of the following is true: (1) cancer is also found on the outside surface of one or both ovaries; or (2) the capsule (outer covering) of the ovary has ruptured (broken open); or (3) cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

**stage I ovarian low malignant potential tumor :** The tumor is found in one or both ovaries. Stage I is divided into stages IA, IB, and IC. In stage IA, the tumor is found inside a single ovary. In stage IB, the tumor is found inside both ovaries. In stage IC, the tumor is found inside one or both ovaries and one of the following is true: (1) tumor cells are found on the outside surface of one or both ovaries; or (2) the capsule (outer covering) of the ovary has ruptured (broken open); or (3) tumor cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

**stage I pancreatic cancer :** Cancer is found in the pancreas only. Stage I is divided into stage IA and stage IB based on tumor size. In stage IA, the tumor is no larger than 2 centimeters and in stage IB, the tumor is larger than 2 centimeters.

**stage I penile cancer :** Cancer has spread to connective tissue just under the skin of the penis. The tumor cells look a lot like normal cells under a microscope.

**stage I perihilar extrahepatic bile duct cancer :** Cancer has formed in the innermost layer of the wall of the perihilar extrahepatic bile duct (where the bile duct leaves the liver) and has spread into the muscle and fibrous tissue of the wall.

**stage I prostate cancer :** Cancer is found in the prostate only. The cancer (1) is found by needle biopsy or in a small amount of tissue during surgery for other reasons; the prostate-specific antigen (PSA) level is lower than 10 and the Gleason score is 6 or lower; or (2) is found in one-half or less of one lobe of the prostate; the PSA level is lower than 10 and the Gleason score is 6 or lower; or (3) cannot be felt during a digital rectal exam and is not visible by imaging; cancer is found in one-half or less of one lobe of the prostate and the PSA level and Gleason score are not known.

**stage I renal cell cancer :** The tumor is 7 centimeters or smaller and is found in the kidney only. Also called stage I kidney cancer.

**stage I salivary gland cancer :** Cancer that is 2 centimeters or less in diameter and has not spread outside the salivary gland.

**stage I soft tissue sarcoma :** Stage I is divided into stages IA and IB. In stage IA, the tumor is low-grade (likely to grow and spread slowly) and 5 centimeters or smaller. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue). In stage IB, the tumor is low-grade (likely to grow and spread slowly) and larger than 5 centimeters. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue).

**stage I testicular cancer :** Stage I is divided into stage IA, stage IB, and stage IS, and is determined after a radical inguinal orchiectomy (surgery to remove the testicle) is done. In stage IA, cancer is in the testicle and epididymis and may have spread to the inner layer of the membrane

surrounding the testicle; all tumor marker levels are normal. In stage IB, cancer is in the testicle and the epididymis and has spread to the blood or lymph vessels in the testicle; or has spread to the outer layer of the membrane surrounding the testicle; or is in the spermatic cord or the scrotum and may be in the blood or lymph vessels of the testicle; all tumor marker levels are normal. In stage IS, cancer is found anywhere within the testicle, spermatic cord, or the scrotum, and either all tumor marker levels are slightly above normal or one or more tumor marker levels are moderately above normal or high.

**stage I thymoma :** Cancer is found only within the thymus. All cancer cells are inside the capsule (sac) that surrounds the thymus.

**stage I transitional cell cancer of the renal pelvis and ureter :** Cancer has spread through the lining of the renal pelvis and/or ureter, into the layer of connective tissue.

**stage I uterine sarcoma :** Cancer is found in the uterus only. Stage I is divided into stages IA and IB, based on how far the cancer has spread. In stage IA, cancer is in the endometrium only or less than halfway through the myometrium (muscle layer of the uterus). In stage IB, cancer has spread halfway or more into the myometrium.

**stage I vaginal cancer :** Cancer is found in the vaginal wall only.

**stage I vulvar cancer :** The tumor is found only in the vulva or perineum (area between the rectum and the vagina). Stage I is divided into stages IA and IB. In stage IA, the tumor is 2 centimeters or smaller and has spread 1 millimeter or less into the tissue of the vulva. Cancer has not spread to the lymph nodes. In stage IB, the tumor is larger than 2 centimeters or has spread more than 1 millimeter into the tissue of the vulva. Cancer has not spread to the lymph nodes.

**stage I Wilms tumor :** The tumor was completely removed by surgery and all of the following are true: (1) cancer was found only in the kidney and did not spread to blood vessels of the kidney; (2) the outer layer of the kidney did not break open; (3) the tumor did not break open; (4) a biopsy of the tumor was not done; and (5) no cancer cells were found at the edges of the area where the tumor was removed.

**stage IA breast cancer :** Stage I is divided into stages IA and IB. In stage IA, the tumor is 2 centimeters or smaller. Cancer has not spread outside the breast.

**stage IA esophageal adenocarcinoma :** Stage I is divided into stages IA and IB, depending on where the cancer is found. In stage IA, cancer has formed in the mucosa or submucosa layer of the esophagus wall. The cancer cells are grade 1 or 2. Grade 1 and 2 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 3 cancer cells.

**stage IA esophageal squamous cell carcinoma :** Stage I is divided into stages IA and IB, depending on where the cancer is found. In stage IA, cancer has formed in the mucosa or submucosa layer of the esophagus wall. The cancer cells are grade 1. Grade 1 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 2 and 3 cancer cells.

**stage IA non-small cell lung cancer :** Stage I non-small cell lung cancer is divided into stages IA and IB. In stage IA, the tumor is in the lung only and is 3 centimeters or smaller.

**stage IA soft tissue sarcoma :** Stage I is divided into stages IA and IB. In stage IA, the tumor is low-grade (likely to grow and spread slowly) and 5 centimeters or smaller. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue).

**stage IB breast cancer :** Stage I is divided into stages IA and IB. In stage IB, small clusters of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes and either: (1) no tumor is found in the breast; or (2) the tumor is 2 centimeters or smaller.

**stage IB esophageal adenocarcinoma :** Stage I is divided into stages IA and IB, depending on where the cancer is found. In stage IB, cancer has formed (1) in the mucosa or submucosa layer of the esophagus wall, and the cancer cells are grade 3. Grade 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 and 2 cancer cells; or (2) in the mucosa or submucosa layer and spread into the muscle layer of the esophagus wall, and the cancer cells are grade 1 or 2. Grade 1 and 2 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 3 cancer cells.

**stage IB esophageal squamous cell carcinoma :** Stage I is divided into stages IA and IB, depending on where the cancer is found. In stage IB, cancer has formed (1) in the mucosa or submucosa layer of the esophagus

wall, and the cancer cells are grade 2 and 3. Grade 2 and 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 cancer cells; or (2) in the mucosa or submucosa layer and spread into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 1. Grade 1 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 2 and 3 cancer cells. The tumor is in the lower esophagus or it is not known where the tumor is.

**stage IB non-small cell lung cancer :** Stage I non-small cell lung cancer is divided into stages IA and IB. In stage IB, cancer has not spread to the lymph nodes and one or more of the following is true: (1) the tumor is larger than 3 centimeters but not larger than 5 centimeters; (2) cancer has spread to the main bronchus and is at least 2 centimeters below where the trachea joins the bronchus; (3) cancer has spread to the innermost layer of the membrane that covers the lung; and/or (4) part of the lung has collapsed or become inflamed.

**stage IB soft tissue sarcoma :** Stage I is divided into stages IA and IB. In stage IB, the tumor is low-grade (likely to grow and spread slowly) and larger than 5 centimeters. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue).

**stage II adrenocortical cancer :** The tumor is larger than 5 centimeters and is found in the adrenal gland only.

**stage II adult Hodgkin lymphoma :** Stage II is divided into stages II and IIE. In stage II, cancer is found in two or more lymph node groups either above or below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen). In stage IIE, cancer is found in one or more lymph node groups either above or below the diaphragm and outside the lymph nodes in a nearby organ or area.

**stage II adult non-Hodgkin lymphoma :** Stage II is divided into stages II and IIE. In stage II, cancer is found in two or more lymph node groups, and both are either above or below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen). In stage IIE, cancer is found in one or more lymph node groups either above or below the diaphragm and outside the lymph nodes in an organ or area on the same side of the diaphragm as the lymph nodes with cancer.

**stage II adult primary liver cancer :** There is either (1) one tumor that has spread to nearby blood vessels; or (2) there is more than one tumor, none of which is larger than 5 centimeters.

**stage II AIDS-related lymphoma :** Stage II is divided into stages IIA and IIE. In stage IIA, cancer is found in two or more lymph node groups either above or below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen). In stage IIE, cancer is found in one or more lymph node groups either above or below the diaphragm. Cancer is also found outside the lymph nodes in one organ or area on the same side of the diaphragm as the affected lymph nodes.

**stage II anal cancer :** The tumor is larger than 2 centimeters.

**stage II bladder cancer :** Cancer has spread to the layers of muscle tissue of the bladder.

**stage II breast cancer :** Stage II is divided into stages IIA and IIB. In stage IIA, (1) no tumor is found in the breast or the tumor is 2 centimeters or smaller. Cancer (larger than 2 millimeters) is found in 1 to 3 axillary lymph nodes or in the lymph nodes near the breastbone (found during a sentinel lymph node biopsy); or (2) the tumor is larger than 2 centimeters but not larger than 5 centimeters. Cancer has not spread to the lymph nodes. In stage IIB, the tumor is (1) larger than 2 centimeters but not larger than 5 centimeters. Small clusters of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes; or (2) larger than 2 centimeters but not larger than 5 centimeters. Cancer has spread to 1 to 3 axillary lymph nodes or to the lymph nodes near the breastbone (found during a sentinel lymph node biopsy); or (3) larger than 5 centimeters. Cancer has not spread to the lymph nodes.

**stage II cancer of the uterus :** Cancer that has spread to the cervix.

**stage II cervical cancer :** Cancer has spread beyond the uterus but not onto the pelvic wall (the tissues that line the part of the body between the hips) or to the lower third of the vagina. Stage II is divided into stages IIA and IIB, based on how far the cancer has spread. In stage IIA, cancer has spread beyond the cervix to the upper two thirds of the vagina but not to tissues around the uterus. Stage IIA is divided into stages IIA1 and IIA2, based on the size of the tumor. In stage IIA1, the tumor can be seen without a microscope and is not more than 4 centimeters. In stage IIA2, the tumor can be seen without a microscope and is more than 4 centimeters. In stage

IIB, cancer has spread beyond the cervix to the tissues around the uterus but not onto the pelvic wall.

**stage II childhood Hodgkin lymphoma :** Stage II is divided into stages IIA and IIE. In stage IIA, cancer is found in two or more lymph node groups either above or below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen). In stage IIE, cancer is found in one or more lymph node groups either above or below the diaphragm and outside the lymph nodes in a nearby organ or area.

**stage II childhood liver cancer :** The tumor was in the liver only. After the cancer was removed by surgery, a small amount of cancer remains that can only be seen with a microscope.

**stage II childhood non-Hodgkin lymphoma :** Cancer is found (1) in one area outside the lymph nodes and in nearby lymph nodes; or (2) in two or more areas above or below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen), and may or may not have spread to nearby lymph nodes; or (3) to have started in the stomach or intestines and can be completely removed by surgery. Cancer may or may not have spread to certain nearby lymph nodes.

**stage II chronic lymphocytic leukemia :** There are too many lymphocytes in the blood, the liver or spleen is larger than normal, and the lymph nodes may be larger than normal.

**stage II colorectal cancer :** Stage II colorectal cancer is divided into stage IIA, stage IIB, and stage IIC. In stage IIA, cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa (outermost layer) of the colon and/or rectal wall. In stage IIB, cancer has spread through the serosa of the colon and/or rectal wall but has not spread to nearby organs. In stage IIC, cancer has spread through the serosa of the colon and/or rectal wall to nearby organs. Also called Dukes B colorectal cancer.

**stage II cutaneous T-cell lymphoma :** Stage II cutaneous T-cell lymphoma may be either of the following: (1) stage IIA, in which the skin has red, dry, scaly patches but no tumors, and lymph nodes are enlarged but do not contain cancer cells; (2) stage IIB, in which tumors are found on the skin, and lymph nodes are enlarged but do not contain cancer cells.

**stage II distal extrahepatic bile duct cancer :** Stage II is divided into stages IIA and IIB. In stage IIA, cancer has spread from the distal extrahepatic bile duct (where the bile duct empties into the small intestine)

to the gallbladder, pancreas, small intestine, or other nearby organs. In stage IIB, cancer has spread from the distal extrahepatic bile duct to nearby lymph nodes. Cancer may have spread through the wall of the distal extrahepatic bile duct or to the gallbladder, pancreas, small intestine, or other nearby organs.

**stage II endometrial cancer :** Cancer has spread into connective tissue of the cervix, but has not spread outside the uterus.

**stage II esophageal adenocarcinoma :** Stage II is divided into stages IIA and IIB, depending on where the cancer has spread. In stage IIA, cancer has spread into the muscle layer of the esophagus wall. The cancer cells are grade 3. Grade 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 and 2 cancer cells. In stage IIB, cancer (1) has spread into the connective tissue layer of the esophagus wall; or (2) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall. Cancer is found in 1 or 2 lymph nodes near the tumor.

**stage II esophageal squamous cell carcinoma :** Stage II is divided into stages IIA and IIB, depending on where the cancer has spread. In stage IIA, cancer has spread (1) into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 1. Grade 1 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 2 and 3 cancer cells. The tumor is in either the upper or middle esophagus; or (2) into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 2 and 3. Grade 2 and 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 cancer cells. The tumor is in the lower esophagus or it is not known where the tumor is. In stage IIB, cancer (1) has spread into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 2 and 3. The tumor is in either the upper or middle esophagus; or (2) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall. Cancer is found in 1 or 2 lymph nodes near the tumor.

**stage II gallbladder cancer :** Cancer has spread beyond the muscle layer to the connective tissue around the muscle.

**stage II gastric cancer :** Stage II is divided into stages IIA and IIB, depending on where the cancer has spread. In stage IIA, cancer (1) has

spread to the subserosa (layer of tissue next to the serosa) of the stomach wall; or (2) has spread to the muscle layer of the stomach wall and is found in 1 or 2 lymph nodes near the tumor; or (3) may have spread to the submucosa (layer of tissue next to the mucosa) of the stomach wall and is found in 3 to 6 lymph nodes near the tumor. In stage IIB, cancer (1) has spread to the serosa (outermost layer) of the stomach wall; or (2) has spread to the subserosa (layer of tissue next to the serosa) of the stomach wall and is found in 1 or 2 lymph nodes near the tumor; or (3) has spread to the muscle layer of the stomach wall and is found in 3 to 6 lymph nodes near the tumor; or (4) may have spread to the submucosa (layer of tissue next to the mucosa) of the stomach wall and is found in 7 or more lymph nodes near the tumor.

**stage II gestational trophoblastic neoplasia :** Cancer has spread outside of the uterus to the ovary, fallopian tube, vagina, and/or the ligaments that support the uterus.

**stage II hypopharyngeal cancer :** The tumor is either (1) larger than 2 centimeters but not larger than 4 centimeters and has not spread to the larynx (voice box); or (2) found in more than one area of the hypopharynx or in nearby tissues.

**stage II intraocular melanoma of the iris :** Stage II is divided into stages IIA and IIB. In stage IIA, the tumor (1) is in the iris only and is more than one fourth the size of the iris; or (2) is in the iris only and has caused glaucoma; or (3) has spread next to and/or into the ciliary body, choroid, or both. The tumor has caused glaucoma. In stage IIB, the tumor has spread next to and/or into the ciliary body, choroid, or both, and has also spread into the sclera. The tumor has caused glaucoma.

**stage II kidney cancer :** The tumor is larger than 7 centimeters and is found in the kidney only. Also called stage II renal cell cancer.

**stage II laryngeal cancer :** Stage II depends on where the cancer started. If it started in the supraglottis, then cancer is in more than one area of the supraglottis or surrounding tissue. If it started in the glottis, then cancer has spread to the supraglottis and/or the subglottis, and/or the vocal cords cannot move normally. If it started in the subglottis, then cancer has spread to one or both vocal cords, which may not move normally.

**stage II lip and oral cavity cancer :** The tumor is larger than 2 centimeters but not larger than 4 centimeters, and cancer has not spread to

lymph nodes.

**stage II malignant mesothelioma :** Cancer is found in one side of the chest in the lining of the chest wall, the lining of the chest cavity between the lungs, the lining that covers the diaphragm, and the lining that covers the lung. Also, cancer has spread into the diaphragm muscle and/or the lung.

**stage II maxillary sinus cancer :** Cancer has spread to bone around the maxillary sinus, including the roof of the mouth and the nose, but not to bone at the back of the maxillary sinus or the base of the skull.

**stage II melanoma :** Stage II is divided into stages IIA, IIB, and IIC. In stage IIA, (1) the tumor is more than 1 but not more than 2 millimeters thick, with ulceration (a break in the skin); or (2) more than 2 but not more than 4 millimeters thick, with no ulceration. In stage IIB, (1) the tumor is either more than 2 but not more than 4 millimeters thick, with ulceration; or (2) more than 4 millimeters thick, with no ulceration. In stage IIC, the tumor is more than 4 millimeters thick, with ulceration.

**stage II Merkel cell carcinoma :** Stage II Merkel cell carcinoma is divided into stages IIA, IIB, and IIC. In stage IIA, the tumor is larger than 2 centimeters and no cancer is found when the lymph nodes are checked under a microscope. In stage IIB, the tumor is larger than 2 centimeters and no swollen lymph nodes are found by a physical exam or imaging tests. In stage IIC, the tumor may be any size and has spread to nearby bone, muscle, connective tissue, or cartilage. It has not spread to lymph nodes or distant parts of the body.

**stage II multiple myeloma :** Cancer in which a moderate number of cancer cells have spread throughout the body.

**stage II mycosis fungoides :** Stage II is divided into stages IIA and IIB. In stage IIA, any amount of the skin surface is covered with patches, papules, and/or plaques. Lymph nodes are enlarged but cancer has not spread to them. In stage IIB, one or more tumors that are 1 centimeter or larger are found on the skin. Lymph nodes may be enlarged but cancer has not spread to them. In stages IIA and IIB, there may be abnormal lymphocytes in the blood but they are not cancerous.

**stage II nasal cavity and ethmoid sinus cancer :** Cancer is found in two areas (of either the nasal cavity or the ethmoid sinus) that are near each

other or has spread to an area next to the sinuses. Cancer may also have spread into bone.

**stage II nasopharyngeal cancer :** Cancer (1) is found in the nasopharynx only or has spread from the nasopharynx to the oropharynx (the middle part of the throat, including the soft palate, base of the tongue, and tonsils) and/or to the nasal cavity. Cancer has spread to one or more lymph nodes on one side of the neck and/or to lymph nodes behind the pharynx, and the affected lymph nodes are 6 centimeters or smaller; or (2) is found in the parapharyngeal space (area near the pharynx, between the base of the skull and the lower jaw). Cancer may have spread to one or more lymph nodes on one side of the neck and/or to lymph nodes behind the pharynx, and the affected lymph nodes are 6 centimeters or smaller.

**stage II nonmelanoma skin cancer :** The tumor is larger than 2 centimeters at its widest point; or the tumor is any size and has two or more of the following high-risk features: (1) is thicker than 2 millimeters; (2) has spread into the lower layer of the dermis or into the layer of fat below the skin; (3) has grown and spread along nerve pathways; (4) began on an ear or on a lip that has hair on it; or (5) has cells that look very different from normal cells under a microscope.

**stage II nonmelanoma skin cancer on the eyelid :** The tumor (1) is larger than 20 millimeters; or (2) has spread to nearby parts of the eye or eye socket; or (3) has spread to spaces around the nerves in the eyelid.

**stage II oropharyngeal cancer :** Cancer is larger than 2 centimeters but not larger than 4 centimeters and is found in the oropharynx only.

**stage II ovarian epithelial, fallopian tube, and primary peritoneal cancer :** Cancer is found in one or both ovaries or fallopian tubes and has spread into other areas of the pelvis, or primary peritoneal cancer is found within the pelvis. Stage II is divided into stages IIA and IIB. In stage IIA, cancer has spread from where it first formed to the uterus and/or the fallopian tubes and/or the ovaries. In stage IIB, cancer has spread from the ovary or fallopian tube to organs in the peritoneal cavity (the body cavity that contains most of the organs in the abdomen).

**stage II ovarian germ cell tumor :** Cancer is found in one or both ovaries and has spread into other areas of the pelvis. Stage II is divided into stages IIA, IIB, and IIC. In stage IIA, cancer has spread to the uterus and/or fallopian tubes (the long slender tubes through which eggs pass from the

ovaries to the uterus). In stage IIB, cancer has spread to other tissue within the pelvis. In stage IIC, cancer is found inside one or both ovaries and has spread to the uterus and/or fallopian tubes, or to other tissue within the pelvis. Also, one of the following is true: (1) cancer is found on the outside surface of one or both ovaries; or (2) the capsule (outer covering) of the ovary has ruptured (broken open); or (3) cancer cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

**stage II ovarian low malignant potential tumor :** The tumor is found in one or both ovaries and has spread into other areas of the pelvis. Stage II is divided into stages IIA, IIB, and IIC. In stage IIA, the tumor has spread to the uterus and/or fallopian tubes (the long slender tubes through which eggs pass from the ovaries to the uterus). In stage IIB, the tumor has spread to other tissue within the pelvis. In stage IIC, the tumor is found inside one or both ovaries and has spread to the uterus and/or fallopian tubes, or to other tissue within the pelvis. Also, one of the following is true: (1) tumor cells are found on the outside surface of one or both ovaries; or (2) the capsule (outer covering) of the ovary has ruptured (broken open); or (3) tumor cells are found in the fluid of the peritoneal cavity (the body cavity that contains most of the organs in the abdomen) or in washings of the peritoneum (tissue lining the peritoneal cavity).

**stage II pancreatic cancer :** Stage II is divided into stages IIA and IIB, based on where the cancer has spread. In stage IIA, cancer has spread to nearby tissue and organs but has not spread to nearby lymph nodes. In stage IIB, cancer has spread to nearby lymph nodes and may have spread to nearby tissue and organs.

**stage II penile cancer :** Cancer has spread (1) to connective tissue just under the skin of the penis; cancer has spread to lymph vessels or blood vessels, or the tumor cells may look very different from normal cells under a microscope; or (2) through connective tissue to erectile tissue (spongy tissue that fills with blood to make an erection); or (3) beyond erectile tissue to the urethra.

**stage II perihilar extrahepatic bile duct cancer :** Cancer has spread through the wall of the perihilar extrahepatic bile duct (where the bile duct leaves the liver) to nearby fatty tissue or to the liver.

**stage II prostate cancer :** Stage II is divided into stages IIA and IIB. In stage IIA, cancer is found (1) by needle biopsy or in a small amount of tissue during surgery for other reasons; the prostate-specific antigen (PSA) level is lower than 20 and the Gleason score is 7; or (2) by needle biopsy or in a small amount of tissue during surgery for other reasons; the PSA level is at least 10 but lower than 20 and the Gleason score is 6 or lower; or (3) in one-half or less of one lobe of the prostate; the PSA level is at least 10 but lower than 20 and the Gleason score is 6 or lower; or (4) in one-half or less of one lobe of the prostate; the PSA level is lower than 20 and the Gleason score is 7; or (5) in more than one-half of one lobe of the prostate; the PSA level is lower than 20 and the Gleason score is 7 or lower; or (6) in more than one-half of one lobe of the prostate, and the PSA level and Gleason score are not known. In stage IIB, cancer (1) is found in opposite sides of the prostate; the PSA can be any level and the Gleason score can range from 2 to 10; or (2) cannot be felt during a digital rectal exam and is not visible by imaging, and the tumor has not spread outside the prostate; the PSA level is 20 or higher and the Gleason score can range from 2 to 10; or (3) cannot be felt during a digital rectal exam and is not visible by imaging, and the tumor has not spread outside the prostate; the PSA can be any level and the Gleason score is 8 or higher.

**stage II renal cell cancer :** The tumor is larger than 7 centimeters and is found in the kidney only. Also called stage II kidney cancer.

**stage II salivary gland cancer :** Cancer that is larger than 2 centimeters but not larger than 4 centimeters in diameter and has not spread outside the salivary gland.

**stage II soft tissue sarcoma :** Stage II is divided into stages IIA and IIB. In stage IIA, the tumor is mid-grade (somewhat likely to grow and spread quickly) or high-grade (likely to grow and spread quickly) and 5 centimeters or smaller. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue). In stage IIB, the tumor is mid-grade (somewhat likely to grow and spread quickly) and larger than 5 centimeters. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue).

**stage II testicular cancer :** Stage II is divided into stage IIA, stage IIB, and stage IIC, and is determined after a radical inguinal orchiectomy (surgery to remove the testicle) is done. In stage IIA, cancer is anywhere within the testicle, spermatic cord, or scrotum; and has spread to up to 5 lymph nodes in the abdomen (none larger than 2 centimeters); all tumor marker levels are normal or slightly above normal. In stage IIB, cancer is anywhere within the testicle, spermatic cord, or scrotum; and has spread to up to 5 lymph nodes in the abdomen (at least one of the lymph nodes is larger than 2 centimeters, but none is larger than 5 centimeters), or has spread to more than 5 lymph nodes (the lymph nodes are not larger than 5 centimeters); all tumor marker levels are normal or slightly above normal. In stage IIC, cancer is anywhere within the testicle, spermatic cord, or scrotum; and has spread to a lymph node in the abdomen that is larger than 5 centimeters; all tumor marker levels are normal or slightly above normal.

**stage II thymoma :** Cancer has spread through the capsule (sac) that surrounds the thymus and into the fat around the thymus or into the lining of the chest cavity.

**stage II transitional cell cancer of the renal pelvis and ureter :** Cancer has spread through the layer of connective tissue to the muscle layer of the renal pelvis and/or ureter.

**stage II uterine sarcoma :** Cancer has spread into connective tissue of the cervix, but has not spread outside the uterus.

**stage II vaginal cancer :** Cancer has spread through the wall of the vagina to the tissue around the vagina. Cancer has not spread to the wall of the pelvis.

**stage II vulvar cancer :** The tumor may be any size and has spread into the lower part of the urethra, the lower part of the vagina, or the anus. Cancer has not spread to the lymph nodes.

**stage II Wilms tumor :** Cancer spread out of the kidney to nearby soft tissue or to blood vessels of the kidney and was completely removed by surgery. No cancer cells were found at the edges of the area where the cancer was removed.

**stage IIA breast cancer :** Stage II is divided into stages IIA and IIB. In stage IIA, (1) no tumor is found in the breast or the tumor is 2 centimeters or smaller. Cancer (larger than 2 millimeters) is found in 1 to 3 axillary lymph nodes or in the lymph nodes near the breastbone (found during a

sentinel lymph node biopsy); or (2) the tumor is larger than 2 centimeters but not larger than 5 centimeters. Cancer has not spread to the lymph nodes.

**stage IIA esophageal adenocarcinoma :** Stage II is divided into stages IIA and IIB, depending on where the cancer has spread. In stage IIA, cancer has spread into the muscle layer of the esophagus wall. The cancer cells are grade 3. Grade 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 and 2 cancer cells.

**stage IIA esophageal squamous cell carcinoma :** Stage II is divided into stages IIA and IIB, depending on where the cancer has spread. In stage IIA, cancer has spread (1) into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 1. Grade 1 cancer cells look more like normal cells under a microscope and grow and spread more slowly than grade 2 and 3 cancer cells. The tumor is in either the upper or middle esophagus; or (2) into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 2 and 3. Grade 2 and 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 cancer cells. The tumor is in the lower esophagus or it is not known where the tumor is.

**stage IIA intraocular melanoma of the ciliary body and choroid :** Stage II is divided into stages IIA and IIB. In stage IIA, the tumor (1) has spread to the ciliary body and is size category 1 (not more than 12 millimeters wide and not more than 3 millimeters thick; or not more than 9 millimeters wide and 3.1 to 6 millimeters thick); or (2) may have spread to the ciliary body and is size category 1. The tumor has spread through the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is not more than 5 millimeters thick; or (3) is in the choroid only and is size category 2 (12.1 to 18 millimeters wide and not more than 3 millimeters thick; or 9.1 to 15 millimeters wide and 3.1 to 6 millimeters thick; or not more than 12 millimeters wide and 6.1 to 9 millimeters thick).

**stage IIA non-small cell lung cancer :** Stage II non-small cell lung cancer is divided into stages IIA and IIB. In stage IIA, cancer has spread to lymph nodes on the same side of the chest as the tumor. Also, one or more of the following is true: (1) the tumor is not larger than 5 centimeters; (2) cancer has spread to the main bronchus and is at least 2 centimeters below where the trachea joins the bronchus; (3) cancer has spread to the innermost layer of the membrane that covers the lung; and/or (4) part of the lung has

collapsed or become inflamed. OR in stage IIA, cancer has not spread to lymph nodes and one or more of the following is true: (1) the tumor is larger than 5 centimeters but not larger than 7 centimeters; (2) cancer has spread to the main bronchus and is at least 2 centimeters below where the trachea joins the bronchus; (3) cancer has spread to the innermost layer of the membrane that covers the lung; and/or (4) part of the lung has collapsed or become inflamed.

**stage IIA soft tissue sarcoma :** Stage II is divided into stages IIA and IIB. In stage IIA, the tumor is mid-grade (somewhat likely to grow and spread quickly) or high-grade (likely to grow and spread quickly) and 5 centimeters or smaller. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue).

**stage IIB breast cancer :** Stage II is divided into stages IIA and IIB. In stage IIB, the tumor is (1) larger than 2 centimeters but not larger than 5 centimeters. Small clusters of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes; or (2) larger than 2 centimeters but not larger than 5 centimeters. Cancer has spread to 1 to 3 axillary lymph nodes or to the lymph nodes near the breastbone (found during a sentinel lymph node biopsy); or (3) larger than 5 centimeters. Cancer has not spread to the lymph nodes.

**stage IIB esophageal adenocarcinoma :** Stage II is divided into stages IIA and IIB, depending on where the cancer has spread. In stage IIB, cancer (1) has spread into the connective tissue layer of the esophagus wall; or (2) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall. Cancer is found in 1 or 2 lymph nodes near the tumor.

**stage IIB esophageal squamous cell carcinoma :** Stage II is divided into stages IIA and IIB, depending on where the cancer has spread. In stage IIB, cancer (1) has spread into the muscle layer or the connective tissue layer of the esophagus wall, and the cancer cells are grade 2 and 3. Grade 2 and 3 cancer cells look more abnormal under a microscope and grow and spread more quickly than grade 1 cancer cells. The tumor is in either the upper or middle esophagus; or (2) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall. Cancer is found in 1 or 2 lymph nodes near the tumor.

**stage IIB intraocular melanoma of the ciliary body and choroid :** Stage II is divided into stages IIA and IIB. In stage IIB, the tumor (1) has spread to the ciliary body and is size category 2 (12.1 to 18 millimeters wide and not more than 3 millimeters thick; or 9.1 to 15 millimeters wide and 3.1 to 6 millimeters thick; or not more than 12 millimeters wide and 6.1 to 9 millimeters thick); or (2) is in the choroid only and is size category 3 (15.1 to 18 millimeters wide and 3.1 to 6 millimeters thick; or 12.1 to 18 millimeters wide and 6.1 to 9 millimeters thick; or 3.1 to 18 millimeters wide and 9.1 to 12 millimeters thick; or 9.1 to 15 millimeters wide and 12.1 to 15 millimeters thick).

**stage IIB non-small cell lung cancer :** Stage II non-small cell lung cancer is divided into stages IIA and IIB. In stage IIB, cancer has spread to nearby lymph nodes on the same side of the chest as the tumor. Also, one or more of the following is true: (1) the tumor is larger than 5 centimeters but not larger than 7 centimeters; (2) cancer has spread to the main bronchus and is at least 2 centimeters below where the trachea joins the bronchus (3) cancer has spread to the innermost layer of the membrane that covers the lung; and/or (4) part of the lung has collapsed or become inflamed. OR in stage IIB, cancer has not spread to lymph nodes and one or more of the following is true: (1) the tumor is larger than 7 centimeters; (2) cancer has spread to the main bronchus (and is less than 2 centimeters below where the trachea joins the bronchus), the chest wall, the diaphragm, or the nerve that controls the diaphragm; (3) cancer has spread to the membrane around the heart or lining the chest wall; (4) the whole lung has collapsed or become inflamed; and/or (5) there are one or more separate tumors in the same lobe of the lung.

**stage IIB soft tissue sarcoma :** Stage II is divided into stages IIA and IIB. In stage IIB, the tumor is mid-grade (somewhat likely to grow and spread quickly) and larger than 5 centimeters. It may be either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue).

**stage III adrenocortical cancer :** The tumor can be any size and has spread to fat or lymph nodes near the adrenal gland.

**stage III adult Hodgkin lymphoma :** Stage III is divided into stages III, IIIE, IIIS, and IIIE,S. In stage III, cancer is found in lymph node groups above and below the diaphragm (the thin muscle below the lungs that helps

breathing and separates the chest from the abdomen). In stage IIIE, cancer is found in lymph node groups above and below the diaphragm and outside the lymph nodes in a nearby organ or area. In stage IIIS, cancer is found in lymph node groups above and below the diaphragm, and in the spleen. In stage IIIE,S, cancer is found in lymph node groups above and below the diaphragm, outside the lymph nodes in a nearby organ or area, and in the spleen.

**stage III adult non-Hodgkin lymphoma :** Stage III is divided into stages III, IIIE, IIIS, and IIIE+S. In stage III, cancer is found in one or more lymph node groups above and below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen). In stage IIIE, cancer is found in lymph node groups above and below the diaphragm and outside the lymph nodes in a nearby organ or area. In stage IIIS, cancer is found in lymph node groups above and below the diaphragm and in the spleen. In stage IIIE+S, cancer is found in lymph node groups above and below the diaphragm, outside the lymph nodes in a nearby organ or area, and in the spleen.

**stage III AIDS-related lymphoma :** Stage III is divided into stages III, IIIE, IIIS, and IIIE+S. In stage III, cancer is found in lymph node groups above and below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen). In stage IIIE, cancer is found in lymph node groups above and below the diaphragm and outside the lymph nodes in a nearby organ or area. In stage IIIS, cancer is found in lymph node groups above and below the diaphragm, and in the spleen. In stage IIIE+S, cancer is found in lymph node groups above and below the diaphragm, outside the lymph nodes in a nearby organ or area, and in the spleen.

**stage III anal cancer :** Stage III anal cancer is divided into stages IIIA and IIIB. In stage IIIA, the tumor may be any size and has spread to either (1) lymph nodes near the rectum; or (2) nearby organs, such as the vagina, urethra, and bladder. In stage IIIB, the tumor may be any size and has spread to (1) nearby organs and to lymph nodes near the rectum; or (2) lymph nodes on one side of the pelvis and/or groin, and may have spread to nearby organs; or (3) lymph nodes near the rectum and in the groin, and/or to lymph nodes on both sides of the pelvis and/or groin, and may have spread to nearby organs.

**stage III bladder cancer :** Cancer has spread from the bladder to the layer of fat surrounding it and may have spread to the reproductive organs (prostate, seminal vesicles, uterus, or vagina).

**stage III breast cancer :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, (1) no tumor is found in the breast or the tumor may be any size. Cancer is found in 4 to 9 axillary lymph nodes or in the lymph nodes near the breastbone (found during imaging tests or a physical exam); or (2) the tumor is larger than 5 centimeters. Small clusters of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes; or (3) the tumor is larger than 5 centimeters. Cancer has spread to 1 to 3 axillary lymph nodes or to the lymph nodes near the breastbone (found during a sentinel lymph node biopsy). In stage IIIB, the tumor may be any size and cancer has spread to the chest wall and/or to the skin of the breast and caused swelling or an ulcer. Also, cancer may have spread to: (1) up to 9 axillary lymph nodes; or (2) the lymph nodes near the breastbone. Cancer that has spread to the skin of the breast may also be inflammatory breast cancer. In stage IIIC, no tumor is found in the breast or the tumor may be any size. Cancer may have spread to the skin of the breast and caused swelling or an ulcer and/or has spread to the chest wall. Also, cancer has spread to: (1) 10 or more axillary lymph nodes; or (2) lymph nodes above or below the collarbone; or (3) axillary lymph nodes and lymph nodes near the breastbone. Cancer that has spread to the skin of the breast may also be inflammatory breast cancer. For treatment, stage IIIC breast cancer is divided into operable and inoperable stage IIIC.

**stage III cancer of the uterus :** Cancer cells have spread outside the uterus to the vagina and/or lymph nodes in the pelvis but have not spread outside the pelvis.

**stage III cervical cancer :** Cancer has spread to the lower third of the vagina, and/or onto the pelvic wall, and/or has caused kidney problems. Stage III is divided into stages IIIA and IIIB, based on how far the cancer has spread. In stage IIIA, cancer has spread to the lower third of the vagina but not onto the pelvic wall. In stage IIIB, (1) cancer has spread onto the pelvic wall; or (2) the tumor has become large enough to block one or both ureters (tubes that connect the kidneys to the bladder) and has caused one or both kidneys to get bigger or stop working.

**stage III childhood Hodgkin lymphoma :** Stage III is divided into stages III, IIIE, IIIS, and IIIE,S. In stage III, cancer is found in lymph node groups above and below the diaphragm (the thin muscle below the lungs that helps breathing and separates the chest from the abdomen). In stage IIIE, cancer is found in lymph node groups above and below the diaphragm and outside the lymph nodes in a nearby organ or area. In stage IIIS, cancer is found in lymph node groups above and below the diaphragm, and in the spleen. In stage IIIE,S, cancer is found in lymph node groups above and below the diaphragm, outside the lymph nodes in a nearby organ or area, and in the spleen.

**stage III childhood liver cancer :** The tumor cannot be removed by surgery; or cancer that can be seen without a microscope remains after surgery; or the cancer has spread to nearby lymph nodes.

**stage III childhood non-Hodgkin lymphoma :** Cancer is found (1) in at least one area above the diaphragm (the thin muscle below the lungs that helps with breathing and separates the chest from the abdomen) and in at least one area below the diaphragm; or (2) to have started in the chest; or (3) to have started in the abdomen and spread throughout the abdomen, and cannot be completely removed by surgery; or (4) in the area around the spine.

**stage III chronic lymphocytic leukemia :** There are too many lymphocytes in the blood and there are too few red blood cells. The lymph nodes, liver, or spleen may be larger than normal.

**stage III colorectal cancer :** Stage III colorectal cancer is divided into stage IIIA, stage IIIB, and stage IIIC. In stage IIIA, (1) cancer has spread through the mucosa (innermost layer) of the colon and/or rectal wall to the submucosa (layer of tissue under the mucosa) and may have spread to the muscle layer of the colon and/or rectal wall. Cancer has spread to at least one but not more than 3 nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes; or (2) cancer has spread through the mucosa of the colon and/or rectal wall to the submucosa. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes. In stage IIIB, (1) cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa (outermost layer) of the colon and/or rectal wall or has spread through the serosa but not to nearby organs. Cancer has spread to at least one but not more than 3 nearby lymph nodes, or cancer cells have formed in

tissues near the lymph nodes; or (2) cancer has spread to the muscle layer of the colon and/or rectal wall or to the serosa of the colon and/or rectal wall. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes; or (3) cancer has spread through the mucosa of the colon and/or rectal wall to the submucosa and may have spread to the muscle layer of the colon and/or rectal wall. Cancer has spread to 7 or more nearby lymph nodes. In stage IIIC, (1) cancer has spread through the serosa of the colon and/or rectal wall but has not spread to nearby organs. Cancer has spread to at least 4 but not more than 6 nearby lymph nodes; or (2) cancer has spread through the muscle layer of the colon and/or rectal wall to the serosa of the colon and/or rectal wall or has spread through the serosa but has not spread to nearby organs. Cancer has spread to 7 or more nearby lymph nodes; or (3) cancer has spread through the serosa of the colon and/or rectal wall and has spread to nearby organs. Cancer has spread to one or more nearby lymph nodes, or cancer cells have formed in tissues near the lymph nodes. Also called Dukes C colorectal cancer.

**stage III cutaneous T-cell lymphoma :** Nearly all of the skin is red, dry, and scaly; lymph nodes are either normal or enlarged but do not contain cancer cells.

**stage III distal extrahepatic bile duct cancer :** Cancer has spread to the large vessels that carry blood to the organs in the abdomen. Cancer may have spread to nearby lymph nodes.

**stage III endometrial cancer :** Cancer has spread beyond the uterus and cervix, but has not spread beyond the pelvis. Stage III is divided into stages IIIA, IIIB, and IIIC, based on how far the cancer has spread within the pelvis. In stage IIIA, cancer has spread to the outer layer of the uterus and/or to the fallopian tubes, ovaries, and ligaments of the uterus. In stage IIIB, cancer has spread to the vagina or to the parametrium (connective tissue and fat around the uterus). In stage IIIC, cancer has spread to lymph nodes in the pelvis and/or around the aorta (largest artery in the body, which carries blood away from the heart).

**stage III esophageal adenocarcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIA, cancer (1) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall, and cancer is found in 3 to 6 lymph nodes near the tumor; or (2) has spread into the connective tissue

layer of the esophagus wall, and cancer is found in 1 or 2 lymph nodes near the tumor; or (3) has spread into the diaphragm, pleura (tissue that covers the lungs and lines the inner wall of the chest cavity), or sac around the heart. The cancer can be removed by surgery. In stage IIIB, cancer has spread into the connective tissue layer of the esophagus wall. Cancer is found in 3 to 6 lymph nodes near the tumor. In stage IIIC, cancer has spread (1) into the diaphragm, pleura, or sac around the heart. The cancer can be removed by surgery. Cancer is found in 1 to 6 lymph nodes near the tumor; or (2) into other nearby organs, such as the aorta, trachea, or spine, and the cancer cannot be removed by surgery; or (3) to 7 or more lymph nodes near the tumor.

**stage III esophageal squamous cell carcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIA, cancer (1) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall, and cancer is found in 3 to 6 lymph nodes near the tumor; or (2) has spread into the connective tissue layer of the esophagus wall, and cancer is found in 1 or 2 lymph nodes near the tumor; or (3) has spread into the diaphragm, pleura (tissue that covers the lungs and lines the inner wall of the chest cavity), or sac around the heart. The cancer can be removed by surgery. In stage IIIB, cancer has spread into the connective tissue layer of the esophagus wall. Cancer is found in 3 to 6 lymph nodes near the tumor. In stage IIIC, cancer has spread (1) into the diaphragm, pleura, or sac around the heart. The cancer can be removed by surgery. Cancer is found in 1 to 6 lymph nodes near the tumor; or (2) into other nearby organs, such as the aorta, trachea, or spine, and the cancer cannot be removed by surgery; or (3) to 7 or more lymph nodes near the tumor.

**stage III gallbladder cancer :** Stage III gallbladder cancer is divided into stages IIIA and IIIB. In stage IIIA, cancer has spread through the thin layers of tissue that cover the gallbladder and/or to the liver and/or to one nearby organ (such as the stomach, small intestine, colon, pancreas, or bile ducts outside the liver). In stage IIIB, cancer has spread to nearby lymph nodes and (1) beyond the inner layer of the gallbladder to a layer of tissue with blood vessels or to the muscle layer; or (2) beyond the muscle layer to the connective tissue around the muscle; or (3) through the thin layers of tissue that cover the gallbladder and/or to the liver and/or to one nearby organ

(such as the stomach, small intestine, colon, pancreas, or bile ducts outside the liver).

**stage III gastric cancer :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIA, cancer has spread to (1) the serosa (outermost) layer of the stomach wall and is found in 1 or 2 lymph nodes near the tumor; or (2) the subserosa (layer of tissue next to the serosa) of the stomach wall and is found in 3 to 6 lymph nodes near the tumor; or (3) the muscle layer of the stomach wall and is found in 7 or more lymph nodes near the tumor. In stage IIIB, cancer has spread to (1) nearby organs such as the spleen, transverse colon, liver, diaphragm, pancreas, kidney, adrenal gland, or small intestine, and may be found in 1 or 2 lymph nodes near the tumor; or (2) the serosa (outermost layer) of the stomach wall and is found in 3 to 6 lymph nodes near the tumor; or (3) the subserosa (layer of tissue next to the serosa) of the stomach wall and is found in 7 or more lymph nodes near the tumor. In stage IIIC, cancer has spread to (1) nearby organs such as the spleen, transverse colon, liver, diaphragm, pancreas, kidney, adrenal gland, or small intestine, and may be found in 3 or more lymph nodes near the tumor; or (2) the serosa (outermost layer) of the stomach wall and is found in 7 or more lymph nodes near the tumor.

**stage III gestational trophoblastic neoplasia :** Cancer has spread to the lung.

**stage III hypopharyngeal cancer :** The tumor (1) is larger than 4 centimeters or has spread to the larynx (voice box) or esophagus. Cancer may have spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller; or (2) has spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller and cancer is found (1) in one area of the hypopharynx and/or is 2 centimeters or smaller; or (2) in more than one area of the hypopharynx or in nearby tissues, or is larger than 2 centimeters but not larger than 4 centimeters and has not spread to the larynx.

**stage III intraocular melanoma of the iris :** Stage III is divided into stages IIIA and IIIB. In stage IIIA, the tumor has spread through the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is not more than 5 millimeters thick. In stage IIIB, the tumor has spread through

the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is more than 5 millimeters thick.

**stage III kidney cancer :** (1) The tumor is any size and cancer is found only in the kidney and in 1 or more nearby lymph nodes; or (2) cancer is found in the main blood vessels of the kidney or in the layer of fatty tissue around the kidney. Cancer may be found in 1 or more nearby lymph nodes. Also called stage III renal cell cancer.

**stage III laryngeal cancer :** Stage III laryngeal cancer depends on whether cancer has spread from the supraglottis, glottis, or subglottis. In stage III cancer of the supraglottis, (1) cancer is in the larynx only and the vocal cords cannot move, and/or cancer is in tissues next to the larynx; cancer may have spread to one lymph node on the same side of the neck as the original tumor and the lymph node is 3 centimeters or smaller; or (2) cancer is in one area of the supraglottis and in one lymph node on the same side of the neck as the original tumor; the lymph node is 3 centimeters or smaller and the vocal cords can move normally; or (3) cancer is in more than one area of the supraglottis or surrounding tissues and in one lymph node on the same side of the neck as the original tumor; the lymph node is 3 centimeters or smaller. In stage III cancer of the glottis, (1) cancer is in the larynx only and the vocal cords cannot move, and/or cancer is in tissues next to the larynx; cancer may have spread to one lymph node on the same side of the neck as the original tumor and the lymph node is 3 centimeters or smaller; or (2) cancer is in one or both vocal cords and in one lymph node on the same side of the neck as the original tumor; the lymph node is 3 centimeters or smaller and the vocal cords can move normally; or (3) cancer has spread to the supraglottis and/or the subglottis, and/or the vocal cords cannot move normally; cancer has also spread to one lymph node on the same side of the neck as the original tumor and the lymph node is 3 centimeters or smaller. In stage III cancer of the subglottis, (1) cancer is in the larynx and the vocal cords cannot move; cancer may have spread to one lymph node on the same side of the neck as the original tumor and the lymph node is 3 centimeters or smaller; or (2) cancer is in the subglottis and in one lymph node on the same side of the neck as the original tumor; the lymph node is 3 centimeters or smaller; or (3) cancer has spread to one or both vocal cords, which may not move normally; cancer has also spread to one lymph node on the same side of the neck as the original tumor and the lymph node is 3 centimeters or smaller.

**stage III lip and oral cavity cancer :** The tumor may be any size and has spread to one lymph node that is 3 centimeters or smaller, on the same side of the neck as the tumor; or the tumor is larger than 4 centimeters.

**stage III lymphedema :** A condition in which tissue or a limb becomes very swollen and thick, and changes color. It is caused by a block in the flow of lymph and a buildup of fluid in tissues. Also called lymphostatic elephantiasis.

**stage III malignant mesothelioma :** Cancer (1) is found in one side of the chest in the lining of the chest wall. Cancer may have spread to the lining of the chest cavity between the lungs; the lining that covers the diaphragm; the lining that covers the lung; the diaphragm muscle; or the lung. Cancer has spread to lymph nodes where the lung joins the bronchus, along the trachea and esophagus, between the lung and diaphragm, or below the trachea; or (2) is found in one side of the chest in the lining of the chest wall; the lining of the chest cavity between the lungs; the lining that covers the diaphragm; and the lining that covers the lung. Cancer has spread into one or more of the following: tissue between the ribs and the lining of the chest wall; fat in the cavity between the lungs; soft tissues of the chest wall; and/or sac that covers the heart. Cancer may have spread to lymph nodes where the lung joins the bronchus, along the trachea and esophagus, between the lung and diaphragm, or below the trachea.

**stage III maxillary sinus cancer :** Cancer (1) has spread to any of the following: bone at the back of the maxillary sinus, tissues under the skin, the eye socket, the base of the skull, and/or the ethmoid sinuses; or (2) has spread to one lymph node on the same side of the neck as the cancer and the lymph node is 3 centimeters or smaller. Cancer has also spread to any of the following: the lining of the maxillary sinus, bones around the maxillary sinus (including the roof of the mouth and the nose), tissues under the skin, the eye socket, the base of the skull, and/or the ethmoid sinuses.

**stage III melanoma :** The tumor may be any thickness, with or without ulceration (a break in the skin), and one or more of the following is true: (1) cancer has spread to one or more lymph nodes; (2) lymph nodes may be joined together (matted); (3) cancer may be in a lymph vessel between the primary tumor and nearby lymph nodes; and/or (4) very small tumors may be found on or under the skin, not more than 2 centimeters away from where the cancer first started.

**stage III Merkel cell carcinoma :** Stage III Merkel cell cancer is divided into stages IIIA and IIIB. In stage IIIA, the tumor may be any size and may have spread to nearby bone, muscle, connective tissue, or cartilage. Cancer is found in the lymph nodes when they are checked under a microscope. In stage IIIB, the tumor may be any size and may have spread to nearby bone, muscle, connective tissue, or cartilage. Cancer has spread to the lymph nodes near the tumor and is found by physical exam or imaging test. The lymph nodes are removed and cancer is found in the lymph nodes when they are checked under a microscope. There may also be a second tumor, which is either between the primary tumor and nearby lymph nodes or farther away from the center of the body than the primary tumor is.

**stage III multiple myeloma :** A relatively large number of cancer cells have spread throughout the body. There may be one or more of the following: 1) a decrease in the number of red blood cells, causing anemia; 2) the amount of calcium in the blood is very high, because the bones are being damaged; 3) more than three bone tumors (plasmacytomas) are found; or 4) high levels of M protein are found in the blood or urine.

**stage III mycosis fungoides :** In stage III, nearly all of the skin is reddened and may have patches, papules, plaques, or tumors. Lymph nodes may be enlarged but cancer has not spread to them. There may be abnormal lymphocytes in the blood but they are not cancerous.

**stage III nasal cavity and ethmoid sinus cancer :** Cancer (1) has spread to any of the following: the eye socket, maxillary sinus, roof of the mouth, and/or the bone between the eyes; or (2) has spread to one lymph node on the same side of the neck as the cancer and the lymph node is 3 centimeters or smaller. Cancer has also spread to any of the following: the nasal cavity, ethmoid sinus, eye socket, maxillary sinus, roof of the mouth, and/or the bone between the eyes.

**stage III nasopharyngeal cancer :** Cancer (1) is found in the nasopharynx only or has spread from the nasopharynx to the oropharynx (the middle part of the throat, including the soft palate, base of the tongue, and tonsils) and/or to the nasal cavity. Cancer has spread to one or more lymph nodes on both sides of the neck and the affected lymph nodes are 6 centimeters or smaller; or (2) is found in the parapharyngeal space (area near the pharynx, between the base of the skull and the lower jaw). Cancer has spread to one or more lymph nodes on both sides of the neck and the affected lymph

nodes are 6 centimeters or smaller; or (3) has spread to nearby bones or sinuses. Cancer may have spread to one or more lymph nodes on one or both sides of the neck and/or to lymph nodes behind the pharynx, and the affected lymph nodes are 6 centimeters or smaller.

**stage III nonmelanoma skin cancer :** The tumor has spread to the jaw, eye socket, or side of the skull. Cancer may have spread to one lymph node on the same side of the body as the tumor. The lymph node is not larger than 3 centimeters; or, cancer has spread to one lymph node on the same side of the body as the tumor. The lymph node is not larger than 3 centimeters and one of the following is true: (1) the tumor is not larger than 2 centimeters at its widest point and may have one high-risk feature (is thicker than 2 millimeters, has spread into the lower layer of the dermis or into the layer of fat below the skin, has grown and spread along nerve pathways, began on an ear or on a lip that has hair on it, or has cells that look very different from normal cells under a microscope); or (2) the tumor is larger than 2 centimeters at its widest point; or (3) the tumor is any size and has two or more high-risk features (is thicker than 2 millimeters, has spread into the lower layer of the dermis or into the layer of fat below the skin, has grown and spread along nerve pathways, began on an ear or on a lip that has hair on it, or has cells that look very different from normal cells under a microscope).

**stage III nonmelanoma skin cancer on the eyelid :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, to remove all of the tumor, the whole eye and part of the optic nerve must be removed. The bone, muscles, fat, and connective tissue around the eye may also be removed. In stage IIIB, the tumor may be anywhere in or near the eye and has spread to nearby lymph nodes. In stage IIIC, the tumor has spread to structures around the eye or in the face, or to the brain, and cannot be removed in surgery.

**stage III oropharyngeal cancer :** Cancer is either (1) 4 centimeters or smaller; cancer has spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller; or (2) larger than 4 centimeters or has spread to the epiglottis (the flap that covers the trachea during swallowing). Cancer may have spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller.

**stage III ovarian epithelial, fallopian tube, and primary peritoneal cancer :**

Cancer is found in one or both ovaries or fallopian tubes, or is primary peritoneal cancer, and has spread outside the pelvis to other parts of the abdomen and/or to nearby lymph nodes. Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, one of the following is true: (1) cancer has spread to lymph nodes in the area outside or behind the peritoneum (tissue that lines the abdominal wall and covers organs in the abdomen) only; or (2) cancer cells that can be seen only with a microscope have spread to the surface of the peritoneum outside the pelvis. Cancer may have spread to nearby lymph nodes. In stage IIIB, cancer has spread to the peritoneum outside the pelvis and the cancer in the peritoneum is 2 centimeters or smaller. Cancer may have spread to lymph nodes behind the peritoneum. In stage IIIC, cancer has spread to the peritoneum outside the pelvis and the cancer in the peritoneum is larger than 2 centimeters. Cancer may have spread to lymph nodes behind the peritoneum or to the surface of the liver or spleen.

**stage III ovarian germ cell tumor :** Cancer is found in one or both ovaries and has spread outside the pelvis to other parts of the abdomen and/or nearby lymph nodes. Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, the tumor is found in the pelvis only, but cancer cells that can be seen only with a microscope have spread to the surface of the peritoneum (tissue that lines the abdominal wall and covers most of the organs in the abdomen), the small intestines, or the tissue that connects the small intestines to the wall of the abdomen. In stage IIIB, cancer has spread to the peritoneum and the cancer in the peritoneum is 2 centimeters or smaller. In stage IIIC, cancer has spread to the peritoneum and the cancer in the peritoneum is larger than 2 centimeters and/or has spread to lymph nodes in the abdomen. Cancer that has spread to the surface of the liver is also considered stage III ovarian cancer.

**stage III ovarian low malignant potential tumor :** The tumor is found in one or both ovaries and has spread outside the pelvis to other parts of the abdomen and/or nearby lymph nodes. Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, the tumor is found in the pelvis only, but tumor cells that can be seen only with a microscope have spread to the surface of the peritoneum (tissue that lines the abdominal wall and covers most of the organs in the abdomen), the small intestines, or the tissue that connects the small intestines to the wall of the abdomen. In stage IIIB, the tumor has

spread to the peritoneum and the tumor in the peritoneum is 2 centimeters or smaller. In stage IIIC, the tumor has spread to the peritoneum and the tumor in the peritoneum is larger than 2 centimeters and/or has spread to lymph nodes in the abdomen. The spread of tumor cells to the surface of the liver is also considered stage III disease.

**stage III pancreatic cancer :** Cancer has spread to the major blood vessels near the pancreas, and may have spread to nearby lymph nodes.

**stage III penile cancer :** Stage III penile cancer is divided into stage IIIa and stage IIIb. In stage IIIa, cancer has spread to one lymph node in the groin and (1) to connective tissue just under the skin of the penis; cancer may have spread to lymph vessels or blood vessels, or the tumor cells may look very different from normal cells under a microscope; or (2) through connective tissue to erectile tissue (spongy tissue that fills with blood to make an erection); or (3) beyond erectile tissue to the urethra. In stage IIIb, cancer has spread to more than one lymph node on one side of the groin or to lymph nodes on both sides of the groin, and (1) to connective tissue just under the skin of the penis; cancer may have spread to lymph vessels or blood vessels, or the tumor cells may look very different from normal cells under a microscope; or (2) through connective tissue to erectile tissue (spongy tissue that fills with blood to make an erection); or (3) beyond erectile tissue to the urethra.

**stage III perihilar extrahepatic bile duct cancer :** Stage III is divided into stages IIIA and IIIB. In stage IIIA, the tumor has spread to one branch of the hepatic artery or of the portal vein. In stage IIIB, the tumor has spread to nearby lymph nodes. Cancer has also spread into the wall of the perihilar extrahepatic bile duct (where the bile duct leaves the liver) and may have spread through the wall to nearby fatty tissue, the liver, or to one branch of the hepatic artery or of the portal vein.

**stage III prostate cancer :** Cancer has spread beyond the outer layer of the prostate and may have spread to the seminal vesicles. The prostate-specific antigen (PSA) level can be any level and the Gleason score can range from 2 to 10.

**stage III renal cell cancer :** (1) The tumor is any size and cancer is found only in the kidney and in 1 or more nearby lymph nodes; or (2) cancer is found in the main blood vessels of the kidney or in the layer of fatty tissue

around the kidney. Cancer may be found in 1 or more nearby lymph nodes. Also called stage III kidney cancer.

**stage III salivary gland cancer :** In stage III salivary gland cancer, (1) the tumor is not larger than 4 centimeters and has spread to a single lymph node on the same side of the body as the tumor and the lymph node is 3 centimeters or smaller; or (2) the tumor is larger than 4 centimeters and/or has spread to soft tissue around the affected gland; cancer may have spread to a single lymph node on the same side as the tumor and the lymph node is 3 centimeters or smaller.

**stage III soft tissue sarcoma :** The tumor is either (1) high-grade (likely to grow and spread quickly), larger than 5 centimeters, and either superficial (in subcutaneous tissue with no spread into connective tissue or muscle below) or deep (in the muscle and may be in connective or subcutaneous tissue); or (2) any grade, any size, and has spread to nearby lymph nodes.

**stage III testicular cancer :** Stage III is divided into stage IIIA, stage IIIB, and stage IIIC, and is determined after a radical inguinal orchiectomy (surgery to remove the testicle) is done. In stage IIIA, cancer is anywhere within the testicle, spermatic cord, or scrotum; may have spread to one or more lymph nodes in the abdomen; and has spread to distant lymph nodes or to the lungs; tumor marker levels may range from normal to slightly above normal. In stage IIIB, cancer is anywhere within the testicle, spermatic cord, or scrotum; and may have spread to one or more lymph nodes in the abdomen, to distant lymph nodes or to the lungs; the level of one or more tumor markers is moderately above normal. In stage IIIC, cancer is anywhere within the testicle, spermatic cord, or scrotum; and may have spread to one or more lymph nodes in the abdomen, to distant lymph nodes, or to the lungs; the level of one or more tumor markers is high; OR, cancer is anywhere within the testicle, spermatic cord, or scrotum; and may have spread to one or more lymph nodes in the abdomen; and has not spread to distant lymph nodes or the lung but has spread to other parts of the body; tumor marker levels may range from normal to high.

**stage III thymoma :** Cancer has spread to nearby organs in the chest, including the lung, the sac around the heart, or large blood vessels that carry blood to the heart.

**stage III transitional cell cancer of the renal pelvis and ureter :** Cancer has spread (1) from the renal pelvis to tissue or fat in the kidney; or (2)

from the ureter to fat that surrounds the ureter.

**stage III uterine sarcoma :** Cancer has spread beyond the uterus and cervix, but has not spread beyond the pelvis. Stage III is divided into stages IIIA, IIIB, and IIIC, based on how far the cancer has spread within the pelvis. In stage IIIA, cancer has spread to the outer layer of the uterus and/or to the fallopian tubes, ovaries, and ligaments of the uterus. In stage IIIB, cancer has spread to the vagina or to the parametrium (connective tissue and fat around the uterus). In stage IIIC, cancer has spread to lymph nodes in the pelvis and/or around the aorta (largest artery in the body, which carries blood away from the heart).

**stage III vaginal cancer :** Cancer has spread to the wall of the pelvis.

**stage III vulvar cancer :** The tumor may be any size and may have spread into the lower part of the urethra, the lower part of the vagina, or the anus. Cancer has spread to one or more nearby lymph nodes. Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, cancer is found in 1 or 2 lymph nodes that are smaller than 5 millimeters or in one lymph node that is 5 millimeters or larger. In stage IIIB, cancer is found in 2 or more lymph nodes that are 5 millimeters or larger, or in 3 or more lymph nodes that are smaller than 5 millimeters. In stage IIIC, cancer is found in lymph nodes and has spread to the outside surface of the lymph nodes.

**stage III Wilms tumor :** Cancer remains in the abdomen after surgery and at least one of the following is true: (1) cancer has spread to lymph nodes in the abdomen or pelvis (the part of the body between the hips); (2) cancer has spread to or through the surface of the peritoneum (the layer of tissue that lines the abdominal cavity and covers most organs in the abdomen); (3) a biopsy of the tumor was done during surgery to remove it; (4) the tumor was removed in more than one piece.

**stage IIIA adult primary liver cancer :** Stage III adult primary liver cancer is divided into stages IIIA, IIIB, and IIIC. In stage IIIA there is either (1) more than one tumor larger than 5 centimeters; or (2) one tumor that has spread to a major branch of blood vessels near the liver.

**stage IIIA anal cancer :** Stage III anal cancer is divided into stages IIIA and IIIB. In stage IIIA, the tumor may be any size and has spread to either (1) lymph nodes near the rectum; or (2) nearby organs, such as the vagina, urethra, and bladder.

**stage IIIA breast cancer :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, (1) no tumor is found in the breast or the tumor may be any size. Cancer is found in 4 to 9 axillary lymph nodes or in the lymph nodes near the breastbone (found during imaging tests or a physical exam); or (2) the tumor is larger than 5 centimeters. Small clusters of breast cancer cells (larger than 0.2 millimeter but not larger than 2 millimeters) are found in the lymph nodes; or (3) the tumor is larger than 5 centimeters. Cancer has spread to 1 to 3 axillary lymph nodes or to the lymph nodes near the breastbone (found during a sentinel lymph node biopsy).

**stage IIIA esophageal adenocarcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIA, cancer (1) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall, and cancer is found in 3 to 6 lymph nodes near the tumor; or (2) has spread into the connective tissue layer of the esophagus wall, and cancer is found in 1 or 2 lymph nodes near the tumor; or (3) has spread into the diaphragm, pleura (tissue that covers the lungs and lines the inner wall of the chest cavity), or sac around the heart. The cancer can be removed by surgery.

**stage IIIA esophageal squamous cell carcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIA, cancer (1) is in the mucosa or submucosa layer and may have spread into the muscle layer of the esophagus wall, and cancer is found in 3 to 6 lymph nodes near the tumor; or (2) has spread into the connective tissue layer of the esophagus wall, and cancer is found in 1 or 2 lymph nodes near the tumor; or (3) has spread into the diaphragm, pleura (tissue that covers the lungs and lines the inner wall of the chest cavity), or sac around the heart. The cancer can be removed by surgery.

**stage IIIA intraocular melanoma of the ciliary body and choroid :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIA, the tumor (1) may have spread to the ciliary body and is size category 2 (12.1 to 18 millimeters wide and not more than 3 millimeters thick; or 9.1 to 15 millimeters wide and 3.1 to 6 millimeters thick; or not more than 12 millimeters wide and 6.1 to 9 millimeters thick). The tumor has spread through the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is not more than 5 millimeters thick; or (2) has spread to the ciliary body and is size category 3 (15.1 to 18 millimeters wide and 3.1

to 6 millimeters thick; or 12.1 to 18 millimeters wide and 6.1 to 9 millimeters thick; or 3.1 to 18 millimeters wide and 9.1 to 12 millimeters thick; or 9.1 to 15 millimeters wide and 12.1 to 15 millimeters thick); or (3) is size category 3 and has spread through the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is not more than 5 millimeters thick. The tumor has not spread to the ciliary body; or (4) is in the choroid only and is size category 4 (more than 18 millimeters wide and may be any thickness; or 15.1 to 18 millimeters wide and more than 12 millimeters thick; or 12.1 to 15 millimeters wide and more than 15 millimeters thick).

**stage IIIA non-small cell lung cancer :** Stage III non-small cell lung cancer is divided into stages IIIA and IIIB. In stage IIIA, cancer has spread to lymph nodes on the same side of the chest as the tumor. Also, (1) the tumor may be any size; (2) part of the lung (where the trachea joins the bronchus) or the whole lung may have collapsed or become inflamed; (3) there may be one or more separate tumors in the same lobe of the lung; and/or (4) cancer may have spread to any of the following: main bronchus (but not the area where the trachea joins the bronchus), chest wall, diaphragm and the nerve that controls it, or membrane around the heart, lung, or lining the chest wall. OR in stage IIIA, cancer has spread to lymph nodes on the same side of the chest as the tumor. Also, (1) the tumor may be any size; (2) the whole lung may have collapsed or become inflamed; (3) there may be one or more separate tumors in any of the lobes of the lung with cancer; and/or (4) cancer may have spread to any of the following: main bronchus (but not the area where the trachea joins the bronchus), chest wall, diaphragm and the nerve that controls it, membrane around the lung or lining the chest wall, heart or the membrane around it, trachea, carina (where the trachea joins the bronchi), esophagus, sternum (chest bone), backbone, major blood vessels that lead to or from the heart, or the nerve that controls the larynx (voice box). OR in stage IIIA, cancer has not spread to the lymph nodes and the tumor may be any size. Cancer has spread to any of the following: trachea, carina, esophagus, sternum, backbone, heart, major blood vessels that lead to or from the heart, or the nerve that controls the larynx.

**stage IIIB adult primary liver cancer :** Stage III adult primary liver cancer is divided into stages IIIA, IIIB, and IIIC. In stage IIIB, there are one or more tumors of any size that have either (1) spread to nearby organs

other than the gallbladder; or (2) broken through the lining of the peritoneal cavity.

**stage IIIB anal cancer :** Stage III anal cancer is divided into stages IIIA and IIIB. In stage IIIB, the tumor may be any size and has spread to (1) nearby organs and to lymph nodes near the rectum; or (2) lymph nodes on one side of the pelvis and/or groin, and may have spread to nearby organs; or (3) lymph nodes near the rectum and in the groin, and/or to lymph nodes on both sides of the pelvis and/or groin, and may have spread to nearby organs.

**stage IIIB breast cancer :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIB, the tumor may be any size and cancer has spread to the chest wall and/or to the skin of the breast and caused swelling or an ulcer. Also, cancer may have spread to (1) up to 9 axillary lymph nodes; or (2) the lymph nodes near the breastbone. Cancer that has spread to the skin of the breast may also be inflammatory breast cancer.

**stage IIIB esophageal adenocarcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIB, cancer has spread into the connective tissue layer of the esophagus wall. Cancer is found in 3 to 6 lymph nodes near the tumor.

**stage IIIB esophageal squamous cell carcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIB, cancer has spread into the connective tissue layer of the esophagus wall. Cancer is found in 3 to 6 lymph nodes near the tumor.

**stage IIIB intraocular melanoma of the ciliary body and choroid :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIB, the tumor (1) has spread to the ciliary body and is size category 3 (15.1 to 18 millimeters wide and 3.1 to 6 millimeters thick; or 12.1 to 18 millimeters wide and 6.1 to 9 millimeters thick; or 3.1 to 18 millimeters wide and 9.1 to 12 millimeters thick; or 9.1 to 15 millimeters wide and 12.1 to 15 millimeters thick). The tumor has spread through the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is not more than 5 millimeters thick; or (2) has spread to the ciliary body and is size category 4 (more than 18 millimeters wide and may be any thickness; or 15.1 to 18 millimeters wide and more than 12 millimeters thick; or 12.1 to 15 millimeters wide and more than 15 millimeters thick); or (3) is size category 4 and has spread through the sclera to the outside of the eyeball.

The part of the tumor outside the eyeball is not more than 5 millimeters thick. The tumor has not spread to the ciliary body.

**stage IIIB non-small cell lung cancer :** Stage III non-small cell lung cancer is divided into stages IIIA and IIIB. In stage IIIB, cancer has spread to lymph nodes above the collarbone or in the opposite side of the chest as the tumor. Also, (1) the tumor may be any size; (2) part of the lung (where the trachea joins the bronchus) or the whole lung may have collapsed or become inflamed; (3) there may be one or more separate tumors in any of the lobes of the lung with cancer; and/or (4) cancer may have spread to any of the following: main bronchus, diaphragm and the nerve that controls it, membrane around the lung, chest wall or the membrane that lines it, trachea, carina (where the trachea joins the bronchi), esophagus, sternum (chest bone), backbone, heart or the membrane around it, major blood vessels that lead to or from the heart, or the nerve that controls the larynx (voice box). OR in stage IIIB, cancer has spread to lymph nodes on the same side of the chest as the tumor. Also, (1) the tumor may be any size; (2) there may be separate tumors in different lobes of the same lung; and/or (3) cancer has spread to any of the following: trachea, carina, esophagus, sternum, backbone, major blood vessels that lead to or from the heart, or the nerve that controls the larynx.

**stage IIIC adult primary liver cancer :** Stage III adult primary liver cancer is divided into stages IIIA, IIIB, and IIIC. In stage IIIC, the cancer has spread to nearby lymph nodes.

**stage IIIC breast cancer :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIC, no tumor is found in the breast or the tumor may be any size. Cancer may have spread to the skin of the breast and caused swelling or an ulcer and/or has spread to the chest wall. Also, cancer has spread to: (1) 10 or more axillary lymph nodes; or (2) lymph nodes above or below the collarbone; or (3) axillary lymph nodes and lymph nodes near the breastbone. Cancer that has spread to the skin of the breast may also be inflammatory breast cancer. For treatment, stage IIIC breast cancer is divided into operable and inoperable stage IIIC.

**stage IIIC esophageal adenocarcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIC, cancer has spread (1) into the diaphragm, pleura (tissue that covers the lungs and lines the inner wall of the chest cavity), or sac around the heart.

The cancer can be removed by surgery. Cancer is found in 1 to 6 lymph nodes near the tumor; or (2) into other nearby organs, such as the aorta, trachea, or spine, and the cancer cannot be removed by surgery; or (3) to 7 or more lymph nodes near the tumor.

**stage IIIC esophageal squamous cell carcinoma :** Stage III is divided into stages IIIA, IIIB, and IIIC, depending on where the cancer has spread. In stage IIIC, cancer has spread (1) into the diaphragm, pleura (tissue that covers the lungs and lines the inner wall of the chest cavity), or sac around the heart. The cancer can be removed by surgery. Cancer is found in 1 to 6 lymph nodes near the tumor; or (2) into other nearby organs, such as the aorta, trachea, or spine, and the cancer cannot be removed by surgery; or (3) to 7 or more lymph nodes near the tumor.

**stage IIIC intraocular melanoma of the ciliary body and choroid :** Stage III is divided into stages IIIA, IIIB, and IIIC. In stage IIIC, the tumor (1) has spread to the ciliary body and is size category 4 (more than 18 millimeters wide and may be any thickness; or 15.1 to 18 millimeters wide and more than 12 millimeters thick; or 12.1 to 15 millimeters wide and more than 15 millimeters thick). The tumor has spread through the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is not more than 5 millimeters thick; or (2) may be any size and has spread through the sclera to the outside of the eyeball. The part of the tumor outside the eyeball is more than 5 millimeters thick. The tumor has not spread to the ciliary body.

**stage IV adrenocortical cancer :** The tumor can be any size and has spread (1) to fat and lymph nodes near the adrenal gland; or (2) to organs near the adrenal gland and may have spread to nearby lymph nodes; or (3) to other parts of the body, such as the liver or lung.

**stage IV adult Hodgkin lymphoma :** Cancer is found (1) outside the lymph nodes throughout one or more organs, and may be in lymph nodes near those organs; or (2) outside the lymph nodes in one organ and has spread to areas far away from that organ; or (3) in the lung, liver, bone marrow, or cerebrospinal fluid (CSF). The cancer has not spread to the lung, liver, bone marrow, or CSF from nearby areas.

**stage IV adult non-Hodgkin lymphoma :** Cancer is found (1) throughout one or more organs that are not part of a lymphatic area (lymph nodes, tonsils, thymus or spleen) and may be in lymph nodes near those organs; or

(2) in one organ that is not part of a lymphatic area and has spread to organs or lymph nodes far away from that organ; or (3) in the liver, bone marrow, cerebrospinal fluid (CSF), or lungs (other than cancer that has spread to the lungs from nearby areas).

**stage IV adult primary liver cancer :** Cancer has spread beyond the liver to other places in the body, such as the bones or lungs. The tumors may be of any size and may also have spread to nearby blood vessels and/or lymph nodes.

**stage IV AIDS-related lymphoma :** Cancer is found (1) throughout one or more organs that are not part of a lymphatic area (lymph node group, tonsils and nearby tissue, thymus, or spleen) and may be in lymph nodes near those organs; or (2) in one organ that is not part of the lymphatic area and has spread to organs or lymph nodes far away from that organ; or (3) in the liver, bone marrow, cerebrospinal fluid (CSF), or lungs (other than cancer that has spread to the lungs from nearby areas).

**stage IV anal cancer :** The tumor may be any size, and cancer has spread to distant parts of the body. It may also have spread to lymph nodes and nearby organs.

**stage IV bladder cancer :** Cancer has spread (1) from the bladder to the wall of the abdomen or pelvis; and/or (2) to one or more lymph nodes; and/or (3) to other parts of the body, such as the lung, bone, or liver.

**stage IV breast cancer :** Cancer has spread to other organs of the body, most often the bones, lungs, liver, or brain.

**stage IV cancer of the uterus :** Cancer cells have spread to the lining of the bladder or rectum or to distant parts of the body.

**stage IV cervical cancer :** Cancer has spread beyond the pelvis, or can be seen in the lining of the bladder and/or rectum, or has spread to other parts of the body. Stage IV is divided into stages IVA and IVB, based on where the cancer has spread. In stage IVA, cancer has spread to nearby organs, such as the bladder or rectum. In stage IVB, cancer has spread to other parts of the body, such as the liver, lungs, bones, or distant lymph nodes.

**stage IV childhood Hodgkin lymphoma :** Cancer is found (1) outside the lymph nodes throughout one or more organs, and may be in lymph nodes near those organs; or (2) outside the lymph nodes in one organ and has spread to areas far away from that organ; or (3) in the lung, liver, bone

marrow, or cerebrospinal fluid (CSF). The cancer has not spread to the lung, liver, bone marrow, or CSF from nearby areas.

**stage IV childhood liver cancer :** The cancer has spread to other parts of the body, such as the lung or brain.

**stage IV childhood non-Hodgkin lymphoma :** Cancer is found in the bone marrow, brain, or cerebrospinal fluid. Cancer may also be found in other parts of the body.

**stage IV chronic lymphocytic leukemia :** There are too many lymphocytes in the blood and too few platelets. The lymph nodes, liver, or spleen may be larger than normal and there may be too few red blood cells.

**stage IV colorectal cancer :** Stage IV colorectal cancer is divided into stage IVA and stage IVB. In stage IVA, cancer may have spread through the colon and/or rectal wall and may have spread to nearby organs or lymph nodes. Cancer has spread to one organ that is not near the colon and/or rectum, such as the liver, lung, or ovary, or to a distant lymph node. In stage IVB, cancer may have spread through the colon and/or rectal wall and may have spread to nearby organs or lymph nodes. Cancer has spread to more than one organ that is not near the colon and/or rectum or into the lining of the abdominal wall.

**stage IV cutaneous T-cell lymphoma :** Stage IV cutaneous T-cell lymphoma may be either of the following: in stage IVA cancer, the skin is red, dry, and scaly, and the lymph nodes contain cancer cells; in stage IVB cancer, the skin is red, dry and scaly, cancer cells may be found in lymph nodes, and cancer has spread to other organs in the body.

**stage IV distal extrahepatic bile duct cancer :** Cancer has spread to other parts of the body, such as the liver or lungs.

**stage IV endometrial cancer :** Cancer has spread beyond the pelvis. Stage IV is divided into stages IVA and IVB, based on how far the cancer has spread. In stage IVA, cancer has spread to the bladder and/or bowel wall. In stage IVB, cancer has spread to other parts of the body beyond the pelvis, including the abdomen and/or lymph nodes in the groin.

**stage IV esophageal adenocarcinoma :** Cancer has spread to other parts of the body.

**stage IV esophageal squamous cell carcinoma :** Cancer has spread to other parts of the body.

**stage IV gallbladder cancer :** Stage IV gallbladder cancer is divided into stages IVA and IVB. In stage IVA, cancer has spread to a main blood vessel of the liver or to 2 or more nearby organs or areas other than the liver. Cancer may have spread to nearby lymph nodes. In stage IVB, cancer has spread to either (1) lymph nodes along large arteries in the abdomen and/or near the lower part of the backbone; or (2) to organs or areas far away from the gallbladder.

**stage IV gastric cancer :** Cancer has spread to distant parts of the body.

**stage IV gestational trophoblastic neoplasia :** Cancer has spread to distant parts of the body other than the lungs.

**stage IV hypopharyngeal cancer :** Stage IV is divided into stages IVA, IVB, and IVC. In stage IVA, cancer (1) has spread to cartilage around the thyroid or trachea, the bone under the tongue, the thyroid, or nearby soft tissue. Cancer may have spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller; or (2) has spread to one lymph node on the same side of the neck as the tumor (the lymph node is larger than 3 centimeters but not larger than 6 centimeters) or to lymph nodes anywhere in the neck (affected lymph nodes are 6 centimeters or smaller), and one of the following is true: (1) cancer is found in one area of the hypopharynx and/or is 2 centimeters or smaller; or (2) cancer is found in more than one area of the hypopharynx or in nearby tissues, or is larger than 2 centimeters but not larger than 4 centimeters and has not spread to the larynx (voice box); or (3) cancer has spread to the larynx or esophagus and is more than 4 centimeters; or (4) cancer has spread to cartilage around the thyroid or trachea, the bone under the tongue, the thyroid, or nearby soft tissue. In stage IVB, the tumor (1) has spread to muscles around the upper part of the spinal column, the carotid artery, or the lining of the chest cavity and may have spread to lymph nodes, which can be any size; or (2) may be any size and has spread to one or more lymph nodes that are larger than 6 centimeters. In stage IVC, the tumor may be any size and has spread beyond the hypopharynx to other parts of the body.

**stage IV intraocular melanoma of the ciliary body and choroid :** The tumor may be any size and has spread (1) to nearby lymph nodes; or (2) to other parts of the body.

**stage IV intraocular melanoma of the iris :** The tumor may be any size and has spread (1) to nearby lymph nodes; or (2) to other parts of the body.

**stage IV kidney cancer :** Cancer has spread (1) beyond the layer of fatty tissue around the kidney and may be found in the adrenal gland above the kidney with cancer, or in nearby lymph nodes; or (2) to other organs, such as the lungs, liver, bones, or brain, and may have spread to lymph nodes. Also called stage IV renal cell cancer.

**stage IV laryngeal cancer :** Stage IV is divided into stage IVA, stage IVB, and stage IVC. In stage IVA, (1) cancer has spread through the thyroid cartilage and/or has spread to tissues beyond the larynx, such as the neck, trachea, thyroid, or esophagus; cancer may have spread to one lymph node on the same side of the neck as the original tumor and the lymph node is 3 centimeters or smaller; or (2) cancer has spread to one lymph node on the same side of the neck as the original tumor and the lymph node is larger than 3 centimeters but not larger than 6 centimeters, or has spread to more than one lymph node anywhere in the neck with none larger than 6 centimeters; cancer may have spread to tissues beyond the larynx, such as the neck, trachea, thyroid, or esophagus. The vocal cords may not move normally. In stage IVB, (1) cancer has spread to the space in front of the spinal column, surrounds the carotid artery, or has spread to parts of the chest; cancer may have spread to one or more lymph nodes anywhere in the neck and the lymph nodes may be any size; or (2) cancer has spread to a lymph node that is larger than 6 centimeters and may have spread as far as the space in front of the spinal column, around the carotid artery, or to parts of the chest. The vocal cords may not move normally. In stage IVC, cancer has spread to other parts of the body, such as the lungs, liver, or bone.

**stage IV lip and oral cavity cancer :** Stage IV is divided into stages IVA, IVB, and IVC. In stage IVA, (1) the tumor has spread through tissue in the lip or oral cavity into nearby tissue and/or bone (jaw, tongue, floor of mouth, maxillary sinus, or skin of chin or nose); cancer may have spread to one lymph node that is 3 centimeters or smaller, on the same side of the neck as the tumor; or (2) the tumor is any size or has spread through tissue in the lip or oral cavity into nearby tissue and/or bone (jaw, tongue, floor of mouth, maxillary sinus, or skin of chin or nose). Cancer has spread to one lymph node on the same side of the neck as the tumor and the lymph node is larger than 3 centimeters but not larger than 6 centimeters, or to more

than one lymph node on the same side of the neck as the tumor and the lymph nodes are not larger than 6 centimeters, or to lymph nodes on the opposite side of the neck as the tumor or on both sides of the neck, and the lymph nodes are not larger than 6 centimeters. In stage IVB, (1) the tumor may be any size and has spread to one or more lymph nodes that are larger than 6 centimeters; or (2) the tumor has spread further into the muscles or bones in the oral cavity, or to the base of the skull and/or the carotid artery. Cancer may have spread to one or more lymph nodes anywhere in the neck. In stage IVC, the tumor has spread beyond the lip or oral cavity to distant parts of the body, such as the lungs. The tumor may be any size and may have spread to lymph nodes.

**stage IV malignant mesothelioma :** Cancer cannot be removed by surgery and is found in one or both sides of the body. Cancer may have spread to lymph nodes anywhere in the chest or above the collarbone. Cancer has spread in one or more of the following ways: (1) through the diaphragm into the peritoneum (the thin layer of tissue that lines the abdomen and covers most of the organs in the abdomen); (2) to the tissue lining the chest on the opposite side of the body as the tumor; (3) to the chest wall and may be found in the rib; (4) into the organs in the center of the chest cavity; (5) into the spine; (6) into the sac around the heart or into the heart muscle; and/or (7) to distant parts of the body such as the brain, spine, thyroid, or prostate.

**stage IV maxillary sinus cancer :** Stage IV maxillary sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVA, cancer (1) has spread to one lymph node on the same side of the neck as the cancer and the lymph node is larger than 3 centimeters but not larger than 6 centimeters; or to more than one lymph node on the same side of the neck as the original tumor and the lymph nodes are not larger than 6 centimeters; or to lymph nodes on the opposite side of the neck as the original tumor or on both sides of the neck, and the lymph nodes are not larger than 6 centimeters, and cancer has also spread to any of the following: the lining of the maxillary sinus, bones around the maxillary sinus (including the roof of the mouth and the nose), tissues under the skin, the eye socket, the base of the skull, and/or the ethmoid sinuses; or (2) has spread to any of the following: the front of the eye, skin of the cheek, base of the skull, behind the jaw, the bone between the eyes, and/or the sphenoid or frontal sinuses, and cancer may also have spread to one or more lymph nodes 6 centimeters or smaller,

anywhere in the neck. In stage IVB, cancer (1) has spread to any of the following: the back of the eye, brain, middle parts of the skull, nerves in the head that go to the brain, upper part of the throat behind the nose, and/or the base of the skull, and cancer may be found in one or more lymph nodes of any size, anywhere in the neck; or (2) is found in a lymph node larger than 6 centimeters. Cancer may also be found anywhere in or near the maxillary sinus. In stage IVC, cancer may be anywhere in or near the maxillary sinus, may have spread to lymph nodes, and has spread to organs far away from the maxillary sinus, such as the lungs.

**stage IV melanoma :** Cancer has spread to other places in the body, such as the lung, liver, brain, bone, soft tissue, gastrointestinal (GI) tract, or to places in the skin far away from where the cancer first started.

**stage IV Merkel cell carcinoma :** The tumor may be any size and has spread to distant parts of the body, such as the liver, lung, bone, or brain.

**stage IV mycosis fungoides :** Stage IV is divided into stages IVA and IVB. In stage IVA, most of the skin is reddened and any amount of the skin surface is covered with patches, papules, plaques, or tumors, and either (1) cancer has spread to lymph nodes and there may be cancerous lymphocytes in the blood; or (2) there are cancerous lymphocytes in the blood and lymph nodes may be enlarged, but cancer has not spread to them. In stage IVB, most of the skin is reddened and any amount of the skin surface is covered with patches, papules, plaques, or tumors. Cancer has spread to other organs in the body. Lymph nodes may be enlarged and cancer may have spread to them. There may be cancerous lymphocytes in the blood.

**stage IV nasal cavity and ethmoid sinus cancer :** Stage IV nasal cavity and ethmoid sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVA, cancer (1) has spread to one lymph node on the same side of the neck as the cancer and the lymph node is larger than 3 centimeters but not larger than 6 centimeters; or to more than one lymph node on the same side of the neck as the original tumor and the lymph nodes are not larger than 6 centimeters; or to lymph nodes on the opposite side of the neck as the original tumor or on both sides of the neck, and the lymph nodes are not larger than 6 centimeters, and cancer has also spread to any of the following: the nasal cavity, ethmoid sinus, eye socket, maxillary sinus, roof of the mouth, and/or the bone between the eyes; or (2) has spread to any of the following: the front of the eye, skin of the nose or cheek, front parts of

the skull, base of the skull, and/or the sphenoid or frontal sinuses, and cancer may also have spread to one or more lymph nodes 6 centimeters or smaller, anywhere in the neck. In stage IVB, cancer (1) has spread to any of the following: the back of the eye, brain, middle parts of the skull, nerves in the head that go to the brain, upper part of the throat behind the nose, and/or the base of the skull, and cancer may be found in one or more lymph nodes of any size, anywhere in the neck; or (2) is found in a lymph node larger than 6 centimeters. Cancer may also be found anywhere in or near the nasal cavity and ethmoid sinus. In stage IVC, cancer may be found anywhere in or near the nasal cavity and ethmoid sinus, may have spread to lymph nodes, and has spread to organs far away from the nasal cavity and ethmoid sinus, such as the lungs.

**stage IV nasopharyngeal cancer :** Stage IV nasopharyngeal cancer is divided into stages IVA, IVB, and IVC. In stage IVA, cancer has spread beyond the nasopharynx and may have spread to the cranial nerves, the hypopharynx (bottom part of the throat), areas in and around the side of the skull or jawbone, and/or the bone around the eye. Cancer may have spread to one or more lymph nodes on one or both sides of the neck and/or to lymph nodes behind the pharynx, and the affected lymph nodes are 6 centimeters or smaller. In stage IVB, cancer has spread to lymph nodes between the collarbone and the top of the shoulder and/or the affected lymph nodes are larger than 6 centimeters. In stage IVC, cancer has spread beyond nearby lymph nodes to other parts of the body.

**stage IV non-small cell lung cancer :** The tumor may be any size and cancer may have spread to lymph nodes. One or more of the following is true: (1) there are one or more tumors in both lungs; (2) cancer is found in fluid around the lungs or the heart; and/or (3) cancer has spread to other parts of the body, such as the brain, liver, adrenal glands, kidneys, or bone.

**stage IV nonmelanoma skin cancer :** The tumor is any size and may have spread to the jaw, eye socket, or side of the skull. Cancer has spread to one lymph node on the same side of the body as the tumor and the affected node is larger than 3 centimeters but not larger than 6 centimeters, or cancer has spread to more than one lymph node on one or both sides of the body and the affected nodes are not larger than 6 centimeters; or, the tumor is any size and may have spread to the jaw, eye socket, skull, spine, or ribs. Cancer has spread to one lymph node that is larger than 6 centimeters; or, the tumor is

any size and has spread to the base of the skull, spine, or ribs. Cancer may have spread to the lymph nodes; or, cancer has spread to other parts of the body, such as the lung.

**stage IV nonmelanoma skin cancer on the eyelid :** The tumor has spread to distant parts of the body.

**stage IV oropharyngeal cancer :** Stage IV oropharyngeal cancer is divided into stages IVA, IVB, and IVC. In stage IVA, cancer (1) has spread to the larynx, front part of the roof of the mouth, lower jaw, or muscles that move the tongue or are used for chewing. Cancer may have spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller; or (2) has spread to one lymph node on the same side of the neck as the tumor (the lymph node is larger than 3 centimeters but not larger than 6 centimeters) or to more than one lymph node anywhere in the neck (the lymph nodes are 6 centimeters or smaller), and one of the following is true: (1) tumor in the oropharynx is any size and may have spread to the epiglottis (the flap that covers the trachea during swallowing); or (2) tumor has spread to the larynx, front part of the roof of the mouth, lower jaw, or muscles that move the tongue or are used for chewing. In stage IVB, the tumor (1) surrounds the carotid artery or has spread to the muscle that opens the jaw, the bone attached to the muscles that move the jaw, nasopharynx, or base of the skull. Cancer may have spread to one or more lymph nodes, which can be any size; or (2) may be any size and has spread to one or more lymph nodes that are larger than 6 centimeters. In stage IVC, the tumor may be any size and has spread beyond the oropharynx to other parts of the body, such as the lung, bone, or liver.

**stage IV ovarian epithelial, fallopian tube, and primary peritoneal cancer :** Cancer has spread beyond the abdomen to other parts of the body. Stage IV is divided into stages IVA and IVB. In stage IVA, cancer cells are found in extra fluid that builds up around the lungs. In stage IVB, cancer has spread to organs and tissues outside the abdomen, including lymph nodes in the groin.

**stage IV ovarian germ cell tumor :** Cancer has spread beyond the abdomen to other parts of the body, such as the lungs or tissue inside the liver. Cancer cells in the fluid around the lungs is also considered stage IV ovarian cancer.

**stage IV ovarian low malignant potential tumor :** Tumor cells have spread beyond the abdomen to other parts of the body, such as the lungs or tissue inside the liver. Tumor cells in the fluid around the lungs is also considered stage IV disease. Ovarian low malignant potential tumors almost never reach stage IV.

**stage IV pancreatic cancer :** Cancer may be of any size and has spread to distant organs, such as the liver, lung, and peritoneal cavity (the body cavity that contains most of the organs in the abdomen), and may have also spread to organs and tissues near the pancreas or to lymph nodes.

**stage IV penile cancer :** Cancer has spread (1) to tissues near the penis, such as the prostate, and may have spread to lymph nodes in the groin or pelvis; or (2) to one or more lymph nodes in the pelvis, or from the lymph nodes to the tissues around the lymph nodes; or (3) to distant parts of the body.

**stage IV perihilar extrahepatic bile duct cancer :** Stage IV is divided into stages IVA and IVB. In stage IVA, the tumor may have spread to nearby lymph nodes and has spread to one or more of the following: (1) the main part of the portal vein or both branches of the portal vein; (2) the hepatic artery; (3) the right and left hepatic ducts; (4) the right hepatic duct and the left branch of the hepatic artery or of the portal vein; and/or (5) the left hepatic duct and the right branch of the hepatic artery or of the portal vein. In stage IVB, the tumor has spread to other parts of the body, such as the liver.

**stage IV prostate cancer :** Cancer (1) has spread beyond the seminal vesicles to nearby tissue or organs, such as the rectum, bladder, or pelvic wall; or (2) has spread to nearby lymph nodes and may have spread to the seminal vesicles or to nearby tissue or organs, such as the rectum, bladder, or pelvic wall; or (3) has spread to distant parts of the body, which may include lymph nodes or bones. Also, the prostate-specific antigen (PSA) can be any level and the Gleason score can range from 2 to 10.

**stage IV renal cell cancer :** Cancer has spread (1) beyond the layer of fatty tissue around the kidney and may be found in the adrenal gland above the kidney with cancer, or in nearby lymph nodes; or (2) to other organs, such as the lungs, liver, bones, or brain, and may have spread to lymph nodes. Also called stage IV kidney cancer.

**stage IV salivary gland cancer :** Stage IV salivary gland cancer is divided into stages IVA, IVB, and IVC. In stage IVA, (1) the tumor may be any size and may have spread to soft tissue around the affected gland. Cancer has spread to a single lymph node on the same side as the tumor and the lymph node is larger than 3 centimeters but not larger than 6 centimeters, or has spread to more than one lymph node on either or both sides of the body and the lymph nodes are not larger than 6 centimeters; or (2) cancer has spread to the skin, jawbone, ear canal, and/or facial nerve, and may have spread to one or more lymph nodes on either or both sides of the body; the lymph nodes are not larger than 6 centimeters. In stage IVB, (1) the tumor may be any size and may have spread to soft tissue around the affected gland. Cancer has spread to a lymph node larger than 6 centimeters; or (2) cancer has spread to the base of the skull and/or the carotid artery, and may have spread to one or more lymph nodes of any size on either or both sides of the body. In stage IVC, the tumor may be any size and may have spread to soft tissue around the affected gland, to the skin, jawbone, ear canal, facial nerve, base of the skull, or carotid artery, or to one or more lymph nodes on either or both sides of the body. Cancer has spread to distant parts of the body.

**stage IV Sezary syndrome :** Most of the skin is reddened and covered with patches, papules, plaques, or tumors. There is a high level of cancerous lymphocytes in the blood. Lymph nodes may be enlarged and cancer may have spread to them.

**stage IV soft tissue sarcoma :** The tumor is any grade, any size, and may have spread to nearby lymph nodes. Cancer has spread to distant parts of the body, such as the lungs.

**stage IV thymoma :** Stage IV is divided into stages IVA and IVB, depending on where the cancer has spread. In stage IVA, cancer has spread widely around the lungs and heart. In stage IVB, cancer has spread to the blood or lymph system.

**stage IV transitional cell cancer of the renal pelvis and ureter :** Cancer has spread to at least one of the following: (1) a nearby organ; (2) the layer of fat surrounding the kidney; (3) one or more lymph nodes; and/or (4) distant parts of the body, such as the lung, liver, or bone.

**stage IV uterine sarcoma :** Cancer has spread beyond the pelvis. Stage IV is divided into stages IVA and IVB, based on how far the cancer has spread.

In stage IVA, cancer has spread to the bladder and/or bowel wall. In stage IVB, cancer has spread to other parts of the body beyond the pelvis, including the abdomen and/or lymph nodes in the groin.

**stage IV vaginal cancer :** Stage IV is divided into stages IVA and IVB. In stage IVA, cancer may have spread to one or more of the following areas: (1) the lining of the bladder; (2) the lining of the rectum; and/or (3) beyond the area of the pelvis that has the bladder, uterus, ovaries, and cervix. In stage IVB, cancer has spread to parts of the body that are not near the vagina, such as the lung or bone.

**stage IV vulvar cancer :** The tumor has spread into the upper part of the urethra, the upper part of the vagina, or to other parts of the body. Stage IV is divided into stages IVA and IVB. In stage IVA, (1) cancer has spread into the lining of the upper urethra, the upper vagina, the bladder, or the rectum, or has attached to the pelvic bone; or (2) cancer has spread to nearby lymph nodes and the lymph nodes are not moveable or have formed an ulcer. In stage IVB, cancer has spread to lymph nodes in the pelvis or to other parts of the body.

**stage IV Wilms tumor :** Cancer has spread through the blood to organs such as the lungs, liver, bone, or brain, or to lymph nodes outside of the abdomen and pelvis (the part of the body between the hips).

**stage IVA hypopharyngeal cancer :** Stage IV hypopharyngeal cancer is divided into stages IVA, IVB, and IVC. In stage IVA, cancer (1) has spread to cartilage around the thyroid or trachea, the bone under the tongue, the thyroid, or nearby soft tissue. Cancer may have spread to one lymph node on the same side of the neck as the tumor and the lymph node is 3 centimeters or smaller; or (2) has spread to one lymph node on the same side of the neck as the tumor (the lymph node is larger than 3 centimeters but not larger than 6 centimeters) or to lymph nodes anywhere in the neck (affected lymph nodes are 6 centimeters or smaller), and one of the following is true: (1) cancer is found in one area of the hypopharynx and/or is 2 centimeters or smaller; or (2) cancer is found in more than one area of the hypopharynx or in nearby tissues, or is larger than 2 centimeters but not larger than 4 centimeters and has not spread to the larynx (voice box); or (3) cancer has spread to the larynx or esophagus and is more than 4 centimeters; or (4) cancer has spread to cartilage around the thyroid or trachea, the bone under the tongue, the thyroid, or nearby soft tissue.

**stage IVA laryngeal cancer :** Stage IV is divided into stage IVA, stage IVB, and stage IVC. In stage IVA, (1) cancer has spread through the thyroid cartilage and/or has spread to tissues beyond the larynx, such as the neck, trachea, thyroid, or esophagus; cancer may have spread to one lymph node on the same side of the neck as the original tumor and the lymph node is 3 centimeters or smaller; or (2) cancer has spread to one lymph node on the same side of the neck as the original tumor and the lymph node is larger than 3 centimeters but not larger than 6 centimeters, or has spread to more than one lymph node anywhere in the neck with none larger than 6 centimeters; cancer may have spread to tissues beyond the larynx, such as the neck, trachea, thyroid, or esophagus. The vocal cords may not move normally.

**stage IVA lip and oral cavity cancer :** Stage IV is divided into stages IVA, IVB, and IVC. In stage IVA, (1) the tumor has spread through tissue in the lip or oral cavity into nearby tissue and/or bone (jaw, tongue, floor of mouth, maxillary sinus, or skin of chin or nose); cancer may have spread to one lymph node that is 3 centimeters or smaller, on the same side of the neck as the tumor; or (2) the tumor is any size or has spread through tissue in the lip or oral cavity into nearby tissue and/or bone (jaw, tongue, floor of mouth, maxillary sinus, or skin of chin or nose). Cancer has spread to one lymph node on the same side of the neck as the tumor and the lymph node is larger than 3 centimeters but not larger than 6 centimeters, or to more than one lymph node on the same side of the neck as the tumor and the lymph nodes are not larger than 6 centimeters, or to lymph nodes on the opposite side of the neck as the tumor or on both sides of the neck, and the lymph nodes are not larger than 6 centimeters.

**stage IVA maxillary sinus cancer :** Stage IV maxillary sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVA, cancer (1) has spread to one lymph node on the same side of the neck as the cancer and the lymph node is larger than 3 centimeters but not larger than 6 centimeters; or to more than one lymph node on the same side of the neck as the original tumor and the lymph nodes are not larger than 6 centimeters; or to lymph nodes on the opposite side of the neck as the original tumor or on both sides of the neck, and the lymph nodes are not larger than 6 centimeters, and cancer has also spread to any of the following: the lining of the maxillary sinus, bones around the maxillary sinus (including the roof of the mouth and the nose), tissues under the skin, the eye socket, the base of the skull,

and/or the ethmoid sinuses; or (2) has spread to any of the following: the front of the eye, skin of the cheek, base of the skull, behind the jaw, the bone between the eyes, and/or the sphenoid or frontal sinuses, and cancer may also have spread to one or more lymph nodes 6 centimeters or smaller, anywhere in the neck.

**stage IVA nasal cavity and ethmoid sinus cancer :** Stage IV nasal cavity and ethmoid sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVA, cancer (1) has spread to one lymph node on the same side of the neck as the cancer and the lymph node is larger than 3 centimeters but not larger than 6 centimeters; or to more than one lymph node on the same side of the neck as the original tumor and the lymph nodes are not larger than 6 centimeters; or to lymph nodes on the opposite side of the neck as the original tumor or on both sides of the neck, and the lymph nodes are not larger than 6 centimeters, and cancer has also spread to any of the following: the nasal cavity, ethmoid sinus, eye socket, maxillary sinus, roof of the mouth, and/or the bone between the eyes; or (2) has spread to any of the following: the front of the eye, skin of the nose or cheek, front parts of the skull, base of the skull, and/or the sphenoid or frontal sinuses, and cancer may also have spread to one or more lymph nodes 6 centimeters or smaller, anywhere in the neck.

**stage IVA pancreatic cancer :** Cancer has spread to organs that are near the pancreas (such as the stomach, spleen, or colon) but has not spread to distant organs (such as the liver or lungs).

**stage IVB hypopharyngeal cancer :** Stage IV hypopharyngeal cancer is divided into stages IVA, IVB, and IVC. In stage IVB, the tumor (1) has spread to muscles around the upper part of the spinal column, the carotid artery, or the lining of the chest cavity and may have spread to lymph nodes, which can be any size; or (2) may be any size and has spread to one or more lymph nodes that are larger than 6 centimeters.

**stage IVB laryngeal cancer :** Stage IV is divided into stage IVA, stage IVB, and stage IVC. In stage IVB, (1) cancer has spread to the space in front of the spinal column, surrounds the carotid artery, or has spread to parts of the chest; cancer may have spread to one or more lymph nodes anywhere in the neck and the lymph nodes may be any size; or (2) cancer has spread to a lymph node that is larger than 6 centimeters and may have

spread as far as the space in front of the spinal column, around the carotid artery, or to parts of the chest. The vocal cords may not move normally.

**stage IVB lip and oral cavity cancer :** Stage IV is divided into stages IVA, IVB, and IVC. In stage IVB, (1) the tumor may be any size and has spread to one or more lymph nodes that are larger than 6 centimeters; or (2) the tumor has spread further into the muscles or bones in the oral cavity, or to the base of the skull and/or the carotid artery. Cancer may have spread to one or more lymph nodes anywhere in the neck.

**stage IVB maxillary sinus cancer :** Stage IV maxillary sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVB, cancer (1) has spread to any of the following: the back of the eye, brain, middle parts of the skull, nerves in the head that go to the brain, upper part of the throat behind the nose, and/or the base of the skull, and cancer may be found in one or more lymph nodes of any size, anywhere in the neck; or (2) is found in a lymph node larger than 6 centimeters. Cancer may also be found anywhere in or near the maxillary sinus.

**stage IVB nasal cavity and ethmoid sinus cancer :** Stage IV nasal cavity and ethmoid sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVB, cancer (1) has spread to any of the following: the back of the eye, brain, middle parts of the skull, nerves in the head that go to the brain, upper part of the throat behind the nose, and/or the base of the skull, and cancer may be found in one or more lymph nodes of any size, anywhere in the neck; or (2) is found in a lymph node larger than 6 centimeters. Cancer may also be found anywhere in or near the nasal cavity and ethmoid sinus.

**stage IVB pancreatic cancer :** Cancer of the pancreas in which the cancer has spread to distant organs (such as the liver or lungs).

**stage IVC hypopharyngeal cancer :** Stage IV hypopharyngeal cancer is divided into stages IVA, IVB, and IVC. In stage IVC, the tumor may be any size and has spread beyond the hypopharynx to other parts of the body.

**stage IVC laryngeal cancer :** Stage IV is divided into stage IVA, stage IVB, and stage IVC. In stage IVC, cancer has spread to other parts of the body, such as the lungs, liver, or bone.

**stage IVC lip and oral cavity cancer :** Stage IV is divided into stages IVA, IVB, and IVC. In stage IVC, the tumor has spread beyond the lip or oral cavity to distant parts of the body, such as the lungs. The tumor may be any size and may have spread to lymph nodes.

**stage IVC maxillary sinus cancer :** Stage IV maxillary sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVC, cancer may be anywhere in or near the maxillary sinus, may have spread to lymph nodes, and has spread to organs far away from the maxillary sinus, such as the lungs.

**stage IVC nasal cavity and ethmoid sinus cancer :** Stage IV nasal cavity and ethmoid sinus cancer is divided into stages IVA, IVB, and IVC. In stage IVC, cancer may be found anywhere in or near the nasal cavity and ethmoid sinus, may have spread to lymph nodes, and has spread to organs far away from the nasal cavity and ethmoid sinus, such as the lungs.

**stage V Wilms tumor :** Cancer cells are found in both kidneys when the disease is first diagnosed. Each kidney is staged separately as I, II, III, or IV.

**staggered conformation:** one of the possible orientations of atoms or groups around two carbon atoms joined by a single bond. Atoms and groups bonded to the two carbons of a staggered conformer are positioned so there is maximum separation between them and therefore minimum interaction. (Compare with "eclipsed conformation.")

**Staggered Style Guard Edges :** A retaining edge consisting of alternating overlapped inside and outside flat plates.

**staging :** Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. It is important to know the stage of the disease in order to plan the best treatment.

**staging system :** A system that is used to describe the extent of cancer in the body. Staging is usually based on the size of the tumor and whether the cancer has spread from where it started to nearby areas, lymph nodes, or other parts of the body.

**STAIN:** A solution or suspension of coloring matter in a vehicle designed primarily to be applied to create color effects rather than to form a protective coating. A transparent or semi-opaque coating that colors without completely obscuring the grain of the surface.

**Staining/discolouration of paint on masonry:** There are a number of principal causes: Certain types of sand used in the construction or rendering of a building can cause staining, as can certain kinds of brick hollow clay

pots or clinker blocks containing soluble salts. Pieces of ferrous metal or iron stone embedded in the material can rust and discolour when the surface is painted. These problems can be treated by sealing the affected areas with Dulux Alkali Resisting Primer when the surface is completely dry. Rust/Steel reinforcing in concrete may be too close to the surface and cause rusting. The only effective way to resolve this problem is to get back to the metal itself and treat the cause of the rust. staining can occur where old nails are left in the substrate, or a wire brush has been used to prepare the surface. In this case, prime locally with Dulux Metal Primer prior to painting. Steel reinforcing in concrete may be too close to the surface and cause rusting. The only effective way to resolve this problem is to get back to the metal itself and treat the cause of the rust.

**Staining/discolouration of paint on plaster:** Past water leaks or burst water pipes can cause staining. Before repainting, ensure that the leak has stopped and the surface is thoroughly dry, then spot prime the affected area with Dulux Alkali Resisting Primer. 2) Heavy deposits of tar from cigarette smoke and around the chimney breast of open fires are common causes of staining, especially on water-based emulsion paints. To prepare, wash the surface thoroughly with detergent solution and rinse frequently with clean water. Allow to dry, then prime with Dulux Alkali Resisting Primer. If using water-based paints, allow a few days for the oil deposits of the primer to disappear, otherwise cissing may be a problem. 3) Conventional solvent-based finishes such as gloss can discolour with age, particularly in areas sheltered from natural daylight. Prior to repainting, wash the surface with a detergent solution, rinse with clean water and allow to dry. It may be more advisable to use a water-based coating for a low light area.

**Staining/discolouration of paint on wood:** There are different solutions for each of these problems. 1) Staining caused by rust from old nails should be rubbed down to remove the rust, then prime any exposed metal with Dulux Metal Primer or Dulux Q.D. Metal Primer before painting. 2) Resin bleeding from knots in wood should first be removed with white spirit. Then seal the knots with two coats of Dulux White Knotting Solution and repaint. 3) All solvent-based paints such as gloss will discolour or yellow with age. To treat, wash the surface thoroughly with detergent solution, rinse with clean water and allow to dry before repainting. If the wood appears to be dirty, particularly around glazing rebates, it may be affected

by fungal growth. Clean the surface thoroughly and treat with domestic bleach, or apply a coat of Aluminium Primer, before painting.

**stainless steel:** Stainless steel does not rust. It has nickel and chromium added in its manufacture.

**Stakel:** (Other name for: padeliporfin)

**stalactite:** rock icicle forming from the ceiling of a cave. Or rock formation rising up from a cave floor.

**stamen:** the structure of a flower that contains a thin, stemlike filament and an anther.

**stamina :** The energy and strength to endure physical activity, stress, or illness over time.

**Stanchion:** A prop or support to a roof ceiling or beam. Especially refers to cast iron or rolled steel member used as a supporting column.

**standard (or standardized solution):** a solution containing a known, precise concentration of an element or chemical compound, often used to calibrate analytical chemistry measurement devices.

**Standard Conditions:** Conditions used to complete formulas in chemistry. Standard conditions include atmosphere at sea level (760 torr) and the Kelvin value for the freezing point of water (273K).

**standard deviation:** The standard deviation is a statistical measure of precision. The best estimate of the standard deviation  $s$  for small data sets is calculated using 
$$s = \sqrt{\frac{\sum (x_i - \bar{x})^2}{N-1}}$$
 where  $x_i$  is the measurement from the  $i$ -th run,  $\bar{x}$  is the mean of all the measurements, and  $N$  is the number of measurements. For very large data sets, the standard deviation is the root-mean-square deviation from the true mean, and is usually written as  $\sigma$  to distinguish it from the best estimate standard deviation  $s$  used for small data sets.

**standard enthalpy change:** A change in enthalpy associated with a reaction or transformation involving substances in their standard states.

**standard enthalpy of formation  $\Delta H_f^\circ$ :** The change in enthalpy when one mole of compound is formed from its elements in their most stable form and in their standard states.

**standard enthalpy of reaction  $\Delta H_{rxn}^\circ$ :** A change in enthalpy associated with a reaction involving substances in their standard states.

**standard entropy of reaction<sub>rxn</sub>:** A change in entropy associated with a reaction involving substances in their standard states. A superscript circle (<sup>°</sup>) distinguishes standard enthalpy changes from enthalpy changes which involve reactants and products that are not in their standard states.

**Standard free-energy change:** The free-energy change of a reaction, when it takes place under standard conditions, in which each of the reactants is present at a concentration of 1.0 M.

**standard free-energy change ( $\Delta G^\circ$ ):** The free-energy change for a reaction occurring under a set of standard conditions : temperature, 298 K; pressure, 1 atm or 101.3 kPa; and all solutes at 1 M concentration.  $\Delta G^\circ$  denotes the standard free-energy change at pH 7.0.

**standard hydrogen electrode:** A platinum electrode that runs the half reaction  $2 \text{H}^+(\text{aq}, 1\text{M}) + 2 \text{e}^- \rightarrow \text{H}_2(\text{g}, 1 \text{ atm})$ , chosen as a reference for cell voltages. The electrode potential of the standard hydrogen electrode is defined to be zero volts.

**standard medical care :** Treatment that is accepted by medical experts as a proper treatment for a certain type of disease and that is widely used by healthcare professionals. Also called best practice, standard of care, and standard therapy.

**standard molar entropy:** The entropy of one mole of a substance in its standard state.

**standard molar volume:** The volume of 1 mole of an ideal gas at STP, equal to 22.414 liters.

**standard of care :** Treatment that is accepted by medical experts as a proper treatment for a certain type of disease and that is widely used by healthcare professionals. Also called best practice, standard medical care, and standard therapy.

**Standard Operating Procedure :** Written instructions for doing a specific task in a certain way. In clinical trials, Standard Operating Procedures are set up to store records, collect data, screen and enroll subjects, and submit Institutional Review Board (IRB) applications and renewals. Also called SOP.

**Standard Pressure:** The pressure measured at sea level on the Earth. Pressure can change if weather changes but standard pressure is measured as 760 millimeters of mercury on a barometer (torr).

**standard pressure:** Standard pressure is a pressure of 1 bar. Before 1982, the standard pressure was 1 atm (1 atm = 1.01325 bar).

**standard reduction potential:** The voltage associated with a reduction process at standard state. The reduction potential of  $2\text{H}^+(\text{aq}, 1\text{M}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g}, 1\text{ atm})$  is taken as exactly zero volts.

**standard reduction potential ( $E^0$ ):** The electromotive force exhibited at an electrode by 1 M concentrations of a reducing agent and its oxidized form at 25 °C and pH 7.0; a measure of the relative tendency of the reducing agent to lose electrons.

**Standard Review Plan:** A document that provides guidance to the staff for reviewing an application to obtain an NRC license to construct or operate a nuclear facility or to possess or use nuclear materials.

**Standard Solution:** This is a solution for which the scientist knows the concentration of solute and solvent. Or A solution of precisely known concentration.

**standard state:** A set of conditions defined to allow convenient comparison of thermodynamic properties. The standard state for a gas is the the state of the pure substance in the gaseous phase at the standard pressure, with the gas behaving ideally. The standard state for liquids and solids is the state of the most stable form of the substance at the standard pressure. Temperature is not included in the definition of standard state and must be specified, but when not given a temperature of 25°C is usually implied.

**Standard Technical Specifications:** NRC staff guidance on model technical specifications for an operating license. (See also Technical Specifications.)

**standard temperature and pressure:** 0° and 1 atmosphere.

**standard therapy :** Treatment that is accepted by medical experts as a proper treatment for a certain type of disease and that is widely used by healthcare professionals. Also called best practice, standard medical care, and standard of care.

**standardization:** A set of techniques used to remove as far as possible the effects of differences in age or other confounding variables, when comparing two or more populations. The common method uses weighted averaging of rates specific for age, sex, or some other potential confounding

variable(s) according to some specified distribution of these variables. There are two main methods, as follows:

**standardized freeze-dried table grape powder:** A standardized freeze-dried preparation of desiccated table grapes containing polyphenols (including flavanols, anthocyanins, flavonols, and stilbenes such as resveratrol) and other unidentified compounds with antioxidant activity. Standardized freeze-dried table grape powder increases serum antioxidant activity and reduces the macrophage-mediated oxidation and uptake of low-density lipoprotein (LDL). This agent has been shown to inhibit genes linked to the development of sporadic colorectal cancer and may exhibit chemopreventive activity for other human cancers.

**standardized mortality (morbidity) ratio (SMR):** The ratio of the number of events observed in the study group or population to the number of deaths expected if the study population had the same specific rates as the standard population, multiplied by 100 (Last, 1988).

**Stanford V :** An abbreviation for a chemotherapy combination that is used to treat Hodgkin lymphoma and is being studied in the treatment of other types of cancer. It includes the drugs mechlorethamine, doxorubicin hydrochloride, vinblastine sulfate, vincristine sulfate, bleomycin sulfate, etoposide phosphate, and prednisone and was developed at Stanford University. Also called Stanford V regimen.

**Stanford V regimen:** A chemotherapy regimen consisting of mechlorethamine, doxorubicin hydrochloride, vinblastine, vincristine, bleomycin, etoposide and prednisone, administered on a compressed schedule and used in the treatment of Hodgkin lymphoma; it may be followed by consolidative radiation therapy. or An abbreviation for a chemotherapy combination that is used to treat Hodgkin lymphoma and is being studied in the treatment of other types of cancer. It includes the drugs mechlorethamine, doxorubicin hydrochloride, vinblastine sulfate, vincristine sulfate, bleomycin sulfate, etoposide phosphate, and prednisone and was developed at Stanford University. Also called Stanford V.

**staphylococcus aureus protein A:** A protein that resides in the microbial wall of staphylococcus aureus and interferes with opsonization by binding to the Fc portion of immunoglobulin. The protein has a deleterious effect on the epithelial cells that line the respiratory tract, and plays a role in the

induction of pneumonia. Protein A also initiates polymorphonuclear cell migration into airway passages via TNFR1 activation.

**Staple:** Refers to textile fibers of a short length, usually 1/2 to 3", for natural fibers and sometimes larger for synthetics.

**star dune:** an isolated hill of sand formed by variable winds in the Sahara and Arabian deserts; the base of the dune resembles a multipointed star.

**Starch:** A long chain of carbohydrates formed in plants. It is often used as a food supply because it is a poly-saccharide made of glucose units. You will see starches from wheat plants used everyday in pasta. Starch is originally created in plant cells. Or A polysaccharide used by plants to stockpile glucose molecules. The most common forms are amylose and amylopectin. or A homopolysaccharide that is a storage form of glucose in plant chloroplasts; amylopectin, the branched form of starch, has approximately one  $\alpha$ -1,6 linkage per thirty  $\alpha$ -1,4 linkages, whereas amylose is unbranched, composed of glucose residues in  $\alpha$ -1,4 linkage. or Starch is the main source of food energy for most of the world's human population. It can be considered to be a condensation polymer of glucose, like cellulose, although the ether linkages in starch are different to those in cellulose. Starch may be highly branched (amylopectin) or relatively unbranched (amylose).

**starch :** A substance found in plants. It contains sugar molecules joined chemically. It is found in high levels in foods such as potatoes, rice, corn, and wheat. It may be used as a dusting powder, a skin softener, a filler in medicine tablets, and a clothes stiffener.

**Starlix:** (Other name for: nateglinide)

**Start codon:** The first codon to be translated, usually AUG.

**Startup:** An increase in the rate of fission (and heat production) in a reactor (usually by the removal of control rods from the core).

**STARVE FEEDING:** Feeding of an extruder at a rate below the full capacity of the machine. This results in output determined by the feeder and not by the extruder or the process parameters.

**Starved-fed cycle:** In animals, the biochemical changes that take place in the postabsorptive state, a prolonged fast and a refeed state, such as would take place between an evening meal and breakfast.

**STAT inhibitor OPB-111077:** An orally bioavailable inhibitor of one or more signal transducer and activator of transcription (STAT) protein(s), with potential antineoplastic activity. Upon oral administration, OPB-111077 binds to and inhibits the phosphorylation of STATs. This prevents binding of STATs to DNA sequences on a variety of STAT-responsive gene promoters, which may result in the inhibition of both STAT-mediated transcription and tumor cell proliferation. STATs are constitutively activated in a variety of cancers and play a key role in tumor cell proliferation.

**STAT3 antisense oligonucleotide ISIS 481464:** An antisense oligonucleotide targeting signal transducer and activator of transcription 3 (STAT3) with potential antitumor activity. STAT3 antisense oligonucleotide ISIS 481464 binds to STAT3 mRNA, thereby inhibiting translation of the transcript. Suppression of STAT3 expression induces tumor cell apoptosis and decreases tumor cell growth. STAT3, a protein overexpressed in a variety of human cancers, plays a critical role in tumor cell growth and survival.

**STAT3 decoy oligonucleotide:** A double-stranded 15-mer oligonucleotide, corresponding closely to the signal transducer and activator of transcription 3 (STAT3) response element within the c-fos promoter, with potential antineoplastic activity. STAT3 decoy oligonucleotide binds specifically to activated STAT3 and blocks binding of STAT3 to DNA sequences on a variety of STAT3-responsive promoters, which results in the inhibition of STAT3-mediated transcription and, potentially, the inhibition of tumor cell proliferation. STAT3 is constitutively activated in a variety of cancers including squamous cell carcinoma of the head and neck, contributing to the loss of cell growth control and neoplastic transformation.

**STAT3 inhibitor OPB-31121:** An orally bioavailable inhibitor of signal transducer and activator of transcription 3 (STAT3), with potential antineoplastic activity. OPB-31121 inhibits the phosphorylation of STAT3, which prevents binding of STAT3 to DNA sequences on a variety of STAT3-responsive promoters and may result in the inhibition of STAT3-mediated transcription and, potentially, the inhibition of tumor cell proliferation. STAT3 is constitutively activated in a variety of cancers, contributing to the loss of cell growth control and neoplastic transformation.

**STAT3 inhibitor OPB-51602:** An orally bioavailable inhibitor of signal transducer and activator of transcription 3 (STAT3), with potential

antineoplastic activity. STAT3 inhibitor OPB-51602 inhibits the phosphorylation and thus the activation of STAT3 protein, impeding STAT3 protein from translocating from the cytoplasm to the nucleus and thereby blocking STAT3's regulation of gene expression through direct binding to the promoters of responsive genes. STAT3 regulates the cellular functions that lead to the cancer phenotype, and constitutive activation of STAT3 is observed in a wide range of human cancers, inducing uncontrolled proliferation and neoplastic transformation.

**state function:** A property that depends only on the condition or "state" of the system, and not on the path used to obtain the current conditions. Energy, enthalpy, temperature, volume, pressure, and temperature are examples of state functions; heat and work are examples of non-state functions.

**state of matter:** There are three common states of matter: gases, liquids, and solids. States of matter differ in the way the molecules are arranged at the molecular level, but not in the structure of the molecules themselves. Other states (the plasma and Bose-Einstein condensate states) are uncommon on Earth.

**state property:** A state property is a quantity that is independent of how the substance was prepared. Examples of state properties are altitude, pressure, volume, temperature and internal energy.

**states of matter:** solid, liquid, and gas. Or Matter comes in many forms, shapes, and sizes. The big ones you should remember are solids, liquids, gases, and plasmas. Nearly all matter can be found in these four basic forms. Or Solid, liquid, gas and plasma. Plasma is a "soup" of disassociated nuclei and electrons, normally found only in stellar objects.

**Statex SR:** (Other name for: morphine sulfate)

**static correlation:** See "nondynamic correlation."

**Static electricity:** Buildup of stationary electrical charge on a coating powder or a coated surface.

**Static Eliminators:** Mechanical devices frequently used by plastic material manufacturers for removing electrical static charges from plastic articles.

**Static Mixer:** A helix like device that mixes two liquids by redirecting the flow path into each other repeatedly, common with RTV Silicone and some

liquid silicone rubber applications

**Static Seal:** A seal that, except for pulsations caused by cycle pressure, does not move in its environment

**Static-light scattering (SLS):** See Fraunhofer diffraction.

**statin :** Any of a group of drugs that lower the amount of cholesterol and certain fats in the blood. Statins inhibit a key enzyme that helps make cholesterol. Statin drugs are being studied in the prevention and treatment of cancer.

**Statins:** Inhibitors of HMG-coa reductase that are used to lower the plasma cholesterol level of people with atherosclerosis.

**station model:** a diagram on a weather map showing weather data from a specific city at a given time.

**stationary front:** initial boundary between two air masses.

**stationary phase:** A stationary phase is a substance that shows different affinities for different components in a sample mixture in a separation of the mixture by chromatography. The mobile phase (a solution containing the sample) flows over or through the stationary phase to effect the separation.

**STATIONARY PLATEN:** The plate of an injection or compression molding machine to which the front plate of the mold is secured during operation. This platen does not move during normal operation. OR ("a"). The platen at the injection end of the molding machine that does not travel. It contains the "a" half of the mold and locates the mold to the nozzle of the injection unit. The moving platen travels between this platen and stationary platen "b." OR The plate of an injection or compression molding machine to which the front plate of the mold is secured during operation. This platen does not move during normal operation. OR The large front plate of an injection molding press to which the front plate of the mold is secured. This platen does not move during normal operation.

**Statistical Process Control (SPC):** The use of statistical techniques on processes and their output to establish process stability and increase capabilities

**statistical-dynamical models:** Computer programs that calculate simplified climate models based on versions of the conservation equations that have been averaged over longitude, with the effects of the synoptic eddies parameterized statistically in the meridional plane.

**statistically significant :** Describes a mathematical measure of difference between groups. The difference is said to be statistically significant if it is greater than what might be expected to happen by chance alone. Also called significant.

**stature :** The height of a person while standing.

**staurosporine :** A drug that belongs to the family of drugs called alkaloids. It is being studied in the treatment of cancer.

**stavudine:** A synthetic nucleoside, analog of didehydro-3-deoxythymidine with potent antiretroviral activity. In vivo, stavudine is phosphorylated by cellular kinases to the active metabolite stavudine triphosphate; this metabolite inhibits the activity of HIV reverse transcriptase both by competing with the natural substrate deoxythymidine triphosphate and by incorporation into viral DNA causing a termination of DNA chain elongation (due to the lack the essential 3'-OH group). or A drug that belongs to the family of drugs called nucleoside analogs. It is used to treat infection caused by viruses.

**Stavzor :** A drug used to treat epileptic seizures and bipolar disorder and to prevent migraine headaches. It is also being studied in the treatment of several types of cancer. It blocks an enzyme that cells need to grow and may cause cancer cells to die. It also blocks the growth of new blood vessels that tumors need to grow. It is a type of anticonvulsant, histone deacetylase (HDAC) inhibitor, antimaniacal, migraine headache prophylactic, and antiangiogenesis agent. Also called Depakene and valproic acid.

**Stay time:** The period during which personnel may remain in a restricted area in a reactor before accumulating some permissible occupational dose.

**Steady state:** In enzyme-kinetic analysis, the time interval when the rate of reaction is approximately constant with time. The term is also used to describe the state of a living cell where the concentrations of many molecules are approximately constant because of a balancing between their rate of synthesis and breakdown. or In enzyme-kinetic analysis, the time interval when the rate of reaction is approximately constant with time. The term is also used to describe the state of a living cell where the concentrations of many molecules are approximately constant because of a balancing between their rate of synthesis and breakdown. or A

nonequilibrium state of a system through which matter is flowing and in which all components remain at a constant concentration.

**Steam generator:** The heat exchanger used in some reactor designs to transfer heat from the primary (reactor coolant) system to the secondary (steam) system. This design permits heat exchange with little or no contamination of the secondary system equipment.

**Stearamide:** A slip additive used by most plastic product distributors in polyolefins. It is used in process industries as release agents, antistatic agents, and antifoaming agents.

**steatosis:** describing the abnormal retention of lipids within a cell. It reflects an impairment of the normal processes of synthesis and elimination of triglyceride fat

**steel:** Steel is a metal composed mainly of iron, with a little carbon and sometimes other metals, mixed in. or An alloy of iron and carbon. Steel contains anywhere between 0.2% carbon (for soft wire and sheet steel) and 1.5% carbon (for cutting tools), with small amounts of many other elements often present.

**Steel (Metal) Safe:** Part design change will only require to remove metal from mold instead of “weld-add” metal on the mold.

**Steel pins:** A cylindrical pin for formatting high-aspect-ratio, small-diameter holes in a part. A steel pin is strong enough to handle the stress of ejection and its surface is smooth enough to release cleanly from the part without draft.

**Steel safe:** Also known as “metal safe” (which is the preferred term when working with aluminum molds). This refers to a change to the part design that requires only the removal of metal from the mold to produce the desired geometry. Typically most important when a part design is changed after the mold has been manufactured, because then the mold can be modified rather than entirely re-machined. OR Steel Safe Rule: Add Plastic = Removing Steel, Removing Plastic = Adding Steel (welding or inserting). When it comes to mold-making, you can always cut more metal away – making your plastic part larger, walls thicknesses wider, etc. – but adding metal back to the mold – removing walls, thinning features, etc.- can be extremely costly, and often times not possible.

**Stelara:** (Other name for: ustekinumab)

**Stelazine:** (Other name for: trifluoperazine hydrochloride)

**stellate :** Star shaped.

**Stem cell:** A cell from which other cells stem or arise by differentiation. Or A cell from which other cells stem or arise by differentiation. Or The common, self regenerating cells in bone marrow that give rise to differentiated blood cells such as erythrocytes and lymphocytes.

**stem cell :** A cell from which other types of cells develop. For example, blood cells develop from blood-forming stem cells.

**stem cell engraftment :** A process in which transplanted stem cells travel through the blood to the bone marrow, where they begin to make new white blood cells, red blood cells, and platelets. It usually happens within 2 to 4 weeks after a stem cell transplant. The transplanted stem cells may come from a donor or from the patient.

**stem cell factor :** A substance that causes blood stem cells (cells from which other types of cells develop) to change into different types of blood cells and increases the number and actions of these cells in the blood. Stem cell factor is a type of cytokine and a type of growth factor. Also called kit ligand and SCF.

**stem cell factor receptor :** A protein found on the surface of many different types of cells. It binds to a substance called stem cell factor (SCF), which causes certain types of blood cells to grow. Stem cell factor receptor may also be found in higher than normal amounts, or in a changed form, on some types of cancer cells, including gastrointestinal stromal tumors and melanoma. Measuring the amount of stem cell factor receptor in tumor tissue may help diagnose cancer and plan treatment. Stem cell factor receptor is a type of receptor tyrosine kinase and a type of tumor marker. Also called c-kit and CD117.

**stem cell mobilization :** A process in which certain drugs are used to cause the movement of stem cells from the bone marrow into the blood. The stem cells can be collected and stored. They may be used later to replace the bone marrow during a stem cell transplant.

**stem cell rescue :** A method of replacing blood-forming stem cells that were destroyed by treatment with high doses of anticancer drugs or radiation therapy. The stem cells help the bone marrow recover and make healthy blood cells. A stem cell rescue may allow more chemotherapy or

radiation therapy to be given so that more cancer cells are killed. It is usually done using the patient's own stem cells that were saved before treatment. Also called rescue transplant.

**stem cell transplant :** A method of replacing immature blood-forming cells in the bone marrow that have been destroyed by drugs, radiation, or disease. Stem cells are injected into the patient and make healthy blood cells. A stem cell transplant may be autologous (using a patient's own stem cells that were saved before treatment), allogeneic (using stem cells donated by someone who is not an identical twin), or syngeneic (using stem cells donated by an identical twin).

**Stem-loop structure:** The simplest and most common structural motif found in single-stranded nucleic acids, formed when two complementary sequences within a single strand come together to yield a double-helical structure with an unpaired loop at the end of the helical region.

**Stemgen :** A substance that causes blood stem cells (cells from which other types of cells develop) to change into different types of blood cells and increases the number and actions of these cells in the blood. It is being studied in the treatment of myelodysplasia. Stemgen is a type of recombinant stem cell growth factor. Also called ancestim, r-metHuSCF, and recombinant human methionyl stem cell factor.

**stent :** A device placed in a body structure (such as a blood vessel or the gastrointestinal tract) to keep the structure open.

**STEP:** Stands for "Standard for the Exchange of Product Model Data." It is a common format for exchanging CAD data.

**steradian:** A solid angle with vertex at the center of a sphere of radius  $r$  that encompasses an area of  $r^2$  on the surface of the sphere.

**Stereochemical:** The geometry of molecules, and the arrangement of their constituent atoms in space, is the subject matter of stereochemistry. What does that actually mean? In the nomenclature section, you will have encountered isomers with the same chemical formula but with the atoms arranged in a different order - such as the various forms of pentane. You will also have met cis and trans isomers of alkenes - these are compounds with the atoms in the same order, but with a different geometry and are simple examples of stereoisomers. A good general rule to follow is that any compound with a carbon centre bearing four different substituents can exist in different stereoisomers; such a carbon is called a chiral centre. The

original (and still one of the best) examples of stereoisomerism are the two forms of tartaric acid, discovered by Louis Pasteur. It can be hard to see from a picture, so if you can you should try to make models of the two species below and you will discover that they are not the same at all. or The spatial arrangement of atoms in molecules or compounds and the relation of spatial arrangement to the substance's properties.

**Stereochemistry:** A branch of chemistry that is concerned with the study of the relationship between chemical properties and the spatial arrangement of atoms and molecules in a compound. Or the study of the three-dimensional structure of molecules and how it affects their interactions. Or Stereochemistry is the study of how the properties of a compound are affected by the spatial positions of groups within its molecules. Stereochemistry is also concerned with determining the structure of stereoisomers.

**Stereocilium:** One of a bundle of 20 to 300 hairlike projections that protrude from hair cells; movements of a stereocilia initiate the hearing signal-transduction pathway by altering the polarization of hair cells.

**stereogenic center:** a central atom that has four different atoms or groups bonded to it; also called or .

**stereoisomer:** Molecules with the same atoms and bond structure, but different three dimensional arrangements of atoms. For example, the CH<sub>3</sub> groups in CH<sub>3</sub>CH=CHCH<sub>3</sub> can be placed on the same side of the double bond in one stereoisomer and on opposite sides in another. Or Two or more compounds with the same molecular formula and the same atom-to-atom arrangement, but with different arrangement of atoms in space. stereoisomeric (adjective) or compounds with the same molecular formula but different arrangement of their atoms in three-dimensional space. or Isomers that are nonsuperimposable mirror images of each other. or Isomers that are nonsuperimposable mirror images of each other. or Compounds that have the same composition and the same order of atomic connections, but different molecular arrangements.

**Stereolithography (SL):** SL uses an ultraviolet laser focused to a small point to draw on the surface of a liquid thermoset resin. Where it draws, the liquid turns to solid. This is repeated in thin, two-dimensional cross-sections that are layered to form complex three-dimensional parts.

**Stereolithography (SLA):** This form of 3D-printing utilizes a UV laser to cure photo-reactive liquid resin layer by layer into a solid form pre-defined by a 3D modeling file.

**Stereoscopic packing drawing:** A three-dimensional representation of a crystalline arrangement of molecules using side-by-side views at slightly different angles. These representation may be viewed unaided or by using special viewers.

**stereospecific:** the requirement of a specific stereochemical shape for a reaction to occur.

**stereotactic biopsy :** A biopsy procedure that uses a computer and a 3-dimensional scanning device to find a tumor site and guide the removal of tissue for examination under a microscope.

**stereotactic body radiation therapy :** A type of external radiation therapy that uses special equipment to position a patient and precisely deliver radiation to tumors in the body (except the brain). The total dose of radiation is divided into smaller doses given over several days. This type of radiation therapy helps spare normal tissue.

**stereotactic external-beam radiation therapy :** A type of external radiation therapy that uses special equipment to position the patient and precisely deliver radiation to a tumor. The total dose of radiation is divided into several smaller doses given over several days. Stereotactic external-beam radiation therapy is used to treat brain tumors and other brain disorders. It is also being studied in the treatment of other types of cancer, such as lung cancer. Also called stereotactic radiation therapy and stereotaxic radiation therapy.

**stereotactic injection :** A procedure in which a computer and a 3-dimensional scanning device are used to inject anticancer drugs directly into a tumor.

**stereotactic radiation therapy :** A type of external radiation therapy that uses special equipment to position the patient and precisely deliver radiation to a tumor. The total dose of radiation is divided into several smaller doses given over several days. Stereotactic radiation therapy is used to treat brain tumors and other brain disorders. It is also being studied in the treatment of other types of cancer, such as lung cancer. Also called stereotactic external-beam radiation therapy and stereotaxic radiation therapy.

**stereotactic radiosurgery :** A type of external radiation therapy that uses special equipment to position the patient and precisely give a single large dose of radiation to a tumor. It is used to treat brain tumors and other brain disorders that cannot be treated by regular surgery. It is also being studied in the treatment of other types of cancer. Also called radiation surgery, radiosurgery, and stereotaxic radiosurgery.

**stereotaxic radiation therapy :** A type of external radiation therapy that uses special equipment to position the patient and precisely deliver radiation to a tumor. The total dose of radiation is divided into several smaller doses given over several days. Stereotaxic radiation therapy is used to treat brain tumors and other brain disorders. It is also being studied in the treatment of other types of cancer, such as lung cancer. Also called stereotactic external-beam radiation therapy and stereotactic radiation therapy.

**stereotaxic radiosurgery :** A type of external radiation therapy that uses special equipment to position the patient and precisely give a single large dose of radiation to a tumor. It is used to treat brain tumors and other brain disorders that cannot be treated by regular surgery. It is also being studied in the treatment of other types of cancer. Also called radiation surgery, radiosurgery, and stereotactic radiosurgery.

**stereotaxis :** Use of a computer and scanning devices to create 3-dimensional pictures. This method can be used to direct a biopsy, external radiation, or the insertion of radiation implants.

**Steric:** Any effect that is caused simply by a chemical group physically getting in the way, rather than by any particular properties of that group, is called a steric effect. A good definition to keep in mind (Organic Chemistry, John McMurry , 1988) is that steric strain is the result of trying to force two objects to occupy the same space. Here is an interesting example of a steric effect.

**steric height:** The mean dynamic depth (or height) of the ocean for the month minus the annual mean dynamic depth for the same isobaric reference level.

**steric hindrance:** the ability of bulky groups on carbon atoms to prevent or restrict a reagent from reaching a reaction site. Or the blocking of one side of a molecule by a substituent so that any further bonding must occur

on the opposite side. Steric hindrance causes the formation of trans stereoisomers.

**Steric Shield:** In drug design, steric shields are bulky groups added to metabolically vulnerable parts of the drug in order to slow down metabolism.

**sterile :** Unable to produce children. Also means free from germs.

**Sterile Talc Powder:** (Other name for: talc)

**sterile talc powder :** A mineral, usually used in a powdered form. In cancer treatment, sterile talc powder is used to prevent pleural effusions (an abnormal collection of fluid in the space between the lungs and the chest wall). Sterile talc powder is inserted into the space, causing it to close up, so fluid cannot collect there. Also called talc.

**Sterilise:** The treatment of surfaces to kill off organic growth such as mould or algae prior to painting.

**Steritalc:** (Other name for: talc)

**sternum :** The long flat bone that forms the center front of the chest wall. The sternum is attached to the collarbone and the first seven ribs. Also called breastbone.

**Steroid:** Steroids are lipids that are based on the cholesterol molecule. Steroids have three six-carbon rings, one five-carbon ring, and a side chain of some type. They are often used as hormones in organisms. Some steroids you may know are cholesterol, progesterone, or testosterone.

**steroid :** Any of a group of lipids (fats) that have a certain chemical structure. Steroids occur naturally in plants and animals or they may be made in the laboratory. Examples of steroids include sex hormones, cholesterol, bile acids, and some drugs.

**steroid cream :** A skin cream containing a type of drug that relieves swelling, itching, and inflammation.

**steroid drug :** A type of drug used to relieve swelling and inflammation. Some steroid drugs may also have antitumor effects.

**Steroid hormones:** Hormones, such as androgen and estrogen, derived from cholesterol.

**steroid metabolism gene :** A type of gene that helps the body build up or break down steroids. Steroids may be made by the body (such as hormones

and cholesterol) or made in a laboratory (such as drugs). A steroid metabolism gene called CYP17 is being studied in breast, ovarian, and uterine cancers.

**steroid sulfatase inhibitor BN 83495:** An orally bioavailable tricyclic coumarin-based sulfamate with potential antineoplastic activity. Steroid sulfatase inhibitor BN 83495 selectively binds to and inhibits steroid sulfatase (STS), which may inhibit the production of locally active estrogens and so inhibit estrogen-dependent cell growth in tumor cells, such as those of the breast, ovary, and endometrium. STS is a cytoplasmic enzyme responsible for the conversion of circulating inactive estrone sulfate and estradiol sulfate to biologically active unconjugated estrone and estradiol, respectively.

**steroid therapy :** Treatment with corticosteroid drugs to reduce swelling, pain, and other symptoms of inflammation.

**steroids:** Compounds containing a 17-carbon, four-ring system. Or Compounds that are derivatives of a tetracyclic structure composed of a cyclopentane ring fused to a substituted phenanthrene nucleus. Or Compounds that are derivatives of a tetracyclic structure composed of a cyclopentane ring fused to a substituted phenanthrene nucleus.

**Sterol regulatory element binding protein (SREBP):** A transcription factor that binds to the sterol regulatory element of the HMG-coa reductase gene and other genes in cholesterol metabolism to stimulate their transcription.

**sterols:** A class of lipids containing the steroid nucleus.

**STI571:** A drug used to treat different types of leukemia and other cancers of the blood, gastrointestinal stromal tumors, skin tumors called dermatofibrosarcoma protuberans, and a rare condition called systemic mastocytosis. It is also being studied in the treatment of other types of cancer. STI571 blocks the protein made by the bcr/abl oncogene. It is a type of tyrosine kinase inhibitor. Also called Gleevec and imatinib mesylate.

**Stickiness:** There's only one thing for it. Completely remove all existing material and carefully clean down the surfaces. Allow to dry, then reapply coating.

**Sticking:** A problem during the ejection phase of molding, where a part becomes lodged in one or the other half of the mold, making removal

difficult. This is a common issue when the part is not designed with sufficient draft.

**sticky ends:** Two DNA ends in the same DNA molecule, or in different molecules, with short overhanging single-stranded segments that are complementary to one another, facilitating ligation of the ends; also known as cohesive ends.

**Stiffness:** The capacity of a material to resist elastic displacement under stress. OR The capacity of a material to resist strain where stressed.

**Stilbestrol:** (Other name for: diethylstilbestrol)

**Stilbetin:** (Other name for: diethylstilbestrol)

**Stilboestroform:** (Other name for: diethylstilbestrol)

**Stilboestrol:** (Other name for: diethylstilbestrol)

**Stile:** The vertical part of any framing into which the horizontal rails are fixed by mortices and tenons.

**Stimate:** (Other name for: desmopressin acetate)

**Stimulation :** Oil well stimulation is the general term describing a variety of operations performed on a well to improve its productivity. Its main two types of operations are matrix acidization and hydraulic fracturing.

**Stimuvax:** (Other name for: emepepimut-S)

**STING-activating cyclic dinucleotide agonist ADU-S100:** A synthetic, cyclic dinucleotide (CDN) and agonist of stimulator of interferon genes protein (STING; transmembrane protein 173; TMEM173), with potential immunomodulating and antineoplastic activities. Upon intratumoral administration, the STING agonist MIW815 binds to STING and stimulates STING-mediated pathways. This activates the immune response through the activation of certain immune cells, including dendritic cells (DCs), which induces the expression of cytokines and chemokines, and leads to an antigen-specific T-cell mediated immune response against cancer cells. STING, a transmembrane protein that activates immune cells in the tumor microenvironment, plays a key role in the activation of the innate immune system.

**Stipple:** A method of evening out a coat of paint by dabbing or lightly beating out the surface immediately after application with a special brush (stippler). Hence the texture or appearance of a paint surface so treated.

**Stitch lines:** Also known as “weld lines” or “knit lines,” and when multiple gates are present, “meld lines.” These are imperfections in the part where separated flows of cooling material meet and rejoin, often resulting in incomplete bonds and/or a visible line.

**Stivarga :** A drug used to treat colorectal cancer that has spread to other parts of the body and has not gotten better with other treatment. It is also used to treat gastrointestinal stromal tumors (GIST) that cannot be removed by surgery or have spread to other parts of the body and have not gotten better with other anticancer drugs. It is being studied in the treatment of other types of cancer. Stivarga blocks the action of certain proteins, which may help keep cancer cells from growing and may kill them. It may also prevent the growth of new blood vessels that tumors need to grow. Stivarga is a type of kinase inhibitor and a type of antiangiogenesis agent. Also called regorafenib.

**STL:** Originally stood for “STereoLithography.” It is a common format for transmitting CAD data to rapid prototyping machines and is not suitable for injection molding.

**STO:** Slater-type orbital. Basis function with an exponential radial function, i.e.,  $\exp(-\zeta r)$ . Also used to denote a fit to such a function using other functions, such as gaussians. For example, STO-3G is an MBS that uses 3 gaussians to fit an exponential. Exponentials are probably better basis functions than gaussians, but are so much more difficult computationally that they were abandoned by most people a long time ago.

**STO-3G:** The most popular MBS (see MBS and STO).

**stochastic effect:** Effect for which the probability of occurrence depends on the absorbed dose. Hereditary effects and cancer induced by radiation are considered to be stochastic effects (ICRP, 1977). The term “stochastic” indicates that the occurrence of effects so named would be random. This means that, even for an individual, there is no threshold of dose below which the effect will not appear, but the chance of experiencing the effect increases with increasing dose (WHO, 1979). or Effects that occur by chance, generally occurring without a threshold level of dose, whose probability is proportional to the dose and whose severity is independent of the dose. In the context of radiation protection, the main stochastic effects are cancer and genetic effects.

**stock:** a pluton that occupies less than 100 square kilometers at the earth's surface.

**Stoichiometric:** If you can spell this word, you're a real chemist. To paraphrase the IUPAC definition, stoichiometry is the relationship between the amounts of reactants reacted and the amounts of products produced. An equation that says that "Two moles of X reacts with one mole of Y to make three moles of Z" is a stoichiometric equation. We have rarely known anyone to use this word when they were not showing off. or refers to compounds or reactions in which the components are in fixed, whole-number ratios.

**stoichiometric coefficient:** The coefficients given before substances in a balanced chemical equation. For example, the stoichiometric coefficient of carbon dioxide in the following reaction is 4:

**stoichiometry:** The study of the relationships between amounts of products and reactants. Or The study of the quantitative relationships between reactants and products. Or 1. Ratios of atoms in a compound. 2. Ratios of moles of compounds in a reaction. 3. A branch of chemistry that quantitatively relates amounts of elements and compounds involved in chemical reactions, based on the law of conservation of mass and the law of definite proportions.

**Stokes shift :** the difference in wavelength between the apex of the excitation spectrum (shorter wavelength, higher energy) and the apex of the emission spectrum (longer wavelength, lower energy).

**stoma :** A surgically created opening from an area inside the body to the outside.

**stoma, plant stomata:** A minute pore in the epidermis of plant leaves or stems. Stoma, which are bordered by guard cells that regulate the size of the opening, function in gas exchange between the plant and the external environment. The stomatal apparatus or stomate consists of the stoma plus guard cells.

**stomach :** An organ that is part of the digestive system. The stomach helps digest food by mixing it with digestive juices and churning it into a thin liquid.

**stomach acid stimulation test :** A test used to measure the amount of gastric acid made by the stomach. The patient receives an injection of the

hormone gastrin or insulin. A tube is put through the nose or throat into the stomach and samples are taken from the stomach and sent to a laboratory for testing. Also called gastric acid secretion test and stomach acid test.

**stomach acid test :** A test used to measure the amount of gastric acid made by the stomach. The patient receives an injection of the hormone gastrin or insulin. A tube is put through the nose or throat into the stomach and samples are taken from the stomach and sent to a laboratory for testing. Also called gastric acid secretion test and stomach acid stimulation test.

**stomach cancer :** Cancer that forms in tissues lining the stomach. Also called gastric cancer.

**stomata:** the pores within leaves surrounded by guard cells that regulate the rate of gas exchange, which regulates the rate of photosynthesis. (Singular, stoma.)

**stomatitis :** Inflammation or irritation of the mucous membranes in the mouth.

**stool :** The material in a bowel movement. Stool is made up of undigested food, bacteria, mucus, and cells from the lining of the intestines. Also called feces.

**stool guaiac test :** A test that checks for occult (hidden) blood in the stool. Small samples of stool are placed on special cards coated with a chemical substance called guaiac and sent to a doctor or laboratory for testing. A testing solution is put on the cards and the guaiac causes the stool sample to change color. If there is blood in the stool, the color changes very quickly. Blood in the stool may be a sign of colorectal cancer or other problems, such as polyps, ulcers, or hemorrhoids. Also called gFOBT, guaiac fecal occult blood test, and guaiac smear test.

**stool test :** A test to check for hidden blood in the bowel movement.

**Stop codons:** A set of codons that are recognized by release factors and mark the end of translation. Or See termination codons.

**Stopping:** The action of filling up joints, deep imperfections or holes in a surface before painting.

**STORAGE MODULUS (denoted as  $G'$ ):** The ratio of shear stress to strain (deformation) when dynamic (sinusoidal) deformation is applied in a cone-and-plate rheometer. It relates to the elasticity of the polymer melt.  $G''$ , the loss modulus, also determined in dynamic (sinusoidal)

measurements relates to the viscous behaviour. So,  $G'$  and  $G''$  together give an idea of the dual nature of the polymer melt (partly elastic solid and partly viscous fluid). Measurements of  $G'$  and  $G''$  provide information on polymer structure and might be related to molecular weight distribution, cross-linking, etc.. Computer software like RHEOMWD can infer the breadth of the molecular weight distribution from  $G'$  and  $G''$  data.

**Storage stability:** The ability of a coating material to maintain uniform physical and chemical properties while in storage over an extended period of time.

**storm surge:** bubble of water carried by a hurricane, causing coastal flooding.

**Stoving:** The process of drying and hardening a paint coating by heating in an oven or other apparatus.

**Stoxil:** (Other name for: idoxuridine)

**STP:** Standard temperature and pressure. This is 0°C and 1 atm. Or Used to describe a substance at standard pressure and a temperature of 0°C (273.15 K).

**strabismus:** a disorder in which the eyes do not line up in the same direction when focusing

**straight angle:** an angle equal to 180°. Often called a line.

**straight colorectal anastomosis :** A surgical procedure in which the colon is attached directly to the remainder of the rectum after most of it has been removed during surgery for rectal cancer. This procedure is different from the J-pouch colorectal anastomosis because a pouch to store stool is not made from the colon before it is attached to the rectum.

**straight line:** often described as the shortest distance between two points. Continues forever in both directions. (Line means straight line.)

**Straight Pull:** No side actions.

**straight-chain alkane:** a saturated hydrocarbon that has no carbon-containing side chains.

**Straight-pull mold:** A mold that uses only two halves to form a cavity that resin is injected into. Generally, this term refers to molds with no side-actions or other special features used to resolve undercuts.

**Straight-sided Round:** A round bottle with straight side walls from shoulder to base.

**strain:** a change in the volume and/or shape of a rock because of stress. Or In tensile testing, the ratio of the elongation to the gage length of the test specimen, that is, the change in length per unit of original length. The term is also used in a broader sense to denote a dimensionless number that characterizes the change in dimensions of an object during a deformation or flow process.

**Strain Relief:** A type of fitting that prevents a kink to form at the point where the fitting and tube or hose meet. Particularly useful in situations where the maximum working length of the tube is frequently met.

**Strand:** An assembly of parallel filaments simultaneously produced and lightly bonded, without intentional twist.

**Strand,  $\beta$ :** An extended polypeptide chain, with an axial distance of 3.5 Å between adjacent amino acids, often found in a  $\beta$  pleated sheet.

**stratification:** The process of or result of separating a sample into several subsamples according to specified criteria such as age groups, socioeconomic status, etc. The effect of confounding variables may be controlled by stratifying the analysis of results. For example, lung cancer is known to be associated with smoking. To examine the possible association between urban atmospheric pollution and lung cancer, controlling for smoking, the population may be divided into strata according to smoking status. The association between air pollution and cancer can then be appraised separately within each stratum. Stratification is used not only to control for confounding effects but also as a way of detecting modifying effects. In this example, stratification makes it possible to examine the effect of smoking on the association between atmospheric pollution and lung cancer (Last, 1988).

**stratified sampling:** Of a population which can be divided into different subpopulations (called strata), sampling carried out in such a way that specific proportions of the sample are drawn from the different strata (ISO, 1977).

**stratigraphic trap:** a naturally occurring change in a sedimentary sequence that traps migrating oil and gas; examples include a lens of sandstone in a larger bed of shale or a porous reef structure in a limestone unit.

**stratopause:** the region between the stratosphere and the mesosphere. Or The layer of the earth's atmosphere that extends from roughly 7 miles (11 km) above the surface to 31 miles (50 km) above the surface. Or the layer of the atmosphere above the troposphere; temperature increases with altitude. or The region of the upper atmosphere extending from the tropopause (8 to 15 km altitude) to about 50 km. The thermal structure is determined by its radiation balance and is generally very stable with low humidity.

**Strattera:** (Other name for: atomoxetine hydrochloride)

**stratus:** layered, sheet-like clouds, usually associated with warm fronts and found at lower altitudes.

**strawberry-blackberry-black raspberry-blueberry berry mixture:** A dietary supplement consisting of a mixture of strawberries, blackberries, black raspberries and blueberries with potential antineoplastic activity. Although the exact mechanism of action through which berries may exert their anti-tumor effect has yet to be elucidated, in vivo studies suggest that the ingestion of a mixture of berries seems to result in a reduction in tumor growth and tumor development. As berries are rich in phytonutrients, such as anthocyanins, flavonols, ellagitannins, galltannins, proanthocyanidins, and phenolic acids, the antineoplastic effects of strawberry-blackberry-black raspberry-blueberry berry mixture on cancer cells may be attributable to phytonutrient antioxidant and apoptotic activities. In addition, phytoestrogens in berries may be protective against estrogen-sensitive tumors.

**streak:** the color of the powder left behind when a mineral is rubbed along an unglazed porcelain tile.

**STREAKING:** The irregular occurrence of lines or streaks of various lengths and colors in an applied film; usually caused by some form of contamination.

**stream base level:** the elevation of a stream's most horizontal flow and lowest velocity.

**stream capacity:** the total load of sediment a stream is capable of carrying.

**stream competence:** a measure of the largest-sized particle a stream can transport.

**stream discharge:** the volume of water that flows past a certain point in a certain amount of time.

**stream gradient:** the downhill slope of a channel; typically measured in feet per mile.

**stream terrace:** a steplike bench that occurs above a stream bed and floodplain and that is cut into bedrock or is a remnant of older river sediments that have since been eroded.

**stream valley:** a topographically low area, typically centered on a stream, that is produced by mass wasting and erosion.

**stream velocity:** the speed at which a stream flows.

**streptavidin:** An extracellular protein that has four high affinity binding sites for biotin. Streptavidin is widely utilized in fluorescence microscopy applications due to the ease with which a conjugate fluorescent moiety can be coupled to the protein. Check for active clinical trials using this agent. OR A small bacterial protein that binds with high affinity to the vitamin biotin. This streptavidin-biotin combination can be used to link molecules such as radioisotopes and monoclonal antibodies together. These bound products have the property of being attracted to, and attaching to, cancer cells, rather than normal cells. The radiolabeled products are more easily removed from the body, thus decreasing their toxicity.

**Streptomycin:** A highly basic trisaccharide antibiotic that causes both the inhibition of translational initiation and the misreading of mRNA in prokaryotes.

**streptonigrin:** An aminoquinone antineoplastic antibiotic isolated from the bacterium *Streptomyces flocculus*. Streptonigrin complexes with DNA and topoisomerase II, resulting in DNA cleavage and inhibition of DNA replication and RNA synthesis. This agent also acts as a reverse transcriptase inhibitor and causes free radical-mediated cellular damage. Check for active clinical trials using this agent.

**streptozocin:** A methyl nitrosourea antineoplastic antibiotic isolated from the bacterium *Streptomyces achromogenes*. Streptozocin alkylates DNA, forming inter-strand DNA cross-links and inhibiting DNA synthesis. Due to its glucose moiety, this agent is readily taken up by pancreatic beta cells, inducing diabetes mellitus at high concentrations. Unlike other nitrosoureas, streptozocin causes little myelosuppression. Check for active clinical

trials using this agent. or An anticancer drug that belongs to the family of drugs called alkylating agents.

**Stress:** In the science called rheology (the study of how materials flow and deform), stress is the force applied to a material and strain is the resulting movement of the material. A simple practical exercise is to measure the length of a rubber band 'at rest', then suspend an object of known weight from it (stress) and measure the change in its length (strain). Try adding bigger and bigger weights, and you may discover something originally discovered by Sir Isaac Newton. or an applied force (usually tectonic) that tends to physically alter a rock mass. or The force producing or tending to produce deformation divided by the area over which the force is applied. As generally defined in tensile testing (engineering stress), stress is the ratio of applied load to the original cross-sectional area. OR Force per original cross section that is applied to a specimen OR The force causing deformation in a plastic material measured by the force applied per unit area. OR A resistance to deformation from an applied force Molded plastic products tend to contain stresses molded in as a result of forces applied during the injection process These stresses may result in fractures, cracks, and breakage if they are released during use of the product.

**stress :** In medicine, the body's response to physical, mental, or emotional pressure. Stress causes chemical changes in the body that can raise blood pressure, heart rate, and blood sugar levels. It may also lead to feelings of frustration, anxiety, anger, or depression. Stress can be caused by normal life activities or by an event, such as trauma or illness. Long-term stress or high levels of stress may lead to mental and physical health problems.

**Stress Corrosion Cracking :** The fracture of a metal in a corrosive environment. Austenitic stainless steel belts are susceptible to a phenomenon known as "Stress Corrosion Cracking" under certain conditions.

**Stress Crack:** A crack, either external or internal, in a plastic caused by tensile stresses less than its short-time mechanical strength. Or External or internal cracks in a plastic caused by tensile stresses less than that of its short-time mechanical strength. Note The development of such cracks is frequently accelerated by the environment to which the plastic is exposed.

**Stress Cracking :** There are three types of stress cracking 1. Thermal stress cracking is caused by prolonged exposure of the part to elevated

temperatures or sunlight. 2. Physical stress cracking occurs between crystalline and amorphous portions of the part when the part is under an internally or externally induced strain. 3. Chemical stress cracking occurs when a liquid or gas permeates the part's surface. All of these types of stress cracking have the same end result the splitting or fracturing of the molding. OR A crack, either external / internal, in a plastic part caused by tensile stress less than its short time mechanical strength. The moulded-in stress left in the moulded part - due to unbalanced filling, over packing or non uniform freezing - can fail in service condition. The service environment can have objectionable temperature or contact with aggressive chemicals causing the plastic part to fail. Avoiding or minimising moulded-in stress in plastic part can increase the performance of part even under adverse condition.

**stress protein :** One of a group of proteins that help protect cells from stresses such as heat, cold, and low amounts of oxygen or glucose (sugar). Stress proteins help other proteins function in normal cells and may be present at high levels in cancer cells. Blocking the activity of a stress protein called HSP90 is being studied in the treatment of cancer. Other stress proteins including HSP70 and gp96 are being studied in vaccines to treat cancer. Also called heat-shock protein and HSP.

**Stress Relaxation:** The decay of stress at a constant strain. OR Decreasing stress with constant strain over a given time interval or viscoelastic response

**Stress-Strain Curve :** The curve plotting the applied stress on a test specimen versus the corresponding strain. Stress can be applied through shear, compression, flexure, or tension.

**Stretch Forming:** A plastic sheet forming technique in which the heated thermoplastic sheet is stretched over a mold and subsequently cooled.

**Stretcher:** A stone or brick laid so that its length is in the line of the face of the wall. Opposite to 'header'.

**striated muscle:** skeletal muscle fiber that appears to be banded due to the presence of overlapping actin and myosin filaments; also called voluntary muscle.

**striations:** parallel scratches on the Earth's surface caused by rocks dragged by a glacier; the scratches point in the direction of the glacial movement. Or A separation of colors resulting in a linear effect of color

variation. OR Rippling of thick parisons, caused by a local orientation effect in the melt by the spider legs. OR A separation of colors resulting in a linear effect of color variation. OR Marks evident on the molded-part surfaces that indicate melt flow directions or impingement.

**strike:** the compass bearing of the line formed by the intersection of a tilted bedding plane with the horizontal plane.

**Strike Plate:** A kind of cutting board for thermoforming plastics. What the cutter strikes against.

**strike-slip fault:** a fault in which the blocks on either side of the fault move horizontally in relation to each other, parallel to the strike of the fault. Or a fault where rock plates move horizontally to each other.

**String course:** A projecting course of stone or brick continued horizontally along the face of a wall.

**Stringent response:** In bacteria, a decrease in the rate of ribosomal and transfer RNA synthesis in response to a scarcity of amino acids.

**Stringing:** The supporting board of a staircase farthest from the wall.

**Strings:** Strings of material due to poor gate cut off. See pulled gate.

**STRIP:** Removal of old finishes with paint removers.

**Strip Sizes :** Strip sizes for flat wire and Omniflex are generally supplied in dimensions within the accepted tolerances of flat wire manufacturers. Strip sizes also designates the height and thickness of a flat wire strip.

**Stripper Plate:** A plate that strips a molded piece from core pins or force plugs. The stripper plate is set into operation by the opening of the mold. OR A plate that strips a molded plastic or liquid silicone rubber part from core pins

**Stripping:** A process in which a liquid containing a dissolved gas flows down a column and a gas (stripping gas) flows up the column at conditions such that the dissolved gas comes out of solution and is carried off with the stripping gas. Or The removal of old paint or paper. or Stripping is a technique for removing volatile components in a mixture by bubbling a stream of an chemically unreactive gas (like nitrogen) through the sample, and then 'scrubbing' the nitrogen through a solution or solid adsorbent that can recover the volatile materials.

**stroke :** In medicine, a loss of blood flow to part of the brain, which damages brain tissue. Strokes are caused by blood clots and broken blood

vessels in the brain. Symptoms include dizziness, numbness, weakness on one side of the body, and problems with talking, writing, or understanding language. The risk of stroke is increased by high blood pressure, older age, smoking, diabetes, high cholesterol, heart disease, atherosclerosis (a buildup of fatty material and plaque inside the coronary arteries), and a family history of stroke. Also called cerebrovascular accident and CVA.

**Stroma:** The matrix of the chloroplast; contains thylakoids as well as soluble enzymes and is enclosed by the inner membrane of the chloroplast. Or The space and aqueous solution enclosed within the inner membrane of a chloroplast, not including the contents within the thylakoid membranes.

**Stromagen :** A product that is made of special stem cells taken from a patient's bone marrow and grown in the laboratory. After a patient's bone marrow is destroyed by treatment with whole body irradiation or chemotherapy, these cells are injected back into the patient to help rebuild bone marrow. Stromagen has been studied in the prevention of graft-versus-host disease during stem cell transplant in patients receiving treatment for cancer. Stromagen is used in cellular therapy. Also called autologous expanded mesenchymal stem cells OTI-010.

**stromal cell :** A type of cell that makes up certain types of connective tissue (supporting tissue that surrounds other tissues and organs).

**stromal tumor :** A tumor that arises in the supporting connective tissue of an organ.

**strong acid:** A strong acid is an acid that completely dissociates into hydrogen ions and anions in solution. Strong acids are strong electrolytes. There are only six common strong acids: HCl (hydrochloric acid), HBr (hydrobromic acid), HI (hydroiodic acid), H<sub>2</sub>SO<sub>4</sub> (sulfuric acid), HClO<sub>4</sub>(perchloric acid), and HNO<sub>3</sub> (nitric acid).

**strong base:** A strong base is an base that completely dissociates into ions in solution. Strong bases are strong electrolytes. The most common strong bases are alkali metal and alkaline earth metal hydroxides.

**Strong Electrolyte:** A strong electrolyte is compound that ionizes one hundred percent in solution. Strong acids, bases, and salts are all strong electrolytes. Or an acid, base, or salt that dissociates almost completely to ions in aqueous solution. Or A strong electrolyte is a solute that completely dissociates into ions in solution. Solutions of strong electrolytes conduct electricity. Most soluble ionic compounds are strong electrolytes.

**strong ligand:** A ligand that causes a large crystal field splitting which results in a low-spin complex.

**Strontium:** Symbol:"Sr" Atomic Number:"38" Atomic Mass: 87.62amu. This element is a member of the alkaline metals family. Strontium is grouped with other barium-like minerals. It is reactive and oxidizes quickly, becoming a yellowish color. You may find it in magnets, TV tubes, and nuclear reactors.

**strontium :** A metal often used in a radioactive form for imaging tests and in the treatment of cancer.

**strontium chloride Sr 89:** The chloride salt of a radioactive isotope of strontium. Strontium chloride Sr 89 is taken up and incorporated preferentially in metastatic lesions in bone where it emits cytotoxic beta radiation, resulting in an inhibition and/or reduction of tumor growth and so tumor-related bone pain. or A salt form of the radioactive metal strontium-89 that is absorbed by a part of growing bone. It is being studied in the treatment of bone pain caused by cancer that has spread to the bone.

**strontium ranelate :** A substance that is being studied in the treatment of osteoporosis in postmenopausal women. Strontium ranelate helps new bone tissue to grow and decreases bone loss. This lowers the risk of bone fractures.

**strontium-89 :** A radioactive form of the metal strontium that is taken up by a part of growing bone. It is being studied in the treatment of bone pain caused by some types of cancer.

**structural basin:** a variation of a syncline in which all the beds dip inward toward the center of the basin.

**Structural biology:** A branch of biology dedicated to the study of the three-dimensional structures of proteins and other molecules to help understand the function of these molecules in the cell

**Structural domain:** An element of protein tertiary structure that forms an independent folding unit. Or An element of protein tertiary structure that forms an independent folding unit.

**structural dome:** a variety of anticline, a feature of which is that the central area has been warped and uplifted and all the surrounding rock units dip away from the center.

**Structural Foam:** The process of molding thermoplastics articles with a cellular core and integral solid skins in a single operation.

**Structural Foam Molding :** The process of molding thermoplastics articles with a cellular core and integral solid skins in a single operation.

**structural formula:** depicts the bonding of atoms in a molecule. Or a chemical formula that shows not only the number and kind of atoms in a molecule but also their arrangement. Or A structural formula is a diagram that shows how the atoms in a molecule are bonded together. Atoms are represented by their element symbols and covalent bonds are represented by lines. The symbol for carbon is often not drawn. Most structural formulas don't show the actual shape of the molecule (they're like floor plans that show the layout but not the 3D shape of a house).

**Structural formula** : This is sometimes called a displayed formula. It shows the arrangement of the atoms within a molecule. When drawing the structural formula for a hydrocarbon, remember that all carbon atoms must have four bonds and every hydrogen atom has only one bond.

**Structural gene:** A gene encoding the amino acid sequence of a polypeptide chain. Or A gene encoding the amino acid sequence of a polypeptide chain. Or A gene coding for a protein or RNA molecule; as distinct from a regulatory gene.

**structural geology:** the study of the processes that result in the formation of geologic structures.

**structural isomer:** also known as a constitutional isomer, structural isomers have the same molecular formula but different bonding arrangements among their atoms. For example, C<sub>4</sub>H<sub>10</sub> can be butane or 2-methylpropane, and C<sub>4</sub>H<sub>8</sub> can be 1-butene or 2-butene.

**Structural protein:** A protein that serves a structural function.

**structural trap:** a structure such as a fault between reservoir rocks and impermeable rocks, a thrust fault, or a fold such as an anticline that traps migrating petroleum.

**Structure factor:** The intensity and phase of a diffracted X-ray by a unit cell denoted by F or F(hkl).

**Structure-Activity Relationships (SAR):** SAR studies explore the relationship between a molecule's biological activity and the three dimensional structure of the molecule.

**Structured Light 3-D Scanner:** A 3D scanning device for measuring the three-dimensional shape of an object using projected light patterns and a camera system.

**Stucco:** A smooth-surfaced cement or rendering applied to external walls, especially if it resembles stone.

**study agent :** A medicine, vitamin, mineral, food supplement, or a combination of them that is being tested in a clinical trial.

**Sturge-Weber syndrome :** A rare, congenital disorder that affects the brain, skin, and eyes. Abnormal blood vessel growth occurs in the trigeminal nerve in the face and the meninges (covering) of the brain. This abnormal growth causes red or purple skin discoloration (sometimes called a port wine stain), usually on one side of the face, and can also cause seizures, learning disabilities, and glaucoma. Also called SWS.

**Styrene:** Styrene (also known as vinyl benzene, ethenylbenzene) is a colourless liquid in the Aromatics family. Styrene is a chemical intermediate made from the dehydration of ethyl benzene and a vinyl group on styrene molecule can readily undergo polymerization. Styrene is a monomer used in the production of variety of polymer and rubbers including: polystyrene, ABS, SBR, SBL, and unsaturated polyesters. or One of the most common monomers used to make chain-growth polymers. It also seems to be the one that everyone studies lots: 'If it works for styrene it must be true for all monomers...' (famous trap). or Styrene is the key building block for styrenic polymers. This includes materials such as Polystyrene, ABS, EPS or Expandable polystyrene, to name but a few. Plastic manufacturers use styrene-based resins to produce a wide variety of everyday goods ranging from cups and utensils to furniture, bathroom, and kitchen appliances, hospital and school supplies, boats, sports and recreational equipment, consumer electronics, automobile parts, and durable lightweight packaging of all kinds. OR An unsaturated monomer, widely used with polyester resins.

**Styrene-Acrylonitril (SAN):** A styrene derivative that offers the clarity and rigidity of polystyrene in an engineering grade plastic. SAN has superior barrier properties, as well as improved chemical resistance when compared to polystyrene.

**Styrenics family:** The Styrenics chain includes the chemical products and polymers that can be produced from the styrene monomer. Ethylbenzene,

the immediate precursor used in the production of styrene is also included in this grouping.

**SU006668:** A substance being studied in the treatment of cancer. SU006668 blocks proteins involved in the growth and spread of cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called orantinib and SU6668.

**SU011248:** A drug used to treat certain types of pancreatic cancer. It is also used to treat gastrointestinal stromal tumors (GIST) in some patients and to treat advanced kidney cancer. It is being studied in the treatment of other types of cancer. SU011248 stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called SU11248, sunitinib, sunitinib malate, and Sutent.

**SU014813:** An orally-active, tyrosine kinase receptor inhibitor with potential antitumor activity. SU014813 binds to and inhibits the phosphorylation of vascular endothelial growth factor receptor 2 (VEGFR2), platelet-derived growth factor receptor (PDGFR) alpha and beta, c-Kit and Fms-related tyrosine kinase 3 (Flt-3). This leads to an inhibition of cellular proliferation and angiogenesis and an induction of apoptosis.

**SU101:** An anticancer drug that works by inhibiting a cancer cell growth factor. Also called leflunomide.

**SU11248:** A drug used to treat certain types of pancreatic cancer. It is also used to treat gastrointestinal stromal tumors (GIST) in some patients and to treat advanced kidney cancer. It is being studied in the treatment of other types of cancer. SU11248 stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called SU011248, sunitinib, sunitinib malate, and Sutent.

**SU5416:** A substance that has been studied in the treatment of cancer. It belongs to the families of drugs called angiogenesis inhibitors and tyrosine kinase inhibitors. Also called semaxanib.

**SU6668:** A substance being studied in the treatment of cancer. SU6668 blocks proteins involved in the growth and spread of cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is

a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called orantinib and SU006668.

**subacute toxicity test:** An animal experiment serving to study the effects produced by the test material when administered in repeated doses (or continuously in food, drinking water) over a period of up to about 90 days (WHO, 1979).

**subarachnoid block :** A temporary loss of feeling in the abdomen and/or the lower part of the body. Special drugs called anesthetics are injected into the fluid in the lower part of the spinal column to cause the loss of feeling. The patient stays awake during the procedure. It is a type of regional anesthesia. Also called SAB, spinal anesthesia, and spinal block.

**subatomic particles:** a component of an atom; either a proton, neutron, or electron.

**subbituminous coal:** weakly metamorphosed, black, soft, sooty coal.

**Subcritical mass:** An amount of fissionable material insufficient in quantity or of improper geometrical configuration to sustain a fission chain reaction.

**Subcriticality:** The condition of a nuclear reactor system, in which nuclear fuel no longer sustains a fission chain reaction (that is, the reaction fails to initiate its own repetition, as it would in a reactor's normal operating condition). A reactor becomes subcritical when its fission events fail to release a sufficient number of neutrons to sustain an ongoing series of reactions, possibly as a result of increased neutron leakage or poisons.

**subcutaneous :** Beneath the skin.

**subcutaneous port :** A tube surgically placed into a blood vessel and attached to a disk placed under the skin. It is used for the administration of intravenous fluids and drugs; it can also be used to obtain blood samples.

**subducting plate:** crustal plate which collides with another plate and moves under it.

**subduction:** the process by which oceanic crust is pushed against, and finally underneath, continental or oceanic crust.

**subduction boundary:** a convergent boundary marked by the oceanic crust of one plate that is being pushed downward beneath the continental or oceanic crust of another plate.

**subduction zone:** the gently dipping zone along which subduction occurs.

**subependymal** : Describes the layer of cells just under the ependyma (the thin membrane that lines the fluid-filled spaces in the brain and spinal cord).

**subependymal giant cell astrocytoma** : A benign (not cancer), slow-growing tumor that usually forms in the walls of fluid-filled spaces in the brain. The tumors are made up of large, star-shaped cells called astrocytes. Subependymal giant cell astrocytomas are common in patients with tuberous sclerosis (an inherited disorder in which benign tumors form in the brain and other parts of the body). Also called SEGA.

**suberoylanilide hydroxamic acid** : A drug that is used to treat cutaneous T-cell lymphoma that does not get better, gets worse, or comes back during or after treatment with other drugs. It is also being studied in the treatment of other types of cancer. Suberoylanilide hydroxamic acid is a type of histone deacetylase inhibitor. Also called SAHA, vorinostat, and Zolinza.

**Subgate**: Entrance to the part from the runner located below the parting line. On ejection the part breaks away from the subgate. OR The direct conversion of a substance from solid state to vapor or gas state

**subglottis** : The lowest part of the larynx; the area from just below the vocal cords down to the top of the trachea.

**Subgroup**: These are columns of transition and inner transition elements. They have electron similarities for the outer two or three electron orbitals.

**subject**: part of a sentence that tells what or whom the sentence is about.

**subject-predicate agreement**: a predicate must agree in person and in number with its subject, regardless of other elements in a sentence.

**subjective (nominative) case**: when a noun or pronoun is the subject of a verb.

**subjective environment** : The environment as it is perceived by persons living in it, e.g., eye irritation caused by air pollution, or pleasure arising from good housing conditions (WHO, 1979).

**subjective improvement** : An improvement that is reported by the patient, but cannot be measured by the healthcare provider (for example, "I feel better").

**subjunctive**: refers to the mood of the verb used in sentences that are contrary-to-fact or hypothetical.

**sublimation:** The direct conversion of a solid to a gas. Or A change in state from a solid to a gas and then back to a solid. Sublimation can be used to purify a solid and also may be involved in solid-state reactions and phase transformations. Or the transformation of a solid directly to a gas without an intervening liquid state. or the rare process of a substance changing states from solid directly to a gas. or the changing of a gas directly to a solid. or Conversion of a solid directly into a gas, without first melting into a liquid.

**Sublimaze:** (Other name for: fentanyl citrate)

**submarine canyon:** a V-shaped erosion feature that cuts a continental shelf and slope.

**SUBMARINE GATE:** A type of edge gate where the opening from the runner into the mold is located below the parting line or mold surface as opposed to conventional edge gating where the opening is machined into the surface of the mold. With submarine gates, the part is broken from the runner system on ejection from the mold. OR Tunnel gate, a type of edge gate where the opening from the runner into the mold is located below the mold parting line

**Submolding:** Break up of a full molding into component areas.

**submucosa :** The layer of tissue under the mucosa (inner lining of some organs and body cavities that makes mucus).

**subordinate (dependant) clause:** a clause that does not express a complete thought and is not a sentence; it depends upon something else to express a complete thought.

**subordinating conjunctions:** join subordinate clauses to independent clauses.

**subserosa :** The layer of tissue under the serosa (outer lining of some organs and body cavities).

**subset analysis :** In a clinical study, the evaluation of results for some but not all of the patients who participated. The selected patients have one or more characteristics in common, such as the same stage of disease or the same hormone receptor status.

**subshell:** One part of a level, each of which can hold different numbers of electrons. Or a set of electron orbitals with the same principal and second quantum number; for example, 2p, 3s, and so on. Or A set of electrons with

the same azimuthal quantum number. The number of electrons permitted in a subshell is equal to  $2l + 1$ .

**subsidence:** land sinks into the sea; opposite of uplifting.

**subsoil:** the layer of soil that underlies the topsoil.

**substance abuse :** The use of illegal drugs or the use of prescription or over-the-counter drugs or alcohol for purposes other than those for which they are meant to be used, or in excessive amounts. Substance abuse may lead to social, physical, emotional, and job-related problems.

**substance P-saporin:** An agent composed of substance P (SP) conjugated to the ribosome-inactivating protein and neurotoxin saporin (SAP), isolated from the seeds of the plant *Saponaria officinalis* (SP-SAP), with potential analgesic activity. Upon administration, SP-SAP targets the SP receptor, neurokinin-1 receptor (NK-1R), located on neurons. When SP-SAP binds NK-1R and the receptor/conjugate complex internalizes, the saporin moiety inactivates ribosomes and prevents protein synthesis, which causes cell death, destroys NK-1R-expressing nerves and decreases pain perception. Check for active clinical trials using this agent.

**substituent:** An atom or group that replaces another atom or group in a molecule.

**substituent group:** any atom or group that replaces a hydrogen atom on a hydrocarbon.

**substitution:** the replacement of an atom or group bonded to a carbon atom with a second atom or group. Or A reaction in which an atom or fragment within a molecule is replaced with another.

**Substitution matrix:** A tool for determining evolutionary relationships between amino acid sequences. When two sequences are compared, each substitution is assigned a score based on the matrix. A large positive score corresponds to a substitution that occurs frequently, whereas a negative score corresponds to a substitution that occurs only rarely.

**substitution method:** A method for solving a system of two equations. One of the equations needs to be solved for one of the variables. That expression is then substituted into the other equation for the variable. The resulting equation has only one unknown. Or A mutation caused by the replacement of one base by another.

**substitution reaction:** a reaction in which one group replaces another on a molecule.

**substrate:** A substance that is acted upon by an enzyme during a biochemical reaction. Or A molecule that is acted upon, and chemically changed, by an enzyme. Or The specific compound acted upon by an enzyme.

**substrate:** A substrate is a reactant molecule in an enzyme-catalysed reaction. Or Any surface to which a coating is applied. Or The surface or composition of the structure which is to be painted. Or the substance changed or acted on by an enzyme. Or A molecule acted upon by an enzyme or A molecule that is acted upon, and chemically changed, by an enzyme. or A reactant in a chemical reaction. An enzyme catalyzes a single chemical reaction or set of closely related reactions, and the components of those reactions are called substrates.

**Substrate:** Substrate.

**Substrate channeling:** A property of multienzyme complexes in which the product of one reaction is routed directly to the active site of the next enzyme in the complex, for which it is a substrate; substrate channeling enhances catalytic rate by preventing the loss of intermediates in the overall reaction.

**Substrate cycle:** A pair of thermodynamically irreversible biochemical reactions that simultaneously produce and consume a pair of metabolic intermediates; these paired pathways may amplify metabolic signals and in some cases can also generate heat for the maintenance of temperature in tissues. Also called futile cycle.

**Substrate-level phosphorylation:** The formation of ATP from ADP in which the phosphate donor is a substrate with high phosphoryl transfer potential. Or Phosphorylation of ADP or some other nucleoside 5'-diphosphate coupled to the dehydrogenation of an organic substrate; independent of the electron transfer chain.

**subtenon :** Used to describe injections through the membrane covering the muscles and nerves at the back of the eyeball.

**subtotal hysterectomy :** Surgery to remove the uterus, but not the cervix. Also called partial hysterectomy.

**subtraction keywords:** Words that indicate subtraction.

**Subunit:** Individual polypeptide chains in a protein. Or Any of the polypeptide chains in a protein that contains more than one of such chains. Or Individual polypeptide chains in a protein.

**Subunit, 30S:** The small subunit of the bacterial 70S ribosome; composed of 21 different proteins and a 16S RNA molecule.

**Subunit, 50S:** The large subunit of the bacterial 70S ribosome; the site of peptide-bond synthesis, it contains 34 different proteins, a 5S RNA species, and a 23S RNA species.

**Succinate-Q reductase:** An integral membrane protein complex of the inner mitochondrial membrane that transfers electrons from FADH<sub>2</sub> formed in the citric acid cycle to coenzyme Q. Also called Complex II.

**Suck-back :** When the pressure on the sprue is not held long enough for the melt to cool before the screw returns. Some of the melt in the cavities or runner system may expand back into the nozzle and cause sinks marks on the finished part. OR A method of decompressing a molds runner system by retracting the screw on a plastic or silicone injection molding machine

**sucralfate :** A drug used to treat ulcers. It adheres to proteins at the ulcer site and forms a protective coating over the ulcer. Sucralfate is also used to treat mucositis.

**Sucrose:** A disaccharide of glucose and fructose (commonly known as table sugar) that is readily transportable and stored in many plant cells.

**suction aspiration :** A surgical procedure in which the cervix is dilated (opened) and vacuum is used to remove tissue from the uterus. Also called suction evacuation and vacuum aspiration.

**suction evacuation :** A surgical procedure in which the cervix is dilated (opened) and vacuum is used to remove tissue from the uterus. Also called suction aspiration and vacuum aspiration.

**sudden infant death syndrome :** A disorder marked by the sudden and unexpected death of a healthy child who is younger than one year old, usually during sleep. The cause of sudden infant death syndrome is not known. Also called crib death and SIDS.

**Suess effect:** The relative change in the <sup>14</sup>C/<sup>12</sup>C or <sup>13</sup>C/<sup>12</sup>C ratio of any carbon pool or reservoir caused by the addition of fossil- fuel CO<sub>2</sub> to the atmosphere. Fossil fuels are devoid of <sup>14</sup>C because of the radioactive decay of <sup>14</sup>C to <sup>14</sup>N during long underground storage and are depleted in <sup>13</sup>C

because of isotopic fractionation eons ago during photosynthesis by the plants that were the precursors of the fossil fuels. Carbon dioxide produced by the combustion of fossil fuels is thus virtually free of  $^{14}\text{C}$  and depleted in  $^{13}\text{C}$ . The term Suess effect originally referred to the dilution of the  $^{14}\text{C}/\text{C}$  ratio in atmospheric  $\text{CO}_2$  by the admixture of fossil-fuel produced  $\text{CO}_2$ , but the definition has been extended to both the  $^{14}\text{C}$  and  $^{13}\text{C}$  ratios in any pool or reservoir of the carbon cycle resulting from human disturbances.

**Sufenta:** (Other name for: sufentanil citrate)

**sufentanil citrate:** The citrate salt form of sufentanil, a synthetic congener of fentanyl and related to the phenylpiperidines, with analgesic property. Sufentanil citrate binds to and activates the mu-opioid receptor, thereby producing analgesia, respiratory depression, miosis, reduced gastrointestinal motility, and euphoria. In addition, this agent has a more rapid onset of action and shorter duration of action compared to fentanyl. Check for active clinical trials using this agent.

**sufentanil transdermal system:** A transdermal matrix patch formulation containing the synthetic opioid sufentanil with analgesic activity. Sufentanil binds to and activates the mu-opioid receptors in the central nervous system (CNS), thereby mimicking the effects of the endogenous opioids. Binding of sufentanil to opioid receptors stimulates exchange of GTP for GDP, inhibits adenylate cyclase, and decreases intracellular cAMP. This inhibits the release of various nociceptive neurotransmitters, such as substance P, gamma-aminobutyric acid (GABA), dopamine, acetylcholine, noradrenaline, vasopressin, and somatostatin. In addition, sufentanil closes N-type voltage-gated calcium channels and opens calcium-dependent inwardly rectifying potassium channels, which results in hyperpolarization of neuronal membranes and a reduction in neuronal excitability, and, subsequently, analgesia and sedation. Check for active clinical trials using this agent.

**Sufortan:** (Other name for: penicillamine)

**sugammadex sodium:** The sodium salt form of the biologically inert, selective relaxant binding agent (SRBA) sugammadex, a modified, anionic gamma cyclodextrin derivative containing a hydrophilic exterior and a hydrophobic core, with neuromuscular blocking drug (NMBD) reversal activity. Upon administration, the negatively charged carboxyl-thio-ether

groups of sugammadex selectively and reversibly bind to the positively charged quaternary nitrogen of a steroidal NMBD, which was administered at an earlier time for anesthetic purposes. The encapsulation of the NMBD by sugammadex blocks its ability to bind to nicotinic receptors in the neuromuscular junction and thereby reverses the NMBD-induced neuromuscular blockade. Sugammadex binds rocuronium, vecuronium, and to a lesser extent pancuronium.

**sugar:** A carbohydrate with a characteristically sweet taste. Sugars are classified as monosaccharides, disaccharides, or trisaccharides.

**suicide :** The act of taking one's own life on purpose.

**Suicide (mechanism-based) inhibition:** Inhibition that results when an enzyme converts a pseudosubstrate into a reactive inhibitor that immediately inactivates its catalytic activity.

**suicide inhibitor:** A relatively inert molecule that is transformed by an enzyme, at its active site, into a reactive substance that irreversibly inactivates the enzyme.

**sulfa drug :** A type of antibiotic used to treat infection. Also called sulfonamide.

**Sulfamethoprim:** (Other name for: trimethoprim-sulfamethoxazole)

**sulfasalazine:** A synthetic salicylic acid derivative with affinity for connective tissues containing elastin and formulated as a prodrug, antiinflammatory sulfasalazine acts locally in the intestine through its active metabolites, sulfamide 5-aminosalicylic acid and salicylic acid, by a mechanism that is not clear. It appears inhibit cyclooxygenase and prostaglandin production and is used in the management of inflammatory bowel diseases. Check for active clinical trials using this agent.

**Sulfate Mineral:** A mineral that is made up of compounds with a sulfate group bonded to a metal. Copper sulfate is a good example of a sulfate mineral. It is also known as chalcantite.

**sulfate<sup>2-</sup>:** 1. The  $\text{SO}_4^{2-}$  ion, formed by reaction of sulfuric acid with a base. 2. A compound containing the  $\text{SO}_4^{2-}$  ion.

**sulfatinib:** An orally bioavailable, small molecule inhibitor of vascular endothelial growth factor receptors (VEGFR) 1, 2, and 3, and the fibroblast growth factor receptor type 1 (FGFR1), with potential antineoplastic and anti-angiogenic activities. Upon oral administration, sulfatinib binds to and

inhibits VEGFRs and FGFR1 thereby inhibiting VEGFR- and FGFR1-mediated signal transduction pathways. This leads to a reduction of angiogenesis and tumor cell proliferation in VEGFR/FGFR1-overexpressing tumor cells. Expression of VEGFRs and FGFR1 may be upregulated in a variety of tumor cell types.

**SULFATION:** The process by which an alcohol, such as lauryl alcohol, is reacted with sulfur trioxide (or chlorosulfonic acid) to give an alkyl sulfuric acid.

**Sulfatrim:** (Other name for: trimethoprim-sulfamethoxazole)

**Sulfide Mineral:** A mineral that is made of compounds with a sulfur atom bonded to a metal. Iron pyrite is a good example of a sulfide mineral with one iron atom bonded to two sulfur atoms.

**sulfite<sup>32-</sup>:** 1. The  $\text{SO}_3^{2-}$  ion, formed by reaction of sulfurous acid with a base. 2. A compound containing the  $\text{SO}_3^{2-}$  ion.

**sulfonamide :** A type of antibiotic used to treat infection. Also called sulfa drug.

**Sulfonation:** The replacement of a hydrogen atom of an organic compound with a sulfonic acid. This often occurs as a chemical reaction at high temperatures. Or The process by which a material such as an alkylate is reacted with sulfur trioxide to give a sulfonic acid.

**sulforaphane:** A naturally-occurring phytochemical belonging to the class of isothiocyanates. As the aglycone metabolite of glucosinolate glucoraphanin (sulforaphane glucosinolate), sulforaphane acts as an antioxidant and potent stimulator of endogenous detoxifying enzymes. This agent displays anticarcinogenic properties due to its ability to induce phase II detoxification enzymes, such as glutathione S-transferase and quinone reductase, thereby providing protection against certain carcinogens and toxic, reactive oxygen species. Broccoli sprouts contain large amounts of sulforaphane, which is also found in other cruciferous vegetables including cabbage and kale. Check for active clinical trials using this agent.

**sulforaphane-cyclodextrin complex:** An orally available, stable formulation comprised of sulforaphane, a naturally-occurring phytochemical belonging to the class of isothiocyanates, and encapsulated within alpha-cyclodextrin, with cancer preventive activity. Upon administration, sulforaphane acts as an antioxidant and potent stimulator of

endogenous detoxifying enzymes. This agent is able to induce phase II detoxification enzymes, such as glutathione S-transferase and quinone reductase, thereby providing protection against certain carcinogens and toxins. Broccoli sprouts contain large amounts of sulforaphane, which is also found in other cruciferous vegetables including cabbage and kale. Cyclodextrin is able to prevent sulforaphane's rapid breakdown, which improves its stability and half-life. Check for active clinical trials using this agent.

**Sulfur:** Symbol:"S" Atomic Number:"16" Atomic Mass: 32.06amu. Sulfur is a non-reactive element and is classified as a non-metal. It is found in large amounts all over the Earth and is usually yellow. It is also spelled "sulphur." You'll also find sulfur in fertilizers, medicine, fireworks, and matches. There are also many minerals called sulfides and sulfates in which sulfur appears.

**Sulfur (S) :** The chemical element that has the atomic number 16. It is an abundant, multivalent non-metal. Sulfur, in its native form, is a yellow crystalline solid. In nature, it can be found as the pure element and as sulfide and sulfate minerals. It is an essential element for life and one of the most common elements in various types of chemicals.

**Sulfur compounds** : They are present in crude oil and so find their way into petrol and diesel. When they are burned, sulfur dioxide is released.

**Sulfur dioxide:** This gas is a major contributor to acid rain. It is formed by the combustion of sulfur and sulfur compounds. It is an irritant too.

**Sulfur dioxide (SO<sub>2</sub>) :** A gaseous chemical compound. It is produced by volcanoes and in various industrial processes. Since coal and petroleum often contain sulfur compounds, their combustion generates sulfur dioxide. A reducing agent.

**sulfur hexafluoride:** A contrast agent composed of an inorganic fluorinated inert gas comprised of six fluoride atoms bound to one sulfur atom, with potential diagnostic activity upon imaging. Upon inhalation of sulfur hexafluoride (SF<sub>6</sub>), the gas is distributed throughout the lungs. Upon subsequent ultrasound imaging, the lung vasculature can be imaged and pulmonary perfusion can be assessed.

**Sulfuric Acid:** H<sub>2</sub>SO<sub>4</sub> A strong acid - in water, it decomposes completely to H<sup>+</sup> and HSO<sub>4</sub><sup>-</sup> ions; with a little more prompting, HSO<sub>4</sub><sup>-</sup> can be persuaded to give H<sup>+</sup> and SO<sub>4</sub><sup>2-</sup>. When I was young, I had quite a bitter

disagreement with a friend of mine about whether the element from which its name arises ought to be spelled "sulfur" or "sulphur" (IUPAC comes down firmly on the side of "sulfur"). We eventually reached a compromise, and for many years I stuck to a spelling of "sulfhur" which miraculously passed uncorrected through several years of laboratory practical reports.

**sulfuric acid** : A strong acid that, when concentrated, is extremely corrosive to the skin and mucous membranes. It is used in making fertilizers, dyes, electroplating, and industrial explosives.

**Sulfuric acid (H<sub>2</sub>SO<sub>4</sub>)** : A strong mineral acid. Sulfuric acid has many applications, and is one of the top products of the chemical industry. Principal uses include ore processing, oil refining, wastewater processing, and chemical synthesis.

**sulfuric acid<sup>24</sup>**: An oily, corrosive liquid that acts as a strong acid when dissolved in water. Sulfuric acid has so many industrial uses that sulfuric acid production was once used as an index of industrial productivity. Salts of sulfuric acids are called sulfates.

**sulfurous acid<sup>23</sup>**: A colorless liquid that acts as a weak acid when dissolved in water, sometimes used as a bleach. Salts of sulfurous acid are called sulfites.

**sulindac**: A sulfinylindene derivative prodrug with potential antineoplastic activity. Converted in vivo to an active metabolite, sulindac, a nonsteroidal anti-inflammatory drug (NSAID), blocks cyclic guanosine monophosphate-phosphodiesterase (cGMP-PDE), an enzyme that inhibits the normal apoptosis signal pathway; this inhibition permits the apoptotic signal pathway to proceed unopposed, resulting in apoptotic cell death. Check for active clinical trials using this agent.

**sulindac** : A nonsteroidal anti-inflammatory drug (NSAID) that is being studied as a treatment for cancer.

**Sulmeprim**: (Other name for: trimethoprim-sulfamethoxazole)

**sulofenur**: A diarylsulfonylurea with potential antineoplastic activity. Sulofenur's antineoplastic mechanism of action is unknown.

**sumac/black cumin powder**: An Iranian traditional herbal medicine composed of powder derived from sumac and *Bunium persicum* (black cumin, black zira), with potential anti-emetic activity. Upon oral administration, sumac/black cumin powder may inhibit chemotherapy-

induced nausea and vomiting (CINV). The powder may also have some anti-oxidant activities. Check for active clinical trials using this agent.

**sumatriptan succinate:** The succinate salt form of sumatriptan, a member of the triptan class of compounds with anti-migraine property. Sumatriptan succinate selectively binds to and activates serotonin 5-HT<sub>1</sub> receptors. This results in constriction of meningeal, dural, cerebral or pial blood vessels via stimulation of the 5-HT<sub>1B</sub> receptors, thereby reducing the vascular pulsation and may provide relief in migraine headaches. Furthermore, agonistic action of this agent through presynaptic stimulation of 5-HT<sub>1D</sub> and/or 5-HT<sub>1F</sub> receptors prevents release of vasoactive and pro-inflammatory neuropeptide (calcitonin gene-related peptide), thereby may also relieve migraine headaches. In addition, central inhibition of pain transmission via the inhibition of trigeminal neurons in the brain stems and upper spinal cord mediated by 5-HT<sub>1B</sub>, 5-HT<sub>1D</sub> or 5-HT<sub>1F</sub> receptors also aides in the alleviation of migraine pain.

**sumLOD score :** The summation of all positive pedigree LOD scores (statistical estimates of whether two genetic loci are physically near enough to each other on a particular chromosome that they are likely to be inherited together) at each point in the genome. Also called summary logarithm of the odds score.

**summary logarithm of the odds score :** The summation of all positive pedigree LOD scores (statistical estimates of whether two genetic loci are physically near enough to each other on a particular chromosome that they are likely to be inherited together) at each point in the genome. Also called sumLOD score.

**summation problems:** A word problem with a total.

**summer solstice:** June 21, when the vertical ray of the Sun is at the Tropic of Cancer (23.5° N latitude), and is the longest day of the year in the Northern Hemisphere.

**Summicort:** (Other name for: methylprednisolone)

**sun protection factor :** A scale for rating the level of sunburn protection in sunscreen products. The higher the sun protection factor, the more sunburn protection it gives. Sunscreens with a value of 2 through 11 give minimal protection against sunburns. Sunscreens with a value of 12 through 29 give moderate protection. Sun protection factors of 30 or higher give high protection against sunburn. Also called SPF.

**Sun's Soup :** A mixture of vegetables and other edible plants that has been studied in the treatment of cancer. The vegetables include soybean, shiitake mushroom, mung bean, red date, scallion, garlic, leek, lentil, Hawthorn fruit, onion, ginseng, Angelica root, licorice, dandelion root, senega root, ginger, olive, sesame seed, and parsley. Sun's Soup is available in the United States as a dietary supplement.

**sunitinib :** A drug used to treat certain types of pancreatic cancer. It is also used to treat gastrointestinal stromal tumors (GIST) in some patients and to treat advanced kidney cancer. It is being studied in the treatment of other types of cancer. Sunitinib stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called SU011248, SU11248, sunitinib malate, and Sutent.

**sunitinib malate:** The orally bioavailable malate salt of an indolinone-based tyrosine kinase inhibitor with potential antineoplastic activity. Sunitinib blocks the tyrosine kinase activities of vascular endothelial growth factor receptor 2 (VEGFR2), platelet-derived growth factor receptor b (PDGFRb), and c-kit, thereby inhibiting angiogenesis and cell proliferation. This agent also inhibits the phosphorylation of Fms-related tyrosine kinase 3 (FLT3), another receptor tyrosine kinase expressed by some leukemic cells. or A drug used to treat certain types of pancreatic cancer. It is also used to treat gastrointestinal stromal tumors (GIST) in some patients and to treat advanced kidney cancer. It is being studied in the treatment of other types of cancer. Sunitinib malate stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called SU011248, SU11248, sunitinib, and Sutent.

**sunscreen:** A substance that helps protect the skin from the sun's harmful rays. Sunscreens reflect, absorb, and scatter both ultraviolet A and B radiation to provide protection against both types of radiation. Using lotions, creams, or gels that contain sunscreens can help protect the skin from premature aging and damage that may lead to skin cancer.

**sunspot:** cooler area on the surface of the Sun. or A relatively dark, sharply defined region on the solar disk, marked by an umbra approximately 2000K cooler than the effective photospheric temperature, surrounded by a less dark but also sharply bounded penumbra. The average

spot diameter is about 3700 km, but can range up to 245,000 km. Most sunspots are found in groups of two or more, but they can occur singly. Sunspots are cyclic, with a period of approximately 11 years. The quantitative description of sunspot activity is called the Wolf sunspot number, denoted R. The Wolf sunspot number is also referred to as Wolfer sunspot number, Zurich relative sunspot number, or relative sunspot number.

**Supect:** (Other name for: radotinib hydrochloride)

**superagonist interleukin-15:interleukin-15 receptor alphaSu/Fc fusion complex ALT-803:** A fusion protein complex composed of a mutated form of the cytokine interleukin (IL)-15 (IL-15N72D) and a soluble, dimeric IL-15 receptor alpha (IL-15Ra) Fc fusion protein (IL-15Ra-Fc) (IL-15N72D/IL-15Ra-Fc), with potential antineoplastic activity. Upon administration, superagonist interleukin-15:interleukin-15 receptor alphaSu/Fc fusion complex ALT-803 binds to the IL-2/IL-15 receptor beta-common gamma chain (IL-2Rbetagamma) receptor on natural killer (NK) and CD8<sup>+</sup> T lymphocytes, which activates and increases the levels of NK cells and memory CD8<sup>+</sup>(CD44<sup>high</sup>) T-cells. The memory T-cells enhance the secretion of the cytokine interferon-gamma (IFN-g), which further potentiates the immune response against tumor cells. This may increase tumor cell killing and decrease tumor cell proliferation. IL-15 regulates CD8<sup>+</sup> T and NK cell development, activation and proliferation. By coupling IL-15 to IL15Ra-Fc, this agent has a prolonged drug half-life and shows an increased ability to bind IL-2Rbetagamma, which enhances its immune stimulatory activity as compared to IL-15 alone. Check for active clinical trials using this agent.

**supercell:** thunderstorm with strong updrafts that exist for hours and can spawn tornadoes.

**Supercoil:** A structure formed by closed, circular DNA in which the DNA is more compact than the relaxed circular DNA; the circular DNA helix twists upon itself to form a superhelix.

**Supercoiled DNA:** Supertwisted, covalently-closed duplex DNA. Or Supertwisted, covalently-closed duplex DNA.

**Supercoiling:** Refers to the ability of closed, circular DNA to coil upon itself.

**superconductivity:** A state in which the electrical resistance of a material is so low that it cannot be measured and appears to be zero. The superconducting state is also characterized by unusual magnetic properties. Or The ability of certain materials to carry an electric current with zero electrical resistance.

**supercooling:** Liquids at temperatures below their normal freezing points are said to be "supercooled".

**supercritical:** Above the critical point; above critical temperature or pressure.

**supercritical fluid:** A fluid state that occurs when the pressure and temperature exceed the substance's critical pressure and critical temperature. Supercritical fluids fill their containers like gases but dissolve substances like liquids, which makes them very useful as solvents. Their density and other properties are intermediate between gases and liquids.

**Supercritical reactor:** A reactor in which the power level is increasing with time.

**Supercriticality:** The condition for increasing the level of operation of a reactor. The rate of fission neutron production exceeds all neutron losses, and the overall neutron population increases.

**superficial :** Affecting cells on the surface. Not invasive.

**superfractionated radiation therapy :** Radiation treatment in which the total dose of radiation is divided into small doses and treatments are given more than once a day. Superfractionated radiation therapy is given over the same period of time (days or weeks) as standard radiation therapy. Also called hyperfractionated radiation therapy.

**supergene deposit:** a high-grade metal deposit enriched through the processes of weathering.

**Superheating:** The heating of a vapor, particularly steam, to a temperature much higher than the boiling point at the existing pressure. This is done in some power plants to improve efficiency and to reduce water damage to the turbine.

**Superhelix:** The coil of a double-stranded DNA that forms when it is twisted so as to cross over its own axis.

**superior vena cava :** The large vein that carries blood from the head, neck, arms, and chest to the heart.

**superior vena cava syndrome :** A condition in which a tumor presses against the superior vena cava (the large vein that carries blood from the head, neck, arms, and chest to the heart). This pressure blocks blood flow to the heart and may cause coughing, difficulty in breathing, and swelling of the face, neck, and upper arms.

**superlative degree:** used with adjectives and adverbs to compare more than two things, people, or actions.

**supermolecule:** A system composed of two or more atoms or molecules separated by large distances. See "size-consistent."

**supernova:** the explosion of a star.

**superoxide:** A binary compound containing oxygen in the  $-1/2$  oxidation state. For example,  $KO_2$  is potassium superoxide, an ionic compound containing the superoxide ion,  $O_2^-$ .

**Superoxide dismutase:** An enzyme that scavenges superoxide radicals by catalyzing the conversion of two of these radicals into hydrogen peroxide and molecular oxygen; protects against damage by reactive oxygen species.

**Supersaturated:** A solution that has more solute dissolved than is possible under normal circumstances. If you heat a glass of water that is saturated you can add more sugar to the solution. When that solution cools to the original temperature, it is considered super-saturated. or A solution that temporarily contains more solute than the saturated amount at some temperature.

**supersaturated calcium phosphate rinse:** An aqueous oral rinse composed of an electrolyte solution supersaturated with phosphate and calcium ions with antimucositis and analgesic activities. This solution may help relieve mucositis and mucositis-induced pain by restoring the natural electrolyte and pH balance of human saliva and lubricating mucosal tissues of the mouth, tongue and oropharynx.

**supersaturated solution:** A supersaturated solution has concentration of solute that is higher than its solubility. A crystal of solute dropped into a supersaturated solution grows; excess solute is deposited out of the solution until the concentration falls to the equilibrium solubility.

**Supersaturation:** A solution that contains a concentration of solute greater than the equilibrium solubility value.

**supinoxin:** (Other name for: P-p68 inhibitor RX-5902)

**supplemental nutrition :** A substance or product that is added to a person's diet to make sure they get all the nutrients they need. It may include vitamins, minerals, protein, or fat, and may be given by mouth, by tube feeding, or into a vein.

**supplemental oxygen therapy :** Treatment in which a storage tank of oxygen or a machine called a compressor is used to give oxygen to people with breathing problems. It may be given through a nose tube, a mask, or a tent. The extra oxygen is breathed in along with normal air. Also called oxygen therapy.

**supplementary angles:** two angles the sum of which measures  $180^\circ$ .

**supplementation :** Adding nutrients to the diet.

**support group :** A group of people with similar disease or concerns who help each other cope by sharing experiences and information.

**Support pillar:** A circular rod mold component (post) used to support the ejector half of the mold. It is required because of the tremendous amount of pressure exerted against the "b" plate by the injection phase of the molding process.

**supportive care :** Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of supportive care is to prevent or treat as early as possible the symptoms of a disease, side effects caused by treatment of a disease, and psychological, social, and spiritual problems related to a disease or its treatment. Also called comfort care, palliative care, and symptom management.

**suppository :** A form of medicine contained in a small piece of solid material, such as cocoa butter or glycerin, that melts at body temperature. A suppository is inserted into the rectum, vagina, or urethra and the medicine is absorbed into the bloodstream.

**Supprelin:** (Other name for: histrelin acetate)

**Suppressor gene:** A gene that can reverse the phenotype of a mutation in another gene. Or A gene that can reverse the phenotype of a mutation in another gene.

**Suppressor mutation:** A mutation that restores a function lost by an initial mutation and that is located at a site different from the initial mutation.

**Suppressor mutation:** Suppressor mutation. A mutation that restores a function lost by an initial mutation and that is located at a site different from

the initial mutation.

**suppressor T cell :** A type of immune cell that blocks the actions of some other types of lymphocytes, to keep the immune system from becoming over-active. Suppressor T cells are being studied in the treatment of cancer. A suppressor T cell is a type of white blood cell and a type of lymphocyte. Also called regulatory T cell, T reg, and T-regulatory cell.

**supraclavicular lymph node :** A lymph node located above the clavicle (collarbone).

**supraglottic laryngectomy :** An operation to remove the supraglottis, which is part of the larynx (voice box) above the vocal cords.

**supraglottis :** The upper part of the larynx (voice box), including the epiglottis; the area above the vocal cords.

**Suprane:** (Other name for: desflurane)

**suprarenal gland :** A small gland that makes steroid hormones, adrenaline, and noradrenaline. These hormones help control heart rate, blood pressure, and other important body functions. There are two suprarenal glands, one on top of each kidney. Also called adrenal gland.

**supratentorium :** The upper part of the brain that contains the cerebrum, ventricles (fluid-filled spaces), choroid plexus, hypothalamus, pineal gland, pituitary gland, and optic nerve. Examples of tumors that form in the supratentorium are glioblastomas, pineal region tumors, and ependymomas.

**Suprax:** (Other name for: cefixime)

**Suprep®:** (Other name for: sodium sulfate/potassium sulfate/magnesium sulfate-based laxative)

**suramin:** A polysulphonated naphthylurea with potential antineoplastic activity. Suramin blocks the binding of various growth factors, including insulin-like growth factor I (IGF-I), epidermal growth factor (EGF), platelet-derived growth factor (PDGF), and tumor growth factor-beta (TGF-beta), to their receptors, thereby inhibiting endothelial cell proliferation and migration. This agent also inhibits vascular endothelial growth factor (VEGF)- and basic fibroblast growth factor (bFGF)-induced angiogenesis; retroviral reverse transcriptase; uncoupling of G-proteins from receptors; topoisomerases; cellular folate transport; and steroidogenesis. or A drug that is used to treat infections caused by parasites. It is also being studied in

the treatment of cancer. It belongs to the families of drugs called antiprotozoals and anthelmintics.

**surf:** the zone where waves break against a shoreline.

**surface air temperature:** The temperature of the air near the surface of the Earth, usually determined by a thermometer in an instrument shelter about 2 m above the ground. The true daily mean, obtained from a thermograph, is approximated by the mean of 24 hourly readings and may differ by 1.0 degrees C from the average based on minimum and maximum readings. The global average surface air temperature is 15 degrees C.

**surface albedo:** The fraction of solar radiation incident on the Earth's surface that is reflected by it. Reflectivity varies with ground cover, and during the winter months it varies greatly with the amount of snow cover (depth and areal extent). Roughness of terrain, moisture content, solar angle, and angular and spectral distribution of ground-level irradiations are other factors affecting surface albedo.

**Surface appearance:** The smoothness, gloss and presence or lack of surface defects in a coating. Or Distressed melt flow due to welding, melding, splay, etc. will appear as surface imperfections.

**Surface area:** A measurement of the exposed surface of an object. Or the total surface of all sides of a solid, or the total area of faces.

**surface electrode :** A small device that is attached to the skin to measure or cause electrical activity in the tissue under it. Surface electrodes may be used to look for problems with muscles and nerves.

**SURFACE FINISH:** Finish of molded product.

**Surface Resistivity:** The ratio of the potential gradient parallel to the current along its surface to the current per unit width of the surface. OR The electrical resistance between opposite edges of a unit square of insulating material. It is commonly expressed in ohms. (Also covered in ASTM D257-54T.) OR the resistance of a material between two opposite sides of a unit square of its surface.

**surface tension:** the property, due to molecular forces in the surface film, that tends to contract the liquid into a form having the least surface/volume ratio. Or The energy required to disrupt the surface of a liquid. Or The force acting on the surface of a liquid, tending to minimize the area of that surface. (see RFF 705.10.03 - SURFACE TENSION). or The property of a

coating that makes it tend to shrink when applied. or The work required to expand the surface of a liquid by unit area. or A fluid in contact with a surface exhibits phenomena, due to molecular attractions, which appears to arise from a tension in the surface of the fluid. It may be expressed as dynes per cm or as ergs per sq.cm.

**Surface treating:** any method of treating a plastic so as to alter the surface and render it receptive to inks, lacquers and adhesives, such as chemical, flame or electronic treating. Or Conditioning the substrate before coating through grit blast, phosphate, etc. May include the removal of a coating (See Burn-off).

**surface water:** All water naturally open to the atmosphere. Or the slowest of the seismic waves; surface waves travel outward on the earth's surface from the epicenter much as ripples do from a stone thrown into the water.

**surfactant:** a surface-active substance, such as a detergent or soap, that lowers the surface tension of a solvent (usually water). Or The descriptor for any substance that lowers the surface tension. Or An ingredient contained in detergents and other products that provides and enables the cleaning function and capability in the product, such as the removal of stains. or A material which possesses the ability to radically alter the free energy of a liquid surface or interface when present in the system at low concentrations. The word surfactant is a contraction of the term surface active agent. (see RFF 750.10.01 - SURFACTANTS) or From SURFace ACTive AgeNT. A substance which prefers to exist at the boundary between two other substances - for example, detergents have one end highly soluble in greasy, non-polar substances and one end soluble in water. Sodium dodecyl sulfate is a common surfactant. See also emulsifier. or A material that spreads along a surface, changing the properties of the surface. For example, soap spreads over a water surface and lowers its surface tension. or A compound that affects interfacial tensions between two liquids. It usually reduces surface tension. OR The use of these chemicals allows the formation of an emulsion or intimate mixture of otherwise incompatible substances by modifying the surface properties and influencing the wetting and flowing properties of liquids. or A surface active agent. Lowers the surface tension of a liquid, improves wetting of a solid substance in water, lowers the interfacial tension between two liquids

thus improving their compatibility to each other and generates or prevents foaming.

**Surge :** This term is applied to describe a loping or jerky operation of the belt due to too much overdrive, varying coefficients of friction of belt supports and drive problems.

**surgeon :** A doctor who removes or repairs a part of the body by operating on the patient.

**Surgeon General :** The chief medical doctor and health educator for the United States. The mission of the U.S. Surgeon General is to give the public the best scientific information available on how to improve health and lower the risk of illness and injury. The U.S. Surgeon General oversees the U.S. Public Health Service and is chosen by the U.S. President. Each state public health agency and branch of the U.S. military also has its own Surgeon General. The office of the U.S. Surgeon General is part of the Department of Health and Human Services (DHHS).

**surgery :** A procedure to remove or repair a part of the body or to find out whether disease is present. An operation.

**surgical biopsy :** The removal of tissue by a surgeon for examination by a pathologist. The pathologist may study the tissue under a microscope.

**surgical castration :** Surgical removal of the testicles (orchiectomy) or ovaries (oophorectomy) to stop the production of sex hormones. Decreasing the levels of hormones may stop the growth of certain cancers.

**surgical menopause :** Describes a stop in a woman's menstrual periods that is caused by surgery to remove her ovaries. Symptoms of menopause include hot flashes, mood swings, night sweats, vaginal dryness, trouble concentrating, and infertility.

**surgical oncologist :** A surgeon who has special training in performing biopsies and other surgical procedures in cancer patients.

**SURGING:** In extrusion, an unstable pressure buildup leading to variable output and waviness of the surface of the extrudate. In extreme cases, the flow of extrudate may even cease momentarily at intervals. OR An instability of melt pressure and flow rate in an extruder, which can be detected by a pressure gage at the tip of the screw (or at the die adapter), or by dimensional product variations.

**surplus:** the period of time when the precipitation exceeds the needs for an area and the ground is saturated; runoff occurs, causing flooding conditions.

**surrogate endpoint :** In clinical trials, an indicator or sign used in place of another to tell if a treatment works. Surrogate endpoints include a shrinking tumor or lower biomarker levels. They may be used instead of stronger indicators, such as longer survival or improved quality of life, because the results of the trial can be measured sooner. The use of surrogate endpoints in clinical trials may allow earlier approval of new drugs to treat serious or life-threatening diseases, such as cancer. Surrogate endpoints are not always true indicators or signs of how well a treatment works.

**surroundings:** In thermodynamics, the surroundings refer to the universe outside the system.

**surveillance:** Ongoing scrutiny, generally using methods distinguished by their practicability, uniformity, and frequently their rapidity, rather than by complete accuracy. Its main purpose is to detect changes in trend or distribution in order to initiate investigative or control measures (Last, 1988).

**surveillance :** Periodic clinical evaluation of an individual who is at increased risk of developing a condition (compared with the general population) aimed at detecting new or recurrent disease. In public health, surveillance may also refer to the systematic collection of information regarding the incidence, prevalence, and mortality related to various medical conditions or health-related events. or In medicine, closely watching a patient's condition but not treating it unless there are changes in test results. Surveillance is also used to find early signs that a disease has come back. It may also be used for a person who has an increased risk of a disease, such as cancer. During surveillance, certain exams and tests are done on a regular schedule. In public health, surveillance may also refer to the ongoing collection of information about a disease, such as cancer, in a certain group of people. The information collected may include where the disease occurs in a population and whether it affects people of a certain gender, age, or ethnic group.

**Survey meter:** Any portable radiation detection instrument especially adapted for inspecting an area or individual to establish the existence and amount of radioactive material present.

**survival of the fittest:** the concept of natural selection that states that the fittest survive and spread their traits through a population.

**survival rate :** The percentage of people in a study or treatment group who are still alive for a certain period of time after they were diagnosed with or started treatment for a disease, such as cancer. The survival rate is often stated as a five-year survival rate, which is the percentage of people in a study or treatment group who are alive five years after their diagnosis or the start of treatment. Also called overall survival rate.

**survivin antigen:** A tumor-associated antigen. Vaccination with survivin antigen may result in a cytotoxic T-cell response against survivin antigen-expressing tumor cells, resulting in decreased tumor cell proliferation and tumor cell death. Overexpressed in many tumors, endogenous survivin inhibits tumor cell apoptosis.

**survivin antigen vaccine DPX-Survivac:** A lipid depot-based therapeutic cancer vaccine composed of survivin epitopes, a universal T Helper peptide and a polynucleotide adjuvant encapsulated in liposomes and then formulated in the hydrophobic carrier Montanide ISA51 VG, with potential immunopotentiating and antineoplastic activities. Upon injection of the survivin antigen vaccine DPX-Survivac, a depot is created at the injection site from which the antigens and adjuvant are released. This vaccine may elicit a long lasting cellular response against survivin-expressing cancers, resulting in a decrease in tumor cell proliferation and an induction of tumor cell death. Survivin, a member of the inhibitor of apoptosis (IAP) family expressed during embryonic development, is upregulated in a variety of human cancers while absent in most normal adult cells; its expression in tumors is associated with a more aggressive phenotype, decreased survival, and increased resistance to chemotherapy.

**survivin mRNA antagonist EZN-3042:** A locked nucleic acid (LNA) antisense oligonucleotide targeting survivin mRNA, with potential antineoplastic activity. EZN-3042 hybridizes to survivin mRNA, thereby blocking translation of survivin protein and inhibiting survivin-induced anti-apoptotic activity and promoting tumor cell apoptosis in survivin-overexpressing tumor cells. Survivin, a member of the inhibitor of apoptosis (IAP) family expressed during embryonic development, is upregulated in a variety of human cancers while absent in most normal adult cells; its expression in tumors is associated with a more aggressive

phenotype, decreased survival, and increased resistance to chemotherapy. LNAs contain a methylene bridge linking 2'-oxygen and 4'-carbon of ribose sugar rings, thereby increasing their stability and decreasing degradation.

**survivin Sur1M2 peptide vaccine:** A modified recombinant nonapeptide (LMLGEFLKL) derived from the anti-apoptosis protein survivin with potential immunopotentiating and antineoplastic activities. Upon administration, survivin Sur1M2 peptide vaccine may elicit humoral and cellular immune responses against survivin-expressing cancers, resulting in decreased tumor cell proliferation and tumor cell death. The survivin protein inhibits caspase activation and apoptosis; it is undetectable in normal adult tissues but is expressed by several human cancers including lung, colon, breast, pancreas, and prostate cancer as well as hematopoietic malignancies and skin cancers.

**survivin/p53/HER2 antigen-loaded autologous dendritic cell vaccine:** An autologous dendritic cell (DC) vaccine loaded with tumor-associated antigens (TAAs) derived from survivin, p53 and human epidermal growth factor receptor 2 (HER2 or ERBB2), with immunostimulating and antineoplastic activities. Upon administration, this DC vaccine may elicit a potent cytotoxic T-cell (CTL) response against tumor cells expressing these TAAs, resulting in tumor cell death. Survivin, p53 and HER2 are essential in neoplastic growth, and are considered to be universal tumor antigens.

**survivor :** One who remains alive and continues to function during and after overcoming a serious hardship or life-threatening disease. In cancer, a person is considered to be a survivor from the time of diagnosis until the end of life.

**survivorship :** In cancer, survivorship focuses on the health and life of a person with cancer post treatment until the end of life. It covers the physical, psychosocial, and economic issues of cancer, beyond the diagnosis and treatment phases. Survivorship includes issues related to the ability to get health care and follow-up treatment, late effects of treatment, second cancers, and quality of life. Family members, friends, and caregivers are also considered part of the survivorship experience.

**survivorship care plan :** A detailed plan for a patient's follow-up care after treatment for a disease ends. In cancer, the plan is based on the type of cancer and the treatment the patient received. A survivorship care plan may include schedules for physical exams and medical tests to see if the cancer

has come back or spread to other parts of the body. Follow-up care also checks for health problems that may occur months or years after treatment ends, including other types of cancer. A survivorship care plan may also include information to help meet the emotional, social, legal, and financial needs of the patient. It may include referrals to specialists and recommendations for a healthy lifestyle, such as changes in diet and exercise and quitting smoking. Also called follow-up care plan.

**susceptibility gene :** A germline mutation that increases an individual's susceptibility or predisposition to a certain disease or disorder. When such a mutation is inherited, development of symptoms is more likely, but not certain. Also called predisposing mutation.

**suspect terrane:** a terrane that does not fit the regional pattern or has conflicting age dates.

**suspended load:** of a stream, the fine-grained sediment that remains in the water in a stream during transportation. Or of wind, the fine-grained clay and silt that is carried long distances.

**suspended matter:** (1) solids in suspension in water, wastewater or effluent. (2) solids in suspension that can be removed readily by standard filtering procedures in a laboratory.

**suspended solids:** (1) solids that either float on the surface of, or are in suspension in, water, wastewater, or other liquids, and which are largely removable by laboratory filtering. (2) the quantity of material removed from wastewater in a laboratory test, as prescribed in "Standard Methods" and referred to as nonfilterable residue.

**suspension:** A suspension is a mixture between a liquid (usually water) and fine particles of insoluble solid spread throughout the liquid. Or A liquid that contains undissolved solid distributed evenly throughout the mixture. Or A mixture of two substances where small pieces of a solid are suspended in a liquid - for example, milk (blobs of fat and protein floating in water) and orange juice (chunks of plant floating in water). or similar to a solution, but the particles within the suspension can be seen by the naked eye. or A heterogenous mixture in which droplets or particles are suspended in a liquid. or A mixture of fine particles of any solid with a liquid or gas. The particles are called the disperse phase, the suspending medium is called the continuous phase.

**Sustainability:** The care and maintenance of valuable resources to ensure their presence and longevity for future generations.

**sustained-release mitomycin C hydrogel formulation:** A sustained-release (SR) hydrogel polymer-based formulation containing the antineoplastic antibiotic mitomycin C (MMC), with potential antineoplastic activity. Upon local administration of the SR MMC hydrogel formulation to the upper urinary tract via a ureteral catheter, the gel solidifies and deposits MMC locally to prevent the excretion of this chemotherapeutic agent via urinary flow. In turn, MMC alkylates DNA, and produces interstrand DNA cross-links, thereby inhibiting DNA synthesis. Due to its reverse thermal-gelation properties, this gel is able to stay in a liquid state at cold temperatures and solidifies at body temperature. This allows for increased accumulation of MMC locally in the upper urinary tract which leads to increased efficacy compared to standard intravesical delivery of MMC for upper tract urothelial carcinoma (UTUC). Check for active clinical trials using this agent.

**Sustiva :** A drug used with other drugs to treat infection with the human immunodeficiency virus (HIV). It blocks HIV from making copies of itself. It is a type of non-nucleoside reverse transcriptase inhibitor and a type of antiviral agent. Also called efavirenz.

**Sutent :** A drug used to treat certain types of pancreatic cancer. It is also used to treat gastrointestinal stromal tumors (GIST) in some patients and to treat advanced kidney cancer. It is being studied in the treatment of other types of cancer. Sutent stops cancer cells from dividing and may prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of angiogenesis inhibitor. Also called SU011248, SU11248, sunitinib, and sunitinib malate.

**suture zone:** the line of collision at a convergent boundary, typically continent-to-continent.

**sutures:** the immovable joints where bones come together within the skull.

**SV40:** Simian virus 40. A virus that infects some types of monkeys. It may also infect humans, and was found in some polio vaccines tested in the early 1960s. Although the virus has been shown to cause cancer in laboratory animals, there is no evidence that it causes cancer in people. Also called simian virus 40.

**Svedberg (S):** A unit of measure of the rate at which a particle sediments in a centrifugal field.

**Svedberg unit:** A unit for measuring the sedimentation of a macromolecule; 1 Svedberg unit (S) is equal to 10-13 seconds.

**Svedberg unit (S):** The unit used to express the sedimentation constant (S = 10-13 sec)The sedimentation constant S is proportional to the rate of sedimentation of a molecule in a given centrifugal field and is related to the size and shape of the molecule.

**SVN53-67/M57-KLH peptide vaccine:** A peptide vaccine containing a 15-mer peptide (DLAQMFFCFKELEGW), with C to M alteration at amino acid position 57, derived from the anti-apoptosis protein survivin, and conjugated with keyhole limpet hemocyanin (KLH), with potential immunopotentiating and antineoplastic activities. Upon subcutaneous administration of SVN53-67/M57-KLH peptide vaccine, this peptide is able to bind both HMC class I and II molecules and may activate the immune system to mount a cytotoxic T-lymphocyte (CTL) as well as a T-helper cell response against survivin-expressing cancer cells. This may result in decreased tumor cell proliferation and ultimately tumor cell death. Survivin, a member of the inhibitor of apoptosis (IAP) family, expressed during embryonic development while absent in most normal adult cells, is upregulated in a variety of human cancers; its expression in tumors is associated with a more aggressive phenotype, decreased survival, and increased resistance to chemotherapy. KLH may enhance immune recognition and may promote an enhanced response. As SVN53-67 is weakly immunogenic in humans, the M57 alteration may lead to greater affinity towards HLA-A\*0201 and thus an enhanced antitumor immune response.

**SVV-001:** A virus being studied in the treatment of neuroendocrine tumors and other types of cancer. Neuroendocrine tumors form from cells that release hormones in response to a signal from the nervous system. The virus infects and breaks down these tumor cells but not normal cells. It is a type of oncolytic virus. Also called NTX-010 and Seneca Valley virus-001.

**SVWN:** Slater exchange functional, Vosko-Wilk-Nusair correlation functional. A local DFT method.

**swamp:** A type of wetland that is dominated by woody vegetation and does not accumulate appreciable peat deposits; it may be fresh- or saltwater, and

tidal or nontidal.

**swash:** the still-turbulent sheet of water that sweeps up the slope of a beach.

**Sweating:** Exudation of small drops of liquid, usually a plasticizer or softener, on the surface of a plastic part.

**Sweet Crude:** Sweet Crude is the term used for crudes with a low sulphur content. Continued tightening of emissions legislation has increased the value of low sulphur crude in recent years.

**sweet elm :** The inner bark of this plant has been used in some cultures to treat certain medical problems. It may have antioxidant effects. Also called gray elm, Indian elm, red elm, slippery elm, *Ulmus fulva*, and *Ulmus rubra*.

**Swing Wide :** A term denoting the occasional tendency of the belt to swing outward in an area, prior to, or on leaving a turn, or the drum.

**Switch over point fill to pack:** The point on injection stroke at which filling phase with speed profile ends and pack or pressure phase with pressure profile starts.

**SWS:** A rare, congenital disorder that affects the brain, skin, and eyes. Abnormal blood vessel growth occurs in the trigeminal nerve in the face and the meninges (covering) of the brain. This abnormal growth causes red or purple skin discoloration (sometimes called a port wine stain), usually on one side of the face, and can also cause seizures, learning disabilities, and glaucoma. Also called Sturge-Weber syndrome.

**Syk inhibitor HMPL-523:** An orally available inhibitor of spleen tyrosine kinase (Syk), with potential immunomodulating and antineoplastic activities. Upon oral administration of Syk inhibitor HMPL-523, this agent binds to and inhibits the activity of Syk. This inhibits B-cell receptor (BCR) signaling, which leads to the inhibition of B-cell activation, and prevents tumor cell activation, migration, adhesion and proliferation. Syk, a non-receptor cytoplasmic, BCR-associated tyrosine kinase, is expressed in hematopoietic tissues and is often overexpressed in hematopoietic malignancies; it plays a key role in B-cell receptor signaling.

**Syk kinase inhibitor R-935788 :** A substance being studied in the treatment of cancer and certain other diseases, such as rheumatoid arthritis. It may block tumor cell signaling and growth. It is a type of tyrosine kinase inhibitor. Also called fostamatinib disodium and R788 sodium.

**Syk-JAK inhibitor PRT062070:** An orally bioavailable dual inhibitor of spleen tyrosine kinase (Syk) and Janus-associated kinases (JAK), with potential anti-inflammatory and antineoplastic activity. Upon oral administration, Syk-JAK inhibitor PRT062070 specifically binds to and inhibits the activity of Syk, JAK1, and JAK3 with preferential inhibition of JAK1 and JAK3-dependent cytokine-mediated signaling and functional responses. This negatively affects the downstream JAK-STAT (signal transducer and activator of transcription) pathway, and leads to both reduced inflammation in various animal models and enhanced antiproliferative activity towards non-Hodgkin's lymphoma (NHL) cell lines. Syk is a non-receptor cytoplasmic tyrosine kinase involved in signal transduction in cells of hematopoietic origin including B cells, macrophages, basophils and neutrophils. Abnormal function of Syk has been implicated in several hematopoietic malignancies including NHL and chronic lymphocytic leukemia (CLL). The JAK-STAT pathway plays a key role in the signaling of many cytokines and growth factors and is involved in cellular proliferation, growth, hematopoiesis, and the immune response; JAK kinases may be upregulated in inflammatory diseases, myeloproliferative disorders, and various malignancies.

**Sylatron :** A drug used to treat melanoma in patients who have had surgery to remove cancer that has spread to lymph nodes. It is also being studied in the treatment of other types of cancer. Sylatron is a brand name for peginterferon alfa-2b. It is a type of cytokine and a type of biological response modifier.

**Sylvant :** A drug used to treat a rare condition called Castleman disease in patients who do not have HIV or human herpesvirus 8. It is also being studied in the treatment of multiple myeloma. Sylvant binds to a protein called interleukin-6 (IL-6), which is made by some white blood cells and other cells in the body. Sylvant may help reduce inflammation and stop the growth of cancer cells or abnormal blood cells. It is a type of monoclonal antibody. Also called anti-IL-6 chimeric monoclonal antibody, cCLB8, CNTO 328, and siltuximab.

**Symadine:** (Other name for: amantadine hydrochloride)

**Symbicort:** (Other name for: budesonide/formoterol fumarate dihydrate inhalation aerosol)

**symbionts:** Two or more organisms that are mutually interdependent; usually living in physical association.

**symbiosis:** the relationship between two populations that live together in a close, permanent, and mutually beneficial association.

**symbol:** an abbreviation for the name of an element; for example, C for carbon.

**Symbol (chemical symbol) :** This may be one, two (or even three) letters. The first letter is always a capital. The others are lower case. The three letter symbols are for elements that have not yet been assigned a name (eg ununquadium which is atomic number 114 and has the symbol Uuq).

**Symbol equation :** If a chemical equation is done using symbols it MUST be balanced. There must be the same number of each kind of atom on each side of the equation.

**Symmetrel:** (Other name for: amantadine hydrochloride)

**Symmetry element:** The various formal spatial relationships that govern the orderly three-dimensional propagation of an object in space (i.e., in crystal growth, the molecules of the compound). (See Table 1.1).

**Symmetry operation:** An operation that returns the contents of the unit cell unchanged. Symmetry operations include n-fold rotations, rotary inversions, point inversions, mirror planes, glide planes, and screw axes.

**sympathetic nervous system:** a subdivision of the autonomic nervous system that prepares the body for an emergency.

**sympathetic nervous system :** The part of the nervous system that increases heart rate, blood pressure, breathing rate, and pupil size. It also causes blood vessels to narrow and decreases digestive juices.

**symport:** Cotransport of solutes across a membrane in the same direction.

**Symporter:** A transport system in which a molecule is carried across a membrane in the same direction as an ion, which in turn is pumped back across the membrane through active transport linked to ATP consumption.

**Sympt-X:** (Other name for: glutamine)

**Sympt-X G.I.:** (Other name for: glutamine)

**symptom :** A physical or mental problem that a person experiences that may indicate a disease or condition. Symptoms cannot be seen and do not

show up on medical tests. Some examples of symptoms are headache, fatigue, nausea, and pain.

**symptom management :** Care given to improve the quality of life of patients who have a serious or life-threatening disease. The goal of symptom management is to prevent or treat as early as possible the symptoms of a disease, side effects caused by treatment of a disease, and psychological, social, and spiritual problems related to a disease or its treatment. Also called comfort care, palliative care, and supportive care.

**symptomatic :** Having to do with symptoms, which are signs of a condition or disease.

**synapse:** the fluid-filled space separating the end of the axon from the dendrite of the next neuron or from a muscle cell. Or The chemical connection for communication between two nerve cells or between a nerve cell and a target cell such as a muscle cell. Or The pairing of homologous chromosomes, seen during the first meiotic prophase.

**synapse :** The space between the end of a nerve cell and another cell. Nerve impulses are usually carried to the neighboring cell by chemicals called neurotransmitters, which are released by the nerve cell and are taken up by another cell on the other side of the synapse. The neighboring cell may be another nerve cell, a muscle cell, or a gland cell.

**synbiotic supplement:** A nutritional supplement comprised of prebiotic and probiotic ingredients, with potential immunomodulating and gastrointestinal (GI) flora-restoring activity. Upon ingestion of the synbiotic supplement, the prebiotics and probiotics work synergistically in the GI tract, thereby modulating the GI flora ecosystem and may improve the functions of the intestinal barrier. In addition, synbiotics may have a beneficial effect on the immune system.

**syncline:** a fold that arches downward to form a trough. Or parallel rock layers folded downward in a valley-like formation.

**syncytium :** A large cell-like structure formed by the joining together of two or more cells. The plural is syncytia.

**syndactyly:** fusion of the fingers and/or toes, results in webbing of the digits, occurs with a frequency of 1 in 2,000 to 1 in 3,000 live births making it the most common congenital malformation of the limbs

**Syndiotactic:** Having a stereochemical regularity where the molecules can be described in terms of alternation of configurational base units that are mirror images of one another.

**syndrome :** A set of symptoms or conditions that occur together and suggest the presence of a certain disease or an increased chance of developing the disease.

**synergism:** a type of relationship in which two populations accomplish together what neither could accomplish on its own. OR A phenomenon wherein the effect of a combination of two additives is greater than the effect that could be expected from the known performance of each additive used singly. OR A term used to describe the use of two or more stabilizers in an organic material where the combination of such stabilizers improves the stability to a greater extent than could be expected from the additive effect of each stabilizer.

**synergistic :** In medicine, describes the interaction of two or more drugs when their combined effect is greater than the sum of the effects seen when each drug is given alone.

**synergistic effect:** A synergistic effect is any effect of two chemicals acting together which is greater than a simple sum of their effects when acting alone.

**Synestrin:** (Other name for: diethylstilbestrol)

**syngeneic :** Having to do with individuals or tissues that have identical genes. For example, identical twins and cells and tissues from them are syngeneic.

**syngeneic bone marrow transplantation :** A procedure in which a person receives bone marrow donated by his or her healthy identical twin.

**syngeneic stem cell transplantation :** A procedure in which a patient receives blood-forming stem cells (cells from which all blood cells develop) donated by his or her healthy identical twin.

**synovial membrane :** A layer of connective tissue that lines the cavities of joints, tendon sheaths, and bursae (fluid-filled sacs between tendons and bones). The synovial membrane makes synovial fluid, which has a lubricating function.

**synovial sarcoma :** A malignant tumor that develops in the synovial membrane of the joints.

**Synovir :** A drug used with another drug to treat multiple myeloma in patients who have just been diagnosed. It is also used to treat a painful skin disease related to leprosy. It is being studied in the treatment of other types of cancer. Synovir may help the immune system kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of immunomodulating agent. Also called thalidomide and Thalomid.

**synovitis :** Inflammation (swelling, pain, and warmth) of a synovial membrane, which is a layer of connective tissue that lines a joint, such as the hip, knee, ankle, or shoulder. Synovitis is caused by some types of arthritis and other diseases.

**Synribo:** (Other name for: omacetaxine mepesuccinate)

**Synribo :** A drug used to treat certain types of chronic myelogenous leukemia (CML) that have not gotten better after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Synribo blocks certain proteins involved in cancer cell growth and may kill cancer cells. It is a type of plant alkaloid. Also called homoharringtonine and omacetaxine mepesuccinate.

**Synthase:** An enzyme catalyzing a synthetic reaction in which two units are joined without the direct participation of a nucleotide triphosphate. Or Enzymes that catalyze condensation reactions in which no nucleoside triphosphate is required as an energy source.

**Synthesis:** When you take two elements or compounds and combine them to create a new compound. Or Formation of a complex product from simpler reactants. For example, water can be synthesized from oxygen and hydrogen gas:  $H_2(g) + \frac{1}{2}O_2(g) \rightarrow H_2O(l)$ .

**Synthetase:** An enzyme catalyzing a synthetic reaction in which two units are joined with the direct participation of ATP or another nucleoside triphosphate. Or Enzymes that catalyze condensation reactions using ATP or another nucleoside triphosphate as an energy source.

**synthetic:** A substance manufactured by chemical synthesis.

**synthetic :** Having to do with substances that are man-made instead of taken from nature. OR Term loosely applied to paints containing a proportion of, or based entirely upon a synthetic resin. The use of the term should be avoided as it is not sufficiently precise.

**synthetic brain tumor peptides-pulsed autologous dendritic cell**

**vaccine:** A cell-based cancer vaccine composed of autologous dendritic cells (DCs) pulsed with synthetic brain tumor peptides with potential immunostimulatory and antineoplastic activities. Upon administration, synthetic brain tumor peptides-pulsed autologous dendritic cell vaccine may stimulate anti-tumoral cytotoxic T lymphocyte (CTL) and antibody responses against glioma tumor cells, resulting in glioma tumor cell lysis.

**synthetic breast cancer peptides-tetanus toxoid-Montanide ISA-51**

**vaccine:** A cancer vaccine comprised of multiple synthetic breast cancer peptides and the adjuvant tetanus toxoid helper peptide emulsified in the adjuvant Montanide ISA-51 with immunopotential activity. Vaccination with this cancer vaccine may elicit a specific cytotoxic T-lymphocyte response against breast cancer cells. Synthetic breast cancer peptides may stimulate the immune response against cells that produce breast cancer markers such as erbB2 (HER2/neu) while tetanus toxoid helper peptide binds to class II MHC molecules as a nonspecific vaccine helper epitope, resulting in a long-term immunopotential by increasing the helper T-cell response. Montanide ISA-51, also known as incomplete Freund's adjuvant or IFA, is a stabilized water-in-oil emulsion adjuvant containing mineral oil with mannide oleate added as a surfactant that non-specifically stimulates cell-mediated immune responses to antigens.

**synthetic breast cancer peptides-tetanus toxoid-poly ICLC vaccine:**

A cancer vaccine comprised of nine class I major histocompatibility complex (MHC)-restricted breast cancer associated peptides, the tetanus toxoid helper peptide and the Toll-like receptor 3 (TLR3) agonist poly ICLC, with potential immunostimulatory and antineoplastic activities. The nine peptides derived from six cancer associated proteins are epidermal growth factor receptor 2 (HER2/neu), carcinoembryonic antigen (CEA) and four cancer/testis antigens (CTAs: MAGE-A1, -A3, -A10, and NY-ESO-1). Vaccination with this vaccine may elicit a specific cytotoxic T-lymphocyte (CTL) response against cells overexpressing these tumor associated antigens (TAAs). As a nonspecific T-helper epitope, tetanus toxoid helper peptide binds to class II MHC and results in long-term immunopotential by increasing the helper T-cell response. Poly ICLC, the double-stranded RNA molecules of polyinosinic-polycytidylic acid stabilized with poly L-lysine in carboxymethylcellulose, binds to TLR3 and induces the release of cytokines which may help boost the immune response against the TAAs.

**Synthetic chemistry:** A branch of chemistry in which chemists devise ways to make specific molecules of interest and/or develop new chemical reactions for this purpose

**synthetic colorectal tumor-associated peptides vaccine IMA910:** A synthetic tumor-associated peptide (TUMAP)-based cancer vaccine directed against colorectal cancer with potential immunostimulatory and antineoplastic activities. Synthetic colorectal tumor-associated peptides vaccine IMA910 contains 13 different synthetic tumor-associated peptides (TUMAPs), each of which represents a tumor associated antigen (TAA) specific for colorectal cancer. Upon administration, this agent may elicit a cytotoxic T-lymphocyte (CTL) response against colorectal tumors expressing these TAAs, which may result in a reduction in colorectal tumor cell proliferation. Check for active clinical trials using this agent.

**synthetic glioblastoma mutated tumor-specific peptides vaccine therapy APVAC2:** A personalized peptide-based cancer vaccine comprised of one or two de novo synthesized patient-specific tumor-mutated peptides associated with glioblastoma (GB), with potential immunomodulating and antineoplastic activities. Vaccination with synthetic GB mutated tumor-specific peptides vaccine therapy APVAC2 stimulates the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing the selected mutated tumor-associated peptides, which results in decreased GB growth. These peptides are specifically selected and synthesized based on the expression of the patient's own mutated tumor-associated antigens, which were detected during individual tumor genome sequencing.

**synthetic glioblastoma tumor-associated peptides vaccine therapy APVAC1:** A personalized peptide-based cancer vaccine comprised of five to ten peptides associated with glioblastoma (GB), with potential immunomodulating and antineoplastic activities. Vaccination with synthetic GB tumor-associated peptides vaccine therapy APVAC1 stimulates the host immune system to mount a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing the tumor associated peptides, and results in decreased GB growth. The peptides are derived from a glioma actively-personalized vaccine consortium (GAPVAC) warehouse and are specifically selected based on the patient's expression of tumor-associated antigens.

**synthetic hTERT DNA vaccine INO-1400:** A DNA vaccine consisting of a plasmid encoding the full-length sequence of the tumor-associated antigen (TAA) human telomerase reverse transcriptase (hTERT), which is the catalytic subunit of human telomerase and synthesizes telomeric DNA at the chromosome ends, containing two immunogenic mutations, with potential immunostimulating and antineoplastic activities. Upon intradermal vaccination of the hTERT-encoding DNA vaccine INO-1400 in combination with electroporation, hTERT protein is expressed and activates the immune system to mount a cytotoxic T-cell (CTL) response against telomerase-expressing tumor cells, which may result in tumor cell death. Telomerase prolongs the functional lifespan of cells via the restoration and maintenance of telomere length. Abnormally activated in tumorigenesis, telomerase is expressed in the majority of human cancer cells, but its expression is low or non-existent in normal cells.

**synthetic human papillomavirus 16 E6 peptide:** A synthetic peptide sequence of human papillomavirus (HPV) type 16 oncoprotein E6. The E6 oncoprotein is implicated in the tumorigenesis of cervical carcinoma. Vaccination with HPV 16 E6 peptide may stimulate the host immune system to mount a cytotoxic T lymphocyte (CTL) response against cells expressing the E6 oncoprotein, resulting in tumor cell lysis.

**synthetic human secretin:** A synthetic human therapeutic agent which is chemically identical or similar to endogenous secretin, a peptide hormone found in the mucosal S-cells of the proximal small intestine. Secretin stimulates the pancreatic acinar cells and ductal epithelial cells to emit bicarbonate rich digestive fluids, thereby increases duodenal bicarbonate level. Bicarbonate neutralizes acidity of the intestines, consequently increasing the pH and facilitating the action of intestinal digestive enzymes. In addition, secretin stimulates the stomach and the liver to produce pepsin and bile, respectively. Both pepsin and bile aid the digestive action of the duodenum, which resulting in the prevention of gastric inflammation. Check for active clinical trials using this agent.

**synthetic human secretin :** A drug used to help diagnose gastrinomas (tumors that cause too much gastric acid to be made) and other problems with the pancreas. It is also used to increase secretions from the pancreas and to help identify a duct called the ampulla of Vater. Synthetic human secretin is a form of secretin that is made in the laboratory. Secretin causes

the pancreas, liver, and stomach to release substances that help digest food. Also called ChiRhoStim and secretin human.

**synthetic hypericin:** A topical ointment formulation containing a synthetic form of hypericin, an anthraquinone derivative that is naturally found in the yellow flower of *Hypericum perforatum* (St. John's wort), with potential antineoplastic and photosensitizing activities. Upon topical administration of the ointment to the tumor site, hypericin becomes activated through the application of visible fluorescent light. During photoactivation, hypericin generates singlet oxygen, which induces DNA damage, necrosis and apoptosis, thereby inhibiting tumor cell growth. The use of visible light for activation avoids the risk of developing secondary malignancies, which are frequently associated with other photodynamic therapies that are dependent on ultraviolet A exposure.

**synthetic long E6/E7 peptides vaccine HPV-01:** A therapeutic peptide vaccine consisting of thirteen synthetic long peptides (SLPs), which are 25-35 amino acids in size, derived from the human papillomavirus (HPV) type 16 oncoproteins E6 and E7, with potential immunostimulating and antitumor activities. Upon administration, synthetic long E6/E7 peptides vaccine HPV-01 is taken up and degraded into small pieces by dendritic cells. The processed viral epitopes are presented by dendritic cells, which may stimulate the host immune system to mount both cytotoxic T-cell lymphocyte (CTL) and helper T cell responses against HPV E6/E7-expressing tumor cells. This results in the destruction of tumor cells and leads to decreased tumor growth. The E6 and E7 oncoproteins are implicated in the tumorigenesis in a variety of cancers. The SLPs allow for optimal presentation by antigen-presenting cells. Check for active clinical trials using this agent.

**synthetic melanoma-associated antigens vaccine:** A cancer vaccine containing synthetic epitope peptides derived from melanoma tumor-associated antigens (TAAs), including melanoma-melanocyte antigen gp100(280-288), melanoma-associated antigen tyrosinase(1-9), and melanoma-associated antigen melan-A(27-35). Upon administration, synthetic melanoma-associated antigens vaccine may stimulate a cytotoxic T-lymphocyte immune response against melanoma cells that express TAAs which share epitopes with the vaccine epitope peptides, resulting in tumor cell lysis.

**synthetic peptide-based erythropoiesis stimulating agent:** A synthetic, non-recombinant, pegylated, peptidic erythropoiesis stimulating agent. Synthetic peptide-based erythropoiesis stimulating agent binds to and activates the erythropoietin (EPO) receptor on erythroid progenitor cells, thereby inducing their proliferation and differentiation into mature erythrocytes. Check for active clinical trials using this agent.

**synthetic peptides E-PRA and E-PSM vaccine:** A cancer vaccine consisting of E-PRA and E-PSM, two synthetic peptide analogs of PRAME (PReferential Antigen MELanoma) and PSMA (Prostate Specific Membrane Antigen), with potential immunostimulating activity. Upon direct administration into lymph nodes, synthetic peptides E-PRA and E-PSM vaccine may stimulate a cytotoxic T-lymphocyte (CTL) response against PRAME- and PSMA-expressing tumor cells. PRAME and PSMA are tumor-associated antigens upregulated and expressed on the cell surfaces of certain tumor cell types.

**synthetic protegrin analog :** A form of a protegrin that is made in the laboratory. Protegrins kill certain bacteria, fungi, and viruses by making holes in their outer membranes and causing them to burst. Synthetic protegrin analogs, such as iseganan, are being studied in the treatment of oral mucositis (painful mouth sores) caused by radiation therapy. It is a type of synthetic antimicrobial peptide.

**synthetic retinoid :** A substance related to vitamin A that is produced in a laboratory.

**Synthetic Rubber:** Any synthetic polymer that mimics the properties of natural rubber. One of the earliest was ABS (Acrylonitrile-Butadiene-Styrene) rubber, a copolymer containing long segments of each of those three monomers.

**Synthoestrin:** (Other name for: diethylstilbestrol)

**Synthroid:** (Other name for: levothyroxine sodium)

**Synthroid:** (Other name for: levothyroxine sodium)

**Syntocinon:** (Other name for: recombinant oxytocin)

**syringe :** A small hollow tube used for injecting or withdrawing liquids. It may be attached to a needle in order to withdraw fluid from the body or inject drugs into the body.

**Syringeability:** The ability of a suspension to pass readily through a syringe and needle. For example, long needle-like crystals in suspension may have poor suspension syringeability.

**system:** In thermodynamics, the system is the part of the universe that is of interest. Or An isolated collection of matter; all other matter in the universe apart from the system is called the surroundings.

**Systematic:** According to some kind of system. It does not have to be particularly logical- for example, consistently naming chemicals you don't like after people you don't like would be an example of systematic, but irrational, nomenclature.

**Systematic absence:** The absence of certain hkl reflections in the X-ray diffraction of a single crystal. Systematic absences are used to determine the space group and symmetry of a crystal.

**Systematic error:** mean that would result from an infinite number of measurements of the same measurand carried out under repeatability conditions minus a true value of the measurand. Or Systematic errors have an identifiable cause and affect the accuracy of results.

**systemic :** Affecting the entire body.

**systemic chemotherapy :** Treatment with anticancer drugs that travel through the blood to cells all over the body.

**systemic disease :** Disease that affects the whole body.

**systemic inflammatory response syndrome :** A serious condition in which there is inflammation throughout the whole body. It may be caused by a severe bacterial infection (sepsis), trauma, or pancreatitis. It is marked by fast heart rate, low blood pressure, low or high body temperature, and low or high white blood cell count. The condition may lead to multiple organ failure and shock. Also called SIRS.

**systemic lupus erythematosus :** A chronic, inflammatory, connective tissue disease that can affect the joints and many organs, including the skin, heart, lungs, kidneys, and nervous system. It can cause many different symptoms; however, not everyone with systemic lupus erythematosus has all of the symptoms. Also called lupus and SLE.

**systemic mastocytosis :** A rare disease in which too many mast cells (a type of immune system cell) are found in the skin, bones, joints, lymph nodes, liver, spleen, and gastrointestinal tract. Mast cells give off chemicals

such as histamine that can cause flushing (a hot, red face), itching, abdominal cramps, muscle pain, nausea, vomiting, diarrhea, low blood pressure, and shock.

**systemic radiation therapy :** A type of radiation therapy in which a radioactive substance, such as radioactive iodine or a radioactively labeled monoclonal antibody, is swallowed or injected into the body and travels through the blood, locating and killing tumor cells.

**systemic scleroderma :** A disease that is marked by hardening and thickening of skin, connective tissue that surrounds other tissues and organs, and blood vessels. Also called systemic sclerosis.

**systemic sclerosis :** A disease that is marked by hardening and thickening of skin, connective tissue that surrounds other tissues and organs, and blood vessels. Also called systemic scleroderma.

**systemic therapy :** Treatment using substances that travel through the bloodstream, reaching and affecting cells all over the body.

**systemic toxicity:** This term is applied when a substance affects a system in the organism other than and often distant from the site of application or exposure.

**systems analysis:** The analysis of an existing or proposed system in order to find optimal solutions for achieving the objectives of the system. The method owes much to the development of computer logic, and computerized methods of data control are used in the systems analysis when necessary (WHO, 1979).

**systems of equations:** More than one equation that are solved simultaneously.

**T cell:** A lymphocyte that has receptors (T cell receptors) that recognize antigens only if bound to MHC proteins; two major types of T cells exist: cytotoxic T lymphocytes (killer T cells) and helper T cells. OR A type of white blood cell. T cells are part of the immune system and develop from stem cells in the bone marrow. They help protect the body from infection and may help fight cancer. Also called T lymphocyte and thymocyte.

**T lymphocyte :** A type of white blood cell. T lymphocytes are part of the immune system and develop from stem cells in the bone marrow. They help protect the body from infection and may help fight cancer. Also called T

cell and thymocyte. OR white blood cells in the lymph nodes that are stimulated by microorganisms or other foreign material in the blood.

**T reg :** A type of immune cell that blocks the actions of some other types of lymphocytes, to keep the immune system from becoming over-active. T regs are being studied in the treatment of cancer. A T reg is a type of white blood cell and a type of lymphocyte. Also called regulatory T cell, suppressor T cell, and T-regulatory cell.

**t test :** A statistical test that is used to find out if there is a real difference between the means (averages) of two different groups. It is sometimes used to see if there is a significant difference in response to treatment between groups in a clinical trial.

**T-3:** A thyroid hormone. Also called triiodothyronine.

**T-cell acute lymphoblastic leukemia :** An aggressive (fast-growing) type of leukemia (blood cancer) in which too many T-cell lymphoblasts (immature white blood cells) are found in the bone marrow and blood. Also called precursor T-lymphoblastic leukemia and T-cell acute lymphocytic leukemia.

**T-cell acute lymphocytic leukemia :** An aggressive (fast-growing) type of leukemia (blood cancer) in which too many T-cell lymphoblasts (immature white blood cells) are found in the bone marrow and blood. Also called precursor T-lymphoblastic leukemia and T-cell acute lymphoblastic leukemia.

**T-cell depletion :** Treatment to destroy T cells, which play an important role in the immune response. Elimination of T cells from a bone marrow graft from a donor may reduce the chance of an immune reaction against the recipient's tissues.

**T-cell large granular lymphocyte leukemia :** A type of leukemia in which large T lymphocytes (a type of white blood cell) that contain granules (small particles) are found in the blood. It is a chronic disease that may last for a long time and get worse. Also called T-LGL leukemia.

**T-cell lymphoma :** A type of cancer that forms in T cells (a type of immune system cell). T-cell lymphomas may be either indolent (slow-growing) or aggressive (fast-growing). Most T-cell lymphomas are non-Hodgkin lymphomas. There are many different types of T-cell non-Hodgkin lymphomas. These include mycosis fungoides, anaplastic large cell

lymphoma, and precursor T-lymphoblastic lymphoma. Prognosis and treatment depend on type and stage of the cancer.

**T-cell receptor:** A receptor that recognizes peptides displayed by MHC proteins on target cells; the receptor consists of two different 43-kd chains joined by a disulfide bond and spanning the plasma membrane; the combination of constant and variable regions among various T-cell receptors allows T cells to recognize a large number of different epitopes.

**T-cell receptor gene rearrangement test :** A laboratory test in which blood or bone marrow cells are checked to see if there is a certain change in the genes that make receptors on T cells (white blood cells that fight infection). Testing for this gene change can tell whether large numbers of T cells with a certain receptor are being made. This may be a sign of cancer.

**T-cell-mediated immunity:** One of the recognition systems of the immune response, in which T cells scan the surfaces of all cells and kill those that exhibit foreign proteins synthesized by intercellular pathogens.

**T-DM1:** A drug used to treat HER2-positive breast cancer that has spread to other parts of the body. It is used in patients who have already been treated with the anticancer drug called trastuzumab and a type of drug called a taxane. It may also be used in patients whose cancer has recurred (come back) after adjuvant therapy with these drugs. It is also being studied in the treatment of other types of cancer. T-DM1 contains a monoclonal antibody called trastuzumab that binds to a protein called HER2, which is found on some breast cancer cells. It also contains an anticancer drug called DM1, which may help kill cancer cells. T-DM1 is a type of antibody-drug conjugate. Also called ado-trastuzumab emtansine and Kadcyla.

**T-LGL leukemia :** A type of leukemia in which large T lymphocytes (a type of white blood cell) that contain granules (small particles) are found in the blood. It is a chronic disease that may last for a long time and get worse. Also called T-cell large granular lymphocyte leukemia.

**T-lymphoblastic lymphoma :** A type of non-Hodgkin lymphoma in which too many T-cell lymphoblasts (immature white blood cells) are found in the lymph nodes and spleen. It is most common in young men. Also called precursor T-lymphoblastic lymphoma.

**T-Phyl:** (Other name for: theophylline)

**T-regulatory cell :** A type of immune cell that blocks the actions of some other types of lymphocytes, to keep the immune system from becoming over-active. T-regulatory cells are being studied in the treatment of cancer. A T-regulatory cell is a type of white blood cell and a type of lymphocyte. Also called regulatory T cell, suppressor T cell, and T reg.

**T-shape:** A molecular shape that results when there are 3 bonds and 2 lone pairs around the central atom in the molecule. The atoms bonded to the central atom lie at the ends of a "T" with 90° angles between them. ICl<sub>3</sub> has a T-shaped molecular geometry

**T-VEC:** A drug used to treat melanoma that has recurred (come back) after surgery. It is used in patients whose cancer is in the skin and lymph nodes and cannot be removed by surgery. It is also being studied in the treatment of other types of cancer. T-VEC is made with a form of the herpesvirus that has been changed in the laboratory to infect and break down cancer cells without harming normal cells. It may also help the immune system kill cancer cells. T-VEC is injected directly into tumors in the skin and lymph nodes. It is a type of oncolytic virus therapy. Also called Imlygic and talimogene laherparepvec.

**T1 diagnostic:** An indication of how far the usual HF orbitals differ from the Brueckner orbitals. It has been used as an indicator of multi-reference character and therefore of the reliability of coupled cluster calculations (18,19), although this usage has been challenged.

**T138067:** An anticancer drug that belongs to the family of drugs called mitotic inhibitors. It inhibits the growth of cancer cells by preventing cell division.

**T1E28z CAR-expressing autologous CD4-positive T lymphocytes:**

Autologous CD4 positive T-lymphocytes engineered to express the chimeric antigen receptor (CAR) T1E28z containing the ErbB ligand, T1E, fused to the hinge region, transmembrane domain and endodomain of CD28 and the CD3zeta endodomain, with potential immunomodulating and antineoplastic activities. T1E, a chimeric polypeptide containing the N-terminus of human transforming growth factor (TGF)-alpha fused to the C-terminus of epidermal growth factor (EGF), binds to ErbB1 homodimers and heterodimers as well as ErbB2/3 heterodimers, but not to ErbB2 or ErbB3 alone. Upon intratumoral administration, the promiscuous ErbB ligand T1E of the T1E28z CAR-expressing autologous CD4-positive T

lymphocytes binds to the specific ErbB homo- and heterodimers on tumor cells. This induces selective toxicity in ErbB-expressing tumor cells resulting in tumor cell lysis. ErbB1, ErbB2 and ErbB3, members of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, are frequently overexpressed in solid tumors and play key roles in tumor cell proliferation and tumor angiogenesis.

**T4:** A hormone that is made by the thyroid gland and contains iodine. T4 increases the rate of chemical reactions in cells and helps control growth and development. T4 can also be made in the laboratory and is used to treat thyroid disorders. Also called L-3,5,5'-tetraiodothyronine, thyroxin, and thyroxine.

**T4N5 liposomal lotion :** A lotion being studied in the treatment of skin cancer and a skin condition called xeroderma pigmentosum. It has an enzyme contained in very tiny, fat-like particles. The enzyme repairs damage caused by ultraviolet radiation. T4N5 liposomal lotion is a type of DNA repair enzyme topical agent. Also called Dimericine.

**T900607:** A pentafluorophenylsulfonamide compound with potential antineoplastic activity. T900607 inhibits tubulin polymerization by binding irreversibly to colchicine binding sites, resulting in cell cycle arrest and apoptosis. Or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called tubulin-binding agents.

**Tab gate:** An opening aligned with the parting line of the mold where resin flows into the cavity. These are also referred to as “edge-gates” and are typically placed on an outside edge of the part. OR A small removable tab about the same thickness as the molded item, but usually perpendicular to the part for easy removal.

**TAB GATED:** A small removable tab of approximately the same thickness as the mold item, usually located perpendicular to the molded part. The tab is used as a site for edge gate location, usually on items with large flat areas.

**tabalumab:** A human IgG4 monoclonal antibody against B-cell activating factor (BAFF), with potential immunomodulating and antineoplastic activities. Tabalumab binds to and inhibits the activity of both soluble and cell surface-bound BAFF. This may reduce the activity, proliferation and survival of B-cells. A dysregulated expression of BAFF, a member of the tumor necrosis factor (TNF) family of proteins, is often seen in certain

autoimmune diseases and certain cancers, and may promote B lymphocyte activation, proliferation and survival.

**Tableting behavior:** A general term for behavior of crystals upon compression into tablets.

**Tabloid :** A drug used to treat acute myeloid leukemia (AML). It is also being studied in the treatment of other types of cancer. Tabloid stops cells from making DNA and RNA and it may kill cancer cells. It is a type of antimetabolite. Also called thioguanine.

**TAC:** An abbreviation for a chemotherapy combination used with other types of therapy to treat breast cancer. It includes the drugs docetaxel (Taxotere), doxorubicin hydrochloride (Adriamycin), and cyclophosphamide. Also called TAC regimen.

**TAC regimen:** An combination chemotherapy regimen consisting of docetaxel (Taxotere), doxorubicin hydrochloride (Adriamycin) and cyclophosphamide used in the adjuvant setting for the treatment of breast cancer. Or An abbreviation for a chemotherapy combination used with other types of therapy to treat breast cancer. It includes the drugs docetaxel (Taxotere), doxorubicin hydrochloride (Adriamycin), and cyclophosphamide. Also called TAC.

**TAC-101:** A substance that is being studied in the treatment of cancer. It belongs to the families of drugs called synthetic retinoids and angiogenesis inhibitors.

**TACE :** A procedure in which the blood supply to a tumor is blocked after anticancer drugs are given in blood vessels near the tumor. Sometimes, the anticancer drugs are attached to small beads that are injected into an artery that feeds the tumor. The beads block blood flow to the tumor as they release the drug. This allows a higher amount of drug to reach the tumor for a longer period of time, which may kill more cancer cells. It also causes fewer side effects because very little of the drug reaches other parts of the body. TACE is used to treat liver cancer. Also called chemoembolization and transarterial chemoembolization.

**tacedinaline:** An orally bioavailable substituted benzamide derivative with potential antineoplastic activity. Tacedinaline inhibits histone deacetylation, which may result in histone hyperacetylation, followed by the induction of differentiation, the inhibition of cell proliferation, and apoptosis in susceptible tumor cell populations.

**TachoSil:** (Other name for: absorbable fibrin sealant patch)

**tachycardia :** Rapid beating of the heart, usually defined as greater than 100 beats per minute.

**tachypnea :** Rapid breathing.

**Tack:** Stickiness of an adhesive, measurable as the force required to separate an adherent from it by viscous or plastic flow of the adhesive.

**Tack rag:** A fabric impregnated with a special oil or resin which remains tacky. Used to remove dust, etc. from a surface immediately prior to painting.

**Tack Weld :** This process prevents picket compression or narrowing associated with high belt tension typically associated with flat wire belts 60" (1524 mm) or greater.

**Tackifiers:** Additives used to enhance the adhesiveness or bonding ability of a material.

**TACKY:** Sticky condition of coating during drying, between wet and dry-to-touch stage.

**tacrolimus:** A macrolide isolated from the fungus *Streptomyces tsukubaensis*. Tacrolimus binds to the FKBP-12 protein and forms a complex with calcium-dependent proteins, thereby inhibiting calcineurin phosphatase activity and resulting in decreased cytokine production. This agent exhibits potent immunosuppressive activity in vivo and prevents the activation of T-lymphocytes in response to antigenic or mitogenic stimulation. Tacrolimus possesses similar immunosuppressive properties to cyclosporine, but is more potent.

**tacrolimus :** A drug used to help reduce the risk of rejection by the body of organ and bone marrow transplants.

**tadalafil:** A carboline-based compound with vasodilatory activity. Tadalafil selectively inhibits the cyclic guanosine monophosphate (cGMP)-specific type 5 phosphodiesterase- (PDE-5)-mediated degradation of cGMP, which is found in the smooth muscle of the corpus cavernosa and corpus spongiosum of the penis. Inhibition of cGMP degradation by tadalafil results in prolonged muscle relaxation, vasodilation, and blood engorgement of the corpus cavernosa, and, so, prolonged penile erection. Check for active clinical trials using this agent.

**tadalafil** : A drug used to treat erectile dysfunction. It is also being studied in the treatment of sexual problems in patients treated with radiation or surgery for prostate cancer. Tadalafil blocks the action of a certain enzyme, which can result in increased blood flow to the penis, causing an erection. It is a type of cGMP phosphodiesterase type 5 (PDE5) inhibitor. Also called Cialis.

**TAE**: A procedure in which the blood supply to a tumor or an abnormal area of tissue is blocked. During TAE, a small incision (cut) is made in the inner thigh and a catheter (thin, flexible tube) is inserted and guided into an artery near the tumor or abnormal tissue. Once the catheter is in place, small particles made of tiny gelatin sponges or beads are injected. This blocks the artery and stops the flow of blood to the tumor or abnormal area of tissue. TAE is used to treat some types of liver cancer, kidney cancer, and neuroendocrine tumors. It may also be used to treat uterine fibroids, aneurysms, and other conditions. Also called arterial embolization and transarterial embolization.

**tafamidis meglumine**: A soft gelatin capsule formulation containing the meglumine salt form of tafamidis, a small molecule and pharmacological chaperone with potential disease-modifying activity. Tafamidis binds to and stabilizes wild-type and variant (V122I) transthyretin (TTR), thereby preventing tetramer dissociation into monomers; this prevents misfolding of the TTR protein and inhibits the formation of TTR amyloid fibrils and the subsequent deposition of these insoluble protein clusters in peripheral nerve tissues and organs. TTR is a 127 amino acid transport protein for thyroxine and retinol and is secreted by the liver.

**Tafinlar** : A drug used alone or with trametinib to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is used in patients with a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. Tafinlar blocks this mutated protein, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor and a type of targeted therapy. Also called dabrafenib.

**TAG-72 antigen** : A protein/sugar complex found on the surface of many cancer cells, including breast, colon, and pancreatic cells.

**Tagamet**: (Other name for: cimetidine)

**tagging SNP** : A single nucleotide polymorphism, or SNP, that is used to “tag” a particular haplotype in a region of the genome. As a subset of all of the SNPs in the genome, tagging SNPs can be extremely useful for testing the association of a marker locus with a qualitative or quantitative trait locus in that it may not be necessary to genotype all of the SNPs. Also called tagSNP.

**Tagrisso** : A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of a cell protein called epidermal growth factor receptor and whose disease got worse during or after treatment with an anticancer drug that blocks EGFR. It is also being studied in the treatment of other types of cancer. Tagrisso blocks this mutated protein, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor. Also called osimertinib.

**tagSNP** : A single nucleotide polymorphism, or SNP, that is used to “tag” a particular haplotype in a region of the genome. As a subset of all of the SNPs in the genome, tagSNPs can be extremely useful for testing the association of a marker locus with a qualitative or quantitative trait locus in that it may not be necessary to genotype all of the SNPs. Also called tagging SNP.

**tai chi** : A form of traditional Chinese mind/body exercise and meditation that uses slow sets of body movements and controlled breathing. Tai chi is done to improve balance, flexibility, muscle strength, and overall health.

**tailbone** : The small bone at the bottom of the spine. It is made up of 3-5 fused bones. Also called coccyx.

**tailored intervention** : The use of communication, drugs, or other types of treatments that are specific for an individual or a group to improve health or change behavior.

**Take-up**: An apparatus for reeling extruded material. Or The area of the system where variations in belt length are accommodated or "taken up".

**Take-Up Drive** : A name often given to the system sprocket drive. This drive sets the belt speed and dwell time for the system, and is located just before the take-up.

**Take-Up Tower** : The structure or area where the take-up, take-up drive, limit switches and dancer roll are located in a spiral.

**talabostat :** A substance being studied in the treatment of cancer, including certain types of lung, pancreas, and brain cancer. Talabostat may help the immune system block the growth of cancer cells. It may also increase the growth of new blood cells. It is a type of enzyme inhibitor. Also called PT-100 and talabostat mesylate.

**talabostat mesylate:** The orally bioavailable mesylate salt of an amino boronic dipeptide with antineoplastic and hematopoiesis- stimulating activities. By cleaving N-terminal Xaa-Pro or Xaa-Ala residues, talabostat inhibits dipeptidyl peptidases, such as fibroblast activation protein (FAP), resulting in the stimulation of cytokine and chemokine production and specific T-cell immunity and T-cell- dependent activity. This agent may also stimulate the production of colony stimulating factors, such as granulocyte colony stimulating factor (G-CSF), resulting in the stimulation of hematopoiesis. Dipeptidyl peptidases are involved in the activation of polypeptide hormones and chemokines. or A substance being studied in the treatment of cancer, including certain types of lung, pancreas, and brain cancer. Talabostat mesylate may help the immune system block the growth of cancer cells. It may also increase the growth of new blood cells. It is a type of enzyme inhibitor. Also called PT-100 and talabostat.

**talactoferrin:** An orally bioavailable recombinant human lactoferrin produced in the fungus *Aspergillus niger* with potential antineoplastic and immunomodulating activities. Upon oral administration, talactoferrin is transported into small intestinal Peyer's patches of the gut-associated lymphoreticular tissues (GALT), where it recruits circulating immature dendritic cells (DCs) bearing tumor antigens and induces their maturation. In the GALT, DC maturation in the presence of tumor antigens and lymphoid effector cells may induce systemic innate and adaptive immune responses mediated by anti-tumor natural killer (NK) cells, cytotoxic T lymphocytes, and natural killer T (NKT) cells; activation of tumor-draining lymph nodes, cellular infiltration of distant tumors, and tumor-cell death may follow. Raising the initial immune response in the GALT, distant from the primary tumor, may counter local tumor-mediated immunosuppression. Check for active clinical trials using this agent.

**talactoferrin :** A drug being studied in the treatment of kidney cancer that has spread. It is also being studied in the treatment of other types of cancer and other conditions. Talactoferrin increases the activity of dendritic cells (a

type of immune cell) to help kill cancer cells. It is a form of human lactoferrin (a protein found in milk, tears, mucus, bile, and some white blood cells) that is made in the laboratory. Talactoferrin is a type of recombinant protein and a type of immunomodulatory protein. Also called talactoferrin alfa and TLF.

**talactoferrin alfa :** A drug being studied in the treatment of kidney cancer that has spread. It is also being studied in the treatment of other types of cancer and other conditions. Talactoferrin alfa increases the activity of dendritic cells (a type of immune cell) to help kill cancer cells. It is a form of human lactoferrin (a protein found in milk, tears, mucus, bile, and some white blood cells) that is made in the laboratory. Talactoferrin alfa is a type of recombinant protein and a type of immunomodulatory protein. Also called talactoferrin and TLF.

**taladegib:** An orally bioavailable small molecule antagonist of the Hedgehog (Hh)-ligand cell surface receptor smoothed (Smo) with potential antineoplastic activity. Taladegib inhibits signaling that is mediated by the Hh pathway protein Smo, which may result in a suppression of the Hh signaling pathway and may lead to the inhibition of the proliferation of tumor cells in which this pathway is abnormally activated. The Hh signaling pathway plays an important role in cellular growth, differentiation and repair; constitutive activation of this pathway is associated with uncontrolled cellular proliferation and has been observed in a variety of cancers. Check for active clinical trials using this agent.

**talampanel:** A synthetic derivative of dioxolo-benzodiazepine with anti-seizure activity. Talampanel noncompetitively binds to the AMPA (alpha-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid) subtype of glutamate excitatory amino acid receptors and may inhibit the growth of gliomas by interfering with neurotransmitters involved in brain tumor growth. This agent may also protect against traumatic brain injury. or A substance that is being studied in the treatment of brain tumors and other brain disorders, such as epilepsy and Parkinson disease. It is a type of AMPA receptor antagonist.

**talaporfin sodium:** An agent consisting of chlorin e6, derived from chlorophyll, and L-aspartic acid with photosensitizing activity. After intratumoral activation by light emitting diodes, taporfin sodium forms an extended high energy conformational state that generates singlet oxygen,

resulting in free radical-mediated cell death. or A drug used in photodynamic therapy. When absorbed by cancer cells and exposed to light, the drug becomes active and kills the cancer cells.

**talazoparib:** An orally bioavailable inhibitor of the nuclear enzyme poly(ADP-ribose) polymerase (PARP) with potential antineoplastic activity. Talazoparib selectively binds to PARP and prevents PARP-mediated DNA repair of single strand DNA breaks via the base-excision repair pathway. This enhances the accumulation of DNA strand breaks, promotes genomic instability and eventually leads to apoptosis. PARP catalyzes post-translational ADP-ribosylation of nuclear proteins that signal and recruit other proteins to repair damaged DNA and is activated by single-strand DNA breaks.

**Talc:** Additive composed of hydrous magnesium silicate, used frequently as a filler or antiblock agent. OR A natural hydrous magnesium silicate, used frequently as an additive in plastic compounds. OR Finely-powdered native hydrous magnesium silicate. When administered into the pleural space, talc initiates an inflammatory reaction, resulting in adhesion of the visceral pleura to the parietal pleura and fibrosis, thereby effectively closing the pleural space and preventing further accumulation of fluid. This agent exhibits no intrinsic antineoplastic activity. or A mineral, usually used in a powdered form. In cancer treatment, sterile talc is used to prevent pleural effusions (an abnormal collection of fluid in the space between the lungs and the chest wall). Talc is inserted into the space, causing it to close up, so fluid cannot collect there. Also called sterile talc powder.

**talimogene laherparepvec:** An ICP34.5, ICP47-deleted, oncolytic herpes simplex type-1 virus (HSV-1) based on the JS1 strain, and encoding the immunostimulating factor human cytokine granulocyte-macrophage colony stimulating factor (GM-CSF) with potential immunostimulating and antineoplastic activities. Upon intratumoral injection, talimogene laherparepvec selectively infects and replicates in tumor cells, thereby inducing tumor cell lysis. In addition, GM-CSF attracts dendritic cells (DCs) and may stimulate a cytotoxic T cell response against tumor cells, which results in immune-mediated tumor cell death. Deletion of the gene encoding for ICP34.5 provides tumor selectivity and prevents replication in healthy cells. As ICP47 blocks antigen presentation in HSV-infected cells, deletion of this gene may induce a more potent antitumor immune response

in the tumor cells. Additionally, deletion of ICP47 causes increased expression of the HSV US11 gene and allows US11 to be expressed as an immediate early and not a late gene. This further enhances the degree of viral replication and oncolysis of tumor cells. or A drug used to treat melanoma that has recurred (come back) after surgery. It is used in patients whose cancer is in the skin and lymph nodes and cannot be removed by surgery. It is also being studied in the treatment of other types of cancer. Talimogene laherparepvec is made with a form of the herpesvirus that has been changed in the laboratory to infect and break down cancer cells without harming normal cells. It may also help the immune system kill cancer cells. Talimogene laherparepvec is injected directly into tumors in the skin and lymph nodes. It is a type of oncolytic virus therapy. Also called Imlygic and T-VEC.

**talk therapy :** Treatment of mental, emotional, personality, and behavioral disorders using methods such as discussion, ing, and counseling. Also called psychotherapy.

**talmapimod:** An orally bioavailable, small-molecule, p38 mitogen-activated protein kinase (MAPK) inhibitor with potential immunomodulating, anti-inflammatory, and antineoplastic activities. Talmapimod specifically binds to and inhibits the phosphorylation of p38 MAPK, which may result in the induction of tumor cell apoptosis, the inhibition of tumor cell proliferation, and the inhibition of tumor angiogenesis. This agent may also enhance proteasome inhibitor-induced apoptosis. p38 MAPK is a serine/threonine protein kinase involved in a MAPK signaling cascade that controls cellular responses to various environmental stresses, cytokines, and endotoxins.

**talotrexin :** A substance that is being studied in the treatment of leukemia and some other types of cancer. It belongs to the family of drugs called antifolates.

**talotrexin ammonium:** The ammonium salt of an antimetabolite analogue of aminopterin with potential antineoplastic activity. As a folate antagonist, talotrexin binds to and inhibits the function of dihydrofolate reductase, resulting in the inhibition of folate metabolism, DNA synthesis, and cell division. Hydrosoluble, talotrexin is actively transported into cells by the reduced folate carrier (RFC) and, therefore, is unlikely to be associated with P-glycoprotein-mediated multidrug resistance.

**taltirelin hydrate:** The hydrate of taltirelin, a thyrotropin releasing hormone (TRH) analogue with potential neuroprotective, analgesic and central nervous system-stimulating (CNS)/analeptic activities. Taltirelin mimics the physiological actions of TRH on the CNS while exerting a minimal effect on the release of thyrotrophin (TSH) from the anterior lobe of the pituitary. Like TRH, the mechanism of action of this agent in the CNS has not been fully elucidated mechanism, but may involve various cerebral monoamine pathways. Compared to TRH, taltirelin has a much longer half-life and duration of effects. Check for active clinical trials using this agent.

**talus:** a pile of rocks at the bottom of a hill. Or the accumulation of rock debris at the base of a steep slope.

**Talvesta:** (Other name for: talotrexin ammonium)

**tamibarotene:** An orally active, synthetic retinoid, developed to overcome all-trans retinoic acid (ATRA) resistance, with potential antineoplastic activity. As a specific retinoic acid receptor (RAR) alpha/beta agonist, tamibarotene is approximately ten times more potent than ATRA in inducing cell differentiation and apoptosis in HL-60 (human promyelocytic leukemia) cell lines in vitro. Due to a lower affinity for cellular retinoic acid binding protein (CRABP), tamibarotene may show sustained plasma levels compared to ATRA. In addition, this agent may exhibit a lower toxicity profile than ATRA, in part, due to the lack of affinity for the RAR-gamma receptor, the major retinoic acid receptor in the dermal epithelium. Check for active clinical trials using this agent.

**Tamiflu :** A drug used to prevent and to treat influenza virus infections. It blocks the release of the virus from infected cells. It is a type of antiviral agent. Also called oseltamivir phosphate.

**tamoxifen :** A drug used to treat certain types of breast cancer in women and men. It is also used to prevent breast cancer in women who have had ductal carcinoma in situ (abnormal cells in the ducts of the breast) and in women who are at a high risk of developing breast cancer. Tamoxifen is also being studied in the treatment of other types of cancer. It blocks the effects of the hormone estrogen in the breast. Tamoxifen is a type of antiestrogen. Also called tamoxifen citrate.

**tamoxifen citrate:** The citrate salt of an antineoplastic nonsteroidal selective estrogen receptor modulator (SERM). Tamoxifen competitively

inhibits the binding of estradiol to estrogen receptors, thereby preventing the receptor from binding to the estrogen-response element on DNA. The result is a reduction in DNA synthesis and cellular response to estrogen. In addition, tamoxifen up-regulates the production of transforming growth factor B (TGFb), a factor that inhibits tumor cell growth, and down-regulates insulin-like growth factor 1 (IGF-1), a factor that stimulates breast cancer cell growth. Tamoxifen also down-regulates protein kinase C (PKC) expression in a dose-dependant manner, inhibiting signal transduction and producing an antiproliferative effect in tumors such as malignant glioma and other cancers that overexpress PKC. or A drug used to treat certain types of breast cancer in women and men. It is also used to prevent breast cancer in women who have had ductal carcinoma in situ (abnormal cells in the ducts of the breast) and in women who are at a high risk of developing breast cancer. Tamoxifen citrate is also being studied in the treatment of other types of cancer. It blocks the effects of the hormone estrogen in the breast. Tamoxifen citrate is a type of antiestrogen. Also called tamoxifen.

**Tamper-evident:** Any device which shows visible signs that the container has been opened.

**tamsulosin :** A drug used to treat urinary problems caused by an enlarged prostate. Tamsulosin relaxes the muscles of the prostate and bladder, which helps the flow of urine. It is a type of alpha blocker. Also called Flomax and tamsulosin hydrochloride.

**tamsulosin hydrochloride:** The hydrochloride salt of tamsulosin, a sulfonamide derivative with adrenergic antagonist activity. Tamsulosin selectivity binds to and blocks the activity of alpha1 adrenoreceptors in the human prostate and bladder neck; blockade of these adrenoceptors can cause smooth muscle in the prostate and bladder neck to relax, resulting in an improvement in urinary flow rate. or A drug used to treat urinary problems caused by an enlarged prostate. Tamsulosin hydrochloride relaxes the muscles of the prostate and bladder, which helps the flow of urine. It is a type of alpha blocker. Also called Flomax and tamsulosin.

**Tandem duplication:** A duplication in which the repeated regions are immediately adjacent to one another.

**tandutinib:** A piperazinyl quinazoline receptor tyrosine kinase inhibitor with antineoplastic activity. Tandutinib inhibits the autophosphorylation of FLT3 (FMS-Like Tyrosine kinase-3), c-KIT and PDGF (platelet-derived

growth factor) receptor tyrosine kinases, thereby inhibiting cellular proliferation and inducing apoptosis. or A substance being studied in the treatment of some types of cancer. It may stop cancer cell growth by blocking certain enzymes. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called CT53518 and MLN518.

**tanespimycin:** A benzoquinone antineoplastic antibiotic derived from the antineoplastic antibiotic geldanamycin. Tanespimycin binds to and inhibits the cytosolic chaperone functions of heat shock protein 90 (HSP90). HSP90 maintains the stability and functional shape of many oncogenic signaling proteins; the inhibition of HSP90 promotes the proteasomal degradation of oncogenic signaling proteins that may be overexpressed by tumor cells. or A substance being studied in the treatment of cancer. It is made from an antibiotic called geldanamycin. Tanespimycin helps cause the breakdown of certain proteins in the cell, and may kill cancer cells. It is a type of antineoplastic antibiotic and a type of HSP90 inhibitor. Also called 17-AAG and 17-N-allylamino-17-demethoxygeldanamycin.

**tanezumab:** A humanized monoclonal antibody directed against nerve growth factor (NGF), a modulator of nociceptor function, with potential analgesic activity. Tanezumab binds to NGF and prevents NGF binding to its high affinity, membrane-bound, catalytic receptor tropomyosin-related kinase A (TrkA), which is present on sympathetic and sensory neurons; reduced stimulation of TrkA by NGF inhibits the pain-transmission activities of these neurons. NGF, a neurotrophin, is critical to the growth and maintenance of sympathetic and sensory neurons. In addition, NGF may induce mast cells to release inflammatory proteins and may induce the upregulation of substance P and other pain-related peptides in sympathetic and sensory neurons. Upon neurotrophin binding, TrkA phosphorylates itself and members of the MAPK pathway, mediating the multiple neuronal effects of NGF.

**tangent to a circle:** a line, line segment, or ray that touches a circle at one point (cannot go within the circle).

**tangerine tomato juice:** Tomato juice derived from the tangerine tomato, with potential antioxidant and chemopreventive activities. Tangerine tomato juice contains higher levels of the cis-isomer of lycopene (cis-LYC) compared to the trans-isomer (trans-LYC). Lycopene, a linear, unsaturated

hydrocarbon carotenoid, is the major red pigment in certain fruits such as tomatoes, pink grapefruit, apricots, red oranges, watermelon, rosehips, and guava. As an antioxidant, lycopene scavenges free radicals, which may both inhibit cellular oxidation and prevent free radical damage to cells. cis-LYC is better absorbed than its trans form.

**tanibirumab:** A fully human monoclonal antibody targeting the vascular endothelial growth factor receptor 2 (VEGFR2), with potential antiangiogenic activity. Upon administration, tanibirumab specifically binds to VEGFR2, thereby preventing the binding of its ligand VEGF. This may result in the inhibition of tumor angiogenesis and a decrease in tumor nutrient supply. VEGFR2 is a pro-angiogenic growth factor receptor tyrosine kinase expressed by endothelial cells, while VEGF is overexpressed in many tumors and is correlated to tumor progression.

**Tank:** Large metal container for holding water or other liquid usually completely enclosed and rectangular in shape.

**tannic acid :** A type of chemical found in plants and in certain foods, such as fruits, vegetables, nuts, wine, and tea. Tannic acid has antioxidant properties and may promote good health. It is being studied in the prevention of cancer, heart disease, and other diseases. It is also used in certain medicines, fabrics, leather, and ink. Tannic acid is a type of polyphenol. Also called tannin.

**tannin :** A type of chemical found in plants and in certain foods, such as fruits, vegetables, nuts, wine, and tea. Tannins have antioxidant properties and may promote good health. They are being studied in the prevention of cancer, heart disease, and other diseases. They are also used in certain medicines, fabrics, leather, and ink. A tannin is a type of polyphenol. Also called tannic acid.

**tanomastat:** A biphenyl matrix metalloproteinase (MMP) inhibitor (MMPI) with potential antineoplastic activity. Tanomastat inhibits MMP-2, MMP-3, and MMP-9, inhibiting extracellular matrix degradation and potentially inhibiting angiogenesis, tumor growth and invasion, and metastasis. MMPs consist of at least 18 zinc-containing endo-proteinases that are capable of degrading collagen and proteoglycan.

**Tantalum:** Symbol:"Ta" Atomic Number:"73" Atomic Mass: 180.95amu. Tantalum is one of the transition elements. This very hard, gray metal can

be found in many alloys. It has also been used in surgical equipment, camera lenses, and even electronic capacitors.

**tapentadol hydrochloride :** A drug used to treat moderate to severe pain. It binds to opioid receptors and other molecules in the central nervous system. Tapentadol hydrochloride is a type of opioid and a type of analgesic agent. Also called Nucynta.

**tapentadol hydrochloride ER:** An orally active, extended-release preparation of the hydrochloride salt of tapentadol with analgesic activity. Tapentadol is a synthetic, centrally acting analgesic with a dual mechanism of action involving mu-opioid receptor agonism and norepinephrine reuptake inhibition. This agent may be effective in the management of pain, cancer-related and other.

**Tapered Cylinder:** Refers to a particular shape of a container in which the circular cross section at the top is smaller in diameter than that at the bottom, or vice versa.

**Tarabine PFS:** (Other name for: cytarabine)

**Tarceva:** (Other name for: erlotinib hydrochloride)

**Tarceva :** A drug used to treat certain types of non-small cell lung cancer. It is also used with gemcitabine hydrochloride to treat pancreatic cancer that cannot be removed by surgery or has spread to other parts of the body. It is being studied in the treatment of other types of cancer. Tarceva blocks a protein called epidermal growth factor receptor (EGFR), which may help keep cancer cells from growing. It is a type of EGFR tyrosine kinase inhibitor. Also called CP-358,774, erlotinib hydrochloride, and OSI-774.

**tarenflurbil:** An orally active synthetic enantiomer of flurbiprofen. Tarenflurbil activates c-Jun N terminal kinase, increases AP-1 binding to DNA, and downregulates cyclin D1 expression, resulting in arrest of tumor cells in the G1 phase of the cell cycle and apoptosis. This agent also affects the expression of nuclear factor kappa B, a rapid response transcription factor that stimulates the immune response to tumor cells. Tarenflurbil does not inhibit the enzyme cyclo-oxygenase.

**tarextumab:** A monoclonal antibody directed against the Notch receptor with potential antineoplastic activity. Tarextumab binds to Notch on the cell surface, thereby inhibiting Notch-mediated signaling and gene transcription, which may impede tumor angiogenesis. Notch receptors are important for

cell-cell communication, which involves gene regulation mechanisms that control multiple cell differentiation processes during embryonic and adult life. Dysregulated Notch signaling is implicated in many diseases including T-ALL (T-cell acute lymphoblastic leukemia), CADASIL (cerebral autosomal dominant arteriopathy with sub-cortical infarcts and leukoencephalopathy), MS (multiple sclerosis), and many other disease states.

**target (biological):** Any organism, organ, tissue, or cell that is subject to the action of a pollutant or other chemical, physical, or biological agent (WHO, 1979).

**target (of environmental pollution):** A human being or any organism, organ, tissue, cell, resource, or any constituent of the environment, living or not, that is subject to the activity of a pollutant or other chemical or physical activity or other agent (WHO, 1979).

**target organ(s):** Organ(s) in which the toxic injury manifests itself in terms of dysfunction or overt disease (WHO, 1979).

**target population:** (i) The collection of individuals, items, measurements, etc., about which we want to make inferences. The term is sometimes used to indicate the population from which a sample is drawn and sometimes to denote any "reference" population about which inferences are required; (ii) The group of persons for whom an intervention is planned (Last, 1988).

**targeted therapy :** A type of treatment that uses drugs or other substances to identify and attack specific types of cancer cells with less harm to normal cells. Some targeted therapies block the action of certain enzymes, proteins, or other molecules involved in the growth and spread of cancer cells. Other types of targeted therapies help the immune system kill cancer cells or deliver toxic substances directly to cancer cells and kill them. Targeted therapy may have fewer side effects than other types of cancer treatment. Most targeted therapies are either small molecule drugs or monoclonal antibodies.

**Targocid:** (Other name for: teicoplanin)

**Targretin :** A drug used to treat skin problems caused by cutaneous T-cell lymphoma that have not gotten better after other treatment. It is also being studied in the treatment of other types of cancer. Targretin is a type of retinoid. Also called bexarotene and LGD1069.

**tariquidar:** An anthranilamide derivative with multidrug resistance properties. Tariquidar non-competitively binds to the p-glycoprotein transporter, thereby inhibiting transmembrane transport of anticancer drugs. Inhibition of transmembrane transport may result in increased intracellular concentrations of an anticancer drug, thereby augmenting its cytotoxicity. or A substance that is being studied in the treatment of cancer. It may help tumor cells respond again to drugs they have become resistant (unable to respond) to. Tariquidar is a type of multidrug resistance inhibitor and a type of P-glycoprotein antagonist. Also called XR9576.

**tarnish:** Tarnish is a dulling of a metal's shiny surface as a result of reactions at its surface between the metal and oxygen (and other gases in the air).

**TARP 27-35 peptide vaccine:** A peptide-based cancer vaccine, containing amino acid residues 27 through 35 of T cell receptor gamma alternate reading frame protein (TARP), with potential immunostimulatory and antineoplastic activities. Upon administration, TARP 27-35 peptide vaccine may stimulate a host cytotoxic T-cell (CTL) response against TARP-expressing tumor cells, resulting in tumor cell cytotoxicity. The nuclear protein TARP is commonly expressed on prostate and breast cancer cells and is highly immunogenic.

**TARP 29-37-9V peptide vaccine:** A peptide-based cancer vaccine, consisting of amino acid residues 29 through 37 of T cell receptor gamma alternate reading frame protein (TARP) with a leucine-to-valine substitution at position 9, with potential immunostimulatory and antineoplastic activities. Upon administration, TARP 29-37-9V peptide vaccine may induce a cytotoxic T-lymphocyte (CTL) response against TARP-expressing tumor cells, which may result in decreased tumor cell proliferation. The leucine-to-valine substitution at position 9 of this peptide improves its immunogenicity. The nuclear protein TARP is commonly expressed on prostate and breast cancer cells and is highly immunogenic.

**Tarvacin :** A substance being studied in the treatment of several types of cancer and infections caused by certain viruses. It binds to substances on the surface of tumor cells, certain viruses, and cells infected with a virus. The immune system detects Tarvacin on the cells and the viruses and may destroy them. It is a type of monoclonal antibody and a type of targeted therapy agent. Also called bavituximab.

**TAS-108:** A synthetic, antiestrogenic steroidal compound with potential antitumor activity. TAS-108 binds to and inhibits estrogenic receptor alpha (ERa), mainly expressed in the mammary gland and uterus and upregulated in estrogen-dependent tumors. Blockage of ERa by TAS-108 prevents the binding and effects of estrogen and may lead to an inhibition of estrogen-dependent cancer cell proliferation. TAS-108 also is a partial agonist of the estrogenic receptor beta (ERb), expressed in many tissues including the central nervous system, urogenital tract, bone and cardiovascular system, thereby exerting a positive effect on these tissues. In addition, TAS-108 activates the co-repressor Silencing Mediator for Retinoid and Thyroid hormone receptor (SMRT), a protein that inhibits the activities of the estrogen receptors, which may contribute to the antitumor activity of TAS-108. Check for active clinical trials using this agent.

**taselisib:** An orally bioavailable inhibitor of the class I phosphatidylinositol 3-kinase (PI3K) alpha isoform (PIK3CA), with potential antineoplastic activity. Taselisib selectively inhibits PIK3CA and its mutant forms in the PI3K/Akt/mTOR pathway, which may result in tumor cell apoptosis and growth inhibition in PIK3CA-expressing tumor cells. By specifically targeting class I PI3K alpha, this agent may be more efficacious and less toxic than pan PI3K inhibitors. Dysregulation of the PI3K/Akt/mTOR pathway is frequently found in solid tumors and causes increased tumor cell growth, survival, and resistance to both chemotherapy and radiotherapy. PIK3CA, which encodes the p110-alpha catalytic subunit of the class I PI3K, is mutated in a variety of cancer cell types and plays a key role in cancer cell growth and invasion.

**Tasigna :** A drug used to treat certain types of chronic myelogenous leukemia (CML). It is used in some newly diagnosed patients. It is also used in patients who have not gotten better after treatment with other anticancer drugs or who are not able to take imatinib mesylate. It is also being studied in the treatment of other types of cancer. Tasigna blocks a protein called BCR-ABL, which may help keep cancer cells from growing. It is a type of tyrosine kinase inhibitor. Also called nilotinib.

**tasisulam sodium:** The sodium salt form of tasisulam, an acyl-sulfonamide compound with potential antiproliferative activity. Tasisulam activates, through an as of yet not fully elucidated mechanism, the intrinsic mitochondrial-mediated cell death pathway as manifested by decreased

adenosine triphosphate (ATP), cytochrome C release, activation of caspases, loss of mitochondrial membrane potential, production of reactive oxygen species (ROS) and eventually apoptosis.

**tasquinimod:** A quinoline-3-carboxamide linomide analogue with antiangiogenic and potential antineoplastic activities. Tasquinimod has been shown to decrease blood vessel density but the exact mechanism of action is not known. This agent has also been shown to augment the antineoplastic effects of docetaxel and androgen ablation in a murine model of prostate cancer involving human prostate cancer xenografts. Check for active clinical trials using this agent.

**TATA box:** Found in nearly all eukaryotic genes, a promoter element giving rise to mRNA. The TATA box is centered between 30 and 90 residues downstream of the transcription start site and has the consensus sequence 5'-TATAAAA-3'.

**TATA-box-binding protein associated factor (TAF):** One of a group of proteins, many of which contain bromodomains, that bind to the TATA-box-binding protein to form a complex required for RNA transcription.

**taurolidine:** A synthetic broad-spectrum antibiotic with antibacterial, anticoagulant and potential antiangiogenic activities. Taurolidine, derived from the amino acid taurine, binds to and neutralizes bacterial exotoxins and endotoxins, or lipopolysaccharides (LPS). Taurolidine binding to LPS prevents bacterial adherence to host epithelial cells, thereby preventing bacterial invasion of uninfected host cells. Although the mechanism underlying its antineoplastic activity has not been fully elucidated, it may be related to this agent's anti-adherence property. In addition, taurolidine also promotes apoptosis by inducing various apoptotic factors and suppresses the production of vascular endothelial growth factor (VEGF), a protein that plays an important role in angiogenesis. or A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called anti-infectives.

**tautomer:** A structure formed by facile motion of a hydrogen from one site to another within the same molecule.

**Tavocept:** (Other name for: dimesna)

**taxane :** A type of drug that blocks cell growth by stopping mitosis (cell division). Taxanes interfere with microtubules (cellular structures that help

move chromosomes during mitosis). They are used to treat cancer. A taxane is a type of mitotic inhibitor and a type of antimicrotubule agent.

**taxoid XRP6258 :** A drug used with prednisone to treat hormone-resistant prostate cancer that has spread and that had been treated with docetaxel. It is also being studied in the treatment of other types of cancer. Taxoid XRP6258 blocks cell growth by stopping cell division and may kill cancer cells. It is a type of antimitotic agent. Also called cabazitaxel and Jevtana.

**taxol:** A naturally occurring compound (extracted from the bark of the Pacific yew tree) that has been approved by the U.S. Food and Drug Administration (FDA) for treating advanced breast or ovarian cancers. Or A chemical isolated from the Pacific yew tree that stabilizes tubulin in microtubules and promotes polymerization; used in chemotherapy to interfere with the proliferation of rapidly dividing cells.

**Taxol :** A drug used to treat breast cancer, ovarian cancer, and AIDS-related Kaposi sarcoma. It is also used together with another drug to treat non-small cell lung cancer. Taxol is also being studied in the treatment of other types of cancer. It blocks cell growth by stopping cell division and may kill cancer cells. It is a type of antimitotic agent. Also called paclitaxel.

**taxol analogue SID 530:** An intravenous formulation containing docetaxel, a semi-synthetic, second-generation taxane derived from a compound found in the European yew tree, *Taxus baccata*, with potential antineoplastic activity. Taxol analogue SID 530 binds to and stabilizes tubulin, inhibiting microtubule disassembly, which results in cell-cycle arrest at the G2/M phase and cell death.

**Taxoprexin:** (Other name for: DHA-paclitaxel)

**Taxotere :** A drug used to treat certain types of cancers of the breast, stomach, lung, prostate, and head and neck. It is being studied in the treatment of other types of cancer. Taxotere kills cancer cells by stopping them from dividing. It is a type of taxane. Also called docetaxel.

**Taxotere injection concentrate:** (Other name for: docetaxel)

**Taxotere-Platinol-fluorouracil :** A chemotherapy combination used to treat certain types of head and neck cancer and stomach cancer. It includes the drugs docetaxel (Taxotere), cisplatin (Platinol), and fluorouracil. Also called DCF, docetaxel-cisplatin-fluorouracil, TPF, and TPF regimen.

**Tay-Sachs disease:** A heritable disorder caused by the accumulation of gangliosides due to the lack of an enzyme ( $\alpha$ -N-acetylhexosaminidase) responsible for their degradation; clinical characteristics include weakness, mental retardation, dementia, blindness, and death by age 3.

**tazarotene :** A drug used on the skin to treat several skin conditions. It is also being studied in the treatment of basal cell skin cancer and basal cell nevus syndrome. Tazarotene is related to vitamin A and is made in the laboratory. It turns on a gene that may help stop the growth of skin cancer cells. Tazarotene is a type of synthetic retinoid. Also called Avage and Tazorac. OR A synthetic, topical retinoid. Tazarotene induces the expression of tazarotene-induced gene 3 (TIG3), a tumor suppressor gene. In psoriasis, tazarotene normalizes abnormal keratinocyte differentiation and reduces their hyperproliferation.

**tazemetostat:** An orally available, small molecule selective and S-adenosyl methionine (SAM) competitive inhibitor of histone methyltransferase EZH2, with potential antineoplastic activity. Upon oral administration, E7438 selectively inhibits the activity of both wild-type and mutated forms of EZH2. Inhibition of EZH2 specifically prevents the methylation of histone H3 lysine 27 (H3K27). This decrease in histone methylation alters gene expression patterns associated with cancer pathways and results in decreased tumor cell proliferation in EZH2 mutated cancer cells. EZH2, which belongs to the class of histone methyltransferases (HMTs), is overexpressed or mutated in a variety of cancer cells and plays a key role in tumor cell proliferation.

**Tazicef:** (Other name for: ceftazidime sodium)

**Tazorac :** A drug used on the skin to treat several skin conditions. It is also being studied in the treatment of basal cell skin cancer and basal cell nevus syndrome. Tazorac is related to vitamin A and is made in the laboratory. It turns on a gene that may help stop the growth of skin cancer cells. Tazorac is a type of synthetic retinoid. Also called Avage and tazarotene.

**TB:** A disease caused by a specific type of bacteria that spreads from one person to another through the air. TB can affect many parts of the body, but most often affects the lungs. A person may not have symptoms of TB for years, but they may appear when the patient becomes ill with a serious condition like diabetes, AIDS, or cancer. TB can usually be treated and cured with antibiotics. Also called tuberculosis.

**Tc 99m sestamibi:** Sestamibi is a large synthetic molecule of the isonitrile family, which can be labeled with Tc99m. It passes through cell membranes passively, collecting in cells with large numbers of mitochondria. It is often used for imaging of the thyroid and parathyroid. Check for active clinical trials using this agent.

**Tc 99m sulfur colloid :** A substance being studied as a way to find cancer in the body. It is also used to find sentinel lymph nodes in breast cancer. It contains a radioactive substance called technetium linked to a substance called sulfur colloid. Sulfur colloid is taken up by special cells in lymph tissue, and in the liver, spleen, and bone marrow after it is injected. A machine or probe that detects radioactivity is used to find where the Tc 99m sulfur colloid is in the body. It is a type of radiopharmaceutical and a type of radioimaging agent. Also called Tc-99m SC and technetium Tc 99m sulfur colloid.

**Tc-99m Dextran :** A substance being studied as a way to find sentinel lymph nodes in some types of skin cancer and breast cancer. It contains a radioactive substance called technetium linked to a substance called dextran. Dextran helps technetium stay in blood and lymph vessels after it is injected. A machine or probe that detects radioactivity shows which lymph nodes near the tumor have Tc-99m Dextran in them. It is a type of radiopharmaceutical and a type of radioimaging agent. Also called 99m-Tc-Dx and technetium Tc 99m dextran.

**Tc-99m SC:** A substance being studied as a way to find cancer in the body. It is also used to find sentinel lymph nodes in breast cancer. It contains a radioactive substance called technetium linked to a substance called sulfur colloid. Sulfur colloid is taken up by special cells in lymph tissue, and in the liver, spleen, and bone marrow after it is injected. A machine or probe that detects radioactivity is used to find where the Tc-99m SC is in the body. It is a type of radiopharmaceutical and a type of radioimaging agent. Also called Tc 99m sulfur colloid and technetium Tc 99m sulfur colloid.

**TCA cycle:** TCA cycle. See tricarboxylic acid cycle.

**TCE:** A device used to look at tissues in the esophagus. It is a tiny capsule with a laser scanner inside and a very thin cord attached to it. The patient swallows the capsule and the thin cord helps keep the capsule in a specific area in the esophagus. The cord is also used to remove the capsule. Pictures are taken by the laser scanner and sent to a computer for viewing. A TCE is

used to find early cancers of the esophagus and other parts of the body. Also called tethered capsule endoscope.

**TCGA:** A project to identify the complete set of DNA changes in many different types of cancer. Studying these changes may help researchers understand how different types of cancer form. This may lead to new ways to prevent, diagnose, and treat cancer. TCGA is led by the National Cancer Institute (NCI) and the National Human Genome Research Institute (NHGRI), which are parts of the National Institutes of Health (NIH). Also called The Cancer Genome Atlas.

**TCM:** A medical system that has been used for thousands of years to prevent, diagnose, and treat disease. It is based on the belief that qi (the body's vital energy) flows along meridians (channels) in the body and keeps a person's spiritual, emotional, mental, and physical health in balance. TCM aims to restore the body's balance and harmony between the natural opposing forces of yin and yang, which can block qi and cause disease. TCM includes acupuncture, diet, herbal therapy, meditation, physical exercise, and massage. Also called Oriental medicine and Traditional Chinese Medicine.

**TCP:** Transmission Control Protocol.

**TDA:** Tamm-Dancoff approximation. Synonymous with CIS.

**tea tree :** A tree that is a member of the myrtle family. Oil from the tea tree is used in shampoos and skin care products and to treat skin infections. It has been used in some cultures to treat other skin conditions, including acne, burns, and insect bites. The scientific name is *Melaleuca alternifolia*.

**TEAR PROPAGATION RESISTANCE:** Resistance of a material to a force acting to propagate an initiated tear in the material.

**Tear Resistance:** Also called tear strength, is the measure of how well a plastic material can withstand the effects of tearing. Natural rubber and polyurethane, for example, have a high tear resistance. Materials with low tear resistance tend to have poor resistance to abrasion and will quickly fail when damaged. or Resistance of a material to a force acting to initiate and then propagate a failure at the edge of a test specimen.

**Tear strength:** 1) force required to initiate or continue a tear in a material under specified conditions. 2) the force acting substantially parallel to the major axis of the test specimen.

**Tear Strip:** A feature added to the mold that will be removed from the part after molding to aid in creating a crisp end on the part. This is often done in conjunction with an overflow to improve the final part quality.

**Tecentriq :** A drug used to treat urothelial cancer (a type of bladder cancer) that has advanced or spread to other parts of the body. It is used in patients whose disease got worse during or after treatment with anticancer drugs that included platinum. It is also being studied in the treatment of other types of cancer. Tecentriq binds to a protein called PD-L1, which is found on some cancer cells. Tecentriq may block this protein and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called atezolizumab.

**Tecfidera:** (Other name for: dimethyl fumarate)

**TechneScan MDP:** (Other name for: technetium Tc 99m methylene diphosphonate)

**Technetium:** Symbol:"Tc" Atomic Number:"43" Atomic Mass: (98)amu. Technetium is one of the transition elements from period five. Technetium is an element that is not found in nature. Man has been able to create it in labs. It is a silvery-gray metal than has been used in steel and super conductors. It is radioactive.

**technetium Tc 94m sestamibi:** A radioconjugate consisting of sestamibi labeled with the positron-emitting isotope Tc 94m. Sestamibi is a synthetic molecule of the isonitrile family that diffuses through cell membranes and may preferentially accumulate within mitochondria. Technetium Tc 94m sestamibi may be used in tumor-imaging studies utilizing positron emission tomography (PET).

**technetium Tc 99 hydrazinonicotinamide-tricine-linked interleukin-2:** A radioconjugate composed of the cytokine interleukin-2 (IL-2) conjugated to the bifunctional chelating agent succinimidyl-6-hydrazinopyridine-3-carboxylate (HYNIC-NHS) and co-ligand tricine and labeled with the radioisotope technetium Tc 99m (99mTc-HYNIC-IL2), that can potentially be used as a diagnostic agent to detect tumor inflammation. Upon intravenous administration, IL-2 selectively binds to the IL-2 receptor (IL-2R) expressed on tumor infiltrating lymphocytes (TILs); upon internalization, the Tc99m moiety can be visualized using radioimaging, which allows the quantification of TILs expressing IL-2R. This agent

detects tumor enlargement due to invasion by TILs and not tumor progression.

**technetium Tc 99m demobesin-4:** A radioconjugate composed of the synthetic bombesin (BB) analog demobesin-4 bound to the radioisotope technetium Tc 99m with receptor ligand and gamma-emitting radioisotope activities. Upon intravenous administration, demobesin-4 selectively binds to the gastrin-releasing peptide receptor (GRPR) expressed on the surfaces of various tumor cell types; upon internalization, tumor cells expressing GRPRs bound to technetium Tc 99m can then be visualized using scintigraphy. GRPR, a bombesin receptor subtype, is frequently overexpressed on the surface of tumor cells such as prostate and breast cancer cells. Demobesin-4 was developed for technetium Tc 99m imaging of GRPR-expressing tumor cells. or A substance being studied as a way to find certain types of cancer. It contains a radioactive substance called technetium linked to another substance called demobesin. Demobesin binds to the receptor for bombesin (a substance that is found at higher-than-normal levels on some types of cancer cells). Technetium Tc 99m demobsin-4 collects in cancer cells and a machine is used to find where the cancer cells are in the body. It is a type of radiopharmaceutical and a type of radioimaging agent.

**technetium Tc 99m dextran :** A substance being studied as a way to find sentinel lymph nodes in some types of skin cancer and breast cancer. It contains a radioactive substance called technetium linked to a substance called dextran. Dextran helps technetium stay in blood and lymph vessels after it is injected. A machine or probe that detects radioactivity shows which lymph nodes near the tumor have technetium Tc 99m dextran in them. It is a type of radiopharmaceutical and a type of radioimaging agent. Also called 99m-Tc-Dx and Tc-99m Dextran.

**technetium Tc 99m DTPA:** A radiopharmaceutical core of chelating agent DTPA (diethylenetriaminepentaacetic acid) complexed with the gamma-emitting radionuclide technetium Tc 99m with radioimaging application. Tc-99m-DTPA has been utilized as a radiotracer, when conjugated to tissue specific molecules, in a wide variety of nuclear imaging studies, including brain, lung, and renal function studies.

**technetium Tc 99m ethylenedicysteine-deoxyglucose:** A radiopharmaceutical consisting of ethylenedicysteine-deoxyglucose (EC-

DG) labeled with the metastable radioisotope technetium Tc-99 ( $^{99m}\text{Tc}$ ). Upon administration, technetium Tc  $^{99m}$  ethylenedicycysteine-deoxyglucose accumulates in cells with increased metabolic activity such as proliferating tumor cells; tumor tissue may then be imaged using gamma scintigraphy.

**technetium Tc  $^{99m}$  galactosyl human serum albumin:** A colloid formulation of human galactosyl serum albumin (GSA) conjugated to the chelating agent diethylene-triaminepentaacetic acid (DTPA) and complexed to the gamma-emitting isotope technetium- $^{99m}$  ( $^{99m}\text{Tc}$ -GSA) with potential diagnostic imaging activity. Upon intravenous administration, the galactosyl moiety of  $^{99m}\text{Tc}$ -GSA binds to asialoglycoprotein receptors (ASGPR) located on hepatic cells. Upon SPECT (Single Photon Emission Computed Tomography) imaging, liver function can be assessed. The expression of ASGPR, which are solely found on the plasma membrane of mammalian hepatocytes, is associated with hepatic function.

**technetium Tc  $^{99m}$  glycopeptide:** A technetium Tc  $^{99m}$  radiopharmaceutical of a glutamate-rich peptide (GP) conjugated, via carbodiimide linker, to the heparin-like polysaccharide chitosan (CH) in a 1:1 ratio, with potential tumor targeting property. Upon administration,  $^{99m}\text{Tc}$ -glycopeptide targets and is taken up by glutamate-specific transporters on tumor cells. Upon internalization, the  $^{99m}\text{Tc}$  moiety can be visualized upon scanning. GP may potentially be used as a drug carrier for antineoplastic drug delivery to tumor cells.

**technetium Tc  $^{99m}$  human serum albumin colloid:** A colloid formulation of human serum albumin (HSA) labeled with Technetium- $^{99m}$  ( $^{99m}\text{Tc}$ ) with diagnostic imaging properties. This HSA radioconjugate contains the gamma-emitting  $^{99m}\text{Tc}$ , a metastable nuclide of molybdenum-99. A potential advantage of the  $^{99m}\text{Tc}$ -HSA suspension is its smaller colloid particle size as compared to formulations containing either sulfur or tin, thereby allowing for enhanced imaging of the lymphatic draining pattern during lymphoscintigraphic or sentinel lymph node mapping procedures.

**technetium Tc  $^{99m}$  hydroxydiphosphonate:** A radioconjugate containing hydroxydiphosphonate (HDP) labeled with the metastable radioisotope technetium Tc ( $^{99m}\text{Tc}$ ), with radioimaging activity. Upon intravenous administration, skeletal uptake of technetium Tc- $^{99m}$  HDP occurs as a function of skeletal blood flow and osteogenic activity. HDP has a specific

affinity for hydroxyapatite crystals in bone where abnormal accumulation of increased osteoid mineralization has occurred. Labeling of HDP with  $^{99m}\text{Tc}$  allows gamma scintigraphic imaging of areas of abnormal osteogenesis associated with malignant bone lesions.

**technetium Tc 99m mebrofenin:** A radioconjugate composed of the iminodiacetic acid derivative mebrofenin bound to an isotope of the synthetic element technetium (Tc). Upon administration and rapid clearance from the circulation, technetium Tc 99m mebrofenin is secreted into the hepatobiliary system, emitting gamma rays that are detectable with planar scintigraphy or single photon emission computer tomography (SPECT). Mebrofenin has no pharmacological effect at the recommended dosage for diagnostic imaging.

**technetium Tc 99m methylene diphosphonate:** A radiopharmaceutical containing methylene diphosphonate (medronate; MDP) complexed with the gamma-emitting radionuclide technetium Tc 99m with radioisotopic activity and hydroxyapatite affinity. Upon intravenous administration, skeletal uptake of technetium Tc 99m methylene diphosphonate occurs as a function of skeletal blood flow and osteogenic activity. The MDP moiety of this agent has affinity for hydroxyapatite crystals in bone with abnormal accumulation at sites with increased osteoid mineralization; labeling of MDP with Tc 99m allows scintigraphic imaging of areas of abnormal osteogenesis associated with malignant bone lesions.

**technetium Tc 99m sulfur colloid:** A gamma-emitting colloid used in scintillation scanning of the reticuloendothelial system (RES). After intravenous administration, technetium Tc 99m sulfur colloid is phagocytized by the reticuloendothelial system and concentrated in the liver, spleen, and bone marrow; detection/localization of phagocytized gamma ray-emitting colloid is performed with a gamma-ray scintillation camera. Scintillation scanning using technetium Tc 99m colloid sulfur helps determine the distribution and function of the RES and the extent to which tumor involves the RES. The RES includes cells types that can phagocytize and sequester inert particles and vital dyes; RES cell types include macrophages or macrophage precursors, specialized endothelial cells lining the sinusoids of the liver, spleen, and bone marrow, and reticular cells of lymphatic tissue and of bone marrow. or A substance being studied as a way to find cancer in the body. It is also used to find sentinel lymph nodes in

breast cancer. It contains a radioactive substance called technetium linked to a substance called sulfur colloid. Sulfur colloid is taken up by special cells in lymph tissue, and in the liver, spleen, and bone marrow after it is injected. A machine or probe that detects radioactivity is used to find where the technetium Tc 99m sulfur colloid is in the body. It is a type of radiopharmaceutical and a type of radioimaging agent. Also called Tc 99m sulfur colloid and Tc-99m SC.

**technetium Tc 99m-3PRGD2:** A radiopharmaceutical agent comprised of a pegylated arginine-glycine-aspartic acid (RGD) dimer (PRGD2) labeled with technetium Tc 99m, with potential alphaVbeta3 integrin imaging activity when used with single photon emission computed tomography (SPECT). After intravenous administration of technetium Tc 99m-3PRGD2, the RGD moiety binds to alphaVbeta3 integrin on the cell membrane via the cyclic RGD motif. Upon PET imaging, alphaVbeta3 integrin-expressing tumor cells can be visualized and expression levels can be quantified. Compared to other radiolabeled RGD-containing peptides, this agent shows an increased affinity for alphaVbeta3 integrin, enhanced tumor uptake as well as improved pharmacokinetics. AlphaVbeta3 integrin, a member of the integrin receptor family, is overexpressed on certain tumor cells and tumor endothelial cells while minimally or not expressed on healthy, normal cells; this receptor plays a key role in angiogenesis, tumor proliferation and survival.

**technetium Tc 99m-labeled albumin microspheres:** An injectable radiopharmaceutical formulation containing human serum albumin (HSA) microspheres labeled with technetium-99m (Tc-99m) with diagnostic imaging activity. Technetium Tc 99m-labeled albumin microspheres contain the gamma-emitting Tc99m, a metastable nuclide of molybdenum-99. Upon injection into the hepatic artery, the radionuclide portion allows for SPECT (single photon emission computed tomography) imaging of distribution patterns of the albumin microspheres. This may possibly predict the distribution of other agents with similar particle sizes within the liver and may give a prediction of the tumor response upon administration of such agents.

**technetium Tc 99m-labeled macroaggregated albumin:** An injectable radiopharmaceutical formulation containing human serum albumin (HSA) labeled with technetium-99m (Tc99m) in macroaggregates (MAA) with

diagnostic imaging activity. Technetium Tc 99m-labeled macroaggregated albumin contains the gamma-emitting Tc99m, a metastable nuclide of molybdenum-99. Upon injection into the hepatic artery and upon SPECT (single photon emission computed tomography) imaging, distribution patterns and possible prediction of expected distribution of agents with similar particle sizes within the liver can be assessed and may give a prediction about the tumor response upon administration of such agents.

**technetium Tc 99m-labeled tilmanocept:** A radiolabeled macromolecule consisting of the chelating agent diethylenetriamine pentaacetic acid (DTPA) and mannose each attached to a dextran backbone and labeled with metastable technetiumTc-99 (Tc-99m), with mannose binding and radioisotopic activities. Upon injection, the mannose moiety of technetium Tc 99m-labeled tilmanocept binds to mannose-binding protein (MBP). As MBPs reside on the surface of dendritic cells and macrophages, this gamma-emitting macromolecule tends to accumulate in lymphatic tissue where it may be imaged using gamma scintigraphy. This agent exhibits rapid clearance from the injection site, rapid uptake and high retention within the first draining lymph node, and low uptake by the remaining lymph nodes. MBP is a C-type lectin that binds mannose or fucose carbohydrate residues, such as those found on the surfaces of many pathogens, and once bound activates the complement system.

**technetium Tc 99m-NC100692:** A synthetic Arg-Gly-Asp (RGD)-containing cyclic peptide radiolabeled with technetium Tc 99m with integrin-binding and radioisotopic activities. Upon administration, technetium Tc 99m-NC100692 binds to alpha5beta3 integrin and to a lesser extent alpha5beta5; subsequently, alpha5beta3-expressing tumor cells can be visualized using scintigraphy and the degree of tumor angiogenesis can be determined. Integrins, membrane-spanning protein receptors, may be upregulated on proliferating endothelial cells; their overexpression has been associated with neovascularization, differentiation, proliferation of tumor cells and poor prognosis.

**technetium TC-99m:** One of the radioactive isotopes of technetium, a gamma/beta-emitter with a half life of 6 hours.

**technetium Tc-99m-labeled rhenium sulfide nanocolloid:** A colloid formulation of rhenium sulfide that is labeled with the gamma-emitting epitope technetium Tc 99m (Tc-99m) with diagnostic imaging activity.

Upon administration, the  $^{99m}\text{Tc}$ -colloidal rhenium sulfide is taken up by the lymph nodes. This allows imaging of the lymphatic drainage pattern during sentinel lymph node mapping, also known as lymphoscintigraphy.

**Technical Specifications:** Part of an NRC license authorizing the operation of a nuclear production or utilization facility. A Technical Specification establishes requirements for items such as safety limits, limiting safety system settings, limiting control settings, limiting conditions for operation, surveillance requirements, design features, and administrative controls. (See also Standard Technical Specifications.)

**technician :** A person trained in the techniques (methods) and skills of a profession. For example, a mammogram technician is trained to perform mammograms.

**tecogalan sodium:** A sulfated polysaccharide isolated from various *Arthrobacter* bacterial species. Possessing potential antiangiogenic and antineoplastic properties, tecogalan binds to basic fibroblast growth factor (bFGF), thereby preventing bFGF from binding to its receptors. Disruption of this receptor binding results in the inhibition of bFGF-stimulated endothelial cell growth, proliferation, and migration.

**Tectin:** (Other name for: tetrodotoxin)

**tectonic plates:** Tectonic plates are huge slabs of rock that make up the lithosphere (the Earth's crust and uppermost part of the mantle). They move at a rate of a few centimetres per year.

**tegafur:** A congener of the antimetabolite fluorouracil with antineoplastic activity. Tegafur is a prodrug that is gradually converted to fluorouracil in the liver by the cytochrome P-450 enzyme. Subsequently, 5-FU is metabolized to two active metabolites, 5-fluoro-2-deoxyuridine monophosphate (FdUMP) and 5-fluorouridine triphosphate (FUTP) by both tumor cells and normal cells. FdUMP inhibits DNA synthesis and cell division by inhibiting thymidylate synthase and reducing normal thymidine production, while FUTP inhibits RNA and protein synthesis by competing with uridine triphosphate. or An anticancer drug that belongs to the family of drugs called antimetabolites.

**tegafur-gimeracil-oteracil potassium:** An orally bioavailable fluoropyrimidine antagonist composed of tegafur combined with two modulators of 5-fluorouracil (5-FU) activity, 5-chloro-2,4-dihydropyridine (CDHP) and potassium oxonate, in a molar ratio of 1:0.4:1. Tegafur is a

prodrug of 5-fluorouracil, an antimetabolite that inhibits thymidylate synthase, DNA synthesis and cell division, and competes with uridine triphosphate, thus inhibiting RNA and protein synthesis. CDHP is a reversible inhibitor of dihydropyrimidine dehydrogenase (DPD), the liver enzyme responsible for rapid catabolism of 5-FU into inactive metabolites. Potassium oxonate preferentially localizes in the gut and inhibits the enzyme orotate phosphoribosyl-transferase (OPRT), thereby decreasing activation of 5-FU in the gut and activated 5-FU-related gastrointestinal toxicity.

**tegafur-gimeracil-oteracil potassium-leucovorin calcium oral**

**formulation:** An orally bioavailable granular formulation composed of the fluoropyrimidine antagonist tegafur combined with two modulators of 5-fluorouracil (5-FU) activity, gimeracil and oteracil potassium, and the folic acid derivative leucovorin calcium, with potential antineoplastic activity. Tegafur is a prodrug of 5-fluorouracil (5-FU), an antimetabolite that is further metabolized to 5-fluoro-2'-deoxyuridine monophosphate (FdUMP) and 5-fluorouridine triphosphate (FUTP). FdUMP inhibits thymidylate synthase, DNA synthesis and cell division; FUTP competes with uridine triphosphate (UTP), thus inhibiting RNA and protein synthesis. Gimeracil is a reversible inhibitor of dihydropyrimidine dehydrogenase (DPD), the liver enzyme responsible for rapid catabolism of 5-FU into inactive metabolites. Oteracil potassium preferentially localizes in the gut and inhibits the enzyme orotate phosphoribosyl-transferase (OPRT), which converts tegafur to 5-FU. This decreases the amount of 5-FU in the gut and prevents activated 5-FU-related gastrointestinal (GI) toxicity. Leucovorin calcium, an active metabolite of folic acid, counteracts the toxic effects of 5-FU, thereby 'rescuing' the patient while permitting the antitumor activity of 5-FU. Check for active clinical trials using this agent.

**tegafur-uracil:** A formulated therapeutic oral agent consisting of a combination of the 5-fluorouracil (5-FU) congener prodrug tegafur (tetrahydrofuran-5-fluorouracil) and uracil (1:4). The high concentration of uracil reversibly inhibits the uracil-reducing enzyme dihydropyrimidine dehydrogenase (DPD), thereby inhibiting first-pass DPD-mediated hepatic metabolism of the uracil analogue 5-FU and permitting administration of 5-FU as the orally bioavailable prodrug tegafur. Tegafur is bioactivated to 5-FU by liver microsomal cytochrome P450 enzymes. 5-FU is subsequently converted into its active metabolites 5-fluoro-deoxyuridine-monophosphate

(FdUMP) and 5-fluorouridine-triphosphate (FUTP) intracellularly; these metabolites inhibit the enzyme thymidylate synthase and intercalate into RNA, resulting in decreased thymidine synthesis, reduced DNA synthesis, disrupted RNA function, and tumor cell cytotoxicity. or A substance being studied in the treatment of some types of cancer. It is a combination of tegafur and uracil. The tegafur is taken up by the cancer cells and breaks down into 5-FU, a substance that kills tumor cells. The uracil causes higher amounts of 5-FU to stay inside the cells and kill them. Tegafur-uracil is a type of antimetabolite. Also called Ftorafur and UFT.

**teglarinad chloride:** A water-soluble prodrug of a cyanoguanidine compound with potential antineoplastic activity. In vivo, teglarinad chloride is rapidly converted into active drug through hydrolytic cleavage of a carbonate ester bond. Although the exact mechanism of action has yet to be fully elucidated, the active drug appears to antagonize nuclear factor-kappa B (NF- $\kappa$ B) transcription, resulting in the induction of tumor cell apoptosis.

**Tegretol:** (Other name for: carbamazepine)

**teicoplanin:** A glycopeptide antibiotic complex isolated from the bacterium *Actinoplanes teichomyceticus*. Teicoplanin inhibits peptidoglycan polymerization, resulting in inhibition of bacterial cell wall synthesis and cell death. Or A substance used to treat bacterial infections. It belongs to the family of drugs called antibiotics.

**telangiectasia :** The permanent enlargement of blood vessels, causing redness in the skin or mucous membranes.

**telangiectasias:** small dilated vessels near the surface of the skin

**telaprevir:** An orally available peptidomimetic small molecule with activity against hepatitis C virus (HCV). Telaprevir is a selective protease inhibitor that targets the viral HCV NS3-4A serine protease and disrupts processing of viral proteins and formation of a viral replication complex.

**telapristone acetate:** The acetate form of the 21-substituted-19-nor-progestin telapristone, an orally available selective progesterone receptor modulator (SPRM), with potential anti-progesterone and antineoplastic activities. Upon oral administration, telapristone competitively binds to the progesterone receptor (PR) in progesterone-responsive tissue and inhibits PR-mediated gene expression. This interferes with progesterone activity in the reproductive system. As a result, this agent may suppress ovulation and inhibit proliferation of endometrial tissue. Also, this agent may prevent cell

growth and induce apoptosis in estrogen receptor (ER) and PR-positive breast cancer cells through a reduction in progesterone levels, ER downregulation and a suppression of the expression of cyclin-dependent kinases (CDK) 2 and 4, ultimately leading to G1/S cell cycle arrest. Unlike some other SPRMs, this agent does not exert any estrogenic, androgenic, anti-estrogenic, and anti-androgenic activities.

**telatinib mesylate:** The orally bioavailable mesylate salt of the 17-allylaminogeldanamycin (17-AAG) small-molecule inhibitor of several receptor protein tyrosine kinases with potential antiangiogenic and antineoplastic activities. Telatinib binds to and inhibits the vascular endothelial growth factor receptors (VEGFRs) type 2 and 3, platelet-derived growth factor receptor beta (PDGFRb) and c-Kit, which may result in the inhibition of angiogenesis and cellular proliferation in tumors in which these receptors are upregulated. These telatinib-inhibited receptor protein tyrosine kinases are overexpressed or mutated in many tumor cell types and may play key roles in tumor angiogenesis and tumor cell proliferation. 17-AAG is a synthetic analogue of the benzoquinone ansamycin antibiotic geldanamycin and has also been found to inhibit the molecular chaperone Hsp90.

**telavancin hydrochloride:** The hydrochloride salt form of telavancin, a lipoglycopeptide and a semisynthetic derivative of vancomycin with antibacterial activity against gram-positive bacteria. Like vancomycin, telavancin binds tightly to the D-alanyl-D-alanine residue of cell wall precursors, thereby interfering with bacterial cell wall synthesis. In addition, the lipophilic moiety of telavancin may interact with the lipid bilayer in the bacterial cell membrane, thereby compromising the integrity of cell membrane and causing cell membrane depolarization. This novel mechanism of action may contribute to telavancin's rapid bactericidal activity and its improved activity over vancomycin against some antibiotic resistance gram-positive bacteria.

**telbivudine:** A synthetic thymidine nucleoside analogue with antiviral activity highly specific for the treatment of hepatitis B virus (HBV). Intracellularly, telbivudine is phosphorylated to its active metabolite, telbivudine triphosphate. The dideoxy telbivudine triphosphate competes with thymidine for incorporation into viral DNA, thereby causing DNA chain termination and inhibiting the function of HBV DNA polymerase

(reverse transcriptase). This results in the blockade of HBV DNA replication and viral propagation.

**Telcyta :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called glutathione analogs. Also called TLK286.

**telemedicine :** The delivery of healthcare from a distance using electronic information and technology such as computers, cameras, videoconferencing, the Internet, satellite, and wireless communications.

**Telescoping:** Roll phenomenon characterized by layers of film sliding laterally in the transverse direction, causing the edge of the roll to have a conical shaped appearance resembling that of a telescope.

**Teletherapy:** Treatment in which the source of the therapeutic radiation is at a distance from the body. Because teletherapy is often used to treat malignant tumors deep within the body by bombarding them with a high-energy beam of gamma rays (from a radioisotope such as cobalt-60) projected from outside the body, it is often called “external beam radiotherapy.” For related information, see the Backgrounder on Medical Use of Radioactive Materials.

**Telintra:** (Other name for: ezatiostat hydrochloride)

**Telltale:** A label or tab of some material. Often a patch of cement and sand or plaster placed across a crack to show whether any future movement occurs.

**Tellurium:** Symbol:"Te" Atomic Number:"52" Atomic Mass: 127.60amu. Tellurium is usually found with gold. It is used in many alloys and as a trace element in ceramics.

**Telomelysin:** (Other name for: telomerase-specific type 5 adenovirus OBP-301)

**Telomerase:** A reverse transcriptase that contains its own template; a highly processive enzyme that elongates the 3'-ending strand of a telomere.

**telomerase :** An enzyme in cells that helps keep them alive by adding DNA to telomeres (the ends of chromosomes). Each time a cell divides, the telomeres lose a small amount of DNA and become shorter. Over time, the chromosomes become damaged and the cells die. Telomerase helps keep this from happening. Cancer cells usually have more telomerase than most normal cells.

**telomerase peptide vaccine GV1001:** A synthetic peptide vaccine containing a 16-amino-acid human telomerase reverse transcriptase peptide(hTERT: 611-626) with potential antineoplastic activity. Vaccination with telomerase peptide vaccine GV1001, which binds multiple HLA class II molecules and harbors putative HLA class I epitopes, may activate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against telomerase-expressing tumor cells. Telomerase, a reverse transcriptase normally repressed in healthy cells, is overexpressed in most tumor cell types and plays a key role in cellular proliferation.

**telomerase-specific type 5 adenovirus OBP-301:** A replication-competent oncolytic, telomerase-specific adenovirus serotype 5 (Ad5), with potential antineoplastic activity. OBP-301 contains the human telomerase reverse transcriptase (hTERT) gene promoter sequence that drives the expression of the E1A and E1B genes, and is linked to an internal ribosomal entry site (IRES). Upon administration, OBP-301 selectively infects and replicates in cancer cells that are expressing telomerase, which causes cell lysis. This adenovirus does not infect or replicate in normal, healthy cells. OBP-301 may also potentially be used as a chemosensitizer. hTERT, which encodes for the catalytic protein subunit of telomerase, is overexpressed in a variety of cancer cell types but not in normal, healthy cells. The insertion of an IRES further improves selectivity towards telomerase-expressing cancer cells.

**telomerase: 540-548 peptide vaccine:** A recombinant peptide consisting of the amino acid residues 540 to 548 of the human telomerase reverse transcriptase (hTERT). Telomerase expression has been directly linked to tumor development; its catalytic subunit is expressed in the majority of human cancer cells, but infrequently in normal cells. Vaccination with telomerase:540-548 peptide may stimulate cytotoxic T cells to recognize and kill telomerase-expressing cells. Check for active clinical trials using this agent.

**telomere:** Specialized nucleic acid structure found at the ends of linear eukaryotic chromosomes.

**telomere :** The ends of a chromosome. Each time a cell divides, the telomeres lose a small amount of DNA and become shorter. Over time, the chromosomes become damaged and the cells die. In cancer cells the telomeres do not get shorter, and may become longer, as the cells divide.

**Telomeres:** Ends of chromosomes; the DNA at the telomere consists of hundreds of repeats of a hexanucleotide sequence characteristic of the organism.

**telophase:** a phase during mitosis in which the chromosomes arrive at the opposite poles of the cell.

**telophase I:** the phase during meiosis in which the nucleus reorganizes as the chromosomes become chromatin; cytoplasmic division takes place, resulting in two cells.

**telophase II:** the phase during meiosis II in which the chromosomes gather at the poles of the cells and form a mass of chromatin; the nuclear envelope develops, the nucleoli reappear, and the cells undergo cytokinesis.

**telotristat etiprate:** An orally bioavailable, small-molecule, tryptophan hydroxylase (TPH) inhibitor prodrug, with potential antiserotonergic activity. Upon administration, telotristat etiprate is converted to its active moiety, telotristat (LP-778902), which binds to and blocks the activity of TPH. This may result in a reduction in peripheral serotonin (5-HT) production and improvement of serotonin-mediated gastrointestinal effects such as severe diarrhea. TPH, the rate-limiting enzyme in serotonin biosynthesis, is overexpressed in carcinoid tumor cells.

**teloxantrone hydrochloride:** The hydrochloride salt of an anthrapyrazole antineoplastic antibiotic. Teloxantrone intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair, as well as RNA and protein synthesis. Check for active clinical trials using this agent.

**Temodar :** A drug that is used to treat certain types of brain tumors in adults and is being studied in the treatment of other types of cancer. It belongs to the family of drugs called alkylating agents. Also called temozolomide.

**temoporfin:** A synthetic light-activated chlorin with photodynamic activity. Upon systemic administration, temoporfin distributes throughout the body and is taken up by tumor cells. Upon stimulation of temoporfin by non-thermal laser light (at 652 nm), and in the presence of oxygen, this agent produces highly reactive short-lived singlet oxygen and other reactive oxygen radicals, resulting in local damage to tumor cells. This may kill tumor cells and may reduce the tumor size. or An anticancer drug that is

also used in cancer prevention. It belongs to the family of drugs called photosensitizing agents.

**temozolomide:** A triazene analog of dacarbazine with antineoplastic activity. As a cytotoxic alkylating agent, temozolomide is converted at physiologic pH to the short-lived active compound, monomethyl triazeno imidazole carboxamide (MTIC). The cytotoxicity of MTIC is due primarily to methylation of DNA at the O6 and N7 positions of guanine, resulting in inhibition of DNA replication. Unlike dacarbazine, which is metabolized to MITC only in the liver, temozolomide is metabolized to MITC at all sites. Temozolomide is administered orally and penetrates well into the central nervous system. Check for active clinical trials using this agent. OR A drug that is used to treat certain types of brain tumors in adults and is being studied in the treatment of other types of cancer. It belongs to the family of drugs called alkylating agents. Also called Temodar.

**temperate phage:** A phage whose DNA may be incorporated into the host-cell genome without being expressed; as distinct from a virulent phage, which destroys the host cell.

**temperature:** measure of how warm or cold a substance is. Or A measure of the average kinetic energy of a substance. Determines the direction of heat transfer. Or Temperature is an intensive property associated with the hotness or coldness of an object. It determines the direction of spontaneous heat flow (always from hot to cold).

**Temperature effects:** changes in sensor signal due to changes in temperature.

**Temperature factor (thermal factor):** See Atomic displacement parameter.

**Template:** In DNA or RNA, a sequence that directs the production of a complementary sequence. Or A macromolecular mold or pattern for the synthesis of an informational macromolecule. Or A polynucleotide chain that serves as a surface for the absorption of monomers of a growing polymer and thereby dictates the sequence of the monomers in the growing chain.

**Template strand:** The strand of DNA that is complementary to the RNA transcript.

**Tempol:** (Other name for: topical piperidine nitroxide MTS-01)

**temporary acceptable daily intake:** Used when data are sufficient to conclude that use of the substance is safe over the relatively short period of time required to generate and evaluate further safety data, but are insufficient to conclude that use of the substance is safe over a lifetime. A higher-than-normal safety factor is used when establishing a temporary ADI and an expiration date is established by which time appropriate data to resolve the safety issue should be available (WHO, 1987).

**temporary hardness:** The component of total water hardness that can be removed by boiling the water.  $\text{Ca}(\text{HCO}_3)_2$  and  $\text{Mg}(\text{HCO}_3)_2$  are responsible for temporary hardness.

**temporary maximum residue limit:** A temporary maximum residue limit is a maximum residue limit established for a specified, limited period when (i) only a temporary or conditional acceptable daily intake has been established for the pesticide concerned, or (ii) although an acceptable daily intake has been established, the residue data are inadequate for firm maximum residue recommendations (WHO, 1976).

**Tempostatin:** (Other name for: halofuginone hydrobromide)

**temsirolimus:** An ester analog of rapamycin. Temsirolimus binds to and inhibits the mammalian target of rapamycin (mTOR), resulting in decreased expression of mRNAs necessary for cell cycle progression and arresting cells in the G1 phase of the cell cycle. mTOR is a serine/threonine kinase which plays a role in the PI3K/AKT pathway that is upregulated in some tumors. or A drug used to treat advanced renal cell carcinoma (a type of kidney cancer). It is also being studied in the treatment of other types of cancer. Temsirolimus blocks a protein involved in cell division, and may kill cancer cells. It is a type of rapamycin analog and a type of serine/threonine kinase inhibitor. Also called CCI-779 and Torisel.

**Tenacity (gpd):** The term generally used in yarn manufacture and textile engineering to denote the strength of a yarn or of a filament for its given size. Numerically it is the grams of breaking force per denier unit of yarn or filament size; grams per denier, gpd. The yarn is usually pulled at the rate of 12 in./min. Tenacity equals breaking strength (grams) divided by denier.

**tenase complex:** clotting cascade protein complex

**tendon :** Tough, fibrous, cord-like tissue that connects muscle to bone or another structure, such as an eyeball. Tendons help the bone or structure to move.

**tendons:** the connective tissue by which muscles are attached to bones.

**tenifatecan:** A lipophilic preparation of 7-ethyl-10-hydroxycamptothecin (SN-38) with potential antineoplastic activity. Tenifatecan is an oil-in-water emulsion of tocopherol covalently linked, via a succinate linker, to SN-38, an active metabolite of the camptothecin derivative irinotecan. After the succinate linker is hydrolyzed in vivo, the active moiety SN-38 is released and selectively stabilizes topoisomerase I-DNA covalent complexes, thereby inhibiting religation of topoisomerase I-mediated single-stranded DNA breaks and inducing lethal double-stranded DNA breaks; DNA replication is inhibited and apoptosis is triggered. This agent may provide greater delivery and exposure of SN-38 to the tumor than can be achieved with irinotecan.

**teniposide:** A semisynthetic derivative of podophyllotoxin with antineoplastic activity. Teniposide forms a ternary complex with the enzyme topoisomerase II and DNA, resulting in dose-dependent single- and double-stranded breaks in DNA, DNA: protein cross-links, inhibition of DNA strand religation, and cytotoxicity. This agent acts in the late S or early G phase of the cell cycle.

**teniposide :** An anticancer drug that is a podophyllotoxin derivative and belongs to the family of drugs called mitotic inhibitors.

**tenofovir:** A synthetic antiviral acyclic nucleotide analogue of adenosine 5-monophosphate. Tenofovir is incorporated into human immunodeficiency viral DNA instead of the natural substrate deoxyadenosine 5-triphosphate, thereby inhibiting HIV-1 reverse transcriptase (RT), an RNA-dependent DNA polymerase, and resulting in DNA chain termination and impairment of viral replication and propagation. This agent prevents HIV from reproducing in uninfected cells only. Tenofovir exhibits activity against the hepatitis B virus (HBV).

**tenofovir disoproxil fumarate:** A pro-drug, fumaric acid salt form of tenofovir, a nucleoside reverse transcriptase inhibitor analog of adenosine. Tenofovir disoproxil fumarate is prescribed to treat HIV and chronic hepatitis B virus (HBV) in adults.

**Tenon:** The end of a piece of wood cut in a rectangular form to fit into a cavity of the same shape and size cut in another piece (a mortice).

**TENS :** A procedure in which mild electric currents are applied to some areas of the skin. Also called transcutaneous electrical nerve stimulation.

**tense:** refers to the time in which the action, or state of being of the verb, is taking place.

**Tensile Bar (specimen):** A compression or injection molded specimen of specified dimensions which is used to determine the tensile properties of a material.

**Tensile Modulus :** (Also called modulus of elasticity). The ratio of nominal stress to the corresponding strain below the proportional limit of a material.

**Tensile Modulus (Also called modulus of elasticity):** The ratio of nominal stress to the corresponding strain below the proportional limit of a material.

**Tensile Strength:** the longitudinal stress required to break a prescribed specimen divided by the original cross-sectional area at the point of rupture (usually expressed in lbs. Per square inch), within the gauge boundaries sustained by the specimen during the test. OR The maximum tensile stress sustained by a material before failure in a tension test. Plastic materials have different tensile strengths. OR The amount of force required to elongate the plastic by a defined amount. The higher the value, the stronger the material. Or the maximum stress sustained by a material before failure in tension. When the maximum stress occurs at the yield point, it is called tensile strength at yield. When maximum stress at break: tensile strength at break.

**Tensile Strength:** The pulling stress required to break a given specimen. Area used in computing strength is usually the original, rather than the necked-down area.

**Tensile Strength, Break:** The maximum stress that a material can withstand without breaking when subjected to a stretching load.

**Tensile Strength, Yield:** The maximum stress that a material can withstand without yielding when subjected to a stretching load.

**Tensile Stress :** This can result from the fabrication of the material or applied stresses to the material in operation. This would most commonly be caused from high tension in the system.

**Tension Drive :** Another name for the Take-Up Drive or Auxiliary Drive.

**Tension Switches :** Switches that are installed to sound an alarm or stop the system if the position of the take-up roll goes too high or too low. Limit

switches can detect high tension and prevent some jam-ups.

**tensional stress:** stress that occurs when a rock is subjected to forces that tend to elongate it or pull it apart.

**tephra:** pyroclastic debris that is ejected from a volcano. Or Any rock material produced by a volcano.

**teprotumumab:** A recombinant, fully human monoclonal antibody directed against the insulin-like growth factor-1 receptor (IGF-1R) with potential antineoplastic activity. Teprotumumab binds to membrane-bound IGF-1R, preventing the binding of the natural ligand IGF-1 and the activation of PI3K/AKT signal transduction; downregulation of the PI3K/AKT survival pathway may result in the induction of apoptosis and decreased cellular proliferation. The activation of IGF-1R, a receptor tyrosine kinase of the insulin receptor superfamily, stimulates cell proliferation, enables oncogenic transformation, and suppresses apoptosis; IGF-1R signaling has been implicated in tumorigenesis and metastasis.

**terameprocol:** A synthetic tetra-methylated derivative of nordihydroguaiaretic acid (NDGA) and transcriptional inhibitor with potential antiviral, antiangiogenic, and antineoplastic activities. Terameprocol competes with the transcription factor Sp1 for specific Sp1 DNA binding domains within gene promoter regions during DNA synthesis. In virally-infected cells, blocking of the Sp1 binding site suppresses Sp1-regulated viral promoter activity and gene expression, thereby inhibiting viral transcription and replication. In tumor cells, blockage of Sp1 binding sites by this agent interferes with the transcription of the Sp1-dependant genes cyclin-dependant kinase (Cdc2), survivin, and vascular endothelial growth factor (VEGF), which are overexpressed in a variety of cancers. By suppressing Sp1-regulated transcription of these genes, terameprocol may reduce tumor angiogenesis and tumor cell proliferation and induce tumor cell apoptosis. Check for active clinical trials using this agent.

**teratocarcinoma :** A type of germ cell cancer that usually forms in the testes (testicles).

**teratogen:** A substance that causes fetal abnormalities. Or This is the descriptor applied to any substance that can cause non-heritable birth defects. Or A substance that can cause deformities in embryos. Dioxin is a teratogen.

**teratogenicity:** The property (or potential) to produce structural malformations or defects in an embryo or fetus (WHO, 1987).

**teratoma :** A type of germ cell tumor that may contain several different types of tissue, such as hair, muscle, and bone. Teratomas may be mature or immature, based on how normal the cells look under a microscope. Sometimes teratomas are a mix of mature and immature cells. Teratomas usually occur in the ovaries in women, the testicles in men, and the tailbone in children. They may also occur in the central nervous system (brain or spinal cord), chest, or abdomen. Teratomas may be benign (not cancer) or malignant (cancer).

**terazosin :** A drug used to treat urinary problems caused by an enlarged prostate. It is also used to treat high blood pressure and is being studied in the treatment of other conditions. Terazosin relaxes muscle tissue in blood vessels and in the prostate. It is a type of alpha blocker. Also called Hytrin and terazosin hydrochloride.

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**Terbium:** Symbol:"Tb" Atomic Number:"65" Atomic Mass: 158.93amu. Terbium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element.

**Terebine:** A form of liquid drier for paint, originally a combination of solvent linseed oil and metallic salts. Now tends to be used by the painter for any liquid drying agent.

**terephthalamidine:** A derivative of the phthalanilide compounds. Terephthalamidine belongs to a family of compounds which appear to reversibly bind to the minor groove of the DNA double helix but not intercalate DNA. This agent also has been suggested to form ionic complexes with many biological components in vitro, including nucleic acids, proteins and lipids. Check for active clinical trials using this agent.

**term:** Each compound or element in a chemical equation. Or The addends of an expression.

**terminal:** 1. The end of a polymer molecule. 2. A point at which electrical connections can easily be made or broken.

**terminal alkyne:** an alkyne whose triple bond is located between the first and second carbon atoms of the chain.

**terminal cancer :** Cancer that cannot be cured and leads to death. Also called end-stage cancer.

**terminal carbon:** the carbon atom on the end a carbon chain.

**Terminal glycosylation:** The addition of carbohydrates to proteins and the processing of these carbohydrates that takes place in the Golgi complex.

**terminal moraine:** a moraine created at the end of the advance of a glacier. Or a ridge of till that marks the farthest advance of a glacier before it started to recede.

**terminal reaction:** A reaction that ends a cycle or chain of other chemical reactions.

**terminal transferase:** An enzyme that catalyzes the addition of nucleotide residues of a single kind to the 3' end of DNA chains.

**Termination:** The final state common to all biological polymerization reactions; the polymerization process is halted in response to a set of termination signals specific for the type of biological molecule being synthesized.

**termination codons:** UAA, UAG, and UGA; in protein synthesis, signal the termination of a polypeptide chain. Also known as stop codons.

**Termination factors:** Proteins that are exclusively involved in the termination reactions of protein synthesis on the ribosome. Or Protein factors of the cytosol required in releasing a completed polypeptide chain from a ribosome; also known as release factors.

**termination sequence:** A DNA sequence that appears at the end of a transcriptional unit and signals the end of transcription.

**termination step:** the step in a reaction mechanism that ends the reaction, often a reaction between two free radicals.

**terminus:** The end of a polymer molecule.

**teroxirone:** A triazene triepoxide with antineoplastic activity. Teroxine alkylates and cross-links DNA, thereby inhibiting DNA replication.

**terpene :** A type of strong-smelling chemical substance found in some plants, especially trees that have cones. Terpenes are found in essential oils (scented liquid taken from plants).

**Terpenes:** A diverse group of lipids made from isoprene precursors. Or Organic hydrocarbons or hydrocarbon derivatives constructed from recurring isoprene units. They produce some of the scents and tastes of plant products; for example, the scents of geranium leaves and pine needles.

**terrane:** a region of geologic continuity distinct from neighboring regions. Or large pieces of rock that are moved large distances; can be from another plate.

**terrestrial planets:** those that have densities of  $3\text{g/cm}^3$  or more: Mercury, Venus, Earth, and Mars. Or inner planet (Mercury, Venus, Earth, and Mars) with a rocky surface.

**terrestrial radiation:** The total infrared radiation emitted by the Earth and its atmosphere in the temperature range of approximately 200-300K.

Because the Earth is nearly a perfect radiator, the radiation from its surface varies as the fourth power of the surface's absolute temperature. Terrestrial radiation provides a major part of the potential energy changes necessary to drive the atmospheric wind system and is responsible for maintaining the surface air temperature within limits for livability. or The portion of the natural background radiation that is emitted by naturally occurring radioactive materials, such as uranium, thorium, and radon in the earth.

**terrigenous sediment:** a sea-floor sediment derived from land and usually deposited on the continental shelf, continental rise, and abyssal plain.

**tertiary:** a carbon atom that is directly attached to three other carbon atoms.

**tertiary ( $3^\circ$ ) carbon:** a carbon atom that is directly attached to three other carbon atoms.

**Tertiary Amines:** Amines fall into three different classes dependent upon how many of the hydrogen atoms are replaced. In a Tertiary Amine, all of the hydrogen atoms in an ammonia molecule have been replaced by hydrocarbon groups.

**tertiary carbocation:** a carbocation to which three alkyl groups are bonded.

**Tertiary structure:** In a protein or nucleic acid, the final folded form of the polymer chain. Or In proteins, the spatial arrangement of amino acid residues that are far from each other in the linear sequence, as well as the pattern of disulfide bonds.

**tertiary treatment:** process utilized to remove practically all solids and organic matter from wastewater. Granular activated carbon filtration is a tertiary treatment process. Phosphate removal by chemical coagulation is also regarded as a step in tertiary treatment.

**TESA:** A procedure in which a sample of sperm cells and tissue are removed from the testicle through a syringe attached to a small needle. The sperm is separated from the tissue and looked at under a microscope in the laboratory. It may then be used right away to fertilize eggs or frozen for future infertility treatment. TESA may be useful for men who have fertility problems caused by a blockage that keeps sperm from being ejaculated. This could be caused by previous vasectomy, certain genetic conditions, ejaculation problems, infection, or other conditions. It may also be useful for men who want to have children after having treatment that may cause infertility, such as certain cancer treatments. TESA is a type of sperm retrieval method. Also called testicular sperm aspiration.

**TESE:** A procedure in which sperm cells are removed and either used right away to fertilize eggs or frozen for future infertility treatment. Tissue is removed from the testicle through a small incision (cut) and looked at under a microscope in the laboratory to find sperm cells. TESE may be useful for men who want to have children after having treatment that may cause infertility, such as certain cancer treatments. TESE is a type of sperm retrieval method. Also called testicular sperm extraction.

**tesetaxel:** A semi-synthetic, orally bioavailable taxane derivative with potential antineoplastic and antiangiogenic properties. Tesetaxel binds to and stabilizes tubulin, promoting microtubule assembly and thereby preventing microtubule depolymerization. This may lead to cell cycle arrest and an inhibition of cell proliferation. This agent may also inhibit pro-angiogenic factors such as vascular endothelial growth factor (VEGF). As it represents poor substrate for P-glycoprotein-related drug resistance mechanisms, this agent may be useful for treating multi-drug resistant tumors.

**tesevatinib:** An orally bioavailable small-molecule receptor tyrosine kinase (RTK) inhibitor with potential antineoplastic activity. Tesevatinib binds to and inhibits several tyrosine receptor kinases that play major roles in tumor cell proliferation and tumor vascularization, including epidermal growth factor receptor (EGFR; ERBB1), epidermal growth factor receptor 2 (HER2; ERBB2), vascular endothelial growth factor receptor (VEGFR), and ephrin B4 (EphB4). This may result in the inhibition of tumor growth and angiogenesis, and tumor regression.

**Teslac:** (Other name for: testolactone)

**testes:** endocrine glands that secrete androgens; the male reproductive organs located in the scrotum.

**testicle :** One of two egg-shaped glands inside the scrotum that produce sperm and male hormones. Also called testis.

**testicular cancer :** Cancer that forms in tissues of one or both testicles. Testicular cancer is most common in young or middle-aged men. Most testicular cancers begin in germ cells (cells that make sperm) and are called testicular germ cell tumors.

**testicular cord :** A cord-like structure in the male reproductive system that contains nerves, blood and lymph vessels, and the vas deferens (a coiled tube that carries sperm out of the testicle). It runs from the abdomen to the testicle, and connects to the testicle in the scrotum (external sac). Also called spermatic cord.

**testicular germ cell tumor :** A type of tumor that forms in a testicle from germ cells (cells that make sperm). Two main types of testicular germ cell tumors are seminomas and nonseminomas. Seminomas grow and spread slowly and are sensitive to radiation therapy. Nonseminomas grow and spread more quickly than seminomas. There are several different types of nonseminomas.

**testicular intraepithelial neoplasia :** Abnormal cells are found in the tiny tubules where the sperm cells begin to develop. These abnormal cells may become cancer and spread into nearby normal tissue. All tumor marker levels are normal. Also called stage 0 testicular carcinoma in situ and testicular intratubular germ cell neoplasia.

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cells may become cancer and spread into nearby normal tissue. All tumor marker levels are normal. Also called stage 0 testicular carcinoma in situ and testicular intraepithelial neoplasia.

**testicular shielding :** A procedure used to help keep a man fertile by preventing damage to the testicles during radiation therapy. A protective shield is placed over the scrotum (the external sac that contains the testicles) during radiation to the pelvic area. Testicular shielding is a type of fertility preservation.

**testicular sperm aspiration :** A procedure in which a sample of sperm cells and tissue are removed from the testicle through a syringe attached to a small needle. The sperm is separated from the tissue and looked at under a microscope in the laboratory. It may then be used right away to fertilize eggs or frozen for future infertility treatment. Testicular sperm aspiration may be useful for men who have fertility problems caused by a blockage that keeps sperm from being ejaculated. This could be caused by previous vasectomy, certain genetic conditions, ejaculation problems, infection, or other conditions. It may also be useful for men who want to have children after having treatment that may cause infertility, such as certain cancer treatments. Testicular sperm aspiration is a type of sperm retrieval method. Also called TESA.

**testicular sperm extraction :** A procedure in which sperm cells are removed and either used right away to fertilize eggs or frozen for future infertility treatment. Tissue is removed from the testicle through a small incision (cut) and looked at under a microscope in the laboratory to find sperm cells. Testicular sperm extraction may be useful for men who want to have children after having treatment that may cause infertility, such as certain cancer treatments. Testicular sperm extraction is a type of sperm retrieval method. Also called TESE.

**testicular tissue banking :** A process being developed to freeze testicular tissue from boys who have not gone through puberty, to save for future infertility treatment. Tissue that contains cells that make sperm is removed from the testicles through a small incision (cut). It is then frozen and stored. At a later date, the tissue can be thawed to retrieve sperm. Testicular tissue banking is being studied as a type of fertility preservation. It may be useful for young boys who are going to have treatments that may cause infertility,

such as certain cancer treatments. Also called testicular tissue cryopreservation and testicular tissue freezing.

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**testicular tissue freezing :** A process being developed to freeze testicular tissue from boys who have not gone through puberty, to save for future infertility treatment. Tissue that contains cells that make sperm is removed from the testicles through a small incision (cut). It is then frozen and stored. At a later date, the tissue can be thawed to retrieve sperm. Testicular tissue freezing is being studied as a type of fertility preservation. It may be useful for young boys who are going to have treatments that may cause infertility, such as certain cancer treatments. Also called testicular tissue banking and testicular tissue cryopreservation.

**testimonial :** Information provided by an individual who claims to have been helped or cured by a particular product. The information provided lacks the necessary elements to be evaluated in a rigorous and scientific manner and is not used in the scientific literature.

**testis :** One of two egg-shaped glands inside the scrotum that produce sperm and male hormones. Also called testicle.

**Testoderm:** (Other name for: therapeutic testosterone)

**testolactone:** A progesterone derivative with antineoplastic activity. Testolactone inhibits steroid aromatase, thereby preventing the formation of estrogen from adrenal androstenedione and reducing endogenous estrogen levels.

**Testolin:** (Other name for: therapeutic testosterone)

**testosterone :** A hormone made mainly in the testes (part of the male reproductive system). It is needed to develop and maintain male sex characteristics, such as facial hair, deep voice, and muscle growth.

Testosterone may also be made in the laboratory and is used to treat certain medical conditions.

**testosterone cypionate:** An eight-carbon ester form of testosterone. The number of ester carbon atoms correlate with the half-life of the prodrug. Testosterone inhibits gonadotropin secretion from the pituitary gland and ablates estrogen production in the ovaries, thereby decreasing endogenous estrogen levels. In addition, this agent promotes the maintenance of male sex characteristics and is indicated for testosterone replacement in hypogonadal males.

**testosterone flare :** A temporary increase in testosterone levels in the body caused by certain types of hormone therapy used to treat prostate cancer. A testosterone flare may occur in patients who are taking drugs called gonadotropin-releasing hormone (GnRH) agonists. When first given, these drugs cause the testicles to make more testosterone. This may cause symptoms, such as bone pain and urinary problems, to get worse, but they usually go away after the first few weeks of treatment.

**testosterone gel:** A topical gel preparation of synthetic testosterone. In vivo, testosterone is irreversibly converted to dihydrotestosterone (DHT) in target tissues by the enzyme 5-alpha reductase. Testosterone or DHT ligand-androgen receptor complexes act as transcription factor complexes, stimulating the expression of various responsive genes, resulting in an increase in protein anabolism, a decrease in amino acid catabolism, and retention of nitrogen, potassium, and phosphorus; DHT binds with higher affinity to nuclear androgen receptors than testosterone. In addition, testosterone is irreversibly converted to estradiol by the enzyme complex aromatase, particularly in the liver and adipose tissue. Testosterone and DHT promote the development and maintenance of male sex characteristics related to the internal and external genitalia, skeletal muscle, and hair follicles; estradiol promotes epiphyseal maturation and bone mineralization. Check for active clinical trials using this agent.

**testosterone undecanoate:** The undecanoate ester form of the androgen testosterone, with gonadotropin-secretory inhibiting and hormone replacement activity. As testosterone inhibits the secretion of gonadotropins from the pituitary gland, administration of testosterone decreases the secretion of luteinizing hormone (LH). By inhibiting LH secretion, the growth of Leydig cells, which are normally stimulated by LH to produce

testosterone, may be suppressed. In addition, this agent promotes the maintenance of male sex characteristics and can be used for testosterone replacement in hypogonadal males.

**testosterone vaginal cream:** A topical cream containing a synthetic form of the endogenous androgenic steroid testosterone. Upon vaginal application, testosterone is irreversibly converted to dihydrotestosterone (DHT) in target tissues by the enzyme 5-alpha reductase. Testosterone or DHT ligand-androgen receptor complexes act as transcription factor complexes, stimulating the expression of various responsive genes. DHT binds with higher affinity to androgen receptors than testosterone, activating gene expression more efficiently. In addition, testosterone is irreversibly converted to estradiol by the enzyme complex aromatase, particularly in the liver and adipose tissue. Topical application of testosterone may improve symptoms of vaginal dryness.

**Testostroval:** (Other name for: therapeutic testosterone)

**Testostroval-PA:** (Other name for: therapeutic testosterone)

**Testro AQ:** (Other name for: therapeutic testosterone)

**tetanus peptide melanoma vaccine:** A vaccine consisting of peptides derived from melanoma-associated antigens and a modified T-cell epitope derived from tetanus toxoid. Vaccination with this agent may stimulate a host cytotoxic and helper T-cell response against tumor cells expressing melanoma-associated antigens, resulting in decreased tumor growth.

**tetanus toxoid:** A substance that is derived from the toxin released by the bacterium that causes the disease tetanus. It is used as a vaccine to prevent tetanus or to help boost the immune response to other vaccines. OR A solution of formaldehyde-deactivated toxin isolated from the bacterium *Clostridium tetani*. Tetanus toxoid stimulates the production of antitoxin antibodies. This agent may be used as an adjuvant in cancer vaccines.

**tetanus toxoid helper peptide:** Obtained by genetic engineering from the bacterial *Clostridium tetani* toxoid, tetanus toxoid helper peptide QYIKANSKFIGITEL (amino acids 830-844) binds to class II MHC molecules as a nonspecific vaccine helper epitope (adjuvant) and induces an increased (and long term) immune response by increasing the helper T-cell response. Check for active clinical trials using this agent.

**tetanus-CMV fusion peptide vaccine:** A vaccine containing an inactivated epitope of tetanus toxin fused to a cytomegalovirus (CMV) peptide epitope, with potential anti-viral and immunomodulating activities. Upon administration, tetanus-CMV fusion peptide may stimulate a cytotoxic T-lymphocyte (CTL) response against CMV in the CMV-infected host. Tetanus toxin contains universal T cell helper epitopes.

**tethered capsule endoscope :** A device used to look at tissues in the esophagus. It is a tiny capsule with a laser scanner inside and a very thin cord attached to it. The patient swallows the capsule and the thin cord helps keep the capsule in a specific area in the esophagus. The cord is also used to remove the capsule. Pictures are taken by the laser scanner and sent to a computer for viewing. A tethered capsule endoscope is used to find early cancers of the esophagus and other parts of the body. Also called TCE.

**tetra-O-methyl NDGA :** A substance being studied in the treatment of cancer. It blocks proteins needed for cancer growth. It is a type of transcriptional inhibitor. Also called EM-1421 and tetra-O-methyl nordihydroguaiaretic acid.

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**Tetracycline:** An antibiotic that binds to the prokaryotic 30S ribosomal subunit and inhibits the binding of aminoacyl-trna molecules to the ribosomal complex.

**tetracycline :** A drug used to treat bacterial infections. It stops the growth of bacteria by keeping them from making proteins. Tetracycline also binds to new bone tissue and is being studied as a way to detect bone growth. Tetracycline is a type of antibiotic and a type of bone-labeling agent.

**tetracycline antibiotic:** Any of a group of broad spectrum naphthacene antibiotics isolated from various species of Streptomyces or produced semisynthetically. In bacteria, tetracycline antibiotics block binding of aminoacyl-tRNA to the mRNA-ribosome complex, thereby inhibiting protein synthesis.

**tetracycline hydrochloride:** The hydrochloride salt of tetracycline, a broad-spectrum naphthacene antibiotic produced semisynthetically from chlortetracycline, an antibiotic isolated from the bacterium Streptomyces

aureofaciens. In bacteria, tetracycline blocks binding of aminoacyl-tRNA to the mRNA-ribosome complex, thereby inhibiting protein synthesis and bacterial cell growth. Because naturally fluorescing tetracycline binds to newly formed bone at the bone/osteoid interface, tetracycline-labeling of bone and fluorescence microscopy may be used to perform bone histomorphometry.

**tetradecanoylphorbol acetate:** A phorbol ester with potential antineoplastic effects. Tetradecanoylphorbol acetate (TPA) induces maturation and differentiation of hematopoietic cell lines, including leukemic cells. This agent may induce gene expression and protein kinase C (PKC) activity. In addition to potential antineoplastic effects, TPA may exhibit tumor promoting activity. OR A substance being studied in the treatment of leukemias and lymphomas. It is also being studied in the treatment of other types of cancer. Tetradecanoylphorbol acetate affects many cell actions and may cause tumor cells to die. It is a type of phorbol ester. Also called 12-O-tetradecanoylphorbol-13-acetate and TPA.

**Tetrafluoroethylene (TFE):** Monomer used as a chemical feedstock in the production of PTFE.

**Tetragonal Crystal:** A crystal that has a basic cube shape but is stretched out. It is almost rectangular when viewed from one side. Think about a candy bar for this one.

**Tetragonal crystal class:** A crystal class containing a four-fold rotation axis or rotatory-inversion axis along c. This class contains 68 space groups and has two restrictions: 1) the lengths of the a and b axes are identical, and 2) all angles are equal to  $90^\circ$ . T<sub>g</sub> See Glass-transition temperature.

**tetrahaloalkane:** an alkane that contains four halogen atoms on the carbon chain. The halogen atoms can be located on vicinal or nonvicinal carbon atoms.

**tetrahedral:** A molecular shape that results when there are four bonds and no lone pairs around the central atom in the molecule. The atoms bonded to the central atom lie at the corners of a tetrahedron with  $109.5^\circ$  angles between them. The ammonium ion ( $\text{NH}_4^+$ ) has a tetrahedral molecular geometry.

**tetrahedral angle:** an angle of  $109^\circ 28''$ , or approximately  $110^\circ$ . All of the bond angles in methane,  $\text{CH}_4$ , are tetrahedral angles.

**tetrahydrobiopterin:** The reduced coenzyme form of biopterin.

**tetrahydrofolate:** The reduced, active coenzyme form of the vitamin folate.

**Tetrahydrofolate (tetrahydropteroylglutamate):** A highly versatile carrier of activated one-carbon units.

**tetrahydrouridine:** A synthetic pyrimidine nucleoside analogue with biomodulating activity. Tetrahydrouridine increases the efficacy of the radiosensitizer cytochlor (5-chloro-2'-deoxycytidine) by inhibiting the enzyme deoxycytidine monophosphate (dCMP) deaminase and preventing the premature deamination of the cytochlor metabolite 5-chloro-2'-deoxycytidine monophosphate (CldCMP) to 5-chloro-2'-deoxyuridine monophosphate (CldUMP); in turn, this increases tumor concentrations of CldUMP which is then further anabolized and incorporated selectively into tumor DNA as CldU (5-chloro-2'-deoxyuridine). Check for active clinical trials using this agent. OR A substance being studied in the treatment of some types of cancer. It may help make cancer cells easier to kill with radiation therapy. Tetrahydrouridine is a type of radiosensitizing agent, a type of multidrug resistance modulator, and a type of cytidine deaminase inhibitor. Also called THU.

**Tetramer:** Structure resulting from the association of four subunits.

**tetraphenyl chlorin disulfonate:** A meso-tetraphenylchlorin substituted by two adjacent sulfonated groups with potential photosensitizing activity. Upon administration, tetraphenyl chlorin disulfonate incorporates into the cell's endosome and lysosome membranes. Subsequently, cytotoxic agents are administered and accumulate in endosomal and lysosomal compartments; upon local activation by light, tetraphenyl chlorin disulfonate produces reactive oxygen species (ROS), such as singlet oxygen, damaging endo/lysosomal membranes and accumulated cytotoxic agents are released into the tumor cell cytosol. This photochemical internalization (PCI) method can enhance the efficacy and selectivity of cytotoxic agents.

**tetravalent RNA-lipoplex cancer vaccine:** A RNA-lipoplex (RNA-LP)-based cancer vaccine containing four naked ribonucleic acid (RNA)-drug products (DPs) RBL001.1, RBL002.2, RBL003.1, and RBL004.1 encoding melanoma-associated antigens (MAAs) encapsulated in liposomes, with potential antineoplastic activity. Upon intravenous administration of the

tetravalent RNA-lipoplex cancer vaccine, the liposomes protect the RNA from degradation in the bloodstream, travel to the spleen and are taken up by antigen-presenting cells (APCs); RNA is translocated to the cytoplasm and translated into the four tumor-associated proteins. The expressed proteins are processed and the human leukocyte antigen (HLA)-peptide complexes are presented to the immune system. This induces antigen-specific CD8<sup>+</sup> and CD4<sup>+</sup> T-cell responses against the four selected MAAs.

**Tetrodotoxin:** A highly potent poison from the fugu (puffer) fish that blocks the conduction of nerve impulses along axons and excitable membranes in nerve fibers, leading to respiratory paralysis.

**tetrodotoxin:** A neurotoxin with potential analgesic activity. Tetrodotoxin binds to the pores of fast voltage-gated fast sodium channels in nerve cell membranes, inhibiting nerve action potentials and blocking nerve transmission. Although found in various species of fish (such as the pufferfish), newts, frogs, flatworms, and crabs, tetrodotoxin, for which there is no known antidote, is actually produced by bacteria such as *Vibrio alginolyticus*, *Pseudoalteromonas tetraodonis*, and other vibrio and pseudomonas bacterial species.

**Tetroses:** Monosaccharides that have four carbon atoms.

**TEXTURE:** The roughness or irregularity of a surface. Or a term describing the sizes and orientations of a rock's mineral or rock fragment components. Or A specific type of surface treatment applied to some or all faces of the part. This treatment can range from a smooth, polished finish to a highly contoured pattern that can obscure surface imperfections and create a better looking or better feeling part.

**TEXTURE PAINT:** Paint that can be manipulated by brush, roller, trowel or other tool to produce various effects.

**tezacitabine:** A synthetic purine nucleoside analogue with potential antineoplastic activity. Phosphorylated by cellular kinases, tezacitabine is converted into its active diphosphate and triphosphate metabolites. Tezacitabine diphosphate binds to and irreversibly inhibits the activity of the enzyme ribonucleotide reductase (RNR), which may result in the inhibition of DNA synthesis in tumor cells and tumor cell apoptosis. Tezacitabine triphosphate acts as a substrate for DNA polymerase, further compromising DNA replication. This agent is relatively resistant to metabolic deactivation by cytidine deaminase. RNR catalyzes the

conversion of ribonucleoside 5'-diphosphates to deoxyribonucleoside 5'-diphosphates necessary for DNA synthesis and is overexpressed in many tumor types.

**TG4010:** A substance that is being studied as an anticancer drug.

**TGF-beta-resistant LMP-specific cytotoxic T-lymphocytes:** A preparation of transforming growth factor-beta (TGF-beta)-resistant cytotoxic T-lymphocytes (CTL) reactive to Epstein-Barr virus (EBV) latent membrane proteins 1 and 2 (LMP 1 and 2) with potential antineoplastic activity. T lymphocytes are transduced with a retroviral vector expressing the dominant-negative mutant type II TGF-beta receptor, which blocks signaling by all three TGF-beta isoforms. These TGF-beta-resistant T-lymphocytes are exposed ex-vivo to dendritic cells (DCs) transfected with a replication-deficient adenovirus encoding EBV LMP; subsequent exposure to LMP1- or LMP2-expressing lymphoblastoid cell lines is used to expand the CTL. Administered to patients with EBV-positive tumors, TGF-beta-resistant LMP-specific CTL target LMP-positive cells, which may result in a specific CTL response, followed by cell lysis and inhibition of tumor cell proliferation. Tumor-expressed TGF-beta inhibits T lymphocyte activation and expansion.

**TGFa-PE38 immunotoxin:** A recombinant, chimeric toxin composed of human transforming growth factor alpha (TGF-alpha) fused to a fragment of Pseudomonas exotoxin (PE38) without its cell-binding domain. The TGF-alpha moiety of the agent attaches to tumor cells expressing the epithelial growth factor receptor (EGFR); the exotoxin induces caspase-mediated apoptosis of tumor cells via a mechanism involving mitochondrial damage; it also catalyzes the transfer of ADP ribose from nicotinamide adenine dinucleotide (NAD) to elongation factor-2 in eukaryotic cells, thereby inactivating elongation factor 2 and inhibiting protein synthesis.

**TGFbDNRII-transduced autologous tumor-infiltrating lymphocytes:** A preparation of tumor infiltrating lymphocytes (TILs) that are transduced with a retroviral vector encoding a gene for a dominant-negative form of the transforming growth factor beta (TGFb) receptor, TGFbDNRII, with potential immunomodulating activity. Upon administration, the TGFbDNRII-transduced autologous TILs recognize and kill tumor cells. The expression of TGFbDNRII allows for the TILs to be resistant to TGFb-mediated inhibition of T cell proliferation and activation, which allows

optimal TIL activity. The immunosuppressant TGF- $\beta$  is produced by tumor cells and plays a key role in the repression of the immune system.

**thalamus:** a portion of the forebrain that integrates sensory impulses.

**thalamus :** An area of the brain that helps process information from the senses and transmit it to other parts of the brain.

**thalassemia:** a term relating to any genetic defect that results in reduced rate of synthesis of one of the globin chains that make up hemoglobin

**Thalassemias:** Genetic disorders characterized by the defective synthesis of one or more hemoglobin chains.

**thalicarpine:** A natural aporphine benzyloisoquinoline vinca alkaloid with antineoplastic activity. Thalicarpine binds to and inhibits p-glycoprotein, the multidrug resistance efflux pump. Thalicarpine also induces single-strand breaks in DNA and arrests cancer cells at the G<sub>2</sub>/M and G<sub>1</sub> phase of the cell cycle.

**thalidomide:** A synthetic derivative of glutamic acid (alpha-phthalimido-glutarimide) with teratogenic, immunomodulatory, anti-inflammatory and anti-angiogenic properties. Thalidomide acts primarily by inhibiting both the production of tumor necrosis factor alpha (TNF-alpha) in stimulated peripheral monocytes and the activities of interleukins and interferons. This agent also inhibits polymorphonuclear chemotaxis and monocyte phagocytosis. In addition, thalidomide inhibits pro-angiogenic factors such as vascular endothelial growth factor (VEGF) and basic fibroblast growth factor (bFGF), thereby inhibiting angiogenesis. OR A drug used with another drug to treat multiple myeloma in patients who have just been diagnosed. It is also used to treat a painful skin disease related to leprosy. It is being studied in the treatment of other types of cancer. Thalidomide may help the immune system kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of immunomodulating agent. Also called Synovir and Thalomid.

**Thallium:** Symbol:"Tl" Atomic Number:"81" Atomic Mass: 204.38amu. It is classified as a basic metal. Thallium is a very soft, silver-colored metal. It is very toxic but still has uses in poisons and some photographic equipment.

**Thalomid** : A drug used with another drug to treat multiple myeloma in patients who have just been diagnosed. It is also used to treat a painful skin disease related to leprosy. It is being studied in the treatment of other types of cancer. Thalomid may help the immune system kill cancer cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent and a type of immunomodulating agent. Also called Synovir and thalidomide.

**The Cancer Genome Atlas** : A project to identify the complete set of DNA changes in many different types of cancer. Studying these changes may help researchers understand how different types of cancer form. This may lead to new ways to prevent, diagnose, and treat cancer. The Cancer Genome Atlas is led by the National Cancer Institute (NCI) and the National Human Genome Research Institute (NHGRI), which are parts of the National Institutes of Health (NIH). Also called TCGA.

**THE MOLE**: is the number of atoms in the atomic mass of an element or the number of molecules in the molecular mass of a compound. It =  $6.02 \times 10^{23}$  atoms or molecules.

**theaflavin** : A substance formed when green tea is fermented to make black tea. It is being studied in the treatment of cancer and other conditions, such as high cholesterol. It is a type of antioxidant.

**thearubigin** : A substance formed when green tea is fermented to make black tea. It is being studied in the treatment of cancer and other conditions, such as high cholesterol. It is a type of antioxidant.

**Theo-24**: (Other name for: theophylline)

**Theobid Duracap**: (Other name for: theophylline)

**theobromine** : A substance that is closely related to caffeine and is found in cocoa beans, cola nuts, and tea. It may also be made in the laboratory. Theobromine is used to increase the amount of urine made by the kidneys, to stimulate the heart, and to widen blood vessels. It is a type of alkaloid.

**Theochron**: (Other name for: theophylline)

**theophylline**: A natural alkaloid derivative of xanthine isolated from the plants *Camellia sinensis* and *Coffea arabica*. Theophylline appears to inhibit phosphodiesterase and prostaglandin production, regulate calcium flux and intracellular calcium distribution, and antagonize adenosine.

Physiologically, this agent relaxes bronchial smooth muscle, produces

vasodilation (except in cerebral vessels), stimulates the CNS, stimulates cardiac muscle, induces diuresis, and increases gastric acid secretion; it may also suppress inflammation and improve contractility of the diaphragm.

**theophylline** : A drug used to improve breathing in people who are short of breath. It belongs to the family of drugs called bronchodilators or respiratory smooth muscle relaxants.

**theoretical yield**: The amount of product obtained when all of the limiting reagent reacts.

**Theory**: A principle that explains a body of facts and the laws based on them. OR This is a word that is frequently misunderstood. Let us say we have a collection of observations ('facts') about something - it preferentially absorbs certain wavelengths of light, is composed largely of oxygen, hydrogen, carbon, calcium and phosphorus in certain proportions, and absorbs oxygen from the environment while releasing carbon dioxide. A theory is a way of explaining at these observations that allows us to make additional predictions about the behaviour of the system. If these predictions are right, we have a theory that is good enough for now. If they are not, we have to change our theory or claim that the additional observations were flawed. For example, the something in our example may be a frog; we could try poking it with a stick to see if it undergoes saltatory motion. If it does, we could claim that as a victory for our theory. If it doesn't, we could claim that some frogs will not jump if poked with sticks, or that our measuring equipment was not sensitive enough to pick up the motion of what was undoubtedly a frog. or Theories are well-established explanations for experimental data. To become established, the theory must experimentally tested by many different investigators. Theories usually can not be proven; a single contrary experiment can disprove a theory. Or A scientific explanation. A scientist uses imagination to produce a theory which seems to explain the observations that have been made. An experiment is then performed to try to either confirm or disprove the theory. The theory is then modified as these results are taken into account. The whole process continues. Although it may seem that science is a list of facts, it is continually evolving. Some of the ideas that were considered perfectly acceptable one hundred years ago are now considered too simple or even wrong. It is possible, though, that some of the ideas we believe today might turn out to be mistaken. Somebody reading this website today could be the

scientist who will produce the new theory! Ask your teacher about Bucky Balls. Unless you have a very young teacher, it is most likely that at school they were told that carbon can only be diamond or graphite. Although Bucky Balls have existed for just as long as diamond and graphite, they were only discovered in the last twenty years or so.

**theory of glacial ages:** a theory proposed by Swiss naturalist Louis Agassiz that parts of the earth's surface in the geologic past were covered with larger glaciers than we see today.

**Theraloc :** A substance being studied in the treatment of some types of cancer. Theraloc binds to a protein called epidermal growth factor receptor (EGFR), which is found on some normal cells and some types of cancer cells. Blocking this protein may help keep cancer cells from growing. Theraloc is a type of monoclonal antibody. Also called nimotuzumab.

**therapeutic :** Having to do with treating disease and helping healing take place.

**therapeutic (subthreshold) electrical stimulation :** A procedure in which small electric impulses are used to stimulate muscles that are weak or paralyzed. It helps to increase muscle strength, blood circulation, and range of motion and to lessen muscle spasms. Also called NES, neuromuscular electrical stimulation, and NMES.

**therapeutic allogeneic cytotoxic T lymphocytes:** A population of cytotoxic T-lymphocytes (CTLs) that are therapeutically administered to a recipient individual who is genetically distinct from a donor of the same species. Check for active clinical trials using this agent.

**therapeutic allogeneic lymphocytes:** A population of lymphocytes therapeutically administered to a recipient individual who is genetically distinct from a donor of the same species.

**therapeutic angiotensin-(1-7):** A substance being studied in the treatment of several types of cancer. Therapeutic angiotensin-(1-7) is a hormone that is made in the laboratory, and helps control blood pressure. It may stop the growth of some types of cancer cells and may stop the growth of blood vessels needed by tumors to grow. It is a type of antiproliferative agent. OR A synthetic heptapeptide identical to endogenous angiotensin-(1-7) with vasodilator and antiproliferative activities. Therapeutic angiotensin 1-7 may inhibit cyclooxygenase 2 (COX-2) and the production of proinflammatory prostaglandins and may activate the angiotensin-(1-7) receptor Mas,

resulting in diminished tumor cell proliferation. Activation of the angiotensin-(1-7) receptor Mas, a G-protein coupled, seven transmembrane protein, may down-regulate the phosphorylation and activation of Erk1 and Erk2 in the Erk1/Erk2 Mapk signaling pathway. In the renin-angiotensin system, the vasodilating activity of angiotensin- (1-7), hydrolysed from angiotensin II by the type I transmembrane metalloproteinase and carboxypeptidase angiotensin converting enzyme 2 (ACE2) in vivo, counteracts the vasoconstricting activity of angiotensin II. Check for active clinical trials using this agent.

**therapeutic autologous dendritic cells:** A population of a type of antigen-presenting cell (APC), the dendritic cell (DC), harvested from a patient and grown in vitro in the presence of tumor-associated antigens (TAAs) derived from the patient's tumor (a technique known as 'pulsing') and then injected back into the patient; autologous DCs so manipulated may stimulate a specific cell-mediated antitumoral cytotoxicity. DCs derived from a patient may also be fused with the patient's tumor cells in vitro to combine sustained tumor antigen expression with the antigen-presenting and immunostimulatory capacities of DCs; when injected back into the patient, these autologous DC-tumor cell hybrids (fusion cells) may stimulate an active antitumoral immune response.

**therapeutic autologous lymphocytes:** A population of lymphocytes isolated from an individual, altered in vitro, and returned to the same individual for therapeutic purposes.

**therapeutic breast/ovarian/prostate cancer vaccine DPX-0907:** A lipid-based multi-peptide cancer vaccine targeted against multiple cancers with immunopotentiating activity. Therapeutic breast/ovarian/prostate peptide cancer vaccine DPX-0907 is a lyophilized liposomal proprietary preparation comprised of 7 tumor-specific HLA-A2-restricted epitopes (TAAs): topoisomerase II alpha, B-cell receptor-associated protein 31 (CDM protein), TNF-alpha-converting enzyme (TACE/ADAM17), Abelson homolog 2 (Abl2), gamma catenin (Junction plakoglobin), epithelial discoidin domain receptor 1 (EDDR1) and integrin beta 8 subunit. Upon vaccination, the lyophilized antigen/adjuvant/liposome complex is re-suspended in Montanide 1SA51 VG to create a depot effect, thereby presenting the TAAs to the immune system for a prolonged period of time. This may stimulate a potent cytotoxic T-lymphocyte (CTL) immune

response against cancer cells that express these 7 TAAs and share epitopes with the vaccine epitope peptides, resulting in tumor cell lysis. The 7 TAAs are overexpressed on the surface of breast/ovarian and prostate cancer cells and play an important role in tumor cell growth and survival.

**therapeutic dendritic cells/cytokine-induced killer cells:** A preparation of autologous dendritic cells (DC) mixed with cytokine-induced killer (CIK) cells (DC-CIK), with potential immunopotentiating and antineoplastic activities. DCs were obtained ex vivo by incubation of peripheral blood lymphocytes (PBLs) with granulocyte-macrophage colony-stimulating factor stimulating factor (GM-CSF or CSF2), tumor necrosis factor (TNF), and interleukin (IL)-24 and were sensitized with tumor-associated antigens (TAAs). Cytokine-induced killer (CIK) cells are immune effector cells with both T-cell and natural killer (NK) cell like phenotype. CIKs are non-major histocompatibility complex (MHC)-restricted, NK-like T-lymphocytes, which express both CD3, a T-cell surface marker, and CD56, a natural killer cell surface marker, and have been generated ex vivo by incubation of peripheral blood lymphocytes (PBLs) with anti-CD3 monoclonal antibody, IL-2, IL-1 alpha, and interferon gamma (IFN-gamma) and then expanded. Upon co-culture of DCs and CIKs, and administration of DC-CIK cells into the patient, the DCs are able to stimulate the immune response to exert a specific anti-tumor immune response, while the CIK cells exert direct oncolytic activity.

**therapeutic epinephrine:** The synthetic form of the naturally occurring sympathomimetic amine with vasoconstricting, intraocular pressure-reducing, and bronchodilating activities. By stimulating vascular alpha-adrenergic receptors, epinephrine causes vasoconstriction, thereby increasing vascular resistance and blood pressure. When administered in the conjunctiva, this agent binds to alpha-adrenergic receptors in the iris sphincter muscle, resulting in vasoconstriction, a decrease in the production of aqueous humor, and a lowering of intraocular pressure. Through its beta1 receptor-stimulating actions, epinephrine increases the force and rate of myocardial contraction and relaxes bronchial smooth muscle, resulting in bronchodilation.

**therapeutic estetrol:** A synthetic steroid similar or identical to endogenous estetrol, a short-acting estrogen with both agonistic and antagonistic estrogen receptor activity. Administered orally, therapeutic estetrol binds to

the estrogen receptor and as a selective estrogen receptor modulator (SERM) exhibits estrogen agonism in certain tissues and estrogen antagonism in others. Displaying weak estrogen activity in the uterus, estetrol acts as an estrogen antagonist in breast tissue. Produced solely by the human fetal liver, endogenous estetrol is the primary estrogen metabolite of estrogen biosynthesis in the human fetal liver.

**therapeutic estradiol:** A steroid sex hormone vital to the maintenance of fertility and secondary sexual characteristics in females. Typically esterified, estradiol derivatives are formulated for oral or parenteral administration. As the primary, most potent estrogen hormone produced by the ovaries, estradiol binds to and activates specific nuclear receptors. Estradiol exhibits mild anabolic and metabolic properties, and increases blood coagulability.

**therapeutic gamma delta T lymphocytes:** A subset of therapeutic autologous T-lymphocytes that express a T-cell receptor (TCR) composed of one gamma chain and one delta chain, with potential immunomodulating and antineoplastic activities. Upon administration of the therapeutic gamma delta T-lymphocytes, these cells secrete interferon-gamma (IFN-g), and exert direct killing of tumor cells. In addition, these cells activate the immune system to exert a cytotoxic T-lymphocyte (CTL) response against tumor cells. Gamma delta T-lymphocytes play a key role in the activation of the immune system and do not require major histocompatibility complex (MHC)-mediated antigen presentation to exert their cytotoxic effect. Check for active clinical trials using this agent.

**therapeutic hemin:** A sterile, lyophilized powder of hemin, the Fe<sup>3+</sup> oxidation product of heme (Fe<sup>2+</sup>), derived from processed red blood cells. Therapeutic hemin appears to inhibit delta-aminolevulinic acid (ALA) synthetase, a rate-limiting enzyme in the porphyrin/heme biosynthetic pathway, resulting in inhibition of the hepatic and/or marrow synthesis of porphyrin precursors. The mechanism by which therapeutic hemin produces symptomatic improvement in patients with acute episodes of the hepatic porphyrias has not been determined.

**therapeutic hydrocortisone:** A synthetic or semisynthetic analog of natural hydrocortisone hormone produced by the adrenal glands with primary glucocorticoid and minor mineralocorticoid effects. As a glucocorticoid receptor agonist, hydrocortisone promotes protein

catabolism, gluconeogenesis, capillary wall stability, renal excretion of calcium, and suppresses immune and inflammatory responses.

**therapeutic immune globulin:** A preparation of plasma proteins derived from the pooled plasma of adult donors. Largely comprised of IgG antibodies, therapeutic immune globulin provides passive immunization by increasing the recipient's serum levels of circulating antibodies. IgG antibodies have multiple functions, including binding to and neutralizing bacterial toxins; opsonization of pathogens; activation of complement; and suppression of pathogenic cytokines and phagocytes through binding to CD5, interleukin-1a (IL-1a), interleukin 6 (IL-6), tumor necrosis factor-alpha (TNF-alpha), and T-cell receptors. Therapeutic immune globulin may diminish pathogenic mechanisms in some autoimmune diseases by binding to and inhibiting the activity of autoantibodies.

**therapeutic insulin:** A synthetic or animal-derived form of insulin used in the treatment of diabetes mellitus. Therapeutic insulin is formulated to be short-, intermediate- and long-acting in order to individualize an insulin regimen according to individual differences in glucose and insulin metabolism. Therapeutic insulin may be derived from porcine, bovine or recombinant sources. Endogenous human insulin, a pancreatic hormone composed of two polypeptide chains, is important for the normal metabolism of carbohydrates, proteins and fats and has anabolic effects on many types of tissues.

**therapeutic lotion:** A moisturizing skincare formulation used for various skin conditions including dry skin conditions associated with eczema, psoriasis, chapped or chafed skin.

**therapeutic medical play :** The use of games, toys, books, art, and role playing, sometimes with real or pretend medical equipment, to help children understand and become more comfortable with medical tests, procedures, treatments, and their illness. Therapeutic medical play gives children a way to express their feelings, fears, and anxieties and helps them learn ways to cope with things that may be stressful or upsetting.

**therapeutic melatonin:** A therapeutic chemically synthesized form of the pineal indole melatonin with antioxidant properties. The pineal synthesis and secretion of melatonin, a serotonin-derived neurohormone, is dependent on beta-adrenergic receptor function. Melatonin is involved in numerous

biological functions including circadian rhythm, sleep, the stress response, aging, and immunity.

**therapeutic progesterone:** A synthetic form of the endogenous hormone progesterone. Progesterone binds to the progesterone receptor, resulting in dissociation of heat shock proteins, receptor phosphorylation, and transcription activation through direct or indirect interaction with transcription factors. This agent exerts inhibitory effects on estrogens by decreasing the number of estrogen receptors and increasing its metabolism to inactive metabolites. Progesterone induces secretory changes in the endometrium, decreases uterine contractility during pregnancy, and maintains pregnancy. Check for active clinical trials using this agent.

**therapeutic testosterone:** A synthetic form of the endogenous androgenic steroid testosterone. In vivo, testosterone is irreversibly converted to dihydrotestosterone (DHT) in target tissues by the enzyme 5-alpha reductase. Testosterone or DHT ligand-androgen receptor complexes act as transcription factor complexes, stimulating the expression of various responsive genes. DHT binds with higher affinity to androgen receptors than testosterone, activating gene expression more efficiently. In addition, testosterone is irreversibly converted to estradiol by the enzyme complex aromatase, particularly in the liver and adipose tissue. Testosterone and DHT promote the development and maintenance of male sex characteristics related to the internal and external genitalia, skeletal muscle, and hair follicles; estradiol promotes epiphyseal maturation and bone mineralization. Due to rapid metabolism by the liver, therapeutic testosterone is generally administered as an ester derivative.

**therapeutic touch :** A form of complementary and alternative medicine based on the belief that vital energy flows through the human body. This energy is said to be balanced or made stronger by practitioners who pass their hands over, or gently touch, a patient's body. Therapeutic touch is being studied in patients receiving cancer therapy, to find out if it can improve quality of life, boost the immune system, or reduce side effects. Therapeutic touch is a type of energy therapy. Also called healing touch.

**therapeutic triiodothyronine:** A therapeutic formulation of the primary physiologically active form of endogenous thyroid hormone. In vivo, triiodothyronine enters the nucleus and binds to nuclear thyroid hormone receptors that subsequently bind to thyroid response elements (TREs)

located in target genes. Receptor binding by triiodothyronine in combination with recruited coactivators results in maximal transcriptional activation after binding to TREs; in general, binding of thyroid hormone receptor alone to TREs leads to repression of gene transcription.

**therapeutic tumor infiltrating lymphocytes:** A preparation of cells, consisting of autologous tumor infiltrating lymphocytes, that are manipulated in vitro and, upon administration in vivo, re-infiltrate the tumor to initiate tumor cell lysis. In vitro, therapeutic tumor-infiltrating lymphocytes (TILs) are isolated from tumor tissue and cultured with lymphokines such as interleukin-2; the therapeutic TILs are then infused into the patient, where, after re-infiltration of the tumor, they may induce lysis of tumor cells and tumor regression. The use of therapeutic TILs is considered a form of adoptive immunotherapy.

**therapy :** Treatment.

**TheraSphere:** (Other name for: yttrium Y 90 glass microspheres)

**thermal:** Pertaining to heat.

**thermal ablation :** A procedure using heat to remove tissue or a part of the body, or destroy its function. For example, to remove the lining of the uterus, a catheter is inserted through the cervix into the uterus, a balloon at the end of the catheter is inflated, and fluid inside the balloon is heated to destroy the lining of the uterus.

**Thermal analysis:** One of a group of methods used to characterize solids, thermogravimetric analysis, differential thermal analysis, differential scanning calorimetry.

**Thermal breeder reactor:** A breeder reactor in which the fission chain reaction is sustained by thermal neutrons.

**THERMAL CONDUCTIVITY:** Ability of a material to conduct heat; physical constant for quantity of heat that passes through unit cube of a substance in unit of time when difference in temperature of two faces is  $1^{\circ}$ . Or The rate of heat flow under steady state conditions through unit area per unit temperature gradient in a direction perpendicular to an isothermal surface. OR the ability of a material to conduct heat; physical constant for quantity of heat that passes through volume of a substance in unit of time for unit difference in temperature. OR Ability of a material to conduct heat;

physical constant for quantity of heat that passes through unit cube of a substance in unit of time when difference in temperature of two faces is 1°.

**Thermal conductivity** : One of the properties of metals, it is the ability to pass heat energy. Metal are good thermal conductors.

**Thermal Cracking:** A form of cracking that simply uses heat to break up the molecules. The crude oil is heated to 750 to 900 °C in the absence of oxygen and the molecules break up to give free-radicals, which start falling apart and rearranging themselves. Catalytic cracking can be done at much lower temperatures, but generates different products from the decomposition of the crude oil.

**thermal decomposition:** Thermal decomposition is the breakdown of the compound by heat. Or A chemical reaction where one substance is broken down into more than one substance by the action of heat. A good example is the thermal decomposition of limestone (calcium carbonate).

**Thermal Degradation:** deterioration of the material by heat, characterized by molecular scission.

**thermal energy:** energy an object possesses by virtue of its temperature. For example, 1 g of water at 15°C has 4.184 J more energy than 1 g of water at 14°C.

**THERMAL EXPANSION:** See COEFFICIENT OF THERMAL EXPANSION.

**Thermal Expansion Coefficient:** The fractional change in length (sometimes volume, specified) of a material for a unit change in temperature. Values for plastics range from 0.01 to 0.2 mils/in., degrees C.

**THERMAL MECHANICAL ANALYSIS (TMA):** In this technique, a sample is deformed under a static load as its temperature is being changed. Glass transition and softening points can be measured. The amount of orientation can also be measured by TMA.

**Thermal power:** The total core heat transfer rate to the reactor coolant.

**Thermal reactor:** A reactor in which the fission chain reaction is sustained primarily by thermal neutrons. Most current reactors are thermal reactors.

**Thermal shield:** A layer, or layers, of high-density material located within a reactor pressure vessel or between the vessel and the biological shield to reduce radiation heating in the vessel and the biological shield.

**Thermal Shut-Off:** Material freezes causing blockage.

**Thermal Stability:** It is polymers thermal characteristic. It is the time interval for which polymer remains stable at certain temperature. Beyond that time if the polymer is exposed to longer duration for a given temperature, it degrades. OR Ability of a polymer to maintain its initial physical and chemical properties at elevated temperature.

**THERMAL STRESS CRACKING (TSC):** Crazeing and cracking of some thermoplastic resins which results from over-exposure to elevated temperatures.

**Thermalization:** The process undergone by high-energy (fast) neutrons as they lose energy by collision.

**Thermazene:** (Other name for: silver sulfadiazine)

**Thermionic:** relating to, using, or being the emission of charged particles (as electrons) by an incandescent material.

**THERMIONIC EMISSION:** is the boiling off of electrons from heated metals. It gives a source of electrons for cathode ray tubes.

**thermionic emission:** The emission of electrons or ions by a hot object. For example, the filament in a mass spectrometer spits out energetic electrons that ionize atoms and molecules in the sample.

**thermistor:** a semiconductor whose resistance will vary with temperature. Or A device that senses temperature changes by using a resistor with an electrical resistance that falls when temperature rises.

**thermochemical equation:** An compact equation representing a chemical reaction that describes both the stoichiometry and the energetics of the reaction. For example, the thermochemical equation  $\text{CH}_4(\text{g}) + 2 \text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2 \text{H}_2\text{O}(\text{g}), \Delta H = -2220 \text{ kJ}$  means "When one mole of gaseous  $\text{CH}_4$  is burned in two moles of oxygen gas, one mole of  $\text{CO}_2$  gas and 2 moles of steam are produced, and 2220 kilojoules of heat are released."

**thermochemistry:** The study of heat absorbed or released during chemical changes.

**Thermochromism:** A compound is thermochromic if, upon exposure to heat, a color change occurs. Often this color change is reversible.

**thermocline:** zone in water where the temperature changes drastically. Or A transition layer of water in the ocean, with a steeper vertical temperature gradient than that found in the layers of ocean above and below. The

permanent thermocline separates the warm mixed surface layer of the ocean from the cold deep ocean water, and is found between 100- and 1000-m depths. The thermocline first appears at the 55 - 60 degree N and S latitudes, where it forms a horizontal separation between temperate and polar waters. The thermocline reaches its maximum depth at mid-latitudes and is shallowest at the equator and at its northern and southern limits. The thermocline is stably stratified, and transfer of water and carbon dioxide across this zone occurs very slowly. Thus, the thermocline acts as a barrier to the downward mixing of carbon dioxide.

**thermocouple:** A device that senses temperature changes by using a pair of joined wires made of dissimilar metals that produces a voltage that changes with temperature. Or A device made of two dissimilar metals that are used to measure the temperature of a heated area such as a barrel or nozzle. It sends a signal to a controller, which then adjusts the temperature of that area. OR Temperature sensor for measurement and control and can also be used to convert a temperature gradient into electricity. These are used on plastic extruder machines.

**ThermoDox:** (Other name for: lyso-thermosensitive liposomal doxorubicin)

**Thermodynamic:** The word 'thermodynamic' comes from roots that mean 'heat' and 'motion'. In a chemical reaction where chemical bonds rearrange to give more stable products, the energy that was stored in the bonds will be released as heat. In many chemical reactions where there are a number of possible products, one will be the most stable (give the greatest release of heat) - this will be the thermodynamic product. This might not be the product that is actually formed, since another possible product might be formed more rapidly - the kinetic product. Try this dodgy example.

**thermodynamic equilibrium:** A system is at thermodynamic equilibrium if the energy it gains from its surroundings is exactly balanced by the energy it loses, no matter how much time is allowed to pass.

**thermodynamically controlled reaction:** a reaction in which conditions permit two or more products to form. The products are in an equilibrium condition, allowing the more stable product to predominate.

**thermodynamically controlled reaction:** a reaction in which conditions permit two or more products to form. The products are in an equilibrium condition, allowing the more stable product to predominate.

**thermodynamics:** The study of temperature, pressure, volume, and energy flow in chemical reactions. Or The study of energy and its transformation. Or The study of energy transfers and transformations.

**Thermoelasticity :** Rubber-like elasticity exhibited by a rigid plastic resulting from an increase in temperature.

**thermoelectron:** An electron emitted by a very hot object.

**Thermoforming:** A manufacturing process where a plastic sheet is heated to a pliable forming temperature, formed to a specific shape in a mold, and trimmed to create a usable product. The sheet, or “film” when referring to thinner gauges and certain material types, is heated in an oven to a high-enough temperature that it can be stretched into or onto a mold and cooled to a finished shape. OR The process of forming a thermoplastic sheet into a three-dimensional shape by clamping the sheet in a frame, heating it to tender it soft and flowable. Then applying differential pressure to make the sheet conform to the shape of a mold or die positioned below the frame.

**Thermogenesis:** The regulated uncoupling of oxidative phosphorylation as a means of generating heat to maintain body temperature.

**Thermogenin:** A mitochondrial membrane protein (an uncoupling protein) that plays a role in thermogenesis by forming a pathway for the flow of protons into the mitochondria, thereby generating heat without synthesizing ATP.

**thermography :** In medicine, a procedure in which a heat-sensing infrared camera is used to record the surface heat produced by different parts of the body. Abnormal tissue growth can cause temperature changes, which may show up on the thermogram. Thermography may be used to diagnose breast cancer and other tumors. OR Treatment of disease using heat.

**THERMOGRAVIMETRIC ANALYSIS (TGA):** This technique is used to measure a variety of polymeric phenomena involving weight changes, such as sorption of gases, desorption of contaminants (monomers, solvents, and additives) and degradation. In TGA, a sample is placed on a balance beam in an oven. From the weight versus temperature curves, kinetic and other studies are carried out.

**Thermogravimetric analysis (TGA):** An analytical technique in which the weight change of the sample is measured during heating.

**thermohaline:** Refers to the combined effects of temperature and salinity that contribute to density variations in the oceans.

**Thermoluminescent dosimeter:** A small device used to measure radiation by measuring the amount of visible light emitted from a crystal in the detector when exposed to ionizing radiation.

**thermometer:** An instrument for measuring temperature.

**thermometry:** The science of temperature measurement.

**Thermomicroscopy:** A technique that involves observation of crystals on a microscope during heating.

**Thermonuclear:** An adjective referring to the process in which very high temperatures are used to bring about the fusion of light nuclei, such as those of the hydrogen isotopes deuterium and tritium, with the accompanying liberation of energy.

**thermoplastic:** A thermoplastic substance softens when subjected to heat and can be remoulded into different shapes. Or A polymer that, when heated ('thermo') becomes soft and deformable ('plastic'). Examples are poly(styrene) and poly(ethylene). Or A polymer that softens or melts on heating, and becomes rigid again on cooling. Thermoplastic polymer chains are not cross-linked. Polystyrene is a thermoplastic. or (a.) Capable of being repeatedly softened by heat and hardened by cooling — (n.) A material that will repeatedly soften when heated and harden when cooled. Typical of the thermoplastic family are the styrene polymers and copolymers, acrylics, cellulose, polyethylenes, polypropylene, vinyls, nylons, and the various fluorocarbon materials. OR Materials that become soft when heated and solid when cooled to room temperature. This softening and setting may be repeated many times. OR Polymers that can be melted by heating and solidified by cooling and may be remelted repeatedly. PE, PP, PVC and all extrudable polymers are thermoplastics. OR Resins capable of undergoing a chemical reaction leading to a relative infusible and insoluble state. OR Resins or plastic compounds in the form of small beads which, in their final state as formed plastic products, are capable of being repeatedly softened by an increase of temperature and hardened by a decrease of temperature.

**Thermoplastic Elastomers :** The family of polymers that resemble elastomers in that they can be repeatedly stretched without distortion of the unstressed part shape, but are true thermoplastics and thus do not require curing. OR TPEs are a family of polymers that can be repeatedly stretched

without permanently deforming the shape of the part. Unlike rubber-like elastomers, they do not require curing or vulcanization, as they are true thermoplastics. TPEs may be processed by conventional thermoplastic techniques such as injection moulding, plastic extrusion and blow moulding. They are used for automotive, building and construction plastic profiles, soft touch grips and handles, caster treads and rollers.

**Thermoplastic resin:** A resin which will melt when heated and solidifies when cooled, and softens when reheated.

**Thermoplastic screw:** The screw in the barrel of the plastic extrusion machine. There are single screw and vented (two-stage/twin) screws. Often screw length is referenced to its diameter as LD ratio. For instance, a 6-inch (150 mm) diameter screw at 241 will be 144 inches (12 ft) long, and at 321 it is 192 inches (16 ft) long. An LD ratio of 241 is common, but some machines go up to 321 for more mixing and more output at the same screw diameter. Two-stage (vented) screws are typically 361 to account for the two extra zones.

**Thermoplastics vs. Thermosets :** A thermoplastic is a polymeric material or plastic which becomes soft and formable when heated and rigid when cooled. This process may be repeated a number of times without chemically altering the material. A thermoset is a polymeric material which undergoes irreversible chemical changes when cured through heat, catalysts or ultraviolet light: cross-linking prevents movement of molecular chains after curing. Once cured, the structure cannot be changed.

**thermoset:** A thermoset plastic is heat resistant because of extensive cross-linking between its molecules by strong covalent bonds. Or A polymer that, when heated ('thermo') does not become soft and deformable. This is usually because it is crosslinked, and the molecules comprising it cannot move past one another unless chemical bonds are actually broken - which leads to the decomposition of the polymer. Phenol-formaldehyde resin is an example. or A plastic which flows and then sets permanently on first heating, as a result of setting up a three-dimensional crosslinked molecular structure, and subsequently will not soften or dissolve. OR A material, which when heated, is pressed or molded into a shape. The heating process changes the structure of these materials, and for this reason they cannot be re-heated. OR A polymer that doesn't melt when heated. Thermoset polymers "set" into a given shape when first made and afterwards do not

flow or melt, but rather decompose upon heating. They are often highly cross-linked polymers, with properties similar to those of network covalent solids, i.e., hard and strong. OR Materials that undergo chemical reaction and can be hardened by application of heat and pressure. They cannot be softened again to make them flowable. Typical plastics in this family are melamine, urea, epoxies and phenolics. OR Resins or plastic compounds, which in their final state are infusible and insoluble. After being fully cured, thermosets cannot be resoftened by heat. OR Resins or plastic compounds which in their final state as finished resin or plastic articles are substantially infusible and insoluble (see also Cross-Linking). OR Materials that may not be reheated and softened again. Once the structural framework is set, these plastics cannot be reformed.

**thermosetting:** A thermosetting plastic is heat resistant because of extensive cross-linking between its molecules by strong covalent bonds. Or A polymer that solidifies on heating and cannot be remelted. The setting action results from crosslinking of the polymer chains at high temperature—a process that is not reversed by cooling and reheating.

**Thermosetting resin (Thermoset):** A resin designed to undergo an irreversible chemical and physical change during a heat-cure schedule, i.e., a plastic resin that crosslinks during cure so that it does not soften when reheated.

**thermosoftening:** A thermosoftening plastic softens when subjected to heat and can be remoulded into different shapes.

**thermosphere:** uppermost layer of the atmosphere; temperatures increase with altitude.

**thesis:** a sentence or group of sentences that make an assertion about the topic; it is usually found in the introduction and may be directly stated or implied.

**thiabendazole:** A benzimidazole derivative with anthelmintic property. Although the mechanism of action has not been fully elucidated, thiabendazole inhibits the helminth-specific mitochondrial enzyme fumarate reductase, thereby inhibiting the citric acid cycle, mitochondrial respiration and subsequent production of ATP, ultimately leading to helminth's death. In addition, it has been suggested that thiabendazole may lead to inhibition of microtubule polymerization by binding to beta-tubulin and has an overt ovicidal effect with regard to some trichostrongylids.

**Thiamine:** The vitamin component of the coenzyme thiamine pyrophosphate. Also called vitamin B1. OR A heat-labile and water-soluble essential vitamin, belonging to the vitamin B family, with antioxidant, erythropoietic, mood modulating, and glucose-regulating activities. Thiamine reacts with adenosine triphosphate (ATP) to form an active coenzyme, thiamine pyrophosphate. Thiamine pyrophosphate is necessary for the actions of pyruvate dehydrogenase and alpha-ketoglutarate in carbohydrate metabolism and for the actions of transketolase, an enzyme that plays an important role in the pentose phosphate pathway. Thiamine plays a key role in intracellular glucose metabolism and may inhibit the action of glucose and insulin on arterial smooth muscle cell proliferation. Thiamine may also protect against lead toxicity by inhibiting lead-induced lipid peroxidation.

**thiamine :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Thiamine helps some enzymes work properly, helps break down sugars in the diet, and keeps nerves and the heart healthy. It is found in pork, organ meats, peas, beans, nuts, and whole grains. Thiamine is water-soluble (can dissolve in water) and must be taken in daily. Not enough thiamine can cause a disease called beriberi (a condition marked by heart, nerve, and digestive disorders). Too much thiamine may help cancer cells grow faster. Also called vitamin B1.

**Thiamine pyrophosphate:** The coenzyme form of thiamine (vitamin B1), composed of a modified thiazole ring linked by a methylene bridge to a substituted pyrimidine; a cofactor in enzymatic reactions in which bonds to carbonyl carbon atoms are cleaved or synthesized. Or The active coenzyme form of vitamin B1; involved in aldehyde transfer reactions.

**thiarabine:** A analog of antimetabolite cytarabine (ara-C), with potential antineoplastic activity. Upon administration, thiarabine (T-araC) is phosphorylated to the triphosphate form T-araCTP and competes with cytidine for incorporation into DNA. This results in an inhibition of DNA replication and RNA synthesis, chain termination and may eventually decrease tumor cell proliferation. Compared to ara-C, T-araC appears to have a longer half-life and has a higher efficacy.

**thiazide diuretic :** A type of drug used to treat high blood pressure, edema (extra fluid in the tissues), and other conditions. Thiazide diuretics cause the

kidneys to make more urine, which allows the body to get rid of extra fluid and salt.

**Thibenzole:** (Other name for: thiabendazole)

**Thick moulding compound (TMC):** Similar to BMC (see separate entry) but continuously produced in sheet form with a thickness of 25 mm or more.

**THICKENER:** A substance, such as Xanthan Gum, which, when added in low concentrations to a fluid, raises the viscosity of that fluid. (see also SALT THICKENING).

**Thickness:** Depth of the material and contributory to pressure requirements; thickening reduces the pressure required to fill the part.

**thiethylperazine :** A drug used to prevent or reduce nausea and vomiting. It belongs to the families of drugs called antiemetics and phenothiazines.

**thin layer chromatography:** A technique for separating components in a mixture on the basis of their differing polarities. A spot of sample is placed on a flat sheet coated with silica and then carried along by a solvent that soaks the sheet. Different components will move different distances over the surface. TLC is a useful screening technique in clinical chemistry; for example, it can be used to detect the presence of drugs in urine.

**Thin Layer Chromatography (TLC):** An analytical, separatory technique based on the differing affinities of the constituents of the mixture for the stationary phase.

**Thin-layer chromatography (TLC):** A chromatographic method of separating compounds eluted with a solvent after applying them to a thin layer of adsorbent adhered to a solid support (e.g., glass, plastic, or aluminum).

**thin-skinned thrusting:** thin, horizontal sheets of rock from the edge of a continent are forced inland.

**Thinner:** The thinner and binder together form the paint's vehicle. Water thinner used in latex paints evaporates as the paint dries, allowing a smooth paint application. Turpentine or spirits are the thinners in oil-based paints.

**THINNERS:** Solvents used to thin coatings.

**thio-:** A prefix that means, "replace an oxygen with sulfur". For example, sulfate ion is  $\text{SO}_4^{2-}$ ; thiosulfate ion is  $\text{S}_2\text{O}_3^{2-}$ . Cyanate ion is  $\text{OCN}^-$ ; thiocyanate ion is  $\text{SCN}^-$ .

**Thioester:** An ester of a carboxylic acid with a thiol or mercaptan.

**Thioester intermediate:** An ester in which the noncarbonyl oxygen atom is replaced by a sulfur atom; thioesters are energy-rich intermediates in a number of biochemical reactions.

**thioguanine:** A drug used to treat acute myeloid leukemia (AML). It is also being studied in the treatment of other types of cancer. Thioguanine stops cells from making DNA and RNA and it may kill cancer cells. It is a type of antimetabolite. Also called Tabloid. OR A synthetic guanosine analogue antimetabolite. Phosphorylated by hypoxanthine-guanine phosphoribosyltransferase, thioguanine incorporates into DNA and RNA, resulting in inhibition of DNA and RNA syntheses and cell death. This agent also inhibits glutamine-5-phosphoribosylpyrophosphate amidotransferase, thereby inhibiting purine synthesis.

**Thiol:** Also called a mercaptan. A carbon compound containing the -SH functional group. Mercaptans are responsible for the distinctive odour of cat urine.

**Thiol proteases:** A class of protein-degrading enzymes whose activity depends on the presence of a cysteine residue at the active site; papain is a thiol protease.

**Thioredoxin:** A protein with exposed cysteines that can be reversibly oxidized and reduced; an important electron carrier in the reduction of ribonucleotides and in photosynthesis.

**thioredoxin-1 inhibitor PX-12:** An orally bioavailable small molecule with potential antineoplastic activity. Thioredoxin-1 inhibitor PX-12 irreversibly binds to thioredoxin-1 (Trx-1) and inhibits its activity, which may result in growth inhibition and the induction of apoptosis.

Overexpressed in many cancer cell types, the low molecular weight redox protein Trx-1 regulates transcription factor activity and inhibits apoptosis, promoting cell growth and survival; it also interacts with growth factors extracellularly to stimulate cell growth.

**thioridazine hydrochloride:** The hydrochloride salt form of thioridazine, a piperidine phenothiazine derivative and a dopamine antagonist with antipsychotic property. Thioridazine hydrochloride binds to mesolimbic postsynaptic dopamine receptor D2, thereby decreasing dopamine activity leading to decreased psychotic effects, such as hallucinations and delusions.

In addition, this agent binds to serotonin 5-HT<sub>2</sub> receptors, resulting in decreased serotonin activity. Check for active clinical trials using this agent.

**thiotepa:** A polyfunctional, organophosphorus alkylating agent and a stable derivative of N,N',N''-triethylenephosphoramidate (TEPA), with antineoplastic activity. Upon administration, thiotepa is converted into highly reactive ethylenimine groups, which covalently bind to nucleophilic groups in DNA and demonstrate a preference for the N7 position of guanine bases. This induces crosslinking of alkylated guanine bases in double-stranded DNA, interferes with both DNA replication and cell division, and results in both the induction of apoptosis and the inhibition of cell growth. or A drug used to treat certain types of bladder cancer, breast cancer, and ovarian cancer. It is also used to treat malignant effusion (a condition in which cancer causes an abnormal amount of fluid to collect in hollow spaces or between tissues of the body). It is also being studied in the treatment of other types of cancer. Thiotepa damages the cell's DNA and may kill cancer cells. It is a type of alkylating agent.

**thioureidobutyronitrile:** A water-soluble, small molecule and activator of the tumor suppressor protein p53, with potential antineoplastic activity. Upon intravenous administration, thioureidobutyronitrile activates p53 which in turn induces the expressions of p21 and PUMA (p53 up-regulated modulator of apoptosis), thereby inhibiting cancer cell growth and causing tumor cell apoptosis. Thioureidobutyronitrile may be effective in drug-resistant cancers with mutated p53. p53 tumor suppressor, a transcription factor regulating the expression of many stress response genes and mediating various anti-proliferative processes, is often mutated in cancer cells.

**third law:** The entropy of a perfect crystal is zero at absolute zero.

**third molar :** The last tooth to come in at the back of each side of the upper and lower jaws. Third molars usually come in between 17 and 23 years of age, but not everyone has them. Also called wisdom tooth.

**third-line therapy :** Treatment that is given when both initial treatment (first-line therapy) and subsequent treatment (second-line therapy) don't work, or stop working.

**Thixotropy:** Also known as 'false body'. Usually refers to gel type paints which in the tin appear to be very thick or even solid. When applied by brush or roller the gel structure breaks down and the paint becomes liquid

thus allowing ease of application. Or The property of a material that causes it to change from a thick, pasty consistency to a fluid consistency upon agitation, brushing or rolling. or The ability of resins to change their viscosity, liquefying on being shaken or stirred.

**THL-P:** A proprietary, oral Chinese medicinal herb preparation with potential antioxidant, immunomodulating, and antineoplastic activities. THL-P (Tien-Hsien Liquid-P) contains fourteen Chinese medicinal herbs including: *Cordyceps sinensis*, *Oldenlandia diffusa*, *Indigo pulverata levis*, *Polyporus umbellatus*, *Radix astragali*, *Panax ginseng*, *Solanum nigrum L.*, *Pogostemon cablin*, *Atractylodis macrocephalae rhizoma*, *Trichosanthes radix*, *Clematis radix*, *Margarite*, *Ligustrum lucidum Ait* and *Glycyrrhiza radix*. Administered as an oral liquid, THL-P may modulate the activity of natural killer (NK) cells, cytotoxic T-lymphocytes (CTLs), macrophages and polymorphonuclear leukocytes, and enhance the secretion of interleukins (ILs) and interferon-gamma (IFN-gamma). This agent may also induce G2/M cell cycle arrest and downregulate several important oncogenic signaling pathways.

**thoracalgia :** Chest pain. Also called thoracodynia.

**thoracentesis :** Removal of fluid from the pleural cavity through a needle inserted between the ribs.

**thoracic :** Having to do with the chest.

**thoracic surgeon :** A surgeon who has special training in operating on organs inside the chest, including the heart and lungs.

**thoracic surgical oncologist :** A surgeon who has special training in operating on tumors found inside the chest.

**thoracodynia :** Chest pain. Also called thoracalgia.

**thoracoscope :** A thin tube-like instrument used to examine the inside of the chest. A thoracoscope has a light and a lens for viewing and may have tool to remove tissue. Or Examination of the inside of the chest, using a thoracoscope. A thoracoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease.

**thoracotomy :** An operation to open the chest.

**Thorazine:** (Other name for: chlorpromazine)

**Thorium:** Symbol:"Th" Atomic Number:"90" Atomic Mass: 231.04amu. This is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. A very radioactive element that is used in reactors and in the process of making certain types of gas. One of the byproducts of the combustion of thorium is radium.

**Thread:** The profile of a container finish which will accommodate specific closures.

**THREAD PLUG OR RING OR CORE:** A part of a mold that shapes a thread and must be unscrewed from the finished piece.

**Threads:** on continuous thread styles, the "spiral" of plastic onto which a c/t closure is twisted. Different c/t closure styles feature different numbers of threads.

**threonine tyrosine kinase inhibitor CFI-402257:** An orally bioavailable, selective inhibitor of the dual specificity protein kinase TTK (monopolar spindle 1 kinase, Mps1), with potential antineoplastic activity. Upon administration, the Mps1 inhibitor CFI-402257 selectively binds to and inhibits the activity of Mps1. This inactivates the spindle assembly checkpoint (SAC) and accelerates mitosis, resulting in chromosomal misalignment and missegregation, and mitotic checkpoint complex destabilization. This induces cell death in Mps1-overexpressing cancer cells. Mps1, a tyrosine and serine/threonine kinase expressed in proliferating normal tissues, is essential for proper SAC functioning and chromosome alignment. Overexpressed in various human tumors, Mps1 plays a key role in uncontrolled tumor cell growth. Check for active clinical trials using this agent.

**threshold limit value (TLV):** This is a guideline value defined by the by the American Conference of Government Industrial Hygienists to establish the airborne concentration of a potentially toxic substance to which it is believed that healthy working adults may be exposed safely through a 40 hour working week and a full working life. This concentration is measured as a time-weighted average concentration. They are developed only as a guidelines to assist in the control of health hazards and are not developed for use as legal standards.

**Threshold temperature:** The temperature at which an arbitrarily defined 2% of the solvent of crystallization is lost from a solvate. It is conveniently

measured by TGA using a 6 °C/min heating rate.

**throat :** The hollow tube inside the neck that starts behind the nose and ends at the top of the trachea (windpipe) and esophagus (the tube that goes to the stomach). The throat is about 5 inches long, depending on body size. Also called pharynx.

**throat cancer :** Cancer that forms in tissues of the pharynx (the hollow tube inside the neck that starts behind the nose and ends at the top of the windpipe and esophagus). Throat cancer includes cancer of the nasopharynx (the upper part of the throat behind the nose), the oropharynx (the middle part of the pharynx), and the hypopharynx (the bottom part of the pharynx). Cancer of the larynx (voice box) may also be included as a type of throat cancer. Most throat cancers are squamous cell carcinomas (cancer that begins in thin, flat cells that look like fish scales). Also called pharyngeal cancer.

**thrombectomy :** Surgery to remove a thrombus (blood clot) from a blood vessel.

**thrombocytopenia:** low platelet count

**thrombocyte :** A tiny piece of cell that is made by breaking off of a large cell in the bone marrow. Thrombocytes are found in the blood and spleen. They help form blood clots to slow or stop bleeding, and to help wounds heal. Also called platelet.

**thrombocytes:** the starting material for blood clotting; also called platelets.

**thrombocytes:** See platelets.

**thrombocytopenia :** A condition in which there is a lower-than-normal number of platelets in the blood. It may result in easy bruising and excessive bleeding from wounds or bleeding in mucous membranes and other tissues.

**thrombohemorrhagic event :** A process that involves either a blood clot or bleeding, such as a heart attack or stroke.

**thrombolysis :** The process of breaking up a thrombus (blood clot) that is blocking blood flow. The blood clot may be dissolved using drugs delivered through a catheter (tube) into the clot.

**thrombomodulin alfa:** A recombinant, soluble form of the human protein thrombomodulin, with potential anticoagulant activity. Upon

administration, thrombomodulin binds to thrombin, which stimulates the activation of protein C. Activated protein C (APC) degrades factor Va and Factor VIIa in the presence of the cofactor protein S, inhibits thrombin formation, and prevents both thrombin-mediated coagulation and further clot formation. Check for active clinical trials using this agent.

**thrombophlebitis** : Inflammation of a vein that occurs when a blood clot forms.

**thrombopoietin** : A substance made by the body that helps make blood cells, especially platelets. A form of thrombopoietin made in the laboratory is called recombinant human thrombopoietin and rHu thrombopoietin. Thrombopoietin is being studied as a way to increase the number of platelets in cancer patients receiving chemotherapy. Also called TPO.

**thrombosis** : The formation or presence of a thrombus (blood clot) inside a blood vessel.

**thromboxanes**: A class of molecules derived from arachidonate and involved in platelet aggregation during blood clotting.

**thrombus** : A blood clot that forms on the wall of a blood vessel or in the heart when blood platelets, proteins, and cells stick together. A thrombus may block the flow of blood.

**throughput** : The quantity of information, people, or materials that is put through a process in a specific period of time. In medicine, it can be used to describe the efficiency of laboratory procedures, such as genetic sequencing, or the number of patients seen in a clinic in a certain period of time.

**thrush** : A condition in which *Candida albicans*, a type of yeast, grows out of control in moist skin areas of the body. It is usually a result of a weakened immune system, but can be a side effect of chemotherapy or treatment with antibiotics. Thrush usually affects the mouth (oral thrush); however, rarely, it spreads throughout the entire body. Also called candidiasis and candidosis.

**thrust fault**: a reverse fault in which the hanging block (upper plate) has overridden the footwall block (lower plate) at a very shallow angle for an extensive distance.

**THU**: A substance being studied in the treatment of some types of cancer. It may help make cancer cells easier to kill with radiation therapy. THU is a

type of radiosensitizing agent, a type of multidrug resistance modulator, and a type of cytidine deaminase inhibitor. Also called tetrahydrouridine.

**Thulium:** Symbol:"Tm" Atomic Number:"69" Atomic Mass: 168.93amu. Thulium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element.

**Thylakoid:** In chloroplasts, a membranous sac, or vesicle, that contains the energy-transducing machinery of photosynthesis, including light-harvesting proteins, reaction centers, electron-transport chains, and ATP synthase. Or Closed cisterna, or disc, formed by the pigment-bearing internal membranes of chloroplasts. or membranes that make up the grana in chloroplasts; the actual site of photosynthesis within chloroplasts.

**Thymectacin:** (Other name for: brivudine phosphoramidate)

**thymic carcinoma :** A rare type of thymus gland cancer. It usually spreads, has a high risk of recurrence, and has a poor survival rate. Thymic carcinoma is divided into subtypes, depending on the types of cells in which the cancer began. Also called type C thymoma.

**Thymidine:** One of the four nucleosides found in DNA. OR A chemical compound found in DNA. Also used as treatment for mucositis. OR A pyrimidine nucleoside that is composed of the pyrimidine base thymine attached to the sugar deoxyribose. As a constituent of DNA, thymidine pairs with adenine in the DNA double helix.

**Thymidylate synthase:** An enzyme that catalyzes the methylation of deoxyuridylate (dUMP) to form thymidylate (TMP).

**thymidylate synthase :** A protein involved in making and repairing DNA (molecules inside cells that carry genetic information and pass it on from parent to child). High levels of thymidylate synthase may be involved in how certain types of cancer form and respond to treatment.

**thymidylate synthase inhibitor :** A drug that blocks DNA synthesis and may prevent tumor cell growth. It is being studied as a treatment for cancer.

**thymidylate synthase inhibitor DFP-11207:** An orally available thymidylate synthase (TS) inhibitor with potential antineoplastic activity. Upon oral administration, DFP-11207 binds to and inhibits TS. This reduces thymine nucleotide synthesis, inhibits DNA synthesis and cell division, causes DNA damage and leads to tumor cell apoptosis. TS

catalyzes the conversion of deoxyuridine monophosphate (dUMP) to deoxythymidine monophosphate (dTMP).

**Thymine:** A pyrimidine base found in DNA. OR A chemical compound that is used to make one of the building blocks of DNA. It is a type of pyrimidine.

**thymine dimer:** See pyrimidine dimer.

**Thymitaq :** A substance that is being studied in the treatment of liver cancer. It belongs to the family of drugs called thymidylate synthase inhibitors. Also called AG337 and nolatrexed.

**thymocyte :** A type of white blood cell. Thymocytes are part of the immune system and develop from stem cells in the bone marrow. They help protect the body from infection and may help fight cancer. Also called T cell and T lymphocyte.

**Thymoglobulin:** (Other name for: anti-thymocyte globulin)

**thymoma :** A tumor of the thymus, an organ that is part of the lymphatic system and is located in the chest, behind the breastbone.

**thymopentin:** A synthetic pentapeptide which is the active site of the naturally occurring hormone thymopoietin with immunomodulating properties. Thymopentin enhances the production of thymic T cells and may help restore immunocompetence in immunosuppressed subjects. This agent also augments the effects of ionizing radiation by arresting cancer cells in the G2/M phase of the cell cycle.

**thymosins:** hormones secreted by the thymus gland that influence the development of the T lymphocytes of the immune system.

**thymus :** An organ that is part of the lymphatic system, in which T lymphocytes grow and multiply. The thymus is in the chest behind the breastbone.

**thymus gland:** an endocrine gland in the neck tissues that secretes thymosins.

**Thyrogen :** (Other name for: recombinant thyrotropin alfa) OR A form of thyroid-stimulating hormone (TSH) that is made in the laboratory. It is used to test for remaining or recurring cancer cells in patients who have been treated for thyroid cancer. Also called thyrotropin alfa.

**thyroglobulin :** The form that thyroid hormone takes when stored in the cells of the thyroid. If the thyroid has been removed, thyroglobulin should

not show up on a blood test. Doctors measure thyroglobulin level in blood to detect thyroid cancer cells that remain in the body after treatment.

**thyroid** : A gland located beneath the larynx (voice box) that makes thyroid hormone and calcitonin. The thyroid helps regulate growth and metabolism. Also called thyroid gland.

**thyroid cancer** : Cancer that forms in the thyroid gland (an organ at the base of the throat that makes hormones that help control heart rate, blood pressure, body temperature, and weight). Four main types of thyroid cancer are papillary, follicular, medullary, and anaplastic thyroid cancer. The four types are based on how the cancer cells look under a microscope.

**thyroid follicular cell** : A type of cell in the thyroid. Thyroid follicular cells make thyroid hormone.

**thyroid gland**: a gland at the base of the neck that produces several hormones, such as thyroxine and calcitonin. OR A gland located beneath the larynx (voice box) that makes thyroid hormone and calcitonin. The thyroid gland helps regulate growth and metabolism. Also called thyroid.

**thyroid hormone** : A hormone that affects heart rate, blood pressure, body temperature, and weight. Thyroid hormone is made by the thyroid gland and can also be made in the laboratory.

**thyroid hormone treatment** : Treatment with thyroid hormone, which is a hormone that affects heart rate, blood pressure, body temperature, and weight.

**thyroid-stimulating hormone** : A hormone produced by the pituitary gland. Thyroid-stimulating hormone stimulates the release of thyroid hormone from thyroglobulin. It also stimulates the growth of thyroid follicular cells. An abnormal thyroid-stimulating hormone level may mean that the thyroid hormonal regulation system is out of control, usually as a result of a benign condition (hyperthyroidism or hypothyroidism). Also called TSH.

**thyroidectomy** : Surgery to remove part or all of the thyroid.

**thyroiditis** : Inflammation of the thyroid gland. Thyroiditis may be an autoimmune disease that affects the thyroid gland over time, causing hypothyroidism (too little thyroid hormone). A temporary form of thyroiditis may also occur after the birth of a baby, or when viral or bacterial infections spread to the thyroid.

**thyroidologist :** A medical doctor who has special training in diagnosing and treating thyroid diseases.

**thyrotropin alfa :** A form of thyroid-stimulating hormone (TSH) that is made in the laboratory. It is used to test for remaining or recurring cancer cells in patients who have been treated for thyroid cancer. Also called Thyrogen.

**thyroxin :** A hormone that is made by the thyroid gland and contains iodine. Thyroxin increases the rate of chemical reactions in cells and helps control growth and development. Thyroxin can also be made in the laboratory and is used to treat thyroid disorders. Also called L-3,5,5'-tetraiodothyronine, T4, and thyroxine.

**thyroxine:** A hormone synthesized and secreted by the thyroid gland containing four iodine atoms and is converted to triiodothyronine (T3) in the body, influencing metabolism and organ function. OR A hormone that is made by the thyroid gland and contains iodine. Thyroxine increases the rate of chemical reactions in cells and helps control growth and development. Thyroxine can also be made in the laboratory and is used to treat thyroid disorders. Also called L-3,5,5'-tetraiodothyronine, T4, and thyroxin.

**Thytropar:** (Other name for: recombinant thyroid-stimulating hormone)

**tiacumicin B :** A substance being studied in the treatment of diarrhea caused by infection with *Clostridium difficile* (a type of bacteria that can grow without oxygen) in cancer patients. Tiacumicin B is a type of antibiotic. Also called OPT-80 and PAR-101.

**tiazofurin:** A synthetic nucleoside analogue with antineoplastic activity. Tiazofurin (TR) is anabolized intracellularly to an analogue of NAD, tiazole-4-carboxamide adenine dinucleotide (TAD), a potent inhibitor of IMP dehydrogenase (IMPDH); IMPDH is the rate-limiting enzyme for de novo purine synthesis. Inhibition of IMPDH results in reduced levels of guanylates, resulting in the inhibition tumor cell growth in vitro and in vivo. OR An anticancer drug being studied to stop cell growth.

**tibia :** The larger of two bones between the knee and ankle. Also called shinbone.

**tibolone:** A synthetic anabolic steroid with estrogenic, androgenic and progestagenic activities. The 3alpha- and 3beta-hydroxy metabolites of tibolone activate estrogenic receptors (ERs) in bone and vaginal tissue

leading to a decrease in bone turnover, and decreased vaginal dryness, respectively; derived from the 3beta-hydroxy metabolite, its delta4-isomer activates androgenic receptors (ARs) in the brain and liver and progestogenic receptors (PRs) in endometrial tissue, affecting sexual function, lipid metabolism, and endometrial function, respectively. In breast and endometrial tissue, tibolone metabolites inhibit sulfatase, preventing the conversion of circulating estrone sulfate and estradiol sulfate to estrone and estradiol, respectively; estrogen-mediated effects in the breast and uterus are thus reduced.

**TICE BCG solution:** (Other name for: BCG solution)

**tidal current:** the horizontal flow of water that accompanies the changing tide and flows in two opposite directions.

**tidal delta:** sediments deposited by the back-and-forth tidal action between barrier islands.

**tidal flat:** a flat, muddy zone of coastline affected by tidal currents.

**tidal marsh:** Low, flat marshlands traversed by channels and tidal hollows and subject to tidal inundation; normally, the only vegetation present are salt-tolerant bushes and grasses.

**tidal wave:** a gigantic wall of water, sometimes as high as 90 meters, caused by a submarine earthquake.

**tide:** the rhythmic rise and fall of sea level along a coastline.

**TIE BARS:** Bars which provide structural rigidity to the clamping mechanism of a press often used to guide platen movement. OR Large diameter rods that connect stationary platen "a" to stationary platen "b." The moving platen contains bushings that are used for sliding over the tie bars, allowing the moving platen to travel between the two stationary platens. OR Bars which provide structural support to the mold in the press. The spacing between the tie bars dictates the size of the mold that can be placed into the injection machine. The mold opens and closes riding on the tie bars. OR Bars which provide structural rigidity to the clamping mechanism often used to guide platen movement.

**Tie-Bar Spacing :** The space between the horizontal tie-bars on an injection molding machine. Basically, this measurement limits the size of molds that can be placed between the tie-bars and into the molding machine.

**Tier:** A 360° element of the spiral, either ascending or descending one level.

**Tier Height :** The vertical distance from one belt level on the drum to the next higher or lower level. This is a measurement of distance.

**Tier Spacing :** Another term for Tier Height.

**tigapotide:** A synthetic 15-mer peptide corresponding to amino acids 31-45 of the 94-amino acid isoform of human prostate secretory protein (PSP-94) with potential anti-metastasis and anti-angiogenesis activities.

Tigapotide may inhibit the secretion of the metastasis-related protein matrix metalloproteinase-9 (MMP-9) and its potential binding to its cell surface receptor CD44; may interfere with the vascular endothelial growth factor (VEGF) signaling pathway, resulting in an anti-angiogenesis effect; and may reduce the levels of parathyroid hormone-related protein (PTHrP), decreasing plasma calcium levels. PSP-94, one of three predominant proteins found in seminal fluid, may be down-regulated in prostate cancer, representing a potential survival mechanism for prostate cancer cells. MMP-9 is implicated in the invasion and metastasis of cancer. PTHrP may be expressed by various tumor cell types, resulting in the hypercalcemia of malignancy.

**tigatuzumab:** A humanized agonistic monoclonal antibody directed against human tumor necrosis factor-related apoptosis-inducing ligand receptor 2 (TRAIL-R2) with potential antitumor activity. Mimicking the natural receptor ligand TRAIL, tigatuzumab binds to TRAIL-R2, activating signal transduction pathways that may result in tumor cell apoptosis and a reduction in tumor growth. A member of the tumor necrosis factor (TNF) receptor family, TRAIL-R2, also known as DR5 (death receptor 5), is expressed on the surfaces of many types of malignant cells.

**tigecycline:** A broad-spectrum glycylcycline antibiotic derived from tetracycline. Tigecycline binds to the 30S ribosomal subunit, thereby interfering with the binding of aminoacyl-tRNA to the mRNA-ribosome complex. This prevents the incorporation of amino acid residues into the elongating peptide chain, inhibiting protein synthesis and eventually bacterial cell growth. Check for active clinical trials using this agent.

**TIL 1383I T cell receptor-transduced autologous T cells:** Autologous peripheral blood lymphocytes-derived T cells transduced with a retroviral encoding TIL 1383I, a T cell receptor (TCR) specific for melanoma antigen

tyrosinase, with potential immunostimulating and antineoplastic activity. After transduction, expansion in culture, and reintroduction into the patient, TIL 1383I TCR-transduced autologous T cells bind to tumor cells expressing tyrosinase, which may induce cytokine expression, activation and proliferation of T-cells, and a specific cytotoxic T-lymphocyte (CTL) response against tyrosinase-expressing tumor cells. TIL 1383I TCR originated from a melanoma patient's CD4+ tumor-infiltrating lymphocytes and is reactive against a class I MHC (HLA-A2)-restricted epitope (368-376) of tyrosinase.

**till:** an unsorted pile of sediment left behind when a glacier melts. Or the unsorted and unlayered rock debris and sediment that is carried or later deposited by a glacier.

**Time scan :** effects of mold and melt temperature and injection time changes on pressure, stress and temperature at the end of flow.

**time to progression :** The length of time from the date of diagnosis or the start of treatment for a disease until the disease starts to get worse or spread to other parts of the body. In a clinical trial, measuring the time to progression is one way to see how well a new treatment works. Also called TTP.

**Time-domain analysis:** A technique used to determine the size of a particle (0.5–3600  $\mu\text{m}$  in diameter) by measuring the time required for a laser beam moving at a fixed velocity to cross a particle.

**time-weighted average (TWA) exposure:** This is a regulatory value defining the concentration of a substance to which a person is exposed in ambient air divided by the total time of observation. For occupational exposure a working shift of eight hours is commonly used as the averaging time.

**timolol maleate gel forming solution:** A gel forming solution containing the maleate salt of timolol, a propanolamine derivative and a non-selective beta-adrenergic antagonist, with intraocular pressure-reducing activity. Although the precise mechanism of action of timolol's ocular hypotensive action is not clearly established at this time, studies suggest that it may be the result of decreased aqueous humor production (possibly by reduction of blood flow to the ciliary processes and cAMP synthesis) as well as a slight increase in outflow facility. Timolol gel-forming solution can potentially be

used topically as well, in the prevention of the neoangiogenesis that may occur following pulsed dye laser treatment of port wine stains.

**timonacic:** A cyclic sulfur amino acid derivative with potential antineoplastic and antioxidant activities. Acting on cellular membranes of malignant cells through an unknown mechanism, timonacic may induce malignant cells to revert back to an untransformed state. This agent may also restore contact inhibition, a phenomenon characterized by the paracrine inhibition of mitosis following the formation of a critical cell mass, presumably the result of cell-to-cell signal transfer. Timonacic may also produce antioxidant effects secondary to its release of cysteine and restoration of glutathione concentrations.

**Timoptic-XE:** (Other name for: timolol maleate gel forming solution)

**Tin:** Symbol:"Sn" Atomic Number:"50" Atomic Mass: 118.69amu. It is classified as a basic metal. Tin is a metal mainly found in the mineral casiterite. It is a silvery metal used in creating alloys to protect metals from corrosion. It is also used in cans and superconductive materials (materials than conduct electricity extremely well).

**Tin Canning:** Roll defect appearing as raised ridges around the circumference of the roll resembling a tin can.

**tin ethyl etiopurpurin :** An anticancer drug that is also used in cancer prevention. It belongs to the family of drugs called photosensitizing agents. Also called SnET2.

**Tindamax:** (Other name for: tinidazole)

**tinidazole:** A 5-nitroimidazole derivative with antiprotozoal property. Although the mechanism of action has not been fully elucidated, it has been suggested that tinidazole is metabolized and yields nitrite anions and metronidazole. Metronidazole's nitro group in turn is reduced via the parasite ferredoxin, thereby generating a series of free nitro radicals including nitro anions. Toxicity is achieved via depletion of sulfhydryl groups and DNA strand breaks with multiple hits having an additive effect and ultimately leading to cell death.

**tinidazole :** A drug used to treat protozoal infections, such as amebiasis, giardiasis, and trichomoniasis. It belongs to a family of drugs called antiprotozoal agents. Tinidazole is also being evaluated in the treatment of *Helicobacter pylori* infections in people with low-grade gastric lymphoma.

**tinnitus :** A disorder in which a person hears noises such as buzzing, ringing, clicking, or the sound of a pulse, when no outside sound is causing them. Tinnitus may have many different causes, and may be a symptom of another disease or condition. It may be caused by certain tumors and anticancer drugs.

**TINT BASE:** The basic paint in a custom color system to which colorants are added.

**Tinter:** Any coloured pigment or paint mixture used to make small adjustments in colour to an already prepared paint.

**tinzaparin :** A drug that is used with another drug, warfarin, to treat blood clots that form deep in the veins and to prevent new blood clots from forming. It is a type of anticoagulant. Also called Innohep and tinzaparin sodium.

**tinzaparin sodium:** A drug that is used with another drug, warfarin, to treat blood clots that form deep in the veins and to prevent new blood clots from forming. It is a type of anticoagulant. Also called Innohep and tinzaparin. OR The sodium salt of a low molecular weight heparin (LMWH) obtained by controlled enzymatic depolymerization of heparin from porcine intestinal mucosa with antithrombotic properties. Tinzaparin is a potent inhibitor of several activated coagulation factors, especially Factors Xa and IIa (thrombin); its primary activity is mediated through the plasma protease inhibitor antithrombin. In addition, this agent may inhibit angiogenesis through: 1) competitive binding of the heparin-binding sites on endothelial cells for the proangiogenic cytokines vascular endothelial growth factor (VEGF) and beta-fibroblast growth factor (beta-FGF) and 2) increasing the release of tissue factor pathway inhibitor (TFPI), a negative regulator of angiogenesis.

**tiomolibdate diammonium:** An ammonium salt with potential antiangiogenic and antitumor activities. ammonium Tiomolibdate diammonium has been found to deplete systemic copper reserves through an unknown mechanism. This agent has been shown to inhibit the activities of cuproenzymes, including superoxide dismutase 1 (SOD1) and cytochrome c oxidase (COX), which may contribute to its antiangiogenic and antitumor effects.

**tiotropium bromide monohydrate:** The monohydrate bromide salt form of tiotropium, a quaternary ammonium derivative of atropine and a long-

acting muscarinic receptor antagonist, with bronchodilating activity. Upon inhalation, tiotropium binds to and blocks mainly muscarinic M3 receptors located on smooth muscle cells, thereby preventing smooth muscle contraction

**Tip link:** A filament that links adjacent stereocilia; in the membrane of stereocilia, tip links are coupled to ion channels that are gated by stress; mechanical movement alters the current flow across a hair-cell membrane, which may initiate or terminate the hearing signal-transduction pathway.

**tipifarnib:** A nonpeptidomimetic quinolinone with potential antineoplastic activity. Tipifarnib binds to and inhibits the enzyme farnesyl protein transferase, an enzyme involved in protein processing (farnesylation) for signal transduction. By inhibiting the farnesylation of proteins, this agent prevents the activation of Ras oncogenes, inhibits cell growth, induces apoptosis, and inhibits angiogenesis. OR A substance that is being studied in the treatment of acute myeloid leukemia (AML) and other types of cancer. It belongs to the family of drugs called farnesyltransferase inhibitors. Also called R115777 and Zarnestra.

**tipranavir sodium :** A drug used with another drug, ritonavir, to treat patients who are infected with HIV (the virus that causes AIDS) and have been treated with other anti-HIV drugs. Tipranavir sodium blocks the HIV virus from making copies of itself. It is a type of anti-HIV agent and a type of protease inhibitor. Also called Aptivus.

**tirapazamine:** A benzotriazine di-N-oxide with potential antineoplastic activity. Tirapazamine is selectively activated by multiple reductases to form free radicals in hypoxic cells, thereby inducing single- and double-strand breaks in DNA, base damage, and cell death. This agent also sensitizes hypoxic cells to ionizing radiation and inhibits the repair of radiation-induced DNA strand breaks via inhibition of topoisomerase II. OR A substance that has been studied in the treatment of some types of cancer. It may cause damage to the DNA in cells that have a low level of oxygen, including cancer cells. This may make the cells easier to kill with radiation therapy and chemotherapy. Tirapazamine is a type of radiosensitizing agent and a type of chemosensitizing agent.

**Tirazone:** (Other name for: tirapazamine)

**TISAB = Total Ionic Strength Adjustment Buffer:** a reagent which is added to standards and samples in Fluoride determinations to optimize the

pH value at 5.5, liberate any fluoride which may be complexed with hydrogen, aluminium, iron or other cations, and equalize the activity coefficient between sample and standards.

**TISSEEL VH:** (Other name for: fibrin sealant)

**tissue :** A group or layer of cells that work together to perform a specific function.

**tissue culture:** Method by which cells derived from multicellular organisms are grown in liquid media.

**Tissue engineering:** A field of study that combines cells, engineering and materials methods, with the goal of improving or replacing biological functions

**tissue flap reconstruction :** A type of breast reconstruction in which a flap of tissue is surgically moved from another area of the body to the chest, and formed into a new breast mound.

**tissue fluid :** Fluid found in the spaces around cells. It comes from substances that leak out of blood capillaries (the smallest type of blood vessel). It helps bring oxygen and nutrients to cells and to remove waste products from them. As new tissue fluid is made, it replaces older fluid, which drains towards lymph vessels. When it enters the lymph vessels, it is called lymph. Also called interstitial fluid.

**tissue plasminogen activator :** An enzyme made in the body that helps dissolve blood clots. A form of this enzyme is made in the laboratory to treat heart attacks, strokes, and clots in the lungs. It is also being studied in the treatment of cancer. Tissue plasminogen activator is a type of systemic thrombolytic agent. Also called tPA.

**Titanium:** Symbol:"Ti" Atomic Number:"22" Atomic Mass: 47.90amu. This is one of the transition elements from period three. Titanium can be found in meteorites and many minerals from the Earth's crust. Or Titanium is a corrosion-resistant transition metal used in high performance alloys.

**Titanium dioxide:** A highly opaque inert white pigment. It is the white pigment almost exclusively used in the manufacture of all 'white paint' or in colours which require the addition of white. Or A white powder available in two crystalline forms, the anatase and rutile types. or A white powder available in two crystalline forms, the anatase and rutile types. Both are widely used as opacifying pigments in thermosets and thermoplastics. OR

A white pigment available in two crystalline forms, rutile and anatase, the former being the most widely used white and opacifying pigment in thermoplastics, printing inks and paints

**titanium dioxide/zinc oxide sunscreen cream SPF 60:** A sunscreen formulated with titanium dioxide and zinc oxide with broad UV spectrum-blocking properties. Upon topical application, titanium dioxide and zinc oxide reflect and block both UVA and UVB ultraviolet light rays, protecting the skin against UVA and UVB radiation that causes sunburn, premature aging of the skin and skin cancer. SPF30 and SPF60 contain 5% titanium dioxide and zinc oxide, and 7.5% titanium dioxide and zinc, oxide respectively.

**Title 10 of the Code of Federal Regulations (10 CFR):** Four volumes of the Code of Federal Regulations (CFR) address energy-related topics. Parts 1 to 199 contain the regulations (or rules) established by the NRC. These regulations govern the transportation and storage of nuclear materials; use of radioactive materials at nuclear power plants, research and test reactors, uranium recovery facilities, fuel cycle facilities, waste repositories, and other nuclear facilities; and use of nuclear materials for medical, industrial, and academic purposes. To review the regulations, see NRC Regulations - Title 10, Code of Federal Regulations.

**Titrant:** a reagent containing a species that either complexes or liberates the species being determined. An ideal titrant should react instantaneously, completely, and stoichiometrically with the species being determined. The titrant is added in measured increments from a burette and the sample concentration determined from the amount of titrant needed for complete reaction. or The substance that quantitatively reacts with the analyte in a titration. The titrant is usually a standard solution added carefully to the analyte until the reaction is complete. The amount of analyte is calculated from the volume of titrant required for complete reaction.

**titration:** a method of analyzing the composition of a solution by adding known amounts of a standardized solution until a given reaction (color change, precipitation, or conductivity change) is produced. Or The process used to take a solution of unknown concentration with a solution of a known concentration for the purpose of finding out more about the unknown solution.

**Titration:** A procedure for quantitative analysis by carrying out a reaction in solution by measurement of volumes using a reactant of known concentration. Or a quantitative analytical technique for measuring the concentration of a species by incremental addition of a reagent (titrant) containing a species that either complexes or liberates the sample species. or A procedure for determining the amount of some unknown substance (the analyte) by quantitative reaction with a measured volume of a solution of precisely known concentration (the titrant).

**titration curve:** A plot that summarizes data collected in a titration. A linear titration curve plots moles of analyte (or, some quantity proportional to moles of analyte) on the Y axis, and the volume of titrant added on the X axis. Nonlinear plots use the log of the concentration of the analyte instead. Nonlinear titration curves are often used for neutralization titrations (pH vs. mL NaOH solution). Logs are used to exaggerate the rate of change of concentration on the plot, so that the endpoint can be determined from the point of maximal slope. or A plot of the pH versus the equivalents of base added during titration of an acid.

**tivantinib:** An orally bioavailable small molecule inhibitor of c-Met with potential antineoplastic activity. Tivantinib binds to the c-Met protein and disrupts c-Met signal transduction pathways, which may induce cell death in tumor cells overexpressing c-Met protein or expressing constitutively activated c-Met protein. c-Met protein, the product of the proto-oncogene c-Met, is a receptor tyrosine kinase also known as hepatocyte growth factor receptor (HGFR); this protein is overexpressed or mutated in many tumor cell types and plays key roles in tumor cell proliferation, survival, invasion, and metastasis, and tumor angiogenesis.

**Tivicay:** (Other name for: dolutegravir)

**tivozanib:** An orally bioavailable inhibitor of vascular endothelial growth factor receptors (VEGFRs) 1, 2 and 3 with potential antiangiogenic and antineoplastic activities. Tivozanib binds to and inhibits VEGFRs 1, 2 and 3, which may result in the inhibition of endothelial cell migration and proliferation, inhibition of tumor angiogenesis and tumor cell death. VEGFR tyrosine kinases, frequently overexpressed by a variety of tumor cell types, play a key role in angiogenesis.

**tizanidine hydrochloride:** The hydrochloride salt form of tizanidine, an imidazoline derivative structurally similar to clonidine and an adrenergic

agonist with muscle relaxant property. Tizanidine stimulates alpha-2 adrenergic receptors in the central nervous system, thereby inhibiting presynaptic release of norepinephrine and increasing the inhibitory effect on alpha motor neurons and motor reflexes. Tizanidine exerts some activity at the postsynaptic excitatory amino acid receptors and imidazoline receptors which may contribute to the overall reduction in facilitation of spinal motor neurons. Overall, tizanidine hydrochloride causes muscle relaxation, reduces spasticity and antinociceptive effects. Check for active clinical trials using this agent.

**TLF:** A drug being studied in the treatment of kidney cancer that has spread. It is also being studied in the treatment of other types of cancer and other conditions. TLF increases the activity of dendritic cells (a type of immune cell) to help kill cancer cells. It is a form of human lactoferrin (a protein found in milk, tears, mucus, bile, and some white blood cells) that is made in the laboratory. TLF is a type of recombinant protein and a type of immunomodulatory protein. Also called talactoferrin and talactoferrin alfa.

**TLK286:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called glutathione analogs. Also called Telcyta.

**TLR-directed cationic lipid-DNA complex JVRS-100:** A cationic lipid DNA complex (CLDC) consisting of DOTIM/cholesterol liposomes and plasmid DNA, containing immunostimulatory CpG and non-CpG motifs, with potential immunostimulating and antineoplastic activities. Upon systemic administration, TLR-directed cationic lipid-DNA complex JVRS-100 enters dendritic cells (DCs) and macrophages; immunostimulatory DNA binds to and activates Toll-like receptors (TLRs), which may result in the generation of anti-tumor natural killer (NK) cell and T-cell responses by the innate immune system. In addition, as a vaccine adjuvant, this agent may induce a strong cytotoxic T-lymphocyte (CTL) response to co-administered antigen.

**TLR4 agonist GLA-SE:** A synthetic lipid A derivative and toll-like receptor 4 (TLR4) agonist, in an oil-in-water emulsion, with potential immunoadjuvant activity. Upon administration, GLA-SE binds to and activates TLR4, thereby stimulating dendritic cells (DCs), monocytes and macrophages. This activation results in the production of proinflammatory cytokines, including interferon alpha, tumor necrosis factor-alpha and the

interleukins (IL), IL-1 beta, -6 and -12. This may induce a T helper cell-1 (Th1) immune response and activates a cytotoxic T-lymphocyte (CTL) response against tumor associated antigens (TAAs) upon co-administration of vaccine antigens. TLR4, a member of the TLR family, plays a key role in the activation of innate immunity.

**TLR4 agonist GSK1795091:** A toll-like receptor 4 (TLR4) agonist, with potential immunoadjuvant activity. Upon administration, GSK1795091 binds to and activates TLR4, thereby stimulating dendritic cells (DCs), monocytes and macrophages. This activation results in the production of pro-inflammatory cytokines, including interferon gamma (IFN-g), tumor necrosis factor-alpha (TNF-a) and the interleukins (IL), IL-1 beta, -6 and -12. This may induce a T helper cell-1 (Th1) immune response and, upon co-administration of a vaccine containing tumor-associated antigens (TAAs), activates a cytotoxic T-lymphocyte (CTL) response against tumor cells expressing those TAAs. TLR4, a member of the TLR family, plays a key role in the activation of innate immunity. Check for active clinical trials using this agent.

**TLR7 agonist ANA773 tosylate:** The tosylate salt form of ANA773, a Toll-like Receptor 7 (TLR7) agonist prodrug with potential immunostimulating activity. Upon oral administration, ANA773 is metabolized into its active form that binds to and activates TLR7, thereby stimulating dendritic cells (DCs) and enhancing natural killer cell (NK) cytotoxicity. This activation results in the production of proinflammatory cytokines, including interferon alpha, and enhanced antibody-dependent cellular cytotoxicity (ADCC). TLR7 is a member of the TLR family, which plays a fundamental role in pathogen recognition and activation of innate immunity.

**TLR7/8 agonist MEDI9197:** A toll-like receptor type 7 and 8 (TLR7/8) agonist with potential immunostimulating and antitumor activities. Upon intratumoral administration, TLR7/8 agonist MEDI9197 binds to and activates TLR7 and 8, thereby stimulating antigen-presenting cells (APCs), including dendritic cells (DCs). Activation of DCs results in the production of proinflammatory cytokines, and the activation of cytotoxic T-lymphocyte (CTL) and B-lymphocyte immune responses. This may cause tumor cell lysis. TLR7 and 8, members of the TLR family, play fundamental roles in

the activation of the immune system. Check for active clinical trials using this agent.

**TLR8 agonist VTX-2337:** A small-molecule Toll-like receptor 8 (TLR8) agonist with potential immunostimulating and antineoplastic activities. TLR8 agonist VTX-2337 binds to TLR8, present in cutaneous dendritic cells, monocytes/macrophages, and mast cells, which may result in the activation of the central transcription factor nuclear factor- $\kappa$ B, the secretion of proinflammatory cytokines and other mediators, and a Th1-weighted antitumoral cellular immune response. Primarily localized to endosomal membranes intracellularly, TLR8, like other TLRs, recognizes pathogen-associated molecular patterns (PAMPs) and plays a key role in the innate immune system.

**TLR9 agonist DUK-CPG-001:** A synthetic CpG-rich oligonucleotide with potential immunopotentiating activity. TLR9 agonist DUK-CPG-001 binds to and activates intracellular toll-like receptor 9 (TLR9) in monocytes/macrophages, plasmacytoid dendritic cells (DCs), natural killer (NK) cells and B cells. This initiates immune signaling pathways, activates DCs, NK cells and B cells, and induces both the production of T-helper 1 cells (Th1) and a Th1-mediated immune response. TLR9 is a member of the TLR family, which plays a key role in both pathogen recognition and the activation of innate immunity.

**TLR9 agonist EMD 1201081:** A synthetic oligonucleotide containing phosphorothioate oligodeoxynucleotide with potential immunopotentiating activity. TLR9 agonist EMD 1201081 binds to and activates the intracellular Toll-like receptor (TLR) 9 in monocytes/macrophages, plasmacytoid dendritic cells (DCs) and B cells, initiating immune signaling pathways, activating B cells and inducing T-helper cell cytokine production. TLR9 is a member of the TLR family, which plays a fundamental role in pathogen recognition and activation of innate immunity.

**TLR9 agonist IMO-2055:** A synthetic oligonucleotide containing unmethylated CpG dinucleotides with potential immunopotentiating activity. Mimicking unmethylated CpG sequences in bacterial DNA, TLR9 agonist IMO-2055 binds to and activates intracellular Toll-like receptors (TLR) 9 in monocytes/macrophages, plasmacytoid dendritic cells (DCs) and B cells, initiating immune signaling pathways and activating B cells and DCs and inducing T-helper cell cytokine production. TLR9 is a member

of the TLR family, which plays a fundamental role in pathogen recognition and activation of innate immunity. Check for active clinical trials using this agent.

**TLR9 agonist MGN1703:** A synthetic oligonucleotide based on a proprietary double stem-loop immunomodulator design with potential immunostimulating activity. TLR9 agonist MGN1703 binds to and activates intracellular Toll-like receptor 9 (TLR9) in monocytes/macrophages, plasmacytoid and myeloid dendritic cells (DCs), and natural killer (NK) cells, initiating immune signaling pathways and inducing T-helper 1 cell (Th1) production leading to the production of memory T cells and a Th1-mediated immune response. By activating the immune system, MGN1703 may attack tumor associated antigen (TAAs). TLR9 is a member of the TLR family, which plays a fundamental role in pathogen recognition and activation of innate immunity.

**TLR9 agonist SD-101:** A proprietary oligonucleotide with immunostimulatory activity. Immunostimulatory phosphorothiolate oligodeoxyribonucleotide SD-101 targets Toll-Like Receptor 9 (TLR9) found on a specialized subset of dendritic cells. The interaction of TLR9 with SD-101, in conjunction with an allergen or antigen, induces activation of memory T helper cells 1 (Th1) against a specific pathogen or allergen, thereby leading to long-lasting therapeutic effects. Furthermore, this agent does not cause a generalized activation of the immune system.

**TM:** A mental technique used to promote relaxation, reduce stress, and improve quality of life. TM is the registered trademark of the Maharishi Foundation Ltd. Also called Transcendental Meditation.

**TNF:** A protein made by white blood cells in response to an antigen (substance that causes the immune system to make a specific immune response) or infection. TNF can also be made in the laboratory. It may boost a person's immune response, and also may cause necrosis (cell death) of some types of tumor cells. TNF is being studied in the treatment of some types of cancer. It is a type of cytokine. Also called tumor necrosis factor.

**TNF-bound colloidal gold :** A substance being studied in the treatment of some types of cancer. TNF-bound colloidal gold is made in the laboratory by binding a cancer-killing protein called tumor necrosis factor (TNF) to the surface of very tiny particles of gold. These TNF-gold particles may kill

cancer cells without harming healthy tissue. Also called Aurimmune and colloidal gold-bound tumor necrosis factor.

**TNF-related apoptosis-inducing ligand :** A cell protein that can attach to certain molecules in some cancer cells and may kill the cells. TNF-related apoptosis-inducing ligand is being studied in the treatment of cancer. Also called Apo-2L, TRAIL, and tumor necrosis factor-related apoptosis-inducing ligand.

**TNFerade :** A gene therapy product that is being studied in combination with radiation therapy in the treatment of cancer.

**TNM staging system :** A system to describe the amount and spread of cancer in a patient's body, using TNM. T describes the size of the tumor and any spread of cancer into nearby tissue; N describes spread of cancer to nearby lymph nodes; and M describes metastasis (spread of cancer to other parts of the body). This system was created and is updated by the American Joint Committee on Cancer (AJCC) and the International Union Against Cancer (UICC). The TNM staging system is used to describe most types of cancer. Also called AJCC staging system.

**TNP-470:** A synthetic analog of fumagillin, an antibiotic isolated from the fungus *Aspergillus fumigatus fresenius* with antineoplastic activity. TNP-470 binds to and irreversibly inactivates methionine aminopeptidase-2 (MetAP2), resulting in endothelial cell cycle arrest late in the G1 phase and inhibition of tumor angiogenesis. This agent may also induce the p53 pathway, thereby stimulating the production of cyclin-dependent kinase inhibitor p21 and inhibiting angiogenesis. OR A substance being studied in the treatment of cancer. It may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent.

**tobacco :** A plant with leaves that have high levels of the addictive chemical nicotine. After harvesting, tobacco leaves are cured, aged, and processed in various ways. The resulting products may be smoked (in cigarettes, cigars, and pipes), applied to the gums (as dipping and chewing tobacco), or inhaled (as snuff). Cured tobacco leaves and the products made from them contain many cancer-causing chemicals, and tobacco use and exposure to secondhand tobacco smoke have been strongly linked to many types of cancer and other diseases. The scientific name of the most common tobacco plant is *Nicotiana tabacum*.

**tobacco tar :** A chemical substance made when tobacco is burned. Tar contains most of the cancer-causing and other harmful chemicals found in tobacco smoke. When tobacco smoke is inhaled, the tar can form a sticky layer on the inside of the lungs. This damages the lungs and may lead to lung cancer, emphysema, or other lung problems. Cigarettes and other smoked tobacco products may produce different amounts of tar, depending on how they are made. Inhaling tobacco smoke also causes other types of cancer, including cancers of the mouth and throat.

**tobacco-specific nitrosamine :** A type of harmful, cancer-causing chemical found in tobacco and tobacco smoke. Tobacco-specific nitrosamines are formed when tobacco leaves are grown, cured, aged, and processed. Tobacco products can contain different amounts of tobacco-specific nitrosamines, depending on how they are made. Also called TSNA.

**tobramycin sulfate:** The sulfate salt of tobramycin, an aminoglycoside antibiotic derived from the bacterium *Streptomyces tenebrarius* with bactericidal activity. Following active transport into the cell, tobramycin binds irreversibly to a specific aminoglycoside receptor on the bacterial 30S ribosomal subunit and fixes the 30 S-50 S ribosomal complex at the start codon (AUG), interfering with the initiation of protein synthesis. In addition, this agent induces misreading of the mRNA template, which results in 1) detachment of the ribosomal complex and inhibition of protein elongation or 2) incorporation of the incorrect amino acids into the growing polypeptide chain and the production of abnormal or nonfunctional proteins. Altogether, cell permeability is altered and cell death ensues.

**Tobrex:** (Other name for: tobramycin sulfate)

**Toca FC:** (Other name for: extended-release flucytosine)

**tocilizumab:** A recombinant, humanized IgG1 monoclonal antibody directed against the interleukin-6 receptor (IL-6R) with immunosuppressant activity. Tocilizumab targets and binds to both the soluble form of IL-6R (sIL-6R) and the membrane-bound form (mIL-6R), thereby blocking the binding of IL-6 to its receptor. This prevents IL-6-mediated signaling. IL-6, a pro-inflammatory cytokine that plays an important role in the regulation of the immune response, is overproduced in autoimmune disorders and certain types of cancers.

**tocladesine:** An antimetabolite and a chlorine derivative of the intracellular secondary messenger, cyclic adenosine 3,5-monophosphate (cAMP), with

potential antineoplastic activity. Tocladesine appears to be converted to 8-chloro-adenosine by phosphodiesterases and subsequently phosphorylated to 8-chloro-ATP, which functions as a purine analogue and competes with ATP in transcription. In addition, generation of 8-chloro-ATP depletes the endogenous ATP pool that is essential for many biological reactions in intracellular energy transfer. As a result, this agent causes RNA synthesis inhibition, blocks cellular proliferation, and induces apoptosis.

**tocladesine :** A substance that has been studied as an anticancer drug. It is an analog of a substance that occurs naturally in the body (cyclic adenosine monophosphate).

**tocopherols:** Forms of vitamin E.

**tocophersolan:** A water-soluble amphipathic formulation of d-alpha-tocopherol succinate coupled, through a succinate linker, to polyethylene glycol (PEG) 1000. Due to its amphipathic property in which it forms its own micelles, tocophersolan is easily taken up into enterocytes, even in the absence of bile salts; fat soluble d-alpha-tocopherol is then released after hydrolysis. This formulation enhances the absorption of d-alpha-tocopherol compared to the administration of free d-alpha-tocopherol. In addition, tocophersolan may enhance the absorption of water-insoluble agents and other fat-soluble vitamins. Check for active clinical trials using this agent.

**Tocosol Paclitaxel:** (Other name for: paclitaxel vitamin E-based emulsion formulation)

**tocotrienol:** Any of the four forms, alpha, beta, gamma and delta, of a member of the vitamin E family, with potential hypocholesterolemic, antithrombotic, antioxidant, immunomodulating and antineoplastic activities. Tocotrienol inhibits the activity of 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase, thereby lowering cholesterol levels. In addition, tocotrienol acts through multiple signal transduction pathways to induce cell cycle arrest and caspase-mediated apoptosis, and to decrease tumor cell proliferation. In addition, this agent may inhibit angiogenesis through the blockage of vascular endothelial growth factor receptor (VEGFR) and the subsequent inhibition of tumor cell-induced vessel formation. Also, this agent prevents free radical formation and inhibits lipid peroxidation, thereby preventing DNA cell damage. Tocotrienol farnesyl isoprenoid side chains contain 3 double bonds, which are absent in tocopherols, likely contribute to its anti-cancer activities.

**tocotrienol-rich fraction:** An orally available nutritional supplement containing high amounts of the vitamin E family member tocotrienol with antioxidant, hypolipidemic and potential immunomodulating and antiproliferative activity. Upon oral administration, tocotrienol-rich fraction (TRF) accumulates in tumor cells and induces cell cycle arrest, programmed cell death, and inhibits tumor cell proliferation. In addition, this agent suppresses 3-hydroxy-3-methylglutaryl coenzyme A (HMG CoA) reductase activity and inhibits angiogenesis. Rice bran oil, palm oil and annatto seed oil are common sources of TRF.

**tofacitinib:** An orally available inhibitor of Janus kinases (JAK), with immunomodulatory and anti-inflammatory activities. Upon administration, tofacitinib binds to JAK and prevents the activation of the JAK-signal transducers and activators of transcription (STAT) signaling pathway. This may decrease the production of pro-inflammatory cytokines, such as interleukin (IL)-6, -7, -15, -21, interferon-alpha and -beta, and may prevent both an inflammatory response and the inflammation-induced damage caused by certain immunological diseases. JAK kinases are intracellular enzymes involved in signaling pathways affecting hematopoiesis, immunity and inflammation.

**Toggle:** A type of clamping mechanism that exerts pressure by applying force on a knee joint. A toggle is used to close and exert pressure on a mold in a press. OR A type of clamping mechanism that exerts pressure by applying force on a knee joint. A toggle is used to close and exert pressure on a mold in a press.

**TOGGLE ACTION:** A mechanism which exerts pressure developed by the application of force on a knee joint. It is used as a method of closing presses and also serves to apply pressure at the same time.

**Toggle clamp:** A term used to describe the use of a mechanical "scissors action" system to open and close the clamp unit of a molding machine. It is operated by a relatively small hydraulic cylinder.

**Tolak :** A drug used to treat cancers of the breast, colon, rectum, stomach, and pancreas. Under the brand names Carac, Tolak, Efudex, and Fluoroplex, it is used as a cream to treat actinic keratosis (a skin condition that may become cancer). It is also used under the brand name Efudex as a cream to treat basal cell skin cancer that is superficial (not invasive) and cannot be removed by surgery. Tolak is being studied in the treatment of

other conditions and types of cancer. It stops cells from making DNA and may kill cancer cells. Tolak is a type of antimetabolite. Also called 5-fluorouracil, 5-FU, Carac, Efudex, Fluoroplex, and fluorouracil.

**tolazamide:** An intermediate-acting, first-generation sulfonylurea with hypoglycemic activity. Tolazamide is converted into five major metabolites that are excreted into the urine. Tolazamide is more potent than tolbutamide and similar in potency to chlorpropamide on a milligram basis. This agent may cause cholestatic jaundice. Check for active clinical trials using this agent.

**tolbutamide:** A first-generation sulfonylurea with hypoglycemic activity. Tolbutamide binds to and blocks adenosine triphosphate (ATP)-sensitive potassium channels on the beta cell membrane of the pancreatic islet tissues. This leads to potassium efflux, which results in depolarization, calcium influx, calcium-calmodulin binding, kinase activation, and release of insulin-containing granules by exocytosis. In addition, tolbutamide may increase the number and affinity of cell surface insulin receptors, thereby enhancing the peripheral response to insulin. Tolbutamide is a CYP2C9 substrate.

**tolerance:** Tolerance is the ability to experience exposure to potentially harmful amounts of a substance without showing an adverse effect. An adaptive state characterized by diminished responses to the same dose of a chemical (WHO, 1979). Or A specified allowance for deviations in weighing, measuring, etc., or for deviations from the standard dimensions or weight.

**tolfenamic acid:** An orally available, benzoic acid derivative and a non-steroidal anti-inflammatory drug (NSAID) with anti-inflammatory, antipyretic, analgesic and potential anti-neoplastic activities. Tolfenamic acid inhibits the activity of the enzymes cyclooxygenase (COX) I and II, resulting in a decreased formation of precursors of prostaglandins and thromboxanes. The decrease in prostaglandin synthesis results in the therapeutic effects of this agent. Tolfenamic acid also inhibits thromboxane A<sub>2</sub> synthesis, by thromboxane synthase, which decreases platelet aggregation. In addition, this agent exerts anti-tumor effects through COX-dependent and independent pathways. Specifically, this agent induces the production of reactive oxygen species, causes DNA damage, increases nuclear factor-kappa B (NF- $\kappa$ B) activation and the expression of activating

transcription factor 3 (ATF3) and NSAID-activated gene-1 (NAG1), and inhibits the expression of specificity proteins (Sp), which reduces the expression of Sp-dependent anti-apoptotic and growth-promoting proteins. Altogether, this enhances tumor cell apoptosis, and reduces tumor cell growth and angiogenesis. Check for active clinical trials using this agent.

**Tolinase:** (Other name for: tolazamide)

**Toll-like receptor 9 agonist IMO-2125:** A proprietary synthetic oligonucleotide-based agonist of toll-like receptor 9 (TLR9), with potential immunostimulating activity. Upon administration, TLR9 agonist IMO-2125 binds to and activates TLR9 expressed by plasmacytoid dendritic cells (pDCs) and B cells. This initiates immune signaling pathways, activates B cells and pDCs, and induces a cytotoxic T-lymphocyte (CTL)-mediated immune response against tumor cells. TLR9 is a member of the TLR family, which plays a fundamental role in pathogen recognition and activation of innate immunity.

**Toluene:** Toluene is one of the "aromatic" compounds along with benzene and xylenes. There is limited chemical consumption of toluene but it may be converted to benzene by hydrodealkylation (THDA) or to benzene and xylenes by disproportionation (TDP) or transalkylation. Chemical applications include solvents and toluene diisocyanate (TDI). or The non-systematic name for methylbenzene, like so:

**toluene :** A strong-smelling, colorless liquid used to make gasoline and other types of fuel, paint, paint thinner, fingernail polish, glue, and rubber. Being exposed to toluene may cause headache, tiredness, confusion, weakness, memory loss, nausea, loss of appetite, hearing and color vision loss, dizziness, loss of consciousness, kidney damage, and death.

**Toluene diisocyanate (TDI):** Toluene diisocyanate (TDI) is an aromatic derivative produced by the nitration of toluene followed by phosgenation. TDI-based polyurethanes are used in flexible foams, coating resins, adhesives, sealants and elastomers.

**Toluene Disproportionation (TDP):** Incremental mixed xylenes can be produced from available toluene through disproportionation. Technologies are available that will permit co-processing C9 aromatics with toluene into mixed xylenes. The analysis presented here gives the costs for a typical TDP unit processing toluene only, valuing the feedstock at its gasoline blending value. Xylenes production from gasoline value toluene, in general,

has a lower cash cost of production than xylenes from reformat. This result is sensitive to co-product credits from benzene and other gasoline based co-products, and the position can be reversed if toluene is valued throughout at its market price.

**tomato-soy juice:** A juice containing tomato extract and soy protein with potential chemopreventive and antiproliferative activities. Tomato-soy juice contains phytochemicals, including flavonoids, such as the soy isoflavone genistein, and carotenoids, including lycopene. These phytochemicals may exhibit antioxidative activity, antitumor activity by modulating certain tumor-associated signal transduction pathways, and apoptosis-inducing activity. Check for active clinical trials using this agent.

**tombolo:** a bar of sediment that connects an island to the mainland, forming a small peninsula.

**tomography :** A series of detailed pictures of areas inside the body. The pictures are created by a computer linked to an x-ray machine. Or A type of therapy in which radiation is aimed at a tumor from many different directions. The patient lays on a table and is moved through a donut-shaped machine. The radiation source in the machine rotates around the patient in a spiral pattern. Before radiation, a 3-dimensional (3-D) image of the tumor is taken. This helps doctors find the highest dose of radiation that can be used to kill tumor cells while causing less damage to nearby tissue. Tomotherapy is a type of intensity-modulated radiation therapy (IMRT). Also called helical tomotherapy.

**Tomudex:** (Other name for: raltitrexed)

**TONER:** Pigmented lacquer sealer that is applied by spray. Toners provide color and make the surface appear more even.

**tonga :** An herb native to islands in the South Pacific. Substances taken from the root have been used in some cultures to relieve stress, anxiety, tension, sleeplessness, and problems of menopause. Tonga may increase the effect of alcohol and of certain drugs used to treat anxiety and depression. The U.S. Food and Drug Administration advises users that tonga may cause severe liver damage. The scientific name is Piper methysticum. Also called intoxicating pepper, kava kava, rauschpfeffer, and yangona.

**tongue cancer :** Cancer that begins in the tongue. When the cancer begins in the front two-thirds of the tongue, it is considered to be a type of oral

cavity cancer; when the cancer begins in the back third of the tongue, it is considered to be a type of oropharyngeal or throat cancer.

**Tonnage:** The measure by which injection molding machines are typically categorized, representing the clamping force of the injection molding machine.

**tonsil :** One of two small masses of lymphoid tissue on either side of the throat.

**Tool:** In injection molding, the term sometimes used to describe the mold.  
OR The measure by which injection molding machines are typically categorized, representing the clamping force of the injection molding machine.

**Top Blow:** A specific type of blow molding machine forms hollow articles by injecting the blowing into the parison at the top of the mold

**Top event:** The events across the top of the event tree, which graphically represent the systems needed to keep the plant in a safe state following an initiating event (i.e., a challenge to plant operation). A top event is the starting point of the fault tree, which identifies all of the pathways that lead to a system failure. For additional information, see Probabilistic Risk Assessment.

**Top load:** the amount of weight bearing on the top of a container. The term is sometimes used to indicate the maximum load the container will bear without becoming distorted.

**Topamax:** (Other name for: topiramate)

**topic:** the general idea or area of an essay; provides the subject of the essay.

**topical :** On the surface of the body.

**topical betulinic acid:** A topical formulation of a pentacyclic lupane-type triterpene derivative of betulin (isolated from the bark of *Betula alba*, the common white birch) with antiinflammatory, anti-HIV and antineoplastic activities. Betulinic acid induces apoptosis through induction of changes in mitochondrial membrane potential, production of reactive oxygen species, and opening of mitochondrial permeability transition pores, resulting in the release of mitochondrial factors involved in apoptosis, activation of caspases, and DNA fragmentation. Although originally thought to exhibit specific cytotoxicity against melanoma cells, this agent has been found to

be cytotoxic against non-melanoma tumor cell types including neuroectodermal and brain tumor cells.

**topical calcitriol:** A topical formulation containing the hormonally active form of vitamin D3, with potential protective activity against chemotherapy-induced alopecia (CIA). Upon topical application to the scalp, calcitriol may prevent keratinocyte apoptosis in anagen hair follicles. Therefore, this agent may protect against the damaging effects of certain chemotherapeutics to the hair follicles.

**topical chemotherapy :** Treatment with anticancer drugs in a lotion or cream applied to the skin.

**topical cocaine hydrochloride:** A topical formulation of the hydrochloride salt of the tropane alkaloid cocaine, with local anesthetic activity. Upon topical application of the cocaine hydrochloride solution to nasal mucous membranes, cocaine reversibly binds to and blocks the voltage-gated sodium channels in the neuronal cell membranes. By stabilizing neuronal membranes, cocaine inhibits the initiation and conduction of nerve impulses and produces a reversible loss of sensation. Check for active clinical trials using this agent.

**topical fluorouracil:** A topical formulation containing the antimetabolite 5-fluorouracil (5-FU), with antineoplastic activity. Upon topical administration, 5-FU is converted into the active metabolite 5-fluorouridylic acid monophosphate (F-UMP), which competes with uracil during RNA synthesis and inhibits RNA processing. Conversion of 5-FU into another active metabolite, 5-fluorouridylic acid-2'-deoxyuridine-5'-O-monophosphate (F-dUMP), inhibits thymidylate synthase; this results in the depletion of thymidine triphosphate (TTP), one of the four nucleotide triphosphates used in DNA synthesis, and thus inhibits DNA synthesis. Altogether, this prevents the proliferation of tumor cells locally.

**topical gemcitabine hydrochloride:** A topical preparation of gemcitabine hydrochloride with antineoplastic activity. Gemcitabine, an analogue of the antimetabolite nucleoside deoxycytidine, is converted intracellularly to the active metabolites difluorodeoxycytidine di- and triphosphate (dFdCDP, dFdCTP). dFdCDP inhibits ribonucleotide reductase, thereby decreasing the deoxynucleotide pool available for DNA synthesis; dFdCTP is incorporated into DNA, resulting in DNA strand termination and apoptosis.

**topical keratin:** A topical formulation containing the naturally-derived biomaterial keratin that has wound repair-promoting, hemostatic, moisturizing and potential radioprotective activities. Upon topical application to an injured site, keratin adheres to the injured tissue, and forms an extracellular matrix that mimics the structure and function of the native tissue. This exogenous extracellular matrix is able to absorb fluid, accelerate thrombus formation through beta1 integrin-mediated platelet adhesion and forms a physical seal on the wound. This facilitates tissue regeneration by promoting cellular proliferation and migration, reducing pro-inflammatory cytokine and chemokine expression and altering the expression of extracellular matrix components and adhesion molecules. Altogether, this promotes wound healing and provides protection from damage due to thermal or radiation exposure. Keratin is an essential component in nails, hair and skin. Check for active clinical trials using this agent.

**topical menthol:** A topical cream containing menthol that both causes a localized cooling sensation and has analgesic activities. Upon topical application, menthol acts on the cold-sensitive transient receptor potential cation channel subfamily M member 8 (TRPM8), which provides a cooling sensation. This treatment also provides an analgesic effect through the activation of the inhibitory group II/III metabotropic glutamate receptors (mGluRs). This may decrease neuropathic pain from chemotherapy. In addition, the topical application of menthol causes vasodilation.

**topical myristyl nicotinate cream:** A topical cream containing the ester prodrug myristyl nicotinate (MN), a lipophilic nicotinic acid derivative with potential chemopreventive activity. Upon topical application, myristyl nicotinate penetrates into the epidermis where the agent is cleaved and is converted into nicotinic acid (niacin); nicotinic acid then diffuses into cells where it is converted to nicotinamide adenine dinucleotide (NAD). NAD may stimulate poly(ADP-ribose) polymerase-1 (PARP-1); enhance skin cell turnover and epidermal differentiation; and strengthen skin barrier function. NAD is a coenzyme that plays a crucial role in many redox reactions; PARP-1 is an enzyme that plays an important role in DNA repair.

**topical phenylephrine solution:** A topical solution containing phenylephrine, a sympathomimetic amine with vasoconstricting activity. Upon topical application to the oral mucosa, phenylephrine may activate

alpha-adrenergic receptors in the mucosa thereby causing vasoconstriction. As a result, this agent may reduce swelling of the mucosal membranes and decrease radiotherapy-induced mucositis.

**topical piperidine nitroxide MTS-01:** A topical gel containing a cell permeable hydrophilic piperidine nitroxide with potential radioprotective and antioxidant activity. As a stable, free radical compound, MTS-01 may be able to protect cells against the damaging effects of reactive oxygen species (ROS), upon exposure to ionizing radiation and oxidative stress. The topically applied MTS-01 may protect normal tissue from radiation-induced toxicity, such as radiation dermatitis, during radiation therapy.

**topical sirolimus:** A topical formulation containing the macrolide sirolimus (rapamycin), which is produced by the organism *Streptomyces hygroscopicus*, with potential anti-proliferative activity. Upon application of topical sirolimus, this agent migrates into the skin and is internalized by the affected cells. In turn, sirolimus binds to the immunophilin FK binding protein-12 (FKBP-12) and forms a sirolimus:FKBP-12 complex. This complex binds to and inhibits the activity of the serine/threonine kinase mammalian target of rapamycin (mTOR). It also decreases the production of vascular endothelial growth factor (VEGF) and results in the suppression of cellular proliferation.

**topical vitamin E:** A topical preparation of the fat-soluble vitamin E with potential antioxidant and cytoprotective activities. As a potent antioxidant and radical scavenger, vitamin E ameliorates free-radical damage to cell membranes, thereby protecting cells from reactive oxygen species and maintaining the integrity of cellular macromolecules. In addition, vitamin E noncompetitively inhibits cyclooxygenase (COX) activity in many tissues, which may decrease inflammation. Vitamin E is a generic name for a group of compounds known as tocopherols and tocotrienols (tocols).

**topical wound spray HP802-247:** A cell-based combination product consisting of a fibrinogen solution and a cell preparation containing allogeneic non-proliferating, living human skin-derived keratinocytes and fibroblasts, suspended in thrombin, with potential topical wound healing enhancing and topical anti-ulcer activity. Upon sequential spray of the two components of HP802-247 topically, a thin fibrin matrix is formed on the wound surface and the cellular components are capable of secreting wound healing cytokines and growth factors, such as vascular endothelial growth

factor (VEGF), basic fibroblast growth factor (bFGF), granulocyte-macrophage colony-stimulating growth factor (GM-CSF) and keratinocyte growth factor. Cell concentration and keratinocyte-to-fibroblast ratio in HP802-247 are essential for optimal growth factor production and thus the efficacy of this agent.

**topiramate:** A sulfamate-substituted monosaccharide with anticonvulsant activity. Although the mechanism of action has not been fully elucidated, topiramate appears to antagonize kainate/AMPA subtype glutamate receptors, which results in stabilization of hyper-excited neural membranes, inhibition of repetitive neuronal firing, and a decrease in propagation of synaptic impulses, thus impeding seizure activity. In addition, this agent enhances chloride channels activated by the inhibitory neurotransmitter GABA. Kainate/AMPA subtype glutamate receptors are ligand-activated cation channels that mediate the fast component of excitatory postsynaptic currents in neurons of the central nervous system.

**Topochemical:** The term used to describe the control of solid-state reactions by selective crystal packing. A reaction is topochemical if the structure of the products can be explained by the crystal packing of the reactant crystal.

**Topochemical postulate:** This postulate states that, because a solid-state reaction may occur within the solid or at the surface of the solid, the outcome of the reaction is for the most part determined by the spatial relationships of the reactants.

**topographic map:** map that shows elevations above sea level.

**Topoisomerase:** An enzyme that changes the extent of supercoiling of a DNA duplex.

**topoisomerase I inhibitor Genz-644282:** A non-camptothecin inhibitor of topoisomerase I with potential antineoplastic activity. Topoisomerase I inhibitor Genz-644282 binds to and inhibits the enzyme topoisomerase I, which may result in the inhibition of repair of single-strand DNA breaks, DNA replication, and tumor cell growth in susceptible tumor cell populations. Check for active clinical trials using this agent.

**topoisomerase I inhibitor LMP400:** An indenoisoquinoline and non-camptothecin inhibitor of topoisomerase I (Top I) with potential antineoplastic activity. Topoisomerase I inhibitor LMP400 binds to the topoisomerase I-DNA covalent cleavage complexes, and inhibits repair of

single-strand DNA breaks, DNA replication, and tumor cell growth in susceptible tumor cell populations. Compared to camptothecins, indenoisoquinolines are chemically stable, produce stable Top I-DNA cleavage complexes, induce unique DNA cleavage sites and appear more resistant to multidrug efflux pumps.

**topoisomerase I inhibitor LMP776:** An indenoisoquinoline and non-camptothecin inhibitor of topoisomerase I (Top I) with potential antineoplastic activity. Topoisomerase I inhibitor LMP776 binds to the topoisomerase I-DNA covalent cleavage complexes, and inhibits repair of single-strand DNA breaks, DNA replication, and tumor cell growth in susceptible tumor cell populations. Compared to camptothecins, indenoisoquinolines are chemically stable, produce stable Top I-DNA cleavage complexes, induce unique DNA cleavage sites and appear more resistant to multidrug efflux pumps.

**topoisomerase I/II inhibitor NEV-801:** A multi-targeted agent with potential antineoplastic activity. Upon administration, NEV-801 appears to selectively inhibit topoisomerase (Topo) I and II, and activates hypoxia-inducible factor 1 (HIF-1) transcription and the expression of vascular endothelial growth factor (VEGF) mRNA. NEV-801 is also able to overcome multidrug resistance (MDR) 1-mediated resistance. Check for active clinical trials using this agent.

**Topoisomerase II (DNA gyrase):** A topoisomerase that catalyzes the ATP-driven introduction of negative supercoils into DNA.

**topoisomerase II inhibitor :** A substance that blocks the activity of the enzyme topoisomerase II, which cuts and repairs tangled strands of DNA. Topoisomerase II is involved in cell division and growth, so blocking activity of this enzyme may kill cancer cells. Some topoisomerase II inhibitors are being used to treat cancer.

**topoisomerase II inhibitor RTA 744 :** A substance being studied in the treatment of adult brain tumors. Topoisomerase II inhibitor RTA 744 crosses the blood-brain barrier and blocks an enzyme needed for cancer growth. It is a type of topoisomerase inhibitor. Also called RTA 744.

**topoisomerase inhibitor :** A substance that blocks topoisomerases (enzymes that break and rejoin DNA strands and are needed for cells to divide and grow). Blocking these enzymes may kill cancer cells. Certain topoisomerase inhibitors are being studied in the treatment of cancer.

**Topoisomerases:** Enzymes that catalyze the interconversion of topoisomers of DNA; can relax supercoiled DNA. Or Enzymes that introduce positive or negative supercoils in closed, circular duplex DNA.

**Topoisomers:** Molecules of DNA that differ from one another only in their linking number. Or Different forms of a covalently closed, circular DNA molecule that differ only in their linking number.

**Topotactic:** See Topotaxy

**Topotactic reaction:** A reaction exhibiting topotaxy.

**Topotaxy:** A term used to describe a solid-state reaction whose products have a preferred orientation relative to a crystallographic direction of the parent crystal.

**topotecan :** A drug used to treat certain types of ovarian cancer, lung cancer, and cervical cancer. Topotecan is a type of topoisomerase inhibitor. Also called Hycamtin and topotecan hydrochloride.

**topotecan hydrochloride:** The hydrochloride salt of a semisynthetic derivative of camptothecin with antineoplastic activity. During the S phase of the cell cycle, topotecan selectively stabilizes topoisomerase I-DNA covalent complexes, inhibiting religation of topoisomerase I-mediated single-strand DNA breaks and producing potentially lethal double-strand DNA breaks when complexes are encountered by the DNA replication machinery. Camptothecin is a cytotoxic quinoline-based alkaloid extracted from the Asian tree *Camptotheca acuminata*.

**topotecan hydrochloride :** A drug used to treat certain types of ovarian cancer, lung cancer, and cervical cancer. Topotecan hydrochloride is a type of topoisomerase inhibitor. Also called Hycamtin and topotecan.

**toposalysin:** A targeted prodrug consisting of a recombinant modified form of the *Aeromonas* protoxin proaerolysin (PA), bearing a prostate-specific protease cleavage site, with potential antineoplastic activity. When injected directly into the prostate, topsalysin is hydrolyzed to the active toxin aerolysin by the serine protease prostate specific antigen (PSA), a protein overexpressed by prostate cancers and prostate cells in hyperplastic prostatic tissue. Aerolysin molecules then oligomerize to form ring-like heptamers that are incorporated into the lipid bilayers of cell membranes, forming large membrane channels and resulting in the leakage of cellular

contents and lysis of PSA-expressing prostate cells. Check for active clinical trials using this agent.

**topset bed:** a nearly horizontal layer of sediment deposited by distributaries as they flow toward a delta front.

**topsoil:** the upper part of a section of loam; topsoil has the highest organic content of types of soil and is considered to be the most fertile.

**Toradol:** (Other name for: ketorolac tromethamine)

**TORC1/2 kinase inhibitor DS-3078a:** An orally bioavailable inhibitor of raptor-mTOR protein complex (TORC1) and rictor-mTOR protein complex (TORC2) with potential antineoplastic activity. TORC1/2 inhibitor DS-3078a binds to and inhibits both TORC1 and TORC2, which may result in tumor cell apoptosis and a decrease in tumor cell proliferation. TORC1 and 2 are upregulated in some tumors and play an important role in the PI3K/Akt/mTOR signaling pathway, which is frequently dysregulated in human cancers.

**toremifene:** An anticancer drug that belongs to the family of drugs called antiestrogens. Toremifene blocks the effect of the hormone estrogen in the body. It may help control some cancers from growing, and it may delay or reduce the risk of cancer recurrence. OR A nonsteroidal triphenylethylene antiestrogen. Chemically related to tamoxifen, toremifene is a selective estrogen receptor modulator (SERM). This agent binds competitively to estrogen receptors, thereby interfering with estrogen activity. Toremifene also has intrinsic estrogenic properties, which are manifested according to tissue type or species. Check for active clinical trials using this agent.

**Torisel :** A drug used to treat advanced renal cell carcinoma (a type of kidney cancer). It is also being studied in the treatment of other types of cancer. Torisel blocks a protein involved in cell division, and may kill cancer cells. It is a type of rapamycin analog and a type of serine/threonine kinase inhibitor. Also called CCI-779 and temsirolimus.

**TORKi:** (Other name for: mTOR kinase inhibitor CC-223)

**tornado:** narrow, funnel-shaped column of wind created by a thunderstorm. Or An apparatus at the discharge stage of the screw to finish homogenizing and blending the melt.

**Torque:** twisting force used to either attach or remove the closure. OR Stress caused by twisting a material.

**Torr:** Torr is a measurement of pressure. One millimeter of mercury on a barometer is equal to one torr. Standard pressure is equal to 760 torr. Or A unit of pressure equal to 1 mmHg or 1/760 of an atmosphere. Or A unit of pressure, defined so that 760 Torr is exactly 1 atmosphere. A Torr is equivalent to 1 mm Hg on barometer readings taken at 0°C; at other temperatures, the conversion from mm Hg to Torr is approximately  $p(\text{Torr}) = p(\text{mm Hg}) \times (1 - 1.8 \times 10^{-4}t)$ , where t is in °C.

**TORS:** Surgery in which a robot with arms is used to remove cancer from hard-to-reach areas of the mouth and throat. Cameras attached to the robot give a 3-dimensional (3D) image that a surgeon can see. The surgeon guides tools at the ends of the robot arms to remove the cancer. Also called transoral robotic surgery.

**torsional strain:** strain caused by repulsion between groups in an eclipsed conformation.

**tosedostat:** A proprietary orally bioavailable inhibitor of the M1 family of aminopeptidases with potential antineoplastic activity. Tosedostat is converted intracellularly into a poorly membrane-permeable active metabolite (CHR-79888) which inhibits the M1 family of aminopeptidases, particularly puromycin-sensitive aminopeptidase (PuSA), and leukotriene A4 (LTA4) hydrolase; inhibition of these aminopeptidases in tumor cells may result in amino acid deprivation, inhibition of protein synthesis due to a decrease in the intracellular free amino acid pool, an increase in the level of the proapoptotic protein Noxa, and cell death. Noxa is a member of the BH3 (Bcl-2 homology 3)-only subgroup of the proapoptotic Bcl-2 (B-cell CLL/lymphoma 2) protein family.

**tositumomab:** A murine IgG2 monoclonal antibody directed against the CD20 antigen, found on the surface of B-cells. Tositumomab binds to the CD20 surface membrane antigen, resulting in apoptosis, and may stimulate antitumoral cell-mediated and/or antibody-dependent cytotoxicity. OR A drug used together with another drug to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of cancer. Tositumomab binds to a protein called CD20, which is found on the surface of B cells, and may kill cancer cells. It is a type of monoclonal antibody.

**tositumomab and iodine I 131 tositumomab:** A murine IgG2a lambda monoclonal antibody, both unradiolabeled and radiolabeled with iodine I

131, directed against the human B cell-specific surface antigen CD20. Tositumomab binds to CD20, resulting in complement-dependent cytotoxicity (CDC), antibody-dependent cellular cytotoxicity (ADCC), and apoptosis in B cells expressing CD20; in addition to the antibody-mediated cytotoxicity, iodine I 131 tositumomab delivers cytotoxic ionizing radiation specifically to CD20-expressing B cells. In a two-step therapeutic regimen, a predose of unradiolabeled tositumomab is administered first followed by the administration of a dosimetric dose of iodine I 131 tositumomab; 7-14 days later, a therapeutic dose of iodine I 131 tositumomab is administered. The predose of unradiolabeled tositumomab binds to nontumor B cells, increasing the terminal half-life of radiolabeled antibody while protecting nontumor B cells from radiolabeled antibody-mediated radiocytotoxicity. or A combination of drugs used to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of cancer. Tositumomab and iodine I 131 tositumomab is made up of a monoclonal antibody called tositumomab and a form of tositumomab that is linked to a radioactive substance called iodine I 131. It is a type of radioimmunoconjugate. Also called Bexxar and Bexxar regimen.

**tosyl group:** a p-toluenesulfonate group:

**total androgen blockade :** Treatment used to block androgen (male hormone) activity in the body. This may be done by giving an antiandrogen drug and removing the testicles (orchiectomy) or by giving an antiandrogen drug with a gonadotropin-releasing hormone (GnRH) agonist. Total androgen blockade may stop the growth of cancer cells that need androgens to grow, and is used in the treatment of prostate cancer. Also called combined androgen blockade and complete androgen blockade.

**total diet studies:** Studies undertaken to show the range and amount of various foodstuffs in the typical diet or to estimate the total amount of a specific substance (e.g., pesticide residue, vitamin, or food contaminant) in a typical diet (WHO, 1979).

**total diet study:** A total diet study is a study designed to establish the pattern of pesticide residue intake by a person consuming a defined diet (WHO, 1979).

**Total Effective Dose Equivalent (TEDE):** The sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

**total estrogen blockade :** Therapy used to eliminate estrogen in the body. This may be done with surgery, radiation therapy, chemotherapy, or a combination of these procedures.

**total hysterectomy :** Surgery to remove the entire uterus, including the cervix. Also called complete hysterectomy.

**total laryngectomy :** An operation to remove all of the larynx (voice box).

**total mastectomy :** Surgery to remove the whole breast. Some of the lymph nodes under the arm may also be removed. Also called simple mastectomy.

**total nodal irradiation :** Radiation therapy to the mantle field, the spleen, the lymph nodes in the upper abdomen, and the lymph nodes in the pelvic area.

**total pancreatectomy :** Surgery to remove the entire pancreas. Part of the stomach, part of the small intestine, the common bile duct, gallbladder, spleen, and nearby lymph nodes are also removed.

**total parenteral nutrition :** A form of nutrition that is delivered into a vein. Total parenteral nutrition does not use the digestive system. It may be given to people who are unable to absorb nutrients through the intestinal tract because of vomiting that won't stop, severe diarrhea, or intestinal disease. It may also be given to those undergoing high-dose chemotherapy or radiation and bone marrow transplantation. It is possible to give all of the protein, calories, vitamins and minerals a person needs using total parenteral nutrition. Also called hyperalimentation, parenteral nutrition, and TPN.

**total PSA :** The total amount of prostate-specific antigen (PSA) in the blood. It includes the amount of free PSA and the amount of PSA attached to other proteins.

**total skin electron beam radiation therapy :** A type of radiation therapy using electrons that is directed at the entire surface of the body. This type of radiation goes into the outer layers of the skin, but does not go deeper into tissues and organs below the skin. Also called TSEB radiation therapy.

**total tumor RNA-loaded dendritic cell vaccine:** A cancer vaccine containing autologous dendritic cells (DCs) that are loaded with total tumor RNA (TTRNA) from a specific tumor, with potential immunostimulatory and antineoplastic activities. Upon administration, TTRNA-loaded DC

vaccine may elicit a highly specific cytotoxic T-cell (CTL) response against the tumor-associated antigens (TAAs) encoded by the TTRNA.

**total-body irradiation** : Radiation therapy to the entire body. It is usually followed by bone marrow or peripheral stem cell transplantation.

**Totect** : (Other name for: dexrazoxane hydrochloride) OR A drug used to treat the toxic effects of an anticancer drug that leaks from a vein into surrounding tissue and causes tissue damage. It is also being studied in the treatment of cancer. Totect contains the active ingredient dexrazoxane. It is a type of chemoprotective agent, a type of cardioprotective agent, and a type of topoisomerase inhibitor.

**totipotent** : Having to do with cells that are able to develop into any type of cell found in the body.

**TOUCH UP**: The ability of a coating film to be spot repaired (usually within a few months of initial painting) without showing color or gloss differences.

**Toughener**: a substance added to a polymer that allows for the absorption of energy in the final parts. Typically they alter other performance properties as well.

**tourniquet** : A device, such as a strip of cloth or a band of rubber, that is wrapped tightly around a leg or an arm to prevent the flow of blood to the leg or the arm for a period of time. A tourniquet may be used when drawing blood or to stop bleeding after an injury.

**Toviaz**: (Other name for: fesoterodine fumarate)

**toxemia** : Disease caused by the spread of bacteria and their toxins in the bloodstream. Also called blood poisoning and septicemia.

**toxic** : Having to do with poison or something harmful to the body. Toxic substances usually cause unwanted side effects.

**toxicant** : A poison that is made by humans or that is put into the environment by human activities. Many pesticides are toxicants.

**toxicity**: The degree to which a substance is poisonous. OR The extent to which something is poisonous or harmful.

**toxicokinetics**: A term with the same meaning as chemobiokinetics for substances not used as drugs (WHO, 1979).

**Toxicology:** The study of the harmful effects of chemicals on living organisms or The study of poisons, including identification, isolation, biological effects, mechanism of action, and development of antidotes. OR The study of poisons, including the source, effect, and treatment of poisoning. It is a branch of pharmacology (the study of drugs).

**toxicometry:** A combination of investigation methods and techniques for making a quantitative assessment of toxicity and hazards of poisons (UNEP/IRPTC, 1982).

**Toxin:** A poisonous substance or Proteins produced by some organisms and toxic to certain other species.

**toxin :** A poison made by certain bacteria, plants, or animals, including insects.

**tozasertib lactate:** The lactate salt of tozasertib, a synthetic, small-molecule Aurora kinase inhibitor with potential antitumor activity. Tozasertib binds to and inhibits Aurora kinases (AKs), thereby inducing apoptosis in tumor cells in which AKs are overexpressed. AKs, a family of serine-threonine kinases, are essential for mitotic progression, spindle formation, centrosome maturation, chromosomal segregation, and cytokinesis.

**TP-38 immunotoxin :** A substance being studied in the treatment of brain tumors. It combines a protein that binds to certain tumor cells with a bacterial toxin that kills tumor cells.

**TPA:** A substance being studied in the treatment of leukemias and lymphomas. It is also being studied in the treatment of other types of cancer. TPA affects many cell actions and may cause tumor cells to die. It is a type of phorbol ester. Also called 12-O-tetradecanoylphorbol-13-acetate and tetradecanoylphorbol acetate.

**tPA:** An enzyme made in the body that helps dissolve blood clots. A form of this enzyme is made in the laboratory to treat heart attacks, strokes, and clots in the lungs. It is also being studied in the treatment of cancer. tPA is a type of systemic thrombolytic agent. Also called tissue plasminogen activator.

**TPF:** An abbreviation for a chemotherapy combination used to treat certain types of head and neck cancer and stomach cancer. It includes the drugs docetaxel (Taxotere), cisplatin (Platinol), and fluorouracil. Also called DCF,

docetaxel-cisplatin-fluorouracil, Taxotere-Platinol-fluorouracil, and TPF regimen.

**TPF regimen:** A regimen consisting of docetaxel, cisplatin and fluorouracil used for the treatment of squamous cell head and neck cancer and gastric cancer. OR An abbreviation for a chemotherapy combination used to treat certain types of head and neck cancer and stomach cancer. It includes the drugs docetaxel (Taxotere), cisplatin (Platinol), and fluorouracil. Also called DCF, docetaxel-cisplatin-fluorouracil, Taxotere-Platinol-fluorouracil, and TPF.

**TPI 287:** A synthetic, third generation taxane with potential antineoplastic activity. TPI 287 binds to tubulin and stabilizes microtubules, resulting in inhibition of microtubule assembly/disassembly dynamics, cell cycle arrest at the G2/M phase, and apoptosis.

**TPN:** A form of nutrition that is delivered into a vein. TPN does not use the digestive system. It may be given to people who are unable to absorb nutrients through the intestinal tract because of vomiting that won't stop, severe diarrhea, or intestinal disease. It may also be given to those undergoing high-dose chemotherapy or radiation and bone marrow transplantation. It is possible to give all of the protein, calories, vitamins and minerals a person needs using TPN. Also called hyperalimentation, parenteral nutrition, and total parenteral nutrition.

**TPO:** A substance made by the body that helps make blood cells, especially platelets. A form of TPO made in the laboratory is called recombinant human TPO and rHu TPO. TPO is being studied as a way to increase the number of platelets in cancer patients receiving chemotherapy. Also called thrombopoietin.

**TPO receptor agonist ONO-7746:** An orally available small molecule and platelet thrombopoietin (TPO) receptor (TPOR; MPL) agonist with potential megakaryopoiesis stimulating activity. Upon administration, TPOR agonist ONO-7746 binds to and stimulates TPOR, which may lead to the proliferation and differentiation of megakaryocytes. In turn, this may increase the production of blood platelets and may prevent chemotherapy induced thrombocytopenia (CIT). TPOR is a cytokine receptor and member of the hematopoietin receptor superfamily. Check for active clinical trials using this agent.

**trabectedin :** A drug used to treat liposarcoma and leiomyosarcoma (types of soft tissue sarcoma) that cannot be removed by surgery or have spread to other parts of the body. It is used in patients who were treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Trabectedin may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called ecteinascidin 743, ET-743, and Yondelis. OR A tetrahydroisoquinoline alkaloid isolated from the marine tunicate Ecteinascidia turbinata with potential antineoplastic activity. Binding to the minor groove of DNA, trabectedin interferes with the transcription-coupled nucleotide excision repair machinery to induce lethal DNA strand breaks and blocks the cell cycle in the G2 phase.

**trabecular cancer :** A rare type of cancer that forms on or just beneath the skin, usually in parts of the body that have been exposed to the sun. It is most common in older people and in people with weakened immune systems. Also called Merkel cell cancer, Merkel cell carcinoma, and neuroendocrine carcinoma of the skin.

**trabedersen:** A transforming growth factor (TGF)-beta2 specific phosphorothioate antisense oligodeoxynucleotide with the sequence 5'-CGGCATGTCTATTTTGTA-3', with potential antineoplastic activity. Trabedersen binds to TGF-beta2 mRNA causing inhibition of protein translation, thereby decreasing TGF-beta2 protein levels; decreasing intratumoral TGF-beta2 levels may result in the inhibition of tumor cell growth and migration, and tumor angiogenesis. TGF-beta2, a cytokine often over-expressed in various malignancies, may play an important role in promoting the growth, progression, and migration of tumor cells.

**Trace Element:** This is an element of the periodic table that living organisms need to survive. These are not the major ones we need to survive (like oxygen); these elements are only needed in very small amounts. OR A chemical element required by an organism in only trace amounts. OR An element found in very small amounts in a given substance. Organisms need certain trace elements to survive.

**trace fossil:** evidence that life existed in the past, such as footprints and burrows.

**trace gas:** A minor constituent of the atmosphere. The most important trace gases contributing to the greenhouse effect are water vapor, carbon

dioxide, ozone, methane, ammonia, nitric acid, nitrous oxide, ethylene, sulfur dioxide, nitric oxide, dichlorofluoromethane or Freon 12, trichlorofluoromethane or Freon 11, methyl chloride, carbon monoxide, and carbon tetrachloride.

**tracer:** (1) a foreign substance mixed with or attached to a given substance for the determination of the location or distribution of the substance. (2) an element or compound that has been made radioactive so that it can be easily followed (traced) in biological and industrial processes. Radiation emitted by the radioisotope pinpoints its location.

**tracer :** A substance (such as a radioisotope) used in imaging procedures.

**trach tube :** A 2-inch- to 3-inch-long curved metal or plastic tube placed in a surgically created opening (tracheostomy) in the windpipe to keep it open. Also called tracheostomy tube.

**trachea:** the windpipe of mammals. OR The airway that leads from the larynx (voice box) to the bronchi (large airways that lead to the lungs). Also called windpipe. OR the branching network that extends from holes to all parts of an arthropod body to assist in gas exchange.

**tracheal carina :** A ridge at the base of the trachea (windpipe) that separates the openings of the right and left main bronchi (the large air passages that lead from the trachea to the lungs). Also called carina of trachea.

**tracheids:** the main conducting vessels of the xylem in most vascular plants.

**trachelectomy :** Surgery to remove the cervix (the end of the uterus that forms a canal between the uterus and the vagina). The upper part of the vagina and certain pelvic lymph nodes may also be removed. Also called cervicectomy.

**tracheoesophageal puncture :** A small opening made by a surgeon between the esophagus and the trachea. A valve keeps food out of the trachea but lets air into the esophagus for esophageal speech.

**tracheophytes:** vascular plants composed of a xylem and phloem.

**tracheostomy :** Surgery to create an opening (stoma) into the windpipe. The opening itself may also be called a tracheostomy.

**tracheostomy button :** A 0.5-inch- to 1.5-inch-long plastic tube placed in a surgically created opening (tracheostomy) in the windpipe to keep it open.

**tracheostomy tube :** A 2-inch- to 3-inch-long curved metal or plastic tube placed in a surgically created opening (tracheostomy) in the windpipe to keep it open. Also called trach tube.

**Tracking:** A phenomenon wherein a high voltage source current creates a leakage or fault path across the surface of an insulating material by slowly but steadily forming a carbonized path.

**trade winds:** planetary winds between 0° and 30° latitude.

**tradition :** A belief or behavior that is passed from generation to generation in a family, a culture, or a religion.

**traditional acupuncture :** An ancient form of acupuncture based on the principle that there are five universal elements (wood, fire, earth, metal, and water) that affect a person's emotions, personality, health, and response to treatment. Each person is affected by one element more than the others. Also called five element acupuncture.

**Traditional Chinese Medicine :** A medical system that has been used for thousands of years to prevent, diagnose, and treat disease. It is based on the belief that qi (the body's vital energy) flows along meridians (channels) in the body and keeps a person's spiritual, emotional, mental, and physical health in balance. Traditional Chinese medicine aims to restore the body's balance and harmony between the natural opposing forces of yin and yang, which can block qi and cause disease. Traditional Chinese medicine includes acupuncture, diet, herbal therapy, meditation, physical exercise, and massage. Also called Oriental medicine and TCM.

**TRAIL :** A cell protein that can attach to certain molecules in some cancer cells and may kill the cells. TRAIL is being studied in the treatment of cancer. Also called Apo-2L, TNF-related apoptosis-inducing ligand, and tumor necrosis factor-related apoptosis-inducing ligand.

**TRAIL receptor 1 :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of TRAIL receptor 1 on cancer cells may kill more cells. Also called death receptor 4, DR4, TRAIL-R1, and tumor necrosis factor receptor superfamily member 10A.

**TRAIL receptor 2 :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of TRAIL receptor 2 on cancer cells may

kill more cells. Also called death receptor 5, DR5, TRAIL-R2, and tumor necrosis factor receptor superfamily member 10B.

**TRAIL-R1 :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of TRAIL-R1 on cancer cells may kill more cells. Also called death receptor 4, DR4, TRAIL receptor 1, and tumor necrosis factor receptor superfamily member 10A.

**TRAIL-R2 :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of TRAIL-R2 on cancer cells may kill more cells. Also called death receptor 5, DR5, TRAIL receptor 2, and tumor necrosis factor receptor superfamily member 10B.

**TRAM flap :** A type of surgery used to rebuild the shape of the breast after a mastectomy. A muscle in the lower abdomen called the rectus abdominis, along with skin, fat, and blood vessels, is moved from the lower abdomen to the chest. This is usually done by passing the muscle tissue and blood vessels through a tunnel under the skin to the chest. A TRAM flap forms a natural-looking breast, so the patient usually does not need a breast implant. It is a type of breast reconstruction. Also called transverse rectus abdominis myocutaneous flap.

**tramadol hydrochloride :** A drug used to treat moderate to severe pain in adults. It binds to opioid receptors in the central nervous system. Tramadol hydrochloride is a type of analgesic agent and a type of opioid. Also called Ultram.

**trametinib:** An orally bioavailable inhibitor of mitogen-activated protein kinase kinase (MEK MAPK/ERK kinase) with potential antineoplastic activity. Trametinib specifically binds to and inhibits MEK 1 and 2, resulting in an inhibition of growth factor-mediated cell signaling and cellular proliferation in various cancers. MEK 1 and 2, dual specificity threonine/tyrosine kinases often upregulated in various cancer cell types, play a key role in the activation of the RAS/RAF/MEK/ERK signaling pathway that regulates cell growth. or

**tranexamic acid:** A synthetic derivative of the amino acid lysine with antifibrinolytic activity. With strong affinity for the five lysine-binding sites of plasminogen, tranexamic acid competitively inhibits the activation of plasminogen to plasmin, resulting in inhibition of fibrinolysis; at higher

concentrations, this agent noncompetitively inhibits plasmin. This agent has a longer half-life, is approximately ten times more potent, and is less toxic than aminocaproic acid, which possesses similar mechanisms of action.

**tranquilizer** : A drug that calms and soothes, and reduces stress and tension. Tranquilizers are used to treat anxiety and insomnia.

**trans fat** : A type of fat that has certain chemical properties and is usually found in processed foods such as baked goods, snack foods, fried foods, shortening, margarine, and certain vegetable oils. Eating trans fat increases blood cholesterol levels and the risk of heart disease.

**trans isomer**: trans a stereoisomer in which substituents are located on opposite sides of a double bond. (Compare with "cis isomer.")

**trans sodium crocetin**: The sodium salt of the trans-isomer of the carotenoid crocetin with potential antihypoxic and radiosensitizing activities. Trans sodium crocetin (TSC) increases the diffusion rate of oxygen in aqueous solutions such as from plasma to body tissue. The agent has been shown to increase available oxygen during hypoxic and ischemic conditions that may occur in hemorrhage, vascular and neurological disorders, and in the tumor microenvironment.

**transabdominal ultrasound** : A procedure used to examine the organs in the abdomen. An ultrasound transducer (probe) is pressed firmly against the skin of the abdomen. High-energy sound waves from the transducer bounce off tissues and create echoes. The echoes are sent to a computer, which makes a picture called a sonogram. Also called abdominal ultrasound.

**Transaldolase**: An enzyme that transfers a three-carbon dihydroxyacetone unit from a ketose to an aldose acceptor; one of the enzymes in the nonoxidative part of the pentose phosphate pathway.

**transaminase** : A type of enzyme that causes the transfer of a chemical substance called an amino group from one molecule to another. Transaminases are involved in many processes in the body, such as making amino acids. OR See aminotransferases.

**Transamination**: Enzymatic transfer of an amino group from an  $\alpha$ -amino acid to an  $\alpha$ -keto acid. Or The transfer of an  $\alpha$ -amino group from an amino acid to an  $\alpha$ -ketoacid.

**transarterial chemoembolization** : A procedure in which the blood supply to a tumor is blocked after anticancer drugs are given in blood

vessels near the tumor. Sometimes, the anticancer drugs are attached to small beads that are injected into an artery that feeds the tumor. The beads block blood flow to the tumor as they release the drug. This allows a higher amount of drug to reach the tumor for a longer period of time, which may kill more cancer cells. It also causes fewer side effects because very little of the drug reaches other parts of the body. Transarterial chemoembolization is used to treat liver cancer. Also called chemoembolization and TACE.

**transarterial embolization :** A procedure in which the blood supply to a tumor or an abnormal area of tissue is blocked. During transarterial embolization, a small incision (cut) is made in the inner thigh and a catheter (thin, flexible tube) is inserted and guided into an artery near the tumor or abnormal tissue. Once the catheter is in place, small particles made of tiny gelatin sponges or beads are injected. This blocks the artery and stops the flow of blood to the tumor or abnormal area of tissue. Transarterial embolization is used to treat some types of liver cancer, kidney cancer, and neuroendocrine tumors. It may also be used to treat uterine fibroids, aneurysms, and other conditions. Also called arterial embolization and TAE.

**Transcendental Meditation :** A mental technique used to promote relaxation, reduce stress, and improve quality of life. Transcendental Meditation is the registered trademark of the Maharishi Foundation Ltd. Also called TM.

**transcription:** the process in which a complementary strand of mRNA is synthesized according to the nitrogenous base code of DNA.

**Transcription:** RNA synthesis that occurs on a DNA template. Or DNA-directed synthesis of RNA catalyzed by RNA polymerase. Or The enzymatic process whereby the genetic information contained in one strand of DNA is used to specify a complementary sequence of bases in an mRNA chain.

**transcription :** In biology, the process by which a cell makes an RNA copy of a piece of DNA. This RNA copy, called messenger RNA (mRNA), carries the genetic information needed to make proteins in a cell. It carries the information from the DNA in the nucleus of the cell to the cytoplasm, where proteins are made.

**Transcription bubble:** The site of RNA synthesis or transcription; it contains RNA polymerase, a locally melted “bubble” of DNA, and helix

consisting of the template strand and the newly synthesized RNA.

**Transcription factor:** A protein that assists RNA polymerase in the initiation of RNA synthesis; binds to a specific promoter element.

**transcriptional control:** The regulation of a protein's synthesis by regulation of the formation of its mRNA.

**transcriptomics :** The study of all RNA molecules in a cell. RNA is copied from pieces of DNA and contains information to make proteins and perform other important functions in the cell. Transcriptomics is used to learn more about how genes are turned on in different types of cells and how this may help cause certain diseases, such as cancer.

**transcutaneous electrical nerve stimulation :** A procedure in which mild electric currents are applied to some areas of the skin. Also called TENS.

**transdermal :** Absorbed through the unbroken skin.

**transdermal 17beta-estradiol gel BHR-200:** A proprietary, transdermal, hydroalcoholic gel formulation containing 17beta-estradiol, with potential antineoplastic activity. Upon topical administration, 17beta-estradiol exerts its antineoplastic effect(s) through as of yet not fully elucidated mechanism(s) of action(s). This formulation may induce feedback inhibition via the hypothalamic–pituitary–gonadal axis feedback loop, block the secretion of luteinizing hormone (LH) and prevent the release of testosterone from Leydig cells in the testes, thus suppressing testosterone secretion. In addition, 17beta-estradiol inhibits enzymes involved in steroidogenesis, thereby further inhibiting androgen production. Since testosterone is required to sustain prostate tumor growth, reducing testosterone levels may inhibit hormone-dependent prostate cancer cell proliferation. In addition, 17beta-estradiol prevents bone loss, and suppresses andropause symptoms, such as hot flashes, which appear during androgen-deprivation therapy (ADT) where the standard of care is the use of gonadotropin releasing hormone (GnRH) analogs. Compared to oral estrogens, the topical gel formulation lowers the risk of cardiovascular side effects.

**transdermal 4-hydroxytestosterone:** A transdermal formulation containing 4-hydroxytestosterone (4-OHT), a steroidal aromatase inhibitor (AI) and androgen receptor (AR) antagonist, with potential antineoplastic activity. 4-OHT is largely converted into 4-hydroxyandrostenedione (4-OHA) and irreversibly binds to and inhibits aromatase, thereby blocking the

conversion of androstenedione to estrone, and testosterone to estradiol. This may inhibit tumor cell proliferation in estrogen-dependent tumor cells. In addition, 4-OHT binds to the AR and may inhibit AR-mediated tumor cell growth. Aromatase, a cytochrome P-450 enzyme, is overexpressed in a variety of cancer cells; it plays a key role in estrogen biosynthesis. Compared to oral 4-OHT, the transdermal formulation allows for continuous release of 4-OHT into the bloodstream and prevents first pass metabolism by the liver.

**transdermal estrogen:** A transdermal formulation containing the synthetic form of estradiol, the most potent, endogenously produced estrogen. Upon topical administration, estradiol diffuses through the cell membrane and binds to and activates specific intracellular estrogen receptors located on estrogen-responsive tissues, including the reproductive tract, breast, pituitary, hypothalamus, liver, and bone. The activated ligand-receptor complex binds to estrogen response elements on DNA and promotes the transcription of genes involved in the functioning of the female reproductive system and secondary sex characteristics. In addition, estradiol inhibits the pituitary secretion of the gonadotropins luteinizing hormone (LH) and follicle stimulating hormone (FSH) through a negative feedback mechanism.

**Transducer :** a physical part of the sensor (detector), that amplifies the primary signal to usable level. According to the IUPAC definition of chemical sensor one of the two principal components of the chemical sensor. The receptor part converts chemical information into a form of energy acceptable by the transducer and then the analytical signal is generated.

**Transducin:** G protein that is the signal-coupling protein of visual excitation; activated by rhodopsin, it leads to the activation of cGMP phosphodiesterase, which in turn leads to a nerve impulse.

**transduction:** (1) Generally, the conversion of energy or information from one form to another. (2) The transfer of genetic information from one cell to another by means of a viral vector.

**Transduction:** Genetic exchange in bacteria that is mediated via phage.

**Transfection:** An artificial process of infecting cells with naked viral DNA.

**Transfer efficiency:** The ratio of the amount of coating deposited on a substrate compared to the total amount directed at the part to be coated.

**transfer factor :** A substance made by some white blood cells. Transfer factor from one person's white blood cells may be able to cause a specific immune response when injected into the skin of another person.

**Transfer Molding :** A process of forming articles by fusing a plastic material in a chamber then forcing the whole mass into a hot mold to solidify.

**Transfer RNA:** The adaptor molecule in protein synthesis; contains an amino acid recognition site as well as a template-recognition site, or anticodon.

**transfer RNA (tRNA):** A class of RNA molecules (Mr. 25,000 to 30,000), each of which combines covalently with a specific amino acid as the first step in protein synthesis.

**Transfer RNA (tRNA):** Any of a family of low-molecular weight RNAs that transfer amino acids from the cytoplasm to the template for protein synthesis on the ribosome.

**Transfer RNA (tRNA):** Transfer RNA (tRNA). Any of a family of low-molecular weight RNAs that transfer amino acids from the cytoplasm to the template for protein synthesis on the ribosome.

**Transferase:** An enzyme that catalyzes the transfer of a molecular group from one molecule to another. Or An enzyme that catalyzes group transfer, often employing a cofactor.

**transferrin receptor-targeted anti-RRM2 siRNA CALAA-01:** A proprietary transferrin receptor-targeted nanoparticle preparation of a non-chemically modified small-interfering RNA (siRNA) directed against the M2 subunit of ribonucleotide reductase (RRM2) with potential antineoplastic activity. Upon administration, transferrin receptor-targeted anti-RRM2 siRNA CALAA-01 binds to transferrin receptors (TfRs), releasing anti-RRM2 siRNA after endocytosis; anti-RRM2 siRNA silences the expression of RRM2 via the RNAi pathway, impeding the assembly of the holoenzyme ribonucleotide reductase (RR) which catalyzes the production of deoxyribonucleotides. As a result, inhibition of cellular proliferation may occur in cells expressing TfR, a cell surface protein overexpressed on various cancer cell types.

**transferrin receptor-targeted liposomal p53 cDNA:** A cationic liposomal, tumor-targeting p53 (TP53) gene delivery system with potential anti-tumor activity. Transferrin receptor-targeted liposomal p53 cDNA contains plasmid DNA encoding the tumor suppressor protein p53 packaged in membrane-like liposome capsules that are complexed with anti-transferrin receptor single-chain antibody (TfRscFv). Upon systemic administration, the anti-TfRscFv selectively binds to tumor cells expressing transferrin receptors. The p53 plasmid is delivered into the nucleus and as a result, p53 protein is produced in tumor cells that have altered p53 function. This results in the restoration of normal cell growth control mechanisms as well as normal response mechanisms to DNA damage.

**transferrin-CRM107:** A substance being studied in the treatment of brain tumors. Transferrin-CRM107 is made by linking a diphtheria toxin to transferrin, a protein that binds to fast growing cells, such as tumor cells. The diphtheria toxin then kills the tumor cells. Transferrin-CRM107 is a type of immunotoxin. OR A synthetic targeted protein toxin which consists of human transferrin (Tf) conjugated to a diphtheria toxin that contains a point mutation (CRM107). After binding to the transferrin receptor expressed on the tumor cell surface, transferrin-CRM107 is internalized, where the diphtheria toxin moiety exerts its cytotoxic effect intracellularly by inhibiting protein synthesis through ADP-ribosylation of elongation factor. Check for active clinical trials using this agent.

**transform boundary:** a fault boundary marked by plates that slide past one another.

**transform plate boundary:** region where plates move next to each other.

**Transformation:** Genetic exchange in bacteria that is mediated via purified DNA. In somatic cell genetics the term is also used to indicate the conversion of a normal cell to one that grows like a cancer cell. Or The incorporation of intact foreign DNA into a cell. Or Introduction of an exogenous DNA into a cell, causing the cell to acquire a new phenotype.

**transformation :** In medicine, the change that a normal cell undergoes as it becomes malignant.

**transforming growth factor-beta superfamily inhibitor ACE-536:** A soluble, recombinant fusion protein composed of a modified form of the extracellular domain of human activin receptor type IIb (ActRIIb) and linked to the human IgG1 Fc domain, with red blood cell stimulating

activity. Upon subcutaneous administration, ACE-536 inhibits several ligands in the transforming growth factor (TGF)-beta superfamily. This prevents activation of a variety of TGF-beta superfamily members involved in late stage erythropoiesis and results in an increased differentiation and proliferation of erythroid progenitors. ACE-536 acts at a different, later stage than erythropoietin. This agent ultimately enhances red blood cell production and prevents anemia.

**transfusion :** A procedure in which whole blood or parts of blood are put into a patient's bloodstream through a vein. The blood may be donated by another person or it may have been taken from the patient and stored until needed. Also called blood transfusion.

**Transgenic:** Describing an organism that contains transfected DNA in the germ line. Or Describing an organism that has genes from another organism incorporated within its genome as a result of recombinant DNA procedures.

**Transgenic animal:** An animal that harbors and expresses a foreign gene that has been inserted into the germ line; experiments with such animals and their offspring show that a foreign gene under the control of a new promoter can be efficiently integrated, expressed, and transmitted. or animals in which one or more genes have been introduced into the nonreproductive cells.

**transgenic lymphocyte immunization vaccine:** A vaccine consisting of a preparation of allogeneic lymphocytes that encode a gene for telomerase. In transgenic lymphocyte immunization, the transgenic cells are infused into the patient, where they serve as antigen- presenting cells (APCs) with the dual function of antigen synthesis and presentation. Vaccination produces an immune response targeting cancer cells expressing telomerase.

**transgenic mice :** Mice that have had DNA from another source put into their DNA. The foreign DNA is put into the nucleus of a fertilized mouse egg. The new DNA becomes part of every cell and tissue of the mouse. These mice are used in the laboratory to study diseases.

**Transient:** A change in the reactor coolant system temperature, pressure, or both, attributed to a change in the reactor's power output. Transients can be caused by (1) adding or removing neutron poisons, (2) increasing or decreasing electrical load on the turbine generator, or (3) accident conditions.

**transient receptor potential cation channel, subfamily V, member 6 :** A protein found in cell membranes that moves calcium into cells. Levels of transient receptor potential cation channel, subfamily V, member 6 are lower than normal in patients who don't have enough vitamin D. High levels of the protein may be found in breast cancer tissue. It is a type of calcium channel protein. Also called TRPV6.

**transient tracers:** Chemical elements (often radioactive) or compounds that have finite lifetimes. Atmospheric testing of nuclear weapons from the mid-1950s to the early 1960s released large quantities of radionuclides to the atmosphere. Atmosphere-ocean exchange processes have transferred some of these elements to the oceans. Studying the behavior and distribution of these specific isotopes and other chemical tracers in the ocean will provide information on: residence times of the water and its dissolved components in gyres, basins, etc.; the mode and rate of formation and the subsequent spreading rates of specific water types, such as the polar water of the Norwegian and Greenland Seas; deep-ocean circulation and ocean- mixing processes, such as advection and upwelling; and the flux of anthropogenic carbon dioxide into the ocean through its correlation with several different transient tracers.

**Transition:** A mutation that results from the substitution of one pyrimidine for another or one purine for another.

**Transition Element:** Transition elements (also known as transition metals) are found in the middle section of the periodic table. They have two electron shells that are not filled. The shells are usually the outer two shells and are good conductors of electricity. Copper, silver and, and gold are examples of transition elements.

**transition metal:** An element with an incomplete d subshell. Elements which have common cations with incomplete d subshells are also considered transition metals. Elements with incomplete f subshells are sometimes called "inner transition elements". Or One of the metals from the central block of the periodic table. Iron is a good example. Transition metals have all the usual properties of metals but in addition usually have particularly high melting and boiling points, high density and usually form coloured compounds. They are often active as catalysts too. or the three rows of elements in the middle of the periodic table, from scandium to mercury.

**Transition Section:** The flighted portion of the screw between the feed and discharge sections in which the extrusion material becomes a melt.

**Transition state:** The activated form of a molecule that has partly undergone a chemical reaction or the point in a reaction at which the system has the most energy. Or The activated state in which a molecule is best suited to undergoing a chemical reaction. Or A chemical species that has the highest free energy and the lowest concentration of those on the pathway from a substrate to a product.

**Transition State Analogue:** In medicinal chemistry, transition state analogues are compounds that are designed to mimic an enzyme-catalysed reaction's transition state. Can be used to inhibit an enzyme,

**Transition Temperature :** The temperature at which a polymer changes from (or to) a viscous or rubbery condition (or from) a hard and relatively brittle one.

**Transition zone:** That area in the center of the screw (between the feed zone and metering zone) This section has a tapering flight depth condition which compresses the plastic material in preparation for injection.

**Transition-state analog:** A compound resembling the transition state of a catalyzed reaction; such compounds are often potent inhibitors of enzyme-catalyzed reactions.

**transitional care :** Support given to patients when they move from one phase of disease or treatment to another, such as from hospital care to home care. It involves helping patients and families with medical, practical, and emotional needs as they adjust to different levels and goals of care.

**transitional cell :** A cell that varies in shape depending on whether the tissue is being stretched. Transitional cells may be stretched without breaking apart. They line hollow organs such as the bladder.

**transitional cell cancer :** Cancer that begins in cells called urothelial cells that line the urethra, bladder, ureters, renal pelvis, and some other organs. Urothelial cells are also called transitional cells. These cells can change shape and stretch without breaking apart. Also called urothelial cancer.

**transitive verbs:** a verb that takes a direct object; that is, the verb transmits action to an object.

**Transketolase:** An enzyme that transfers an activated aldehyde unit from a ketose to an aldose acceptor; one of the enzymes in the nonoxidative part

of the pentose phosphate pathway.

**translate:** Change a phrase written in English to an algebraic expression, using the correct symbols.

**translation:** the process by which the genetic code is transferred to an amino acid sequence in a protein. Or The process of reading a messenger RNA sequence for the specified amino acid sequence it contains. Or

Cellular protein synthesis, so named because the four-letter alphabet of nucleic acids is translated into the different amino acids that make up proteins. OR In biology, the process by which a cell makes proteins using the genetic information carried in messenger RNA (mRNA). The mRNA is made by copying DNA, and the information it carries tells the cell how to link amino acids together to form proteins. OR The process of synthesizing an amino acid sequence (protein product) from the messenger RNA code.

**translational control:** The regulation of a protein's synthesis by regulation of the rate of its translation on the ribosome.

**Translational repressor:** A mechanism for transcriptional regulation in which a protein encoded by an operon binds to an mRNA near the initiation site for its own synthesis and blocks the synthesis of several proteins encoded by that polygenic message; the synthesis of the 50 or so ribosomal proteins is subject to control by translational repression. or A repressor that binds to an mRNA, blocking translation.

**translational research :** A term used to describe the process by which the results of research done in the laboratory are used to develop new ways to diagnose and treat disease.

**Translocase:** An enzyme that carries a molecule from one cellular compartment to another; the ATPADP translocase facilitates the exchange of ATP and ADP between a mitochondrion and the cytosol. Or (1) An enzyme that catalyzes membrane transport. (2) An enzyme that causes a movement, such as the movement of a ribosome along an mRNA.

**translocation :** A type of chromosomal abnormality in which a chromosome breaks and a portion of it reattaches to a different chromosomal location. OR A genetic change in which a piece of one chromosome breaks off and attaches to another chromosome. Sometimes pieces from two different chromosomes will trade places with each other. Translocations may lead to medical problems such as leukemia, breast cancer, schizophrenia, muscular dystrophy, and Down syndrome.

**Translucent:** permitting the passage of light, but diffusing it so that object beyond cannot be clearly distinguished. OR Descriptive of a material or substance capable of transmitting some light, but not clear enough to be seen through

**TransMID:** (Other name for: transferrin-CRM107)

**Transmitted light:** Used to examine single crystals and their optical properties. (cf. reflected light).

**Transom:** horizontal bar of stone timber or metal across a mullioned window. Also the horizontal member separating a door and fanlight.

**transoral robotic surgery :** Surgery in which a robot with arms is used to remove cancer from hard-to-reach areas of the mouth and throat. Cameras attached to the robot give a 3-dimensional (3D) image that a surgeon can see. The surgeon guides tools at the ends of the robot arms to remove the cancer. Also called TORS.

**Transparent:** Capable of transmitting light so that objects or images can be seen as if there were no intervening material. OR Descriptive of a material or substance capable of a high degree of light transmission e.g., glass. Some polypropylene films and acrylic moldings are outstanding in this respect. OR Descriptive of a material or substance capable of a high degree of light transmission, e.g. glass. Some polypropylene extrusions and acrylic mouldings are outstanding in this respect. or Light can travel through transparent substances. "See-through" is an alternative description (but not as good).

**transperineal biopsy :** A procedure in which a sample of tissue is removed from the prostate for examination under a microscope. The sample is removed with a thin needle that is inserted through the skin between the scrotum and rectum and into the prostate.

**transperineal template-guided prostate mapping biopsy :** A procedure being studied in the diagnosis of prostate cancer and in planning prostate cancer treatment. Ultrasound is used to create a map of the prostate so the whole prostate gland can be seen in three dimensions and divided into 24 areas. Needles are then inserted through a template into each of the 24 areas and tissue is removed to be checked under a microscope. Also called TTMB.

**transpiration:** The process in plants by which water is taken up by the roots and released as water vapor by the leaves. The term can also be applied to the quantity of water thus dissipated. Or Passage of water from the roots of a plant to the atmosphere via the vascular system and the stomata of the leaves.

**transplant surgeon :** A surgeon who has special training in transplantation surgery. The surgeon replaces a patient's organ with an organ from another person.

**transplantation :** A surgical procedure in which tissue or an organ is transferred from one area of a person's body to another area, or from one person (the donor) to another person (the recipient).

**Transport :** Movement of particles of rock. Together with weathering, transport makes up the process of erosion.

**Transport antibiotics:** Antibiotics that exert their effect by rendering the membranes abnormally permeable.

**Transport protein:** A protein whose primary function is to transport a substance from one part of the cell to another, from one cell to another, or from one tissue to another.

**Transport vesicles:** Membrane-bounded compartments that mediate the transfer of proteins between the endoplasmic reticulum and the Golgi complex, and between the Golgi complex and subsequent destinations.

**transported soil:** soil deposited by agents such as ice and water and not derived from the underlying bedrock.

**transporters:** Proteins that span a membrane and transport specific nutrients, metabolites, ions, or proteins across the membrane; sometimes called permeases.

**Transposase:** A nuclease enzyme encoded by an insertion sequence (IS) or transposon; makes staggered cuts in donor and recipient sites, facilitating IS insertion into a bacterial gene.

**Transposition:** The movement of a gene from one chromosome to another or from one location to another on the same chromosome. Or The movement of a gene or set of genes from one site in the genome to another.

**transposon (transposable element):** A segment of DNA that can move from one position in the genome to another.

**Transposons:** Mobile bacterial genetic elements that enable genes to be transferred among nonhomologous sequences.

**transrectal biopsy :** A procedure in which a sample of tissue is removed from the prostate using a thin needle that is inserted through the rectum and into the prostate. Transrectal ultrasound (TRUS) is usually used to guide the needle. The sample is examined under a microscope to see if it contains cancer.

**transrectal ultrasound :** A procedure in which a probe that sends out high-energy sound waves is inserted into the rectum. The sound waves are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissue called a sonogram. Transrectal ultrasound is used to look for abnormalities in the rectum and nearby structures, including the prostate. Also called endorectal ultrasound, ERUS, and TRUS.

**transsphenoidal surgery :** A type of surgery in which instruments are inserted through the nose and sphenoid sinus (a hollow space in a bone in the nose) to remove tumors that are in or near the pituitary gland. The pituitary gland is a pea-sized organ that lies at the base of the brain above the back of the nose.

**transthyretin antisense oligonucleotide ISIS-TTR Rx:** An antisense oligonucleotide (ASO) targeting transthyretin (TTR), which has potential use in the treatment of TTR amyloidosis (ATTR). Upon subcutaneous administration, TTR ASO ISIS-TTR Rx targets and binds to messenger RNA (mRNA) for both variant and wild-type forms of TTR inside liver cells, thereby inhibiting translation of both mutant and wild-type TTR. Inhibition of TTR protein synthesis lowers TTR blood levels and decreases the amount of and/or prevents TTR amyloid deposits, which accumulate in and cause damage to various body organs and tissues. ATTR is caused by mutations in the TTR gene, which lead to TTR protein misfolding; misfolded wild-type and mutant forms of TTR protein accumulate in tissues as amyloid deposits in most ATTR patients. Check for active clinical trials using this agent.

**Transuranic element:** An artificially made, radioactive element that has an atomic number higher than uranium in the periodic table of elements such as neptunium, plutonium, americium, and others.

**Transuranic waste:** Material contaminated with transuranic elements—artificially made, radioactive elements, such as neptunium, plutonium,

americium, and others—that have atomic numbers higher than uranium in the periodic table of elements. Transuranic waste is primarily produced from recycling spent fuel or using plutonium to fabricate nuclear weapons. For related information, see the Backgrounder on Radioactive Waste.

**transuranium element:** An element with an atomic number higher than 92 (uranium's atomic number). Transuranium elements are unstable and occur in extremely low concentrations (if at all) in nature. Most are made artificially.

**transurethral biopsy :** A procedure in which a sample of tissue is removed from the prostate for examination under a microscope. A thin, lighted tube is inserted through the urethra into the prostate, and a small piece of tissue is removed with a cutting loop.

**transurethral electroevaporation of the prostate :** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra into the prostate. A ball or special wire loop on the instrument heats the prostate tissue and turns it to vapor. This relieves pressure and improves urine flow. Also called transurethral electrovaporization of the prostate, TUEVAP, and TUVF.

**transurethral electrovaporization of the prostate :** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra into the prostate. A ball or special wire loop on the instrument heats the prostate tissue and turns it to vapor. This relieves pressure and improves urine flow. Also called transurethral electroevaporation of the prostate, TUEVAP, and TUVF.

**transurethral incision of the prostate :** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra and one or two small cuts are made in the bladder neck and prostate. This relieves pressure and improves urine flow. Also called TUIP.

**transurethral microwave thermotherapy :** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra into the bladder. A small microwave antenna on the instrument heats nearby prostate tissue and destroys it. This relieves pressure and improves urine flow. Also called TUMT.

**transurethral needle ablation :** A procedure that is used to treat benign prostatic hypertrophy (BPH). An instrument with a small probe that gives off low-level radiofrequency energy is inserted through the urethra into the

prostate. The energy from the probe heats nearby prostate tissue and destroys it. This relieves pressure and improves urine flow. Also called transurethral radiofrequency ablation and TUNA.

**transurethral radiofrequency ablation :** A procedure that is used to treat benign prostatic hypertrophy (BPH). An instrument with a small probe that gives off low-level radiofrequency energy is inserted through the urethra into the prostate. The energy from the probe heats nearby prostate tissue and destroys it. This relieves pressure and improves urine flow. Also called transurethral needle ablation and TUNA.

**transurethral resection :** Surgery performed with a special instrument inserted through the urethra. Also called TUR.

**transurethral resection of the prostate :** Surgery to remove tissue from the prostate using an instrument inserted through the urethra. Also called TURP.

**transvaginal sonography :** A procedure used to examine the vagina, uterus, fallopian tubes, ovaries, and bladder. An instrument is inserted into the vagina that causes sound waves to bounce off organs inside the pelvis. These sound waves create echoes that are sent to a computer, which creates a picture called a sonogram. Also called transvaginal ultrasound and TVS.

**transvaginal ultrasound :** A procedure used to examine the vagina, uterus, fallopian tubes, ovaries, and bladder. An instrument is inserted into the vagina that causes sound waves to bounce off organs inside the pelvis. These sound waves create echoes that are sent to a computer, which creates a picture called a sonogram. Also called transvaginal sonography and TVS.

**transversal:** a line crossing two or more parallel or nonparallel lines in a plane.

**Transverse Direction:** -Cross direction or sideways dimension 90° orientation to the machine direction.

**transverse rectus abdominis myocutaneous flap :** A type of surgery used to rebuild the shape of the breast after a mastectomy. A muscle in the lower abdomen called the rectus abdominis, along with skin, fat, and blood vessels, is moved from the lower abdomen to the chest. This is usually done by passing the muscle tissue and blood vessels through a tunnel under the skin to the chest. A transverse rectus abdominis myocutaneous flap forms a

natural-looking breast, so the patient usually does not need a breast implant. It is a type of breast reconstruction. Also called TRAM flap.

**Transversion:** A mutation in which a purine is replaced by a pyrimidine or vice versa.

**tranylcypromine sulfate:** The sulfate salt form of tranylcypromine, an orally bioavailable, nonselective, irreversible, non-hydrazine inhibitor of both monoamine oxidase (MAO) and lysine-specific demethylase 1 (LSD1/BHC110), with antidepressant and anxiolytic activities, and potential antineoplastic activities. Upon oral administration, tranylcypromine exerts its antidepressant and anxiolytic effects through the inhibition of MAO, an enzyme that catalyzes the breakdown of the monoamine neurotransmitters serotonin, norepinephrine, epinephrine and dopamine. This increases the concentrations and activity of these neurotransmitters. Tranylcypromine exerts its antineoplastic effect through the inhibition of LSD1. Inhibition of LSD1 prevents the transcription of LSD1 target genes. LSD1, a flavin-dependent monoamine oxidoreductase and a histone demethylase, is upregulated in a variety of cancers and plays a key role in tumor cell proliferation, migration, and invasion.

**Trap:** A small door opening in a ceiling giving access to a roof void or in a floor for similar purpose. A bend in a pipe so arranged as to be always full of water and prevent free flow of air or gas through the pipe. Hence S-trap or P-trap indicating the shape of the bend. or a stratigraphic or structural feature of high porosity that traps migrating petroleum.

**trapezoid:** a four-sided plane closed figure with only one pair of parallel sides, called bases.

**TrasGEX:** (Other name for: glycooptimized trastuzumab-GEX)

**trastuzumab:** A recombinant humanized monoclonal antibody directed against the human epidermal growth factor receptor 2 (HER2). After binding to HER2 on the tumor cell surface, trastuzumab induces an antibody-dependent cell-mediated cytotoxicity against tumor cells that overexpress HER2. HER2 is overexpressed by many adenocarcinomas, particularly breast adenocarcinomas.

**trastuzumab :** A drug used to treat breast cancer that is HER2-positive (expresses the human epidermal growth factor receptor 2). It is also used with other drugs to treat HER2-positive stomach cancer that has not already been treated and has spread to other parts of the body. It is being studied in

the treatment of other types of cancer. Trastuzumab binds to HER2 on the surface of HER2-positive cancer cells, and may kill them. It is a type of monoclonal antibody. Also called Herceptin.

**Trastuzumab vc-seco-DUBA:** An antibody-drug conjugate (ADC) composed of the recombinant humanized anti-epidermal growth factor receptor 2 (HER2) monoclonal antibody trastuzumab linked, via a cleavable linker, to the duocarmycin prodrug, seco-duocarmycin-hydroxybenzamide-azaindole (seco-DUBA), with potential antineoplastic activity. Upon administration of trastuzumab vc-seco-DUBA, the trastuzumab moiety binds to HER2 on the tumor cell surface, which triggers the endocytosis of this agent. The linker is then cleaved inside the tumor cell by proteases at the dipeptide valine-citrulline (vc), and releases the active moiety, duocarmycin. Duocarmycin binds to the minor groove of DNA, alkylates adenine at the N3 position, and induces cell death. In addition, trastuzumab induces antibody-dependent cell-mediated cytotoxicity (ADCC) against tumor cells that overexpress HER2. HER2 is overexpressed by many carcinomas and is associated with a poor prognosis.

**Trasylol:** (Other name for: aprotinin bovine)

**trauma :** Injury to the body, or an event that causes long-lasting mental or emotional damage.

**Traumasept:** (Other name for: povidone-iodine solution)

**Traumeel S:** Diluted extracts isolated from plants and minerals, including belladonna, arnica, St. Johns wort, and Echinacea. As a homeopathic mouth rinse preparation, Traumeel S exhibits antiinflammatory activity; the mechanism of action has not been fully elucidated. This agent may reduce the severity and duration of treatment-related stomatitis. Check for active clinical trials using this agent. or A substance that contains minerals and extracts of 14 plants, including belladonna, arnica, St. John's wort, and Echinacea. It is being studied as a mouth rinse treatment for oral mucositis (painful mouth sores) caused by cancer therapy. It is known as a homeopathic remedy.

**Travasol:** (Other name for: amino acid injection)

**travel-time curve:** a plot of the arrival times of seismic waves relative to distance.

**Travelling Saw:** A saw which travels with the extrudate while cutting it to length.

**trazodone :** A drug used to treat depression. It may also be used to help relieve anxiety and insomnia (trouble sleeping) and to treat certain other disorders. Trazodone increases the level of the chemical serotonin in the brain, which helps improve mood. It is a type of antidepressant. Also called Oleptro.

**Tread:** The horizontal part of a step or stair on which the foot treads.

**Treanda :** A drug used to treat chronic lymphocytic leukemia (CLL). It is also used to treat slow-growing B-cell non-Hodgkin lymphoma (NHL) that has gotten worse within 6 months of treatment with other anticancer drugs. It is being studied in the treatment of other types of cancer. Treanda may damage the DNA in cancer cells and cause them to die. It is a type of alkylating agent and a type of antimetabolite. Also called bendamustine hydrochloride.

**Treat:** Method of raising the surface energy and to some extent etching of films in order to accept adhesives and inks.

**TREATER:** Equipment used for preparing resin-impregnated reinforcements including means for the delivery of a continuous web or strand to a resin tank, controlling the amount of resin pickup, drying and/or partially curing the resin, and rewinding the impregnated reinforcement. Term also used to refer to equipment and process used to render a surface of inert plastics like polyethylene more receptive to inks, adhesives, or coatings. OR Equipment and process generally used by plastic manufacturers used to render a surface of inert plastics, such as polyethylene plastic.

**treatment cycle :** In medicine, a course of treatment that is repeated on a regular schedule with periods of rest in between. For example, treatment given for one week followed by three weeks of rest is one treatment cycle.

**treatment efficiency:** usually refers to the percentage reduction of a specific or group of pollutants by a specific wastewater treatment step or treatment plant.

**treatment field :** In radiation therapy, the place on the body where the radiation beam is aimed.

**treatment plan :** A detailed plan with information about a patient's disease, the goal of treatment, the treatment options for the disease and possible side effects, and the expected length of treatment. A treatment plan may also include information about how much the treatment is likely to cost and about regular follow-up care after treatment ends.

**treatment schedule :** A step-by-step plan of the treatment that a patient is going to receive. A treatment schedule includes the type of treatment that will be given (such as chemotherapy or radiation therapy), how it will be given (such as by mouth or by infusion into a vein), and how often it will be given (such as once a day or once a week). It also includes the amount of time between courses of treatment and the total length of time of treatment.

**treatment summary :** A detailed summary of a patient's disease, the type of treatment the patient received, and any side effects or other problems caused by treatment. It usually includes results of laboratory tests (such as pathology reports and biomarker tests) and imaging tests (such as x-rays, CT scans, and MRIs), and whether a patient took part in a clinical trial. A treatment summary may be used to help plan follow-up care after treatment for a disease, such as cancer.

**trebananib:** An angiopoietin (Ang) 1 and 2 neutralizing peptibody, with potential antiangiogenic activity. Trebananib targets and binds to Ang1 and Ang2, thereby preventing the interaction of the angiopoietins with their target tie2 receptors. This may inhibit angiogenesis and may eventually lead to an inhibition of tumor cell proliferation. Check for active clinical trials using this agent.

**tree rings:** Annual growth increments of trees that indicate, among other factors, the climatic conditions that enhance or limit growth. Tree ring widths and indexes have been used to search for solar-terrestrial relationships and climatic cycles and to reconstruct past climates. See also dendroclimatology and dendrochronology.

**trellis drainage pattern:** a drainage pattern consisting of a main stream with short tributaries on either side; forms in areas of tilted sedimentary rocks that create parallel ridges and valleys.

**Trelstar :** A drug that is used to treat advanced prostate cancer, and is being studied in the treatment of breast cancer. It belongs to the family of hormonal drugs called gonadotropin-releasing hormone analogs. Also called triptorelin.

**Trelstar Depot:** (Other name for: triptorelin pamoate)

**tremelimumab:** A substance being studied in the treatment of some types of cancer. Tremelimumab binds to a protein called CTLA-4, which is found on the surface of T cells (a type of white blood cell). It may block CTLA-4 and help the immune system kill cancer cells. Tremelimumab is a type of monoclonal antibody and a type of immunomodulatory agent. OR A human immunoglobulin (Ig) G2 monoclonal antibody directed against the human T-cell receptor protein cytotoxic T-lymphocyte-associated protein 4 (CTLA4), with potential immune checkpoint inhibitory and antineoplastic activities. Tremelimumab binds to CTLA4 on activated T-lymphocytes and blocks the binding of the antigen-presenting cell ligands B7-1 (CD80) and B7-2 (CD86) to CTLA4, resulting in inhibition of CTLA4-mediated downregulation of T-cell activation. This promotes the interaction of B7-1 and B7-2 with another T-cell surface receptor protein CD28, and results in a B7-CD28-mediated T-cell activation that is unopposed by CTLA4-mediated inhibition. This leads to a cytotoxic T-lymphocyte (CTL)-mediated immune response against cancer cells. CTLA4, an inhibitory receptor and member of the immunoglobulin superfamily, plays a key role in the downregulation of the immune system.

**trench:** a deep canyon in the ocean caused by a plate being subducted under another plate.

**trench-suction:** a term that refers to the subduction of a plate at a steep angle, which pulls the overlying plate and the trench toward the midoceanic ridge.

**Trental:** (Other name for: pentoxifylline)

**treosulfan:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called alkylating agents. OR The prodrug of a bifunctional sulfonate alkylating agent with myeloablative, immunosuppressive, and antineoplastic activities. Under physiological conditions, treosulfan converts nonenzymatically to L-diepoxybutane via a monoepoxide intermediate. The monoepoxide intermediate and L-diepoxybutane alkylate DNA at guanine residues and produce DNA interstrand crosslinks, resulting in DNA fragmentation and apoptosis. In escalated doses, this agent also exhibits myeloablative and immunosuppressive activities.

**trephine** : A surgical tool used to cut out circular pieces of bone or other tissue.

**tretinoin**: A naturally-occurring acid of retinol. Tretinoin binds to and activates retinoic acid receptors (RARs), thereby inducing changes in gene expression that lead to cell differentiation, decreased cell proliferation, and inhibition of tumorigenesis. This agent also inhibits telomerase, resulting in telomere shortening and eventual apoptosis of some tumor cell types. The oral form of tretinoin has teratogenic and embryotoxic properties. Check for active clinical trials using this agent. ORA nutrient that the body needs in small amounts to function and stay healthy. Tretinoin is made in the body from vitamin A and helps cells to grow and develop, especially in the embryo. A form of tretinoin made in the laboratory is put on the skin to treat conditions such as acne and is taken by mouth to treat acute promyelocytic leukemia (a fast-growing cancer in which there are too many immature blood-forming cells in the blood and bone marrow). Tretinoin is being studied in the prevention and treatment of other types of cancer. Also called all-trans retinoic acid, ATRA, retinoic acid, and vitamin A acid.

**Trexall**: (Other name for: methotrexate)

**Tri-**: A prefix meaning three

**tri-virus/GD2-specific allogeneic cytotoxic T-lymphocytes**: Allogeneic tri-viral specific, Epstein-Barr virus (EBV), cytomegalovirus (CMV) and adenovirus (Ad), cytotoxic T-lymphocytes (tV-CTLs) expressing a chimeric antigen receptor (CAR) specific for disialoganglioside GD2 with potential antineoplastic activity. Tri-virus/GD2-specific allogeneic CTLs are produced by transducing tV-CTLs with a GD2-specific CAR retroviral vector. Upon administration, after an allogeneic hematopoietic stem cell transplant, these CTLs may be selective towards EBV, CMV, and Ad-infected cells and GD2-expressing tumor cells. The human glycosphingolipid GD2 is a tumor associated antigen overexpressed on the surface of all tumors of neuroectodermal origin.

**TriAb**: (Other name for: monoclonal antibody 11D10 anti-idiotypic vaccine)

**triacetyluridine** : A drug used in the emergency treatment of patients who receive too much fluorouracil or capecitabine (types of anticancer drugs). It is also used in the emergency treatment of heart or central nervous system (CNS) toxicity or other serious side effects that occur within 4 days of

ending treatment with fluorouracil or capecitabine. Triacetyluridine may help protect healthy cells from some of the side effects caused by certain anticancer drugs. It is a type of cytoprotective agent. Also called PN401, uridine triacetate, and Vistogard.

**triacylglycerol:** An ester of glycerol with three molecules of fatty acid; also called a triglyceride or neutral fat.

**Triacylglycerols:** Glycerols that have fatty acyl chains esterified to each of their hydroxyl groups; storage form of fats. Also known as neutral fats or triglycerides.

**triad:** A group of three elements whose chemical and physical properties are somewhat related.

**trial sponsor :** A person, company, institution, group, or organization that oversees or pays for a clinical trial and collects and analyzes the data. Also called clinical trial sponsor.

**triamcinolone:** A synthetic glucocorticoid with anti-inflammatory and immunomodulating properties. Upon cell entry, triamcinolone binds to and activates the glucocorticoid receptor, which leads to translocation of the ligand-receptor complex to the nucleus and induces expression of glucocorticoid-responsive genes such as lipocortins. Lipocortins inhibit phospholipase A2, thereby blocking the release of arachidonic acid from membrane phospholipids and preventing the synthesis of prostaglandins and leukotrienes, both mediators of inflammation. In addition, pro-inflammatory cytokine production, including interleukin (IL)-1 and IL-6, and the activation of cytotoxic T-lymphocytes is also inhibited. T-cells are prevented from making IL-2 and proliferating. This agent also decreases the number of circulating lymphocytes, induces cell differentiation, and stimulates apoptosis through increasing I $\kappa$ B expression and curtailing activation of nuclear factor (NF) $\kappa$ B. OR A substance that is being studied for the prevention of nonmelanoma skin cancer. It is an anti-inflammatory drug that is applied to the skin to relieve irritation, rashes, and infections. It belongs to the family of drugs called topical corticosteroids.

**triamcinolone acetonide:** The acetonide salt of triamcinolone, a synthetic glucocorticosteroid with immunosuppressive and anti-inflammatory activities. Triamcinolone binds to specific cytosolic glucocorticoid receptors, which subsequently interact with the glucocorticoid receptor response element on DNA, gene expression is altered so that the synthesis

of certain anti-inflammatory proteins is induced while the synthesis of certain inflammatory mediators is inhibited. Consequently, chronic inflammatory and autoimmune reactions are reduced.

**triangle:** A three-sided closed figure. Or a three-sided plane closed figure. Contains three angles the sum of whose measures is  $180^\circ$ .

**triapine:** A synthetic heterocyclic carboxaldehyde thiosemicarbazone with potential antineoplastic activity. Triapine inhibits the enzyme ribonucleotide reductase, resulting in the inhibition of the conversion of ribonucleoside diphosphates to deoxyribonucleotides necessary for DNA synthesis. This agent has been shown to inhibit tumor growth in vitro. OR A substance being studied in the treatment of cancer. It is a type of ribonucleotide reductase inhibitor. Also called 3-aminopyridine-2-carboxaldehyde thiosemicarbazone and 3-AP.

**triazinate:** A synthetic dihydrotriazine derivative with antineoplastic properties. As an antifolate agent related to methotrexate (MTX), triazinate inhibits the enzyme dihydrofolate reductase (DHFR), resulting in decreased tetrahydrofolate production and interference with thymidylate synthesis. Unlike MTX, this agent is not converted to polyglutamate forms. Triazinate also inhibits the transport of folates and may be selectively toxic to MTX-resistant tumor cells.

**triazine derivative TriN2755:** A synthetic triazene derivative with antineoplastic activity. Upon metabolic activation via N-demethylation, TriN2755 is converted into highly reactive carbocations that can alkylate DNA and other macromolecules, thereby resulting in DNA cross links, inhibiting DNA replication and repair, and subsequently inducing apoptosis. This agent has high hydrophilicity and photostability and shows a favorable toxicity profile over the other triazenes.

**tributyryn:** A triglyceride prodrug of butyric acid with potential antineoplastic activity. Butyrate, the active metabolite of tributyrin, inhibits histone deacetylase, resulting in increased differentiation, decreased proliferation, cell cycle arrest, and apoptosis in some tumor cell lines.

**tributyryn :** A triglyceride drug that may inhibit cell growth and induce cell differentiation. Differentiating agents may be effective in changing cancer cells back into normal cells.

**Tricarboxylic acid (TCA) cycle:** The cyclical process whereby acetate is completely oxidized to  $\text{CO}_2$  and water, and electrons are transferred to

NAD<sup>+</sup> and flavineThe TCA cycle is localized to the mitochondria in eukaryotic cells and to the plasma membrane in prokaryotic cellsAlso called the Krebs or citric acid cycle.

**tricarboxylic acid cycle:** See citric acid cycle.

**trichilemmoma :** A benign tumor arising from the outer cells of the hair follicle.

**trichothiodystrophy :** A hereditary condition characterized by sparse and brittle hair, short stature, and mental retardation.

**tricyclic phosphate:** The phosphate salt of the synthetic, cell-permeable tricyclic nucleoside tricyclic with potential antineoplastic activity.

Tricyclic inhibits the phosphorylation, activation, and signalling of Akt-1, -2, and -3, which may result in the inhibition of Akt-expressing tumor cell proliferation. Akts are anti-apoptotic serine/threonine-specific protein kinases that phosphorylate and inactivate components of the apoptotic machinery, including Bcl-xL/Bcl-2-associated death promoter (BAD) and caspase 9.

**Triclinic Crystal:** A triclinic crystal has a shape in which the arrangement of facets is random.

**Triclinic crystal class:** A crystal class of containing either no symmetry or a rotatory-inversion axis in any direction. This class contains 2 space groups and has no restrictions on the lengths of the axes or the values of the angles.

**TriCor :** A drug used to treat high levels of cholesterol and triglycerides in the blood. TriCor is being studied in the treatment of advanced cancers in young patients and in the treatment of other conditions. It is a type of antilipidemic agent. Also called fenofibrate and Lofibra.

**tricuspid valve:** a valve that passes blood from the right atrium into the right ventricle.

**tricyclic antidepressant :** A type of drug used to treat depression.

**tried-and-true method:** A method for solving word problems that has been used for many years. Some examples are Polya's four-step process, identifying variables, and estimation.

**trientine hydrochloride:** The hydrochloride salt form of a metal chelating agent with potential anti-angiogenic activity. Trientine chelates excess copper (Cu) ions in the body; the excess copper is subsequently removed

from the body through the kidneys. As Cu is an essential cofactor for cuproenzymes, such as superoxide dismutase 1 (SOD1), depletion of copper may inhibit the activation of signal transduction pathways required for cellular proliferation and angiogenesis. In addition, trientine may inhibit copper-induced secretion of interleukin-8 (IL-8).

**trifluoperazine hydrochloride:** The hydrochloride salt of trifluoperazine, a phenothiazine derivative and a dopamine, alpha-adrenergic, and anticholinergic antagonist with antipsychotic, anxiolytic, and antiemetic activities. Trifluoperazine blocks central dopamine receptors, which may prevent or mitigate delusions and hallucinations caused by an excess of dopamine; dopamine blockade in the chemoreceptor trigger zone (CTZ) may result in an antiemetic effect. This agent binds to central adrenergic receptors, which may result in anxiolytic effects. Trifluoperazine also functions as a calmodulin inhibitor, elevating cytosolic calcium.

**trifluridine:** A fluorinated thymidine analog with potential antineoplastic activity. Trifluridine is incorporated into DNA and inhibits thymidylate synthase, resulting in inhibition of DNA synthesis, inhibition of protein synthesis, and apoptosis. This agent also exhibits antiviral activity.

**trifluridine and tipiracil hydrochloride :** A combination of two drugs used to treat colorectal cancer that has spread to other parts of the body and has already been treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. It is a combination of trifluridine and tipiracil hydrochloride. Trifluridine and tipiracil hydrochloride stops cells from making DNA, which may help keep cancer cells from growing and may kill them. Also called Lonsurf.

**trifluridine/tipiracil hydrochloride:** An orally bioavailable combination agent composed of the cytotoxic pyrimidine analog trifluridine (5-trifluoro-2'-deoxythymidine or TFT) and a thymidine phosphorylase inhibitor (TPI) tipiracil hydrochloride, in a molar ratio of 1.0:0.5 (TFT:TPI), with potential antineoplastic activity. After oral administration of trifluridine/tipiracil, TFT is phosphorylated to the active monophosphate form TF-TMP, which binds covalently to the active site of thymidylate synthase, thereby reducing the nucleotide pool levels required for DNA replication. Furthermore, the triphosphate form TF-TTP can be incorporated into DNA, which induces DNA fragmentation and leads to the inhibition of tumor growth. TPI exhibits a dual effect: 1) an anti-angiogenic effect mediated through the

inhibition of thymidine phosphorylase, which plays an important role in nucleotide metabolism and a variety of development processes, including angiogenesis, 2) increased bioavailability of the normally short-lived antimetabolite TFT by preventing its degradation into the inactive form trifluorothymine (TF-Thy). The synergistic effect of the components in TAS-10 may demonstrate antitumor activity in 5-FU-resistant cancer cells. Check for active clinical trials using this agent.

**Trifolium pratense :** A plant whose flowers have been used in some cultures to treat certain medical problems. It is being studied in the relief of menopausal symptoms and may have anticancer effects. Also called purple clover, red clover, and wild clover.

**trigeminal nerve :** The main sensory nerve of the head and face, and the motor nerve of the muscles used in chewing. Also called fifth cranial nerve.

**trigger :** In medicine, a specific event that starts a process or that causes a particular outcome. For example, chemotherapy, painful treatments, or the smells, sounds, and sights that go with them may trigger anxiety and fear in a patient who has cancer. In allergies, exposure to mold, pollen or dust may trigger sneezing, watery eyes, and coughing.

**Trigger Lock :** Flexible clip molded into the ends of plastic modules to secure rod position.

**trigger point acupuncture :** Use of acupuncture to treat pain by inserting needles into trigger points on the body. Trigger points are places on the body where injury has occurred, but the pain has been sent along nerves and is felt in another place in the body.

**triglyceride:** A triglyceride is an ester of glycerol and three fatty acids. Most animal fats are composed primarily of triglycerides. In the structures below, the fatty acids attached to the glycerol are represented by 'R'. The fatty acids can be the same or different.

**trigonal bipyramidal:** A molecular shape that results when there are five bonds and no lone pairs on the central atom in the molecule. Three of the bonds are arranged along the atom's equator, with  $120^\circ$  angles between them; the other two are placed at the atom's axis. Axial bonds are at right angles to the equatorial bonds. The  $\text{PCl}_5$  molecule has a trigonal bipyramidal molecular geometry.

**Trigonal Crystal:** A trigonal crystal has a shape that has three sides and no specific length. It looks like an elongated triangle.

**Trigonal crystal class:** A crystal class containing a three-fold rotation axis along the diagonal of the unit cell. This class is divided into two subclasses. One subclass, designated with hexagonal axes, contains 18 space groups and has three restrictions: 1) the lengths of the a and b axes are identical, 2) the a and b angles are equal to  $90^\circ$ , and 3) c is equal to  $120^\circ$ . For a description of the other subclass, see Rhombohedral crystal class.

**trigonal planar:** the shape of a molecule with an  $sp^2$  hybrid orbital. In this arrangement, the  $\sigma$  bonds are located in a single plane separated by  $60^\circ$  angles. Or A molecular shape that results when there are three bonds and no lone pairs around the central atom in the molecule. The pairs are arranged along the central atom's equator, with  $120^\circ$  angles between them. The carbonate ion ( $CO_3^{2-}$ ) has a trigonal planar geometry.

**trigonal pyramidal:** A molecular shape that results when there are three bonds and one lone pair on the central atom in the molecule.  $NH_3$  is a trigonal pyramidal molecule.

**triiodothyronine :** A thyroid hormone. Also called T-3.

**Trileptal:** (Other name for: oxcarbazepine)

**Trilisate:** (Other name for: choline magnesium trisalicylate)

**Trilisate :** A substance used to treat arthritis and relieve pain, inflammation, and fever. It is also being studied in the treatment of acute myeloid leukemia (AML). Trilisate blocks the action of a substance that sends a pain message to the brain. It is a type of nonsteroidal anti-inflammatory drug (NSAID). Also called choline magnesium trisalicylate.

**trilostane:** A synthetic derivative of androstane with adrenocortical suppressive properties. Trilostane reversibly inhibits 3 beta-hydroxysteroid dehydrogenase delta 5-4 isomerase in the adrenal cortex, resulting in the decreased synthesis of mineralocorticoids and glucocorticoids and the decreased conversion of pregnenolone to progesterone. Check for active clinical trials using this agent.

**Trimethoprim:** A competitive inhibitor of dihydrofolate reductase, like methotrexate but specific for bacterial and protozoan enzymes.

**trimethoprim-sulfamethoxazole:** A synthetic combination of two antibacterial agents, trimethoprim and sulfamethoxazole. This synergistic

combination, also known as co-trimoxazole, inhibits two sequential steps in the bacterial metabolism of folic acid. Trimethoprim is a pyrimidine inhibitor of dihydrofolate reductase; sulfamethoxazole is a sulfamide inhibitor of bacterial dihydrofolate synthetase.

**trimethoprim-sulfamethoxazole :** An antibiotic drug used to treat infection and prevent pneumocystis carinii pneumonia.

**trimethylcolchicinic acid:** A colchicine analog with potential antineoplastic activity. Trimethylcolchicinic acid binds to tubulin, inhibiting its polymerization into microtubules and preventing cell division.

**trimetrexate glucuronate:** A lipid soluble methotrexate derivative with potential antineoplastic activity. Trimetrexate glucuronate inhibits the enzyme dihydrofolate reductase, thereby preventing the synthesis of purine nucleotides and thymidylate, with subsequent inhibition of DNA and RNA synthesis. Trimetrexate glucuronate also exhibits antiviral activity.

**trimetrexate glucuronate :** A drug that belongs to the family of drugs called antimetabolites. It is used in the treatment of pneumocystis carinii pneumonia and is being studied in the treatment of cancer.

**Trimox:** (Other name for: amoxicillin)

**trinucleotide repeat :** Sequences of 3 nucleotides repeated in tandem on the same contiguous section of chromosome. A certain amount of normal (polymorphic) variation in repeat number with no clinical significance commonly occurs between individuals; however, repeat numbers over a certain threshold can, in some cases, lead to adverse effects on the function of the gene, resulting in genetic disease.

**Trinucleotide repeats:** Stretches of DNA in which a trinucleotide sequence is repeated many times; these segments of DNA can expand in the course of DNA replication, causing such genetic diseases as Huntington disease.

**Triolein:** Triolein is the principal component of olive oil. Triolein is a triglyceride -- it consists of glycerol with three ester linkages. It may be hydrolysed (breaking the ester linkages) to form oleate ions in a saponification reaction.

**triose:** A simple sugar with a backbone containing three carbon atoms.

**Trioses:** Monosaccharides that have three carbon atoms.

**Triostat :** A drug that is used to treat certain thyroid (a gland located near the voice box) conditions. It is also being studied in the treatment of thyroid cancer. Triostat is made in the laboratory and is a form of the thyroid hormone triiodothyronine (T3). Also called Cytomel and liothyronine sodium.

**Trip, reactor:** A term that is used by pressurized water reactors for a reactor scram (see Scram).

**Tripedia:** (Other name for: diphtheria toxoid/tetanus toxoid/acellular pertussis vaccine adsorbed)

**triple bond:** a multiple bond composed of one  $\sigma$  bond and two  $\pi$  bonds. Rotation is not possible around a triple bond. Hydrocarbons that contain triple bonds are called alkynes.

**triple bond:** A covalent bond that involves 3 bonding pairs. In the valence bond theory, one of the bonds in a triple bond is a sigma bond and the other two are pi bonds. For example, the central bond in acetylene is a triple bond: H-CC-H.

**triple junction (point):** the junction of three major faults, thought to be in response to an underlying mantle plume, that signals the onset of rifting.

**Triple Point:** A temperature point at which a substance can be either a solid, liquid, or gas. Many compounds have triple points at very specific temperatures and pressures. Or a point in a phase diagram where the three states of matter are in equilibrium.

**triple point:** The temperature and pressure at which the solid, liquid, and gaseous forms of a substance are at equilibrium.

**triple-negative breast cancer :** Triple-negative breast cancer is defined by a lack of expression of estrogen receptor (ER), progesterone receptor (PR), and human epidermal growth factor receptor 2 (HER2/neu). Also called ER-negative PR-negative HER2/neu-negative breast cancer. OR Describes breast cancer cells that do not have estrogen receptors, progesterone receptors, or large amounts of HER2/neu protein. Also called ER-negative PR-negative HER2/neu-negative breast cancer.

**triptolide analogue:** A water soluble analogue of the diterpenoid triepoxide triptolide isolated from the Chinese herb *Tripterygium wilfordii* Hook F with potential antineoplastic activity. Upon intravenous administration, the triptolide analogue inhibits heat shock protein 70

(HSP70) and prevents HSP70-mediated inhibition of apoptosis. This leads to both the induction of apoptosis and a reduction of cancer cell growth. HSP70, a molecular chaperone upregulated in various cancer cells, plays a key role in the inhibition of caspase-dependent and -independent apoptosis.

**triptorelin:** A synthetic decapeptide agonist analog of luteinizing hormone releasing hormone (LHRH). Possessing greater potency than endogenous LHRH, triptorelin reversibly represses gonadotropin secretion. After chronic, continuous administration, this agent effects sustained decreases in LH and FSH production and testicular and ovarian steroidogenesis. Serum testosterone concentrations may fall to levels typically observed in surgically castrated men. OR A drug that is used to treat advanced prostate cancer, and is being studied in the treatment of breast cancer. It belongs to the family of hormonal drugs called gonadotropin-releasing hormone analogs. Also called Trelstar.

**triptorelin pamoate:** The pamoate salt of triptorelin, a synthetic decapeptide agonist analog of luteinizing hormone releasing hormone (LHRH). Possessing greater potency than endogenous LHRH, triptorelin reversibly represses gonadotropin secretion after prolonged administration. After chronic, continuous administration, a sustained decrease in LH, FSH and testicular and ovarian steroidogenesis is observed. The serum testosterone concentration may fall to levels typically seen in surgically castrated men.

**tris-acryl gelatin microspheres:** An embolic particle composed of water-soluble, compressible, nonabsorbable tris-acryl gelatin microspheres, with potential use for embolization. Upon administration, the tris-acryl gelatin microspheres (TAGM) serve as an embolic agent before surgery for highly vascularized areas, such as those seen in certain tumors, by penetrating into the vascular system and blocking blood flow. These microspheres may be used to encapsulate various therapeutic agents; drug-loaded microspheres can then be used as drug delivery vehicles during embolization of tumor vasculature.

**Trisenox :** A drug used to treat acute promyelocytic leukemia (APL) that has not gotten better or that has come back after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Also called arsenic trioxide.

**trisomy :** The presence of an extra chromosome, resulting in a total of three copies of that chromosome instead of the normal 2 copies (e.g., trisomy 21, or Down syndrome).

**trisomy 18 :** A genetic disorder caused by having an extra chromosome 18 in some or all of the body's cells. Trisomy 18 is marked by a low birth weight and certain abnormal features. These include a small, abnormally shaped head; a small jaw and mouth; clenched fists with overlapping fingers; and heart, lung, kidney, intestine, and stomach defects. Many babies with trisomy 18 die before birth or within the first month of life, but some children live for several years. Having trisomy 18 increases the risk of certain types of cancer, such as hepatoblastoma (a type of liver cancer) and Wilms tumor (a type of kidney cancer). Also called Edwards syndrome.

**Tritium:** A rare isotope of hydrogen with one proton and two neutrons. Or A radioactive isotope of hydrogen. Because it is chemically identical to natural hydrogen, tritium can easily be taken into the body by any ingestion path. It decays by emitting beta particles and has a half-life of about 12.5 years. For related information, see the Fact Sheet on Tritium, Radiation Protection Limits, and Drinking Water Standards. or A radioisotope of hydrogen with two neutrons and one proton in its nucleus

**Trituration:** A process involving grinding a solid with a liquid

**trivalent influenza vaccine:** A synthetic vaccine consisting of three inactivated influenza viruses, two different influenza type A strains and one influenza type B strain. Trivalent influenza vaccine is formulated annually, based on influenza strains projected to be prevalent in the upcoming flu season. This agent may be formulated for injection or intranasal administration.

**trivalent live-attenuated influenza vaccine:** A weakened live virus vaccine containing three seasonal influenza reassortants with prophylactic activity against influenza subtypes A and B. The trivalent live-attenuated influenza vaccine (LAIV) contains 2 strains of the influenza subtype A, one for H1N1 and one for H3N2, and one strain of subtype B. Upon intranasal administration by sprayer of the trivalent LAIV, the live viruses replicate in the upper respiratory tract and induce an immune response leading to active immunization against influenza subtypes A and B.

**Trk inhibitor LOXO-101:** An orally available, tropomyosin receptor kinase (Trk) inhibitor, with potential antineoplastic activity. Upon

administration, LOXO-101 binds to Trk, thereby preventing neurotrophin-Trk interaction and Trk activation, which results in both the induction of cellular apoptosis and the inhibition of cell growth in tumors that overexpress Trk. Trk, a receptor tyrosine kinase activated by neurotrophins, is mutated in a variety of cancer cell types and plays an important role in tumor cell growth and survival.

**tRNA:** transfer RNA; RNA molecules in the cytoplasm of a cell that carry amino acids to the ribosomes for protein synthesis.

**trodusquemine:** A naturally-occurring cholestane and non-competitive, allosteric inhibitor of protein tyrosine phosphatase 1B (PTP1B), with potential hypoglycemic, anti-diabetic, anti-obesity, and antineoplastic activities. Upon administration, trodusquemine selectively targets and inhibits PTP1B, thereby preventing PTP1B-mediated signaling. This prevents the dephosphorylation of the insulin receptor, which improves insulin signaling and insulin sensitivity, and decreases blood glucose levels. In susceptible cancer cells, inhibition of PTP1B causes a reduction of tumor cell proliferation. In addition, as trodusquemine can cross the blood-brain barrier (BBB), it centrally suppresses appetite and causes weight loss. PTP1B, a tyrosine phosphatase, is elevated in certain cancer cells; it is specifically upregulated in human epidermal growth factor receptor 2 (HER2)-driven cancers where it promotes cell growth, and is correlated with a poor prognosis and increased metastatic potential. In diabetes, PTP1B upregulation plays a major role in insulin resistance. Check for active clinical trials using this agent.

**trofosfamide:** An orally bioavailable oxazaphosphorine prodrug with antineoplastic activity. Trofosfamide (TFF) is metabolized predominantly to the cyclophosphamide analogue ifosfamide (IFO), which is then metabolized by liver cytochrome P450s to the active isophosphoramidate mustard (IPM). IPM alkylates DNA to form DNA-DNA cross-links, which may result in inhibition of DNA, RNA and protein synthesis, and tumor cell apoptosis.

**troglitazone:** An orally-active thiazolidinedione with antidiabetic and hepatotoxic properties and potential antineoplastic activity. Troglitazone activates peroxisome proliferator-activated receptor gamma (PPAR-gamma), a ligand-activated transcription factor, thereby inducing cell differentiation and inhibiting cell growth and angiogenesis. This agent also

modulates the transcription of insulin-responsive genes, inhibits macrophage and monocyte activation, and stimulates adipocyte differentiation.

**trophic level:** The amount of energy, in terms of food, that an organism needs. Organisms capable of utilizing inorganic chemicals, e.g., plants, or food of low energy content are said to be on a low trophic level whereas, for example, predator species needing food of high energy content are said to be on a high trophic level. The trophic level, thus, indicates the level of the organism in the food chain (WHO, 1979). or A segment of the food chain in which all organisms obtain food and energy in, basically, the same manner (e.g., photosynthesis, herbivory, or carnivory) and in which all organisms are the same number of links from the photosynthetic segment.

**trophoblast:** a layer of cells that forms after fertilization; projections from the trophoblast form vessels, which merge with maternal blood vessels to form the placenta. OR A thin layer of cells that helps a developing embryo attach to the wall of the uterus, protects the embryo, and forms a part of the placenta.

**tropic hormone (tropin):** A peptide hormone that stimulates a specific target gland to secrete its hormone; for example, thyrotropin produced by the pituitary stimulates secretion of thyroxine by the thyroid.

**tropical depression:** strong low-pressure system formed in low latitudes.

**tropical storm:** low-pressure system with sustained winds from 39 to 73 mph.

**tropisetron:** An indole derivative with antiemetic activity. As a selective serotonin receptor antagonist, tropisetron competitively blocks the action of serotonin at 5HT<sub>3</sub> receptors, resulting in suppression of chemotherapy- and radiotherapy-induced nausea and vomiting. Check for active clinical trials using this agent.

**tropisetron :** A drug used to prevent nausea and vomiting caused by cancer treatment. It is also used to prevent nausea and vomiting after surgery. Tropisetron blocks the action of the chemical serotonin, which binds to certain nerves and may trigger nausea and vomiting. Blocking serotonin may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. It is not available in the United States.

**tropisetron hydrochloride:** The hydrochloride salt form of tropisetron, a selective, competitive serotonin 5-hydroxytryptamine type 3 (5-HT<sub>3</sub>) receptor antagonist, with antinauseant and antiemetic activities. Tropisetron competitively binds to and blocks the action of serotonin at 5HT<sub>3</sub> receptors peripherally on vagus nerve terminals located in the gastrointestinal (GI) tract as well as centrally in the chemoreceptor trigger zone (CTZ) of the area postrema of the central nervous system (CNS). This results in the suppression of chemotherapy- and radiotherapy-induced nausea and vomiting.

**tropism:** the bending or turning response of a plant caused by external stimuli.

**Tropomyosin:** Located in the thin filaments of a sarcomere, a protein that plays a role in the regulation of muscle contraction by blocking the interaction of myosin with actin at low Ca<sup>2+</sup> concentrations; regulated by troponin.

**tropomyosin receptor kinase inhibitor AZD7451:** A tropomyosin receptor kinase (TRK) inhibitor with potential antineoplastic activity. AZD7451 binds to TRK, thereby preventing the neurotrophin-TRK interaction and subsequent TRK activation. This may eventually result in an inhibition of tumor cell proliferation in TRK-expressing tumor cells. TRK, a receptor tyrosine kinase activated by neurotrophins, is mutated in a variety of cancer cell types and plays an important role in tumor cell growth, invasion and survival. Check for active clinical trials using this agent.

**Troponin complex:** Located in the thin filaments of the sarcomeres, that regulate muscle contraction through allosteric interactions with tropomyosin in response to changes in Ca<sup>2+</sup> concentrations.

**tropopause:** region between the troposphere and the stratosphere. Or The boundary between the troposphere and the stratosphere (about 8 km in polar regions and about 15 km in tropical regions), usually characterized by an abrupt change of lapse rate. The regions above the troposphere have increased atmospheric stability than those below. The tropopause marks the vertical limit of most clouds and storms.

**troposphere:** The lowest part of the earth's atmosphere, extending from the surface of the planet to the bottom of the stratosphere. Or lowest level of the atmosphere, where weather occurs; temperature decreases with altitude. Or The inner layer of the atmosphere below about 15 km, within which

there is normally a steady decrease of temperature with increasing altitude. Nearly all clouds form and weather conditions manifest themselves within this region, and its thermal structure is caused primarily by the heating of the Earth's surface by solar radiation, followed by heat transfer by turbulent mixing and convection.

**TROUTON RATIO:** The ratio of elongational (extensional) viscosity to (shear) viscosity for Newtonian fluids is 3. Polymers do not obey this relation. Ratios can range up to 100 for melts and up to perhaps 10,000 for solutions.

**TroVax:** (Other name for: recombinant modified vaccinia Ankara-5T4 vaccine)

**troxacitabine:** A dioxolane derivative and a novel L-configuration deoxycytidine analogue with potent antineoplastic activity. When incorporated into growing chain during DNA replication, troxacitabine stops DNA polymerization due to its unnatural L-configuration, in contrast to the normal nucleotides with D-configuration. As a result, this agent terminates DNA synthesis upon incorporated into DNA molecules, and consequently interrupts tumor cell proliferation. or A drug being studied for use as an anticancer agent.

**Troxatyl:** (Other name for: troxacitabine)

**TRP (transient receptor potential) channels:** A family of ion channels whose properties are altered in response to motion.

**TRP2 mRNA-electroporated autologous langerhans-type dendritic cell vaccine:** A cancer cell vaccine composed of autologous human Langerhans-type dendritic cells (also known as Langerhans cells or LCs) that are electroporated with mRNA encoding full-length murine tyrosinase-related peptide 2 (TRP2), with potential antineoplastic and immunomodulating activities. Upon vaccination, the TRP2 mRNA-electroporated autologous Langerhans-type dendritic cell vaccine may stimulate the immune system to mount a cytotoxic T-lymphocyte (CTL) response against TRP2-expressing tumor cells. TRP2, a tautomerase involved in the synthesis of melanin, is only expressed in melanomas, melanocytes, and the retina. The LCs are differentiated from CD34 positive hematopoietic progenitor cells.

**TRPV6:** A protein found in cell membranes that moves calcium into cells. Levels of TRPV6 are lower than normal in patients who don't have enough

vitamin D. High levels of the protein may be found in breast cancer tissue. It is a type of calcium channel protein. Also called transient receptor potential cation channel, subfamily V, member 6.

**TRPV6 calcium channel inhibitor SOR-C13:** An inhibitor of transient receptor potential cation channel vanilloid family member 6 (TRPV6, CaT1 or CATL) with potential antineoplastic activity. TRPV6 calcium channel inhibitor SOR-C13 binds to TRPV6 and prevents the influx of calcium ions into TRPV6-expressing tumor cells. This inhibits the activation of nuclear factor of activated T-cell (NFAT) transcription complex which may result in an inhibition of calcium-dependent cancer cell proliferation and an induction of apoptosis in tumor cells overexpressing TRPV6. The TRPV6 ion channel plays a key role in calcium homeostasis and is highly selective for calcium compared to other cations; it is overexpressed in a variety of tumors and initiates tumor cell growth, proliferation and metastases.

**True Formula:** This formula tells you the number of atoms in a molecule for each element. Water has two hydrogen atoms and one oxygen atom when you look at the true formula.

**true histiocytic lymphoma :** A rare, very aggressive (fast-growing) type of non-Hodgkin lymphoma (cancer that begins in the cells of the immune system). It is marked by large abnormal lymphoid cells that do not look like T cells or B cells.

**true lavender :** A plant with aromatic leaves and flowers that is a member of the mint family. Oil from the flowers has been used in some cultures to treat certain medical problems, to keep insects away, and to wash in. It is also used in aromatherapy. Perillyl alcohol, a substance found in true lavender, is being studied in cancer prevention and treatment. The scientific name is *Lavandula angustifolia*. Also called English lavender and lavender.

**True North:** geographic North Pole, latitude 90° N.

**Truer Tracking :** The unique profile off the TruSeat Lehr provides the most accurate seating possible and thus provides optimal belt tracking.

**truncated spurs:** topographic spurs along a valley that have been truncated by glacial erosion in the valley.

**Trunking:** Description commonly used for ventilating and other ducting usually, but not always, of metal. Or An extruded PVC-U channel used to contain and protect pipes or cables.

**Truphylline:** (Other name for: aminophylline)

**TRUS:** A procedure in which a probe that sends out high-energy sound waves is inserted into the rectum. The sound waves are bounced off internal tissues or organs and make echoes. The echoes form a picture of body tissue called a sonogram. TRUS is used to look for abnormalities in the rectum and nearby structures, including the prostate. Also called endorectal ultrasound, ERUS, and transrectal ultrasound.

**TruSeat Mesh :** A balanced weave wire mesh fabric consisting of alternating right and left hand flattened spirals fully seated into specially formed crimped connector rods - commonly used in baking or glass processing systems.

**Truss:** A combination of timber or metalwork so arranged as to make a rigid frame. Especially used to denote roof framing, hence 'roof truss', examples of which can be readily seen in industrial buildings.

**trust :** A legal document in which a person states what is to be done with his or her property after death. There are many types of trusts, and a trust may take the place of a will.

**Trypsin:** A proteolytic enzyme that cleaves (cuts) peptide chains next to the basic amino acids arginine and lysine.

**Tryptic peptide mapping:** The technique of generating a chromatographic profile characteristic of the fragments resulting from trypsin enzyme cleavage of the protein.

**Tryptic peptide mapping:** Tryptic peptide mapping. The technique of generating a chromatographic profile characteristic of the fragments resulting from trypsin enzyme cleavage of the protein.

**Tryptophan:** Any enthusiastic admirer of the Slovenian guitarist Wenceslas Trypto. Actually, it is an amino acid with the useful property of absorbing ultraviolet light, helping to make proteins visible to detectors in chromatographs. Some vitamin suppliers call it "the natural alternative to Prozac". Tryptophan's biochemical symbol is T and it looks like this:

**tryptophanase:** Encoded by human TDO2 Gene, 406-aa 48-kDa  
Tryptophanase is a homotetramer that may bind protoheme IV involved in tryptophan catabolism with broad specificity towards tryptamine and derivatives including tryptophan, 5-hydroxytryptophan, and serotonin.

**TS-1:** (Other name for: tegafur-gimeracil-oteracil potassium)

**TS-ONE:** (Other name for: tegafur-gimeracil-oteracil potassium)

**TSEB radiation therapy :** A type of radiation therapy using electrons that is directed at the entire surface of the body. This type of radiation goes into the outer layers of the skin, but does not go deeper into tissues and organs below the skin. Also called total skin electron beam radiation therapy.

**TSH:** A hormone produced by the pituitary gland. TSH stimulates the release of thyroid hormone from thyroglobulin. It also stimulates the growth of thyroid follicular cells. An abnormal TSH level may mean that the thyroid hormonal regulation system is out of control, usually as a result of a benign condition (hyperthyroidism or hypothyroidism). Also called thyroid-stimulating hormone.

**TSNA:** A type of harmful, cancer-causing chemical found in tobacco and tobacco smoke. TSNAs are formed when tobacco leaves are grown, cured, aged, and processed. Tobacco products can contain different amounts of TSNAs, depending on how they are made. Also called tobacco-specific nitrosamine.

**TSP-1 mimetic fusion protein CVX-045:** A fusion protein containing two thrombospondin (TSP-1)-derived nonamer peptides covalently attached, via a proprietary diketone linker, to a proprietary humanized catalytic monoclonal aldolase monoclonal antibody with potential antiangiogenic and antineoplastic activities. The TSP-1 mimetic peptide moieties of TSP-1 mimetic fusion protein CVX-045 bind to TSP-1 receptors, such as CD36, and inhibit tumor angiogenesis, which may result in the inhibition of tumor cell proliferation. The proprietary humanized catalytic monoclonal aldolase monoclonal antibody contains reactive lysine residues in its binding sites, which react covalently with compounds having a diketone function; the TSP-1 mimetic peptide moieties are then covalently attached to the diketone linkers via a proprietary spacer.

**tsunami:** a large wave created by an underwater earthquake or landslide.

**TTI-237:** A small synthetic molecule of triazolopyrimidine derivative with potential antitumor activity. With a novel mechanism of action distinct from the action of other vinca alkaloid compounds, TTI-237 specifically binds to tubulin at the vinca site, and promotes the polymerization of tubulin into microtubules. TTI-237 stabilizes tubulin and inhibits microtubule disassembly. This results in cell cycle arrest at the G2/M phase, and leading

to cell death. OR A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called mitotic inhibitors.

**TTMB:** A procedure being studied in the diagnosis of prostate cancer and in planning prostate cancer treatment. Ultrasound is used to create a map of the prostate so the whole prostate gland can be seen in three dimensions and divided into 24 areas. Needles are then inserted through a template into each of the 24 areas and tissue is removed to be checked under a microscope. Also called transperineal template-guided prostate mapping biopsy.

**TTP:** The length of time from the date of diagnosis or the start of treatment for a disease until the disease starts to get worse or spread to other parts of the body. In a clinical trial, measuring the TTP is one way to see how well a new treatment works. Also called time to progression.

**tubal ligation :** An operation to tie the fallopian tubes closed. This procedure prevents pregnancy by blocking the passage of eggs from the ovaries to the uterus.

**tubefeeding :** A way of giving medicines and liquids, including liquid foods, through a small tube placed through the nose or mouth into the stomach or small intestine. Sometimes the tube is placed into the stomach or small intestine through an incision (cut) made on the outside of the abdomen. Tubefeeding may be added to what a person is able to eat and drink, or it may be the only source of nutrition. It is a type of enteral nutrition. Also called gavage.

**tubercidin:** An antibiotic and adenosine analog isolated from the bacterium *Streptomyces tubercidicus* with potential antineoplastic activity. Tubercidin is incorporated into DNA and inhibits polymerases, thereby inhibiting DNA replication and RNA and protein synthesis. This agent also exhibits antifungal and antiviral activities.

**tuberculosis :** A disease caused by a specific type of bacteria that spreads from one person to another through the air. Tuberculosis can affect many parts of the body, but most often affects the lungs. A person may not have symptoms of tuberculosis for years, but they may appear when the patient becomes ill with a serious condition like diabetes, AIDS, or cancer. Tuberculosis can usually be treated and cured with antibiotics. Also called TB.

**tuberin:** protein encoded by the tuberous sclerosis 2 (TSC2) gene

**tuberous sclerosis :** A genetic disorder in which benign (not cancer) tumors form in the kidneys, brain, eyes, heart, lungs, and skin. This disease can cause seizures, mental disabilities, and different types of skin lesions.

**Tubing:** Blown film is extruded through a circular die which creates a tube of film. When the tube of film is collapsed and rolled onto a core, the finished product is called tubing. OR A flexible, non-reinforced, extruded cylinder of any length.

**Tubulin:** The major microtubule protein component that exists in two forms,  $\alpha$ - and  $\beta$ -tubulin; tubulins display gtpase activity that is vital for the assembly and disassembly of microtubules.

**tubulin :** One of a group of proteins found in high levels in the cell cytoplasm (fluid inside a cell but outside the cell's nucleus). Tubulins are the building blocks of microtubules (narrow, hollow tubes inside a cell), which are involved in cell division and cell movement. Certain anticancer drugs bind to and block the formation or function of tubulins, which may block cell division.

**tubulin inhibitor ALB 109564(a):** A semi-synthetic derivative of the vinka alkaloid vinblastine with potential antineoplastic activity. Tubulin inhibitor ALB 109564(a) binds to tubulin monomers and inhibits microtubule formation, resulting in disruption of mitotic spindle assembly and arrest of tumor cells in the G2/M phase of the cell cycle.

**tubulin polymerization inhibitor CKD-516:** A benzophenone derivative and water soluble valine prodrug of the tubulin binding agent S516, with potential tubulin-inhibiting, vascular-disrupting and antineoplastic activity. Upon administration, tubulin polymerization inhibitor CKD-516 is converted into its active metabolite S-516, which binds to tubulin and prevents its polymerization in tumor blood vessel endothelial cells and tumor cells. This blocks the formation of the mitotic spindle and leads to cell cycle arrest at the G2/M phase. As a result, this agent disrupts the tumor vasculature and tumor blood flow, deprives tumor cells of nutrients and induces tumor cell apoptosis. In addition, this agent has a direct cytotoxic effect on tumor cells by inhibiting tubulin polymerization. Check for active clinical trials using this agent.

**tubulin-binding agent SSR97225:** An antimetabolic tubulin-binding agent with potential antineoplastic activity. Tubulin-binding agent SSR97225

binds to tubulin, arresting the cell cycle at the G2/M checkpoint and preventing mitosis.

**tubulovillous adenoma :** A type of polyp that grows in the colon and other places in the gastrointestinal tract and sometimes in other parts of the body. These adenomas may become malignant (cancer).

**tucotuzumab celmoleukin:** A recombinant fusion protein comprised of a human monoclonal antibody directed against the epithelial cell adhesion molecule (EpCAM or KS) linked to an active interleukin-2 (IL2) molecule with potential antineoplastic activity. The humanized monoclonal antibody moiety of tucotuzumab celmoleukin recognizes and binds to EpCAM, a cell surface epithelial protein that is expressed on a wide variety of cancer cells, thereby concentrating IL2 in EpCAM-expressing tumor tissue.

Subsequently, the localized IL2 moiety of this fusion protein may stimulate a cytotoxic T-cell antitumor immune response.

**TUEVAP:** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra into the prostate. A ball or special wire loop on the instrument heats the prostate tissue and turns it to vapor. This relieves pressure and improves urine flow. Also called transurethral electroevaporation of the prostate, transurethral electrovaporization of the prostate, and TUVF.

**tuff:** a volcanic rock consisting of small particles such as ash and dust.

**tuff breccia:** a volcanic rock that contains angular, coarse rock fragments in a matrix of finer-grained ash and dust.

**tufted angioma :** A rare, benign (not cancer) blood vessel tumor that usually forms on the skin of the arms and legs, but may also form in deeper tissues, such as muscle and bone. Tufted angiomas grow slowly and can spread to nearby tissue. Signs and symptoms may include firm, painful areas of skin that look bruised; purple or brownish-red areas on the skin; easy bruising; anemia; and abnormal bleeding. Tufted angiomas are most common in infants and young children. They are a type of vascular tumor.

**tui na :** Chinese massage that uses kneading, pressing, rolling, shaking, and stretching of the body. Tui na is thought to regulate qi (vital energy) and blood flow, and improve the function of tendons, bones, and joints.

**TUIP:** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra and one or two small cuts are

made in the bladder neck and prostate. This relieves pressure and improves urine flow. Also called transurethral incision of the prostate.

**Tumbling:** Finishing operation for small plastic articles by which gates, flash, and fins are removed and/or surfaces are polished by rotating them in a barrel together with wooden pegs, sawdust, and polishing compounds.

**tumescent mastectomy :** A type of surgery to remove the breast. The breast is injected with a liquid mixture of salts and small amounts of two drugs. These drugs are lidocaine, to numb the area, and epinephrine, to narrow blood vessels and reduce bleeding. Tumescent mastectomy is usually used to treat breast cancer in elderly patients.

**tumor :** An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumors may be benign (not cancer), or malignant (cancer). Also called neoplasm.

**tumor antigen vaccine :** A vaccine made of cancer cells, parts of cancer cells, or pure tumor antigens (substances isolated from tumor cells). A tumor antigen vaccine may stimulate the body's immune system to find and kill cancer cells.

**tumor board review :** A treatment planning approach in which a number of doctors who are experts in different specialties (disciplines) review and discuss the medical condition and treatment options of a patient. In cancer treatment, a tumor board review may include that of a medical oncologist (who provides cancer treatment with drugs), a surgical oncologist (who provides cancer treatment with surgery), and a radiation oncologist (who provides cancer treatment with radiation). Also called multidisciplinary opinion.

**tumor burden :** Refers to the number of cancer cells, the size of a tumor, or the amount of cancer in the body. Also called tumor load.

**tumor cell-derived DRibbles vaccine:** An autophagosome-enriched cancer vaccine composed of short-lived proteins (SLiPs) and defective ribosomal products (DRiPs) derived from tumor cells, with potential immunostimulating and antineoplastic activities. The Dribbles are DriPs- and SLiPs-filled autophagosomes that are made by treating cancer cells with both a proteasome inhibitor, to prevent protein degradation, and an autophagy inducer, which causes the accumulation of DriPs, SLiPs, and their immunogenic fragments. Upon administration of a Dribbles vaccine, the proteins or antigen fragments in Dribbles may stimulate the immune

system to mount cytotoxic T-lymphocyte (CTL) and helper T-lymphocyte responses against the cancer-associated antigens (TAAs).

**tumor debulking :** Surgical removal of as much of a tumor as possible. Tumor debulking may increase the chance that chemotherapy or radiation therapy will kill all the tumor cells. It may also be done to relieve symptoms or help the patient live longer. Also called debulking.

**tumor grade :** A description of a tumor based on how abnormal the cancer cells and tissue look under a microscope and how quickly the cancer cells are likely to grow and spread. Low-grade cancer cells look more like normal cells and tend to grow and spread more slowly than high-grade cancer cells. Grading systems are different for each type of cancer. They are used to help plan treatment and determine prognosis. Also called grade and histologic grade.

**tumor infiltrating lymphocyte :** A white blood cell that has left the bloodstream and migrated into a tumor.

**tumor initiation :** A process in which normal cells are changed so that they are able to form tumors. Substances that cause cancer can be tumor initiators.

**tumor load :** Refers to the number of cancer cells, the size of a tumor, or the amount of cancer in the body. Also called tumor burden.

**tumor lysis syndrome :** A condition that can occur after treatment of a fast-growing cancer, especially certain leukemias and lymphomas (cancers of the blood). As tumor cells die, they break apart and release their contents into the blood. This causes a change in certain chemicals in the blood, which may cause damage to organs, including the kidneys, heart, and liver.

**tumor marker :** A substance found in tissue, blood, or other body fluids that may be a sign of cancer or certain benign (noncancerous) conditions. Most tumor markers are made by both normal cells and cancer cells, but they are made in larger amounts by cancer cells. A tumor marker may help to diagnose cancer, plan treatment, or find out how well treatment is working or if cancer has come back. Examples of tumor markers include CA-125 (in ovarian cancer), CA 15-3 (in breast cancer), CEA (in colon cancer), and PSA (in prostate cancer).

**tumor marker test :** A test that measures the amount of substances called tumor markers in tissue, blood, urine, or other body fluids. Most tumor

markers are made by both normal cells and cancer cells, but they are made in higher amounts by cancer cells. A high level of a tumor marker may be a sign of cancer or certain benign (noncancerous) conditions. A tumor marker test is usually done with other tests, such as biopsies, to help diagnose some types of cancer. It may also be used to help plan treatment or find out how well treatment is working or if cancer has come back.

**tumor microenvironment :** The normal cells, molecules, and blood vessels that surround and feed a tumor cell. A tumor can change its microenvironment, and the microenvironment can affect how a tumor grows and spreads.

**tumor model :** Cells, tissues, or animals used to study the development and progression of cancer, and to test new treatments before they are given to humans. Animals with transplanted human tumors or other tissues are called xenograft models.

**tumor necrosis factor :** A protein made by white blood cells in response to an antigen (substance that causes the immune system to make a specific immune response) or infection. Tumor necrosis factor can also be made in the laboratory. It may boost a person's immune response, and also may cause necrosis (cell death) of some types of tumor cells. Tumor necrosis factor is being studied in the treatment of some types of cancer. It is a type of cytokine. Also called TNF.

**tumor necrosis factor receptor superfamily member 10A :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of tumor necrosis factor receptor superfamily member 10A on cancer cells may kill more cells. Also called death receptor 4, DR4, TRAIL receptor 1, and TRAIL-R1.

**tumor necrosis factor receptor superfamily member 10B :** A protein on the surface of certain cells that binds another protein called TRAIL, which may kill some cancer cells. An increase in the amount or activity of tumor necrosis factor receptor superfamily member 10B on cancer cells may kill more cells. Also called death receptor 5, DR5, TRAIL receptor 2, and TRAIL-R2.

**tumor necrosis factor-related apoptosis-inducing ligand :** A cell protein that can attach to certain molecules in some cancer cells and may kill the cells. Tumor necrosis factor-related apoptosis-inducing ligand is being

studied in the treatment of cancer. Also called Apo-2L, TNF-related apoptosis-inducing ligand, and TRAIL.

**tumor peptide-loaded myeloid dendritic cells:** A cell-based cancer vaccine composed of myeloid dendritic cells (myDCs) pulsed with tumor peptides with potential immunostimulatory and antineoplastic activities. Upon administration, the tumor peptide-loaded myDCs stimulate a specific cytotoxic T-lymphocyte (CTL) response against the tumor cells, resulting in tumor cell lysis. Check for active clinical trials using this agent.

**Tumor promoters:** Chemicals that promote the proliferation of carcinogenic cells; phorbol esters are tumor promoters.

**tumor promotion :** A process in which existing tumors are stimulated to grow. Tumor promoters are not able to cause tumors to form.

**tumor sequencing :** Sequencing of somatic tissue, such as tumors, refers to looking for variants in DNA that typically occur after conception. Somatic mutations can occur in any of the cells of the body except the germ cells (sperm and egg) and therefore are not passed on to children. These variants can (but do not always) cause cancer or other diseases.

**tumor suppressor gene :** A type of gene that makes a protein called a tumor suppressor protein that helps control cell growth. Mutations (changes in DNA) in tumor suppressor genes may lead to cancer. Also called antioncogene.

**tumor suppressor gene :** A type of gene that regulates cell growth. When a tumor suppressor gene is mutated, uncontrolled cell growth may occur. This may contribute to the development of cancer. Also called antioncogene.

**tumor vasculature-targeted tumor necrosis factor alpha :** A substance being studied in the treatment of cancer. It is made by linking tumor necrosis factor (TNF) to a peptide. The peptide binds to tumor blood vessels, and TNF damages them. It is a type of biological response modifier. Also called NGR-TNF.

**tumor volume :** The size of a cancer measured by the amount of space taken up by the tumor. For example, the tumor volume of prostate cancer is the percentage of the prostate taken up by the tumor.

**tumor-cells apoptosis factor hormone-peptide:** A synthetic 14-amino acid peptide derived from a novel human peptide hormone, Tumor-Cells

Apoptosis Factor (TCApF), with potential antineoplastic activity. Upon intravenous administration, tumor-cells apoptosis factor hormone-peptide binds to the T1/ST2 receptor (IL1RL1) and activates both caspase 8 and Bcl-2 mediated apoptosis, in addition to the activation of p38 MAPK and JNK signaling cascades in tumor cells. Furthermore, this agent inhibits angiogenesis by suppressing the expressions of vascular endothelial growth factor A (VEGFA) and fms-related tyrosine kinase 1 (VEGFR1). Tumor-cells apoptosis factor hormone-peptide also modulates immune system responses via increasing the expressions of interleukin-10 and anti-angiogenic interleukin. T1/ST2 receptor, a member of the toll/interleukin-1 receptor superfamily, is overexpressed in certain cancer cells.

**tumor-derived :** Taken from an individual's own tumor tissue; may be used in the development of a vaccine that enhances the body's ability to build an immune response to the tumor.

**tumor-homing peptide iRGD:** A 9-amino-acid-based cyclic, tumor specific homing, arginine-glycine-aspartic acid (RGD)-based peptide (CRGDKRGPDC), with tumor penetrating activity. The iRGD contains the RGD motif as well as the C-terminal end binding (CendR) motif that increases internalization. Upon administration, the RGD motif of the iRGD peptide is able to specifically target tumors by binding to  $\alpha$ v $\beta$ 3/ $\alpha$ v $\beta$ 5 integrins on tumor endothelium. In turn, iRGD is cleaved by specific tumor proteases, which exposes the positively charged CendR motif. This motif binds to neuropilin-1 (NRP-1), a receptor overexpressed on certain tumor cells. This increases vascular permeability of tumor blood vessels and promotes tumor penetration. Compared to other RGD peptides, this agent is able to both improve delivery and increase the accumulation of co-administered or conjugated chemotherapeutic agents in the tumor.

**tumor-specific antigen :** A protein or other molecule that is unique to cancer cells or is much more abundant in them. These molecules are usually found in the plasma (outer) membrane, and they are thought to be potential targets for immunotherapy or other types of anticancer treatment.

**Tumorigenesis:** The mechanism of tumor formation.

**tumour:** (neoplasm) This term describes any growth of tissue forming an abnormal mass. Cells of a benign tumour will not spread and will not cause

cancer. Cells of a malignant tumour can spread through the body and cause cancer.

**TUMT:** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra into the bladder. A small microwave antenna on the instrument heats nearby prostate tissue and destroys it. This relieves pressure and improves urine flow. Also called transurethral microwave thermotherapy.

**TUNA:** A procedure that is used to treat benign prostatic hypertrophy (BPH). An instrument with a small probe that gives off low-level radiofrequency energy is inserted through the urethra into the prostate. The energy from the probe heats nearby prostate tissue and destroys it. This relieves pressure and improves urine flow. Also called transurethral needle ablation and transurethral radiofrequency ablation.

**tundra:** A type of ecosystem dominated by lichens, mosses, grasses, and woody plants. It is found at high latitudes (arctic tundra) and high altitudes (alpine tundra). Arctic tundra is underlain by permafrost and usually very wet.

**Tungsten:** Symbol:"W" Atomic Number:"74" Atomic Mass: 183.85amu. This is one of the transition elements from period six. Tungsten used to be called wolfram (thus the W). It is a light-gray metal found in many minerals. You may find it in electric components, power tools, paints, and even fluorescent lights.

**Tungsten Mesh :** Conventional weave wire mesh fabric consisting of only left hand spirals, wound one into the next so as to form a continuous fabric. Special material allows for use in temperature up to 3632°F (2000°C).

**Tungstic:** Tungstic acid comes in two forms - ortho tungstic acid, which is  $H_2WO_4$ , and meta tungstic acid, which is  $H_2W_4O_{13} \cdot 9H_2O$ . The tungstate anion is  $WO_4^{2-}$ .

**Tunicamycin:** An antibiotic inhibitor of N-glycosylation that is a hydrophobic analog of UDP-Nacetylglucosamine; blocks the first step in core oligosaccharide synthesis.

**Tunnel gate:** A gate that is cut through the body of one side of the mold to create a gate that does not leave a mark on the exterior face of the part.

**TUR:** Surgery performed with a special instrument inserted through the urethra. Also called transurethral resection.

**turbidimeter:** an instrument for measurement of turbidity in which a standard suspension is used for reference.

**turbidites:** sediments that are deposited by turbidity currents and that typically show graded bedding.

**turbidity:** (1) a condition in water or wastewater caused by the presence of suspended matter, resulting in the scattering and absorption of light rays. (2) a measure of fine suspended matter in liquids. (3) an analytical quantity usually reported in turbidity units (NTU/FNU, FTU, JTU) determined by measurements of light diffraction.

**turbidity current:** a large volume of dense, sediment-laden water that results when sand and mud on a continental slope are dislodged by landslides or earthquakes and become suspended in the water.

**Turbine:** A rotary engine made with a series of curved vanes on a rotating shaft, usually turned by water or steam. Turbines are considered the most economical means to turn large electrical generators.

**Turbine generator (TG):** A steam (or water) turbine directly coupled to an electrical generator. The two devices are often referred to as one unit.

**Turcot syndrome :** A rare, inherited disorder in which polyps (abnormal growths of tissue) form on the inside walls of the colon and rectum, and tumors form in the brain. There are two types of Turcot syndrome, which are caused by mutations (changes) in different genes. People with Turcot syndrome have a higher-than-normal risk of colorectal cancer and brain cancer, especially glioblastoma and medulloblastoma.

**turgor pressure:** the pressure exerted on a plant's guard cells to open.

**Turkish rhubarb :** The root of this plant has been used in some cultures to treat certain medical problems. It may have anti-inflammatory and anticancer effects. The scientific name is *Rheum palmatum* or *Rheum officinale*. Also called Chinese rhubarb, da-huang, Indian rhubarb, and rhubarb.

**turmeric :** An East Indian plant that is a member of the ginger family and is used as a spice and food color. The underground stems are used in some cultures to treat certain stomach problems. The substance in turmeric that gives it a yellow color (curcumin) is being studied in the treatment of cancer, Alzheimer disease, cystic fibrosis, and psoriasis. The scientific name is *Curcuma longa*. Also called Indian saffron and jiang huang.

**Turn Ratio :** The ratio of inside turn radius to the belt width.

**Turn-up Guard Edge:** A retaining edge formed by extending individual connectors or rod reinforcements, and turning them up at prescribed angles and spacings.

**Turn,  $\beta$ :** In proteins, a structural element composed of four amino acids, in which the CO and NH groups of residue 1 are hydrogen bonded to the NH and CO groups of residue 4, respectively; such a structure forms a hairpin turn, allowing polypeptide chains to reverse their direction.

**turnaround words:** Words that indicate a change in order from left to right. The expressions are turned around, and the second English phrase becomes the first algebraic expression (and visa versa). The basic turnaround words are, TO (including INTO), FROM, and THAN.

**Turned-up Fabric :** A retaining edge formed by turning up a portion of the belt at a prescribed angle to the carrying surface.

**Turning:** During the turning process, rod stock is rotated in a lathe machine while a tool is held against the stock to remove material and create a cylindrical part.

**Turning Radius :** The radius around which a belt may be flexed. It is commonly referred to as inside turning radius and is established by the nesting of links or pickets at the inside edge of the turn and by the belt width.

**Turnover number:** The maximum number of molecules of substrate that can be converted to product per active site per unit time. Or The number of substrate molecules converted into product by an enzyme molecule in a unit time when the enzyme is fully saturated with substrate; equal to the kinetic constant  $k_2$  (see Michaelis constant). or The number of times an enzyme molecule transforms a substrate molecule per unit time, under conditions giving maximal activity at substrate concentrations that are saturating.

**turnover rate:** The fraction of the total amount of mass (e.g., carbon) in a given pool or reservoir that is released from or that enters the pool in a given length of time. The turnover rate of carbon is often expressed as GtC/year.

**TURP :** Surgery to remove tissue from the prostate using an instrument inserted through the urethra. Also called transurethral resection of the prostate.

**TURPENTINE:** A colorless liquid, which is used as a thinner for oil paints and varnishes, distilled from the products of the pine tree.

**TUVP:** A procedure used to treat benign prostatic hypertrophy (BPH). An instrument is inserted through the urethra into the prostate. A ball or special wire loop on the instrument heats the prostate tissue and turns it to vapor. This relieves pressure and improves urine flow. Also called transurethral electroevaporation of the prostate, transurethral electrovaporization of the prostate, and TUEVAP.

**TVS:** A procedure used to examine the vagina, uterus, fallopian tubes, ovaries, and bladder. An instrument is inserted into the vagina that causes sound waves to bounce off organs inside the pelvis. These sound waves create echoes that are sent to a computer, which creates a picture called a sonogram. Also called transvaginal sonography and transvaginal ultrasound.

**twelve-step program :** A program to help people recover from substance abuse, emotional disorders, or addictions. The twelve steps come from an organization called Alcoholics Anonymous (AA) and are changed for each specific condition.

**Twin Screw Extruder:** Twin screw extrusion used in plastic extrusion manufacturing offers several advantages over single screw extrusion. It has better feeding and more positive conveying characteristics which allow the extruder to process hard-to-feed materials. In addition a better mixing and larger heat transfer area allows good control of stock temperatures, which are key elements in the extrusion of thermally sensitive materials. OR An extruder with a pair of screws working together in a common barrel. OR A screw extruder designed so that the pressure of the extrusion material drops substantially part way along the screw.

**Two-dimensional gel electrophoresis:** A means of analyzing a protein sample in which the sample is initially fractionated in one dimension by isoelectric focusing and is subsequently fractionated in a second dimension, perpendicular to the first, by SDS-polyacrylamide gel electrophoresis.

**Two-stage Screw:** A screw for use in a two stage extruder comprised of a decompression section which is before the final metering section.

**Twofold rotation axis:** A symmetry axis in which a rotation of  $180^\circ$  produces no change.

**Tygacil:** (Other name for: tigecycline)

**Tykerb :** A drug used with another anticancer drug to treat breast cancer that is HER2 positive and has advanced or metastasized (spread to other parts of the body) after treatment with other drugs. Tykerb is also being studied in the treatment of other types of cancer. It is a type of ErbB-2 and EGFR dual tyrosine kinase inhibitor. Also called GW572016, lapatinib, and lapatinib ditosylate.

**Tylenol:** (Other name for: acetaminophen)

**tympanites :** Swelling of the abdomen caused by gas in the intestines or peritoneal cavity. Also called meteorism.

**Tyndall Effect:** The effect of light scattering on particles in colloid systems, such as suspensions or emulsions.

**type 3 serotonin receptor antagonist :** A type of drug used to treat certain types of irritable bowel syndrome and relieve nausea and vomiting. It is a type of antiemetic. Also called 5-HT<sub>3</sub> receptor antagonist and 5-hydroxytryptamine 3 receptor antagonist.

**type C thymoma :** A rare type of thymus gland cancer. It usually spreads, has a high risk of recurrence, and has a poor survival rate. Thymic carcinoma is divided into subtypes, depending on the types of cells in which the cancer began. Also called thymic carcinoma.

**type-1 polarized dendritic cell-induced antigen-specific autologous cytotoxic T lymphocytes:** A preparation of autologous cytotoxic T lymphocytes (CTL), specifically reactive to melanoma-associated antigen 3 (MAGE-3), MAGE-4, survivin, human epidermal growth factor receptor 2 (HER2; ERBB2) and cyclooxygenase-2 (COX-2), with potential immunomodulating activity. Peripheral blood mononuclear cells (PBMCs) are collected from the patient. Subsequently, autologous dendritic cells (DCs) are separated, treated with a certain combination of cytokines to produce polarized type-1 DCs (DC1), and then are loaded with MAGE-3/MAGE-4/survivin/HER2/COX-2 CTL epitope peptides. In turn, autologous CTLs are collected, exposed ex vivo to the antigen-loaded DC1s and subsequently expanded in vitro. Upon re-infusion of the DC1-induced MAGE-3/MAGE-4/survivin/HER2/COX-2-specific autologous CTLs, the CTLs target and lyse tumor cells expressing the tumor-associated antigens (TAAs). Exposure to DC1s generates more potent CTLs and thus induces a more potent CTL response against TAA-expressing tumor cells. The

targeted TAAs play key roles in cellular proliferation and are overexpressed by a variety of cancer cell types. Check for active clinical trials using this agent.

**typhoid vaccine:** A bacterial vaccine used to prevent typhoid fever, which is caused by *Salmonella typhi* bacteria.

**tyrosyleptide:** A tripeptide consisting of tyrosine, serine, and leucine with potential antineoplastic activity. Although the mechanism of its antitumor activity has yet to be fully elucidated, tyrosyleptide appears to inhibit the expression of ICAM-1 (CD54), a cell adhesion factor of the immunoglobulin (Ig) superfamily that plays an important role in the invasion, adhesion, and metastasis of tumor cells. In addition, this agent may influence the Ca<sup>2+</sup>/calmodulin pathway, inhibiting phosphatidylinositol 3 kinase (PI3K); PI3K is upregulated in tumor cells and is involved in cellular proliferation.

**tyrosinase peptide:** One of a number of recombinant peptides consisting of amino acid residues of the enzyme tyrosinase, a protein frequently expressed by melanoma cells. Vaccination with tyrosinase peptide may stimulate cytotoxic T lymphocyte response against tyrosinase-expressing tumor cells, resulting in decreased tumor growth. OR A protein that is made from tumor cells and is used in a vaccine against melanoma. A tyrosinase peptide vaccine may stimulate the body's immune system to find and kill melanoma cells.

**tyrosinase-related protein-1:** A recombinant peptide of the tyrosinase-related protein 1 (TRP1) used in vaccine therapy. Expressed by cells of melanocyte origin, TRP1 is an enzyme involved in the process that converts tyrosinase to melanin pigments. Vaccination with TRP1 may stimulate cytotoxic T cell responses to melanoma cells.

**tyrosine kinase inhibitor :** A substance that blocks the action of enzymes called tyrosine kinases. Tyrosine kinases are a part of many cell functions, including cell signaling, growth, and division. These enzymes may be too active or found at high levels in some types of cancer cells, and blocking them may help keep cancer cells from growing. Some tyrosine kinase inhibitors are used to treat cancer. They are a type of targeted therapy.

**tyrosine kinase inhibitor BIBF 1120 :** A substance being studied in the treatment of some types of cancer. Tyrosine kinase inhibitor BIBF 1120 blocks enzymes needed for cells to grow, and may prevent the growth of

new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called BIBF 1120.

**tyrosine kinase inhibitor OSI-930:** A selective thiophene-derived tyrosine kinase inhibitor with potential antineoplastic activity. Tyrosine kinase inhibitor OSI-930 inhibits stem cell factor receptor (c-Kit) and the vascular endothelial growth factor receptor 2 (VEGFR2), which may result in the inhibition of both tumor cell proliferation and tumor angiogenesis. Both c-Kit and VEGFR2 are overexpressed in a variety of cancers.

**tyrosine kinase inhibitor XL228:** A synthetic molecule that targets multiple tyrosine kinases with potential antineoplastic activity. Tyrosine kinase inhibitor XL228 binds to and inhibits the activities of multiple tyrosine kinases, such as the insulin-like growth factor 1 receptor (IGF1R), Src tyrosine kinase, and Bcr-Abl tyrosine kinase. Blockade of these kinases may result in the inhibition of tumor angiogenesis, cell proliferation, and metastasis. In addition, this agent may be a potent inhibitor of the T315I mutant form of the Abl protein, which is associated with the resistance of chronic myelogenous leukemia (CML) to other tyrosine kinase inhibitors. IGF1R and Src tyrosine kinases are upregulated in many tumor cells and play important roles in tumor cell proliferation and metastasis. Bcr-Abl translocation leads to constitutive activation of ABL kinase and is commonly associated with Philadelphia-positive acute lymphocytic leukemia (ALL).

**tyrosinemia :** A rare, inherited disorder marked by high blood levels of a protein building block called tyrosine. This can cause a harmful buildup of tyrosine and other substances in the body's tissues and organs, especially in the liver, kidney, and nervous system. This can lead to serious medical problems and may increase the risk of liver cancer. Tyrosinemia is caused by mutations (changes) in certain genes that make enzymes needed to break down tyrosine.

**Tysabri:** (Other name for: natalizumab)

**Tyzeka:** (Other name for: telbivudine)

**TZ:** Triple-zeta. See "DZ."

**TZ2P:** Triple-zeta with two sets of polarization functions. See "DZP."

**TZP:** Triple-zeta with polarization. See "DZP."

**TZT-1027:** A substance being studied in the treatment of cancer. It is a type of tubulin inhibitor. Also called soblidotin.

**u-plasminogen activator :** An enzyme that is made in the kidney and found in the urine. A form of this enzyme is made in the laboratory and used to dissolve blood clots or to prevent them from forming. Also called uPA, urokinase, and urokinase-plasminogen activator.

**U.V. Inhibitor:** a chemical added to a plastic resin, which absorbs uv light and helps prevent damage to and prolongs the life of the plastic. Tinuvin compounds (hindered amine light stabilizers from ciba-geigy) are an example. (see uv stabilizer).

**U.V. Stabilizer (ultraviolet):** any chemical compound which, when admixed with a thermoplastic resin, selectively absorbs uv rays and minimizes chemical and/or physical changes that may be caused. (see uv inhibitor).

**UAE inhibitor MLN7243:** A small molecule inhibitor of ubiquitin-activating enzyme (UAE), with potential antineoplastic activity. UAE inhibitor MLN7243 binds to and inhibits UAE, which prevents both protein ubiquitination and subsequent protein degradation by the proteasome. This results in an excess of proteins in the cells and may lead to endoplasmic reticulum (ER) stress-mediated apoptosis. This inhibits tumor cell proliferation and survival. UAE, also called ubiquitin E1 enzyme (UBA1; E1), is more active in cancer cells than in normal, healthy cells.

**ubiquinone :** A nutrient that the body needs in small amounts to function and stay healthy. Ubiquinone helps mitochondria (small structures in the cell) make energy. It is an antioxidant that helps prevent cell damage caused by free radicals (highly reactive chemicals). Ubiquinone is fat-soluble (can dissolve in fats and oils) and is found in fatty fish, beef, soybeans, peanuts, and spinach. It is being studied in the prevention and treatment of some types of cancer and heart disease and in the relief of side effects caused by some cancer treatments. Also called coenzyme Q10, CoQ10, Q10, and vitamin Q10.

**Ubiquitin:** Present in all eukaryotes, a small, highly conserved protein that, when attached to another protein, targets it for proteolytic destruction.

**ublituximab:** A chimeric recombinant IgG1 monoclonal antibody directed against human CD20 with potential antineoplastic activity. Ublituximab specifically binds to the B cell-specific cell surface antigen CD20, thereby

potentially inducing a B cell-directed complement dependent cytotoxicity (CDC) and antibody-dependent cell-mediated cytotoxicity (ADCC) against CD20-expressing B cells, leading to B cell apoptosis. CD20 is a non-glycosylated cell surface phosphoprotein that is exclusively expressed on B cells during most stages of B cell development and is often overexpressed in B-cell malignancies. Ublituximab has a specific glycosylation profile, with a low fucose content, that may enhance its ADCC response against malignant B cells.

**UCN-01:** An anticancer drug that belongs to the family of drugs called staurosporine analogs.

**ildenafil:** A benzenesulfonamide derivative with vasodilatory activity. Sildenafil selectively inhibits phosphodiesterase type 5 (PDE5), thus inhibiting the degradation of cyclic guanosine monophosphate (cGMP) found in the smooth muscle of the corpus cavernosa and corpus spongiosum of the penis; inhibition of cGMP degradation results in prolonged muscle relaxation, vasodilation, and blood engorgement of the corpus cavernosa, and, so, prolonged penile erection. This agent does not significantly inhibit the PDE11 isozyme; PDE11 inhibition may be associated with significant myalgia. Check for active clinical trials using this agent.

**UFT:** A substance being studied in the treatment of some types of cancer. It is a combination of tegafur and uracil. The tegafur is taken up by the cancer cells and breaks down into 5-FU, a substance that kills tumor cells. The uracil causes higher amounts of 5-FU to stay inside the cells and kill them. UFT is a type of antimetabolite. Also called Ftorafur and tegafur-uracil.

**UGT1A1:** A substance that is being studied as a treatment for cancer. It is an enzyme produced by the liver and intestine.

**UHF:** Spin-unrestricted Hartree-Fock. For open-shell molecules. There are separate orbitals for spin-up (alpha) and for spin-down (beta) electrons. UHF wavefunctions are usually not eigenfunctions of spin, and are often contaminated by states of higher spin multiplicity (which usually raises the energy; see PUHF).

**UL Temperature Index :** The maximum temperature below which a material maintains its electrical and mechanical integrity over a reasonable period.

**ulcer :** A break on the skin, in the lining of an organ, or on the surface of a tissue. An ulcer forms when the surface cells become inflamed, die, and are

shed. Ulcers may be linked to cancer and other diseases.

**ulceration** : The formation of a break on the skin or on the surface of an organ. An ulcer forms when the surface cells die and are cast off. Ulcers may be associated with cancer and other diseases.

**ulcerative colitis** : Chronic inflammation of the colon that produces ulcers in its lining. This condition is marked by abdominal pain, cramps, and loose discharges of pus, blood, and mucus from the bowel.

**ULDPE / VLDPE**: Specialized form of linear low-density polyethylene having density between .86 and .90 grams/cc.

**ulimorelin hydrochloride**: The hydrochloride salt form of ulimorelin, a macrocyclic ghrelin peptidomimetic, with potential gastrointestinal (GI) prokinetic activity. Upon intravenous administration, ulimorelin binds to the ghrelin receptor in the GI tract and may stimulate GI motility. Ghrelin is a natural ligand for growth hormone secretagogue receptors and is normally localized in the proximal GI tract. The ghrelin receptor signaling pathway mediates multiple GI functions, including motility and gastric emptying. Check for active clinical trials using this agent.

**ulinastatin**: A multivalent Kunitz-type serine protease inhibitor derived from human urine, with potential protective, anti-fibrinolytic and anticoagulant activities. Upon administration, ulinastatin (or urinary trypsinogen inhibitor) inhibits the activities of a variety of enzymes, including trypsin, chymotrypsin, thrombin, kallikrein, plasmin, elastase, cathepsin, lipase, hyaluronidase, factors IXa, Xa, XIa, and XIIa, and polymorphonuclear leukocyte elastase. In addition, ulinastatin inhibits the excessive release of proinflammatory mediators, such as tumor necrosis factor-alpha, interleukin-6 and -8, and chemokines. Altogether, this agent may improve the microcirculation, perfusion and function of tissues and may protect organ injury.

**ulipristal acetate**: An orally bioavailable, acetate ester of ulipristal, a selective progesterone receptor modulator with anti-progesterone activity. Ulipristal binds to the progesterone receptor (PR), thereby inhibiting PR-mediated gene expression, and interfering with progesterone activity in the reproductive system. As a result, this agent may suppress the growth of uterine leiomyomatosis. Furthermore, by inhibiting or delaying ovulation and effecting endometrial tissue, ulipristal can be used as an emergency contraception. Check for active clinical trials using this agent.

**Ulmus fulva :** The inner bark of this plant has been used in some cultures to treat certain medical problems. It may have antioxidant effects. Also called gray elm, Indian elm, red elm, slippery elm, sweet elm, and *Ulmus rubra*.

**Ulmus rubra :** The inner bark of this plant has been used in some cultures to treat certain medical problems. It may have antioxidant effects. Also called gray elm, Indian elm, red elm, slippery elm, sweet elm, and *Ulmus fulva*.

**ulocuplumab:** An orally bioavailable monoclonal antibody against CXC chemokine receptor 4 (CXCR4) with potential antineoplastic activity. Ulocuplumab binds to the chemokine receptor CXCR4, preventing the binding of stromal derived factor-1 (SDF-1) to the CXCR4 receptor and subsequent receptor activation, which may result in decreased tumor cell proliferation and migration. CXCR4, a chemokine receptor belonging to the G protein-coupled receptor family, plays an important role in chemotaxis and angiogenesis and is upregulated in several tumor cell types.

**Uloric:** (Other name for: febuxostat)

**Ultandren:** (Other name for: fluoxymesterone)

**Ultane:** (Other name for: sevoflurane)

**Ultimate Elongation:** In a tensile test the elongation at rupture.

**Ultimate Strength:** Term used to describe the maximum unit stress a material will withstand when subjected to an applied load in a compression, tension, flexural, or shear test. OR The maximum stress developed in a tensile/compression specimen. OR Term used to describe the maximum unit stress a material will withstand when subjected to an applied load in a compression, tension, or shear test.

**Ultiva:** (Other name for: remifentanil hydrochloride)

**ultra light cigarette :** A type of cigarette that is claimed to give off less tobacco tar than a regular or light (“low-tar”) cigarette when smoked. Ultra light cigarettes have been shown to be no safer than regular cigarettes, and smoking them does not lower the risk of cancer or other diseases. A person smoking an ultra light cigarette can inhale the same amount of tobacco tar, nicotine, and harmful, cancer-causing chemicals as in a regular cigarette, depending on how the cigarette is smoked. Cigarettes are no longer allowed to be labeled or advertised as ultra light cigarettes.

**Ultracentrifugation:** High-speed centrifugation used to separate biomolecules and determine their masses.

**Ultracentrifuge:** A high-speed centrifuge that can attain speeds up to 60,000 rpm and centrifugal fields of 500,000 times gravity Useful for characterizing and/or separating macromolecules.

**Ultradine:** (Other name for: povidone-iodine solution)

**Ultram :** A drug used to treat moderate to severe pain in adults. It binds to opioid receptors in the central nervous system. Ultram is a type of analgesic agent and a type of opioid. Also called tramadol hydrochloride.

**ultramafic rock:** rock consisting almost entirely of ferromagnesian minerals and having no feldspars or quartz.

**ULTRASONIC INSERTION:** The inserting of a metal insert into a thermoplastic part by the application of vibratory mechanical pressure at ultrasonic frequencies.

**Ultrasonic Sealing:** A film sealing method in which sealing is accomplished through the application of vibratory mechanical pressure at ultrasonic frequencies (20 to 40 KC.). Electrical energy is converted to ultrasonic vibrations through the use of either a magnetostrictive or piezoelectric transducer. The vibratory pressures at the film interface in the sealing area develop localized heat losses which melt the plastic surfaces effecting the seal.

**ULTRASONIC SEALING OR BONDING:** A sealing method in which sealing is accomplished through the application of vibratory mechanical pressure at ultrasonic frequencies (20 to 40 kc.). Electrical energy is converted to ultrasonic vibrations through the use of either a magnetostrictive or piezoelectric transducer. The vibratory pressures at the interface in the sealing area develop localized heat losses which melt the plastic surfaces affecting the seal.

**Ultrasonic Welding:** An industrial technique whereby high-frequency ultrasonic acoustic vibrations are locally applied to work pieces being held together under pressure to create a solid-state weld. In ultrasonic welding, there are no connective bolts, nails, soldering materials, or adhesives necessary to bind the materials together. OR An industrial technique whereby high-frequency ultrasonic acoustic vibrations are locally applied to workpieces being held together under pressure to create a solid-state weld.

It is commonly used for plastics, and especially for joining dissimilar materials.

**ultrasonogram :** A computer picture of areas inside the body created by high-energy sound waves. The sound waves are bounced off internal tissues or organs and make echoes. The echoes form a picture of the body tissues on a computer screen. An ultrasonogram may be used to help diagnose disease, such as cancer. It may also be used during pregnancy to check the fetus (unborn baby) and during medical procedures, such as biopsies. Also called sonogram.

**ultrasonography :** A procedure that uses high-energy sound waves to look at tissues and organs inside the body. The sound waves make echoes that form pictures of the tissues and organs on a computer screen (sonogram). Ultrasonography may be used to help diagnose diseases, such as cancer. It may also be used during pregnancy to check the fetus (unborn baby) and during medical procedures, such as biopsies. Also called ultrasound.

**ultrasound :** A procedure that uses high-energy sound waves to look at tissues and organs inside the body. The sound waves make echoes that form pictures of the tissues and organs on a computer screen (sonogram). Ultrasound may be used to help diagnose diseases, such as cancer. It may also be used during pregnancy to check the fetus (unborn baby) and during medical procedures, such as biopsies. Also called ultrasonography.

**ultrasound biomicroscopy :** A type of ultrasound eye exam that makes a more detailed image than regular ultrasound. High-energy sound waves are bounced off the inside of the eye and the echo patterns are shown on the screen of an ultrasound machine. This makes a picture called a sonogram.

**ultrasound energy :** A form of therapy being studied as an anticancer treatment. Intensified ultrasound energy can be directed at cancer cells to heat them and kill them.

**ultrasound transducer :** A device that produces sound waves that bounce off body tissues and make echoes. The transducer also receives the echoes and sends them to a computer that uses them to create a picture called a sonogram. Transducers (probes) come in different shapes and sizes for use in making pictures of different parts of the body. The transducer may be passed over the surface of the body or inserted into an opening such as the rectum or vagina.

**ultrasound-guided biopsy :** A biopsy procedure that uses an ultrasound imaging device to find an abnormal area of tissue and guide its removal for examination under a microscope.

**Ultraviolet:** Electromagnetic radiation of a wavelength between the shortest visible violet and low energy x-rays. Or Zone of invisible radiation beyond the violet end of the spectrum of visible radiation. Since UV wavelengths are shorter than the visible, their photons have more energy, enough to initiate some chemical reactions and to degrade most plastics.

**ultraviolet (UV) radiation:** Electromagnetic radiation in the region of 200 to 400 nm.

**ULTRAVIOLET (UV) STABILIZER:** Chemical agents which absorb or screen out radiation beyond the violet end of the spectrum of electromagnetic radiation. Such radiation has sufficient energy to initiate reactions leading to the degradation of many plastics. These agents are often combined with other additives, e.g., heat stabilizers and antioxidants, with which they act in synergistic fashion. UV stabilizers can be UV absorbers or radical scavengers.

**ultraviolet A radiation :** Invisible rays that are part of the energy that comes from the sun. Ultraviolet A radiation also comes from sun lamps and tanning beds. Ultraviolet A radiation may cause premature aging of the skin and skin cancer. It may also cause problems with the eyes and the immune system. Skin specialists recommend that people use sunscreens that protect the skin from ultraviolet radiation. In medicine, ultraviolet A radiation also comes from special lamps or a laser and is used to treat certain skin conditions such as psoriasis, vitiligo, and skin tumors of cutaneous T-cell lymphoma. Also called UVA radiation.

**ultraviolet B radiation :** Invisible rays that are part of the energy that comes from the sun. Ultraviolet B radiation causes sunburn, darkening and thickening of the outer layer of the skin, and melanoma and other types of skin cancer. It may also cause problems with the eyes and the immune system. Skin specialists recommend that people use sunscreens that protect the skin from ultraviolet radiation. In medicine, ultraviolet B radiation also comes from special lamps or a laser and is used to treat certain skin conditions such as psoriasis, vitiligo, and skin tumors of cutaneous T-cell lymphoma. Also called UVB radiation.

**ultraviolet C radiation :** Invisible rays that are part of the energy that comes from the sun. Most ultraviolet C radiation from the sun is blocked from the Earth's surface by the ozone layer. In medicine, ultraviolet C radiation may also come from special lamps or a laser and is used to kill germs or to help heal wounds. It is also used to treat certain skin conditions such as psoriasis, vitiligo, and skin nodules of cutaneous T-cell lymphoma. Also called UVC radiation.

**Ultraviolet Inhibitor:** Retards the degrading effect of sunlight on polyethylene.

**ultraviolet light:** Electromagnetic radiation with wavelength longer than that of x-rays but shorter than that of visible light. Ultraviolet light can break some chemical bonds and cause cell damage.

**ultraviolet radiation :** Invisible rays that are part of the energy that comes from the sun. Ultraviolet radiation that reaches the Earth's surface is made up of two types of rays, called UVA and UVB. Ultraviolet radiation also comes from sun lamps and tanning beds. It can cause skin damage, premature aging, melanoma, and other types of skin cancer. It can also cause problems with the eyes and the immune system. Skin specialists recommend that people use sunscreens that protect the skin from both kinds of ultraviolet radiation. In medicine, ultraviolet radiation also comes from special lamps or a laser and is used to treat certain skin conditions such as psoriasis, vitiligo, and skin tumors of cutaneous T-cell lymphoma. Also called UV radiation.

**ultraviolet radiation therapy :** A form of radiation used in the treatment of cancer.

**Ultraviolet spectroscopy:** An analytical spectroscopic technique used to study the electronic excitation of a substance. Application of this technique usually requires dissolution of the sample. Or a spectroscopy that measures how much energy a molecule absorbs in the ultraviolet region of the spectrum.

**Ultraviolet-visible Spectroscopy (UV-Vis):** An absorption spectroscopy technique that uses the ultraviolet-visible regions of the electromagnetic spectrum.

**Ultravist:** (Other name for: iopromide)

**Ultresa:** (Other name for: pancrelipase)

**ULvWF multimer-targeting agent ARC1779:** An optimized, second-generation, PEGylated aptamer with antithrombotic property. ULvWF multimer-targeting agent ARC1779 blocks the binding of von Willebrand factor (vWF), via the A1 domain, and ultra-large vWF multimers to platelets, as well as interfering with the binding of platelet receptor glycoprotein Ib, thus reducing platelet adhesion, aggregation and thrombus growth in arterial beds. Unlike other antiplatelet agents, this aptamer can be readily reversed by binding to a complementary sequence of oligonucleotides, and may therefore offer potential therapeutic benefit in surgery.

**umbilical cord:** the source of attachment of the fetus to the maternal blood supply.

**umbilical cord blood :** Blood from the umbilical cord of a newborn baby. This blood contains high concentrations of stem cells (cells from which all blood cells develop).

**umbilical cord blood transplantation :** The injection of umbilical cord blood to restore an individual's own blood production system suppressed by anticancer drugs, radiation therapy, or both. It is being studied in the treatment of cancer and severe blood disorders such as aplastic anemia. Cord blood contains high concentrations of stem cells (cells from which all blood cells develop).

**umbilical cord blood-derived hematopoietic CD34-positive progenitor cells:** A population of cryopreserved, ex vivo expanded and nicotinamide (NAM)-treated, CD34-positive hematopoietic progenitor cells (HPCs) derived from allogeneic, CD34+ cells isolated from human umbilical cord blood (UCB) that can be used during transplantation. CD34+ HPCs are isolated from human UCB mononuclear cells, and expanded ex vivo. Upon transplantation with the UCB-derived CD34+ HPCs, these cells can differentiate into a variety of cell types including fibroblasts, osteoblasts, chondrocytes, myocytes, adipocytes, and endothelial cells. Compared to bone marrow transplants, these HPCs are associated with decreased risk of causing graft-versus host disease (GvHD), increased survival, and enhanced transplant and engraftment potential for any given patient as there is no need for a matched donor. Compared to untreated HPCs, treating the cells ex vivo with NAM increases the number of HPCs from UCB, enhances migration, bone marrow (BM) homing, engraftment and increases

neutrophil and platelet recovery. Check for active clinical trials using this agent.

**umbilical cord blood-derived mesenchymal stem cells:** Multipotent stem cells of mesenchymal origin isolated from umbilical cord blood. Umbilical cord blood-derived mesenchymal stem cells can differentiate into a variety of cell types including fibroblasts, osteoblasts, chondrocytes, myocytes, adipocytes, and endothelial cells.

**umbilical cord blood-derived natural killer cells:** A population of allogeneic, cytokine-differentiated, highly lytic natural killer (NK) cells derived from CD34+ cells isolated from human umbilical cord blood (UCB) with potential cytotoxic activity. CD34+ hematopoietic stem cells (HSC) are isolated from human UCB mononuclear cells, differentiated into mature, highly lytic, CD3- CD56+ NK cells, by a specific combination of cytokines that includes stem cell factor (SCF), fms-related tyrosine kinase 3 ligand (Flt3-L), interleukin-15 (IL-15) and insulin-like growth factor-1 (IGF-1), and expanded *ex vivo*. Upon administration, the UCB-derived NK cells may lyse cancer cells.

**umbra:** the darkest part of a shadow.

**UMP2:** MP2 theory using a UHF reference. Likewise UMP3, UMP4, UCCSD, etc.

**unaffected :** An individual who does not manifest symptoms of a condition or disease occurring in his or her family.

**Unasyn:** (Other name for: ampicillin sodium/sulbactam sodium)

**Uncaria tomentosa extract:** An extract of *Uncaria tomentosa* (U. tomentosa), also called Cat's claw, a native Amazonian plant belonging to the Rubiaceae species, with potential anti-inflammatory, immunomodulating, antioxidant and antineoplastic activities. Although the exact mechanism(s) by which U. tomentosa extract exerts its effect(s) has yet to be fully elucidated, this extract may inhibit the proliferation of certain types of cancer cells. This extract may modulate inflammatory and immune responses through the stimulation of T- and B-lymphocytes and certain cytokines, including interleukin (IL)-1, IL-6 and tumor necrosis factor-alpha (TNF-a). Components in U. tomentosa may both induce repair of chemically-induced DNA damage and scavenge free radicals, which may protect against reactive oxygen species (ROS)-mediated cellular damage. In

addition, this extract stimulates myelopoiesis, which may prevent chemotherapy-induced neutropenia.

**Uncertainty (of a measurement):** parameter associated with the results of a measurement, that characterizes the dispersion of the values that could reasonably be attributed to the measurand.

**uncertainty principle:** The exact momentum and exact location of a particle cannot be specified. Werner Heisenberg stated that the product of uncertainties in location and momentum measurements can never be smaller than  $h/4$ , where  $h$  is Planck's constant.

**Uncertainty range:** Defines an interval within which a numerical result is expected to lie within a specified level of confidence. The interval often used is the 5-95 percentile of the distribution reporting the uncertainty.

**unclassified variant :** A variation in a genetic sequence whose association with disease risk is unknown. Also called variant of uncertain significance, variant of unknown significance, and VUS.

**unconfined aquifer:** an aquifer that does not have a confining bed that separates the zone of saturation from the unsaturated units above it.

**unconformity:** a break or gap in the rock record where layers of rock have been eroded. Or an erosional contact between two rocks in which the upper unit is usually much younger than the lower unit.

**uncontrolled study :** A clinical study that lacks a comparison (i.e., a control) group.

**unconventional cancer treatments :** Approaches that use substances or methods of treating cancer that have not been shown to be effective by accepted scientific methods, such as carefully designed clinical trials.

**uncoupling agent:** A substance that uncouples phosphorylation of ADP from electron transfer; for example, 2,4-dinitrophenol.

**Uncoupling protein:** A mitochondrial membrane protein that plays a role in thermogenesis by forming a pathway for the flow of protons into the mitochondria, thereby generating heat without synthesizing ATP. Also called thermogenin.

**Under-drawing:** Describes the formation of a false ceiling by covering in roof trusses or beams with a light structure of building board or similar material.

**underactive thyroid :** Too little thyroid hormone. Symptoms include weight gain, constipation, dry skin, and sensitivity to the cold. Also called hypothyroidism.

**Undercoat:** A paint coating applied after the primer and before the finishing coat. In relation to timber an undercoat helps fill the grain to give a good basis for a gloss coat and in all cases the use of the right undercoat is essential to achieve the correct colour of the top coat.

**UNDERCOAT:** A primer or intermediate coating before the finish coating.

**Undercut:** Can be a design flaw that results in an indentation or protrusion that inhibits the ejection of the part from the mold. Other times undercuts are designed into a mold to ensure a part holds onto the correct side of the mold. OR Create larger nesting dimensions within the parts, the undercut design determines the stacking function of the final product. Undercuts also allow for reversed draft angles that provide a good snap fit between thermoformed products and their lids. Undercut features require precise detail, otherwise the snap will be weak and not serve its purpose. OR The dominant flow of two confronting flows, over the other. The lesser flow reverses direction giving poor surface appearance and structural strength. Underflow should be avoided by positioning gates so that the flow fronts meet at the end of filling. OR (a.) Having a protuberance or indentation that impedes withdrawal from a two-piece, rigid mold. Flexible materials can be ejected intact even with slight undercuts. (n.) Any such protuberance or indentation; depends also on design of mold. OR A portion of the part that shadows another portion of the part, creating an interlock between the part and one or both of the mold halves. An example is a hole perpendicular to the mold opening direction bored into the side of a part. An undercut prevents the part from being ejected, or the mold from opening, or both.

**Undersaturation:** The condition when solution concentration is less than the saturation value (i.e., when solute concentration is less than its solubility in the respective solvent).

**undescended testicles :** A condition in which one or both testicles fail to move from the abdomen, where they develop before birth, into the scrotum. Undescended testicles may increase the risk for development of testicular cancer. Also called cryptorchidism.

**undifferentiated :** A term used to describe cells or tissues that do not have specialized ("mature") structures or functions. Undifferentiated cancer cells

often grow and spread quickly.

**ungraded stream:** a stream that is still actively downcutting its course and smoothing out irregularities in its gradient through erosion.

**unguent :** A substance used on the skin to soothe or heal wounds, burns, rashes, scrapes, or other skin problems. Also called ointment.

**Uni-Directional Weave :** A conventional weave fabric in which all spirals are of the same weave - either right or left. Also known as one-directional weave.

**Uniaxial crystal:** An anisotropic crystal in which the velocities of both plane-polarized light components traveling through the crystal are equal; a crystal with only one optical axis. These crystals typically belong to the hexagonal or tetragonal crystal systems.

**Unidirectional Flow Pattern:** Plastic flowing in one direction with a straight flow front throughout filling.

**Unidirectional replication:** Unidirectional replication. See bidirectional replication.

**Uniform Cooling Time:** Cooling time the same throughout the part to avoid warping.

**uniformitarianism:** the principle that the geologic processes we see today were active in the geologic past.

**uniformly-labeled [U-13C] glucose:** A non-radioactive, naturally occurring carbon 13 (<sup>13</sup>C) glucose isotopomer in which all six carbons are <sup>13</sup>C, with potential imaging application. Upon administration of uniformly-labeled [U-13C] glucose, the glucose is taken up and metabolized by tumors and the <sup>13</sup>C-containing metabolites can be imaged by <sup>13</sup>C nuclear magnetic resonance (NMR) spectroscopy. Since tumor cells take up and metabolize glucose in higher amounts and through different pathways than normal cells, this agent may help assess the metabolic phenotype of the tumor. Check for active clinical trials using this agent.

**unilateral :** Having to do with one side of the body.

**unilateral salpingo-oophorectomy :** Surgery to remove the ovary and fallopian tube on one side of the body.

**unimolecular reaction:** A reaction that involves isomerization or decomposition of a single molecule.

**uninformative :** A negative test result in an individual where a clearly deleterious mutation has not been found in any family members. The genetic risk status of such an individual must be interpreted in the context of his or her personal and family history. Also called inconclusive and indeterminate.

**Uniphyl:** (Other name for: theophylline)

**uniport:** A transport system that carries only one solute, as distinct from cotransport.

**unit:** A set magnitude of measurements used to express a certain type of physical quantity such as length, mass, and time. The SI units replaced previous used system of units for scientific purposes. Or A standard for comparison in measurements. For example, the meter is a standard length which may be compared to any object to describe its length.

**Unit cavity:** a mold with only one cavity, usually a pilot for the production set of molds.

**Unit cell:** The smallest three-dimensional volume element from which the crystal can be constructed. Or The simplest arrangement of atoms or molecules that regularly repeats in a crystal structure.

**UNIT MOLD:** Mold designed for quick changing interchangeable cavity parts.

**Unit-cell parameters:** The parameters (a, b, c, a, b, g) that define the crystallographic unit cell.

**United States Preventive Services Task Force :** A volunteer group of health experts who review published research and make recommendations about prevention health care methods such as screening tests, counseling, immunizations, and medicines. Before making a recommendation, the United States Preventive Services Task Force looks at the strength (scientific quality and correctness) of the evidence found in the research and the benefits and harms of each method being reviewed. Recommendations are made to help healthcare providers and patients decide whether a specific method is right for a patient's needs. The recommendations may change as new research studies are published. Also called USPSTF.

**units:** The method of measurement used for the numbers in a word problem. For example: feet, inches, dollars, degrees, and so on.

**units of measurement:** The base units of the SI system are metre (m), kilogram (kg), second (s), ampere (A), kelvin (K), candela (cd), and mole (mol) (BIPM, 1979).

**Unituxin:** (Other name for: dinutuximab)

**Unituxin :** A drug used with granulocyte-macrophage colony-stimulating factor (GM-CSF), aldesleukin (IL-2), and 13-cis-retinoic acid to treat high-risk neuroblastoma. It is used in children whose disease has improved with other anticancer treatment. Unituxin binds to a substance called GD2, which is found on some types of cancer cells. Unituxin may block GD2 and help the immune system kill cancer cells. It is a type of monoclonal antibody. Also called Ch14.18, dinutuximab, MOAB Ch14.18, and monoclonal antibody Ch14.18.

**Universal colourants:** A colourant which can be used for thinning water-thinned and solvent-thinned paints.

**universal indicator:** A universal indicator is an indicator which undergoes several color changes over a wide range of pH. The color is used to "indicate" pH directly. Universal indicators are usually mixtures of several indicators. OR This is a mixture of indicators which shows the strength of an acid or alkali as well as simply showing which it is. By comparison with a colour chart, a pH number can be selected. pH numbers less than 7 show an acid (the smaller the number, the stronger the acid) and pH numbers bigger than 7 show an alkali (the larger the number, the stronger the alkali).

**universal law of gravity:** formula that measures the force of gravity; developed by Isaac Newton.

**Unlined:** A closure with no special sealing features and no liner.

**unloading:** the removal of the overlying weight and pressure through erosion when a rock mass is uplifted to the surface, resulting in the mass's slow expansion.

**Unnecessary regulatory burden:** Regulatory criteria that go beyond the levels that would be reasonably expected to be imposed on licensees given that regulations apply to conditions that incorporate normal operation and design-basis conditions.

**unpaired spin:** A single electron occupying an orbital.

**UNREACTED (OIL):** Unreacted is an organic substance present in small amounts in products generally consisting of sulf(on)ation feedstock, for

example an alkylate or fatty alcohol or reaction by-products, for example, sulfones. (see RFF 705.10.53 - UNREACTED OIL).

**Unreactive** : A substance for which reactions are difficult. Unreactive substances come at the bottom of a reactivity series. A typical unreactive metal is gold. Iodine is a typical unreactive non-metal.

**unresectable** : Unable to be removed with surgery.

**unresectable gallbladder cancer** : Cancer that has spread to the tissues around the gallbladder (such as the liver, stomach, pancreas, intestine, or lymph nodes in the area) and cannot be surgically removed.

**unresected** : Describes an organ, tissue, or cancer that has not been either partly or completely removed by surgery.

**unrestricted:** See UHF.

**Unrestricted area:** The area outside the owner-controlled portion of a nuclear facility (usually the site boundary). An area in which a person could not be exposed to radiation levels in excess of 2 millirems in any one hour from external sources (see 10 CFR 20.1003).

**unsaturated:** any chemical compound with more than one bond between adjacent atoms, usually carbon, and thus reactive toward the addition of other atoms at that point; for example: olefins, diolefins, and unsaturated fatty acids. Or An organic compound with one or more double or triple covalent bonds between carbon atoms in each molecule. or An unsaturated solution has not reached the maximum amount of solute. You can easily dissolve a tablespoon of sugar in a glass of water. Since you can still dissolve more the solution, it is considered to be unsaturated. or An unsaturated hydrocarbon is a substance that contains only carbon atoms and hydrogen atoms and it must contain at least one carbon-carbon double bond. Alkenes are unsaturated hydrocarbons. So are alkynes

**unsaturated compound:** a compound that contains one or more multiple bonds; for example, alkenes and alkynes.

**unsaturated compound:** An organic compound with molecules containing one or more double bonds.

**unsaturated fat:** A lipid containing one or more carbon-carbon double bonds. Unsaturated fats tend to be oily liquids and are obtained from plants.

**unsaturated fatty acid:** A fatty acid containing one or more double bonds.

**unsaturated hydrocarbon:** Unsaturated hydrocarbons are compounds made up of molecules containing carbon and hydrogen atoms only, with one or more double covalent bonds between their carbon atoms.

**Unsaturated polyester resin:** A condensation product made by reacting an unsaturated dicarboxylic acid with a diol.

**unsaturated solution:** A solution in which more solute can be dissolved at a given temperature. Or A solution with a concentration lower than its equilibrium solubility.

**unsaturated zone:** rock and soil in which pore spaces contain both air and water and therefore are not saturated.

**unsaturation:** refers to a molecule containing less than the maximum number of single bonds possible because of the presence of multiple bonds.

**unsealed internal radiation therapy :** Radiation therapy given by injecting a radioactive substance into the bloodstream or a body cavity, or by swallowing it. This substance is not sealed in a container.

**unstable:** See instability.

**Unstable isotope:** A radioactive isotope (see also stable isotope).

**UNSULFATED MATTER:** see - UNREACTED

**Unwanted Radioactive Material (Orphan Sources):** refers to sealed sources of radioactive material contained in a small volume (but not radioactively contaminated soils and bulk metals) in any one or more of the following conditions (taken from the NRC Orphan Source Initiative): 1. In an uncontrolled condition that requires removal to protect public health and safety from a radiological threat; 2. Controlled or uncontrolled, but for which a responsible party cannot be readily identified; 3. Controlled, but the material's continued security cannot be assured. If held by a licensee, the licensee has few or no options for, or is incapable of providing for, the safe disposition of the material; 4. In the possession of a person, not licensed to possess the material, who did not seek to possess the material; or 5. In the possession of a state radiological protection program for the sole purpose of mitigating a radiological threat because of one of the above conditions, and for which the state does not have a means to provide for the material's appropriate disposition

**Unwinding proteins:** Proteins that help to unwind double-stranded DNA during DNA replication.

**Up Cage :** A spiral system where the belt's travel is from bottom to top.

**uPA:** An enzyme that is made in the kidney and found in the urine. A form of this enzyme is made in the laboratory and used to dissolve blood clots or to prevent them from forming. Also called u-plasminogen activator, urokinase, and urokinase-plasminogen activator.

**updraft:** wind current moving upward in a cloud.

**uplifted coast:** a former coast that has been lifted above the present coastline by tectonic activity.

**uplifted marine terrace:** a former marine terrace that has been lifted above the present coastline by tectonic activity.

**upper endoscopy :** Examination of the inside of the stomach using an endoscope, passed through the mouth and esophagus. An endoscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. Also called gastroscopy.

**upper extremity :** The part of the body that includes the arm, wrist, and hand.

**upper gastrointestinal series :** A series of x-ray pictures of the esophagus, stomach, and duodenum (the first part of the small intestine). The x-ray pictures are taken after the patient drinks a liquid containing barium sulfate (a form of the silver-white metallic element barium). The barium sulfate coats and outlines the inner walls of the upper gastrointestinal tract so that they can be seen on the x-ray pictures. Also called upper GI series.

**upper GI series :** A series of x-ray pictures of the esophagus, stomach, and duodenum (the first part of the small intestine). The x-ray pictures are taken after the patient drinks a liquid containing barium sulfate (a form of the silver-white metallic element barium). The barium sulfate coats and outlines the inner walls of the upper gastrointestinal tract so that they can be seen on the x-ray pictures. Also called upper gastrointestinal series.

**Uprate:** See Power uprate.

**upstaging :** In cancer, changing the stage used to describe a patient's cancer from a lower stage (less extensive) to a higher stage (more extensive). Upstaging is based on the results of additional staging tests. It is important to know the stage of the disease in order to plan the best treatment.

**uptake :** The entry of a chemical substance into the body, into a cell, or into the body fluids by passage through a membrane or by other means (WHO, 1979).

**UPVC:** Unplasticized polyvinyl chloride is a rigid plastic polymer. UPVC is low maintenance and has strong resistance against chemicals, sunlight, and oxidation from water. Rigid PVC can be used for thermoplastic extrusion and is supplied in a variety of colours and strengths. Unplasticised PVC one of the stiffest polymers at ambient temperatures and is very durable. It is extremely versatile and is used for a wide variety of applications in most industry sectors.

**upwarped mountain:** a mountain that is the result of broad arching of the crust or great vertical displacement along a high-angle fault.

**upwelling:** deep ocean water is pulled to the surface by currents. Or The vertical motion of water in the ocean by which subsurface water of lower temperature and greater density moves toward the surface of the ocean. Upwelling occurs most commonly among the western coastlines of continents, but may occur anywhere in the ocean. Upwelling results when winds blowing nearly parallel to a continental coastline transport the light surface water away from the coast. Subsurface water of greater density and lower temperature replaces the surface water, and exerts a considerable influence on the weather of coastal regions. Carbon dioxide is transferred to the atmosphere in regions of upwelling. This is especially important in the Pacific equatorial regions, where 1 - 2 GtC/year may be released to the atmosphere. Upwelling also results in increased ocean productivity by transporting nutrient-rich waters to the surface layer of the ocean.

**urachus :** A fibrous cord that connects the urinary bladder to the umbilicus (navel). The urachus is formed as the allantoic stalk during fetal development and lasts through life. Also called median umbilical ligament.

**uracil :** A chemical compound that is used to make one of the building blocks of RNA. It is a type of pyrimidine. OROne of the 5 major bases (with adenine, guanine, cytosine, and thymine) which are a component of nucleic acids.

**uracil ointment:** A 0.1% topical formulation of uracil used to potentially lower the incidence of hand-foot syndrome (HFS) (or palmar-plantar erythrodysesthesia) during 5-fluorouracil (5-FU) or 5-FU prodrug capecitabine chemotherapy. Upon local administration of uracil ointment to

the skin, uracil competes with capecitabine or 5-FU as substrates for the activating enzyme thymidine phosphorylase and the metabolizing enzyme dihydropyrimidine dehydrogenase. This may prevent the production of 5-FU as well as the breakdown of 5-FU into the toxic metabolites locally. As the 5-FU metabolites are responsible for the presentation of HFS, inhibiting their formation may prevent this adverse effect. By applying a high concentration of uracil locally, the skin toxicities of 5-FU may be countered while preserving the systemic anti-cancer activity of the 5FU.

**Uranium:** Symbol:"U" Atomic Number:"92" Atomic Mass: 238.03amu. Uranium is one of the elements in the actinide series of inner transition elements. It may also be classified as a rare earth element. A very radioactive metal that can be found in nuclear facilities, weapons, and submarines. or A radioactive element with the atomic number 92 and, as found in natural ores, an atomic weight of approximately 238. The two principal natural isotopes are uranium-235 (which comprises 0.7 percent of natural uranium), which is fissile, and uranium-238 (99.3 percent of natural uranium), which is fissionable by fast neutrons and is fertile, meaning that it becomes fissile after absorbing one neutron. Natural uranium also includes a minute amount of uranium-234.

**Uranium enrichment:** The process of increasing the percentage of Uranium-235 from 0.7 percent in natural uranium to about 3 to 5 percent for use in fuel for nuclear reactors. Enrichment can be done through gaseous diffusion, gas centrifuges, or laser isotope separation.

**Uranium fuel fabrication facility:** A facility that converts enriched uranium hexafluoride (UF<sub>6</sub>) into fuel for commercial light-water power reactors, research and test reactors, and other nuclear reactors. The UF<sub>6</sub>, in solid form in containers, is heated to a gaseous form and then chemically processed to form uranium dioxide (UO<sub>2</sub>) powder. This powder is then processed into ceramic pellets and loaded into metal tubes, which are subsequently bundled into fuel assemblies. Fabrication also can involve mixed-oxide (MOX) fuel, which contains plutonium oxide mixed with either natural or depleted uranium oxide, in ceramic pellet form. For related information, see Fuel Fabrication.

**Uranium hexafluoride production facility (or uranium conversion facility):** A facility that receives natural uranium in the form of ore concentrate (known as “yellowcake”) and converts it into uranium

hexafluoride (UF<sub>6</sub>), in preparation for fabricating fuel for nuclear reactors. For additional detail, see Uranium Conversion.

**urban heat island effect:** city areas are warmer than suburbs or rural areas due to less vegetation, more land coverage and other infrastructure.

**Urea:** The generic name for urea-formaldehyde-the thermosetting compound that's used to mold light-colored closures.

**Urea:** Urea is an organic compound that occurs naturally as a product of excretion in living organisms, and is produced industrially by reacting ammonia with carbon dioxide. Urea's main use is as a fertilizer in the form of granules, prills or in aqueous solution. Urea is also an important ingredient for the manufacture of melamine, and for urea-formaldehyde resins, which are used as adhesives for wood products, paper and textiles. or a component of urine that results from amino acid breakdown in the liver.

**urea :** A substance formed by the breakdown of protein in the liver. The kidneys filter urea out of the blood and into the urine. Urea can also be made in the laboratory. A topical form of urea is being studied in the treatment of hand-foot syndrome (pain, swelling, numbness, tingling, or redness of the hands or feet that may occur as a side effect of certain anticancer drugs). Also called carbamide.

**Urea cycle:** A metabolic pathway in the liver that leads to the synthesis of urea from amino groups and CO<sub>2</sub>. The function of the pathway is to convert the ammonia resulting from catabolism to a nontoxic form, which is then secreted. Or A cyclic pathway that converts excess ammonia into urea for secretion; the first metabolic pathway to be discovered. or A metabolic pathway in vertebrates, for the synthesis of urea from amino groups and carbon dioxide; occurs in the liver.

**urea nitrogen :** Nitrogen in the blood that comes from urea (a substance formed by the breakdown of protein in the liver). The kidneys filter urea out of the blood and into the urine. A high level of urea nitrogen in the blood may be a sign of a kidney problem. Also called blood urea nitrogen and BUN.

**Urea Plastics:** Plastics based on resins made by the condensation of urea and aldehydes.

**urea/lactic acid-based cream :** A substance being studied in the treatment of hand-foot syndrome (a condition caused by chemotherapy and marked

by tingling, numbness, and red, peeling skin). Urea/lactic acid-based cream is a moisturizer that may help break down the hardened protein in dry, scaly skin and relieve these symptoms.

**urelumab:** A humanized agonistic monoclonal antibody targeting the CD137 receptor with potential immunostimulatory and antineoplastic activities. Urelumab specifically binds to and activates CD137-expressing immune cells, stimulating an immune response, in particular a cytotoxic T cell response, against tumor cells. CD137 is a member of the tumor necrosis factor (TNF)/nerve growth factor (NGF) family of receptors and is expressed by activated T- and B-lymphocytes and monocytes; its ligand has been found to play an important role in the regulation of immune responses.

**Ureotelic:** Refers to organisms in which excess ammonia is converted into urea and then excreted; most terrestrial vertebrates are ureotelic. Or Excreting excess nitrogen in the form of urea.

**ureter :** The tube that carries urine from the kidney to the bladder.

**ureteronephrectomy :** Surgery to remove a kidney and its ureter. Also called nephroureterectomy.

**ureteroscopy :** Examination of the inside of the kidney and ureter, using a ureteroscope. A ureteroscope is a thin, tube-like instrument with a light and a lens for viewing. It may also have a tool to remove tissue to be checked under a microscope for signs of disease. The ureteroscope is passed through the urethra into the bladder, ureter, and renal pelvis (part of the kidney that collects, holds, and drains urine).

**ureters:** tubes that carry waste from the kidneys to the urinary bladder for storage or release.

**Urethane:** An important resin in the coatings industry. A true urethane coating is a two-component product that cures when an isocyanate (the catalyst) prompts a chemical reaction that unites the components.

**urethra:** the path in which urine flows from the bladder to the exterior; the tube within the penis that carries the sperm.

**urethra :** The tube through which urine leaves the body. It empties urine from the bladder.

**urethral cancer :** A rare cancer that forms in tissues of the urethra (the tube through which urine empties the bladder and leaves the body). Types of urethral cancer include transitional cell carcinoma (cancer that begins in

cells that can change shape and stretch without breaking apart), squamous cell carcinoma (cancer that begins in flat cells lining the urethra), and adenocarcinoma (cancer that begins in cells that make and release mucus and other fluids).

**uric acid:** a component of urine that results from nucleic acid breakdown.

**uric acid :** A waste product left over from normal chemical processes in the body and found in the urine and blood. Abnormal buildup of uric acid in the body may cause a condition called gout. Increased levels of uric acid in the blood and urine can be a side effect of chemotherapy or radiation therapy.

**Uricotelic:** Refers to organisms in which excess ammonia is converted into the purine uric acid for secretion; birds and terrestrial reptiles are uricotelic. Or Excreting excess nitrogen in the form of urate (uric acid).

**uridine:** A nucleoside consisting of uracil and D-ribose and a component of RNA. Uridine has been studied as a rescue agent to reduce the toxicities associated with 5-fluorouracil (5-FU), thereby allowing the administration of higher doses of 5-FU in chemotherapy regimens.

**Uridine diphosphate glucose (UDP-glucose):** The activated form of glucose used in the synthesis of glycogen; formed from glucose 1-phosphate and UTP.

**uridine triacetate:** An orally bioavailable, lipophilic, triacetate prodrug form of the pyrimidine nucleoside, uridine, that can be used for uridine replacement or as an antidote for 5-fluorouracil (5-FU)-induced toxicity. Upon administration, uridine triacetate is deacetylated by esterases to produce uridine and acetate. In turn, uridine is converted to uridine triphosphate (UTP), which competes with fluorouridine triphosphate (FUTP), one of the toxic metabolites of 5-FU, for incorporation into RNA of normal cells. This prevents disruption of RNA synthesis in normal cells and limits toxicity resulting from overdose of 5-FU and 5-FU prodrugs. The FUTP-mediated damage to RNA is the main cause of 5-FU toxicities.

**uridine triacetate :** A drug used in the emergency treatment of patients who receive too much fluorouracil or capecitabine (types of anticancer drugs). It is also used in the emergency treatment of heart or central nervous system (CNS) toxicity or other serious side effects that occur within 4 days of ending treatment with fluorouracil or capecitabine. Uridine triacetate may help protect healthy cells from some of the side effects caused by

certain anticancer drugs. It is a type of cytoprotective agent. Also called PN401, triacetyluridine, and Vistogard.

**urinalysis** : A test that determines the content of the urine.

**urinary** : Having to do with urine or the organs of the body that produce and get rid of urine.

**urinary bladder**: the site where waste products are shipped from the kidney for storage or for release.

**urinary diversion** : A surgical procedure to make a new way for urine to leave the body. It may involve redirecting urine into the colon, using catheters to drain the bladder, or making an opening in the abdomen and collecting urine in a bag outside the body.

**urinary incontinence** : Inability to hold urine in the bladder.

**urinary tract** : The organs of the body that produce and discharge urine. These include the kidneys, ureters, bladder, and urethra.

**urine**: the product of the kidney; a watery solution of waste products, salts, organic compounds, uric acid, and urea.

**urine** : Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the body through the urethra.

**urine culture** : A laboratory test to check for bacteria, yeast, or other microorganisms in the urine. Urine cultures can help identify the type of microorganism that is causing an infection. This helps determine the best treatment. They may be used to help diagnose urinary tract infections, such as bladder infections. They may also be done after treatment for a urinary tract infection to make sure the microorganism that caused the infection is gone.

**urine cytology** : Tests performed on cells in urine to detect disease.

**URLC10 peptide/Montanide ISA51 vaccine**: A cancer vaccine containing URLC10 (up-regulated lung cancer 10) epitopes with potential immunostimulatory and antineoplastic activities. Upon administration, URLC10 peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against URLC10-expressing tumor cells. Up-regulated in lung and esophageal cancers, the function of URLC10 is unknown.

**URLC10-TTK-KOC1-VEGFR1-VEGFR2 multi-peptide vaccine**: A cancer vaccine containing five peptide epitopes with potential immunostimulatory and antitumor activity. Peptide epitopes in this vaccine

are derived from: URLC10 (up-regulated lung cancer 10), TTK (TTK protein kinase), KOC1 (IGF II mRNA Binding Protein 3) and VEGFRs (vascular endothelial growth factor receptors) 1 and 2. Upon administration, URLC10-TTK-KOC1-VEGFR1-VEGFR2 multipeptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against tumor cells expressing URLC10, TTK, KCO1, VEGFR 1 and 2 peptides, resulting in cell lysis and decreased tumor growth.

**urokinase :** An enzyme that is made in the kidney and found in the urine. A form of this enzyme is made in the laboratory and used to dissolve blood clots or to prevent them from forming. Also called u-plasminogen activator, uPA, and urokinase-plasminogen activator.

**urokinase plasminogen activator (uPA)-derived peptide A6 :** A substance being studied in the treatment of cancer. Urokinase plasminogen activator (uPA)-derived peptide A6 is a small piece of a protein called urokinase (an enzyme that dissolves blood clots or prevents them from forming). It is a type of antiangiogenesis agent and a type of antimetastatic agent. Also called A6.

**urokinase-derived peptide A6:** An octapeptide (amino acids 136-143) derived from the proteolytic enzyme urokinase plasminogen activator (uPA), with potential antineoplastic activity. A6 is derived from the nonreceptor-binding domain and connecting region of urokinase. Administration of A6 inhibits the interaction of uPA with its receptor uPAR, and may inhibit endothelial cell motility and tumor cell invasion. uPA and uPAR promote extracellular matrix degradation and growth factor activation and correlate positively with angiogenesis, cancer cell invasion and metastasis.

**urokinase-plasminogen activator :** An enzyme that is made in the kidney and found in the urine. A form of this enzyme is made in the laboratory and used to dissolve blood clots or to prevent them from forming. Also called u-plasminogen activator, uPA, and urokinase.

**Urolene Blue:** (Other name for: methylene blue)

**urolithiasis:** urate kidney stones

**urologic oncologist :** A doctor who has special training in diagnosing and treating cancers of the male and female urinary tract and the male reproductive organs.

**urologist** : A doctor who has special training in diagnosing and treating diseases of the urinary organs in females and the urinary and reproductive organs in males.

**urostomy** : An operation to create an opening from inside the body to the outside, making a new way to pass urine.

**urothelial cancer** : Cancer that begins in cells called urothelial cells that line the urethra, bladder, ureters, renal pelvis, and some other organs. Urothelial cells are also called transitional cells. These cells can change shape and stretch without breaking apart. Also called transitional cell cancer.

**urothelium** : The lining of the urinary tract, including the renal pelvis, ureters, bladder, and urethra.

**Uroxatrol**: (Other name for: alfuzosin hydrochloride)

**URSO**: (Other name for: ursodiol)

**ursodiol**: A synthetically-derived form of ursodiol, a bile acid produced by the liver and secreted and stored in the gallbladder. Also produced by the Chinese black bear liver, ursodiol has been used in the treatment of liver disease for centuries. This agent dissolves or prevents cholesterol gallstones by blocking hepatic cholesterol production and decreasing bile cholesterol. Ursodiol also reduces the absorption of cholesterol from the intestinal tract. OR A drug that is used to dissolve gallstones in people who can't have surgery to remove them. It is also being studied in the prevention of colorectal cancer. Ursodiol belongs to the family of drugs called anticholelithics.

**urticaria** : Itchy, raised red areas on the skin. Urticaria are caused by a reaction to certain foods, drugs, infections, or emotional stress. Also called hives.

**US Department of Energy (DOE)**: The Federal agency established by Congress to advance the national, economic, and energy security of the United States, among other missions.

**US Department of Homeland Security (DHS)**: The Federal agency responsible for leading the unified national effort to secure the U.S. against those who seek to disrupt the American way of life. DHS is also responsible for preparing for and responding to all hazards and disasters and includes

the formerly separate Federal Emergency Management Agency, the Coast Guard, and the Secret Service.

**US Environmental Protection Agency (EPA):** The Federal agency responsible for protecting human health and safeguarding the environment. The EPA leads the Nation's environmental science, research, education, and assessment efforts to ensure that efforts to reduce environmental risk are based on the best available scientific information. The EPA also ensures that environmental protection is an integral consideration in U.S. policies.

**usage:** time in the water budget for an area when water is being used faster than it is being replenished.

**Useful life:** The period of time during which the paint film is still satisfactorily protecting and/or maintaining its decorative appearance.

**USP14/UCHL5 inhibitor VLX1570:** An inhibitor of the 19S proteasome-specific deubiquitylating enzymes (DUBs) USP14 and UCHL5, with apoptosis-inducing and antineoplastic activities. Upon administration, VLX1570 specifically binds to both USP14 and UCHL5, thereby blocking their deubiquitylating activity. This blocks the ubiquitin proteasome degradation pathway, prevents the degradation of defective proteins, and leads to an accumulation of poly-ubiquitylated proteins. This induces the unfolded protein response (UPR) and results in both the induction of tumor cell apoptosis and the inhibition of tumor cell growth. USP14 and UCHL5, overexpressed in various tumor cell types, play a key role in the correct folding and deubiquitination of proteins.

**USPSTF:** A volunteer group of health experts who review published research and make recommendations about prevention health care methods such as screening tests, counseling, immunizations, and medicines. Before making a recommendation, the USPSTF looks at the strength (scientific quality and correctness) of the evidence found in the research and the benefits and harms of each method being reviewed. Recommendations are made to help healthcare providers and patients decide whether a specific method is right for a patient's needs. The recommendations may change as new research studies are published. Also called United States Preventive Services Task Force.

**ustekinumab:** An orally available, human, IgG1kappa, monoclonal antibody directed against the p40 protein subunit of both interleukin-12 (IL-12) and IL-23, with immunomodulating activity. Upon administration,

ustekinumab binds to the p40 subunit of IL-12 and IL-23, blocking the binding of IL-12 and IL-23 to their interleukin receptors. This inhibits IL-12- and IL-23-mediated signaling and inhibits differentiation of CD4-positive T cells into Th1 and Th17 cells. This prevents Th1- and Th17-mediated responses and cytokine production. This may prevent graft versus host disease (GVHD). IL-12 and IL-23, cytokines that play a key role in the regulation of the immune system, are upregulated in immune-mediated inflammatory disorders. Both Th1 and Th17 cells play a crucial role in GVHD. Check for active clinical trials using this agent.

**usw:** This stands for "und so weiter" which is German for 'et cetera'. It is pronounced "Oont Zoh Vyter" and lends a nice air of Teutonic gravity to any statement about polymers.

**uterine cancer :** Cancer that forms in tissues of the uterus (the small, hollow, pear-shaped organ in a woman's pelvis in which a fetus develops). Two types of uterine cancer are endometrial cancer (cancer that begins in cells lining the uterus) and uterine sarcoma (a rare cancer that begins in muscle or other tissues in the uterus).

**uterine sarcoma :** A rare type of uterine cancer that forms in muscle or other tissues of the uterus (the small, hollow, pear-shaped organ in a woman's pelvis in which a fetus develops). It usually occurs after menopause. The two main types are leiomyosarcoma (cancer that begins in smooth muscle cells) and endometrial stromal sarcoma (cancer that begins in connective tissue cells).

**uterus:** a muscular organ in the pelvic cavity of female mammals; also called the womb. OR The hollow, pear-shaped organ in a woman's pelvis. The uterus is where a fetus (unborn baby) develops and grows. Also called womb.

**Utimax:** (Other name for: amoxicillin)

**UV absorber:** An additive which protects materials by absorbing UV radiation.

**UV irradiation:** Electromagnetic radiation with a wavelength shorter than that of visible light (200-390 nm) Causes damage to DNA (mainly by forming pyrimidine dimers).

**UV radiation :** Invisible rays that are part of the energy that comes from the sun. UV radiation that reaches the Earth's surface is made up of two

types of rays, called UVA and UVB. UV radiation also comes from sun lamps and tanning beds. It can cause skin damage, premature aging, melanoma, and other types of skin cancer. It can also cause problems with the eyes and the immune system. Skin specialists recommend that people use sunscreens that protect the skin from both kinds of UV radiation. In medicine, UV radiation also comes from special lamps or a laser and is used to treat certain skin conditions such as psoriasis, vitiligo, and skin tumors of cutaneous T-cell lymphoma. Also called ultraviolet radiation.

**UV STABILIZER (ULTRAVIOLET):** Any chemical compound which, when admixed with a thermoplastic resin, selectively absorbs UV rays.

**UV stabiliser:** Additive which stabilises organic materials against UV radiation. OR Any chemical compound which, when mixed with a thermoplastic resin, selectively absorbs UV rays. OR Any chemical compound which, when mixed with a thermoplastic resin, selectively absorbs UV rays. It slows down the degradation through UV rays which occurs in most plastics.

**UV1 telomerase peptide vaccine:** A synthetic, peptide cancer vaccine directed against the human telomerase reverse transcriptase catalytic subunit (hTERT) with potential immunomodulating activity. Vaccination with the UV1 telomerase peptide may stimulate cytotoxic T-cells to recognize and kill telomerase-expressing cells. Telomerase, a reverse transcriptase normally repressed in healthy cells, is overexpressed in most cancer cells and plays a key role in cellular proliferation.

**UVA radiation :** Invisible rays that are part of the energy that comes from the sun. UVA radiation also comes from sun lamps and tanning beds. UVA radiation may cause premature aging of the skin and skin cancer. It may also cause problems with the eyes and the immune system. Skin specialists recommend that people use sunscreens that protect the skin from ultraviolet radiation. In medicine, UVA radiation also comes from special lamps or a laser and is used to treat certain skin conditions such as psoriasis, vitiligo, and skin tumors of cutaneous T-cell lymphoma. Also called ultraviolet A radiation.

**Uvadex:** (Other name for: methoxsalen)

**UVB radiation :** Invisible rays that are part of the energy that comes from the sun. UVB radiation causes sunburn, darkening and thickening of the outer layer of the skin, and melanoma and other types of skin cancer. It may

also cause problems with the eyes and the immune system. Skin specialists recommend that people use sunscreens that protect the skin from ultraviolet radiation. In medicine, UVB radiation also comes from special lamps or a laser and is used to treat certain skin conditions such as psoriasis, vitiligo, and skin tumors of cutaneous T-cell lymphoma. Also called ultraviolet B radiation.

**UVC radiation :** Invisible rays that are part of the energy that comes from the sun. Most UVC radiation from the sun is blocked from the Earth's surface by the ozone layer. In medicine, UVC radiation may also come from special lamps or a laser and is used to kill germs or to help heal wounds. It is also used to treat certain skin conditions such as psoriasis, vitiligo, and skin nodules of cutaneous T-cell lymphoma Also called ultraviolet C radiation.

**uvea :** The middle layer of the wall of the eye. The uvea has 3 main parts: (1) the choroid (the tissue layer filled with blood vessels); (2) the ciliary body (the ring of muscle tissue that changes the size of the pupil and the shape of the lens); and (3) the iris (the colored part of the eye). Also called uveal tract.

**uveal tract :** The middle layer of the wall of the eye. The uveal tract has 3 main parts: (1) the choroid (the tissue layer filled with blood vessels); (2) the ciliary body (the ring of muscle tissue that changes the size of the pupil and the shape of the lens); and (3) the iris (the colored part of the eye). Also called uvea.

**UVI (acronym):** Ultra Violet Inhibitor. This is an additive used in making plastic sheeting that requires protection from sunlight.

**Uvidem:** (Other name for: autologous dendritic cell-allogeneic melanoma tumor cell lysate vaccine)

**uvula :** The soft flap of tissue that hangs down at the back of the mouth (at the edge of the soft palate). Also called palatine uvula.

**V-D-J recombination:** A means to increase antibody diversity by recombining different variable (V) genes, joining (J) genes, and diversity (D) genes to generate the entire variable regions of antibody chains; the D genes undergo recombination only in antibody heavy chains.

**V930 vaccine:** A novel cancer vaccine designed to treat HER-2- and/or CEA-expressing cancers. Check for active clinical trials using this agent.

**VAC:** An abbreviation for a chemotherapy combination used to treat rhabdomyosarcoma in children. It is also used to treat certain types of ovarian germ cell tumors. VAC includes the drugs vincristine sulfate, dactinomycin (actinomycin-D), and cyclophosphamide. Also called VAC regimen.

**VAC regimen:** A regimen consisting of vincristine, dactinomycin and cyclophosphamide, which is used for the treatment of rhabdomyosarcoma (RMS) and ovarian germ cell tumors. OR An abbreviation for a chemotherapy combination used to treat rhabdomyosarcoma in children. It is also used to treat certain types of ovarian germ cell tumors. VAC regimen includes the drugs vincristine sulfate, dactinomycin (actinomycin-D), and cyclophosphamide. Also called VAC.

**VACB:** A procedure in which a small sample of tissue is removed from the breast. An imaging device is used to guide a hollow probe connected to a vacuum device. The probe is inserted through a tiny cut made in numbed skin on the breast. The tissue sample is removed using gentle vacuum suction and a small rotating knife within the probe. Then the tissue sample is studied under a microscope to check for signs of disease. This procedure causes very little scarring and no stitches are needed. Also called vacuum-assisted biopsy and vacuum-assisted core biopsy.

**vaccinated :** Treated with a vaccine.

**vaccination :** Treatment with a vaccine.

**vaccine :** A substance or group of substances meant to cause the immune system to respond to a tumor or to microorganisms, such as bacteria or viruses. A vaccine can help the body recognize and destroy cancer cells or microorganisms.

**vaccine adjuvant :** A substance added to a vaccine to improve the immune response so that less vaccine is needed.

**vaccine therapy :** A type of treatment that uses a substance or group of substances to stimulate the immune system to destroy a tumor or infectious microorganisms such as bacteria or viruses.

**vaccine-sensitized draining lymph node cells:** Cells isolated from lymph nodes from patients, and activated in vitro to generate tumor-specific effector T cells. Lymph nodes in the lymphatics draining tumors often contain T cells that are immunologically sensitized but functionally

deficient. Vaccine-sensitized draining lymph node cells are prepared by isolating these lymphocytes in vitro and stimulating them with cytokines to differentiate into mature effector cells. Vaccine-draining lymph node cells may also be produced by pharmacological activation of lymph node-derived lymphocytes with drugs such as ionomycin or with bacterial toxin; these activated lymphocytes may be expanded in culture with cytokines such as interleukin-2 prior to infusion into the patient.

**vaccinia CEA vaccine :** A vaccine made by putting the gene for carcinoembryonic antigen (CEA) into the vaccinia virus. The vaccinia virus is related to the virus used to make the smallpox vaccine. CEA is a tumor marker. The vaccinia CEA vaccine may help the immune system recognize and kill cancer cells that make CEA.

**vaccinia virus (vvDD-CDSR):** A highly tumor-selective vaccinia virus (vv) with an engineered double deletion (DD) of the thymidine kinase (tk) and vaccinia growth factor genes and additions of both a cytosine deaminase (CD) gene and a somatostatin receptor (SR) gene with potential oncolytic viral activity. The tk and vaccinia growth factor gene deletions in intratumorally administered vaccinia virus (vvDD-CDSR) help to restrict its replication and cytolytic activity to tumor cells with large nucleotide pools and tumor cells with activation of the EGFR-Ras pathway. Addition of the CD gene to the viral genome allows control of oncolytic viral infection through the administration of the prodrug 5-fluorocytosine (5-FC), converted by CD to the antimetabolite 5-fluorouracil (5-FU) in cells infected with this agent. Addition of the SR gene allows anatomical localization of vaccinia virus (vvDD-CDSR) through the use of octreotide scintigraphy.

**vaccinia-TRICOM vaccine :** A cancer vaccine made with a form of a vaccinia virus that does not cause disease in humans. It is being studied in the treatment of some types of cancer. The virus is changed in the laboratory to make human proteins that may help immune cells in the body kill tumor cells. Also called recombinant vaccinia-TRICOM vaccine and rV-TRICOM.

**vaccinia-tyrosinase vaccine:** A vaccine consisting of recombinant vaccinia virus, based on the modified vaccinia virus Ankara (MVA), that encodes the melanoma-associated antigen tyrosinase. Vaccination with vaccinia-tyrosinase may stimulate the host immune system to mount a

cytotoxic T-cell response against tumor cells expressing tyrosinase. Tyrosinase is a melanoma-specific differentiation agent that catalyzes the synthesis of the melanin precursor L-3,4-dihydroxyphenylalanine (L-DOPA).

**Vaccinium myrtillus/Macleaya cordata/Echinacea angustifolia extract granules:** A proprietary suspension formulation prepared from granules of standardized extracts from the fruits of *Vaccinium myrtillus*, the aerial parts of *Macleaya cordata* and the roots of *Echinacea angustifolia*, with potential anti-mucositis, anti-inflammatory, and analgesic activities. The main active ingredients of this formulation include anthocyanosides and procyanidins, benzophenanthridinic alkaloids, and alkylamides from *V. myrtillus*, *M. cordata* and *E. angustifolia* extracts, respectively. Upon administration in the mucosal cavity, the anthocyanosides scavenge free radicals, form a protective barrier on the mucosa, and protect the integrity of the capillary vessels; the benzophenanthridine alkaloids prevent the production of pro-inflammatory cytokines by inhibiting NF- $\kappa$ B and may halt the growth of microorganisms; the alkylamides inhibit cyclooxygenase and 5-lipoxygenase thereby blocking productions of prostaglandin and leukotriene. Furthermore, alkylamides modulate the expression of tumor necrosis factor alpha and other cytokines involved in inflammation processes through cannabinoid type 2 receptors and as cannabinomimetics they may also exert analgesic activity. Check for active clinical trials using this agent.

**vacuole:** an organelle found in mature plant cells that stores nutrients and toxic waste.

**Vacuum:** A vacuum is a space that has no pressure and no molecules inside. It is truly and empty space. Although space has a very low pressure (almost a vacuum), there are still particles out there. Or A volume which contains no matter. Or A completely empty space. The collapsing can experiment shows the effect of the pressure of gas particles. The gas particles on the inside of the can are removed, leaving a vacuum. The pressure of the particles on the outside squash the can.

**vacuum aspiration :** A surgical procedure in which the cervix is dilated (opened) and vacuum is used to remove tissue from the uterus. Also called suction aspiration and suction evacuation.

**Vacuum forming:** A process whereby a heated plastic sheet is drawn against a mold surface by evacuating the air between it and the mold. OR A simplified version of thermoforming, whereby a sheet of plastic is heated to a forming temperature, stretched onto or into a single-surface mold, and held against the mold by applying vacuum between the mold surface and the sheet. The vacuum forming process can be used to make most custom plastic packaging, speaker casings and even car dashboards. OR A method of forming plastic sheets or films into three-dimensional shapes, in which the plastic sheet is clamped in a frame suspended above a mold, heated until it becomes softened, drawn down into contact with the mold by means of a vacuum, and cooled while in contact with the mold. Often used interchangeably with thermoforming. OR A process whereby a heated plastic sheet is drawn against a mould surface by withdrawing the air between it and the mould. It is a different process to plastic extrusion manufacturing. OR A method of forming plastic sheets or films into three-dimensional shapes, in which the plastic sheet is clamped in a frame suspended above a mold, heated until it becomes softened, drawn down into contact with the mold by means of a vacuum, and cooled while in contact with the mold. Often used interchangeably with thermoforming.

**VACUUM METALIZING:** Process in which surfaces are thinly coated with metal by exposing them to the vapor of metal that has been evaporated under vacuum (one millionth of normal atmospheric pressure.)

**Vacuum moulding (infusion moulding, resin infusion, vacuum infusion):** Reinforcements and resins are laminated under a vacuum bag operation.

**Vacuum Sizing:** A procedure utilizing a sizing die with a vacuum applied to the outer surface of the extrudate.

**Vacuum Tank:** A cooling tank operating under reduced pressure to control the dimensions of the extrudate.

**vacuum-assisted biopsy :** A procedure in which a small sample of tissue is removed from the breast. An imaging device is used to guide a hollow probe connected to a vacuum device. The probe is inserted through a tiny cut made in numbed skin on the breast. The tissue sample is removed using gentle vacuum suction and a small rotating knife within the probe. Then the tissue sample is studied under a microscope to check for signs of disease.

This procedure causes very little scarring and no stitches are needed. Also called VACB and vacuum-assisted core biopsy.

**vacuum-assisted core biopsy :** A procedure in which a small sample of tissue is removed from the breast. An imaging device is used to guide a hollow probe connected to a vacuum device. The probe is inserted through a tiny cut made in numbed skin on the breast. The tissue sample is removed using gentle vacuum suction and a small rotating knife within the probe. Then the tissue sample is studied under a microscope to check for signs of disease. This procedure causes very little scarring and no stitches are needed. Also called VACB and vacuum-assisted biopsy.

**vadastuximab talirine:** An immunoconjugate consisting of a humanized monoclonal antibody that is engineered to contain cysteine residues that are conjugated to the synthetic, DNA cross-linking, pyrrolbenzodiazepine dimer SGD-1882, via the protease-cleavable linker maleimidocaproyl-valine-alanine dipeptide, with potential antineoplastic activity. The monoclonal antibody portion of the vadastuximab talirine specifically binds to the cell surface antigen CD33. This causes the internalization of vadastuximab talirine, and the release of the cytotoxic moiety SGD-1882. SGD-1882 binds to and crosslinks DNA, which results in both cell cycle arrest and the induction of apoptosis in CD33-expressing tumor cells. CD33, a transmembrane receptor, is expressed on myeloid leukemia cells. Check for active clinical trials using this agent.

**vadimezan:** A fused tricyclic analogue of flavone acetic acid with potential antineoplastic activity. Vadimezan induces the cytokines tumor necrosis alpha (TNF-alpha), serotonin and nitric oxide, resulting in hemorrhagic necrosis and a decrease in angiogenesis. This agent also stimulates the anti-tumor activity of tumor-associated macrophages.

**Vagestrol:** (Other name for: diethylstilbestrol)

**Vagifem:** (Other name for: therapeutic estradiol)

**vagina:** a muscular organ in female mammals leading from the cervix to the exterior. OR The muscular canal that goes from the uterus to the outside of the body. During birth, the baby passes through the vagina. Also called birth canal.

**vaginal :** Having to do with the vagina (the birth canal).

**vaginal cancer :** Cancer that forms in the tissues of the vagina (birth canal). The vagina leads from the cervix (the opening of the uterus) to the outside of the body. The most common type of vaginal cancer is squamous cell carcinoma, which starts in the thin, flat cells lining the vagina. Another type of vaginal cancer is adenocarcinoma, cancer that begins in glandular cells in the lining of the vagina.

**vaginal dilation therapy :** A method used to prevent the closing of the vagina (the birth canal) after radiation therapy to the pelvis. The patient puts a dilator (tube-like device) coated with an oily or slippery substance into her vagina.

**vaginal intraepithelial neoplasia :** Abnormal cells are found in tissue lining the vagina (birth canal). These abnormal cells may become cancer and spread into the vaginal wall. Also called VAIN.

**vaginectomy :** Surgery to remove part or all of the vagina (the birth canal).

**VAIN :** Abnormal cells are found in tissue lining the vagina (birth canal). These abnormal cells may become cancer and spread into the vaginal wall. Also called vaginal intraepithelial neoplasia.

**valacyclovir:** The hydrochloride salt of the L-valyl ester of the antiviral drug acyclovir. Orally administered, valacyclovir is rapidly converted to acyclovir which inhibits viral DNA replication after further conversion to the nucleotide analog acyclovir triphosphate by viral thymidine kinase, cellular guanyl cyclase, and a number of other cellular enzymes. Acyclovir triphosphate competitively inhibits viral DNA polymerase; incorporates into and terminates the growing viral DNA chain; and inactivates viral DNA polymerase. The greater antiviral activity of acyclovir against herpes simplex virus (HSV) compared with varicella-zoster virus (VZV) is due to its more efficient phosphorylation by HSV thymidine kinase.

**valacyclovir :** A substance that is being studied in the prevention of fungal, bacterial, and viral infections in patients undergoing donor stem cell transplantation with cells that are infected with cytomegalovirus. It belongs to the family of drugs called antivirals.

**Valcanisation:** A process by which a network of cross linking is introduced in to an elastomer to strengthen it.

**Valchlor:** (Other name for: mechlorethamine hydrochloride gel)

**Valcyte:** (Other name for: valganciclovir)

**valdecoxib:** A sulfonamide derivative and non-steroidal anti-inflammatory drug (NSAID) with anti-inflammatory, analgesic, and antipyretic activities. Valdecoxib selectively binds to and inhibits cyclooxygenase (COX)-2, thereby preventing the conversion of arachidonic acid into prostaglandins, which are involved in the regulation of pain, inflammation, and fever. This NSAID does not inhibit COX-1 at therapeutic concentrations and therefore does not interfere with blood coagulation.

**valdecoxib :** A substance that is being studied as a treatment for pain and other side effects of cancer therapy. It belongs to the family of drugs called COX-2 inhibitors.

**valence:** the relative ability of a biological substance to react or combine; a positive number that characterizes the combining power of an element for other elements, as measured by the number of bonds to other atoms which one atom of the given element forms upon chemical combination – hydrogen is assigned valence 1, and the valence is the number of hydrogen atoms, or their equivalent, with which an atom of the given element combines. or Valence is a measure of how much an atom wants to form compounds with other elements. You may read of valence mechanism and valence number. or a signed integer describing the combining power of an atom. or The number of hydrogen atoms that typically bond to an atom of an element. For example, in H<sub>2</sub>O, oxygen has a valence of 2; carbon in CH<sub>4</sub> has a valence of four.

**valence bond:** In the valence bond theory, a valence bond is a chemical bond formed by overlap of half-filled atomic orbitals on two different atoms.

**valence bond theory:** A theory that explains the shapes of molecules in terms of overlaps between half-filled atomic orbitals, or half filled "hybridized" orbitals (which are a mixture of atomic orbitals).

**valence electron:** Electrons that can be actively involved in chemical change; usually electrons in the shell with the highest value of n. For example, sodium's ground state electron configuration is 1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> 3s<sup>1</sup>; the 3s electron is the only valence electron in the atom. Germanium (Ge) has the ground state electron configuration 1s<sup>2</sup> 2s<sup>2</sup> 2p<sup>6</sup> 3s<sup>2</sup> 3p<sup>6</sup> 3d<sup>10</sup> 4s<sup>2</sup> 4p<sup>2</sup>; the 4s and 4p electrons are the valence electrons. or The electrons in the outermost shell of an atom.

**valence electrons:** the outermost shell of electrons in an atom or ion. Or the outermost electrons of an atom. The valence electrons of the carbon

atom occupy the 2s, 2px, and 2py orbitals, for example.

**Valence Mechanism:** This mechanism is the way an atom bonds to other atoms to create stable (full) electron orbitals.

**Valence Number:** The valence is the number of electrons that can form compounds with other atoms. The valence number for the same element can be different. Sulfur has the valence numbers 2, 4, and 6 depending on the type of compound it forms.

**valence shell:** the outermost electron orbit. Or The shell corresponding to the highest value of principal quantum number in the atom. The valence electrons in this shell are on average farther from the nucleus than other electrons; they are often directly involved in chemical reaction.

**valence shell electron pair repulsion theory:** A model that explains the shapes of molecules by assuming that electron pairs arrange themselves around atoms in a way that minimizes electron-electron repulsions.

**valerian :** A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden heliotrope, garden valerian, Indian valerian, Mexican valerian, Pacific valerian, *Valeriana officinalis*, and *Valerianae radix*.

**Valeriana officinalis :** A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden heliotrope, garden valerian, Indian valerian, Mexican valerian, Pacific valerian, valerian, and *Valerianae radix*.

**Valeriana officinalis extract:** An herbal extract isolated from the root of the plant *Valeriana officinalis* with sedative and anxiolytic activities. *Valeriana officinalis* extract contains four distinct classes of phytochemical constituents: volatile oils; sesquiterpenoids, including valerenic acid and its hydroxyl and acetoxyl derivative; valepotriates; and volatile pyridine alkaloids. Although the exact mechanism of action has not been established, the sesquiterpenoids in *Valeriana officinalis* extract, particularly valerenic acid, appear to account for its sedative and anxiolytic effects. Valerenic acid is both a subtype-selective GABA-A receptor agonist and a 5HT-5A receptor partial agonist. The sedative-hypnotic benzodiazepines are GABA-A receptor agonists.

**Valerianae radix :** A plant whose roots are used as a sedative and to treat certain medical conditions. It is being studied as a way to improve sleep in cancer patients undergoing treatment. Also called garden heliotrope, garden valerian, Indian valerian, Mexican valerian, Pacific valerian, valerian, and *Valeriana officinalis*.

**valganciclovir:** A synthetic prodrug of ganciclovir, a nucleoside analogue of 2'-deoxyguanosine, with antiviral activity. After phosphorylation, valganciclovir is incorporated into DNA, resulting in inhibition of viral DNA polymerase, viral DNA synthesis, and viral replication. Check for active clinical trials using this agent.

**valganciclovir :** An antiviral agent that is being studied as a treatment for AIDS-related cytomegalovirus. It is changed in the body to ganciclovir.

**validity, measurement:** An expression of the degree to which a measurement measures what it purports to measure.

**validity, study:** The degree to which the inference drawn from a study, especially generalizations extending beyond the study sample, are warranted when account is taken of the study methods, the representatives of the study sample, and the nature of the population from which it is drawn. Two varieties of study validity are distinguished:

**Valium :** A drug used to treat mild to moderate anxiety and tension and to relax muscles. It is a type of benzodiazepine. Also called diazepam.

**valley glacier:** a glacier located on top of a mountain, also called an alpine glacier, that moves downhill through the valley. Or a mass of ice restricted to high mountain valleys.

**Valley Printing:** Ink is applied to the high points of an embossing roll and subsequently deposited in what becomes the valleys of the embossed plastic material.

**valley train:** the outwash plain of an alpine glacier.

**Valparin:** (Other name for: divalproex sodium)

**valproic acid:** A synthetic derivative of propylpentanoic acid with antiepileptic properties and potential antineoplastic and antiangiogenesis activities. In epilepsy, valproic acid appears to act by increasing the concentration of gamma-aminobutyric acid (GABA) in the brain. This agent's antitumor and antiangiogenesis activities may be related to the inhibition of histone deacetylases and nitric oxide synthase, which results in

the inhibition of nitric oxide synthesis. or A drug used to treat epileptic seizures and bipolar disorder and to prevent migraine headaches. It is also being studied in the treatment of several types of cancer. It blocks an enzyme that cells need to grow and may cause cancer cells to die. It also blocks the growth of new blood vessels that tumors need to grow. It is a type of anticonvulsant, histone deacetylase (HDAC) inhibitor, antimaniacal, migraine headache prophylactic, and antiangiogenesis agent. Also called Depakene and Stavzor.

**valrubicin:** A semisynthetic derivative of the antineoplastic anthracycline antibiotic doxorubicin. With a mechanism of action that appears to differ from doxorubicin, valrubicin is converted intracytoplasmically into N-trifluoroacetyl Adriamycin, which interacts with topoisomerase II, stabilizing the complex between the enzyme and DNA; consequently, DNA replication and repair and RNA and protein synthesis are inhibited and the cell cycle is arrested in the G2 phase. In addition, this agent accumulates in the cell cytoplasm where it inhibits protein kinase C (PKC). Valrubicin is less cardiotoxic than doxorubicin when administered systemically; applied topically, this agent shows excellent tissue penetration. Structurally, the trifluoro-acetyl moiety on the amino group of the glycoside and the valerate moiety appear to result in a lipophilicity that is greater than of doxorubicin, resulting in increased intracytoplasmic concentrations. or A drug used to treat bladder cancer that does not respond to BCG (Bacillus Calmette Guerin). It is an anthracycline and is a type of antitumor antibiotic. Also called AD 32.

**valsartan:** An orally active nonpeptide triazole-derived antagonist of angiotensin (AT) II with antihypertensive properties. Valsartan selectively and competitively blocks the binding of angiotensin II to the AT1 subtype receptor in vascular smooth muscle and the adrenal gland, preventing AT II-mediated vasoconstriction, aldosterone synthesis and secretion, and renal reabsorption of sodium, and resulting in vasodilation, increased excretion of sodium and water, a reduction in plasma volume, and a reduction in blood pressure.

**valspodar:** An analogue of cyclosporin-A. Valspodar inhibits p-glycoprotein, the multidrug resistance efflux pump, thereby restoring the retention and activity of some drugs in some drug-resistant tumor cells. This agent also induces caspase-mediated apoptosis.

**Valstar:** (Other name for: valrubicin)

**Valtrex:** (Other name for: valacyclovir)

**Value:** the relative lightness of a color as measured on a scale ranging from pure black to pure white. (This attribute basically classifies a color as light or dark.) The value scale applies to chromatic as well as neutral colors. Value is also referred to as Lightness, Brightness, or Intensity. In color space value is most often represented on the vertical axis.

**Value-added Industries:** Digging stuff up and doing something to it so you can sell it for more than stuff you just dig up and sell. What we should be aiming to do more of for Australia's economy.

**Valve Gating :** A type of gate where a pin is held in the gate or channel by spring tension. As the injection stroke moves forward, this gate compresses the plastic in the runner. When this pressure build-up is sufficient to overcome the spring tension, the pin is then pushed back (pulled) and the fast decompression of the melt fills the cavity at extremely high speed.

**VAMP :** An abbreviation for a chemotherapy combination used with radiation therapy to treat low-risk childhood Hodgkin lymphoma. It includes the drugs vincristine sulfate, doxorubicin hydrochloride (Adriamycin), methotrexate, and prednisone. Also called VAMP regimen.

**VAMP Regimen:** A chemotherapy regimen consisting of vincristine, doxorubicin hydrochloride (Adriamycin), methotrexate and prednisone used in combination with radiation therapy for the treatment of low-risk childhood Hodgkin lymphoma. Or An abbreviation for a chemotherapy combination used with radiation therapy to treat low-risk childhood Hodgkin lymphoma. It includes the drugs vincristine sulfate, doxorubicin hydrochloride (Adriamycin), methotrexate, and prednisone. Also called VAMP.

**van der Waals equation:** An equation for non-ideal gasses that accounts for intermolecular attraction and the volumes occupied by the gas molecules. Or A semiempirical equation that describes the relationship between pressure (P), volume (V), temperature (T), and moles of gas (n) for a real gas. The equation is  $(P + n^2a/V^2)(V - nb) = nRT$ , where a and b are constants that include the effects of molecular attractions and molecular volume. a and b are usually fitted to experimental data for a particular gas.

**van der Waals force:** A weak physical force that holds together two molecules or two different parts of the same molecule or A force acting between nonbonded atoms or molecules. Includes dipole-dipole, dipole-induced dipole, and London forces. Or are weak interactions between MOLECULES. (Note: chemical bonds are the forces between ATOMS in a molecule whereas van der waals forces are between MOLECULES). These weak forces are caused by the attraction between protons in one molecule and electrons in an adjacent molecule. Because of the greater distance between the particles in one molecule and another, van der waals forces are only 1/100 as strong as the covalent bond. or Attractive forces acting between uncharged molecules. There are three kinds: (1) Dipole-dipole forces (2) Dipole-induced dipole forces (3) Dispersion Forces. Named after Johannes Diderik van der Waals (1837-1923).

**van der Waals interactions:** Refers to weak intermolecular interactions between transient dipoles usually in hydrophobic regions of molecules.

**van der Waals radius:** One half the distance between two nonbonded atoms, when attractive and repulsive forces between the atoms are balanced.

**van't Hoff rule:** predicts the maximum number of enantiomers that an optically active molecule can have; 2 raised to the nth power, where n equals the number of stereogenic centers. Or A plot of the log of solubility values versus the reciprocal of the temperature. The plot for several forms of a substance reveals transition temperatures for the forms.

**Vanadate Mineral:** A mineral that is made up of compounds with a vanadium oxide group or vanadium atom bonded to a metal. Vanadinite is a good example of a vanadate mineral.

**Vanadium:** Symbol:"V" Atomic Number:"23" Atomic Mass: 50.94amu. Vanadium is one of the transition elements. Vanadium can be found in some meteorites, crude oil, and many minerals.

**Vancenase:** (Other name for: beclomethasone dipropionate)

**Vanceril:** (Other name for: beclomethasone dipropionate)

**vancomycin :** An antibiotic drug used to fight resistant bacterial infections.

**vandetanib:** An orally bioavailable 4-anilinoquinazoline. Vandetanib selectively inhibits the tyrosine kinase activity of vascular endothelial growth factor receptor 2 (VEGFR2), thereby blocking VEGF-stimulated

endothelial cell proliferation and migration and reducing tumor vessel permeability. This agent also blocks the tyrosine kinase activity of epidermal growth factor receptor (EGFR), a receptor tyrosine kinase that mediates tumor cell proliferation and migration and angiogenesis. OR A drug used to treat medullary thyroid cancer that has spread to other parts of the body and cannot be treated by surgery. It is also being studied in the treatment of other types of cancer. Vandetanib prevents the growth of new blood vessels that tumors need to grow. It also blocks enzymes needed for cell growth and may kill cancer cells. It is a type of antiangiogenesis agent and a type of tyrosine kinase inhibitor. Also called Caprelsa and ZD6474.

**Vanicream Sunscreen SPF 60:** (Other name for: titanium dioxide/zinc oxide sunscreen cream SPF 60)

**Vanos:** (Other name for: fluocinonide cream)

**Vantas:** (Other name for: histrelin acetate)

**vantictumab:** A monoclonal antibody directed against the Wnt signaling pathway with potential antineoplastic activity. Vantictumab binds to certain receptors in the Wnt signaling pathway thereby preventing the activation of the Wnt signaling pathway. This may result in an inhibition of cancer stem cell (CSC) activity and a subsequent inhibition of cancer cell proliferation. The Wnt signaling pathway is dysregulated in many cancer cell types and appears to play a major role in CSC regulation and activity; CSC are tumor initiating cells that are able to self-renew and are responsible for tumor growth and resistance. Check for active clinical trials using this agent.

**Vantin:** (Other name for: cefpodoxime proxetil)

**vapor:** Another name for a gas. Or A vapor is closely related to a gas. Scientists define a vapor as "a compound in a gaseous state when its temperature is below the critical temperature." Steam is considered to be a vapor because it is in a gas state but the temperature is still below the critical temperature. Steam is liquid water suspended in a gas state. Helium gas is a true gas at room temperature. You may also see the spelling "vapour." or The gaseous phase of substances that are liquid or solid at atmospheric pressure (e.g., steam). or The gaseous form of substances that are normally in liquid or solid form.

**VAPOR BARRIER:** A layer of material through which water vapor will not pass readily or at all.

**Vapor Pressure:** A property that is unique to each liquid. When the surrounding pressure of a system is below the vapor pressure, the liquid is able to evaporate. Or The pressure at which pure liquid A can coexist with its vapor at a given temperature. In this text, vapor pressures can be determined from tabulated data, the antoine equation or the cox chart or The pressure of vapor above a liquid or solid surface which is in equilibrium with that liquid or solid. or The partial pressure of a gas in equilibrium with a condensed form (solid or liquid) of the same substance.

**vapor pressure lowering:** A colligative property of solutions. The vapor pressure of a solution is always lower than the vapor pressure of the pure solvent; the ratio of solution to pure solvent vapor pressures is approximately equal to the mole fraction of solvent in the solution.

**vaporization:** the process of boiling.

**vapreotide :** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called somatostatin analogs.

**Vaqta:** (Other name for: hepatitis A vaccine)

**vardenafil hydrochloride:** The hydrochloride salt form of vardenafil, a benzenesulfonamide derivative and phosphodiesterase type 5 (PDE5) inhibitor with vasodilatory activity. Vardenafil selectively inhibits PDE5, thus inhibiting the degradation of cyclic guanosine monophosphate (cGMP) found in the smooth muscle of the corpus cavernosa and corpus spongiosum of the penis. The inhibition of cGMP degradation results in prolonged muscle relaxation, vasodilation, and blood engorgement of the corpus cavernosa, thereby prolonging penile erection.

**varenicline:** A partial agonist of the nicotinic acetylcholine receptor (nAChR) subtype alpha4beta2. Nicotine stimulation of central alpha4beta2 nAChRs located at presynaptic terminals in the nucleus accumbens causes the release of the neurotransmitter dopamine, which may be associated with the experience of pleasure; nicotine addiction constitutes a physiologic dependence related to this dopaminergic reward system. As an AChR partial agonist, varenicline attenuates the craving and withdrawal symptoms that occur with abstinence from nicotine but is not habit-forming itself.

**varenicline tartrate :** A drug used to help people stop smoking by acting the same way nicotine acts in the brain. It is a type of nicotine receptor partial agonist. Also called Chantix.

**Vargatef:** (Other name for: nintedanib)

**variable:** A symbol used to represent an unknown number, often  $x$  or  $n$ . Or A quantity that can have many possible values. In designing experiments, variables that affect measurements must be identified and controlled. For example, an experiment that measures reaction rates must control temperature, because temperature is a variable that can change the rate of reaction.

**variable expression :** Variation in the manner in which a trait is manifested. When there is variable expressivity, the trait may vary in clinical expression from mild to severe. For example, the condition neurofibromatosis type 1 may be mild, presenting with café-au-lait spots only, or may be severe, presenting with neurofibromas and brain tumors. OR Refers to the difference in the way that signs and symptoms of a genetic condition can show up in individual patients who have that condition. For example, some patients with neurofibromatosis type 1 may have only mild symptoms, such as brown spots and freckling on the skin, and others may have more severe symptoms, such as brain tumors and tumors on the nerves.

**variable omission:** An error that occurs when, in the process of translating a sentence in the word problem into an equation, one of the variables is left out.

**Variable region:** The 108-residue amino acid sequence found at the N-terminal end of both the light and heavy chains of immunoglobulin G; the sequence in this region varies for every antibody type known; parts of these segments (the hypervariable regions) form the antigen-binding site of the immunoglobulin.

**variable reversal:** This error is made if the variables are switched with each other.

**variant of uncertain significance :** A variation in a genetic sequence whose association with disease risk is unknown. Also called unclassified variant, variant of unknown significance, and VUS.

**variant of unknown significance :** A variation in a genetic sequence whose association with disease risk is unknown. Also called unclassified variant, variant of uncertain significance, and VUS.

**varicella vaccine:** A live attenuated virus vaccine used to prevent chickenpox and shingles, which is caused by varicella-zoster virus (VZV).

**varicella zoster virus strain Oka/Merck live antigen:** A sterile, lyophilized preparation of the Oka/Merck strain of the live, attenuated varicella zoster virus (VZV), that can be used to prevent varicella, commonly known as chickenpox, or herpes zoster (HZ), commonly known as shingles. Upon reconstitution and subcutaneous vaccination with the VZV strain Oka/Merck live antigen, this vaccine induces antigen-specific T-cell and B-cell immune responses against the VZV, thereby protecting against VZV infection.

**varicose vein :** A condition in which a vein, most often in the legs, becomes permanently enlarged, twisted, and painful. This may be caused by valves in the vein that don't work properly or by weakness in the vein walls.

**Varivax:** (Other name for: varicella vaccine)

**Varivax:** (Other name for: varicella zoster virus strain Oka/Merck live antigen)

**VariZIG:** (Other name for: human varicella zoster immune globulin)

**VariZIG vaccine:** (Other name for: human varicella zoster immune globulin)

**varlilumab:** A human agonistic monoclonal antibody (MoAb) specific for CD27, with potential immunostimulating and antineoplastic activity. Upon administration of CDX-1127, this MoAb binds to CD27 and may potentiate the immune response by increasing the cytotoxic T-lymphocyte (CTL) response against CD27-expressing tumor cells. This may lead to growth inhibition of CD27-expressing tumor cells. In addition, this agent may increase the proliferation and activation of antigen-specific T lymphocytes upon co-administration of TAA-containing vaccines, such as dendritic cell vaccines. CD27, a co-stimulatory molecule and member of the tumor necrosis factor family overexpressed in certain tumor cell types, is constitutively expressed on mature T-lymphocytes, memory B cells and natural killer cells and plays an important role in NK cell mediated cytolytic activity and T and B lymphocyte proliferation and activation.

**varlitinib:** An orally bioavailable inhibitor of the epidermal growth factor receptor family with potential antineoplastic activity. Varlitinib selectively

and reversibly binds to both EGFR (ErbB-1) and Her-2/neu (ErbB-2) and prevents their phosphorylation and activation, which may result in inhibition of the associated signal transduction pathways, inhibition of cellular proliferation and cell death. EGFR and Her-2 play important roles in cell proliferation and differentiation and are upregulated in various human tumor cell types. Due to the dual inhibition of both EGFR and Her-2, this agent may be therapeutically more effective than agents that inhibit EGFR or Her-2 alone.

**Varnish:** A transparent coating based on drying oils and resins. Or Transparent liquid that dries on exposure to air to give a decorative and protective and protective coating when applied as a thin film.

**VARNISH STAIN:** Varnishes colored with a dye and without the same power of penetrations as the true stains, leaving a colored coating on the surface.

**Varubi :** A drug used with other drugs to prevent nausea and vomiting caused by chemotherapy. Varubi blocks the action of chemicals in the central nervous system (CNS) that may trigger nausea and vomiting. It is a type of antiemetic. Also called rolapitant hydrochloride.

**varve:** alternating layers of sediment showing yearly cycles. Or one light-colored bed and one dark-colored bed of sediment that form at the bottom of a glacial lake and that represent a single year's deposition.

**VAS:** A tool used to help a person rate the intensity of certain sensations and feelings, such as pain. The visual analog scale for pain is a straight line with one end meaning no pain and the other end meaning the worst pain imaginable. A patient marks a point on the line that matches the amount of pain he or she feels. It may be used to help choose the right dose of pain medicine. Also called visual analog scale.

**vas deferens :** A coiled tube that carries the sperm out of the testes.

**vascular bundles:** arrangements of the xylem and phloem in vascular plants.

**vascular disrupting agent BNC105P:** A benzofuran-based vascular disrupting agent (VDA) prodrug with potential anti-vascular and antineoplastic activities. Upon administration vascular disrupting agent BNC105P, the disodium phosphate ester of BNC105, is rapidly converted to BNC105; in activated endothelial cells, BNC105 binds to tubulin and

inhibits its polymerization, which may result in a blockage of mitotic spindle formation, cell cycle arrest, and disruption of the tumor vasculature. Hypoxic conditions ensue, depriving tumor cells of nutrients and resulting in tumor cell apoptosis. In addition to its VDA activity, this agent has a direct cytotoxic effect on tumor cells by inhibiting tubulin polymerization. BNC105 is not a substrate for the multidrug-resistance P-glycoprotein (Pgp) transporter.

**vascular endothelial growth factor :** A substance made by cells that stimulates new blood vessel formation. Also called VEGF.

**vascular endothelial growth factor antisense oligonucleotide:** An antisense oligonucleotide with potential antiangiogenesis activity. Vascular endothelial growth factor (VEGF) antisense oligonucleotide binds directly to binds VEGF A/C/D mRNA, leading to mRNA degradation and the inhibition of VEGF A-mediated angiogenesis and VEGF C/D-mediated lymphangiogenesis.

**vascular endothelial growth factor receptor tyrosine kinase inhibitor :** A substance that blocks an enzyme needed to form blood vessels. Also called VEGFR tyrosine kinase inhibitor.

**vascular endothelial growth factor trap :** A drug used with other drugs to treat colorectal cancer that has spread to other parts of the body and has not gotten better with chemotherapy. It is also being studied in the treatment of other types of cancer. Vascular endothelial growth factor trap blocks the action of a protein called vascular endothelial growth factor (VEGF) and may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent. Also called VEGF Trap, Zaltrap, and ziv-aflibercept.

**vascular endothelial growth factor-antisense oligonucleotide :** A substance that has been studied in the treatment of cancer. It binds to the RNA for a protein called vascular endothelial growth factor (VEGF) that stimulates the growth of new blood vessels. Vascular endothelial growth factor-antisense oligonucleotide blocks the cell's ability to make VEGF, which may kill tumors that need new blood vessels to grow. It is a type of antisense oligonucleotide and a type of gene expression inhibitor. Also called VEGF-AS.

**vascular plants:** plants that contain specialized tissues to transport fluids.

**vascular plants with protected seeds:** angiosperms; the most developed and complex vascular plants.

**vascular plants with unprotected seeds:** gymnosperms; vascular plants that contain naked seeds, such as the conifers.

**vascular tumor :** A type of tumor that forms from cells that make blood vessels or lymph vessels. Vascular tumors may be benign (not cancer) or malignant (cancer) and can occur anywhere in the body. They may form on the skin, in the tissues below the skin, and/or in an organ. There are many types of vascular tumors. The most common type of vascular tumor is hemangioma, which is a benign tumor that usually occurs in infants and goes away on its own.

**vascularized autologous bone graft :** Bone tissue that contains blood vessels, taken from one part of the body and used to replace diseased or injured bone in another part of the body of the same person.

**vasectomy :** An operation to cut or tie off the two tubes that carry sperm out of the testicles.

**vasoactive :** Describes something that causes the blood vessels to constrict (get narrower) or dilate (get wider).

**vasoactive intestinal peptide :** A hormone found in the pancreas, intestine, and central nervous system. It has many actions in the body, such as helping to control the secretion of water, salts, enzymes, and gastric acid during digestion. It also causes smooth muscles in the digestive tract, the heart, and the blood vessels to relax. It also has effects on the immune system and the central nervous system. Certain tumors in the pancreas make large amounts of vasoactive intestinal peptide. Also called VIP hormone.

**Vasomax:** (Other name for: phentolamine mesylate)

**vasomotor :** Affecting the narrowing and widening of the blood vessels.

**Vasotec:** (Other name for: enalapril maleate)

**Vasovist:** (Other name for: gadofosveset trisodium)

**vatalanib:** An orally bioavailable anilinophthalazine with potential antineoplastic activity. Vatalanib binds to and inhibits the protein kinase domain of vascular endothelial growth factor receptors 1 and 2; both receptor tyrosine kinases are involved in angiogenesis. This agent also binds to and inhibits related receptor tyrosine kinases, including platelet-derived growth factor (PDGF) receptor, c-Kit, and c-Fms. OR A substance

that is being studied in the treatment of cancer. It belongs to the families of drugs called protein tyrosine kinase inhibitors and VEGF receptor kinase inhibitors. Also called PTK787/ZK 222584.

**Vatican city:** Actually not a member of OPEC. If anyone says it is you will know that they stole their information from us before we added this disclaimer.

**VB4-845:** A substance being studied in the treatment of certain types of head and neck cancer. VB4-845 is made by linking a monoclonal antibody fragment to a toxic protein that may kill cancer cells. It binds to EpCAM (a protein on the surface of epithelial cells and some types of cancer cells). Also called anti-EpCAM-Pseudomonas-exotoxin fusion protein and Proxinium.

**VCL-CB01 vaccine:** A vaccine consisting of two plasmids encoding the human cytomegalovirus (CMV) tegument phosphoprotein 65 (pp65), a major internal matrix protein, and glycoprotein B (gB), an important CMV component responsible for attachment and entry into cells, with immunostimulatory properties. Vaccination with VCL-CB01 may stimulate the host immune system to mount cellular and humoral immune responses against CMV positive cells, resulting in cell lysis.

**VDZ:** Valence double-zeta. A minimal basis is used to describe core electrons, but the valence electrons have twice the minimum number of functions (see "DZ").

**Vectibix :** A human monoclonal antibody that is being used to treat colorectal cancer that has spread to other parts of the body. It is used in patients whose disease has not gotten better during or after treatment with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. Vectibix binds to the epidermal growth factor receptor (EGFR) and may block tumor cell growth. Also called ABX-EGF and panitumumab.

**vector:** field quantity that measures magnitude and direction. Or A DNA molecule known to replicate autonomously in a host cell, to which a segment of DNA may be spliced to allow its replication; for example, a plasmid or a temperate-phage DNA. Or the carriers of DNA genes to be inserted into cells.

**Vectrin:** (Other name for: minocycline hydrochloride)

**vecuronium bromide:** The bromide salt form of vecuronium, a synthetic steroid derivative of the naturally occurring alkaloids of curare with a muscle relaxant property. Vecuronium bromide competes with acetylcholine for the nicotinic receptors at the neuromuscular junction of skeletal muscles, thereby inhibiting the action of acetylcholine and blocking the neural transmission without depolarizing the postsynaptic membrane. This leads to skeletal muscle relaxation and paralysis.

**vedolizumab:** A recombinant humanized immunoglobulin G1 (IgG1) monoclonal antibody directed against the human lymphocyte Peyer's patch adhesion molecule 1 (LPAM-1;  $\alpha4\beta7$ ;  $\alpha4\beta7$ ), with immunomodulating, anti-inflammatory, and potential antineoplastic activities. Upon administration, vedolizumab selectively binds to integrin  $\alpha4\beta7$  and prevents the binding of  $\alpha4\beta7$ , expressed on the surface of a subset of T lymphocytes, to its natural ligand, mucosal addressin cell adhesion molecule-1 (MAdCAM-1), which is mainly expressed on the surface of gut endothelial cells. This prevents  $\alpha4\beta7$ -mediated signaling, adhesion of lymphocytes to the endothelium and the migration of T lymphocytes across the endothelium into inflamed gastrointestinal (GI) tissue. By preventing this infiltration to the affected area, inflammation is reduced. The human lymphocyte  $\alpha4\beta7$  integrin, plays a key role in gastrointestinal (GI) inflammation; it is overexpressed in certain types of cancer cells. The  $\alpha4\beta7$ /MAdCAM-1 signaling pathway plays a critical role in the homing of T lymphocytes to intestinal tissue.

**vegan :** A person who does not eat any foods that come from animals, including meat, eggs, and dairy products. A vegan diet is being studied in the prevention and treatment of prostate cancer and other medical conditions.

**VEGF:** A substance made by cells that stimulates new blood vessel formation. Also called vascular endothelial growth factor.

**VEGF inhibitor PTC299:** An orally bioavailable, small molecule inhibitor of vascular endothelial growth factor (VEGF) synthesis with potential antiangiogenesis and antineoplastic activities. VEGF inhibitor PTC299 targets post-transcriptionally by selectively binding the 5'- and 3'-untranslated regions (UTR) of VEGF messenger RNA (mRNA), thereby preventing translation of VEGF. This inhibits VEGF protein production and decreases its levels in the tumor and bloodstream. In turn, this may result in

the inhibition of migration, proliferation and survival of endothelial cells, microvessel formation, the inhibition of tumor cell proliferation, and eventually the induction of tumor cell death. VEGFs are upregulated in a variety of tumor cell types and play key roles during angiogenesis. In addition, PTC299 may enhance the antitumor activity of other chemotherapeutic agents.

**VEGF Trap :** A drug used with other drugs to treat colorectal cancer that has spread to other parts of the body and has not gotten better with chemotherapy. It is also being studied in the treatment of other types of cancer. VEGF Trap blocks the action of a protein called vascular endothelial growth factor (VEGF) and may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent. Also called vascular endothelial growth factor trap, Zaltrap, and ziv-aflibercept.

**VEGF-AS:** A substance that has been studied in the treatment of cancer. It binds to the RNA for a protein called vascular endothelial growth factor (VEGF) that stimulates the growth of new blood vessels. VEGF-AS blocks the cell's ability to make VEGF, which may kill tumors that need new blood vessels to grow. It is a type of antisense oligonucleotide and a type of gene expression inhibitor. Also called vascular endothelial growth factor-antisense oligonucleotide.

**VEGF/HGF-targeting DARPIn MP0250:** A designed ankyrin repeat proteins (DARPIn)-based agent targeting vascular endothelial growth factor (VEGF) and hepatocyte growth factor (HGF), with potential antiangiogenic and antineoplastic activities. Compared to antibodies, DARPins are small in size, have favorable pharmacokinetics and allow for both high affinity binding and efficacy. Upon administration, the VEGF/HGF-targeting DARPIn MP0250 binds to and inhibits both HGF and VEGF. This prevents HGF- and VEGF-mediated signaling, and inhibits the growth of HGF/VEGF-overexpressing tumor cells. This agent also prevents osteolysis, due to the inhibitory effect on HGF signaling. HGF and VEGF are overexpressed in a variety of cancer cell types and are associated with increased cell proliferation, migration and adhesion.

**VEGFR inhibitor KRN951:** An orally bioavailable quinoline-urea derivative inhibitor of vascular endothelial growth factor receptors (VEGFRs) 1 and 2 with potential antiangiogenesis and antineoplastic

activities. VEGFR inhibitor KRN951 inhibits VEGF-induced phosphorylation of VEGFRs 1 and 2, which may result in inhibition of migration, proliferation and survival of endothelial cells, microvessel formation, the inhibition of tumor cell proliferation, and tumor cell death. Expression of VEGFRs may be upregulated in a variety of tumor cell types.

**VEGFR tyrosine kinase inhibitor :** A substance that blocks an enzyme needed to form blood vessels. Also called vascular endothelial growth factor receptor tyrosine kinase inhibitor.

**VEGFR-2 DNA vaccine VXM01:** An orally available DNA cancer vaccine containing an attenuated strain of the bacterium *Salmonella typhimurium* encoding murine vascular endothelial growth factor receptor 2 (VEGFR-2) (VXM01), with potential immunomodulating, anti-angiogenic and antineoplastic activity. Upon oral administration and successful transduction, VEGFR-2 DNA vaccine VXM01 expresses VEGFR-2 in addition to inducing the expression of T-cell activation markers, such as CD25, interleukin-2, the early T-cell activation antigen CD69 and the lymphocyte function-associated antigen LFA-2. The immune response targets the fast growing VEGFR-2 expressing endothelial cells found in the tumor vasculature, thereby blocking angiogenesis which may ultimately inhibit tumor cell proliferation. VEGFR-2 is a receptor tyrosine kinase overexpressed on proliferating endothelial cells in the tumor vasculature. Check for active clinical trials using this agent.

**VEGFR-2 inhibitor CT-322 :** A substance being studied in the treatment of cancer. VEGFR-2 inhibitor CT-322 may prevent the growth of new blood vessels that tumors need to grow and may kill cancer cells. It is a type of vascular endothelial growth factor receptor-2 (VEGFR-2) inhibitor and a type of antiangiogenesis agent. Also called Angiocept and CT-322.

**VEGFR/FGFR inhibitor ODM-203:** An orally available inhibitor of the human vascular endothelial growth factor receptors (VEGFRs) and fibroblast growth factor receptors (FGFRs), with potential antiangiogenic and antineoplastic activities. VEGFR/FGFR inhibitor ODM-203 inhibits both VEGFRs and FGFRs, which may result in the inhibition of VEGFR- and FGFR-mediated signaling. This leads to an inhibition of angiogenesis and cell proliferation in tumor cells overexpressing VEGFR and/or FGFR. Both VEGFRs and FGFRs belong to the superfamily of receptor tyrosine

kinases and are upregulated in various tumor cell types. Check for active clinical trials using this agent.

**VEGFR/PDGFR dual kinase inhibitor TAK-593:** An oral formulation containing a small-molecule receptor tyrosine kinase inhibitor of both vascular endothelial growth factor receptor (VEGFR) and platelet-derived growth factor receptor (PDGFR) with potential antineoplastic activity. TAK-593 selectively binds to and inhibits VEGFR and PDGFR, which may result in the inhibition of angiogenesis and tumor cell proliferation.

**VEGFR/PDGFR dual kinase inhibitor X-82:** An orally available small molecule dual inhibitor targeting human vascular endothelial growth factor receptors (VEGFRs) and platelet-derived growth factor receptors (PDGFRs) with antiangiogenic and antineoplastic activities. VEGFR/PDGFR dual kinase inhibitor X-82 inhibits all isoforms of VEGFR and PDGFR, which may result in the inhibition of tumor angiogenesis and tumor cell proliferation, and the induction of tumor cell death. Both VEGFRs and PDGFRs are receptor tyrosine kinases that may be upregulated in various tumor cell types. VEGFR/PDGFR dual kinase inhibitor X-82 has been shown to reduce tissue toxicity by 95 percent compared with first-generation kinase inhibitors.

**VEGFR1-1084 peptide vaccine:** A peptide vaccine containing an HLA-A\*2402-restricted epitope of vascular endothelial growth factor receptor 1 (VEGFR1 or Flt-1) with potential immunostimulating, antiangiogenic, and antineoplastic activities. Upon vaccination, VEGFR1-1084 peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against VEGFR1-expressing endothelial cells of the tumor microvasculature, which may inhibit tumor angiogenesis and tumor cell proliferation. VEGFR1, a receptor tyrosine kinase, may be overexpressed on endothelial cells of the tumor microvasculature and is associated with tumor cell proliferation, invasion and tumor angiogenesis. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8<sup>+</sup> T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenicity.

**VEGFR2 tyrosine kinase inhibitor PF-00337210:** An orally available ATP-competitive inhibitor of the vascular endothelial growth factor receptor type 2 (VEGFR2), with potential anti-angiogenesis and antineoplastic activities. Upon administration, the VEGFR2 tyrosine kinase

inhibitor PF-00337210 selectively binds to VEGFR2 and prevents its phosphorylation which may result in an inhibition of migration, proliferation and survival of endothelial cells, microvessel formation, the inhibition of tumor cell proliferation, and may eventually cause tumor cell death. VEGFR2, a receptor tyrosine kinase, is frequently overexpressed by a variety of tumor types.

**VEGFR2-169 peptide vaccine:** A peptide vaccine containing an HLA-A\*2402-restricted epitope of vascular endothelial growth factor receptor (VEGFR) 2 with potential immunostimulatory and antineoplastic activities. Upon administration, VEGFR2-169 peptide vaccine may stimulate a cytotoxic T lymphocyte (CTL) response against VEGFR2-expressing tumor cells. VEGFR2, a receptor tyrosine kinase, is overexpressed by a variety of tumor types; overexpression is associated with tumor cell proliferation and tumor angiogenesis. HLA-A\*2402 is an MHC class I molecule that presents antigenic peptides to CD8+ T cells; epitope design restricted to epitopes that bind most efficiently to HLA-A\*2402 may improve antigenic peptide immunogenicity.

**VEGFR2-targeted contrast agent BR55:** A lipopeptide-based, vascular endothelial growth factor receptor 2 (VEGFR2) -targeted contrast agent with the property of molecular imaging of angiogenesis. BR55 is prepared by incorporation of a biospecific heterodimer peptide into the perfluorobutane-containing lipid-shelled microbubble membrane; the peptide specifically binds to VEGFR2 expressed on tumoral vascular endothelium allowing ultrasound imaging of the sites of active angiogenesis.

**Veglin:** (Other name for: vascular endothelial growth factor antisense oligonucleotide)

**Vehicle:** Portion of a coating that includes all liquids and the binder. The vehicle and the pigment are the two basic components of paint. Or The vehicle and the pigment are the two basic components of paint. The vehicle is made up of thinner and binder. Or The liquid portion of paint composed mainly of solvents, resins or oils.

**vein :** A blood vessel that carries blood to the heart from tissues and organs in the body.

**veins:** channels through which fluid flows toward the heart.

**VeIP:** An abbreviation for a chemotherapy combination used to treat advanced ovarian and testicular germ cell cancers. It includes the drugs vinblastine sulfate (Velban), ifosfamide (Ifex), and cisplatin (Platinol). Also called VeIP regimen.

**VeIP regimen :** An abbreviation for a chemotherapy combination used to treat advanced ovarian and testicular germ cell cancers. It includes the drugs vinblastine sulfate (Velban), ifosfamide (Ifex), and cisplatin (Platinol). Also called VeIP. OR A regimen consisting of vinblastine, ifosfamide and cisplatin used for the treatment of advanced-stage germ cell gonadal cancers.

**velafermin:** A recombinant human fibroblast growth factor-20 (rhFGF-20) protein with pro-proliferative activity. Velafermin stimulates DNA synthesis and cell proliferation, specifically promoting epithelial and mesenchymal cell proliferation, and may prevent radiation or chemotherapy-induced oral mucositis. OR A substance that is being studied in the prevention and treatment of oral mucositis (sores in the mouth) in patients receiving high-dose chemotherapy. Velafermin belongs to the family of drugs called recombinant human fibroblast growth factors (rhFGF).

**Velban :** A drug used to treat several types of cancer, including breast cancer and a type of gestational trophoblastic tumor that have not gotten better with other treatment, lymphoma, testicular cancer, Kaposi sarcoma, and mycosis fungoides. It is also being studied in the treatment of other types of cancer. Velban blocks cell growth by stopping cell division and may kill cancer cells. It is a type of vinca alkaloid and a type of antimetabolic agent. Also called Velsar and vinblastine sulfate.

**VELCADE:** (Other name for: bortezomib)

**velcade :** A drug used to treat multiple myeloma. It is also used to treat mantle cell lymphoma in patients who have already received at least one other type of treatment and is being studied in the treatment of other types of cancer. Velcade blocks several molecular pathways in a cell and may cause cancer cells to die. It is a type of proteasome inhibitor and a type of dipeptidyl boronic acid. Also called bortezomib and PS-341.

**veliparib:** A poly(ADP-ribose) polymerase (PARP) -1 and -2 inhibitor with chemosensitizing and antitumor activities. With no antiproliferative effects as a single agent at therapeutic concentrations, ABT-888 inhibits PARPs, thereby inhibiting DNA repair and potentiating the cytotoxicity of

DNA-damaging agents. PARP nuclear enzymes are activated by DNA single or double strand breaks, resulting in the poly(ADP-ribosyl)ation of other nuclear DNA binding proteins involved in DNA repair; poly(ADP-ribosyl)ation contributes to efficient DNA repair and to survival of proliferating cells exposed to mild genotoxic stresses as induced by oxidants, alkylating agents or ionizing radiation.

**veliparib** : A substance being studied in the treatment of breast cancers caused by mutations (changes) in the BRCA1 and BRCA2 genes. It is also being studied in the treatment of other types of cancer. It blocks an enzyme involved in many functions of the cell, including the repair of DNA damage. DNA damage may be caused by normal cell actions, UV light, some anticancer drugs, and radiation used to treat cancer. Veliparib may cause cancer cells to die. It is a type of poly(ADP-ribose) polymerase inhibitor. Also called ABT-888 and PARP-1 inhibitor ABT-888.

**velocity**: Speed of an object; the change in position over time.

**Velsar** : A drug used to treat several types of cancer, including breast cancer and a type of gestational trophoblastic tumor that have not gotten better with other treatment, lymphoma, testicular cancer, Kaposi sarcoma, and mycosis fungoides. It is also being studied in the treatment of other types of cancer. Velsar blocks cell growth by stopping cell division and may kill cancer cells. It is a type of vinca alkaloid and a type of antimitotic agent. Also called Velban and vinblastine sulfate.

**veltuzumab**: A fully humanized monoclonal antibody directed against the CD20 antigen with potential antineoplastic activity. Following binding, veltuzumab triggers complement-dependent cell lysis (CDCL) and antibody-dependent cell-mediated cytotoxicity (ADCC) in cells that overexpress CD20. CD20 antigen is a hydrophobic transmembrane protein located on pre-B and mature B lymphocytes.

**veltuzumab** : A substance being studied in the treatment of several types of lymphoma. It binds to the protein CD20, which is found on B cells (a type of immune system cell) and some types of lymphoma cells. This causes the immune system to kill the cancer cells. Veltuzumab is a type of monoclonal antibody. Also called hA20, HCD20, and IMMU-106. OR An orally bioavailable, ATP-competitive, small-molecule inhibitor of BRAF(V600E) kinase with potential antineoplastic activity. Vemurafenib selectively binds to the ATP-binding site of BRAF(V600E) kinase and

inhibits its activity, which may result in an inhibition of an over-activated MAPK signaling pathway downstream in BRAF(V600E) kinase-expressing tumor cells and a reduction in tumor cell proliferation. Approximately 90% of BRAF gene mutations involve a valine-to-glutamic acid mutation at residue 600 (V600E); the oncogene protein product, BRAF(V600E) kinase, exhibits a markedly elevated activity that over-activates the MAPK signaling pathway. The BRAF(V600E) gene mutation has been found to occur in approximately 60% of melanomas, and in about 8% of all solid tumors, including melanoma, colorectal, thyroid and other cancers. OR A drug used to treat advanced melanoma that has a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. Vemurafenib blocks this mutated protein, which may stop the growth of cancer cells. It is a type of kinase inhibitor and a type of targeted therapy agent. Also called BRAF (V600E) kinase inhibitor RO5185426, PLX4032, RG7204, and Zelboraf.

**vena cava:** the major vein in the human heart; pumps oxygen-poor blood into the right atrium.

**Venclexta :** A drug used to treat chronic lymphocytic leukemia (CLL) in patients who have already received other treatment. It is used in patients whose cancer has a change in chromosome 17. It is also being studied in the treatment of other types of cancer. Venclexta binds to a protein called BCL2, which may be found on some types of leukemia cells. Blocking this protein may help kill cancer cells and may make them more sensitive to other anticancer drugs. Venclexta is a type of BCL2 inhibitor. Also called venetoclax.

**venetoclax:** An orally bioavailable, selective small molecule inhibitor of the anti-apoptotic protein Bcl-2, with potential antineoplastic activity. Venetoclax mimics BH3-only proteins, the native ligands of Bcl-2 and apoptosis activators, by binding to the hydrophobic groove of Bcl-2 proteins thereby repressing Bcl-2 activity and restoring apoptotic processes in tumor cells. Bcl-2 protein is overexpressed in some cancers and plays an important role in the regulation of apoptosis; its expression is associated with increased drug resistance and tumor cell survival. Compared to the Bcl-2 inhibitor navitoclax, this agent does not inhibit bcl-XL and does not cause bcl-XL-mediated thrombocytopenia. OR A drug used to treat chronic lymphocytic leukemia (CLL) in patients who have already received other

treatment. It is used in patients whose cancer has a change in chromosome 17. It is also being studied in the treatment of other types of cancer.

Venetoclax binds to a protein called BCL2, which may be found on some types of leukemia cells. Blocking this protein may help kill cancer cells and may make them more sensitive to other anticancer drugs. Venetoclax is a type of BCL2 inhibitor. Also called Venclexta.

**venipuncture :** A procedure in which a needle is used to take blood from a vein, usually for laboratory testing. Venipuncture may also be done to remove extra red blood cells from the blood, to treat certain blood disorders. Also called blood draw and phlebotomy.

**venlafaxine:** A synthetic phenethylamine bicyclic derivative with antidepressant activity. Venlafaxine and its active metabolite, O-desmethylvenlafaxine (ODV), are potent inhibitors of neuronal serotonin and norepinephrine reuptake and weak dopamine reuptake inhibitors. This agent may reduce hormone-related vasomotor symptoms. Check for active clinical trials using this agent. OR A drug used to treat depression and certain anxiety disorders. It may also be used to treat hot flashes in women who are in menopause or are being treated for breast cancer. Venlafaxine increases the levels of the chemicals serotonin and norepinephrine in the brain, which helps improve mood. It is a type of antidepressant and a type of serotonin-norepinephrine reuptake inhibitor. Also called Effexor.

**Venofer:** (Other name for: iron sucrose injection)

**Venoglobulin-I:** (Other name for: therapeutic immune globulin)

**Venoglobulin-S:** (Other name for: therapeutic immune globulin)

**venography :** A procedure in which an x-ray of the veins is taken after a special dye is injected into the bone marrow or veins.

**venous catheter :** A thin, flexible tube that is inserted into a large vein, usually in the arm, chest, or leg. It is used to give intravenous fluids, blood transfusions, and chemotherapy and other drugs, and for taking blood samples. It avoids the need for repeated needle sticks.

**venous sampling :** A procedure in which a sample of blood is taken from a certain vein and checked for specific substances released by nearby organs and tissues. A higher than normal amount of a substance can be a sign of disease in the organ or tissue that makes it.

**Vent:** A shallow groove machined into the parting line surface of a mold to allow air and gases to escape from the cavity, or runner, as the molten plastic is filling the mold. Sometimes also located on ejector and core pins.  
OR In a mold, a shallow channel or minute hole cut in the cavity to allow air to escape as the material enters. OR A very small (0.001 in. to 0.005 in.) opening in the mold cavity, typically at the shutoff surface or via an ejector pin tunnel, that is used to let air escape from a mold while the resin is injected.

**Vent pipe:** Any ventilating shaft; expansion pipe from a hot water system or other sealed tank or circuit.

**Ventavis:** (Other name for: iloprost)

**Vented Barrel :** Special barrel unit with a vent port over the compression section of the screw to permit escape of gases prior to injecting melt into mold. Often used when molding moisture-sensitive resins.

**Vented Extruder -:** A two-stage screw extruder with an opening part way along the barrel for the removal of air and volatile matter from the plastics material.

**ventifact:** a rock that has flattened surfaces formed by windblown sand.

**ventilator :** In medicine, a machine used to help a patient breathe. Also called respirator.

**venting:** Providing an opening for the discharge of gases or the relief of pressure.

**Ventolin:** (Other name for: albuterol sulfate)

**ventricle:** a pumping chamber for blood to exit from the heart.

**ventricle :** A fluid-filled cavity in the heart or brain.

**vepoloxamer:** A purified form of the non-ionic polyoxypropylene-based copolymer poloxamer 188 comprised of a hydrophobic core with hydrophilic side chains, with cytoprotective, hemorrhheologic, anti-inflammatory, anti-thrombotic and fibrinolytic activities. Although the exact mechanism of action is not fully elucidated, upon intravenous administration, the hydrophobic polyoxypropylene core of vepoloxamer reversibly adheres to hydrophobic sites of damaged cell membranes, thereby fully covering the damaged sites. This prevents the attachment of other hydrophobic molecules, cell leakage of contents, such as ions, and restores the integrity of the damaged cell. Binding of vepoloxamer to

damaged cells in the blood vessel walls prevents cell aggregation and improves blood flow. By occupying damaged sites, this agent also prevents inflammatory processes, inhibits thrombosis, and induces fibrinolysis. As the hydrophobic region of the lipid cell membrane is not exposed in healthy cells, vepoloxamer does not adhere to healthy cells. Check for active clinical trials using this agent.

**verapamil:** A phenylalkylamine calcium channel blocking agent. Verapamil inhibits the transmembrane influx of extracellular calcium ions into myocardial and vascular smooth muscle cells, causing dilatation of the main coronary and systemic arteries and decreasing myocardial contractility. This agent also inhibits the drug efflux pump P-glycoprotein which is overexpressed in some multi-drug resistant tumors and may improve the efficacy of some antineoplastic agents.

**Verapamil SR:** (Other name for: verapamil)

**verb:** conveys the action performed by a subject, expresses the state of that subject, or links the subject to a complement.

**verbal:** words derived from verbs but that function differently from a verb (see infinitives, participles, and gerunds).

**Veregen:** (Other name for: kunecatechins ointment)

**Verge:** The edge of the roof covering projected beyond a gable end.

**Vermox:** (Other name for: mebendazole)

**Vernal equinox:** March 21, when the vertical ray of the Sun is at the Equator; the entire Earth has 12 hours of day and 12 hours of night.

**Versed :** A drug used to treat anxiety and tension and to relax muscles. It is also being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of benzodiazepine. Also called midazolam and midazolam hydrochloride.

**vertebral column :** The bones, muscles, tendons, and other tissues that reach from the base of the skull to the tailbone. The vertebral column encloses the spinal cord and the fluid surrounding the spinal cord. Also called backbone, spinal column, and spine.

**vertebrates:** animals with backbones.

**vertebroplasty :** A procedure used to repair a bone in the spine that has a break caused by cancer, osteoporosis (a decrease in bone mass and density), or trauma. Bone cement is injected into the broken bone to make it stronger.

**verteporfin:** A synthetic light-activated agent with photodynamic activity. Upon systemic administration, verteporfin accumulates in neovessels in the eye and, once stimulated by nonthermal red light in the presence of oxygen, produces highly reactive short-lived singlet oxygen and other reactive oxygen radicals, resulting in local damage to neovascular endothelium and blood vessel occlusion.

**vertex:** the point at which two rays meet and form an angle, or the point at which two sides meet in a polygon.

**vertical angles:** the opposite angles formed by the intersection of two lines. Vertical angles are equal in measure.

**Vertical Flash Ring:** The clearance between the force plug and the vertical wall of the cavity in a positive or semi-positive mold. Also, the ring of excess melt which escapes from the cavity into this clearance space.

**vertical ionization energy:** The energy required to remove an electron from an atom, molecule, or ion in the gas phase without moving any nuclei. The vertical ionization energy is greater than or equal to the adiabatic ionization energy.

**vertical ray:** radiational energy from the Sun that strikes the Earth at a right angle.

**vertices:** plural of vertex. Or The three endpoints of the line segments that make up a triangle.

**verubulin hydrochloride:** A quinazoline derivative with potential dual antineoplastic activities. Verubulin hydrochloride binds to and inhibits tubulin polymerization and interrupts microtubule formation, resulting in disruption of mitotic spindle assembly, cell cycle arrest in the G<sub>2</sub>/M phase, and cell death. This agent is not a substrate for several subtypes of multidrug resistance ABC transporters, such as P-glycoprotein, multidrug resistance-associated protein 1 (MRP1), and breast cancer resistance protein 1 (BCRP1); therefore, it may be useful for treating multidrug resistant (MDR) tumors that express these transporters. In addition, as a vascular disrupting agent (VDA), MPC-6827 appears to disrupt tumor microvasculature specifically, which may result in acute ischemia and massive tumor cell death.

**verum acupuncture :** Refers to traditional acupuncture, which is the technique of inserting thin needles through the skin to certain depths and at

certain points on the body to control pain and other symptoms. The term verum acupuncture may be used when comparing traditional acupuncture to sham (placebo) acupuncture. In sham acupuncture, needles do not go as deep and are not used at the same points on the body.

**Very high radiation area:** An area accessible to individuals, in which radiation levels exceed 500 rad (5 gray) in one hour at 1 meter from the source or from any surface that the radiation penetrates (see 10 CFR 20.1003).

**Vesanoid :** An oral preparation of tretinoin that is used to treat acute promyelocytic leukemia, usually together with other drugs. It is being studied in the treatment and prevention of other types of cancer. Tretinoin is a form of vitamin A.

**vesicant extravasation :** The leakage of certain drugs called vesicants out of a vein into the tissue around it. Vesicants cause blistering and other tissue injury that may be severe and can lead to tissue necrosis (tissue death).

**vesicle :** A small sac formed by a membrane and filled with liquid. Vesicles inside cells move substances into or out of the cell. Vesicles made in the laboratory can be used to carry drugs to cells in the body.

**vesicular texture:** rock that has gas pockets and air that was trapped during the rock's formation.

**vessels:** the main conducting vessels of the xylem found in the angiosperms.

**Vestige:** After molding, the plastic runner system (or in the case of a hot tip gate, a small dimple of plastic) will remain connected to the part at the location of the gate/s. After the runner is trimmed off (or the hot tip dimple is trimmed), a small imperfection called a “vestige” remains on the part.

**VHL syndrome :** A rare inherited disorder in which blood vessels grow abnormally in the eyes, brain, spinal cord, adrenal glands, or other parts of the body. People with VHL syndrome have a higher risk of developing some types of cancer. Also called von Hippel-Lindau syndrome.

**Viability assessment:** A decisionmaking process used by the U.S. Department of Energy (DOE) to assess the prospects for safe and secure permanent disposal of high-level radioactive waste in an excavated, underground facility, known as a geologic repository. This decisionmaking process is based on (1) specific design work on the critical elements of the

repository and waste package, (2) a total system performance assessment that will describe the probable behavior of the repository, (3) a plan and cost estimate for the work required to complete the license application, and (4) an estimate of the costs to construct and operate the repository.

**Viadur :** A drug used to treat advanced prostate cancer. Under the brand name Lupron, it is also used to treat early puberty in children and certain gynecologic conditions. Viadur is also being studied in the treatment of other types of cancer. It blocks the testicles from making testosterone (a male hormone) and the ovaries from making estrogen and progesterone (female hormones). It may stop the growth of prostate cancer cells that need testosterone to grow. Viadur is a type of gonadotropin-releasing hormone (GnRH) agonist. Also called Eligard, leuprolide acetate, and Lupron.

**viagenpumatulcel-L:** A proprietary, allogeneic tumor cell vaccine expressing a recombinant secretory form of the heat shock protein gp96 fusion (gp96-Ig) with potential antineoplastic activity. Upon administration of viagenpumatulcel-L, the irradiated live tumor cells continuously secrete gp96-Ig along with its chaperoned tumor associated antigens (TAAs) into the blood stream, thereby activating antigen presenting cells, natural killer cells and priming potent cytotoxic T lymphocytes (CTLs) to respond against TAAs on the endogenous tumor cells. Furthermore, this vaccine may induce long-lived memory T cells that could fight recurring cancer cells. gp96-Ig is constructed by replacing the KDEL retention sequence of gp96, normally an endoplasmatic reticulum-resident chaperone peptide, with the Fc portion of mouse and human IgG1.

**Viagmox:** (Other name for: moxifloxacin hydrochloride)

**Viagra :** A drug used to treat erectile dysfunction. Viagra relaxes the smooth muscle of the penis to allow increased blood flow and erection. It is a type of phosphodiesterase inhibitor. Also called sildenafil.

**Vibativ:** (Other name for: telavancin hydrochloride)

**Vibramycin:** (Other name for: doxycycline)

**Vibration** : Solids are made of particles that are vibrating. The particles are fixed in position but can wriggle about.

**vibro-acoustography imaging :** A technique being studied in the diagnosis of breast cancer and other types of cancer. Vibro-acoustography imaging uses ultrasound (high-energy sound waves) to cause tissues to

vibrate. The sound made by the vibrating tissues is picked up by a microphone and is used to make an image of the object on a computer. Cancer tissue can be seen because it is denser and vibrates at a different rate than normal tissue.

**Vicat Softening Point:** The temperature at which a flat ended needle will penetrate a specimen under a specific load using a uniform rate of temperature rise.

**Vicat Softening Temperature Undercut :** Vicat Softening Temperature, is a measure of the temperature at which a plastic starts to soften at specified test conditions according to ISO 306. It is determined with a standard indenter (a flat-ended needle of 1 mm 2 circular cross section) penetrating into the surface of a test specimen under a predefined load. The temperature at 1 mm penetration is quoted as the VST in Co. VST gives an indication of a material's ability to withstand limited short-term contact with a heated object. For material comparisons only.

**vicinal:** a term that describes the location of two identical atoms or groups as being bonded to adjacent carbon atoms; a vicinal dihalide, for example. (Compare with "geminal.")

**Vicodin:** (Other name for: hydrocodone/acetaminophen)

**Victoza:** (Other name for: liraglutide)

**Victrelis:** (Other name for: boceprevir)

**vidarabine:** A nucleoside antibiotic isolated from the bacterium *Streptomyces antibioticus* with antineoplastic activity. Vidarabine inhibits DNA polymerase, resulting in the inhibition of DNA replication in tumor cells.

**Vidaza :** A drug that is used to treat myelodysplastic syndromes and is being studied in the treatment of other types of cancer. It belongs to the family of drugs called antimetabolites. Also called azacitidine and Mylosar.

**Videne:** (Other name for: povidone-iodine solution)

**video-assisted resection :** Surgery that is aided by the use of a video camera that projects and enlarges the image on a television screen. Also called video-assisted surgery.

**video-assisted surgery :** Surgery that is aided by the use of a video camera that projects and enlarges the image on a television screen. Also called video-assisted resection.

**Videx:** (Other name for: didanosine)

**Videx EC:** (Other name for: didanosine)

**Vigil:** (Other name for: bi-shRNA-furin/GMCSF-expressing autologous tumor cell vaccine)

**vildagliptin:** A cyanopyrrolidine-based, orally bioavailable inhibitor of dipeptidyl peptidase 4 (DPP-4), with hypoglycemic activity. Vildagliptin's cyano moiety undergoes hydrolysis and this inactive metabolite is excreted mainly via the urine.

**villous adenoma :** A type of polyp that grows in the colon and other places in the gastrointestinal tract and sometimes in other parts of the body. These adenomas may become malignant (cancer).

**villus :** A tiny hair-like projection, often on the surface of mucous membranes. The plural is villi.

**VIN :** Abnormal cells are found on the surface of the vulvar skin. These abnormal cells may become cancer and spread into nearby tissue. Also called vulvar carcinoma in situ and vulvar intraepithelial neoplasia.

**vinblastine:** A natural alkaloid isolated from the plant *Vinca rosea* Linn. Vinblastine binds to tubulin and inhibits microtubule formation, resulting in disruption of mitotic spindle assembly and arrest of tumor cells in the M phase of the cell cycle. This agent may also interfere with amino acid, cyclic AMP, and glutathione metabolism; calmodulin-dependent  $Ca^{++}$  - transport ATPase activity; cellular respiration; and nucleic acid and lipid biosynthesis.

**vinblastine sulfate:** The sulfate salt of vinblastine, a natural alkaloid isolated from the plant *Catharanthus roseus* (Madagascar periwinkle) with antineoplastic properties. Vinblastine disrupts microtubule formation and function during mitosis and interferes with glutamic acid metabolism. or A drug used to treat several types of cancer, including breast cancer and a type of gestational trophoblastic tumor that have not gotten better with other treatment, lymphoma, testicular cancer, Kaposi sarcoma, and mycosis fungoides. It is also being studied in the treatment of other types of cancer. Vinblastine sulfate blocks cell growth by stopping cell division and may kill cancer cells. It is a type of vinca alkaloid and a type of antimetabolic agent. Also called Velban and Velsar.

**vinca alkaloid :** A type of drug that blocks cell growth by stopping mitosis (cell division). Vinca alkaloids interfere with microtubules (cellular structures that help move chromosomes during mitosis). They are used to treat cancer. A vinca alkaloid is a type of mitotic inhibitor and a type of antimicrotubule agent.

**Vincasar PFS:** (Other name for: vincristine sulfate)

**Vincosid:** (Other name for: vincristine sulfate)

**Vincrex:** (Other name for: vincristine sulfate)

**vincristine :** The active ingredient in a drug used to treat acute leukemia. It is used in combination with other drugs to treat Hodgkin disease, non-Hodgkin lymphoma, rhabdomyosarcoma, neuroblastoma, and Wilms tumor. Vincristine is also being studied in the treatment of other types of cancer. It blocks cell growth by stopping cell division. It is a type of vinca alkaloid and a type of antimitotic agent. or A synthetic derivative of vinblastine, a naturally occurring vinca alkaloid. Vindesine binds to and stabilizes tubulin, thereby interrupting tubulin polymerization and preventing the formation of the mitotic spindle and cell division; treated cells are unable to undergo mitosis and are arrested in metaphase. This agent also disrupts macromolecular synthesis.

**vincristine sulfate:** The sulfate salt of a natural alkaloid isolated from the plant *Vinca rosea* Linn with antimitotic and antineoplastic activities. Vincristine binds irreversibly to microtubules and spindle proteins in S phase of the cell cycle and interferes with the formation of the mitotic spindle, thereby arresting tumor cells in metaphase. This agent also depolymerizes microtubules and may also interfere with amino acid, cyclic AMP, and glutathione metabolism; calmodulin-dependent  $Ca^{++}$  -transport ATPase activity; cellular respiration; and nucleic acid and lipid biosynthesis.

**vincristine sulfate :** A drug used to treat acute leukemia. It is used in combination with other drugs to treat Hodgkin disease, non-Hodgkin lymphoma, rhabdomyosarcoma, neuroblastoma, and Wilms tumor. Vincristine sulfate is also being studied in the treatment of other types of cancer. It blocks cell growth by stopping cell division. It is a type of vinca alkaloid and a type of antimitotic agent. Also called Oncovin.

**vincristine sulfate liposome:** A sphingomyelin/cholesterol liposomal formulation of vincristine sulfate with potential antineoplastic activity.

Vincristine, a vinca alkaloid isolated from the plant *Vinca rosea*, irreversibly binds to and stabilizes tubulin, thereby interrupting microtubule assembly/disassembly dynamics, thereby preventing the formation of the mitotic spindle and leading to cell cycle arrest in metaphase. Liposomal encapsulation prolongs bioavailability of vincristine, increases its delivery to tumor tissues and reduces its toxicity profile. Compared to standard liposomal delivery, sphingosomal drug delivery further increases circulation time of serum drug and enhances drug accumulation at tumor sites, thereby leading to a further increase in efficacy.

**vincristine sulfate liposome :** A form of the anticancer drug vincristine sulfate that is contained inside very tiny, fat-like particles. It may have fewer side effects and work better than vincristine. Vincristine sulfate liposome is used to treat adults with acute lymphoblastic leukemia that is Philadelphia chromosome negative and has come back or has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. It is a type of vinca alkaloid and a type of antimetabolic agent. Also called liposomal vincristine sulfate and Marqibo.

**vindesine :** An anticancer drug that belongs to the family of plant drugs called vinca alkaloids.

**Vinetra:** (Other name for: muscadine grape skin extract)

**vinflunine:** A bi-fluorinated derivative of the semi-synthetic vinca alkaloid vinorelbine with antitubulin, antineoplastic, and antiangiogenic activities. Vinflunine inhibits tubulin assembly without any stabilization of assembled microtubules at concentrations comparable to those of other vinca alkaloids such as vincristine, vinblastine and vinorelbine; this effect on microtubule dynamics results in cell cycle arrest in mitosis and apoptosis. Compared to other vinca alkaloids, this agent binds weakly to the vinca-binding site, indicating that vinflunine may exhibit reduced neurotoxicity. or A substance being studied in the treatment of bladder cancer, lung cancer, and other types of cancer. Also called Javlor.

**vinorelbine :** An anticancer drug that belongs to the family of plant drugs called vinca alkaloids.

**vinorelbine tartrate:** The ditartrate salt of a semisynthetic vinca alkaloid derived from the leaves of the periwinkle plant (*Vinca rosea*) with antineoplastic activity. Vinorelbine binds to tubulin, thereby inhibiting tubulin polymerization into microtubules and spindle formation and

resulting in apoptosis of susceptible cancer cells. Inhibition of mitotic microtubules correlates with antitumor activity, whereas inhibition of axonal microtubules seems to correlate with vinorelbine's neurotoxicity. Compared to related vinca alkaloids, vinorelbine is more selective against mitotic than axonal microtubules in vitro, which may account for its decreased neurotoxicity. This agent is also a radiation-sensitizing agent.

**vinorelbine tartrate :** A drug used to treat advanced non-small cell lung cancer. It blocks cell growth by stopping cell division and may cause cancer cells to die. It is a type of vinca alkaloid and a type of antimitotic agent. Also called Navelbine.

**vinorelbine tartrate emulsion:** An emulsion containing the tartrate salt of the semisynthetic vinca alkaloid vinorelbine with antineoplastic activity. Vinorelbine binds to tubulin, inhibiting tubulin polymerization into microtubules; cell division is prevented, the cell cycle is arrested metaphase and cell death ensues. In this formulation vinorelbine is emulsified in a homogeneous suspension of nanoparticles, which protects the venous endothelium from coming into direct contact with the active ingredient, potentially reducing vinorelbine-associated venous toxicity at the venous injection site.

**vinorelbine tartrate oral:** An orally bioavailable tartrate salt of vinorelbine, a semisynthetic vinca alkaloid with potential antineoplastic activity. Vinorelbine binds to tubulin, thereby inhibiting tubulin polymerization into microtubules and spindle formation and resulting in apoptosis of susceptible cancer cells. Inhibition of mitotic microtubules correlates with antitumor activity, whereas inhibition of axonal microtubules seems to correlate with vinorelbine's neurotoxicity. Compared to related vinca alkaloids, vinorelbine is more selective against mitotic than axonal microtubules in vitro, which may account for its decreased neurotoxicity. This agent is also a radiation-sensitizing agent. Check for active clinical trials using this agent.

**vintafolide:** A water-soluble, folate-receptor-targeted conjugate of folate and the vinca alkaloid desacetylvinblastine monohydrazide (DAVLBH) with potential antineoplastic activity. The folate moiety of vintafolide binds to folic acid receptors on the tumor cell surface and the agent is internalized via folate receptor-mediated endocytosis, delivering the tubulin-binding DAVLBH moiety directly into the tumor cell; DAVLBH binding to tubulin

results in the disruption of microtubule assembly-disassembly dynamics, cell cycle arrest, and tumor cell apoptosis. Folic acid receptors are frequently upregulated on the surfaces of many tumor cell types. DAVLBH is a derivative of the natural product vinblastine.

**Vinyl:** See Polyvinyl Chloride or A resin with poor adhesion but good hardness, flexibility and resistance. Used for swimming pools, tank linings and marine equipment. Or A polymer made by linking ethylene ( $\text{CH}_2=\text{CH}_2$ ) or substituted ethylene molecules together. Or A generic term for PVC, one of various compounds of ethylene that are polymerized to form resins and plastics (e.g. polyvinyl or polyethylene plastics).

**Vinyl Acetate:** A common monomer used to make chain-growth polymers. Or A colorless liquid obtained by the reaction of ethylene and acetic anhydride in the presence of a catalyst. It is the monomer for polyvinyl acetate, and a comonomer and intermediate for many members of the vinyl plastics family.

**Vinyl Acetate Monomer (VAM):** Vinyl acetate monomer (VAM) is a highly versatile intermediate used in the production of a variety of polymers, such as polyvinyl acetate (PVAc), polyvinyl alcohol (PVOH), polyvinyl butyral (PVB), polyvinyl formal (PVF) and ethylene vinyl acetate (EVA). The main process used to produce VAM is vapor-phase acetoxylation (reaction of ethylene with acetic acid), except in China where the acetylene process dominates.

**vinyl alcohol:**  $\text{CH}_2=\text{CH}-\text{OH}$  or One of the most common monomers used to make chain-growth polymers. Here is a picture: One of the few legitimate arguments against PVC in a country like Australia is that making it involves shipping this potent carcinogen from place to place in trucks.

**vinyl chloride :** A substance used to make plastics. Exposure to vinyl chloride may increase the risk of developing liver, brain, and lung cancers; lymphoma; and leukemia.

**Vinyl Chloride Monomer (VCM):** Vinyl chloride monomer (VCM) is an intermediate chemical of the vinyls chain, mainly produced by thermal cracking of EDC. Almost all VCM produced is used to manufacture PVC, with other applications consuming very little VCM. VCM is a toxic gas at room temperature, and thus transporting VCM is costly and hazardous. As

such, trade in VCM is usually minimised, in favour of shipping EDC (the precursor to VCM) or PVC.

**Vinyl emulsions:** Emulsions based on PVA or other vinyl compounds.

**Vinyl ester resin:** A reaction product of methacrylic acid and epoxy resin.

**vinyl group:** the  $\text{CH}_2=\text{CH}-$  group.

**Vinyls family:** The Vinyls family contains those chemicals used in the production of PVC resin, namely chlorine, EDC, VCM, and PVC. Although not specifically used for PVC production, caustic soda is often associated with the vinyls chain, as it is a major by-product of chlorine production.

**Viokace:** (Other name for: pancrelipase)

**Vioxx:** (Other name for: rofecoxib)

**Vioxx :** A drug that was being used for pain relief and was being studied for its ability to prevent cancer and to prevent the growth of new blood vessels that tumors need to grow. It is a type of nonsteroidal anti-inflammatory drug and a type of antiangiogenesis agent. Vioxx was taken off the market in the U.S. because of safety concerns. Also called rofecoxib.

**VIP:** An abbreviation for a chemotherapy combination used to treat advanced testicular cancer. It is often used in patients who cannot receive bleomycin. It includes the drugs etoposide (VePesid), ifosfamide, and cisplatin (Platinol). Also called VIP regimen.

**VIP hormone :** A hormone found in the pancreas, intestine, and central nervous system. It has many actions in the body, such as helping to control the secretion of water, salts, enzymes, and gastric acid during digestion. It also causes smooth muscles in the digestive tract, the heart, and the blood vessels to relax. It also has effects on the immune system and the central nervous system. Certain tumors in the pancreas make large amounts of VIP hormone. Also called vasoactive intestinal peptide.

**VIP regimen:** A regimen consisting of etoposide, ifosfamide and cisplatin used for the treatment of advanced-stage germ cell gonadal cancers. Or An abbreviation for a chemotherapy combination used to treat advanced testicular cancer. It is often used in patients who cannot receive bleomycin. It includes the drugs etoposide (VePesid), ifosfamide, and cisplatin (Platinol). Also called VIP.

**Vira-A:** (Other name for: vidarabine)

**Viracept:** (Other name for: nelfinavir mesylate)

**viral :** Having to do with a virus.

**viral oncolysate :** An extract made from cancer cells that are infected with a strain of virus that can lyse (break down) cancer cells. The extract contains both cancer cell proteins and virus proteins. Viral oncolysates are being studied as cancer vaccines.

**viral therapy :** Treatment using a virus that has been changed in the laboratory to find and destroy cancer cells without harming healthy cells. It is a type of targeted therapy. Also called oncolytic virotherapy, oncolytic virus therapy, and virotherapy.

**viral vector:** A viral DNA altered so that it can act as a vector for recombinant DNA. OR A type of virus used in cancer therapy. The virus is changed in the laboratory and cannot cause disease. Viral vectors may produce tumor antigens (proteins found on a tumor cell) to stimulate an antitumor immune response in the body. Viral vectors may also be used to carry genes that can change cancer cells back to normal cells.

**Viramune:** (Other name for: nevirapine)

**Virazid:** (Other name for: ribavirin)

**Virazole:** (Other name for: ribavirin)

**Viread:** (Other name for: tenofovir disoproxil fumarate)

**Virgin:** plastic material that has not been gone through a melting process since polymerization. Virgin material typically has very high uniformity in the composition of the individual polymer molecules.

**Virgin Grade Material:** plastic material that has not undergone any processing other than that required to prepare it for manufacturing parts.

**Virgin Material:** A plastic material that has not been subjected to use or processing other than that required for its initial manufacture. It can be in the form of pellets, granules, powder, floc, or liquid. OR A plastic material in the form of pellets, granules, powder, flock, or liquid that has not been subjected to use or processing other than that required for its initial manufacture.

**Virgin Resin:** This is a term that refers to pure and clean (no recycled material is included) resins.

**Virilization:** An inherited disorder of steroid-hormone synthesis due to abnormally high levels of androgen; clinical characteristics include early

sexual development in males, masculinization of external female genitalia, and persistent loss of Na<sup>+</sup>, leading to dehydration and hypotension.

**Virilon:** (Other name for: testosterone cypionate)

**Virion:** The complete extracellular form of a virus consisting of DNA or RNA surrounded by a coat. Or A virus particle.

**Viroids:** Pathogenic agents, mostly of plants, that consist of short (usually circular) RNA molecules.

**virotherapy :** Treatment using a virus that has been changed in the laboratory to find and destroy cancer cells without harming healthy cells. It is a type of targeted therapy. Also called oncolytic virotherapy, oncolytic virus therapy, and viral therapy.

**virtual:** An unoccupied orbital.

**virtual colonoscopy :** A method to examine the inside of the colon by taking a series of x-rays. A computer is used to make 2-dimensional (2-D) and 3-D pictures of the colon from these x-rays. The pictures can be saved, changed to give better viewing angles, and reviewed after the procedure, even years later. Also called computed tomographic colonography, computed tomography colonography, CT colonography, and CTC.

**virulence :** The ability of a microorganism to cause damage to its host.

**virulent :** Refers to the ability of a virus or a bacterium to cause damage to its host.

**Virulizin:** A natural biological response modifier (BRM) isolated from bovine reticuloendothelial tissue. Viruzlin may enhance cell-mediated immune response to tumor cells by direct macrophage activation.

**Virulizin :** A substance that activates some types of immune system cells, and is being studied as a treatment for cancer. It belongs to the family of drugs called biological therapy agents.

**virus:** fragments of nucleic acid surrounded by a protein coat; may attack cells and replicate within the cells, destroying them. Or A complex of nucleic-acid and protein, that can infect and replicate inside a specific host cell to make more virus particles. or A complex of protein and nucleic acid that can penetrate a cell and replicate itself by co-opting the host's metabolism and employing its own as well as the host's gene products; the smallest organism known. or A self replicating, infectious, nucleic acid-protein complex that requires an intact host cell for its replication; its

genome is either DNA or RNA. OR In medicine, a very simple microorganism that infects cells and may cause disease. Because viruses can multiply only inside infected cells, they are not considered to be alive.

**virus replication cycle :** The reproduction cycle of viruses. A replication cycle begins with the infection of a host cell and ends with the release of mature progeny virus particles.

**virus-like particle :** A small particle that contains certain proteins from the outer coat of a virus. Virus-like particles do not contain any genetic material from the virus and cannot cause an infection. They are used to make vaccines that can help the body's immune system kill microorganisms and certain cancer cells. Virus-like particles were used to make vaccines that prevent cervical cancer caused by human papilloma viruses (HPV). They were also used to make vaccines that prevent liver cancer caused by infection with the hepatitis B virus.

**virus-neutralizing antibody :** An antibody that binds to a virus and interferes with its ability to infect a cell.

**viscera :** The soft internal organs of the body, including the lungs, the heart, and the organs of the digestive, excretory, and reproductive systems.

**visceral :** Having to do with the viscera, which are the soft internal organs of the body, including the lungs, the heart, and the organs of the digestive, excretory, reproductive, and circulatory systems.

**visceral peritoneum :** The layers of tissue that cover the outer surface of most organs in the abdomen, including the intestines.

**visceromegaly:** enlargement of the internal organs in the abdomen, such as liver, spleen, stomach, kidneys, or pancreas

**Visco-ease:** (Other name for: lamellar body mimetic mouth spray LMS-611)

**VISCOELASTICITY:** The dual nature of polymers, partly viscous fluid and partly elastic solid, is referred to as viscoelasticity. In flowing polymers viscoelasticity is responsible for time-dependent properties, such as stress relaxation, normal stresses, very large elongational viscosities, and numerous unusual phenomena such as extrudate swell, entry flow vortices and some flow instabilities. OR This property, possessed by all plastics to some degree, dictates that while plastics have solid-like characteristics such as elasticity, strength and form-stability, they also have liquid-like

characteristics such as flow depending on time, temperature, rate and amount of loading.

**Viscosity:** The property of a fluid whereby it tends to resist relative motion within itself. Or A measurement of the consistency and/or other properties of a paint, i.e. thickness or thinness. Or The thickness of a coating as related to its ability to flow as a liquid. or resistance to flow; a lava with low viscosity spreads quickly, and one with high viscosity flows sluggishly. or The resistance a liquid exhibits to flow. Experimentally, the frictional force between two liquid layers moving past each other is proportional to area of the layers and the difference in flow speed between them. The constant of proportionality is called "viscosity" or "coefficient of viscosity", and is given the symbol  $\eta$ . The time required for a liquid to drain out of a capillary tube is directly proportional to its viscosity. The poise is a non-SI unit frequently used to express viscosities. or The resistance to flow of a fluid (strictly speaking the resistance to shearing). It is defined as the ratio of shear stress (Tangential Force/Area) to shear rate (velocity/gap). The viscosity of a polymer decreases as the shear rate increases. This property is referred to as pseudoplastic behavior or shear thinning. The viscosity of a polymer at (near) zero shear for a polymer like PE might be 5,000 to 10,000 Pa.s while during flow in an extrusion channel it could be much lower (i.e. 500 Pa.s or less). Melt flow index corresponds to just one point on a viscosity curve (actually inverse). High viscosity implies low melt index and high molecular weight. Viscosity is measured in units of Pa.s or poise.  $1 \text{ Pa.s} = 10 \text{ poise}$ . The viscosity of water is  $10^{-3} \text{ Pa.s}$  (1 centipoise) and for a typical polymer melt at least one million times larger (i.e. over 1000 Pa.s or 10,000 poise) OR Internal friction or resistance to flow of a liquid. The constant ratio of shearing stress to rate of shear. In liquids for which this ratio is a function of stress, the term "apparent viscosity" is defined as the ratio. OR The resistance of a material to flow. Fluids that are highly viscous, are thick and "gooey." Water has a low viscosity. OR the resistance offered by a fluid (liquid or gas) to flow. The viscosity is a characteristic property and is a measure of the combined effects of adhesion and cohesion. Or Resistance of a substance to flow. OR The resistance the a liquid (or gaseous) system offers to flow when it is subjected to shear stress. Viscosity is a specification for a number of oils, solutions and blends.

**VISCOSITY INDEX:** The relationship of viscosity to temperature of a fluid. High viscosity index fluids will display less change in viscosity with temperature.

**Viscosity response:** The viscosity response is a way of describing how the viscosity of a particular polymer responds to the changes in temperature and shear rate.

**Viscosity, Inherent:** The logarithmic viscosity number determined by dividing the natural logarithm of the relative viscosity (sometimes called viscosity ratio) by the concentration in grams per 100 mls. of solution.

**Viscosity, MFR, MVI, and MV:** Viscosity is the resistance to steady flow shown within the body of a material. It is internal friction or the measure of a polymer melt's resistance to flow. In testing: the ratio of the shearing stress to the rate of shear of a fluid. Which 'Newtonian viscosity', the ratio of shearing stress to rate of shearing strain is constant. In non-Newtonian behavior – which is the usual case with plastics – the ratio is not constant but varies with the shearing stress. Such a ratio is often called the apparent viscosity at the corresponding shearing stress. It represents one point on the flow curve. MFR, or melt flow rate, is the mass of thermoplastic material extruded in a given time through a defined orifice under specified conditions. Also called "flow rate." The expression MVI, or melt volume index, equals MFR. MV, or melt viscosity, is a measure of a polymer at a given temperature at which the molecular chains can move relative to each other. It is expressed as the quotient of the real shear stress  $\tau$  and the real rate of shear  $\dot{\gamma}$ . Melt viscosity is considerably dependent on the molecular weight: the higher the molecular weight the greater the entanglements and the greater the melt viscosity.

**Viscosity, Relative (or Viscosity Ratio):** Determined by dividing the average efflux time of the solution by the average efflux time of the pure solvent.

**viscotoxin :** A member of a group of small proteins produced by mistletoe plants that are able to kill cells and may stimulate the immune system.

**visible light:** Visible light is electromagnetic radiation with a wavelength between 400 and 750 nm.

**visilizumab:** A humanized, non-Fc receptor (FcR)-binding IgG2 monoclonal antibody (MoAb) directed against CD3 with potential immunosuppressive activity. Visilizumab binds to invariant CD3 epsilon,

one of the non-covalently-associated subunits of T-cell receptors (TCRs) on activated T-cells. Upon binding to the TCR/CD3 complex, visilizumab induces apoptosis, which may result in the selective clonal deletion of activated pathogenic T-cells. This MoAb is engineered with a substitution at amino acid residues 234 and 237 (Val3Ala) within the IgG2 Fc arm, rendering it unable to bind to type II FcRs; accordingly, this agent is less likely to activate type II FcR-expressing resting T-cells. or A substance being studied in the treatment of an immune system reaction called graft-versus-host disease (GVHD), which may occur after a donor stem cell transplant. It is also being studied in the treatment of some autoimmune diseases. Visilizumab binds to a protein called CD3, which is found on some T cells (a type of white blood cell). This may help suppress the body's immune response. Visilizumab is a type of monoclonal antibody.

**Vision Plastics:** Your Plastic Injection Molder, from Concept to Completion.

**Visipaque:** (Other name for: iodixanol)

**vismodegib:** An orally bioavailable small molecule with potential antineoplastic activity. Vismodegib targets the Hedgehog signaling pathway, blocking the activities of the Hedgehog-ligand cell surface receptors PTCH and/or SMO and suppressing Hedgehog signaling. The Hedgehog signaling pathway plays an important role in tissue growth and repair; aberrant constitutive activation of Hedgehog pathway signaling and uncontrolled cellular proliferation may be associated with mutations in the Hedgehog-ligand cell surface receptors PTCH and SMO.

**vismodegib :** A drug used to treat advanced basal cell carcinoma that has spread to other parts of the body or has come back after surgery. It is also used in patients who cannot be treated with surgery or radiation therapy. It is also being studied in the treatment of other types of cancer. Vismodegib blocks a type of protein involved in tissue growth and repair and may block the growth of cancer cells. It is a type of Hedgehog signaling pathway antagonist. Also called Erivedge and GDC-0449.

**Vistide:** (Other name for: cidofovir)

**Vistogard:** (Other name for: uridine triacetate)

**Vistogard :** A drug used in the emergency treatment of patients who receive too much fluorouracil or capecitabine (types of anticancer drugs). It is also used in the emergency treatment of heart or central nervous system

(CNS) toxicity or other serious side effects that occur within 4 days of ending treatment with fluorouracil or capecitabine. Vistogard may help protect healthy cells from some of the side effects caused by certain anticancer drugs. It is a type of cytoprotective agent. Also called PN401, triacetyluridine, and uridine triacetate.

**vistusertib:** An orally bioavailable inhibitor of the mammalian target of rapamycin (mTOR) with potential antineoplastic activity. Vistusertib inhibits the activity of mTOR, which may result in the induction of tumor cell apoptosis and a decrease in tumor cell proliferation. mTOR, a serine/threonine kinase that is upregulated in a variety of tumors, plays an important role downstream in the PI3K/Akt/mTOR signaling pathway.

**visual analog scale :** A tool used to help a person rate the intensity of certain sensations and feelings, such as pain. The visual analog scale for pain is a straight line with one end meaning no pain and the other end meaning the worst pain imaginable. A patient marks a point on the line that matches the amount of pain he or she feels. It may be used to help choose the right dose of pain medicine. Also called VAS.

**visual pathway glioma :** A rare, slow-growing tumor that usually forms in the optic nerve, optic chiasm, or optic tract. These are parts of the nervous system that carry messages from the eye to the brain. Also called optic pathway glioma.

**Visudyne:** (Other name for: verteporfin)

**VitaBlue tablet formation:** (Other name for: blueberry powder supplement)

**vital :** Necessary to maintain life. Breathing is a vital function.

**vitality :** A term used to describe a person's ability to live, grow, and develop. Vitality also refers to having energy and being vigorous and active. Being ill or being treated for a disease, such as cancer, may lessen a person's vitality.

**Vitamin:** A trace organic substance required in the diet of some species. Many vitamins are precursors of coenzymes. Or A substance that is critical for proper functioning of a living organism that the organism is unable to produce in sufficient quantities for itself. or An organic substance required in small quantities in the diet of some species; generally functions as a component of a coenzyme.

**vitamin :** A nutrient that the body needs in small amounts to function and stay healthy. Sources of vitamins are plant and animal food products and dietary supplements. Some vitamins are made in the human body from food products. Vitamins are either fat-soluble (can dissolve in fats and oils) or water-soluble (can dissolve in water). Excess fat-soluble vitamins are stored in the body's fatty tissue, but excess water-soluble vitamins are removed in the urine. Examples are vitamin A, vitamin C, and vitamin E. OR organic nutrients essential in trace amounts to the health of animals. Or Organic substances required in trace amounts for a number of essential biochemical reactions.

**Vitamin A:** A fat-soluble vitamin that is the precursor of the light-sensitive pigment retinal and the signal molecule retinoic acid, an activator of certain transcription factors. Also called retinol. OR A nutrient that the body needs in small amounts to function and stay healthy. Vitamin A helps in vision, bone growth, reproduction, growth of epithelium (cells that line the internal and external surfaces of the body), and fighting infections. It is fat-soluble (can dissolve in fats and oils). Vitamin A is found in liver, egg yolks, and whole milk dairy products from animals and in fish oils. It can also be made in the body from a substance found in some fruits and vegetables, such as cantaloupes, carrots, spinach, and sweet potatoes. Vitamin A is being studied in the prevention and treatment of some types of cancer. Also called retinol.

**vitamin A acid :** A nutrient that the body needs in small amounts to function and stay healthy. Vitamin A acid is made in the body from vitamin A and helps cells to grow and develop, especially in the embryo. A form of vitamin A acid made in the laboratory is put on the skin to treat conditions such as acne and is taken by mouth to treat acute promyelocytic leukemia (a fast-growing cancer in which there are too many immature blood-forming cells in the blood and bone marrow). Vitamin A acid is being studied in the prevention and treatment of other types of cancer. Also called all-trans retinoic acid, ATRA, retinoic acid, and tretinoin.

**Vitamin B:** 12 A prosthetic group, consisting of a cobalt atom, a corrin ring, and deoxyadenosine, that plays a role in intramolecular rearrangements, methylations, and reductions of ribonucleotides to deoxyribonucleotides. Also called cobalamin.

**vitamin B complex :** A compound containing several or all of a group of vitamins and nutrients that the body needs in very small amounts to function and stay healthy. The B vitamins in the vitamin B complex include thiamine, riboflavin, niacin (nicotinic acid), niacinamide (nicotinamide), the vitamin B6 group (including pyridoxine, pyridoxal, pyridoxamine), biotin, pantothenic acid, folic acid, and vitamin B12. Aminobenzoic acid, inositol, and choline are sometimes included as part of the vitamin B complex. The vitamin B complex is water-soluble (can dissolve in water) and is found in yeast, seeds, eggs, liver, meat, and vegetables. Members of the vitamin B complex are being studied in the prevention and treatment of some types of cancer.

**vitamin B1 :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Vitamin B1 helps some enzymes work properly, helps break down sugars in the diet, and keeps nerves and the heart healthy. It is found in pork, organ meats, peas, beans, nuts, and whole grains. Vitamin B1 is water-soluble (can dissolve in water) and must be taken in daily. Not enough vitamin B1 can cause a disease called beriberi (a condition marked by heart, nerve, and digestive disorders). Too much vitamin B1 may help cancer cells grow faster. Also called thiamine.

**vitamin B12:** An essential nutrient and natural water-soluble vitamin of the B-complex family that must combine with an intrinsic factor for absorption by the intestine, Vitamin B12 (cyanocobalamin) is necessary for hematopoiesis, neural metabolism, DNA and RNA production, and carbohydrate, fat, and protein metabolism. B12 improves iron functions in the metabolic cycle and assists folic acid in choline synthesis. B12 metabolism is interconnected with that of folic acid. Vitamin B12 deficiency causes pernicious anemia, megaloblastic anemia, and neurologic lesions. or A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Vitamin B12 helps make red blood cells, DNA, RNA, energy, and tissues, and keeps nerve cells healthy. It is found in liver, meat, eggs, poultry, shellfish, milk, and milk products. Vitamin B12 is water-soluble (can dissolve in water) and must be taken in every day. Not enough vitamin B12 can cause certain types of anemia (a condition in which the number of red blood cells is below normal) and neurologic disorders. It is being studied with folate in the prevention and

treatment of some types of cancer. Also called cobalamin and cyanocobalamin.

**vitamin B2 :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Vitamin B2 helps make red blood cells, helps some enzymes work properly, and keeps skin, nails, and hair healthy. It is found in milk, eggs, malted barley, organ meats, yeast, and leafy vegetables. Vitamin B2 is water-soluble (can dissolve in water) and must be taken in every day. Not enough vitamin B2 can cause anemia (a low number of red blood cells), mouth sores, and skin problems. Amounts of vitamin B2 may be higher in the blood of patients with some types of cancer. Also called riboflavin.

**vitamin B3 :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Vitamin B3 helps some enzymes work properly and helps skin, nerves, and the digestive tract stay healthy. Vitamin B3 is found in many plant and animal products. It is water-soluble (can dissolve in water) and must be taken in every day. Not enough vitamin B3 can cause a disease called pellagra (a condition marked by skin, nerve, and digestive disorders). A form of vitamin B3 is being studied in the prevention of skin and other types of cancer. Vitamin B3 may help to lower blood cholesterol. Also called niacin and nicotinic acid.

**vitamin B5 :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Vitamin B5 helps some enzymes use foods and make many substances used in the body and protects cells against damage from peroxides. It is found in almost all plant and animal foods. Vitamin B5 is water-soluble (can dissolve in water) and must be taken in every day. Also called pantothenic acid.

**vitamin B6 :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Vitamin B6 helps keep nerves and skin healthy, fight infections, keep blood sugar levels normal, produce red blood cells, and some enzymes work properly. Vitamin B6 is a group of related compounds (pyridoxine, pyridoxal, and pyridoxamine) found in cereals, beans, peas, nuts, meat, poultry, fish, eggs, and bananas. It is water-soluble (can dissolve in water). Not enough vitamin B6 can cause mouth and tongue sores and nervous disorders. Vitamin B6 is being studied in the prevention of hand-foot syndrome (a disorder caused by certain anticancer

drugs and marked by pain, swelling, numbness, tingling, or redness of the hands or feet). Also called pyridoxine.

**vitamin C :** A nutrient that the body needs in small amounts to function and stay healthy. Vitamin C helps fight infections, heal wounds, and keep tissues healthy. It is an antioxidant that helps prevent cell damage caused by free radicals (highly reactive chemicals). Vitamin C is found in all fruits and vegetables, especially citrus fruits, strawberries, cantaloupe, green peppers, tomatoes, broccoli, leafy greens, and potatoes. It is water-soluble (can dissolve in water) and must be taken in every day. Vitamin C is being studied in the prevention and treatment of some types of cancer. Also called ascorbic acid.

**Vitamin D:** A fat-soluble vitamin that plays a role in the regulation of calcium and phosphorus metabolism; deficiencies in vitamin D lead to the impairment of bone formation. OR A family of lipo-soluble steroids important to the absorption, metabolism, and function of calcium and phosphorus and the growth and development of bone and tooth enamel. Found naturally in animal tissues, cholecalciferol (vitamin D3) is formed in the skin when ultraviolet light activates cholesterol conversion into vitamin D3. Ultraviolet irradiation of ergosterol (plant vitamin D) forms ergocalciferol (vitamin D2). Check for active clinical trials using this agent. OR A nutrient that the body needs in small amounts to function and stay healthy. Vitamin D helps the body use calcium and phosphorus to make strong bones and teeth. It is fat-soluble (can dissolve in fats and oils) and is found in fatty fish, egg yolks, and dairy products. Skin exposed to sunshine can also make vitamin D. Not enough vitamin D can cause a bone disease called rickets. It is being studied in the prevention and treatment of some types of cancer. Also called cholecalciferol.

**vitamin D2 :** A form of vitamin D that helps the body use calcium and phosphorus to make strong bones and teeth. It is fat-soluble (can dissolve in fats and oils) and is found in plants and yeast. It can be made in the body from another form of vitamin D when the body is exposed to the sun. Vitamin D2 is also made in the laboratory. It is used to prevent and to treat vitamin D deficiency. It is a type of dietary supplement. Also called ergocalciferol.

**Vitamin E:** Protects unsaturated membrane lipids from oxidation. Also called  $\alpha$ -tocopherol. OR A natural fat-soluble antioxidant with potential

chemopreventive activity. Vitamin E ameliorates free-radical damage to biological membranes, protecting polyunsaturated fatty acids (PUFA) within membrane phospholipids and within circulating lipoproteins. Peroxyl radicals react 1000-fold faster with vitamin E than with PUFA. In the case of oxygen free radical-mediated tumorigenesis, vitamin E may be chemopreventive. OR A nutrient that the body needs in small amounts to stay healthy and work the way it should. It is fat-soluble (can dissolve in fats and oils) and is found in seeds, nuts, leafy green vegetables, and vegetable oils. Vitamin E boosts the immune system and helps keep blood clots from forming. It also helps prevent cell damage caused by free radicals (highly reactive chemicals). Vitamin E is being studied in the prevention and treatment of some types of cancer. It is a type of antioxidant. Also called alpha-tocopherol.

**vitamin H :** A nutrient in the vitamin B complex that the body needs in small amounts to function and stay healthy. Vitamin H helps some enzymes break down substances in the body for energy and helps tissues develop. It is found in yeast, whole milk, egg yolks, and organ meats. Vitamin H is water-soluble (can dissolve in water) and must be taken in every day. Not enough vitamin H can cause skin, nerve, and eye disorders. Vitamin H is present in larger amounts in some cancer tissue than in normal tissue. Attaching vitamin H to substances used to treat some types of cancer helps them find cancer cells. Also called biotin.

**Vitamin K:** A fat-soluble vitamin required for blood coagulation. OR A nutrient that the body needs in small amounts to function and stay healthy. Vitamin K helps to form blood clots (a mass that forms when blood platelets, proteins, and cells stick together) and maintain strong bones. It is fat-soluble (can dissolve in fats and oils) and is found in green leafy vegetables, broccoli, liver, and vegetable oils. Vitamin K is also made by bacteria that live in the large intestine. Not enough vitamin K can lead to bleeding and bruising. It is a type of phyloquinone.

**vitamin K1-containing urea skin cream:** A topical cream containing urea and 0.1% vitamin K1 (phytomenadione) with topical epidermal growth factor receptor (EGFR)-activating activity. Upon application of vitamin K1-containing urea skin cream, vitamin K1 may locally activate EGFR, thereby abrogating EGFR inhibition in the skin caused by systemic EGFR inhibiting agents. This may help inhibit the acne-like skin rash induced by

EGFR antagonists. EGFR, a tyrosine kinase, plays a key role in maintaining epidermal integrity. Check for active clinical trials using this agent.

**vitamin Q10 :** A nutrient that the body needs in small amounts to function and stay healthy. Vitamin Q10 helps mitochondria (small structures in the cell) make energy. It is an antioxidant that helps prevent cell damage caused by free radicals (highly reactive chemicals). Vitamin Q10 is fat-soluble (can dissolve in fats and oils) and is found in fatty fish, beef, soybeans, peanuts, and spinach. It is being studied in the prevention and treatment of some types of cancer and heart disease and in the relief of side effects caused by some cancer treatments. Also called coenzyme Q10, CoQ10, Q10, and ubiquinone.

**vitespen:** An autologous cancer vaccine derived from tumor-specific gp96 heat shock proteins. Heat shock proteins chaperone peptides through the endoplasmic reticulum, are key regulators of dendritic cell maturation, migration and antigen processing, and are involved in T-cell activation.

**vitespen :** A vaccine made from a patient's tumor cells that may help the body's immune system kill cancer cells. This vaccine is used to treat kidney cancer, a type of brain cancer called glioma, and metastatic melanoma (a type of skin cancer that has spread). It is also being studied in the treatment of other types of cancer. Also called gp96 heat shock protein-peptide complex vaccine, gp96 HSP-peptide complex, and Oncophage.

**Vitex :** An extract made from the fruit of the chaste tree (*Vitex agnus-castus*) found in parts of Asia and Europe. It is claimed to treat infertility and to lessen symptoms that may occur before or during a woman's menstrual period, such as headaches and irregular bleeding. Vitex may affect levels of reproductive hormones in the blood. It is a type of phytomedicine. Also called chaste tree berry and monk's pepper.

**vitreous humor :** The clear jelly-like substance that fills the inside of the eyeball. As a person ages, the vitreous humor becomes more liquid.

**Vitreous Solid:** A vitreous solid has no specific organization of molecules. Steel is an example of a vitreous solid. Because of its combination of atoms, it does not have a specific melting point. It may become a liquid over a range of temperatures.

**Vivelle:** (Other name for: therapeutic estradiol)

**Vivitrol :** A drug that blocks the action of opiates (drugs used to treat pain). It may be used in the treatment of intravenous opiate addiction or alcohol dependence. Vivitrol is also being studied in the treatment of breast cancer. It may block the effects of the hormone estrogen, which causes some breast cancer cells to grow, or block the blood flow to tumors. It is a type of opiate antagonist. Also called naltrexone, naltrexone hydrochloride, and ReVia.

**Vizamyl:** (Other name for: flutemetamol F-18)

**Vldls (very low density lipoproteins):** Lipoprotein particles, stabilized by apolipoproteins B-100 and E, that transport excess endogenous triacylglycerides and cholesterol from the liver to other tissues.

**VLP-encapsulated TLR9 agonist CMP-001:** An agent composed of an unmethylated CpG motif-rich G10 oligonucleotide, which is an agonist of toll-like receptor 9 (TLR9), encapsulated in noninfectious virus-like particles (VLPs), with potential immunostimulating and antineoplastic activities. Upon administration of CMP-001, the VLPs are specifically taken up by and release the oligonucleotide into antigen-presenting cells (APCs), including dendritic cells (DCs). In turn, the oligonucleotide binds to and activates intracellular TLR9. This stimulates immune signaling pathways, induces the innate immune system and may promote the immune system to attack tumor cells. VLPs stimulate the immune system. TLR9, a member of the TLR family, plays a key role in both pathogen recognition and the activation of innate immunity.

**V<sub>max</sub>:** The maximum velocity of an enzymatic reaction when the binding site is saturated with substrate.

**VNP20009:** A genetically modified Salmonella bacterium that is injected into the tumor. It is being studied for its ability to shrink solid tumors.

**VNP40101M:** A substance that is being studied as a treatment for cancer. It belongs to the family of drugs called alkylating agents.

**VOC:** Volatile organic content. Any carbon compound that evaporates under standard test conditions. Essentially all paint solvents except water are VOCs. Federal and state governments are beginning to limit the amount of volatile organics found in paint because of the concerns about possible destructive environmental and health effects.

**vocal cord :** One of two small bands of muscle within the larynx that vibrates to produce the voice.

**vocimagene amiretrorepvec:** A replication competent retroviral vector, derived from the Moloney murine leukemia virus (MoMLV), encoding a modified form of the yeast suicide gene cytosine deaminase (CD) (Toca 511) used as an antineoplastic adjuvant. Upon transcranial injection, vocimagene amiretrorepvec preferentially enters and transfects tumor cells, and expresses cytosine deaminase, an enzyme that catalyzes the intracellular conversion of the prodrug flucytosine (5-FC) into the antineoplastic agent 5-fluorouracil (5-FU). After administration of 5-FC, the tumor can be eradicated upon activation of 5-FU. Check for active clinical trials using this agent.

**voglibose:** A valiolamine derivative and inhibitor of alpha-glucosidase with antihyperglycemic activity. Voglibose binds to and inhibits alpha-glucosidase, an enteric enzyme found in the brush border of the small intestines that hydrolyzes oligosaccharides and disaccharides into glucose and other monosaccharides. This prevents the breakdown of larger carbohydrates into glucose and decreases the rise in postprandial blood glucose levels.

**voice:** refers to the form of a verb indicating whether the subject performs the action (active voice) or receives the action (passive voice).

**voice box :** The area of the throat containing the vocal cords and used for breathing, swallowing, and talking. Also called larynx.

**Void:** In a nuclear power reactor, an area of lower density in a moderating system (such as steam bubbles in water) that allows more neutron leakage than does the more dense material around it. Or An unfilled space in a cellular plastic which is substantially larger than the individual cells. Can also be an empty space in any material or medium. OR A void or bubble occurring in the center of a heavy thermoplastic part. This is generally caused by excessive shrinkage.

**Void coefficient of reactivity:** A rate of change in the reactivity of a water reactor system resulting from a formation of steam bubbles as the power level and temperature increase.

**Void space:** The space within a desolvated crystal that is not occupied by atoms.

**volasertib:** A dihydropteridinone Polo-like kinase 1 (Plk1) inhibitor with potential antineoplastic activity. Volasertib selectively inhibits Plk1, inducing selective G2/M arrest followed by apoptosis in a variety of tumor cells while causing reversible cell arrest at the G1 and G2 stage without apoptosis in normal cells. Plk1, named after the polo gene of *Drosophila melanogaster*, is a serine/threonine protein kinase involved in regulating mitotic spindle function in a non-ATP competitive manner.

**volatile:** A substance which is easily vaporized. Or A volatile compound has a lower boiling point than surrounding compounds. Volatility is a comparison. Alcohol is more volatile than water because it evaporates at a lower temperature. Or A solid or liquid material that easily vaporizes. A material with a significant vapor pressure.

**Volatile content:** The quantity, expressed as a percent weight of a coating, that is lost under specified conditions of temperature and time.

**Volatile Organic Compounds (VOCs):** Volatile organic compounds (VOCs) are any compound that contains carbon and hydrogen, having a vapor pressure that may contribute to atmospheric photochemical reactions. VOCs tend to accumulate and remain in the environment, causing issues such as smog and other emissions. Many VOCs are synthetic chemicals that are used in the manufacturing of paints, pharmaceuticals, and refrigerants.

**volatile solids:** the quantity of solid in water, wastewater or other liquids, lost on ignition of the dry solids at 600 oC.

**Volatiles:** That portion of a substance that is readily vaporized.

**Volatility:** The readiness of a substance to change from a solid or liquid form to a vapor.

**volatize:** To make volatile; to cause to pass off in vapor.

**volcanic arc:** a range of andesitic volcanic mountains that forms on the continental edge above a subduction zone.

**volcanic dome:** a rounded volcanic feature, formed from thick, viscous magma, that creates a plug in the vent of a volcano.

**volcanic mountain:** the result of the accumulation of a large amount of volcanic lavas and pyroclastic material around a volcanic vent.

**volcanic neck:** a rock that formed in the vent or throat of a volcano at the end of its eruptive life and remains standing after the flanks of the volcano have eroded away.

**volcanism:** the venting of liquid magma at the surface of the earth.

**volcano:** a hill or mountain that forms around a volcanic vent and that consists of cooled lava, rock fragments, and dust from the eruptions.

**volitinib:** An orally bioavailable inhibitor of the c-Met receptor tyrosine kinase with potential antineoplastic activity. Volitinib selectively binds to and inhibits the activation of c-Met in an ATP-competitive manner, and disrupts c-Met signal transduction pathways. This may result in cell growth inhibition in tumors that overexpress the c-Met protein. C-Met encodes the hepatocyte growth factor receptor tyrosine kinase and plays an important role in tumor cell proliferation, survival, invasion, and metastasis, and tumor angiogenesis; this protein is overexpressed or mutated in a variety of cancers.

**volociximab:** A chimeric monoclonal antibody with potential antineoplastic activity. Volociximab binds to and inhibits the activity of alpha(5)beta(1) integrin, thereby inhibiting endothelial cell-cell interactions, endothelial cell-matrix interactions, and angiogenesis.

**volociximab :** A monoclonal antibody that is being studied in the treatment of some types of cancer. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. Volociximab binds to a protein that is found on cells that line some tumor blood vessels. It is a type of angiogenesis inhibitor. Also called M200.

**volt:** A unit of electrical potential. Or The SI unit of electrical potential. One volt equals one joule per coulomb.

**voltage:** the electrical pressure (electromotive force) that makes current flow through a conductor. Or A measured electric potential, in volts.

**Voltage-gated channel:** A transmembrane channel that is opened by membrane depolarization; the sodium and potassium channels of axon membranes are good examples.

**voltaic cell:** An electrochemical cell that spontaneously generates electrical energy.

**voltaic pile:** An early battery consisting of disks of dissimilar metals (usually zinc and copper) separated by moist paper or cloth soaked in an electrolyte solution.

**voltammeter:** An instrument for measuring voltages and amperages.

**Voltaren** : A drug that is used to treat the symptoms of rheumatoid arthritis and is being studied in the prevention and treatment of some types of skin cancer. It blocks substances that cause inflammation and pain. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of cyclooxygenase inhibitor, a type of nonsteroidal anti-inflammatory drug (NSAID), and a type of antiangiogenesis agent. Also called diclofenac sodium.

**Voltaren gel** : The gel form of a drug that is used to treat the symptoms of rheumatoid arthritis and is being studied in the prevention and treatment of some types of skin cancer. It blocks substances that cause inflammation and pain. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of cyclooxygenase inhibitor, a type of nonsteroidal anti-inflammatory drug (NSAID), and a type of antiangiogenesis agent. Also called diclofenac sodium gel.

**volume**: the space occupied in three dimensions. Or Measures the size of an object using length measurements in three dimensions. Or The space occupied by a mass. Or capacity to hold, measured in cubic units. Volume of rectangular prism = length x width x height. or 1. The amount of space an object takes up. 2. The amount of space a container can hold. The SI unit of volume is the cubic meter (m<sup>3</sup>); the liter is a popular unit of volume in chemistry. or referred to as "displacement" and also as "capacity." (1) the amount of water displaced by a model of a bottle. Volume is used to estimate its capacity. (2) the amount of product a bottle is designed to hold, i.e., up to the fill point of the bottle. (3) the overflow capacity, i.e. The amount of product a bottle will hold when filled to overflowing.

**Volume percent (% v/v)**: for liquid mixtures, the percentage of total volume occupied by a particular component; for ideal gases, the same as mole percent. for nonideal gases, the volume percent has no meaningful physical significance.

**volume percentage**: Volume percentages express the concentration of a component in a mixture or an element in a compound. For example, 95% ethanol by volume contains 95 mL of ethanol in 100 mL of solution (NOT in 100 mL of water!)

**Volume Resistivity**: The measure of ratio of the potential gradient parallel to the current in the material to the current in density. OR The measure of ratio of the potential gradient parallel to the current in the material to the

current in density. OR resistance between opposite faces of 1 cm cube of material, usually in ohm-cms.

**Volume Solids:** Solid ingredients as a percentage of total ingredients. The volume of pigment plus binder divided by the total volume, expressed as a percent. High-volume solids mean a thicker dry film with improved durability.

**Voluven:** (Other name for: hetastarch)

**vomit :** To eject some or all of the contents of the stomach through the mouth.

**Von Gierke disease:** A disease resulting from defective glucose 6-phosphatase that affects the liver and kidneys; glycogen is normal in structure but present in abnormally large amounts and so there is a massive increase in liver size with resulting damage to liver functions.

**von Hippel-Lindau peptide vaccine:** A cancer vaccine composed of peptides derived from a tumor-associated protein encoded by a mutated Von Hippel-Lindau (VHL) oncogene. VHL peptide vaccine may stimulate a cytotoxic T cell response against tumor cells expressing the VHL tumor-associated protein.

**von Hippel-Lindau syndrome :** A rare inherited disorder in which blood vessels grow abnormally in the eyes, brain, spinal cord, adrenal glands, or other parts of the body. People with von Hippel-Lindau syndrome have a higher risk of developing some types of cancer. Also called VHL syndrome.

**Voraxaze:** (Other name for: glucarpidase)

**Voraxaze :** A drug used to treat toxic levels of methotrexate (an anticancer drug) in the blood of patients with kidney problems. It is a bacterial enzyme that breaks down proteins and other substances, such as methotrexate.

Voraxaze may also help certain drugs kill cancer cells. It is a type of chemoprotective agent and a type of prodrug activator. Also called carboxypeptidase-G2 and glucarpidase.

**voriconazole:** A synthetic triazole with antifungal activity. Voriconazole selectively inhibits 14-alpha-lanosterol demethylation in fungi, preventing the production of ergosterol, an essential constituent of the fungal cell membrane, and resulting in fungal cell lysis.

**voriconazole :** A drug that treats infections caused by fungi.

**vorinostat:** A synthetic hydroxamic acid derivative with antineoplastic activity. Vorinostat, a second generation polar-planar compound, binds to the catalytic domain of the histone deacetylases (HDACs). This allows the hydroxamic moiety to chelate zinc ion located in the catalytic pockets of HDAC, thereby inhibiting deacetylation and leading to an accumulation of both hyperacetylated histones and transcription factors. Hyperacetylation of histone proteins results in the upregulation of the cyclin-dependant kinase p21, followed by G1 arrest. Hyperacetylation of non-histone proteins such as tumor suppressor p53, alpha tubulin, and heat-shock protein 90 produces additional anti-proliferative effects. This agent also induces apoptosis and sensitizes tumor cells to cell death processes. Vorinostat crosses the blood-brain barrier.

**vorinostat :** A drug that is used to treat cutaneous T-cell lymphoma that does not get better, gets worse, or comes back during or after treatment with other drugs. It is also being studied in the treatment of other types of cancer. Vorinostat is a type of histone deacetylase inhibitor. Also called SAHA, suberoylanilide hydroxamic acid, and Zolinza.

**vorozole :** A hormone therapy drug used to decrease the production of estrogen.

**vorsetuzumab-mafodotin:** An antibody-drug conjugate (ADC) consisting of a humanized monoclonal antibody, directed against the extracellular domain of the human CD70 molecule, conjugated to the auristatin analogue monomethyl auristatin phenylalanine (MMAF), with potential antineoplastic activity. The anti-CD70 antibody moiety of anti-CD70 antibody-drug conjugate SGN-75 selectively binds to the extracellular domain of CD70 on tumor cell surfaces. Upon internalization, the MMAF moiety is released, binds to tubulin and inhibits its polymerization, which may result in G2/M phase arrest, tumor cell apoptosis and inhibition of cellular proliferation in tumor cells that overexpress CD70. CD70, the ligand for the costimulatory receptor CD27 and a member of the tumor necrosis factor (TNF) family, is found on the surfaces of various types of cancer cells.

**vortioxetine hydrobromide:** A hydrobromide salt form of vortioxetine, a serotonin (5-HT) modulator and stimulator (SMS), with antidepressant activity. Vortioxetine inhibits the reuptake of serotonin and norepinephrine from the synaptic cleft and acts variably as a serotonin receptor agonist (5-

HT1A), partial agonist (5-HT1B) or antagonist (5-HT3, 5-HT1D and 5-HT7). It is not clear how this agent's purported multimodal mechanism of action contributes to its antidepressant effect; however, it is presumed to increase the synaptic availability of serotonin and norepinephrine.

**vosaroxin:** A small molecule and a naphthyridine analogue with antineoplastic activity. Vosaroxin intercalates into DNA in a site-specific manner and blocks the re-ligation process carried out by topoisomerase II during DNA replication. As a result, inhibition of DNA replication, RNA and protein synthesis occurs, followed by cell cycle arrest at G2 phase and induced p53-independent apoptosis. This agent shows a favorable toxicity profile in several aspects: it does not generate reactive oxygen species, as do anthracyclines, hence reducing the risk of cardiotoxicity; it is not a P-glycoprotein (P-gp) substrate, and thereby evades the common mechanism for multidrug resistance; and it has limited distribution to normal tissues and a more chemically stable molecular structure. Check for active clinical trials using this agent.

**Votrient :** A drug used to treat advanced renal cell carcinoma, which is the most common type of kidney cancer. It is also used to treat advanced soft tissue sarcoma that has been treated with other anticancer drugs. It is being studied in the treatment of other types of cancer. Votrient may prevent the growth of new blood vessels that tumors need to grow. It is a type of protein tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called GW786034 and pazopanib hydrochloride.

**VTZ:** Valence triple-zeta. A minimal basis is used to describe core electrons, but the valence electrons have three times the minimum number of functions (see "DZ").

**vulcanization:** The process for changing rubber from a weak material into a hard, strong material, usually by heating with sulfur. Or A process of combining rubber with sulfur or other substances that causes the polymer chains to crosslink, making them stronger and more elastic.

**vulva :** The external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina.

**vulvar cancer :** Cancer of the vulva (the external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina).

**vulvar carcinoma in situ :** Abnormal cells are found on the surface of the vulvar skin. These abnormal cells may become cancer and spread into

nearby tissue. Also called VIN and vulvar intraepithelial neoplasia.

**vulvar intraepithelial neoplasia :** Abnormal cells are found on the surface of the vulvar skin. These abnormal cells may become cancer and spread into nearby tissue. Also called VIN and vulvar carcinoma in situ.

**Vumon:** (Other name for: teniposide)

**VUS:** A variation in a genetic sequence whose association with disease risk is unknown. Also called unclassified variant, variant of uncertain significance, and variant of unknown significance.

**VX 853:** A drug being studied to make cancer cells less resistant to the effects of chemotherapy.

**VX-710:** A drug being studied to make cancer cells less resistant to the effects of chemotherapy.

**Vytorin:** (Other name for: ezetimibe/simvastatin)

**Vyvance:** (Other name for: lisdexamfetamine dimesylate)

**WAGR syndrome :** A rare, genetic disorder that is present at birth and has two or more of the following symptoms: Wilms tumor (a type of kidney cancer); little or no iris (the colored part of the eye); defects in the sexual organs and urinary tract (the organs that make urine and pass it from the body); and below average mental ability. This syndrome occurs when part of chromosome 11 is missing. Also called Wilms tumor-aniridia-genitourinary anomalies-mental retardation syndrome.

**Wainscot:** Woodwork lining the walls of a room or passage.

**Waldenström macroglobulinemia :** An indolent (slow-growing) type of non-Hodgkin lymphoma marked by abnormal levels of IgM antibodies in the blood and an enlarged liver, spleen, or lymph nodes. Also called lymphoplasmacytic lymphoma.

**Waldeyer's ring :** A ring of lymphoid tissue found in the throat. The Waldeyer's ring is made up of the tonsils, adenoids, and other lymphoid tissue. It contains lymphocytes (a type of immune cell) that help the body fight infection and disease.

**Walker cell:** A zonal circulation of the atmosphere confined to equatorial regions and driven principally by the oceanic temperature gradient. In the Pacific, air flows westward from the colder, eastern area to the warm, western ocean, where it acquires warmth and moisture and subsequently

rises. A return flow aloft and subsidence over the eastern ocean complete the cell.

**Wall:** the thickness of the bottle, usually measured along the side walls. B&C Plastics Ltd. manufactures some heavy-wall styles of bottles that offer improved strength and stacking. OR A common term for the faces of a hollow part. Consistency in wall thickness is important.

**Wall Thickness:** The thickness of the cross section of the plastic part.

**Wallach's rule:** A rule stating that enantiomeric crystals tend to be more soluble (lower melting) than the corresponding racemic crystals.

**waning:** part of the lunar cycle in which the Moon is getting less full and the "left side is lit up" (left side lit).

**WARF Compound 42:** (Other name for: warfarin)

**warfarin:** A synthetic anticoagulant. Warfarin appears to inhibit the regeneration of vitamin K1 epoxide and so the synthesis of vitamin K dependent clotting factors, which include Factors II, VII, IX and X, and the anticoagulant proteins C and S. This inhibition results in a sequential depression of Factors VII, IX, X and II activities. Vitamin K is an essential cofactor for the post ribosomal synthesis of the vitamin K dependent clotting factors. The vitamin promotes the biosynthesis of gamma-carboxyglutamic acid residues in these proteins which are essential for biological activity.

**warfarin :** A drug that prevents blood from clotting. It belongs to the family of drugs called anticoagulants (blood thinners).

**warm front:** the leading edge of a warm air mass.

**warm ischemia :** In surgery, keeping a tissue, organ, or body part at body temperature after its blood supply has been reduced or cut off.

**warm ischemia time :** In surgery, the time a tissue, organ, or body part remains at body temperature after its blood supply has been reduced or cut off but before it is cooled or reconnected to a blood supply.

**Warning Label:** These are labels on packaging that indicate improper use of the enclosed products and warning of the dangerous results of improper use. This type of label is required by law.

**Warp:** The curving or bending of a part as it cools that results from stresses as different portions of the part cool and shrink at different rates. Parts made using filled resins may also warp due to the way the fillers align

during resin flow. Fillers often shrink at different rates than the matrix resin, and aligned fibers can introduce anisotropic stresses. OR To twist or deform from a desired shape. Often caused by molded in stress or shrinkage.

**Warpage:** Dimensional distortion in a plastic object after molding. OR Uneven bending, Twisting etc on account of differential cooling, differential shrinkage, or non uniform freezing of melt in the mould can cause these conditions in the moulded part. OR Dimensional distortion of a plastic part due to strain resulting from injection molding or other conversion methods.

**wart :** A raised growth on the surface of the skin or other organ.

**Washability:** Ease with which washing will remove dirt from the paint's surface without causing damage to it. Or The ability of a paint to be easily cleaned without wearing away during cleaning.

**washdown:** water resulting from cleaning of equipment, walls, floors, etc., within a plant.

**Washing off:** If you apply a water-based product in cold conditions (i.e. below 10°C), loss of adhesion can occur and the coating may simply wash off when it rains. To rectify, thoroughly clean down the surfaces to remove all dirt, grease and surface contaminants. Scrape back all areas of poorly adhering or defective coatings to a firm edge and rub down to 'feather' broken edges. Dust off and re-apply coating.

**Waste classification (classes of waste):** Classification of low-level radioactive waste (LLW) according to its radiological hazard. The classes include Class A, B, and C, with Class A being the least hazardous and accounting for 96 percent of LLW. As the waste class and hazard increase, the regulations established by the NRC require progressively greater controls to protect the health and safety of the public and the environment. For the specific regulations, see Title 10, Section 61.55, of the Code of Federal Regulations (10 CFR 61.55), "Waste Classification."

**Waste, radioactive:** Radioactive materials at the end of their useful life or in a product that is no longer useful and requires proper disposal. For additional detail, see Radioactive Waste.

**watchful waiting :** Closely watching a patient's condition but not giving treatment unless symptoms appear or change. Watchful waiting is sometimes used in conditions that progress slowly. It is also used when the

risks of treatment are greater than the possible benefits. During watchful waiting, patients may be given certain tests and exams. Watchful waiting is sometimes used in prostate cancer. It is a type of expectant management.

**Water Absorbtion:** The amount of water absorbed by a plastic article when immersed in water for a certain period of time. All plastics will absorb moisture to some extent. Or The ability of a thermoplastic material to absorb water from an environment. Or the percentage by weight of water absorbed by a sample immersed in water. Dependant upon area exposed. Or The ability of a thermoplastic material to absorb water from an environment. or The amount of water absorbed by a plastic article when immersed in water for a stipulated period of time. All plastics will absorb moisture to some extent.

**Water Absorption, 24 hours:** The percentage of water absorbed by a material when immersed in water for 24 hours; water absorbed in a material chiefly affects its electrical properties.

**Water bath:** Used during the extrusion process to cool plastic extrusions.

**Water contact angle:** Tangent angle at the interface between droplet of liquid and a solid surface; measure of the surface energy;  $0^\circ$  for perfectly hydrophilic surface and  $90^\circ$  for perfectly hydrophobic surface. Water contact angle can be affected by several factors, microscopic roughness of the surface tends to give a higher water contact angle.

**water deprivation test :** A test to measure how much urine is made and how concentrated it becomes when no water is given to a patient for a certain amount of time. This test is used to see how well the kidneys work and to help diagnose diabetes insipidus (a condition in which a person is very thirsty and makes large amounts of urine). Also called fluid deprivation test.

**WATER EMULSIONS:** Mixture of pigment and synthetic resin in water with low solvent emission, low fire hazard and toxicity and good durability and chemical resistance.

**Water footprint :** The water footprint is an indicator of water use that looks at both direct and indirect water use of a consumer or producer. The water footprint of an individual, community or business is defined as the total volume of freshwater that is used to produce the goods and services consumed by the individual or community or produced by the business. Water use is measured in terms of water volumes consumed (evaporated)

and/or polluted per unit of time. A water footprint can be calculated for any well-defined group of consumers (e.g., an individual, family, village, city, province, state or nation) or producers (e.g., a public organization, private enterprise or economic sector). The water footprint is a geographically explicit indicator, not only showing volumes of water use and pollution, but also the locations. (source: Water Footprint Network)

**water gas:** A fuel gas used in industrial synthesis of organic chemicals, and in welding, glassmaking, and other high-temperature industrial applications. Water gas made by passing steam over a bed of hot coal or coke. It consists mainly of carbon monoxide (CO) and hydrogen (H<sub>2</sub>), contaminated with small amounts of CO<sub>2</sub>, N<sub>2</sub>, CH<sub>4</sub>, and O<sub>2</sub>.

**Water Hammer:** a phenomenon whereby a pressure shock wave is generated, due to a sudden change in fluid velocity within a piping system. The resulting pressure pulses can be significantly higher than the nominal working pressure of the system.

**Water hardness:** a measure of the ability of water to form insoluble precipitates when boiled or when soap is added. Hardness is caused by the presence of Ca, Mg and Fe cations and to a lesser extent, other divalent cations. It is expressed as ppm of divalent cations. It can be measured with a water hardness electrode, which exhibits almost equal response to all divalent cations. or Hard water is water contaminated with compounds of calcium and magnesium. Dissolved iron, manganese, and strontium compounds can also contribute to the "total hardness" of the water, which is usually expressed as ppm CaCO<sub>3</sub>. Water with a hardness over 80 ppm CaCO<sub>3</sub> is often treated with water softeners, since hard water produces scale in hot water pipes and boilers and lowers the effectiveness of detergents.

**water O-15:** An inert, radiopharmaceutical of oxygen-15 (O-15) labeled water used as a tracer molecule with positron emission tomography (PET). Upon administration, water O-15 is freely diffusible and its distribution, as well as its clearance, are completely dependent on the rate of blood flow. Water O-15 can be imaged using PET to measure tissue or tumor blood flow/perfusion. This cyclotron product has a very short half life of about 2 minutes thereby allowing for multiple, serial measurements.

**water of crystallization:** Water that is stoichiometrically bound in a crystal; for example, the waters in copper sulfate pentahydrate.

**Water paint:** Any paint in which the 'thinning' agent is water, might strictly be classified as a water paint. However the term has come to mean an oil or varnish bound washable distemper in which the binder, on drying, becomes mainly insoluble in water.

**water pipe :** A device used to smoke a special type of tobacco that comes in different flavors. In a water pipe, charcoal is used to heat the tobacco. The smoke from the heated tobacco is cooled by passing it through a water-filled bowl. It is then inhaled through a flexible tube with a mouthpiece. Water pipe tobacco smoke contains nicotine and many cancer-causing chemicals that are harmful to both smokers and nonsmokers. Water pipe smoking can lead to nicotine addiction and can cause many of the same health problems as cigarette smoking. Water pipe smoking is not safer than cigarette smoking. Also called hookah.

**Water Quality and Quantity Management :** Means reducing water usage, increasing recycling and reuse to ensure efficient process conditions and minimal waste.

**Water Quality Management :** Means optimization of customer process to meet given efficiency requirements.

**water softener:** A material that lowers water hardness when dissolved in water. For example, sodium carbonate ("washing soda") softens water by precipitating  $\text{Ca}^{2+}$  ions as  $\text{CaCO}_3$ . Zeolites soften water by exchanging  $\text{Ca}^{2+}$  ions with  $\text{Na}^{+}$  ions.

**water softening:** Removal of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  from water to prevent undesirable precipitation reactions from occurring in plumbing, pools, washwater, and boilers.

**WATER SPOTTING:** A paint appearance defect caused by water droplets.

**water stress effect:** The closing of the stomata by a plant in response to excessive water loss through transpiration or in response to drought conditions. The stomatal closing reduces  $\text{CO}_2$  uptake as well as water loss, thus decreasing the photosynthetic rate. However, under conditions of elevated  $\text{CO}_2$  concentration, the  $\text{CO}_2$  gradient between the atmosphere and the leaf is higher than under ambient conditions, and  $\text{CO}_2$  can pass through partially closed stomates at a rate similar to that under conditions of lower  $\text{CO}_2$  and open stomates. The humidity gradient remains the same at higher

CO<sub>2</sub>, and transpiration is impeded. The net result is improved water-use efficiency by some plants.

**water table:** the contact between the saturated and unsaturated zones. Or the surface of the water in the zone of saturation.

**water vapor:** Water present in the atmosphere in gaseous form; the source of all forms of condensation and precipitation. Water vapor, clouds, and carbon dioxide are the main atmospheric components in the exchange of terrestrial radiation in the troposphere, serving as a regulator of planetary temperatures via the greenhouse effect. Approximately 50 percent of the atmosphere's moisture lies within about 1.84 km of the earth's surface, and only a minute fraction of the total occurs above the tropopause.

**water vapor feedback:** A process in which an increase in the amount of water vapor increases the atmosphere's absorption of longwave radiation, thereby contributing to a warming of the atmosphere. Warming, in turn, may result in increased evaporation and an increase in the initial water vapor anomaly. This feedback, along with carbon dioxide, is responsible for the greenhouse effect and operates virtually continuously in the atmosphere.

**WATER VAPOR TRANSMISSION:** The amount of water vapor passing through a given area and thickness of a plastic sheet or film in a given time, when the sheet or film is maintained at a constant temperature and when its faces are exposed to certain different relative humidities. The result is usually expressed as grams per 24 hours per square meter.

**Water vapour** : This is water in the form of a gas. Although there is a technical difference between a vapour and a gas but that does not matter at GCSE. When a kettle is boiling, many people call the white clouds "steam". This is not correct. The true steam is the invisible gas that is right by the mouth of the kettle. The white clouds are actually made of droplets of liquid water that have condensed as the steam met the cooler air. The scalds from steam are much worse than scalds from liquid water because the energy released as the gas turns into liquid is added to the energy released as a hot substance becomes cooler.

**Water White:** A grade of colour which looks like clear water.

**Water-based:** Coatings in which the majority of the liquid content is water.

**water-based vaginal lubricant:** A water-based vaginal lubricant with hydration activity. Upon application to the vagina, the water-based vaginal lubricant provides moisture and may relieve dryness and sexual discomfort.

**water-soluble vitamin :** A vitamin that can dissolve in water. Water-soluble vitamins are carried to the body's tissues but are not stored in the body. They are found in plant and animal foods or dietary supplements and must be taken in daily. Vitamin C and members of the vitamin B complex are water-soluble.

**water-use efficiency:** A measure of the amount of water used by plants per unit of plant material produced. The term can be applied at the leaf, whole-plant, and ecosystem levels. At the leaf level, it is more precisely referred to as the instantaneous transpiration efficiency, the CO<sub>2</sub> assimilation rate (photosynthesis) divided by the transpiration rate (the moles of CO<sub>2</sub> taken up divided by the moles of water lost through transpiration in a unit of time per unit leaf area). At the whole-plant level, it is more precisely referred to as the growth water-use efficiency, the units of dry matter synthesized divided by the units of water lost. At the ecosystem level, it is more precisely referred to as the crop water-use efficiency, the grams of dry weight gained by plants during the growing season per unit land area divided by the millimeters of water lost (including evaporation directly from the soil).

**water<sup>2</sup>:** A colorless, tasteless liquid with some very peculiar properties that stem from the bent H-O-H structure of its molecules.

**watercress :** Parts of the flowering plant have been used in some cultures to treat certain medical problems. It may have anticancer effects. The scientific name is *Nasturtium officinale*. Also called Indian cress.

**Watson-Crick base pairs:** The type of hydrogen-bonded base pairs found in DNA, or comparable base pairs found in RNA. The base pairs are A-T, G-C, and A-U.

**Watson-Crick base pairs:** Watson-Crick base pairs. The type of hydrogen-bonded base pairs found in DNA, or comparable base pairs found in RNA. The base pairs are A-T, G-C, and A-U.

**watt:** the practical unit of electrical power. Or A unit of power (in the international system of units) defined as the consumption or conversion of one joule of energy per second. In electricity, a watt is equal to current (in amperes) multiplied by voltage (in volts).

**Watt-hour:** An unit of energy equal to one watt of power steadily supplied to, or taken from, an electrical circuit for one hour (or exactly  $3.6 \times 10^3 \text{J}$ ).

**wave:** A signal which propagates through space, much like a water wave moves through water. Or An oscillating motion that moves outward from the source of some disturbance (ripples running away from a pebble tossed in a pond). Waves transmit the energy of the disturbance away from its source.

**wave crest:** the top of a wave.

**wave cut platform:** a flat-lying bench of eroded rock left behind by a sea cliff's retreat.

**wave height:** the vertical distance between the top of the wave and the low point of the wave.

**wave refraction:** a process by which breaking waves become more parallel with the shore.

**wave trough:** the low point of a wave.

**wavefunction:** A mathematical function that gives the amplitude of a wave as a function of position (and sometimes, as a function of time and/or electron spin). Wavefunctions are used in chemistry to represent the behavior of electrons bound in atoms or molecules.

**wavelength:** On a periodic curve, the length between two consecutive troughs (low points) or peaks (high points). Or The distance between any two identical points in consecutive cycles of a wave. Often measured from peak to peak or crest to crest. Symbolized by the Greek letter lambda. or the horizontal distance between two crests or two troughs of adjacent waves. or The distance between adjacent peaks (or adjacent troughs) on a wave. Varying the wavelength of light changes its color; varying the wavelength of sound changes its pitch.

**Wavelength of light:** the distance in nanometers between nodes in a wave of light. The wavelength is inversely proportional to the energy of the light.

**wavenumber:** The number of wave crests per unit distance. Wavenumber is the reciprocal of wavelength. Wavenumbers are used extensively in infrared spectroscopy, and usually have units of  $\text{cm}^{-1}$ .

**Waver :** The inherent deviation from a straight line along the fabric edges. (Also see Side Travel)

**waves of oscillation:** waves in the open sea; so named because of the orbital motion of water particles in them.

**waves of translation:** waves that begin to break as they meet the shore.

**Waviness:** Long- or short-term undulation of the surface of a moulding.

**Wax:** Any fatty substance that is a relatively hard, brittle, and non-greasy at room temperature. Most waxes, whether derived from mineral, vegetable, or animal sources, are a mixture of relatively high molecular weight (more than thirty carbons) hydrocarbons, esters, alcohols, and carboxylic acids. or An ester formed from long-chain fatty acids and alcohols that is usually solid at room temperature.

**waxing:** part of the lunar cycle when the Moon is getting more full, and the "right side is lit up."

**WBC:** A type of blood cell that is made in the bone marrow and found in the blood and lymph tissue. WBCs are part of the body's immune system. They help the body fight infection and other diseases. Types of WBCs are granulocytes (neutrophils, eosinophils, and basophils), monocytes, and lymphocytes (T cells and B cells). Checking the number of WBCs in the blood is usually part of a complete blood cell (CBC) test. It may be used to look for conditions such as infection, inflammation, allergies, and leukemia. Also called leukocyte and white blood cell.

**WBRT:** A type of external radiation therapy used to treat patients who have cancer in the brain. It is often used to treat patients whose cancer has spread to the brain, or who have more than one tumor or tumors that cannot be removed by surgery. Radiation is given to the whole brain over a period of many weeks. Also called whole-brain radiation therapy and whole-brain radiotherapy.

**weak acid:** Substances capable of donating hydrogen but do not completely ionize in solution. Or An acid that only partially dissociates into hydrogen ions and anions in solution. Weak acids are weak electrolytes. Recognize weak acids by learning the six common strong acids; any acid that doesn't appear on the list of strong acids is usually a weak acid.

**weak base:** A base that only partially dissociates into ions in solution. Weak bases are weak electrolytes. Ammonia is an example of a weak base; the reaction  $\text{NH}_3(\text{aq}) + \text{H}_2\text{O}(\text{l}) = \text{NH}_4^+(\text{aq}) + \text{OH}^-(\text{aq})$  is reversible. Or

Substances capable of accepting hydrogen but do not completely ionize in solution.

**Weak Electrolyte:** A weak electrolyte is a compound that does not ionize one hundred percent in solution. The lower the percentage, the weaker the electrolyte. Weak acids and bases are often weak electrolytes. Water is also considered a weak electrolyte. Or an acid, base, or salt that dissociates only slightly to form ions in solution. or A weak electrolyte is a solute that incompletely dissociates into ions in solution. For example, acetic acid partially dissociates into acetate ions and hydrogen ions, so that an acetic acid solution contains both molecules and ions. A solution of a weak electrolyte can conduct electricity, but usually not as well as a strong electrolyte because there are fewer ions to carry the charge from one electrode to the other.

**weak ligand:** A ligand that causes a small crystal field splitting which results in a high-spin complex.

**Wear:** Deterioration by friction (abrasion, spaling, cutting, fretting).

**Wear Edges :** An additional feature extended beyond the edge of the belt to act as a buffer.

**weather:** The instantaneous state of the global atmosphere-ocean-cryosphere system.

**Weather board:** Boards fixed to overlap one another to prevent entry of rain etc.

**Weather Resistance:** ability of plastic to retain its original physical properties and appearance upon prolonged exposure to outdoor weather.

**Weathered:** Rocks that have been worn away are said to have been weathered. This does not have to be because of the weather! The action of roots, people walking etc are all weathering justb as much as the effect of wind-borne grit and acid rain.

**weathering:** Weathering is the breakdown of rock in nature by physical, chemical, and biological means. Or The effect of exposure to weather on paint films. Or the breaking apart of rock at the surface through chemical and physical processes. Or the physical or chemical breaking down of rocks due to exposure to the atmosphere. or The breakdown of rocks. This does not include the deliberate extraction by mining or quarrying.

**Web:** The central part of a girder connecting the two flanges.

**WEB GATE:** See DIAPHRAGM GATE.

**wedge resection :** Surgery to remove a triangle-shaped slice of tissue. It may be used to remove a tumor and a small amount of normal tissue around it.

**wedge-and-dash projection:** a drawing of a molecule in which three types of lines are used to represent the three-dimensional structure of a molecule: 1) solid lines are bonds in the plane of the paper, 2) dashed lines are bonds extending away from the viewer, and 3) wedge-shaped lines are bonds oriented toward the viewer.

**WEE1 inhibitor AZD1775:** A small molecule inhibitor of the tyrosine kinase WEE1 with potential antineoplastic sensitizing activity. AZD1775 selectively targets and inhibits WEE1, a tyrosine kinase that phosphorylates cyclin-dependent kinase 1 (CDK1, CDC2) to inactivate the CDC2/cyclin B complex. Inhibition of WEE1 activity prevents the phosphorylation of CDC2 and impairs the G2 DNA damage checkpoint. This may lead to apoptosis upon treatment with DNA damaging chemotherapeutic agents. Unlike normal cells, most p53 deficient or mutated human cancers lack the G1 checkpoint as p53 is the key regulator of the G1 checkpoint and these cells rely on the G2 checkpoint for DNA repair to damaged cells. Annulment of the G2 checkpoint may therefore make p53 deficient tumor cells more vulnerable to antineoplastic agents and enhance their cytotoxic effect.

**weight:** The measures of the earth's gravitational pull on a object. Or Weight is the force exerted by an object in a gravitational field. The weight of an object ( $W$ ) arises from its mass ( $m$ ):

**Weighting factor (WT):** Multipliers of the equivalent dose to an organ or tissue used for radiation protection purposes to account for different sensitivities of different organs and tissues to the induction of stochastic effects of radiation (see 10 CFR 20.1003 for complete information).

**Weissenberg camera:** A camera consisting of a cylinder of film that, while a crystal is rotated  $180^\circ$ , is moved past a slit in a screen in one direction along the axis of rotation, then back again through another  $180^\circ$ . The result gives a pattern of intensities that is used to determine the space group and unit-cell dimensions of the crystal.

**WEISSENBERG NUMBER:** The product of a characteristic material time and shear rate. It has the same meaning as the Deborah Number under

certain conditions (see DEBORAH NUMBER).

**WEISSENBERG RHEOGONIOMETER:** see CONE AND PLATE INSTRUMENT

**Welchol:** (Other name for: colesevelam hydrochloride)

**Weld Line:** Where melted material flows together during molding to form a visible line or lines on a finished part that may cause weakening or breaking of the component. A mark formed by the union of two or more streams of material flowing together. OR Also called a knit line, the juncture where two flow fronts meet and are unable to join together during the molding process. These lines usually occur around holes or obstructions and cause localized weak areas in the molded part. OR Where melted material flows together during molding to form a visible line or lines on a finished part that may cause weakening or breaking of the component. OR Also known as “stitch lines” or “knit lines,” and when multiple gates are present, “meld lines.” These are imperfections in the part where separated flows of cooling material meet and rejoin, often resulting in incomplete bonds and/or a visible line. OR A mark on a container caused by incomplete fusion of two streams of molten polymer. See Spider Lines. OR Weld lines are locations in the moulded part where two met fronts meet. or Where melted material flows together during molding to form a visible line or lines on a finished part that may cause weakening or breaking of the component.

**Weld Mark:** A mark on a molded plastic piece made by the meeting of two flow fronts during the molding operation.

**Welded Edge :** An edge finish on a woven belt completed by welding only.

**Welded Knuckled Edge :** An edge finish which is knuckled, and the knuckles completely filled by welding or brazing.

**WELDING:** Joining thermoplastic pieces by one of several heat-softening processes: Butt fusion, spin welding, ultrasonic, and hot gas are several methods. OR the joining of two or more pieces of plastic by fusion of the material in the pieces at adjoining or nearby areas either with or without the addition of plastic from another source. OR Joining thermoplastic pieces by one of several heat-softening processes. In hot-gas welding, the material is heated by a jet of hot air or inert gas directed from a welding “torch” onto the area of contact of the surfaces which are being welded. Welding operations to which this method is applied normally require the use of a

filler rod. In Spin-Welding the heat is generated by friction. Welding also includes heat sealing and the terms are synonymous in some foreign countries including Britain.

**WELDLINES (also known as PARTING LINES):** Weldlines are formed because of flow interruptions by obstructions in a melt flow field. Because of the high viscosity, the diffusion of polymer molecules, after they have been separated, is very slow and the weldline remains a line of mechanical weakness and may be visible to the naked eye. Such defects are common in injection molded products and are often encountered in extruded pipes, bottles, and film.

**well-differentiated :** A term used to describe cells and tissue that have mature (specialized) structures and functions. In cancer, well-differentiated cancer cells look more like normal cells under a microscope and tend to grow and spread more slowly than poorly differentiated or undifferentiated cancer cells.

**well-differentiated lymphocytic lymphoma :** An indolent (slow-growing) type of lymphoma in which too many immature lymphocytes (white blood cells) are found mostly in the lymph nodes. This causes the lymph nodes to become larger than normal. Sometimes cancer cells are found in the blood and bone marrow, and the disease is called chronic lymphocytic leukemia. The disease is most often seen in people older than 50 years. Well-differentiated lymphocytic lymphoma is a type of non-Hodgkin Lymphoma. Also called SLL and small lymphocytic lymphoma.

**Well-logging:** All operations involving the lowering and raising of measuring devices or tools that contain licensed nuclear material or are used to detect licensed nuclear materials in wells for the purpose of obtaining information about the well or adjacent formations that may be used in oil, gas, mineral, groundwater, or geological exploration. For related information, see Well Logging and the Well-Logging Licensee Toolkit.

**Wellbutrin :** A drug used to treat depression and certain other disorders. It is also used to help people stop smoking. Wellbutrin increases the levels of the chemicals dopamine, serotonin, and norepinephrine in the brain. This helps improve mood and can lessen cravings for nicotine. It is a type of antidepressant and a type of nicotine receptor antagonist. Also called bupropion hydrochloride and Zyban.

**Wellcovorin :** A drug used to lessen the toxic effects of substances that block the action of folic acid, especially the anticancer drug methotrexate. Wellcovorin is used to treat some types of anemia and is also used with fluorouracil to treat colorectal cancer. It is also being studied in the treatment of other types of cancer and other conditions. Wellcovorin is a form of folic acid. It is a type of chemoprotective agent and a type of chemosensitizing agent. Also called calcium levoleucovorin, citrovorum factor, and leucovorin calcium.

**Wermer syndrome :** A rare, inherited disorder that affects the endocrine glands and can cause tumors in the parathyroid and pituitary glands and the pancreas. These tumors are usually benign (not cancer). They cause the glands to secrete high levels of hormones, which can lead to other medical problems, such as kidney stones, fertility problems, and severe ulcers. In some cases, tumors inside the pancreas can become malignant (cancer). Also called MEN1 syndrome, multiple endocrine adenomatosis, and multiple endocrine neoplasia type 1 syndrome. OR An inherited disorder marked by rapid aging that begins in early adolescence. Patients may be shorter than average, and have health problems such as loss and graying of hair, hardening of the arteries, thinning of the bones, diabetes, and thin, hardened skin. They also have an increased risk of cancer, especially osteosarcoma (a type of bone cancer). Werner syndrome is caused by a mutation (change) in a gene involved in cell division. It is a type of autosomal recessive gene disease. Also called adult progeria and WS.

**West Antarctic Ice Sheet:** See ice sheet.

**Western blot:** Similar in principle to a Southern blot, but where the species adsorbed to the nitrocellulose filter is a protein, and the detection makes use of specific antibodies.

**Western blotting:** An immunoassay technique used to detect a specific protein in a cell or in body fluid. A sample undergoes electrophoresis in an SDS-polyacrylamide gel, the resolved proteins are transferred to a polymer sheet, and then an antibody specific for the protein of interest is incubated with the blotted sample; other antibodies or radioactive markers may then be used to help visualize the desired antigen-antibody complex.

**Western medicine :** A system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. Also called

allopathic medicine, biomedicine, conventional medicine, mainstream medicine, and orthodox medicine.

**Wet adhesion:** The ability of dry paint to adhere to the surface, in spite of wet conditions, is particularly important for exterior house paints.

**Wet edge:** Refers to the condition of a paint which has been applied for a short while but has remained in a sufficiently liquid condition to be successfully joined up and to dry without showing the lap. Or Length of time a wall paint can stand and be brushed back in to the next stretch without showing a lap.

**Wet etched:** A technique for studying surface properties of crystals by eroding their surface with exposure to solvent.  $W_g$  The weight of a monolayer of water on a solid.

**Wet Lay-up:** A reinforced plastic manufacturing process where the polymer compound is applied as a liquid as the reinforcement is put into place. Or A reinforced plastic manufacturing process where the polymer compound is applied as a liquid as the reinforcement is put into place.

**Wet Strength:** The strength of paper when saturated with water, especially used in discussions of processes whereby the strength of paper is increased by the addition, in manufacture, of plastic resins. Also, the strength of an adhesive joint determined immediately after removal from a liquid in which it has been immersed under specified conditions of time, temperature, and pressure. or A fiber reinforcement material is coated with a polymer compound as a liquid prior to wrapping on a mandrel in the filament wound manufacturing process.

**wet-bulb depression:** difference between wet-bulb and dry-bulb temperatures, used to find relative humidity and dew point temperatures.

**Wet-out:** Complete wetting/saturation of a fibrous surface with a liquid resin.

**wetlands:** An area that is regularly saturated by surface water or groundwater and subsequently is characterized by a prevalence of vegetation that is adapted for life in saturated-soil conditions.

**WETTING:** The coating of a contact surface with an adherent film of liquid. Or Covering with a surface with thin film of liquid. Liquid beads up on a surface if it cannot wet it.

**Wetting Agent:** Wetting is produced when this surface active agent decreases the cohesion within a liquid. For wetting to occur, the adhesive force between the two phases (solid and liquid) is greater than the cohesive force within the liquid.

**wheatgrass juice:** The juice extracted from the mature sprouts of wheatgrass, *Triticum aestivum*, which is a member of the Poaceae family, with potential anti-inflammatory, immunomodulating and chemopreventive activities. Wheatgrass juice contains many vitamins, including A, B vitamins, C and E, minerals, including selenium, iron, magnesium, calcium, manganese, copper and zinc, amino acids, chlorophyll and a number of antioxidant enzymes, including superoxide dismutase and cytochrome oxidase. Although the exact mechanism(s) of action through which wheatgrass juice exerts its effect(s) has yet to be fully elucidated, the components in the juice may scavenge free radicals, reduce chemotherapy-induced myelotoxicity, neutralize toxins and carcinogens and modulate the levels of certain pro-inflammatory cytokines, such as interleukin (IL)- 6, IL-8, IL-10 and IL-12.

**Wheeling service:** The movement of electricity from one system to another over transmission facilities of intervening systems. Wheeling service contracts can be established between two or more systems.

**whey protein isolate:** A biologically active, cystine-rich, whey-based protein isolate. Whey protein isolate is broken down in the body into cystine and glutamylcystine, which travel safely in the blood stream, upon cell entry, deliver a sustained amount of free cysteine to the cells. The available cysteine allows cells to synthesize glutathione (GSH), a tripeptide containing amino acids glycine, glutamate and cysteine, thereby maintaining and increasing intracellular GSH concentrations. GSH plays a major role as an antioxidant, thereby protecting cells from oxidative damage due to harmful substances such as free radicals and reactive oxygen compounds.

**whey protein powder :** A powdered form of proteins taken from whey, which is the liquid left over when cheese is made from cow's milk. Whey protein powder is used to increase protein in the diet and is being studied for possible health benefits.

**Whipple procedure :** A type of surgery used to treat pancreatic cancer. The head of the pancreas, the duodenum, a portion of the stomach, and

other nearby tissues are removed. Also called pancreatoduodenectomy.

**Whisker:** A single-crystal, short fiber.

**white blood cell :** A type of blood cell that is made in the bone marrow and found in the blood and lymph tissue. White blood cells are part of the body's immune system. They help the body fight infection and other diseases. Types of white blood cells are granulocytes (neutrophils, eosinophils, and basophils), monocytes, and lymphocytes (T cells and B cells). Checking the number of white blood cells in the blood is usually part of a complete blood cell (CBC) test. It may be used to look for conditions such as infection, inflammation, allergies, and leukemia. Also called leukocyte and WBC.

**white button mushroom extract:** A heat-stable extract of white button mushrooms (*Agaricus bisporus*) with potential chemopreventive and immunomodulating activities. Phytochemicals, such as polysaccharides and especially beta-D-glucans found in the white button mushroom extract, bind to and inhibit the activity of aromatase, an enzyme responsible for the conversion of androgens to estrogens and which is often upregulated in breast cancer cells. The consequent decrease in estrogen production may result in the suppression of estrogen-dependent cellular proliferation. In addition, this extract may promote dendritic cell (DC) maturation, increase interferon gamma (IFN-gamma) and tumor necrosis factor alpha (TNF-alpha) production, and may enhance natural killer (NK) cell activity, thus amplifying both innate and T cell-mediated immune responses against cancer cells.

**white carrot:** A vegetable, also known as Arracacha, with potential chemopreventive, anti-oxidant and protective activities. White carrot contains a variety of nutrients, including minerals and vitamins. Polyacetylenes, including falcarinol, falcarindiol and falcarindiol-3-acetate are mainly responsible for its potential anti-cancer activity.

**white dwarf:** final stage of a star as it collapses onto itself.

**white wine:** An alcoholic beverage made from fermented white grapes with potential orexigenic activity. Although not well understood, the mechanism for white wine's potential orexigenic activity may be due, in part, to its alcohol content and may involve alterations in neurotransmitter and hormone activities related to appetite regulation.

**Whitmore-Jewett staging system :** A staging system for prostate cancer that uses ABCD. “A” and “B” refer to cancer that is confined to the prostate. “C” refers to cancer that has grown out of the prostate but has not spread to lymph nodes or other places in the body. “D” refers to cancer that has spread to lymph nodes or to other places in the body. Also called ABCD rating and Jewett staging system.

**WHO :** A part of the United Nations that deals with major health issues around the world. The WHO sets standards for disease control, health care, and medicines; conducts education and research programs; and publishes scientific papers and reports. A major goal is to improve access to health care for people in developing countries and in groups who do not get good health care. The headquarters are located in Geneva, Switzerland. Also called World Health Organization.

**whole cell vaccine :** Vaccine made from whole tumor cells that have been changed in the laboratory.

**Whole-body counter:** A device used to identify and measure the radioactive material in the body of human beings and animals. It uses heavy shielding to keep out naturally existing background radiation and ultrasensitive radiation detectors and electronic counting equipment.

**Whole-body exposure:** Whole body exposure includes at least the external exposure, head, trunk, arms above the elbow, or legs above the knee. Where a radioisotope is uniformly distributed throughout the body tissues, rather than being concentrated in certain parts, the irradiation can be considered as whole-body exposure (see also 10 CFR 20.1003).

**whole-brain radiation therapy :** A type of external radiation therapy used to treat patients who have cancer in the brain. It is often used to treat patients whose cancer has spread to the brain, or who have more than one tumor or tumors that cannot be removed by surgery. Radiation is given to the whole brain over a period of many weeks. Also called WBRT and whole-brain radiotherapy.

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**whole-exome sequencing :** A laboratory process that is used to determine the nucleotide sequence primarily of the exonic (or protein-coding) regions of an individual's genome and related sequences, representing approximately 1% of the complete DNA sequence.

**whole-genome sequencing :** A laboratory process that is used to determine nearly all of the approximately 3 billion nucleotides of an individual's complete DNA sequence, including non-coding sequence.

**whooping cough :** A serious bacterial infection of the lungs and breathing tubes that spreads easily. Whooping cough begins like a cold, but develops into severe coughing and gasping for air. Long spells of coughing may cause vomiting, and broken blood vessels in the eyes and on the skin. Also called pertussis.

**wide local excision :** Surgery to cut out the cancer and some healthy tissue around it.

**Wide mouth:** Containers with a large finish opening or those that have a large finish size in proportion to their capacity.

**wild clover :** *Trifolium pratense*. A plant with flowers that has been used in some cultures to treat certain medical problems. It is being studied in the relief of menopausal symptoms and may have anticancer effects. Also called purple clover, red clover, and *Trifolium pratense*.

**wild type:** The normal (unmutated) phenotype.

**Wild-type gene:** The form of a gene (allele) normally found in nature.

**wild-type reovirus:** A serotype 3 Dearing strain (T3D) of reovirus (Respiratory Enteric Orphan virus) with potential oncolytic activity. Reovirus, a dsRNA virus, is able to replicate specifically in cancer cells bearing an activated Ras pathway. In contrast to normal cells, two-thirds of human cancer cells are Ras-activated. Unlike normal cells, Ras-activated tumor cells are deficient in host cellular protein kinase R (PKR) activity and so are unable to mount an antiviral response. In Ras-activated tumor cells, reovirus freely replicates and induces apoptosis; tumor cell lysis frees progeny viral particles to infect surrounding tumor cells. A cycle of infection, replication and cell death may continue until Ras-activated tumor cells are eradicated. PKR (eukaryotic translation initiation factor 2-alpha kinase 2) is activated by viral synthesis of double-stranded RNA and is an

important component of innate immunity in vertebrates, protecting against viral infection.

**will :** A legal document in which a person states what is to be done with his or her property after death, who is to carry out the terms of the will, and who is to care for any minor children.

**Wilms tumor :** A disease in which malignant (cancer) cells are found in the kidney, and may spread to the lungs, liver, or nearby lymph nodes. Wilms tumor usually occurs in children younger than 5 years old.

**Wilms tumor-aniridia-genitourinary anomalies-mental retardation syndrome :** A rare, genetic disorder that is present at birth and has two or more of the following symptoms: Wilms tumor (a type of kidney cancer); little or no iris (the colored part of the eye); defects in the sexual organs and urinary tract (the organs that make urine and pass it from the body); and below average mental ability. This syndrome occurs when part of chromosome 11 is missing. Also called WAGR syndrome.

**Window stripe:** A see-through vertical stripe on a molded bottle; used primarily to monitor the level of the contents.

**windpipe :** The airway that leads from the larynx (voice box) to the bronchi (large airways that lead to the lungs). Also called trachea.

**windward:** the side facing the wind.

**Winobanin:** (Other name for: danazol)

**WinRho SDF:** (Other name for: therapeutic immune globulin)

**Winter solstice:** December 21, when the vertical ray of the Sun is at the Tropic of Capricorn (23.5° S latitude), the shortest day of the year in the Northern Hemisphere.

**Wipe sample:** A sample made for the purpose of determining the presence of removable radioactive contamination on a surface. It is done by wiping, with slight pressure, a piece of soft filter paper over a representative type of surface area. It is also known as a "swipe" or "smear" sample.

**Wire cut:** A type of brick so called from its method of manufacture in which the clay blocks are cut into shape instead of being moulded or pressed.

**wire gauge:** wire size, measured in diameter.

**wire localization :** A procedure used to mark a small area of abnormal tissue so it can be removed by surgery. An imaging device is used to guide a thin wire with a hook at the end through a hollow needle to place the wire in or around the abnormal area. Once the wire is in the right place, the needle is removed and the wire is left in place so the doctor will know where the abnormal tissue is. The wire is removed when a biopsy is done. Also called needle localization and needle/wire localization.

**Wireframe:** A type of CAD model consisting only of lines and curves, in 2D or 3D. Wireframe models are not suitable for rapid-injection molding. OR It is a geometric model that describes 3D geometry by outlining its edges.

**wireless capsule endoscope :** A device used to look at the inside of the intestines and other parts of the digestive tract. It is a capsule that is about the size of a large pill, with a lens, a light, a camera, a radio transmitter, and a battery inside. The patient swallows the capsule and it takes pictures as it travels through the digestive tract. The pictures are sent to a small recorder that is worn on the patient's waist or shoulder. The pictures are then viewed on a computer by the doctor to check for signs of disease. The wireless capsule endoscope passes out of the body during a bowel movement. Also called capsule endoscope.

**wisdom tooth :** The last tooth to come in at the back of each side of the upper and lower jaws. These teeth usually come in between 17 and 23 years of age, but not everyone has them. Also called third molar.

**Wiskott-Aldrich syndrome :** An inherited immune disorder that occurs in young boys. It causes eczema (a type of skin inflammation), a decrease in the number of platelets (blood cells that help prevent bleeding), and frequent bacterial infections. People with Wiskott-Aldrich syndrome are at increased risk of developing leukemia and lymphoma. Also called Aldrich syndrome.

**Wisps :** Similar to stringing but smaller in size. These also may occur as slight flashing when the mold is over packed or forced open slightly. Mold-parting-line wear or misalignment can also cause wisps.

**withdrawal :** In medicine, symptoms that occur when a person quits smoking or stops using an addictive substance, such as drugs or alcohol. Common withdrawal symptoms after quitting smoking include nicotine

cravings, anger, irritability, anxiety, depression, and weight gain. These symptoms usually get better over time.

**Withdrawal Symptoms:** A group of symptoms associated with sudden decrease of or cessation of intake of drugs.

**WITHERING:** Withering a loss of gloss is sometimes caused by varnishing open-pore woods without filling pores, use of improper undercoating or applying top coat before undercoat has dried.

**Wnt-5a mimic hexapeptide foxy-5:** A formylated, six amino acid, Wnt5a-derived peptide and wnt-5a mimetic with potential anti-metastatic activity. Upon intravenous administration, Wnt-5a mimic hexapeptide foxy-5 binds to and activates the wnt-5a receptors, Frizzled-2 and -5, which activates wnt-5a-mediated signaling. Increased wnt-5a signaling may inhibit endothelial tumor cell migration and invasion. This may decrease metastasis of susceptible tumor cells. However, foxy-5 does not affect tumor cell proliferation or apoptosis. Foxy-5 lacks a heparan sulfate-binding domain and contains a formyl group on its NH<sub>2</sub>-terminal methionine residue which decreases in vivo degradation. Decreased expression of wnt-5a protein is associated with increased motility of certain tumor cell types.

**Wobble:** A proposed explanation for base pairing that is not of the Watson-Crick type and that often occurs between the 3' base in the codon and the 5' base in the anticodon. Or The relatively loose base pairing between the base at the 3' end of a codon and the complementary base at the 5' end of the anticodon.

**Wobble hypothesis:** The notion that steric freedom in the pairing of the third base of an mrna codon with the anticodon of a transfer RNA molecule allows more than one codon to be recognized by a particular trna molecule.

**Wobe-Mugos E :** A mixture made from an extract of the calf thymus gland and enzymes (proteins that speed up chemical reactions in the body) from the papaya plant, the pancreas of cows, and the pancreas of pigs. It has been used in Europe as a treatment for a variety of cancers and for herpes virus infections.

**WOC nurse :** A registered nurse who has additional education and training in how to care for people who have a wound, an ostomy (an opening made by surgery, from an area inside the body to the outside), or problems with

continence (ability to control the flow of urine or the passage of stool). Also called wound, ostomy, and continence nurse.

**womb :** The hollow, pear-shaped organ in a woman's pelvis. The womb is where a fetus (unborn baby) develops and grows. Also called uterus.

**wood alcohol :** A type of alcohol used to make antifreeze, pesticides, windshield wiper fluid, paint thinner, certain types of fuel, and other substances. Wood alcohol catches fire easily and is very poisonous. It is one of many harmful chemicals found in tobacco smoke. Also called methanol and methyl alcohol.

**word equation:** A word equation is a way of describing what we start with and what is formed in a chemical equation, e.g. magnesium + oxygen or A way to record the changes that have taken place in a chemical equation. If a word equation is asked for, be careful to use the correct words (eg do you mean chlorine or chloride, sulphide or sulphate etc). Make sure that you include all the substances. Do not use "=" (which would mean that the substances are the same but rather use an arrow to show that the substances have changed.

**wordy expression:** expressions that say the same thing twice or avoid getting directly to the point.

**work:** Expression of the movement of an object against some force. Or Energy transferred b/w a system and its surroundings as a consequence of motion against a restraining force, electricity or radiation, or any other driving force except a temperature difference. Or Work is the energy required to move an object against an opposing force. Work is usually expressed as a force times a displacement. Dropping a stone from a window involves no work, because there is no force opposing the motion (unless you consider air friction...). Pushing against a stone wall involves no work, unless the stone wall actually moves.

**Work Done:** Work is said to be done if an unbalanced force moves its point of application through a distance measured in the direction of force.  
Work = Force x Distance

**work problems:** Word problems that involve two people or machines working together at different rates to complete one whole job.

**Working Length:** The length of a coil when it is comfortably stretched out to its maximum reach.

**Working Pressure:** The maximum pressure at a given temperature, that tubing can be expected to perform.

**Working up:** The action of an existing and apparently dry coat of paint being removed by the action of brushing the succeeding coat over it.

**World Health Organization :** A part of the United Nations that deals with major health issues around the world. The World Health Organization sets standards for disease control, health care, and medicines; conducts education and research programs; and publishes scientific papers and reports. A major goal is to improve access to health care for people in developing countries and in groups who do not get good health care. The headquarters are located in Geneva, Switzerland. Also called WHO.

**wound :** A break in the skin or other body tissues caused by injury or surgical incision (cut).

**wound, ostomy, and continence nurse :** A registered nurse who has additional education and training in how to care for people who have a wound, an ostomy (an opening made by surgery, from an area inside the body to the outside), or problems with continence (ability to control the flow of urine or the passage of stool). Also called WOC nurse.

**WPC:** Wood/Plastic Composite material made of recycled plastic and wood waste.

**Wrinkle:** An imperfection in plastic films that has the appearance of a crease, fold, or wave. OR An imperfection in reinforced plastics that has the appearance of a wave molded into one or more plies of fabric or other reinforcing material. OR A plastic surface imperfection in plastic films that has the appearance of a crease or wrinkle in plastic material.

**Wrinkling:** The development of wrinkles during drying. Often caused by too thick an application. Or Development of ridges and furrows in a paint film when the paint dries.

**WRITING and BALANCING:** equations should be reviewed in your Big Chem notebook. Try them with the solutions covered, then check your results.

**WS:** An inherited disorder marked by rapid aging that begins in early adolescence. Patients may be shorter than average, and have health problems such as loss and graying of hair, hardening of the arteries, thinning of the bones, diabetes, and thin, hardened skin. They also have an

increased risk of cancer, especially osteosarcoma (a type of bone cancer). WS is caused by a mutation (change) in a gene involved in cell division. It is a type of autosomal recessive gene disease. Also called adult progeria and Werner syndrome.

**WT-1 analogue peptide vaccine:** A peptide vaccine containing a human Wilms tumor 1 (WT-1) protein-derived epitope with potential antineoplastic activity. Vaccination with the WT-1 analogue peptide vaccine may induce a cytotoxic T-lymphocyte (CTL) response against WT-1 expressing cells, resulting in tumor cell lysis and inhibition of tumor cell proliferation. WT-1, a zinc finger transcription factor, is overexpressed in most types of leukemia and in some solid cancers. Check for active clinical trials using this agent.

**WT1 124-138 peptide vaccine:** A synthetic peptide vaccine consisting of a HLA-DR15-restricted human Wilms' Tumor protein-1 (WT1) peptide comprised of amino acids 124 through 138, a HLA class II-restricted WT1 peptide, with potential immunomodulating and antitumor activities. Vaccination with WT1 124-138 peptide may stimulate a CD4-positive helper T-lymphocyte-mediated immune response against WT1 expressing cells. Activated helper T-cells stimulate dendritic cells, and activate the proliferation of other T-lymphocytes and B-lymphocytes. This causes tumor cell lysis and inhibition of cancer cell proliferation in WT1-overexpressing tumor cells. WT1, a zinc finger DNA-binding protein, is overexpressed in most types of leukemia and in a variety of solid cancers.

**WT1 126-134 peptide vaccine:** A synthetic peptide vaccine consisting of the amino acids 126 through 134 of the human Wilms' Tumor protein-1 (WT1) with potential antitumor activity. WT1, a tumor associated antigen, is overexpressed in most types of leukemia and in a variety of solid cancers. Vaccination with WT1 126-134 peptide vaccine may induce a WT1-specific cytotoxic T-lymphocyte (CTL) response against WT1 expressing cells, resulting in cell lysis and inhibition of cancer cell proliferation.

**WT1 235-243 peptide vaccine:** A synthetic peptide vaccine consisting of a HLA-A24-restricted human Wilms' Tumor protein-1 (WT1) peptide comprised of amino acids 235 through 243, a MHC class I-restricted peptide, with potential immunomodulating and antitumor activities. Vaccination with WT1 235-243 peptide may induce a WT1-specific cytotoxic T-lymphocyte (CTL) response against WT1 expressing cells,

resulting in cell lysis and inhibition of cancer cell proliferation. WT1, a zinc finger DNA-binding protein, is overexpressed in most types of leukemia and in a variety of solid cancers.

**WT1 247-261 peptide vaccine:** A synthetic peptide vaccine consisting of a HLA-DRw53-restricted human Wilms' Tumor protein-1 (WT1) peptide comprised of amino acids 247 through 261, a HLA class II-restricted WT1 peptide, with potential immunomodulating and antitumor activities.

Vaccination with WT1 247-261 peptide may stimulate a CD4-positive helper T-lymphocyte-mediated immune response against WT1 expressing cells. Activated helper T-cells stimulate dendritic cells, and activate the proliferation of other T-lymphocytes and B-lymphocytes. This causes tumor cell lysis and inhibition of cancer cell proliferation in WT1-overexpressing tumor cells. WT1, a zinc finger DNA-binding protein, is overexpressed in most types of leukemia and in a variety of solid cancers.

**WT1 mRNA-electroporated autologous dendritic cell vaccine:** A cancer vaccine containing autologous dendritic cells electroporated with full-length mRNA encoding Wilms' tumor 1 (WT1) antigen with potential immunostimulatory and antineoplastic activities. Upon administration, WT1 mRNA-electroporated autologous dendritic cell vaccine may elicit a cytotoxic T-cell (CTL) response against tumor cells expressing WT1. Wt1 is frequently overexpressed in a variety of tumor cell types and often correlates with disease progression and poor prognosis. Check for active clinical trials using this agent.

**WT1 peptide vaccine OCV-501:** A peptide cancer vaccine comprised of a peptide derived from Wilms tumor gene 1 (WT1) protein, with potential immunomodulating and antineoplastic activities. Upon subcutaneous administration, WT1 peptide vaccine OCV-501 may stimulate a CD4-positive helper T-lymphocyte-mediated immune response against WT1 expressing cells. WT1 protein, a zinc finger DNA-binding protein, is overexpressed in leukemic cells and in some solid tumors.

**WT1 peptide vaccine WT2725:** A peptide cancer vaccine comprised of a peptide derived from Wilms tumor gene 1 (WT1) protein, with potential immunomodulating and antineoplastic activities. Upon administration, WT2725 may induce a specific cytotoxic T-lymphocyte (CTL) response against WT1-overexpressing tumor cells. WT1 protein, a zinc finger DNA-

binding protein, is overexpressed in leukemic cells and in a vast number of non-hematological solid tumors.

**WT1 protein-derived peptide vaccine DSP-7888:** A peptide cancer vaccine comprised of peptides derived from the Wilms tumor gene 1 (WT1) protein, with potential immunomodulating and antineoplastic activities. Upon administration, WT1 protein-derived peptide vaccine DSP-7888 may induce a specific cytotoxic T-lymphocyte (CTL) response against WT1-overexpressing tumor cells. In addition, DSP-7888 induces a helper T-lymphocyte-mediated immune response against WT1 expressing tumor cells. WT1 protein, a zinc finger DNA-binding protein and transcription factor, is overexpressed in leukemic cells and in many non-hematological solid tumors.

**WT1-A10/AS01B immunotherapeutic GSK2130579A:** An immunotherapeutic consisting of the recombinant fusion protein WT1-A10 combined with the adjuvant AS01B with potential immunostimulating and antineoplastic activities. Upon administration, WT1-A10/AS01B immunotherapeutic GSK2130579A WT1 may induce a WT1-specific cytotoxic T-lymphocyte (CTL) response against WT1-expressing tumor cells, resulting in cell lysis and the inhibition of cellular proliferation. The tumor-associated antigen WT1 (Wilms tumor protein-1) is overexpressed in most types of leukemia and in a variety of solid cancers. WT1-A10 is a 292 amino acid recombinant fusion protein consisting of a 12-mer truncated tat sequence (leader sequence) and amino acids number 2-281 of the WT1 sequence; AS01B consists of a combination of the adjuvants monophosphoryl lipid A (MPL) and Q21.

**WT1-sensitized T cells:** A population of allogeneic T-cells sensitized with Wilms tumor 1 (WT1) antigen with potential immunostimulatory and antineoplastic activities. Upon administration, WT1-sensitized T cells may bind to and lyse WT1-expressing tumor cells. WT1 antigen, a zinc finger DNA-binding protein acting as a transcriptional activator or repressor depending on the cellular or chromosomal context, is overexpressed in leukemic cells and in a vast number of nonhematological solid tumors.

**WTI Crude Oil:** West Texas Intermediate Crude Oil is a light sweet crude that is particularly suited for the production of gasoline. WTI production is widely utilized as a refinery feed in the United States Mid West and to a

lesser extent on the Gulf Coast. WTI crude usually trades at a premium to the other two benchmark crudes owing to its higher gasoline yield.

**wu-ling-san:** A traditional Chinese medicine (TCM) composed of Polyporus sclerotium (Sclerotium polypori Umbrellati; Zhu Ling), hoelen (Poria; Sclerotium Poriae Cocos; Fu Ling), Alismatis rhizome (Alisma; Rhizoma Alismatis Orientalis; Ze Xie), Cinnamomi cortex (Ramulus Cinnamomi Cassiae; Gui Zhi) and Atractylodis macrocephalae rhizome (Rhizoma Atractylodis Macrocephalae; Bai Zhu) with potential diuresis-inducing and kidney-protective activities. Upon oral administration, wu-ling san may increase the removal of excess fluid, prevent the retention of water, maintain healthy water metabolism by promoting diuresis, and protect kidney function.

**Wurtz reaction:** the coupling of two alkyl halide molecules to form an alkane.

**Wurtz reaction:** the coupling of two alkyl halide molecules to form an alkane.

**WWP:** Abbreviation for 'water waste preventer', or flushing cistern.

**WX-671:** A substance being studied in the treatment of several types of cancer. It blocks the action of certain enzymes, and it may help keep cancer cells from growing and spreading. It is a type of serine protease inhibitor.

**Wymox:** (Other name for: amoxicillin)

**Wytensin:** (Other name for: guanabenz acetate)

**X alpha :** X-alpha. A venerable, local DFT method in which the coefficient alpha is taken as an adjustable parameter, usually 0.7.

**X group:** "X" is often used as the abbreviation for a halogen substituent in the structural formula of an organic molecule. Or "X" is often used as the abbreviation for a halogen substituent in the structural formula of an organic molecule.

**X ray:** Electromagnetic radiation of high frequency and short wavelength (ranging from  $10^{-11}$  to  $10^{-9}$  meters). Or A very high energy form of electromagnetic radiation (though not as high energy as gamma rays). X-rays typically have wavelengths from a few picometers up to 20 nanometers. X-rays easily penetrate soft tissue, which makes them useful in medical imaging and in radiation therapy. or These are released when electrons move between the inner shells. They are used in medicine to study

broken bones. Bone is opaque to X-rays but soft tissue is transparent. The digestive system can be investigated by giving the patient a meal containing an X-ray opaque material (usually a barium compound such as barium sulfate). X-rays are actually harmful and so the operators work behind a lead shield. Patients are given the minimum dose of X-rays that will give the information required. Sensitive areas (the genital areas in particular) are protected by a lead sheet.

**X-linked dominant :** X-linked dominant inheritance refers to genetic conditions associated with mutations in genes on the X chromosome. A single copy of the mutation is enough to cause the disease in both males (who have one X chromosome) and females (who have two X chromosomes). In some conditions, the absence of a functional gene results in the death of affected males.

**X-linked recessive :** X-linked recessive inheritance refers to genetic conditions associated with mutations in genes on the X chromosome. A male carrying such a mutation will be affected, because he carries only one X chromosome. A female carrying a mutation in one gene, with a normal gene on the other X chromosome, is generally unaffected.

**x-ray :** A type of radiation used in the diagnosis and treatment of cancer and other diseases. In low doses, x-rays are used to diagnose diseases by making pictures of the inside of the body. In high doses, x-rays are used to treat cancer.

**X-ray Crystallography:** A scientific tool used to determine the 3D arrangement of atoms in a crystal using the X-rays.

**X-ray crystallography:** A technique for determining the structure of molecules from the X-ray diffraction patterns that are produced by crystalline arrays of the molecules. Or A technique for determining the three-dimensional structure of protein crystals at atomic resolution by examining the diffraction pattern of x-rays striking the crystal. or Determination of three dimensional arrangement of atoms in a crystal by analysis of x-ray diffraction patterns. or The analysis of x-ray diffraction patterns of a crystalline compound, used to determine the molecule's three-dimensional structure.

**X-ray crystallography:** A technique of determining a molecule's three-dimensional structure by analyzing the X-ray diffraction patterns of crystals made up of the molecule in question.

**x-ray diffraction pattern:** Interference patterns created by x-rays as they pass through a solid material. Studying x-ray diffraction patterns gives detailed information on the three-dimensional structure of crystals, surfaces, and atoms.

**X-Ray diffraction pattern (X-Ray powder pattern) (XRPD):** The diffraction pattern produced by the lattice spacings in an ordered solid through exposure to X-rays. This technique can be used to identify a substance, ascertain the polymorph(s) present, and determine the crystallinity of a solid.

**x-ray spectrum:** A set of characteristic x-ray frequencies or wavelengths produced by a substance used as a target in an x-ray tube. Each element has a characteristic x-ray spectrum, and there is a strong correlation between atomic number and the frequencies of certain lines in the x-ray spectrum.

**x-ray therapy :** A type of radiation therapy that uses high-energy radiation from x-rays to kill cancer cells and shrink tumors.

**x-ray tube:** A cathode ray tube that focuses energetic streams of electrons on a metal target, causing the metal to emit x-rays.

**X-RAYS:** are electromagnetic radiations above the Ultra Violet in frequency that are produced when electrons strike a metal target. They are used to determine the atomic number of elements and the structure of crystals. Or Electromagnetic radiation with a wavelength approximating that of interatomic distances, thus allowing the measurement of these distances. or Penetrating electromagnetic radiation (photon) having a wavelength that is much shorter than that of visible light. These rays are usually produced by excitation of the electron field around certain nuclei. In nuclear reactions, it is customary to refer to photons originating in the nucleus as x-rays.

**xaliproden hydrochloride:** The hydrochloride salt of xaliproden, an orally-active, synthetic, non-peptidic 5-hydroxytryptamine (5-HT) 1A receptor agonist with neurotrophic and neuroprotective activities. Although its mechanism of action is not fully understood, xaliproden appears to either mimic the effects of neurotrophins or stimulate their synthesis, thereby stimulating neuronal cell differentiation and proliferation and inhibiting neuronal cell death. The neuroprotective effect of this agent involves the activation of MAP kinase pathways via stimulation of the 5-HT<sub>1A</sub> receptor.

**Xalkori :** A drug used to treat non-small cell lung cancer that has spread to other parts of the body. It is used in patients whose cancer has a mutated (changed) form of the anaplastic lymphoma kinase (ALK) gene or the ROS1 gene. It is also being studied in the treatment of other types of cancer. Xalkori blocks the proteins made by the mutated ALK and ROS1 genes. Blocking these proteins may stop the growth and spread of cancer cells. Xalkori may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called crizotinib, MET tyrosine kinase inhibitor PF-02341066, and PF-02341066.

**Xanax :** A drug used to treat anxiety disorders and panic attacks. It is being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of benzodiazepine. Also called alprazolam.

**xanthohumol:** A prenylated flavonoid derived from the female flowers of the hops plant (*Humulus lupulus* L), with potential chemopreventive and antineoplastic activities. Upon administration, xanthohumol scavenges reactive oxygen species (ROS), thereby preventing DNA damage due to oxidative stress. In addition, xanthohumol is able to increase the expression of phase II cytoprotective enzymes, thereby inactivating carcinogens. This agent exerts anti-inflammatory activity, through the inhibition of inflammation-inducing enzymes, inhibits DNA synthesis, and induces apoptosis of susceptible cancer cells. Xanthohumol also decreases the expression of C-X-C chemokine receptor 4 (CXCR4), thereby preventing cancer cell invasion.

**xanthomas:** fat deposits in the skin and tendons

**Xanthotoxin:** (Other name for: methoxsalen)

**Xarelto:** (Other name for: rivaroxaban)

**XPB1-US/XPB1-SP/CD138/CS1 multipeptide vaccine PVX-410:** A cancer vaccine containing immunogenic, HLA-A2-specific epitopes derived from X-box-binding protein 1-unspliced (XPB1-US), XPB1-spliced (SP), syndecan-1 (CD138), and CS1 (CD2 subset 1, CRACC, SLAMF7, CD319) with potential immunomodulating and antineoplastic activities. Upon subcutaneous administration, XPB1-US/XPB1-SP/CD138/CS1 multipeptide vaccine PVX-410 may stimulate the immune system to induce a cytotoxic T-lymphocyte response against the four myeloma-specific antigens. The tumor associated antigens (TAAs) XPB1-US, XPB1-SP,

CD138 and CS1, are overexpressed on the surface of multiple myeloma (MM) cells.

**Xcytrin:** (Other name for: motexafin gadolinium)

**XELIRI:** An abbreviation for a chemotherapy combination used to treat colorectal cancer that has spread to other parts of the body. It is also used to treat esophageal cancer and stomach cancer that are advanced or have spread to other parts of the body. It includes the drugs capecitabine (Xeloda) and irinotecan hydrochloride. Also called CAPIRI, CAPIRI regimen, and XELIRI regimen.

**XELIRI regimen :** An abbreviation for a chemotherapy combination used to treat colorectal cancer that has spread to other parts of the body. It is also used to treat esophageal cancer and stomach cancer that are advanced or have spread to other parts of the body. It includes the drugs capecitabine (Xeloda) and irinotecan hydrochloride. Also called CAPIRI, CAPIRI regimen, and XELIRI.

**Xeloda :** A drug used to treat stage III colon cancer in patients who had surgery to remove the cancer. It is also used to treat metastatic breast cancer that has not improved after treatment with certain other anticancer drugs. Xeloda is being studied in the treatment of other types of cancer. It is taken up by cancer cells and breaks down into 5-fluorouracil, a substance that kills tumor cells. Xeloda is a type of antimetabolite. Also called capecitabine.

**XELOX :** An abbreviation for a chemotherapy combination used to treat colorectal cancer that has spread. It is also being studied in the treatment of other types of cancer. It includes the drugs capecitabine (Xeloda) and oxaliplatin. Also called XELOX regimen.

**XELOX regimen :** An abbreviation for a chemotherapy combination used to treat colorectal cancer that has spread. It is also being studied in the treatment of other types of cancer. It includes the drugs capecitabine (Xeloda) and oxaliplatin. Also called XELOX.

**Xenobiotic:** A xenobiotic is a chemical which is not natural component of the organism exposed to it. Synonyms drug, foreign substance or compound. Or A compound is said to be xenobiotic if it is foreign to an organism. Or A substance which is not normally found in a living thing.

**xenogeneic tyrosinase DNA vaccine:** A plasmid DNA vaccine, encoding an epitope of mouse tyrosinase, with potential antineoplastic activity. Administered via intramuscular electroporation, vaccination with xenogeneic tyrosinase DNA vaccine may induce both humoral and cytotoxic lymphocyte (CTL) immune responses against melanoma cells that express tyrosinase, resulting in decreased tumor growth. .

**xenograft :** The transplant of an organ, tissue, or cells to an individual of another species.

**xenolith:** a fragment of country rock torn away during the emplacement of magma; generally most abundant near the contact with the country rock.

**xenon:** A colorless, heavy, odorless noble gas element with atomic symbol Xe, atomic number 54, and atomic weight 131.3.

**Xenon:** Symbol:"Xe" Atomic Number:"54" Atomic Mass: 131.29amu. It is one of the noble or inert gases. This non-reactive element has been made into several compounds in the lab. The pure gas is used in lasers, headlights, and in medicine. Or Element 54, a colorless, inert gas used to fill cathode ray tubes.

**Xerecept:** (Other name for: corticorelin acetate)

**Xeroderma pigmentosa:** A rare skin disorder, characterized by sensitivity to ultraviolet light and a propensity for skin cancers, caused by a defect in excinuclease, which plays a role in the removal of pyrimidine dimers.

**xeroderma pigmentosum :** A genetic condition marked by an extreme sensitivity to ultraviolet radiation, including sunlight. People with xeroderma pigmentosum are not able to repair skin damage from the sun and other sources of ultraviolet radiation, and have a very high risk of skin cancer.

**xerogram :** A picture of the body recorded on paper rather than on film. Also called xeroradiograph.

**xeroradiograph :** A picture of the body recorded on paper rather than on film. Also called xerogram.

**xeroradiography :** A type of x-ray in which a picture of the body is recorded on paper rather than on film.

**xerostomia :** Dry mouth. It occurs when the body is not able to make enough saliva.

**Xgeva** : A drug used to prevent or treat certain bone problems. Under the brand name Xgeva, it is used to prevent broken bones and other bone problems caused by solid tumors that have spread to bone. It is also used in certain patients to treat giant cell tumor of the bone that cannot be removed by surgery. Under the brand name Prolia, it is used to treat osteoporosis (a decrease in bone mass and density) in postmenopausal women who have a high risk of breaking bones. Xgeva is also being studied in the treatment of other conditions and types of cancer. It binds to a protein called RANKL, which keeps RANKL from binding to another protein called RANK on the surface of certain bone cells, including bone cancer cells. This may help keep bone from breaking down and cancer cells from growing. Xgeva is a type of monoclonal antibody. Also called AMG 162, denosumab, and Prolia.

**xianling gubao**: An orally bioavailable phytoestrogen-rich Traditional Chinese Medicine (TCM) containing extracts from the six herbs *Herba epimedii*, *Radix dipsaci* (*Dipsacus* root), *Radix salvia miltiorrhiza* (*Salvia* root, Danshen, red sage root), *Rhizoma anemarrhenae* (*zhi Mu*), *Fructus Psoraleae* (fruit of *Psoralea corylifolia* L), and *Radix Rehmanniae* (*Rehmannia* root, *Rehmannia glutinosa*, Sheng Di Huang, *Rehmannia glutinosa* Libosch), with potential anti-osteoporotic and bone-strengthening activities. Xianling gubao (XLGB) contains various phytochemicals, including flavonoids, coumarins, saponins, alkaloids and terpenes. Upon oral administration of XLGB, the active ingredients may strengthen bones and may treat or prevent osteoporosis, osteoarthritis, bone loss and bone fractures.

**XIAP/cIAP1 antagonist ASTX660**: An orally bioavailable, non-peptidomimetic antagonist of both X chromosome-linked inhibitor of apoptosis protein (XIAP) and cellular IAP 1 (cIAP1), with potential antineoplastic and pro-apoptotic activities. Upon administration, XIAP/cIAP1 antagonist ASTX660 selectively binds to and inhibits the activity of XIAP and cIAP1. This restores and promotes the induction of apoptotic signaling pathways in cancer cells, and inactivates the nuclear factor-kappa B (NF- $\kappa$ B)-mediated survival pathway. XIAP and cIAP1 are overexpressed by many cancer cell types and suppress apoptosis by inhibiting the activity of certain caspases; they promote both cancer cell survival and chemotherapy resistance. Check for active clinical trials using this agent.

**Xifaxan:** (Other name for: rifaximin)

**Xilonix:** (Other name for: anti-interleukin-1 alpha monoclonal antibody MABp1)

**Xinlay:** (Other name for: atrasentan hydrochloride)

**XK469R:** A substance that is being studied in the treatment of leukemia. It belongs to the family of drugs called topoisomerase inhibitors.

**XL820:** An orally bioavailable, small molecule receptor tyrosine kinase inhibitor with potential antineoplastic activity. XL820 binds to and inhibits the receptor tyrosine kinases for vascular endothelial growth factor (VEGF), c-kit, and platelet-derived growth factor (PDGF). In tumor models of breast carcinomas, gliomas, and leukemia, this agent exhibits dose-dependent growth inhibition and has been shown to cause tumor regression. Check for active clinical trials using this agent.

**XL844:** A synthetic small-molecule inhibitor of checkpoint kinases 1 and 2 (Chk1 and Chk2) with potential antineoplastic activity. XL844 binds to and inhibits Chks 1 and 2, resulting in inhibition of cell cycle arrest, progressive DNA damage, inhibition of DNA repair, and, ultimately, tumor cell apoptosis. This agent also inhibits vascular endothelial growth factor receptor 1 (VEGFR1) and vascular endothelial growth factor receptor 3 (VEGFR3), important mediators of tumor angiogenesis and lymphogenesis, respectively. In the presence of DNA damage or incomplete DNA replication, eukaryotic cells activate cell cycle checkpoints that temporarily halt the cell cycle to permit DNA repair or completion of DNA replication to take place. In the presence of extensive damage or absence of timely repair, these checkpoint-signaling pathways may also trigger a pathway that effects apoptosis. Normal functions of Chks involve the initiation of cell-cycle arrest and the up-regulation of transcription genes involved with DNA excision repair and dNTP synthesis.

**XL880:** A substance being studied in the treatment of cancer. XL880 blocks enzymes involved in the growth and spread of tumor cells. It may also prevent the growth of new blood vessels that tumors need to grow. It is a type of tyrosine kinase inhibitor and a type of antiangiogenesis agent. Also called foretinib and MET/VEGFR-2 inhibitor GSK1363089.

**Xofigo :** A drug used to treat prostate cancer that has spread to the bone and has not gotten better with other treatment. It is also being studied in the treatment of other types of cancer. Xofigo contains a radioactive substance

called radium 223. Radium 223 collects in bone and gives off radiation that may kill cancer cells. Xofigo is a type of radiopharmaceutical. Also called radium 223 dichloride.

**Xolair:** (Other name for: omalizumab)

**Xolegel:** (Other name for: ketoconazole)

**XPO1 inhibitor KPT-8602:** An orally bioavailable inhibitor of exportin-1 (XPO1; chromosome region maintenance 1 protein homolog; CRM1), with potential antineoplastic activity. Upon administration, XPO1 inhibitor KPT-8602 binds to the XPO1 cargo binding site, which prevents the XPO1-mediated nuclear export of cargo proteins such as tumor suppressor proteins (TSPs), including p53, p73, BRCA1/2, pRB, FOXO, and other growth regulatory proteins and leads to their selective accumulation in the nuclei of tumor cells. As a selective inhibitor of nuclear export (SINE), KPT-8602 restores the nuclear localization and function of tumor suppressing proteins which leads to the induction of apoptosis in tumor cells. XPO1, the major export factor that transports proteins from the nucleus to the cytoplasm, is overexpressed in a variety of cancer cell types while minimally expressed in normal, healthy cells. The export of tumor suppressor proteins into the cytoplasm prevents them from initiating apoptosis and leads to uncontrolled tumor cell proliferation. Check for active clinical trials using this agent.

**XR9576:** A substance that is being studied in the treatment of cancer. It may help tumor cells respond again to drugs they have become resistant (unable to respond) to. XR9576 is a type of multidrug resistance inhibitor and a type of P-glycoprotein antagonist. Also called tariquidar.

**XRP9881:** A substance that is being studied in the treatment of breast cancer. It belongs to the family of drugs called taxane derivatives.

**Xtandi :** A drug used to treat prostate cancer that has spread to other parts of the body and did not get better with other treatment, including docetaxel. Xtandi binds to proteins called androgen receptors, which are found in some prostate cancer cells. These proteins bind to androgens (male hormones) and may cause cancer cells to grow. Blocking these proteins may keep cancer cells from growing. Xtandi is a type of antiandrogen. Also called enzalutamide.

**xylem:** the structure of vascular plants that conducts water and minerals upward from the roots.

**Xylene:** The non-systematic name for dimethylbenzene, like so:

**Xylocaine:** (Other name for: lidocaine)

**Xylocitin:** (Other name for: lidocaine)

**Xyotax :** A form of the anticancer drug paclitaxel combined with a protein called poliglumex that may have fewer side effects and work better than paclitaxel. It is being studied in the treatment of breast cancer, ovarian cancer, lung cancer, and other types of cancer. It belongs to the family of drugs called mitotic inhibitors. Also called CT-2103, paclitaxel poliglumex, and paclitaxel polyglutamate.

**Y 90 ibritumomab tiuxetan :** A drug used with the drug rituximab to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of B-cell tumors. Y 90 ibritumomab tiuxetan contains a monoclonal antibody that binds to a protein called CD20, which is found on B cells. It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Y 90 ibritumomab tiuxetan is a type of radioimmunoconjugate. Also called IDEC-Y2B8, Y 90 Zevalin, and yttrium Y 90 ibritumomab tiuxetan.

**Y 90 Zevalin :** A drug used with the drug rituximab to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of B-cell tumors. Y 90 Zevalin contains a monoclonal antibody that binds to a protein called CD20, which is found on B cells. It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Y 90 Zevalin is a type of radioimmunoconjugate. Also called IDEC-Y2B8, Y 90 ibritumomab tiuxetan, and yttrium Y 90 ibritumomab tiuxetan.

**Y-90 OctreoTher:** (Other name for: yttrium Y 90-edotreotide)

**Y-shape branched pegylated filgrastim:** A long-acting, pegylated variant of filgrastim (recombinant human granulocyte colony-stimulating factor (G-CSF)) with immunomodulating activity. Similar to endogenous G-CSF, this agent binds to and activates specific cell surface receptors, stimulating neutrophil progenitor proliferation and differentiation and selected neutrophil functions. The modification of this version of filgrastim with the addition of a Y-shaped branch of polyethylene glycol at a specific lysine residue (Lys 17) theoretically serves to extend the half-life of the agent.

**yangona** : An herb native to islands in the South Pacific. Substances taken from the root have been used in some cultures to relieve stress, anxiety, tension, sleeplessness, and problems of menopause. Yangona may increase the effect of alcohol and of certain drugs used to treat anxiety and depression. The U.S. Food and Drug Administration advises users that yangona may cause severe liver damage. The scientific name is Piper methysticum. Also called intoxicating pepper, kava kava, rauschpfeffer, and tonga.

**yeast:** Yeast is a fungus whose enzymes aid the breakdown of sugar (glucose) into alcohol (ethanol) and carbon dioxide in the absence of oxygen. It is used in the brewing and baking industries or Any of a number of species of single-celled fungus. Most important are the Saccharomyces spp., which are used in bread making and beer brewing... OR A type of microorganism that is found almost everywhere, including inside the body. There are many different types of yeast. Some types are used to make foods, such as bread, cheese, and alcoholic drinks. Small amounts of a certain type of yeast normally live on the skin and in some parts of the body, such as the mouth, throat, and vagina. Yeast are a type of fungus.

**Yeast artificial chromosome (YAC):** A DNA molecule that can be used to clone DNA inserts ranging from 100 to 1000 kb in length; contains a centromere, an autonomously replicating sequence, a pair of telomeres, selectable marker genes, and an insertion site for the sequence to be cloned.

**yeast infection** : A condition in which too much yeast grows in certain areas of the body and causes symptoms and disease. Small amounts of yeast normally live on the skin and in other parts of the body, such as the mouth, throat, and vagina. Sometimes, too much yeast can grow in these areas and cause infection. Yeast infections may also occur in the blood and spread throughout the body, but this is rare. Certain conditions, such as a weakened immune system, diabetes, pregnancy, hormone changes, and stress, and use of certain medicines may increase the risk of yeast infection.

**yellow:** A color.

**yellow fever** : A disease caused by infection with the yellow fever virus, which is carried by mosquitos. Symptoms include body aches, chills, fever, severe headache, weakness, and a yellow skin color. Bleeding, vomiting, and failure of the liver and other organs may occur in late stages of the disease.

**Yellowcake:** The solid form of mixed uranium oxide, which is produced from uranium ore in the uranium recovery (milling) process. The material is a mixture of uranium oxides, which can vary in proportion and color from yellow to orange to dark green (blackish) depending on the temperature at which the material is dried (which affects the level of hydration and impurities), with higher drying temperatures producing a darker and less soluble material. Yellowcake was commonly referred to as  $U_3O_8$ , because that chemical compound historically comprised the majority of the yellowcake produced by uranium recovery facilities utilizing conventional milling methods. Most modern uranium recovery facilities utilize in situ recovery methods and produce a yellowish compound comprised mostly of uranyl peroxide dihydrate. This material is then transported to a uranium conversion facility, where it is transformed into uranium hexafluoride ( $UF_6$ ), in preparation for fabricating fuel for nuclear reactors.

**Yellowing:** The development of a yellow colour on ageing; most noticeable on white or light coloured paint and clear varnishes. Or Development of a yellow color or cast in white, a pastel, colored or clear finishes.

**Yellowness Index:** A measure of the color on the yellow scale. Or A measure of the tendency of plastics to turn yellow upon long-term exposure to light or heat.

**Yervoy :** A drug used to treat melanoma that cannot be removed by surgery or has spread to other parts of the body. It is also used as adjuvant therapy to treat melanoma in the skin and lymph nodes in patients who have already had surgery. Yervoy is also being studied in the treatment of other types of cancer. Yervoy binds to a substance called CTLA-4, which is found on T cells (a type of white blood cell). Yervoy may block CTLA-4 and help the immune system kill cancer cells. It is a type of monoclonal antibody and a type of immune checkpoint inhibitor. Also called ipilimumab and MDX-010.

**Yield:** In chemical synthesis, yield refers to the amount of product obtained at the end of a chemical reaction. Or The amount of product actually obtained in a chemical reaction. Or Net weight per 1,000 lineal feet of film.

**Yield point:** the point at which a material will continue to elongate at no substantial increase in load during a short test period. OR In tensile testing, yield point is the first point on the stress-strain curve at which an increase in

strain occurs without an increase in stress. This is the point at which permanent deformation of the stressed specimen begins to take place. OR In tensile testing, yield point is the first point on the stress-strain curve at which an increase in strain occurs without an increase in stress.

**Yield Strength:** The stress at which a material exhibits a specified limiting deviation from the proportionality of stress to strain. Or The stress at the yield point of a specimen, usually expressed in pounds per square inch or megapascals. OR The stress at which a material exhibits a specified limiting deviation from the proportionality of stress to strain. OR the force which must be applied to a plastic to initiate flow.

**YIELD VALUE:** (Yield Strength) The lowest stress at which a material undergoes plastic deformation. Below this stress, the material is elastic; above it, viscous.

**Yield Value/Yield Strength:** The lowest stress at which a material undergoes plastic deformation. Below this stress, the material is elastic; above it, viscous.

**yin and yang :** In Chinese philosophy, yin and yang are opposite forces that form a whole. Everything contains both yin and yang in a balance that is always changing, such as hot and cold, day and night, and health and disease. In traditional Chinese medicine, disease is diagnosed and treated based on the balance of yin and yang.

**YKL-40:** A substance that may be found in higher-than-normal amounts in the blood of patients with certain types of cancer and inflammatory diseases. It is a type of glycoprotein.

**Ylid:** A compound in which adjacent, covalently-bonded atoms, both having an electronic octet, have opposite charges.

**ylide:** a neutral molecule in which two oppositely charged atoms are directly bonded to each other.

**YM598:** A substance that is being studied as a treatment for advanced prostate cancer and for pain caused by prostate cancer that has spread to the bone. It belongs to the family of drugs called endothelin ETA receptor antagonists.

**yoctomole (ymol):**  $10^{-24}$  moles; A single molecule corresponds to  $1/\text{Avogadro's number}$ , or  $1.66 \times 10^{-24}$  moles, or 1.66 ymol.

**yoga :** An ancient system of practices used to balance the mind and body through exercise, meditation (focusing thoughts), and control of breathing and emotions. Yoga is being studied as a way to relieve stress and treat sleep problems in cancer patients.

**yohimbe :** A tree native to West Africa. The bark is used as a supplement for bodybuilding and to enhance male sexual performance. It contains the chemical yohimbine, which is being studied in the treatment of sexual dysfunction. It may interact with certain drugs used to treat depression, high blood pressure, and high blood sugar. The scientific name is *Pausinystalia yohimbe*. Also called johimbe.

**Yondelis :** A drug used to treat liposarcoma and leiomyosarcoma (types of soft tissue sarcoma) that cannot be removed by surgery or have spread to other parts of the body. It is used in patients who were treated with other anticancer drugs. It is also being studied in the treatment of other types of cancer. Yondelis may kill cancer cells by damaging their DNA and stopping them from dividing. It is a type of alkylating agent. Also called ecteinascidin 743, ET-743, and trabectedin.

**yoshi-864:** An alkylsulfonate. Yoshi-864 alkylates and crosslinks DNA, thereby inhibiting DNA replication.

**Young's Modulus:** The ratio of tensile stress to tensile strain below the proportional limit. OR The modulus of elasticity in tension. It is concerned with how stiff, flexible, springy or floppy a material is

**Youngs Modulus of Elasticity:** The modulus of elasticity in tension. The ratio of stress in a material subjected to deformation.

**Ytterbium:** Symbol:"Yb" Atomic Number:"70" Atomic Mass: 173.04amu. Ytterbium is one of the elements in the lanthanide series of inner transition elements. It may also be classified as a rare earth element. This silvery metal can be found in several minerals. It is never found as a pure element in nature, always in compounds. or Element 70, atomic weight 173.04, a very rare, malleable metal used in special alloys for X-ray sources.

**Yttrium:** Symbol:"Y" Atomic Number:"39" Atomic Mass: 88.91amu. This is one of the transition elements found in period five of the periodic table. One of the rare Earth metals, yttrium is used in TV tubes, alloys, and has even been found on the Moon. Or Element 39, atomic weight 88.90585, a dark gray metal that is used in alloys and nuclear technology for its high

neutron transparency. Yttrium compounds are used in the manufacture of color tv screens, superconducting ceramics, and fireproof bricks.

**yttrium** : A metal of the rare earth group of elements. A radioactive form of yttrium may be attached to a monoclonal antibody or other molecule that can locate and bind to cancer cells and be used to diagnose or treat some types of cancer.

**yttrium Y 90** : A radioactive form of the rare metal yttrium that is used in radiation therapy to treat some types of tumors. Yttrium Y 90 can be linked to a molecule, such as a monoclonal antibody, to help it locate and bind to certain substances in the body, including cancer cells. The radiation may kill the cancer cells.

**yttrium Y 90 anti-CD19 monoclonal antibody BU12**: A radioimmunoconjugate consisting of the murine IgG1 anti-CD19 monoclonal antibody (MoAb) BU12 labeled with the beta-emitting radioisotope yttrium Y 90 with radioisotopic and antibody activities. Yttrium Y 90 anti-CD19 monoclonal antibody BU12 binds to the CD19 molecule, specifically delivering cytotoxic beta radiation to CD19-expressing B cells. CD19 is a membrane antigen that is widely expressed during B-cell development, from pro-B-cell to early plasma cell stages.

**yttrium Y 90 anti-CD45 monoclonal antibody AHN-12**: A radioimmunoconjugate comprised of the monoclonal antibody AHN-12 conjugated to the radioisotope yttrium 90 with potential radioimmunotherapeutic activity. Yttrium Y 90 monoclonal antibody AHN-12 binds to the tyrosine phosphatase CD45, expressed on the surface of normal and malignant hematopoietic cells. After binding and internalization by CD45-expressing tumor cells, this agent may deliver a cytotoxic dose of beta radiation.

**yttrium Y 90 anti-CD45 monoclonal antibody BC8**: A radioimmunoconjugate containing the murine IgG1 anti-CD45 monoclonal antibody (MoAb) BC8 labeled with yttrium 90 (Y90), with potential immunotherapeutic activity. Yttrium Y 90 anti-CD45 monoclonal antibody BC8 binds to CD45 antigen, a receptor protein-tyrosine phosphatase expressed on the surface of both normal and malignant hematopoietic cells. After binding and internalization by CD45-expressing tumor cells, this agent may deliver a cytotoxic dose of beta radiation.

**yttrium Y 90 anti-CD66 monoclonal antibody BW 250/183:** A radioimmunoconjugate consisting of the murine IgG1 monoclonal antibody BW250/183 labeled with yttrium Y 90 with potential radioimmunotherapeutic activity. Yttrium Y 90 anti-CD66 monoclonal antibody BW 250/183 binds to a 95 kD nonspecific cross-reacting antigen (CD66b or NCA-95) on granulocytes, selectively delivering a cytotoxic dose of Y 90 beta radiation to CD66b-expressing cells. CD66b, a member of the carcinoembryonic antigen (CEA) family with an unknown function, appears early in the differentiation of granulopoietic cells and is expressed on the cell surface of almost all human granulocytes and their more mature precursors.

**yttrium Y 90 anti-CDH3 monoclonal antibody FF-21101:** A radioimmunoconjugate consisting of a chimeric monoclonal antibody targeting human cadherin-3 (CDH3) and labeled, via the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA), with the beta-emitting radioisotope yttrium Y 90, with potential antineoplastic activities. Upon administration, the antibody moiety of yttrium Y 90 anti-CDH3 monoclonal antibody FF-21101 binds to CDH3 expressed on tumor cells, thereby specifically delivering cytotoxic beta radiation to CDH3-expressing tumor cells. CDH3, also known as P-cadherin, is a tumor-associated antigen (TAA) and member of the cadherin family; it is overexpressed in a variety of tumors and plays a role in cell adhesion, motility, invasion, and proliferation.

**yttrium Y 90 anti-CEA monoclonal antibody cT84.66:** A radioimmunoconjugate comprised of a chimeric monoclonal antibody against human carcinoembryonic antigen (CEA) conjugated with the radioisotope yttrium 90 (Y-90) via the chelator tetra-azacyclododecanetetraacetic acid (DOTA) with potential antineoplastic activity. The antibody moiety of yttrium Y90 DOTA anti-CEA monoclonal antibody cT84.66 binds to cells expressing the CEA antigen. Upon cellular internalization, this agent selectively delivers a cytotoxic dose of beta radiation. CEA, a tumor associated antigen, is overexpressed in many cancer types, including gastrointestinal, breast, non-small cell lung, and thyroid cancers.

**yttrium Y 90 clivatuzumab tetraxetan :** A substance being studied in the treatment of advanced pancreatic cancer. Yttrium Y 90 clivatuzumab tetraxetan contains a monoclonal antibody that binds to a protein called

MUC-1, which is found on some pancreatic cancer cells. It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Yttrium Y 90 clivatuzumab tetraxetan is a type of radioimmunoconjugate. Also called yttrium Y 90 DOTA monoclonal antibody HuPAM4. OR A radioimmunoconjugate comprised of the humanized monoclonal antibody HuPAM4, directed against the pancreatic cancer antigen MUC1, that is conjugated to the chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and radiolabeled with the beta-emitting radioisotope Yttrium Y90. Yttrium Y 90 clivatuzumab tetraxetan binds to tumor cells expressing MUC1 antigen, selectively delivering a cytotoxic dose of beta radiation.

**yttrium Y 90 colloid:** An injectable, colloidal formulation of the radioisotope yttrium Y 90, with potential antineoplastic activity. When injected into the tumor, the yttrium Y 90 colloid selectively delivers a cytotoxic dose of beta-emitting yttrium Y 90 to the tumor site, which may result in both tumor cell death and tumor regression.

**yttrium Y 90 daclizumab:** A synthetic radioimmunoconjugate comprised of a humanized anti-interleukin-2 (IL-2) antibody linked to the radioisotope Yttrium 90 with potential antineoplastic activity. Daclizumab binds with high affinity to the Tac (also called CD25) subunit of the IL-2 receptor complex and inhibits the binding of IL-2, thereby blocking the IL-2-mediated activation of lymphocytes. As Yttrium Y 90 daclizumab, daclizumab delivers radiation specifically to lymphocytes that express the IL-2 receptor. Check for active clinical trials using this agent.

**yttrium Y 90 DOTA anti-CEA monoclonal antibody M5A:** A radioimmunoconjugate consisting of a monoclonal antibody directed against the human carcinoembryonic antigen (CEA) conjugated with the radioisotope yttrium 90 (Y-90) via the chelator tetra-azacyclododecanetetra-acetic acid (DOTA) with potential antineoplastic activity. The antibody moiety of yttrium Y 90 DOTA anti-CEA monoclonal antibody M5A binds to cells expressing the CEA antigen. Upon cellular internalization, this agent selectively delivers a cytotoxic dose of beta radiation. CEA, a tumor associated antigen, is overexpressed in many cancer types, including gastrointestinal, breast, non-small cell lung, and thyroid cancers.

**yttrium Y 90 DOTA anti-CEA monoclonal antibody M5A :** A substance being studied in the treatment of some types of cancer. M5A is a monoclonal antibody that binds to a protein called CEA on the surface of

some tumor cells. It is linked to a radioisotope called yttrium Y 90, which may help kill the cancer cells. Yttrium Y 90 DOTA anti-CEA monoclonal antibody M5A is a type of radioimmunoconjugate and a type of radiopharmaceutical.

**yttrium Y 90 DOTA monoclonal antibody HuAFP31** : A substance being studied in the treatment of liver cancer. HuAFP31 is a monoclonal antibody that can bind to tumor cells that make a protein called alpha fetoprotein (AFP). It is linked to a radioactive substance called yttrium Y 90, which may help kill the cancer cells. Yttrium Y 90 DOTA monoclonal antibody HuAFP31 is a type of radioimmunoconjugate.

**yttrium Y 90 DOTA monoclonal antibody HuPAM4** : A substance being studied in the treatment of advanced pancreatic cancer. Yttrium Y 90 DOTA monoclonal antibody HuPAM4 contains a monoclonal antibody that binds to a protein called MUC-1, which is found on some pancreatic cancer cells. It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Yttrium Y 90 DOTA monoclonal antibody HuPAM4 is a type of radioimmunoconjugate. Also called yttrium Y 90 clivatuzumab tetraxetan.

**yttrium Y 90 DOTA-biotin** : A radioconjugate of biotin and yttrium Y 90 (Y-90) linked through the bifunctional macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) with radioimmunotherapy property. Biotin is a water-soluble B-complex vitamin, present in minute amounts in every living cell, while its level in cancerous tissue is higher than that of normal tissue. Y 90-DOTA-biotin could be used in 3-step pre-targeting radioimmunotherapy that employs a tumor targeting antibody conjugated with streptavidin, the natural ligand of biotin. OR A compound that contains the radioisotope yttrium Y 90 linked to the chemical biotin. Biotin is a molecule that binds strongly to the chemical streptavidin. Yttrium Y 90 DOTA-biotin will find tumor cells in the body that have been targeted by an antibody linked to streptavidin and kill them. It is being studied together with CC49-streptavidin in the treatment of cancer. Also called 90Y-DOTA-biotin.

**yttrium Y 90 DOTA-tyr3-octreotide** : A substance being studied in the treatment of some types of cancer. Yttrium Y 90 DOTA-tyr3-octreotide contains a molecule that binds to a protein found on certain types of neuroendocrine tumors (tumors that form from cells that release hormones).

It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Yttrium Y 90 DOTA-tyr3-octreotide is a type of radioconjugate. Also called yttrium Y 90 edotreotide and yttrium Y 90 SMT 487.

**yttrium Y 90 edotreotide :** A substance being studied in the treatment of some types of cancer. Yttrium Y 90 edotreotide contains a molecule that binds to a protein found on certain types of neuroendocrine tumors (tumors that form from cells that release hormones). It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Yttrium Y 90 edotreotide is a type of radioconjugate. Also called yttrium Y 90 DOTA-tyr3-octreotide and yttrium Y 90 SMT 487.

**yttrium Y 90 epratuzumab:** A radioimmunoconjugate consisting of the anti-CD22 monoclonal antibody epratuzumab chelated to the radioisotope yttrium-90 (Y 90). Yttrium Y 90 epratuzumab binds to tumor cells expressing CD22, delivering a cytotoxic dose of beta radiation. Epratuzumab is a humanized version of the murine monoclonal antibody LL2; CD22 is a B cell-restricted antigen present on the surfaces of mature B cells.

**yttrium Y 90 epratuzumab tetraxetan :** A substance being studied in the treatment of certain types of B-cell cancer. Epratuzumab is a monoclonal antibody that binds to a protein called CD22, which is found on the surface of B cells. It is linked to a radioactive substance called yttrium Y 90, which may help kill cancer cells. Yttrium Y 90 epratuzumab tetraxetan is a type of radioimmunoconjugate.

**yttrium Y 90 glass microspheres:** An injectable formulation of yttrium Y 90 consisting of glass microspheres containing the radioisotope yttrium Y 90. When injected into the tumor vascular bed, yttrium Y 90 glass microspheres occlude tumor blood vessels and deliver a cytotoxic dose of beta radiation to the tumor site, thereby reducing the tumor burden.

**yttrium Y 90 ibritumomab tiuxetan:** A drug used with the drug rituximab to treat certain types of B-cell non-Hodgkin lymphoma. It is also being studied in the treatment of other types of B-cell tumors. Yttrium Y 90 ibritumomab tiuxetan contains a monoclonal antibody that binds to a protein called CD20, which is found on B cells. It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Yttrium Y 90 ibritumomab tiuxetan is a type of radioimmunoconjugate.

Also called IDEC-Y2B8, Y 90 ibritumomab tiuxetan, and Y 90 Zevalin. OR A radioimmunotherapeutic agent consisting of a murine monoclonal anti-CD20 antibody (ibritumomab) linked by the chelator tiuxetan to the radioisotope yttrium-90 (Y 90). Yttrium Y 90 ibritumomab tiuxetan binds to and specifically delivers beta radiation to CD20-expressing tumor cells, thereby minimizing the systemic effects of radiation. Check for active clinical trials using this agent.

**yttrium Y 90 monoclonal antibody B3:** A radioimmunoconjugate of monoclonal antibody (MoAb) B3 conjugated with isotope yttrium 90. MoAb B3 is a murine MoAb that recognizes a Lewis Y carbohydrate antigen present on the surface of many carcinomas. This radioimmunoconjugate emits beta particles that causes cytotoxicity in tumor cells and has both diagnostic and therapeutic uses.

**yttrium Y 90 monoclonal antibody BrE-3:** A radioimmunotherapeutic agent consisting of a monoclonal antibody (BrE-3) directed against the tumor-associated antigen epithelial glycoprotein mucin chelated to the radioisotope yttrium-90. Yttrium Y 90 monoclonal antibody BrE-3 binds to tumor cells expressing epithelial glycoprotein mucin, selectively delivering a cytotoxic dose of beta radiation.

**yttrium Y 90 monoclonal antibody Hu3S193:** A radioimmunotherapeutic agent consisting of a humanized murine monoclonal antibody (hu3S193) directed against the tumor-associated Lewis Y epithelial antigen chelated to the radioisotope yttrium-90. Yttrium Y 90 monoclonal antibody Hu3S193 binds to Lewis Y epithelial antigen-expressing tumor cells, selectively delivering a cytotoxic dose of beta radiation.

**yttrium Y 90 monoclonal antibody MN-14:** A radioimmunotherapeutic monoclonal antibody (MN-14) directed against tumor-associated carcinoembryonic antigen (CEA) and chelated to the radioisotope yttrium-90 (Y 90). Y 90 monoclonal antibody MN-14 binds to tumor cell expressing CEA, delivering a cytotoxic dose of beta radiation.

**yttrium Y 90 resin microspheres:** An injectable formulation of the radioisotope yttrium Y 90 encapsulated in resin microspheres with potential antineoplastic activity. When injected into arterial vasculature supplying the tumor, yttrium Y 90 resin microspheres occlude tumor blood vessels and selectively deliver a cytotoxic dose of beta emitting yttrium Y 90 to the tumor site, which may result in tumor cell death and tumor regression.

**yttrium Y 90 SMT 487 :** A substance being studied in the treatment of some types of cancer. Yttrium Y 90 SMT 487 contains a molecule that binds to a protein found on certain types of neuroendocrine tumors (tumors that form from cells that release hormones). It also contains a radioactive substance called yttrium Y 90, which may help kill cancer cells. Yttrium Y 90 SMT 487 is a type of radioconjugate. Also called yttrium Y 90 DOTA-tyr3-octreotide and yttrium Y 90 edotreotide.

**yttrium Y 90 tacatuzumab tetraxetan:** A radioimmunoconjugate comprised of the monoclonal antibody HuAFP31, directed against alpha fetoprotein, that is conjugated to the chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and radiolabeled with the beta-emitting radioisotope Yttrium Y90. Yttrium Y 90 tacatuzumab tetraxetan binds to tumor cells expressing alpha fetoprotein, selectively delivering a cytotoxic dose of beta radiation.

**yttrium Y 90-DOTA-di-HSG peptide IMP-288:** A radiolabeled divalent histamine-succinyl-glycine (HSG) hapten-peptide linked with the macrocyclic chelator 1,4,7,10-tetraazacyclododecane-1,4,7,10-tetraacetic acid (DOTA) to the beta-emitting radionuclide yttrium 90 (Y-90), with radioimmunotherapeutic activity. After pre-treating and targeting tumor cells with a bi-specific monoclonal antibody (BiMoAB) directed against both a tumor-associated antigen (TAA) and the HSG hapten-peptide, the HSG portion of the administered yttrium Y 90-DOTA-di-HSG peptide IMP-288 binds to the anti-HSG sequence on the BiMoAB. In turn, Y-90 delivers a cytotoxic dose of beta radiation to tumor cells expressing the specific TAA.

**yttrium Y 90-DOTA-girentuximab:** A radioimmunoconjugate comprised of girentuximab conjugated with the bifunctional, macrocyclic chelating agent tetra-azacyclododecanetetra-acetic acid (DOTA) and labeled with the beta-emitting radioisotope yttrium Y 90. The antibody moiety of yttrium Y 90-DOTA-girentuximab binds to renal cell carcinoma cells expressing the G250 antigen, thereby selectively delivering a cytotoxic dose of beta radiation.

**yttrium Y 90-edotreotide:** A radioconjugate consisting of the octreotide derivative edotreotide labeled with yttrium 90 (Y-90) with potential radiotherapeutic uses. Similar to octreotide, yttrium Y 90-edotreotide binds to somatostatin receptors (SSTRs), especially type 2 receptors, present on

the cell membranes of many types of neuroendocrine tumor cells, delivering tissue-specific, beta-emitting nuclide Y-90-mediated cytotoxicity to SSTR-positive cells. Yttrium Y 90-edotreotide is produced by substituting tyrosine for phenylalanine at the 3 position of the somatostatin analogue octreotide and chelating the substituted octreotide to Y-90 via dodecanetetraacetic acid (DOTA).

**yttrium Y 90-labeled anti-FZD10 monoclonal antibody OTSA101:** A radioimmunoconjugate composed of a humanized monoclonal antibody (MoAb) OTSA101 against FZD10 and labeled with yttrium Y 90, with potential antineoplastic activity. The MoAb moiety of yttrium Y 90-labeled anti-FZD10 monoclonal antibody OTSA101 binds to FZD10, thereby delivering a cytotoxic dose of beta radiation to FZD10 positive tumor cells. FZD10 (also called CD350), a member of the Frizzled family of G protein-coupled receptors that is involved in the Wnt/beta-catenin/TCF signaling pathway, is overexpressed in a variety of cancer cell types but undetectable in normal, healthy human tissues except the placenta.

**yttrium Y 90-labeled basiliximab:** A radioimmunoconjugate composed of basiliximab, a chimeric, mouse-human monoclonal antibody directed against the alpha subunit of interleukin-2 receptor (IL-2R alpha, CD25 or Tac antigen), and labeled with yttrium y 90, with potential antineoplastic activity. The basiliximab moiety of yttrium Y 90 basiliximab selectively binds to IL-2R alpha expressed on the surface of activated T-lymphocytes, thereby preventing IL-2 binding and blocking the IL-2-mediated activation of lymphocytes. The yttrium y 90 moiety selectively delivers a cytotoxic dose of beta radiation to lymphocytes that express the IL-2 receptor. This may prevent T cell-mediated activation of the immune system against a certain transplant and may prevent transplant rejection.

**yttrium-90 polycarbonate brachytherapy plaque:** A polycarbonate-based semicylindrical plaque impregnated with yttrium Y 90 with radioisotopic and antineoplastic activities. An yttrium-90 polycarbonate brachytherapy plaque may be applied to a tumor site with a special brachytherapy applicator for a predetermined interval of time, selectively delivering a cytotoxic dose of beta-emitting yttrium Y 90.

**Z form:** A duplex DNA structure in which there is the usual type of hydrogen bonding between the base pairs but in which the helix formed by the two polynucleotide chains is left-handed rather than right-handed.

**Z scheme of photosynthesis:** The pathway of electron flow between photosystem I and II; so called because the redox diagram from P680 to P700+ looks like the letter Z.

**Z-360:** A selective, orally available, 1,5-benzodiazepine-derivative gastrin/cholecystokinin 2 (CCK-2) receptor antagonist with potential antineoplastic activity. Z-360 binds to the gastrin/CCK-2 receptor, thereby preventing receptor activation by gastrin, a peptide hormone frequently associated with the proliferation of gastrointestinal and pancreatic tumor cells. Check for active clinical trials using this agent.

**Z-DNA:** A left-handed double helix in which the backbone phosphates zigzag; can be formed by oligonucleotides with alternating sequences of purines and pyrimidines.

**Z-endoxifen hydrochloride:** The hydrochloride salt and the z (cis-) stereoisomer of endoxifen with potential antineoplastic activity. Endoxifen, the active metabolite of tamoxifen, competitively inhibits the binding of estradiol to estrogen receptors, thereby preventing the receptor from binding to the estrogen-response element on DNA and thus reducing DNA synthesis. Unlike tamoxifen, however, which relies on CYP2D6 activity for its conversion to the active metabolite endoxifen, the direct administration of endoxifen bypasses the CYP2D6 route. As CYP2D6 activity can vary widely among individuals due to genetic CYP2D6 polymorphisms, endoxifen is therefore theoretically more potent and more uniform in its bioavailability across patient populations.

**Z-matrix:** A common format for specifying molecular geometry in terms of internal coordinates.

**Z-score :** A score that indicates how many standard deviations a value is above or below the mean.

**Zadaxin™:** (Other name for: recombinant thymosin)

**zafirlukast :** A drug used to prevent and treat symptoms of asthma. It blocks substances that cause inflammation in the lungs. It is a type of antiasthmatic agent and a leukotriene receptor antagonist. Also called Accolate.

**Zaitsev rule:** states that the major product in the formation of alkenes by elimination reactions will be the more highly substituted alkene, or the alkene with more substituents on the carbon atoms of the double bond.

**zalcitabine:** A synthetic dideoxynucleoside. After intracellular phosphorylation to its active metabolite, zalcitabine preferentially inhibits the gamma form of DNA polymerase present in tumor cell mitochondria, resulting in the inhibition of tumor cell mitochondrial DNA replication and tumor cell death.

**Zaltrap :** A drug used with other drugs to treat colorectal cancer that has spread to other parts of the body and has not gotten better with chemotherapy. It is also being studied in the treatment of other types of cancer. Zaltrap blocks the action of a protein called vascular endothelial growth factor (VEGF) and may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent. Also called vascular endothelial growth factor trap, VEGF Trap, and ziv-aflibercept.

**zalutumumab:** A fully human IgG1 monoclonal antibody directed against the epidermal growth factor receptor (EGFR) with potential antineoplastic activity. Zalutumumab selectively binds to the EGFR receptor and blocks receptor binding of EGF and transforming growth factor-alpha (TGF-a), which results in the disruption of EGFR-mediated cell signaling, cell growth inhibition and apoptosis in EGFR-expressing tumor cells. In addition, this agent triggers antibody dependent cellular cytotoxicity (ADCC) in EGFR-expressing cells. EGFR is a cell surface receptor tyrosine kinase, overexpressed on many cancer cells.

**Zalypsis:** (Other name for: PM00104)

**Zanaflex:** (Other name for: tizanidine hydrochloride)

**zanamivir:** A sialic acid-analogue neuraminidase inhibitor with antiviral activity. Administered into the respiratory tract by aerosol inhalation, zanamivir selectively binds to and inhibits influenza A and B virus neuraminidase-mediated cleavage of sialic acid residues in host cell membrane-bound glycoprotein receptors for influenza viruses, preventing the release of progeny viruses from host cell surfaces and, so, further viral replication. OR A drug used to prevent and to treat influenza virus infections. It blocks the release of the virus from infected cells. It is a type of antiviral agent. Also called Relenza.

**zanolimumab:** A human IgG1k monoclonal antibody against the CD4 receptor on T lymphocytes, with potential antineoplastic and immunosuppressing activities. Zanolimumab targets and binds to the CD4 receptor on certain T cells thereby preventing the interaction between the

CD4 receptor and the major histocompatibility complex class II molecule. This prevents activation of CD4-positive T cells. In addition, zanolimumab is able to induce an antibody-dependent cellular cytotoxicity (ADCC) response against CD4-expressing tumor cells. CD4, a receptor located on a subset of T-lymphocytes, is upregulated in T-cell lymphomas.

**Zanosar:** (Other name for: streptozocin)

**Zarnestra :** A substance that is being studied in the treatment of acute myeloid leukemia (AML) and other types of cancer. It belongs to the family of drugs called farnesyltransferase inhibitors. Also called R115777 and tipifarnib.

**Zarontin:** (Other name for: ethosuximide)

**Zarxio :** A drug used to treat neutropenia (a condition in which there is a lower-than-normal number of white blood cells) caused by some types of chemotherapy. It is used to help prevent infection in patients with certain types of cancer. It is also used to treat chronic neutropenia and to prepare the blood for the collection of certain types of blood cells. Zarxio is also used to help prevent damage to the bone marrow in patients who were exposed to very high doses of certain types of radiation. Zarxio helps the body make more white blood cells. It is a type of colony-stimulating factor. Also called filgrastim, G-CSF, granulocyte colony-stimulating factor, and Neupogen.

**ZD0473:** A substance that is being studied in the treatment of cancer. It belongs to the family of drugs called platinum analogs.

**ZD1839:** A drug that is used to treat certain types of non-small cell lung cancer and is being studied in the treatment of other types of cancer. It is a type of epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor. Also called gefitinib and Iressa.

**ZD4054:** A substance that is being studied in the treatment of prostate cancer. It belongs to the family of drugs called endothelin-receptor antagonists.

**ZD6126:** A water-soluble phosphate prodrug of N-acetylcolchicol with potential antiangiogenesis and antineoplastic activities. ZD6126 is converted in vivo into N-acetylcolchicol. N-acetylcolchicol binds to and destabilizes the tubulin cytoskeleton of endothelial cells in tumor blood vessels, which may result in tumor endothelial cell apoptosis, the selective

occlusion of tumor blood vessels, cessation of tumor blood flow, and tumor necrosis. OR A substance that has been studied in the treatment of several types of cancer. ZD6126 destroys blood vessels in tumors and may prevent the growth of new blood vessels that tumors need to grow. It is a type of vascular targeting agent and a type of antiangiogenesis agent.

**ZD6474:** A drug used to treat medullary thyroid cancer that has spread to other parts of the body and cannot be treated by surgery. It is also being studied in the treatment of other types of cancer. ZD6474 prevents the growth of new blood vessels that tumors need to grow. It also blocks enzymes needed for cell growth and may kill cancer cells. It is a type of antiangiogenesis agent and a type of tyrosine kinase inhibitor. Also called Caprelsa and vandetanib.

**ZDX:** A drug used to treat prostate cancer and to relieve the symptoms of advanced breast cancer. It is also used to treat problems with the endometrium (lining of the uterus). ZDX keeps the body from making the hormones luteinizing hormone-releasing hormone (LHRH) and luteinizing hormone (LH). This causes the testicles to stop making testosterone (a male hormone) in men, and the ovaries to stop making estradiol (a form of the hormone estrogen) in women. ZDX may stop the growth of cancer cells that need testosterone or estrogen to grow. It is a type of LHRH agonist. Also called goserelin acetate and Zoladex.

**Zeeman effect:** The splitting of spectral lines when an external magnetic field is applied.

**Zelboraf :** A drug used to treat advanced melanoma that has a mutated (changed) form of a cell protein called BRAF. It is also being studied in the treatment of other types of cancer. Zelboraf blocks this mutated protein, which may stop the growth of cancer cells. It is a type of kinase inhibitor and a type of targeted therapy agent. Also called BRAF (V600E) kinase inhibitor RO5185426, PLX4032, RG7204, and vemurafenib.

**Zemuron:** (Other name for: rocuronium bromide)

**Zenapax :** A drug used to keep the body from rejecting kidney transplants. It is also being studied in the treatment of some types of cancer and other conditions. Zenapax binds to receptors for a protein called interleukin-2 (IL-2), which are found on some types of immune cells and cancer cells. This may help suppress the body's immune response and it may help kill

cancer cells. Zenapax is a type of monoclonal antibody. Also called dacliximab and daclizumab.

**zenith:** the point directly overhead of an observer.

**Zenpep:** (Other name for: pancrelipase)

**zeolite:** A natural or synthetic hydrated aluminosilicate with an open three-dimensional crystal structure which water molecules are held in cavities in the lattice. They are used to soften water. Or A class of minerals that are 'hydrated aluminosilicates'. An aluminosilicate is where some of the Si atoms in silica (which has the perfectly reasonable chemical formula  $\text{SiO}_4$ ) are replaced with aluminium, giving an excess negative charge. 'hydrated' means that water is strongly associated with these materials by hydrogen bonding. Lastly, a positively charged 'counter-ion' is needed to balance the negative charge on the zeolite. Zeolites are extremely porous materials, with a regular internal structure of cavities of defined size and shape. or Addition compounds of the type  $\text{Na}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot n \text{SiO}_2 \cdot m \text{H}_2\text{O}$ , with calcium sometimes replacing or present with the sodium. The sodium in the zeolite exchanges with calcium in water, making zeolites useful for water softening. The porous structure of zeolites also makes them effectivemolecular sieves used as gas adsorbents and drying agents. Artificial zeolites are used as ion exchange resins.

**zeolite process:** an ion-exchange process for softening water. The zeolite exchanges sodium ions for hardness constituents (calcium, magnesium, etc.) in the water.

**Zerit:** (Other name for: stavudine)

**zero order reaction:** A reaction with a reaction rate that does not change when reactant concentrations change.

**zero point energy:** A minimum possible energy for an atom or molecule predicted by quantum mechanics. Electrons stay in motion and bonds continue to vibrate even at absolute zero because of zero point energy.

**Zero potential point:** the solution concentration at which an electrode pair develops a potential of 0 mV. In many instances, it is also the isopotential point

**ZERO SHEAR VISCOSITY:** The asymptotic viscosity value at zero shear rate (i.e., the maximum value). As the shear rate increases, the viscosity decreases due to alignments of molecular chains in the direction of

flow and molecular chain disentanglements. The zero shear viscosity is proportional to the 3.4 power of the weight average molecular weight (i.e.  $\eta_0 = \text{constant} * M_w^{3.4}$  for most common polymers). This means that if we increase the molecular weight of a polymer from 100,000 to 200,000 the viscosity will increase by  $2^{3.4} = 10.55$  times.

**Zero-order kinetics:** A rate equation independent of concentration.

**Zestril :** A drug used to treat high blood pressure and certain heart conditions. It is also being studied in the prevention and treatment of side effects caused by some anticancer drugs. It blocks certain enzymes that cause blood vessels to constrict (narrow). It is a type of angiotensin-converting enzyme (ACE) inhibitor. Also called lisinopril and Prinivil.

**zeta potential:** Electric potential across all phase boundaries between solids and liquids. In colloids, the zeta potential is the potential across the ion layer around a charged colloidal particle. Neutralizing the zeta potential can cause the colloid to precipitate.

**Zetia:** (Other name for: ezetimibe)

**Zevalin :** A monoclonal antibody that is used to treat certain types of B-cell non-Hodgkin lymphoma and is being studied in the treatment and detection of other types of B-cell tumors. Monoclonal antibodies are made in the laboratory and can locate and bind to substances in the body, including cancer cells. Ibritumomab binds to the protein called CD20, which is found on B cells. It is linked to the compound tiuxetan. This allows certain radioisotopes to be attached before it is given to a patient. It is a type of monoclonal antibody-chelator conjugate. Also called ibritumomab tiuxetan.

**Zeven:** (Other name for: Hsp90 inhibitor debio 0932)

**Zheng :** In traditional Chinese medicine, a way of diagnosing disease based on observing a set of signs and symptoms. A practitioner checks Zheng by looking at the patient; asking questions; feeling the pulse, organs, and tissues; listening to body sounds; and smelling the body.

**zhongyao fufang:** A combination formula consisting of two or more unknown Traditional Chinese Medicine (TCM) ingredients, with potential anti-osteoporotic activity. Upon oral administration, this particular formula of zhongyao fufang may promote increased bone strength and density.

**Ziagen:** (Other name for: abacavir sulfate)

**zibotentan:** An orally available selective antagonist of the endothelin-A (ET-A) receptor with potential antineoplastic activity. Zibotentan binds selectively to the ET-A receptor, thereby inhibiting endothelin-mediated mechanisms that promote tumor cell proliferation. OR A substance being studied in the treatment of some types of cancer. Zibotentan may block cancer cell growth. It is a type of endothelin-A receptor antagonist.

**ziconotide:** A synthetic, nonopioid, twenty-five amino acid polybasic peptide analogue of an omega-conotoxin derived from the marine snail *Conus magus* with analgesic activity. Ziconotide appears to block neuronal N-type voltage-sensitive calcium channels (NCCB), inhibiting transmission from pain-sensing primary nociceptors. This agent may exhibit significant analgesic activity in refractory pain.

**zidovudine:** A synthetic dideoxynucleoside. After intracellular phosphorylation to its active metabolite, zidovudine inhibits DNA polymerase, resulting in the inhibition of DNA replication and cell death. This agent also decreases levels of available pyrimidines.

**zidovudine :** A drug that inhibits the human immunodeficiency virus (HIV) that causes AIDS. It is a type of systemic antiviral. Also called AZT.

**Ziegler-Natta catalyst:** A compound containing a metal-carbon bond that can be used to make highly ordered, high density polymers by a chain-growth mechanism. A typical Ziegler-Natta catalyst is the compound formed in situ between titanium trichloride and diethylaluminium chloride, picture below: These catalysts are named after two famous polymer chemists named, strangely enough, Ziegler and Natta. You can find out much more than you ever wanted to know about them at the Macrogalleria.

**zileuton:** A synthetic derivative of hydroxyurea with antiasthmatic properties. The leukotriene inhibitor zileuton blocks 5-lipoxygenase, which catalyzes the formation of leukotrienes from arachidonic acid; causes bronchodilation; decreases bronchial mucous secretion and edema; and may prevent or decrease the symptoms of asthma. OR A substance that is used to prevent asthma symptoms and that is being studied in the prevention of lung cancer. It belongs to the family of drugs called leukotriene blockers.

**Zinc:** Symbol:"Zn" Atomic Number:"30" Atomic Mass: 65.38amu. Zinc is one of the transition elements found in period four. Zinc is another metal that has been used for thousands of years. This bluish-white metal can be found in many alloys, paint, fluorescent lights, and in the process of making

plastics. or Element 30, atomic weight 65.37, a reactive gray metal that dissolves in acids, used to galvanize metals and in many alloys (e. g. brass and bronze).

**ZINC CHROMATE:** Rust-inhibiting pigment, greenish-yellow in color that is used with a high-hiding pigment.

**Zinc clusters:** Found in pairs in the nuclear receptor superfamily of proteins, a DNA-binding motif in which a zinc ion is coordinated to four cysteine side chains.

**Zinc finger:** A conserved sequence-specific DNA-binding domain, found in members of the nuclear hormone-receptor family, that consists of eight cysteine residues: the first four bind one zinc ion and the second four bind another. Or A specialized protein motif involved in DNA recognition by some DNA-binding proteins; characterized by a single atom of zinc coordinated to four Lys residues or to two His and two Lys residues.

**zinc gluconate:** A nutritional supplement containing the zinc salt form of gluconic acid for the purpose of providing zinc. As an essential trace element, zinc is of key importance in many biological processes, acts as an antioxidant and strengthens the immune system. Although the mechanism of action is not completely known, zinc supplementation may be used to increase immunity against viruses or may interfere with the replication of certain viruses, such as the human papillomavirus (HPV).

**ZINC OXIDE:** Substance used as a white pigment for high-hiding power hardness and gloss. Reduces yellowing, increases drying; provides resistance to sulfur fumes and mildew. Used with linseed oil for self-cleaning exterior paints. Or An amorphous white or yellowish powder, used as a pigment in plastics. It is said to have the greatest ultra-violet light absorbing power of all commercially available pigments.

**zinc oxide :** A compound that may enhance immune function, especially when administered by inhalation.

**zinc oxide/aluminum starch octenylsuccinate/glycyrrhetic**

**phytosome/vitamin E/botanical extracts-based skin protectant paste:** A paste containing multiple skin protectants with anti-oxidant, skin protecting, moisturizing, anti-erythema and anti-inflammatory activities. The paste includes zinc oxide, aluminum starch octenylsuccinate, lanolin, allantoin, chamomile and sweet almond oil, rice bran oil, shea butter, dimethicone (polymerized siloxane), petrolatum, vitamin E, phytosome of glycyrrhetic

acid and botanical extracts derived from *Calendula officinalis*, *Malva sylvestris* and *Tilia tomentosa*. Upon application, this paste provides a physical barrier on the skin and may help protect, soothe and moisturize the skin as well as restore skin softness, integrity and elasticity. When this paste is applied to the perineum area, it may help prevent radiation-induced dermatitis.

**Zinc proteases:** A class of protein-degrading enzymes whose catalytic activity depends on a zinc ion; carboxypeptidase A is a zinc protease.

**ZINC STEARATE:** A white powder used as a lubricant and antioxidant synergist.

**zinc sulfate:** A salt of the essential trace metal zinc. Zinc is involved in tissue repair and is an important constituent of some proteins, including those involved in taste and smell. Zinc sulfate supplementation may prevent radiation-induced aguesia. Check for active clinical trials using this agent.

**zinc sulfate :** A substance required for cell growth and tissue repair. It is being studied as a way to prevent or decrease mucositis caused by radiation therapy.

**zincography:** Process of etching unprotected parts of a zinc plate with strong acids to produce a printing surface.

**Zinecard :** A drug used to reduce heart damage in women given doxorubicin for breast cancer that has spread. It is also being studied in the treatment of cancer. Zinecard contains the active ingredient dexrazoxane. It is a type of cardioprotective agent, a type of chemoprotective agent, and a type of topoisomerase inhibitor.

**zinostatin:** An enediyne antineoplastic antibiotic hybrid containing an aminoglycoside chromophore. Zinostatin is isolated from the bacterium *Streptomyces carzinostaticus*. The aminoglycoside component of zinostatin intercalates into DNA and the benzene diradical intermediate of the enediyne core binds to the minor groove of DNA, resulting in single- and double-strand breaks in DNA and apoptosis.

**Zip or Seal Top Bag Style:** A recloseable or resealable pouch produced with a plastic track in which two plastic components interlock to provide a mechanism that allows for recloseability in a flexible package.

**Zipan:** (Other name for: promethazine hydrochloride)

**Zirconium:** Symbol:"Zr" Atomic Number:"40" Atomic Mass: 91.22amu. This is one of the transition elements found in period five of the table of elements. Zirconium is found in many minerals. This grayish-white metal can be found in nuclear reactors, corrosion resistant alloys, magnets, and some gemstones. or Element 40, atomic weight 91.22, a hard, grayish, highly flammable crystalline metal that dissolves in hot concentrated acids. Used in steel manufacture and in nuclear reactor chambers because of its transparency to neutrons. Its silicate is used to make zircon used as a gemstone.

**zirconium Zr 89 bevacizumab:** A radioimmunoconjugate comprised of the recombinant humanized monoclonal antibody bevacizumab labeled with the radioisotope zirconium Zr 89 (Zr 89) with radioisotopic activity and potential imaging use. The antibody moiety of zirconium Zr 89 bevacizumab targets and binds to the extracellular domain of the vascular endothelial growth factor receptor (VEGFR). Upon binding, the radioisotope moiety may be detected using positron emission tomography (PET), allowing the imaging and quantification of VEGFR-expressing tumor cells. VEGFR, a tyrosine kinase, is overexpressed on the cell surfaces of various tumor cell types.

**zirconium Zr 89 cetuximab:** A radioimmunoconjugate comprised of the recombinant chimeric monoclonal antibody cetuximab labeled with the radioisotope zirconium Z 89 (Zr 89) with radioisotopic activity and potential imaging use. The antibody moiety of zirconium Zr 89 cetuximab binds to the extracellular domain of the epidermal growth factor receptor (EGFR). Upon binding, the radioisotope moiety may be detected using positron emission tomography (PET), allowing the imaging and quantification of EGFR-expressing tumor cells. EGFR is a tyrosine kinase that may be overexpressed on the cell surfaces of various tumor cell types.

**zirconium Zr 89 desferrioxamine B monoclonal antibody huJ591:** A radioimmunoconjugate comprised of the recombinant humanized monoclonal antibody J591 against prostate-specific membrane antigen (PSMA) conjugated to chelator desferrioxamine B (DFO-B) and labeled with the radioisotope zirconium Zr 89 with potential imaging property used in positron emission tomography (PET) imaging. Upon administration of zirconium Zr 89 desferrioxamine B monoclonal antibody huJ591, the antibody moiety binds to the extracellular domain of PSMA, and the

radioisotope moiety may be detected using PET, thereby allowing the imaging and quantification of PSMA-expressing tumor cells. PSMA, or folate hydrolase is a cell surface peptidase highly expressed by malignant prostate epithelial cells and vascular endothelial cells of numerous solid tumor malignancies. In addition, upon PET imaging this agent provides high tumor:background tissue ratios. Check for active clinical trials using this agent.

**zirconium Zr 89 Df-IAB2M:** A radioimmunoconjugate comprised of an antibody fragment (IAB2M) against prostate-specific membrane antigen (PSMA), conjugated to the chelator desferrioxamine (Df) and labeled with the radioisotope zirconium Zr 89, with potential positron emission tomography (PET) imaging activity. Upon administration of zirconium Zr 89 Df-IAB2M, the antibody moiety binds to the extracellular domain of PSMA expressed on cancer cells. This may enable PET detection of the radioisotope moiety, and allows the imaging and quantification of PSMA-expressing tumor cells. PSMA is a cell surface peptidase highly expressed by malignant prostate epithelial cells and vascular endothelial cells in various solid tumor malignancies.

**zirconium Zr 89 trastuzumab:** A radioimmunoconjugate containing the recombinant humanized monoclonal antibody trastuzumab labeled with the radioisotope zirconium Zr 89 with radioisotopic activity and potential use as an imaging agent. The trastuzumab moiety of zirconium Zr 89 trastuzumab binds with high affinity to the extracellular domain of human epidermal growth factor receptor 2 (HER2). Upon binding, the radioisotope moiety may be detected using positron emission tomography (PET), thereby allowing the imaging and quantification of HER2-expressing tumor cells. HER2, a tyrosine kinase client protein of heat shock protein 90 (Hsp90), may be overexpressed on the cell surfaces of various tumor cell types.

**zirconium Zr 89-labeled anti-CA19-9 monoclonal antibody 5B1:** A radioimmunoconjugate comprised of the recombinant human monoclonal antibody against the carbohydrate antigen sialyl-Lewis a (carbohydrate antigen 19-9; CA19-9) conjugated to the chelator desferrioxamine (DFO) and labeled with the radioisotope zirconium Zr 89 (Zr 89), with radioisotopic activity and potential use as an imaging agent in positron emission tomography (PET). The antibody moiety of zirconium Zr 89 anti-

CA19-9 monoclonal antibody 5B1 targets and binds to CA19-9 expressing-tumor cells. Upon binding, internalization and proteolysis, the radioisotope moiety may be detected using PET, thus allowing imaging and quantification of CA19-9-expressing tumor cells. CA19-9, overexpressed on a number of different tumor cell types, plays a key role in tumor cell survival and metastasis.

**zirconium Zr 89-labeled anti-PD-L1 monoclonal antibody**

**MPDL3280A:** A radioimmunoconjugate composed of MPDL3280A, a human, Fc-optimized, monoclonal antibody directed against programmed cell death-1 ligand 1 (PD-L1) and labeled with the radioisotope zirconium Zr 89, with potential use for assessing PD-L1-expressing tumor cells using positron emission tomography (PET). Upon administration of zirconium Zr 89-labeled anti-PD-L1 monoclonal antibody MPDL3280A, the antibody moiety targets and binds to PD-L1 and is internalized. Following tumor cell uptake, the radioisotope moiety can be visualized using PET. This may result in both the quantification of PD-L1-expressing tumor cells and an assessment of the expected response to treatment with MPDL3280A as well as selection of patients that would respond to MPDL3280A. PD-L1 is overexpressed on many human cancer cell types; PD-L1 binding to programmed cell death 1 (PD-1) on T-cells suppresses the immune system and results in increased immune evasion.

**zirconium Zr 89-labeled anti-PIGF monoclonal antibody RO5323441:**

A radioimmunoconjugate comprised of the humanized IgG1 monoclonal antibody directed against placental growth factor (PIGF) and labeled with zirconium Zr 89 (Zr 89), with potential radiotracer activity upon positron emission tomography (PET) imaging. The monoclonal antibody moiety of RO5323441 binds to both PIGF-1 and -2, thereby preventing the binding of PIGF-1 and -2 to the vascular endothelial growth factor receptor-1 (VEGFR-1) and the subsequent activation of VEGFR-1. The radioisotope moiety of RO5323441 may be detected using PET, thereby allowing for visualization of the antibody's distribution and PIGF expression. PIGF, a member of the VEGF sub-family and a key molecule in angiogenesis and vasculogenesis, is upregulated in many cancers. Check for active clinical trials using this agent.

**zirconium Zr 89-labeled monoclonal antibody MMOT0530A:** A radioimmunoconjugate composed of a monoclonal antibody that targets an

antigen overexpressed in pancreatic and ovarian cancer and labeled with the radioisotope zirconium Zr 89, with potential use for assessing tumor antigen expression using positron emission tomography (PET). Upon administration of zirconium Zr 89-labeled monoclonal antibody MMOT0530A, this agent targets an antigen expressed on certain tumor cells and is internalized. Following tumor cell uptake, the radioisotope moiety can be visualized using PET imaging. This may result in both the quantification of tumor antigen expression and an assessment of the response to treatment with therapeutics targeting the antigen.

**zirconium Zr 89-labeled RO5479599:** A radioimmunoconjugate containing a glycoengineered, humanized monoclonal antibody directed against the human epidermal growth factor receptor HER3 (ErbB3) and labeled with the radioisotope zirconium Zr 89, with radioisotopic activity and potential use as an imaging agent as well as potential antineoplastic activity. Upon administration, the RO5479599 moiety of zirconium Zr 89-labeled RO5479599 binds to the extracellular domain of HER3 and inhibits HER3 dimerization, thereby preventing EGFR-dependent signaling. In addition, RO5479599 elicits enhanced antibody-dependent cellular cytotoxicity (ADCC). Upon binding, the radioisotope moiety may be detected using positron emission tomography (PET), thereby allowing the imaging and quantification of HER3-expressing tumor cells. HER3, a member of the epidermal growth factor receptor (EGFR) family of receptor tyrosine kinases, is frequently overexpressed in tumors; it has no active kinase domain but is activated through heterodimerization with other members of the EGFR receptor family, such as HER2.

**Zithromax:** (Other name for: azithromycin)

**ziv-aflibercept:** A protein comprised of segments of the extracellular domains of human vascular endothelial growth factor receptors 1 (VEGFR1) and 2 (VEGFR2) fused to the constant region (Fc) of human IgG1 with potential antiangiogenic activity. Aflibercept, functioning as a soluble decoy receptor, binds to pro-angiogenic vascular endothelial growth factors (VEGFs), thereby preventing VEGFs from binding to their cell receptors. Disruption of the binding of VEGFs to their cell receptors may result in the inhibition of tumor angiogenesis, metastasis, and ultimately tumor regression.

**ziv-aflibercept** : A drug used with other drugs to treat colorectal cancer that has spread to other parts of the body and has not gotten better with chemotherapy. It is also being studied in the treatment of other types of cancer. Ziv-aflibercept blocks the action of a protein called vascular endothelial growth factor (VEGF) and may prevent the growth of new blood vessels that tumors need to grow. It is a type of antiangiogenesis agent. Also called vascular endothelial growth factor trap, VEGF Trap, and Zaltrap.

**Zocor** : A drug used to lower the amount of cholesterol and other harmful substances in the blood, such as triglycerides. It is also being studied in the treatment of cancer and other conditions. Zocor blocks an enzyme that helps make cholesterol in the body. It is a type of HMG-CoA reductase inhibitor and a type of statin. Also called simvastatin.

**Zofran** : A drug used to prevent nausea and vomiting caused by chemotherapy and radiation therapy. It is also used to prevent nausea and vomiting after surgery. Zofran blocks the action of the chemical serotonin, which binds to certain nerves and may trigger nausea and vomiting. Blocking serotonin may help lessen nausea and vomiting. It is a type of serotonin receptor antagonist and a type of antiemetic. Also called ondansetron hydrochloride.

**Zoladex** : A drug used to treat prostate cancer and to relieve the symptoms of advanced breast cancer. It is also used to treat problems with the endometrium (lining of the uterus). Zoladex keeps the body from making the hormones luteinizing hormone-releasing hormone (LHRH) and luteinizing hormone (LH). This causes the testicles to stop making testosterone (a male hormone) in men, and the ovaries to stop making estradiol (a form of the hormone estrogen) in women. Zoladex may stop the growth of cancer cells that need testosterone or estrogen to grow. It is a type of LHRH agonist. Also called goserelin acetate and ZDX.

**zoledronate** : A drug used to treat patients with hypercalcemia (high blood levels of calcium) caused by cancer. It is also used together with other drugs to treat multiple myeloma and to prevent bone fractures and reduce bone pain in people who have cancer that has spread to the bone. It is a type of bisphosphonate. Also called zoledronic acid and Zometa.

**zoledronic acid**: A synthetic imidazole bisphosphonate analog of pyrophosphate with anti-bone-resorption activity. A third-generation

bisphosphonate, zoledronic acid binds to hydroxyapatite crystals in the bone matrix, slowing their dissolution and inhibiting the formation and aggregation of these crystals. This agent also inhibits farnesyl pyrophosphate synthase, an enzyme involved in terpenoid biosynthesis. Inhibition of this enzyme prevents the biosynthesis of isoprenoid lipids, donor substrates of farnesylation and geranylgeranylation during the post-translational modification of small GTPase signalling proteins, which are important in the process of osteoclast turnover. Decreased bone turnover and stabilization of the bone matrix contribute to the analgesic effect of zoledronic acid with respect to painful osteoblastic lesions. The agent also reduces serum calcium concentrations associated with hypercalcemia. OR A drug used to treat patients with hypercalcemia (high blood levels of calcium) caused by cancer. It is also used together with other drugs to treat multiple myeloma and to prevent bone fractures and reduce bone pain in people who have cancer that has spread to the bone. It is a type of bisphosphonate. Also called zoledronate and Zometa.

**Zolinza :** A drug that is used to treat cutaneous T-cell lymphoma that does not get better, gets worse, or comes back during or after treatment with other drugs. It is also being studied in the treatment of other types of cancer. Zolinza is a type of histone deacetylase inhibitor. Also called SAHA, suberoylanilide hydroxamic acid, and vorinostat.

**Zollinger-Ellison syndrome :** A disorder in which tumors of the pancreatic islet cells produce large amounts of gastrin (a hormone), leading to excess acid in the stomach and, possibly, a peptic ulcer (ulcer of the stomach or the upper part of the small intestine).

**zolmitriptan:** A member of the triptan class agents with anti-migraine property. Zolmitriptan selectively binds to and activates serotonin (5-HT) 1B expressed in intracranial arteries and 5-HT 1D receptors located on peripheral trigeminal sensory nerve terminals in the meninges and central terminals in brain stem sensory nuclei. Receptor binding results in constriction of cranial vessels, reduction of the vessel pulsation and inhibition of nociceptive transmission, thereby providing relief of migraine headaches. Zolmitriptan may also relief migraine headaches by inhibition pro-inflammatory neuropeptide release.

**Zoloft :** A drug used to treat depression. It is a type of selective serotonin reuptake inhibitor (SSRI). Also called sertraline.

**zolpidem** : A drug used to treat insomnia (inability to sleep), and anxiety. It is a type of imidazopyridine (sedative hypnotic). Also called Ambien.

**zolpidem tartrate**: The tartrate salt of an imidazopyridine with non-benzodiazepine benzodiazepine-receptor agonist and sedative-hypnotic activities. Zolpidem binds selectively to the alpha 1 subunit of the omega-1 (BZ1) receptor of the gamma-aminobutyric acid type A (GABA-A ) receptor-chloride ionophore complex, thereby opening neuronal chloride channels, hyperpolarizing neuronal cell membranes, and inhibiting neuronal firing. In contrast, benzodiazepines non-selectively bind to and activate all omega receptor subtypes, exhibiting anticonvulsant and myorelaxant activities in addition to a sedative-hypnotic activity.

**Zometa** : A drug used to treat patients with hypercalcemia (high blood levels of calcium) caused by cancer. It is also used together with other drugs to treat multiple myeloma and to prevent bone fractures and reduce bone pain in people who have cancer that has spread to the bone. It is a type of bisphosphonate. Also called zoledronate and zoledronic acid.

**Zomig**: (Other name for: zolmitriptan)

**Zonal centrifugation**: An ultracentrifugation technique in which the sample is centrifuged through a gradient of increasing density and the components are separated on the basis of differing sedimentation coefficients.

**zonally-averaged models**: Statistical-dynamical or energy-balance models in which only the latitudinally averaged quantities are determined and the effects of the longitudinally varying transports are determined parametrically. Abbreviated as ZAM.

**zone of accumulation**: of a glacier, the higher portion that is perennially covered with snow. Or upper level of a glacier where more snow falls than melts.

**zone of aeration**: area underground above the water table where the spaces between rocks contain a mixture of air and water.

**zone of fracture**: the more rigid portion of a glacier near its surface.

**zone of saturation**: area underground where the spaces between rock particles are filled with water.

**zone of wastage**: of a glacier, the lower portion, where the ice is lost

**zone refining:** A method for purifying solids based on the fact that solutes tend to concentrate in the liquid when a solution is frozen. A solid bar is drawn slowly over a heat source and melted in a narrow band; impurities are carried along in the melted band until the end of the bar is reached.

**Zones:** Sections of the barrel which are controlled individually by temperature controllers.

**zooplankton:** That portion of the plankton community comprised of tiny aquatic animals eaten by fish.

**zoptarelin doxorubicin:** A peptide agonist of the gonadotropin releasing hormone-1 receptor (GnRH-1R) that is conjugated to the anthracycline antibiotic doxorubicin with potential antineoplastic activity. Zoptarelin doxorubicin binds to GnRH-1Rs, which may be highly expressed on endometrial and ovarian tumor cell membrane surfaces, and is internalized. Once inside the cell, the doxorubicin moiety of this agent intercalates into DNA and inhibits the topoisomerase II activity, which may result in the inhibition of tumor cell DNA replication and tumor cell proliferation.

**Zortress:** (Other name for: everolimus)

**zorubicin hydrochloride:** A benzoyl-hydrazone derivative of the anthracycline antineoplastic antibiotic daunorubicin. Zorubicin intercalates into DNA and interacts with topoisomerase II, thereby inhibiting DNA replication and repair and RNA and protein synthesis. Check for active clinical trials using this agent.

**Zostavax:** (Other name for: varicella zoster virus strain Oka/Merck live antigen)

**zosuquidar trihydrochloride:** A difluorocyclopropyl quinoline. Zosuquidar trihydrochloride binds with high affinity to P-glycoprotein and inhibits P-glycoprotein-mediated multidrug resistance (MDR). P-glycoprotein, encoded by the MDR-1 gene, is a member of the ATP-binding cassette superfamily of transmembrane transporters and prevents the intracellular accumulation of many natural product-derived cytotoxic agents.

**zosuquidar trihydrochloride :** A substance being studied in the treatment of cancer. Zosuquidar trihydrochloride may help kill cancer cells that are resistant to anticancer drugs. Also called LY335979.

**Zovirax:** (Other name for: acyclovir sodium)

**Zurinol:** (Other name for: allopurinol)

**zwitterion:** An ion that has a positive and negative charge on the same group of atoms. It is also called dipolar ion. Or A chemical entity that contains both anionic and cationic groups. Or 'Zwitter' is german for 'hybrid', and zwitterions are chemical species that manage to be both cations and anions at the same time. How can this come about? Consider ammonium acetate ( $\text{NH}_4\text{CH}_3\text{COO}$ ). It is a perfectly ordinary salt, and when dissolved in water splits into its two constituent ions,  $\text{NH}_4^+$  and  $\text{CH}_3\text{COO}^-$ . These ions will be able to approach quite close to each other in solution, but there will be no transfer of charge from one to another because of the 'shell' of water around each one. In fact, there is no reason we can't have a molecule where there is a physical bridge joining these two ions - for example, a  $\text{CH}_2$  group. The resulting species is a zwitterion, the ionised form of the amino acid glycine, and it is in this form that glycine exists when dissolved in water at a neutral pH. or A dipolar ion with spatially-separated positive and negative charges For example, most amino acids are zwitterions, having a positive charge on the  $\alpha$ -amino group and a negative charge on the  $\alpha$ -carboxyl group but no net charge on the overall molecule.

**Zyban:** (Other name for: bupropion hydrochloride)

**Zyban :** A drug used to treat depression and certain other disorders. It is also used to help people stop smoking. Zyban increases the levels of the chemicals dopamine, serotonin, and norepinephrine in the brain. This helps improve mood and can lessen cravings for nicotine. It is a type of antidepressant and a type of nicotine receptor antagonist. Also called bupropion hydrochloride and Wellbutrin.

**ZYBRESTAT:** (Other name for: fosbretabulin disodium)

**Zybrestat:** (Other name for: fosbretabulin tromethamine)

**ZYC300:** A plasmid DNA encoding an inactivated form of the carcinogen activator cytochrome P450 1B1 (CYP1B1) encapsulated in biodegradable poly-DL-lactide-co-glycolide microparticles with potential antineoplastic activity. Vaccination with ZYC300 may stimulate the immune system to elicit a cytotoxic T lymphocyte (CTL) response against the tumor-associated antigen (TAA) CYP1B1, which may result in the lysis of tumor cells expressing CYP1B1. CYP1B1, an extrahepatic monooxygenase of the cytochrome P450 family, is overexpressed in many cancers with only restricted expression in normal tissues.

**Zydelig :** A drug used with rituximab to treat chronic lymphocytic leukemia (CLL) that has come back. It is also used to treat follicular B-cell non-Hodgkin lymphoma (NHL) and small lymphocytic lymphoma (SLL) that have come back after treatment with other anticancer therapy. It is also being studied in the treatment of other types of cancer. Zydelig blocks certain proteins, which may help keep cancer cells from growing and may kill them. It is a type of kinase inhibitor. Also called idelalisib.

**Zyflo:** (Other name for: zileuton)

**Zygote:** A cell that results from the union of haploid male and female sex cells. Zygotes are diploid.

**Zykadia :** A drug used to treat non-small cell lung cancer that has spread to other parts of the body and has a mutated (changed) form of a gene called anaplastic lymphoma kinase (ALK). It is used in patients whose cancer has gotten worse after treatment with or who cannot receive certain anticancer drugs. Zykadia blocks the protein made by the mutated ALK gene. Blocking this protein may stop the growth and spread of cancer cells. Zykadia is a type of tyrosine kinase inhibitor. Also called ceritinib.

**Zyloprim:** (Other name for: allopurinol)

**zymase:** Enzymes present in yeast that catalyze fermentation of sugar into alcohol and carbon dioxide.

**zymogen:** An inactive biomolecule that is a precursor to an enzyme. Or An inactive precursor of an enzyme. For example, trypsin exists in the inactive form trypsinogen before it is converted to its active form, trypsin. Or A catalytically inactive precursor of an enzyme. or A protein that may be converted into an enzyme or An inactive precursor of an enzyme; for example, pepsinogen, the precursor of pepsin

**Zyprexa :** A drug used to treat certain mental disorders. It is also being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of antipsychotic and a type of monoamine antagonist. Also called olanzapine and Zyprexa Zydis.

**Zyprexa Zydis :** A drug used to treat certain mental disorders. It is also being studied in the treatment of nausea and vomiting caused by some cancer treatments. It is a type of antipsychotic and a type of monoamine antagonist. Also called olanzapine and Zyprexa.

**Zytiga :** A drug used with prednisone to treat prostate cancer that has spread to other parts of the body and has not gotten better with other hormone therapy. It is also being studied in the treatment of other types of cancer. Zytiga lowers the amount of androgens (male hormones), such as testosterone, made by the body. This may stop the growth of cancer cells that need androgens to grow. Zytiga is a type of antiandrogen. Also called abiraterone acetate.

**Zyvox:** (Other name for: linezolid)

**$\alpha$  helix:** A helical conformation of a polypeptide chain, usually right-handed, with maximal intrachain hydrogen bonding; one of the most common secondary structures in proteins.

**B -microglobulin:** 2 An immunoglobulin fold-containing subunit of human class I MHC protein; this 12- kd polypeptide is noncovalently bound to the 44-kd  $\alpha$  chain.

**$\beta$  conformation:** An extended, zigzag arrangement of a polypeptide chain; a common secondary structure in proteins.

**$\beta$  elimination:** a group of reactions that form double or triple bonds through the loss of atoms or groups from adjacent carbon atoms; included are dehydrations, dehydrogenations, dehydrohalogenations, and double dehydrohalogenations.

**$\beta$  oxidation:** Oxidative degradation of fatty acids into acetyl-CoA by successive oxidations at the  $\beta$ -carbon atom.

**B sheet:** A common structural motif in proteins, in which two or more  $\beta$  strands are associated as stacks of chains, stabilized by interchain hydrogen bonds; a number of  $\beta$  strands running in the same direction form a  $\beta$  pleated sheet, whereas such strands running in opposite directions form an antiparallel pleated sheet.

**B-galactosidase:** An essential enzyme in lactose metabolism that hydrolyzes lactose into galactose and glucose.

**B-galactosidase:** In lactose metabolism, an essential enzyme that hydrolyzes lactose into galactose and glucose.

**B-oxidation:** Oxidation of the C-3 carbon atom that is  $\beta$  to a functional group; in the degradation of a fatty acyl coa molecule, the sequence of oxidation, hydration, and oxidation reactions that converts a methylene group at C-3 into a  $\beta$ -keto group.

$\Delta G^\circ$ : See standard free-energy change.

**$\sigma$  (sigma) antibonding molecular orbital:** a  $\sigma$  molecular orbital in which one or more of the electrons are less stable than when localized in the isolated atomic orbitals from which the molecular orbital was formed.

**$\sigma$  (sigma) bonding molecular orbital:** a  $\sigma$  molecular orbital in which the electrons are more stable than when they are localized in the isolated atomic orbitals from which the molecular orbital was formed.

**$\sigma$  bond:** a bond formed by the linear combination of orbitals in such a way that the maximum electron density is along a line joining the two nuclei of the atoms.