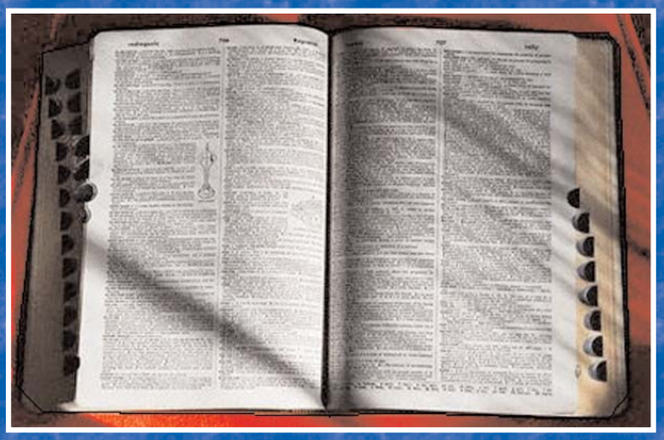
National Cancer Institute

Division of Extramural Activities



The NCI Consumers'

Cancer Dictionary

for Peer Review

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health

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Preface

The *NCI Consumers' Cancer Dictionary for Peer Review* is designed to provide concise definitions of technical terms frequently used in applications for NCI-sponsored investigator-initiated research. The terms include those commonly associated with the molecular biology and immunology of cancer, and clinical oncology. These definitions, in association with the review process, will increase your familiarity and understanding of the biology and clinical aspects of cancer. We hope this will facilitate and make your participation in the NCI Peer Review process more meaningful and beneficial.

A comprehensive resource for definitions of cancer-related terms can be found on the Internet at **http://cancer.gov/dictionary**. This site also provides links to additional online dictionaries of medical and health-related terms of interest. We greatly appreciate and value your participation in the review process.

Division of Extramural Activities, NCI, NIH

A

Academia
Having to do with universities or colleges.

Acquired Immune Deficiency Syndrome (AIDS)
A viral disease that destroys the body's immune system and ability to fight infections, leaving the body susceptible to many other diseases.

Acquired (Somatic) Mutations
Alterations in genes that occur within individual cells that may accumulate throughout an individual's lifetime.

Acute
A sudden onset of symptoms or disease.

Adenocarcinoma (ad́-ĕn-ō-kar-si-nṓ-mă**)**
A malignant tumor made up of glandular tissue.

Adenoma (ad́-ĕn-ō-mă**)**
A benign tumor made up of glandular tissue. For example, an adenoma of the pituitary gland may cause it to produce abnormal amounts of hormones.

Adjuvant Chemotherapy
Use of anticancer drugs in addition to primary treatment to delay or prevent a recurrence.

Adrenal Glands
Two small organs near the kidneys that release hormones.

AFP (Alpha Fetoprotein)
A substance normally present only in fetal tissue. Its reappearance in some tumors enables it to be used as a tumor marker.

Agonist (aǵ-on-ist**)**
A drug capable of combining with the same receptors as natural substances to initiate drug actions.

AIDS
See ***Acquired Immune Deficiency Syndrome***.

Allele (ă-lēĺ**)**
Any one of a series of genes that may occupy the same locus on a chromosome.

Allogeneic Bone Marrow Transplantation (aĺ-ō-jĕ-nḗ-ik**)**
A procedure in which a patient receives bone marrow from a compatible, though not genetically identical, donor.

Alopecia (al-ō-pḗ-shē-ă)
The loss of hair, which may include all body hair as well as scalp hair.

Alternative Therapies
Unproven therapies (not scientifically tested and approved by regulatory agencies such as the Food and Drug Administration) used in place of or with accepted (approved) therapies. Without scientific testing, one cannot be certain whether a particular alternative therapy is beneficial, not beneficial, or harmful.

Amino Acid (a-mḗ-nō**)**
Any of a class of 20 organic molecules that are combined to form proteins in living things. The sequence of amino acids in a protein, and hence protein function, is determined by the genetic code.

Amplification
An increase in the number of copies of a specific DNA fragment; can occur either *in vivo* or *in vitro*.

Analgesic (ań-ăl-jḗ-zik**)**
Any drug that relieves pain. Aspirin and acetaminophen are mild analgesics.

Analogs
Derivatives of a parent molecule that differ by the addition or substitution of specific atoms or molecules.

Androgen (ań-drō-jen**)**
Male sex hormone. Testosterone is an androgen. Other androgens may be used to treat recurring breast cancer by blocking the activity of estrogen, a female hormone that fuels the growth of some breast cancers.

Anemia (ă-nḗ-mē-ă**)**
A condition in which a decreased number of red blood cells may cause symptoms including tiredness, shortness of breath, and weakness.

Aneuploid (ań-yū-ploid**)**
The characteristic of having either fewer or greater than the normal number of chromosomes in a cell. Usually, this indicates an abnormal cell.

Angiogenesis (ań-jē-ō-jeń-ĕ-sis**)**
Blood vessel formation, which usually accompanies the growth of malignant tissue.

Anorexia (an-ō-reḱ-sē-ă**)**
The loss of appetite.

Antagonist (ăn-tăǵ-ō-nĭst**)**
A drug that binds to a cellular receptor without producing any physiological effects and that blocks the binding by any other substance to that receptor.

Antibody (ań-tē-bod-ē**)**
A protein produced by the body's immune system in response to an antigen that can combat infection or harmful foreign substances.

Antiemetic Agent (ań-tē-ĕ-meť-ik**)**
A drug that prevents or controls nausea and vomiting.

Antifungal Agent (ań-tē-funǵ-ăl**)**
A drug used to treat fungal infections.

Antigen (ań-ti-jen**)**
A substance, perceived by the body's immune system as foreign, that stimulates antibody production. Examples are proteins, viruses, bacteria, and pollen.

Antimetabolite (ań-tē-me-tab́-ō-līt**)**
Anticancer drug that closely resembles natural substances needed by cells for normal growth. Tumor cells use the drug instead and "starve" for lack of the proper substance.

Antineoplastic Agent (ań-tē-nē-ō-plaś-tik**)**
A drug that prevents, kills, or blocks the growth and spread of cancer cells.

Antisense
The strand of a double-stranded DNA that is complementary to the sense strand.

Apoptosis (ap-ō-ptṓ-sis**)**
Programmed cell death; a specific "suicide" process in animal cells that includes fragmentation of nuclear DNA. Inducing apoptosis is a strategy to kill cancer cells.

Application
A formal request for grant support of a specific project or activity.

Arm
One group of participants in a comparative clinical trial, all of whom receive the same treatment. The other arm(s) receive(s) a different treatment regimen.

Arrhythmia (ă-rith́-mē-ă**)**
An irregular heartbeat.

Aspiration (as-pi-rā́-shŭn**)**
The process of removing fluid or tissue, or both, from a specific area.

Assays
The determination of the amount, purity, potency, or activity of a substance.

Atypical Hyperplasia (ā-tiṕ-i-kal hī-per-plā́-zē-ă**)**
An abnormal increase in the number of cells in a tissue; is often precancerous.

Autoantibody (aẃ-tō-ań-ti-bod-ē)
Antibody that reacts with a naturally occurring antigenic molecule in the body; can cause autoimmune disease.

Autoimmunity (aẃ-tō-i-myū́-ni-tē**)**
A condition in which the body's immune system mistakenly fights and rejects the body's own tissues.

Autologous Bone Marrow Transplant (aw-tōĺ-ō-gus**)**
A complex procedure used to treat advanced or recurring breast cancer or other cancers. A portion of the bone marrow is removed from the cancer patient and cleansed, treated, and stored. The patient is treated with either high doses of chemotherapy or radiation therapy, which destroy the cancer cells and the remaining bone marrow. To replenish the patient's bone marrow, the previously removed and stored marrow is infused (transplanted) into the patient.

Autosomes (aẃ-tō-sōms)

The 44 chromosomes not involved in sex determination—that is, all chromosomes other than the X and Y chromosomes.

Award

A project or activity to which funds have been obligated.

Axilla (ak-siĺ-ă)

The armpit.

Axillary Nodes

Lymph nodes, also called lymph glands, found in the armpit (axilla).

B

B Lymphocyte (B Cell) (liḿ-fō-sīt**)**
Type of lymphocyte that makes antibodies.

Bacteriophage (bak-tēŕ-ē-ō-fāj**)**
A virus that lyses (destroys) bacteria.

Barium Enema or Swallow
The use of a milky contrast solution (barium sulfate) given by an enema or orally to allow X-ray examination of the lower intestinal tract or orally to allow X-ray examination of the upper intestinal tract.

Base Pairs
The two complementary (one on each DNA strand), nitrogen-rich molecules held together to form double-stranded DNA.

Benign Growth/Tumor (bē-nīń**)**
A swelling or growth that is not cancerous and does not spread from one part of the body to another.

Biological Marker
A characteristic (such as the presence of a specific protein) by which a disease can be recognized.

Biological Response Modifiers (BRMs)
Substances, either natural or synthesized, that boost, direct, or restore normal immune defenses. BRMs include interferons, interleukins, thymus, hormones, and monoclonal antibodies.

Biological Therapy/Immunotherapy
An anticancer treatment, which uses biological response modifiers, components of the body's own immune system, to fight cancer.

Biomedical Research and Development Price Index (BRDPI)
The BRDPI (pronounced "Bird Pie") is developed annually for the NIH to measure changes in the prices of items and services for its sponsored research and development activities.

Biopsy (bī́-op-sē**)**
The surgical removal of tissue for microscopic examination to aid in diagnosis.

Blast Cells
An immature stage in cellular development before the appearance of the definitive characteristics of the cell.

Blinded Study
A research study in which the subject(s) and/or observers are not told to which experimental group subjects are assigned. When both subjects and observers are not informed, the study is considered double-blinded/masked. When study

analysts or statisticians are unaware of group assignments, the study is considered triple-blinded/masked. Also known as a masked study.

Blood Cells

Minute structures produced in the bone marrow; they consist of red blood cells, white blood cells, and platelets.

Blood Typing and Cross-Matching

Blood cells contain antigens that are not the same in all people. Before a transfusion can be given, blood samples from the donor and recipient are typed or classified (type A, B, AB, or O). Once the two blood samples have been typed, they are cross-matched to be absolutely sure that they are compatible. This is done by placing red cells of the donor in a sample of the recipient's serum, and placing red cells of the recipient in a sample of the donor's serum. If the blood does not agglutinate, or "clump," the two bloods are compatible. Techniques for typing white blood cells and platelets are similar, but they are more complex (see HL-A).

Bone Marrow

The spongy material found inside the bones. Most blood cells are made in the bone marrow.

Bone Marrow Biopsy and Aspiration

The procedure by which a needle is inserted into a bone to withdraw a sample of bone marrow.

Bone Marrow Transplant

The infusion of bone marrow into a patient who has been treated with high-dose chemotherapy or radiation therapy. Patients may use their own marrow, which in some cases has been previously removed and frozen for storage.

Allogeneic **(**al-ō-jen-ḗ-ik**)** or ***Allogenic*** **(**al-ō-jeń-ik**)**

The infusion of bone marrow from one individual (donor) to a nonidentical recipient.

Autologous **(**aw-toĺ-ŏ-gŭs**)**

The infusion of a patient's own bone marrow previously removed and stored.

Syngeneic **(**siń-je-nē-ik**)**

The infusion of bone marrow from one identical twin into another.

Bone Scan

A picture of the bones using a radioactive dye that shows any injury, disease, or healing. This is a valuable test to determine if cancer has spread to the bone, if anticancer therapy has been successful, or if affected bony areas are healing.

BRCA1

A gene located on chromosome 17 that normally helps to restrain cell growth. Inheriting an altered version of BRCA1 may predispose an individual to breast, ovary, or prostate cancer.

Bronchoscopy (bron-koś-kō-pē**)**

The insertion of a flexible, lighted tube through the mouth into the lungs to examine the lungs and airways.

C

c-myc
A cellular oncogene that often is associated with cancers.

Cancer (kań-ser**)**
A group of diseases in which malignant cells grow out of control and spread to other parts of the body.

Cancer *in situ*
The stage where the cancer is still confined to the tissue in which it started.

Candidiasis (kan-di-dĭ-ă-sis**)**
A common fungal infection, often seen in AIDS.

Carcinogen (kar-siń-ō-jen**)**
A substance that causes cancer. For example, tar in cigarettes is a carcinogen that causes lung cancer.

Carcinoma (kar-si-nŏ-mă**)**
Cancer of epithelial cells of either endodermal or ectodermal origin. The most common form of human cancer.

Carcinoma *in situ*
A small, localized epithelial tumor that has not invaded surrounding normal tissue.

Cardiomegaly (kaŕ-dē-ō-meǵ-ă-lē**)**
An enlargement of the heart.

Case-Control Study or Retrospective Study
A study comparing a group of people with a disease (cases) and a group of people without the disease (controls).

CAT Scan
Computerized Axial Tomography. Use of computers and X-rays to create a three-dimensional image of internal body parts.

Catalysis (kă-taĺ-ă-sis**)**
Increase in the rate of chemical reaction caused by a substance that is itself unchanged.

Catchment Area
The geographical area served by a medical facility and from which the majority of its patients are drawn.

CBC
Complete blood count. A series of tests to examine the cellular components of the blood. These tests are useful in diagnosing certain health problems and in following the effects of treatment.

CEA

Carcinoembryonic antigen. A tumor marker present in the blood of patients with certain types of cancer.

CEA Assay

A laboratory test to measure the level of carcinoembryonic antigen (CEA), a substance that is sometimes found in an increased amount in the blood of patients with certain cancers.

Cell (sĕl**)**

The smallest unit of living structure capable of independent existence, composed of a membrane-enclosed mass of cytoplasm and containing a nucleus.

Cell-Adhesion Molecule (CAM)

Molecule on the surface of an animal cell that mediates cell-to-cell binding.

Cell Cycle

Ordered sequence of events in which a cell duplicates its chromosomes and divides into two. Cell cycles can be commonly divided into four phases: G(1) before DNA synthesis occurs; S when DNA replication occurs; G(2) after DNA synthesis; and M, when cell division occurs, yielding two daughter cells.

Cell Division

Separation of a cell into two daughter cells. It involves division of the nucleus (mitosis) and of the cytoplasm (cytokinesis); mitosis often is used as a synonym, referring to both nuclear and cytoplasmic division.

Cell-Mediated Cytotoxicity (sī-tō-tok-sis-i-tē**)**

Killing (lysis) of a target cell by specialized white blood cells called lymphocytes.

Cell-Mediated Immunity

Immune responses mediated by direct interaction with specialized white blood cells called T lymphocytes, in contrast to humoral immunity, which is mediated by antibodies secreted by other specialized white blood cells called B lymphocytes.

Cellulitis (sel-yū-lī́-tis**)**

The inflammation of an area of the skin (epithelial layer).

Center for Scientific Review (CSR)

The NIH component that provides central receipt of all applications for research and training support and makes initial referrals to Institutes and Centers. The CSR also provides scientific review of most NIH research grant applications.

Central Venous Catheter (vḗ-nŭs kath́-ĕ-ter**)**

A special intravenous tubing that is surgically inserted into a large vein near the heart and exits from the chest or abdomen. The catheter allows medications, fluids, or blood products to be given and blood samples to be taken.

Centrifugation

The process of rotating a mixture or substance at high speeds to separate the lighter and heavier components of the substance.

Cervical Nodes (seŕ-vĭ-kal nōd**)**
Lymph nodes in the neck.

Checkpoint
Any of several points in the cell cycle at which progression of a cell to the next stage can be halted until conditions are suitable. These regulatory mechanisms are important in preventing formation of cancerous growths.

Chemoprevention
Administration of a chemically defined substance (e.g., a drug or vitamin) to inhibit tumor formation.

Chemotherapy (kēḿ-ō-thaŕ-ă-pē**)**
The treatment of cancer with drugs.
Adjuvant chemotherapy
Chemotherapy given to kill any remaining cancer cells, usually after all detectable tumor is removed by surgery or radiotherapy.
Combination chemotherapy
The use of more than one drug during cancer treatment.

Chimera (kī-mēŕ-ă**)**
An organism composed of two genetically distinct types of cells.

Chromosome (krṓ-mō-sōm**)**
A thread-like structure consisting of genetic material, known as DNA, with associated proteins. Located in the nucleus of a cell.

Chromosome Mapping
Any method used for determining the location of and relative distances between genes on a chromosome.

Chromosome Translocation (trans-lō-kā́-shŭn**)**
Exchange of segments between nonhomologous chromosomes.

Chronic
Persisting over a long period of time.

Circulatory System
The system of vessels (e.g., arteries, veins, and capillaries) through which blood moves in the body.

Clinical
In general, pertaining to observation and treatment of patients. Clinical research is a term applied to the study and treatment of patients.

Clinical Trials
A systematic evaluation of a possible new cancer treatment conducted with cancer patients after the treatment has shown some benefits in animal testing or laboratory testing.

Clone
A group of identical genes, cells, or organisms derived from a single ancestor.

Cloning
The process of making genetically identical copies.

CNS

Central nervous system. The brain and spinal cord.

Codon (kṓ-don**)**

Sequence of three nucleotides in a DNA or messenger RNA molecule that represents the instruction for incorporation of a specific amino acid into a growing protein.

Cohort

A term generally used to mean a group of similar subjects born at the same time, or having some other similar feature, and followed in a study over time.

Cohort Study or Prospective Study

A study in which a group of individuals is followed over an extended period of time to evaluate the incidence of disease or rate of death from disease.

Colony Stimulating Factors (CSFs)

Hormone-like substances that regulate the production and function of blood cells, to promote the growth of infection-fighting white blood cells. Treatment with CSF can help blood-forming tissue recover from chemotherapy and radiation therapy.

Colonoscopy (kō-lon-oś-kō-pē**)**

A procedure to look at the colon or large bowel through a lighted, flexible tube.

Colostomy (kō-loś-tō-mē**)**

A surgical procedure by which an opening is created between the colon and the outside of the abdomen to allow stool to be emptied into a collection bag.

Colposcopy (kol-poś-kō-pē**)**

Examination of the vagina and cervix with an instrument called a colposcope.

Combination Chemotherapy

Cancer treatment using more than one drug to destroy or stop the growth of tumor cells.

Combined Modality Therapy

Cancer treatment involving more than one type of therapeutic approach or modality. An example is the use of radiation therapy, hormonal therapy, and chemotherapy in the same breast cancer patient.

Competing Continuation

Sometimes called a "competing renewal," a competing continuation is an application for continued support of a project. It requires competitive peer review and Institute/Center action to continue to receive funding beyond the current grant period.

Complementary DNA (cDNA)

DNA synthesized by a viral enzyme, termed reverse transcriptase, that is complementary to RNA.

Complementary Therapies

Therapies that have not been scientifically tested and approved by regulatory agencies (such as the Food and Drug Administration) that may be used in addition to accepted (approved) therapies.

Congenital (kon-jĕń-ĭ-tăl**)**
Existing at, and usually before, birth; referring to conditions that are present at birth, regardless of causation.

Congestive Heart Failure
A buildup of fluid in the lungs or extremities (especially the legs), or both. This occurs if the heart cannot pump the blood adequately.

Consensus Panel
A panel of experts responsible for developing an agreed-upon course of action, such as a recommended treatment.

Contract (Research & Development)
An award instrument establishing a binding legal procurement relationship between the NCI and a recipient, obligating the latter to furnish a product or service defined in detail by the NCI and binding the NCI to provide payment for same.

Contralateral (kon-tră-laŕ-er-ăl**)**
Located on the opposite side of the body.

Cooperative Agreement
An award instrument reflecting an assistance relationship between the NCI and a recipient in which substantial NCI programmatic involvement is anticipated during performance of the activity.

CT Scan
Computerized tomography. Diagnostic X-ray procedure in which a computer is used to generate a three-dimensional image. (See also ***CAT Scan***).

Culture
A laboratory procedure in which microorganisms contained in samples of blood, secretions, or other body fluids are cultivated in special nutrients; used to determine the presence and type of infectious agents.

Cyst (sist**)**
An accumulation of fluid or semisolid material within a sac.

Cystitis (sis-tĺ-tis**)**
An inflammation of the bladder.

Cytokine (sĺ-tō-kīn**)**
Numerous secreted, small proteins produced by white blood cells (e.g., interferons, interleukins) that bind to cell-surface receptors on certain cells to trigger their differentiation or proliferation. Some cytokines, also called lymphokines, function to regulate the intensity and duration of the immune response.

Cytoplasm (sĺ-tō-plazm**)**
Contents of a cell that are contained within its plasma membrane but are outside the nucleus.

Cytotoxic T Cell (sī-tō-toḱ-sik**)**

A type of T lymphocyte responsible for killing virus-infected or otherwise altered cells.

D

Data Safety and Monitoring Board (DSMB)
An independent committee, composed of community representatives and clinical research experts, that reviews data while clinical trials are in progress to ensure that participants are not exposed to undue risk. A DSMB may recommend that a trial be stopped if there are safety concerns, or if the trial objectives have been achieved.

Deoxyribonucleic Acid (DNA) (dē-ok-sē-rī́-bō-nu-klḗ-ik**)**
The basic material of life. DNA is a long, chain-like chemical found in the nucleus of all cells. The nucleotide segments of the chain define the genetic code that guides the development of every cell.

Deoxyribonucleic Sequencing
Determining the exact order of the base pairs in a segment of DNA.

Differentiation
Process, usually involving changes in gene expression, by which a precursor cell becomes a distinct specialized cell type.

Diploid (diṕ-loyd**)**
The characteristic of having two sets of chromosomes in a cell. This is a normal condition of most human cells.

Direct Costs
The budgetary component of an award without institution overhead.

Disclosure Laws
Laws requiring physicians to present all treatment options to patients before initiating a treatment.

DNA
See ***Deoxyribonucleic Acid***.

DNA Polymerase
Enzyme involved in the synthesis of DNA, using one strand of DNA as a template for the production of a new, second strand. Retroviruses possess a unique DNA polymerase, reverse transcriptase, that uses an RNA template.

DNA Repair
Cells contain enzymes to repair damage to their DNA by agents such as chemicals and radiation. If these enzymes or pathways are defective, mutation and cancer may result.

DNA Sequencing
Determination of the order of nucleotides in a DNA molecule.

Dose-Intensive Chemotherapy

A chemotherapy regimen in which the drugs are administered at their standard doses, but with shorter time intervals than usual.

Double-Blind Study

A clinical trial design in which neither the participating individuals nor the study staff know which patients are receiving the experimental drug and which are receiving a placebo or another therapy. Double-blind trials are thought to produce objective results, because the doctors' and patients' expectations about the experimental drug do not affect the outcome.

Drug Resistance

The result of cells' ability to resist the effects of a specific drug.

Dysphagia (dis-fā́-jē-ă**)**

Difficulty in swallowing.

Dyspnea (disp-nḗ-ă**)**

Difficult or painful breathing; shortness of breath.

Dysuria (dis-yū́-rē-ă**)**

Difficult or painful urination.

E

E-Cadherin (Ē-căd-hĕŕ-in**)**

One of a class of adherion proteins that function by promoting cell to cell interactions in normal growth. Loss of the function can result in increased cell proliferation, metastasis, and tumorigenesis.

Ectoderm (eḱ-tō-derm**)**

The outermost of the three primary embryonic tissue layers. It gives rise to the skin and nervous system and parts of other organs.

Edema (e-dĕ́-mă**)**

The accumulation of fluid in part of the body.

Effusion (e-fŭ́-zhŭn**)**

A collection of fluid in a body cavity, usually between two adjoining tissues. For example, a pleural effusion is the collection of fluid between two layers of the pleura (the lung's covering).

Electrocardiogram (EKG or ECG) (ē-lek-trō-kaŕ-dē-ō-gram**)**

A test that records the electrical activity of the heart.

Endoderm (eń-dō-derm**)**

The innermost of the three primary embryonic tissue layers. It gives rise to much of the digestive tract lining as well as to the lining of the bladder and vagina and parts of the respiratory system, thyroid, and several other organs.

Endoscopy (en-doś-kŏ-pē**)**

A procedure looking at the inside of body cavities, such as the esophagus (food pipe) or stomach.

Enzyme (eń-zīm**)**

A protein that acts as a catalyst, speeding the rate at which a biochemical reaction proceeds but not altering the direction or nature of the reaction.

Enzyme-Linked Immunosorbent Assay (ELISA)

A laboratory method used to detect the presence of antibodies and antigens.

Epidemiology

Study of the determinants, distribution, and outcomes of health conditions, including diseases, within a population.

Epidemiology Research or Population Research

The study of how disease is distributed in groups of people and of the factors that influence this distribution.

Epidermal Growth Factor (EGF)

A protein found in blood that stimulates cell growth.

Epidermal Growth Factor Receptor (EGFr)
A protein located on the surface of some breast and other cancer cells to which epidermal growth factor attaches. The receptor enables epidermal growth factor to stimulate cell growth.

Erythema (er-i-thĕ́-mă**)**
Redness of the skin.

Erythrocyte (Red Blood Cell) (ĕ-rith́-rō-sīt**)**
Small, hemoglobin-containing blood cell of vertebrates that transports oxygen and carbon dioxide to and from tissues.

Esophagitis (ē-sof-ă-jĭ́-tis**)**
Inflammation of the esophagus (food pipe).

Estrogen
A female hormone produced primarily by the ovaries.

Estrogen Receptor Assay (ER Assay)
A test that determines if a particular breast cancer is stimulated by the hormone estrogen.

Etiology (ē-te-oĺ-o-gē**)**
Cause of disease or the study of causes of disease.

Eukaryotic (yŭ-kar-ē-ot́-ik**)**
Pertaining to the type of cell characteristic of complex organisms; for example, having a well-defined, membrane-bound nucleus containing paired chromosomes and other specialized structures associated with cell division.

Excision (ek-sizh́-ŭn**)**
Surgical or genetic removal of an anatomical structure or genetic element.

Exon
The protein-coding sequence of a gene.

Extramural (Award, Grant) (eks-tră-myŭ-răl**)**
Funds provided by the NIH to organizations outside the NIH, such as universities, teaching hospitals, and independent research institutions.

Extramural Research
Research conducted by nongovernment individuals.

Extravasation (eks-trav́-ă-sā́-shŭn**)**
The leaking of intravenous fluids or medications into tissue surrounding the infusion site. Extravasation may cause tissue damage.

F

Facilities and Administrative Costs

Formerly known as "indirect costs," facilities and administrative costs are the budgetary component of an award provided to help defray costs of institutional overhead and grant administration. The amount of facilities and administrative costs awarded is usually derived from the "facilities and administrative cost rate," a prenegotiated percentage of the direct costs of an award. Not all research grant mechanisms are eligible for facilities and administrative cost reimbursement. (See also ***Direct Costs*** and ***Total Costs***.)

Familial Adenomatous Polyposis (fa-mĺ-ē-ăl ad-ĕ-nŏ-mă-tŭs poĺ-i-pŏ-sis**)**

A hereditary form of colon cancer resulting from inherited mutations of the APC tumor suppressor gene.

Fine-Needle Aspiration

A procedure in which a thin hollow needle is inserted, under local anesthesia, to obtain a sample for the evaluation of suspicious tissue.

Fistula (fiś-tyū-lă**)**

An abnormal opening between two areas of the body.

Flow Cytometry (sī-toḿ-ĕ-trē**)**

Determination of levels of a specific substance or component within individual cells with the aid of a specialized laboratory instrument called a flow cytometer.

Food and Drug Administration (FDA)

The Department of Health and Human Services agency responsible for ensuring the safety and effectiveness of drugs, biologics, vaccines, and medical devices used (among others) in the diagnosis, treatment, and prevention of cancer, AIDS, and other diseases. The FDA also works with the blood-banking industry to safeguard the Nation's blood supply.

Frozen Section

A technique in which tissue is removed surgically and then quick-frozen, cut into very thin slices, and examined under a microscope by a pathologist.

G

Gamma Globulin (gaḿ-ă glob́-yū-lin**)**
A class of protein components of the blood containing antibodies effective in defending the body against certain microorganisms.

Gastrointestinal (gaś-trō-in-teś-tin-ăl**)**
Pertaining to the digestive tract, which includes the mouth, throat, esophagus, stomach, small intestine, large intestine, and rectum.

Gene (jēn**)**
The fundamental physical and functional unit of heredity. A gene is an ordered sequence of nucleotides located in a particular position in DNA and on a particular chromosome that encodes a specific functional product (i.e., a protein or RNA molecule).

Gene Expression
Overall process by which the information encoded in a gene is converted into an observable phenotype (most commonly production of a protein).

Gene Mapping
Determining the relative positions of genes on a chromosome and the distance between them.

Gene Regulatory Protein
General name for any protein that binds to a specific DNA sequence to alter the expression of a gene.

Gene Testing
Examining a sample of blood or other body fluid or tissue for biochemical, chromosomal, or genetic markers that indicate the presence or absence of genetic disease.

Gene Therapy
Treating disease by replacing, manipulating, or supplementing nonfunctional or abnormal genes.

General Clinical Research Centers (GCRCs)
NIH program established in 1960 to create and sustain specialized institutional resources in which clinical investigators can observe and study human physiology and disease and develop innovative therapeutic approaches. Centers operate as discrete, multidepartmental, multicategorical resources where scientists from many departments complement their laboratory studies with carefully controlled clinical investigations and analyses.

Genetic Code
Set of rules specifying the correspondence between nucleotide triplets (codons) in DNA or RNA and amino acids in proteins.

Genome (jḗ-nōm**)**
Total genetic information carried on chromosomes in the nucleus of a cell.

Genome Maps
Charts that indicate the ordered arrangement of the genes and other DNA markers within the chromosomes.

Genomics
Comparative analysis of the complete genomic sequences from different organisms.

Genotype
The entire genetic constitution of an individual, or the alleles present at one or more specific loci. The actual genes carried by an individual. (See also ***Allele***.)

Germ Cells
The reproductive cells of the body; specifically, either egg or sperm cells.

Gleason Grading
A system for describing the degree of severity of a prostate cancer based on the appearance of the cancer cells.

Grade
The degree of differentiation of a cancer, which is related to the prognosis.

Grant
A financial assistance mechanism between the NCI and a recipient. Funds are provided to the recipient to carry out approved activities. Performance responsibility rests primarily with the recipient, and there is little or no Federal involvement or participation in the performance of activities.

Granulocyte (graṅ-yū-lō-sīt**)**
A type of white blood cell that kills bacteria.

Growth Factor
Extracellular protein-signaling molecule that stimulates a cell to grow or proliferate. Examples are epidermal growth factor (EGF) and platelet-derived growth factor (PDGF).

Guaiac Test (gwī́-ak**)**
A test that checks for hidden blood in the stool.

H

Hematocrit (Hct) (hē-mắ-tō-krit**)**
The percentage volume of red blood cells in a blood sample. A low hematocrit measurement indicates anemia.

Hematology (hē-mă-toĺ-ō-jē**)**
The science that studies the blood and bone marrow.

Hematuria (hē-mă-tū́-rē-ă**)**
Blood in the urine.

Hemoccult (Guaiac) Test (hé-mo-kŭlt**)**
A test that checks for hidden blood in the stool.

Hemoglobin (hē-mō-glṓ-bin**)**
The iron-protein component in the red blood cells that carries oxygen to the tissues.

Hemorrhage (heḿ-ŏ-rij**)**
A general term for loss of blood, often profuse, brought about by injury to the blood vessels or by a deficiency of certain necessary blood elements such as platelets.

her-2/neu (c-erb B2)
An oncogene that is associated with different types of human cancer. Extra copies of this gene, as well as the protein for which it codes, can be found in some breast cancers.

Herpes Simplex (heŕ-pēz siḿ-plex**)**
The most common virus that causes sores, often seen around the mouth; commonly called cold sores.

Herpes Varicella Zoster Virus (VZV) (heŕ-pēz văŕ-ĭ-sĕĺ-ă zoś-ter)
The varicella virus causes chicken pox in children and may reappear in adults as herpes zoster. Also called shingles, herpes zoster consists of very painful blisters on the skin that follow nerve pathways. Often occurs in immunosuppressed individuals.

Hickman Catheter
A special intravenous tubing that is surgically inserted into a large vein near the heart. (See also ***Central Venous Catheter***.)

Histologic Grade
The estimation of a tumor's likely "aggressiveness" based on microscopic examination of the tumor's tissue structure and cellular appearance.

HIV
Human immunodeficiency virus. The virus that causes AIDS. (See also ***Retrovirus***.)

HL-A

Human leukocyte antigens. These tissue-compatibility antigens appear on white blood cells as well as cells on almost all other tissues and are analogous to red blood cell antigens (A, B, etc.). By typing for HL-A antigens, donors and recipients of white blood cells, platelets, and organs can be "matched" to ensure good performance and survival of transfused and transplanted cells.

Hodgkin´s Disease

A cancer that affects the lymph nodes. (See also ***Lymphoma***.)

Hormone Receptor Status

Determination of the relative abundance of estrogen and other steroid receptors in the cells of a tumor. If, for example, a breast tumor hormone receptor status is positive, the cells contain large numbers of receptors, and there is a good chance that hormonal therapies such as Tamoxifen will be effective. If the hormone receptor status is negative, the cells contain small numbers of receptors, and there is less likelihood that hormonal therapies will be effective. (See also ***Estrogen Receptor Status*** and ***Progesterone Receptor Status***.)

Hormones

Substances secreted by various organs of the body that regulate growth, metabolism, and reproduction. Some are proteins; some are steroids.

Hospice

A concept of supportive care to meet the special needs of patients and their families during the terminal stages of illness. The care may be delivered in the home or at a specialized residential facility by a specially trained team of professionals.

Host

The human or other animal in which a tumor is present.

Human Gene Therapy

Insertion of normal DNA directly into cells to correct a genetic defect.

Human Leukocyte Antigen Test (HLA) (lŭ-kō-sīt**)**

A special blood test used to match a blood or bone marrow donor to a recipient for transfusion or transplant.

Humoral Immunity (hyū-mōr-ăl**)**

Immunity conferred by circulating antibodies produced by B lymphocytes and plasma cells.

Hybridoma (hī-brid-ō-mă**)**

A hybrid cell produced by the fusion of an antibody-producing lymphocyte with a tumor cell. Hybridomas are used in the production of monoclonal antibodies.

Hyperalimentation (hī-per-aĺ-i-men-tā-shŭn**)**

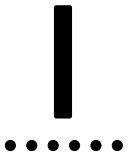
The intravenous administration of a highly nutritious solution.

Hyperthermia Therapy (hī-per-theŕ-mē-ă**)**

An investigational procedure that uses heat to kill cancer cells or make them more sensitive to chemotherapy and/or radiation.

Hysterectomy (his-ter-eḱ-tō-mē**)**

Surgical removal of the uterus or womb. In some instances, removal of the ovaries, or "oophorectomy," is performed at the same time as a hysterectomy.



Ileostomy (ĭl-ē-oś-tō-mē**)**
A surgical opening in the abdomen connected to the small intestine to allow stool to be emptied into a collection bag.

Immune Response
The response made by the host to defend itself against a pathogen. May involve a variety of host defenses mediated by B and T lymphocytes and other white blood cells that result in the lysis of microorganisms or foreign cells (cell-mediated immunity) and elimination of foreign molecules (antigens) by interaction with a specific antibody (humoral immunity). (See also ***Inflammation***.)

Immune System
The body's system of defenses against disease, composed of certain white blood cells and antibodies.

Immunoglobin (Ig)
The term used for antibodies that have specific antigen-binding capacity.

Immunosuppression
Weakening of the immune system that causes a lowered ability to fight infection and disease. Immunosuppression may be deliberate—such as in preparation for bone marrow or other organ transplantation to prevent rejection by the host of the donor tissue—or incidental, such as often results from chemotherapy.

Immunotherapy
The artificial stimulation of the body's immune system through administration of biological agents such as interleukins to treat or fight disease.

Incisional Biopsy
Surgical procedure to remove, for microscopic evaluation, a portion of a suspicious site or tumor.

Infection
The invasion and multiplication of disease-producing organisms in the body.

Infiltration
The leaking of fluid or medicines into tissues, which can cause swelling. Also used in reference to invasive migration of cells into tissues in infection or malignancy.

Inflammation
Localized tissue response to injury or infection involving an influx of phagocytic and other white blood cells that mediate removal of antigens and microorganisms, and healing of the damaged tissue.

Informatics

Development of computational tools and protocols to establish, maintain, use, and analyze large sets of data.

Informed Consent

The permission given by a person before surgery or other medical procedures. The patient, or a parent or guardian, must understand the potential risks and benefits of the procedure and legally agree to accept those risks.

Infusion

Delivering fluids or medications into the bloodstream over a period of time.

Initial Review Group (IRG)

A group of study sections or peer-review committees that are arrayed by scientific discipline. Study sections or peer-review committees of scientists advise on the scientific and technical merit of research applications submitted for support. (See also ***Study Section***.)

Injection

Pushing a medication into the body with the use of a syringe and needle.

Intramuscular (IM) injection **(**iń-tră-mŭś-kyū-lăr**)**

Into the muscle.

Intravenous (IV) injection **(**in-tră-vḗ-nŭs**)**

Into the vein.

Subcutaneous injection **(**sŭb-kyū-tā́-nē-us**)**

Into the fatty tissue under the skin.

***In situ*/Noninvasive Cancer**

Earliest stage of malignant cancer, or nonmetastasizing cancer, confined to the original site.

Institutional Animal Care and Use Committee (IACUC)

A committee set up by an institution to review the institution's program for humane use and care of animals and research protocols involving the care and use of animals.

Institutional Review Board (IRB)

An administrative body established to protect the rights and welfare of human research subjects recruited to participate in research conducted under the auspices of the institution with which it is affiliated. The IRB has the authority to approve, require modifications in, or disapprove all research activities involving human subjects that fall within its jurisdiction, as specified by Federal regulations and institutional policy.

Integrins (in-té-grinz**)**

Family of proteins that are located on the cell surface and that are involved in binding to components outside the cell.

Interferon (IFN) (in-ter-fḗr-on**)**

A group of small proteins released from macrophages following stimulation, or from many cells after virus infection, that can induce changes in gene expression,

leading to an antiviral state or other cellular changes important in the immune response.

Interleukin (in-ter-lŭ-kin**)**

A naturally occurring molecule produced by the body that stimulates the growth of white blood cells and helps to signal and stimulate other cells.

Intramural Program (in-tră-myŭ-răl**)**

Research conducted by employees of the NIH, generally on its campus in Bethesda, Maryland.

Intron

A sequence of DNA that is removed before a protein is made.

Invasive

Cancer that has grown beyond its original site and into surrounding tissues.

Investigational New Drug (IND)

A medication being studied in clinical trials to determine if it is safe and effective for treating a particular condition. A drug ceases to be investigational when it has been approved by the ***Food and Drug Administration*** for the specific purpose for which it is being proposed.

In vitro

Within a test tube or other container outside of a living organism.

In vivo

Within a human or animal body.

J

Currently, there are no terms listed under "J."

Mutation

A permanent, hereditary change in the genetic code of DNA that can be caused by exposure to chemicals or ultraviolet light or to mistakes that occur during DNA replication. Mutations can lead to cancer or to birth defects.

Myelogram (mī-eĺ-ō-gram**)**

An X-ray procedure in which a dye is injected into the spinal column to show any pathology of the spinal cord.

Myeloma (mī-ĕ-lō-mă**)**

A malignant tumor of the bone marrow associated with the production of abnormal proteins.

Myelosuppression (mī́-ĕ-lō-su-prĕ́-shŭn**)**

A decrease in the production of red blood cells, platelets, and some white blood cells by the bone marrow.

N

National Research Service Award (NRSA)
Awards to individuals or institutions to provide research training.

Needle Biopsy
Removal of tissue, for pathological examination, using a large- or small-diameter needle. (See also ***Fine Needle Aspiration***.)

Neoplasm (nḗ-ō-plazm**)**
A new growth of tissue or cells; a tumor that is generally malignant.

Neutropenia (nu-tro-pḗ-nē-ă**)**
A decreased number of neutrophils, a type of white blood cell associated with defense against infectious diseases. May often occur as a consequence of chemotherapy.

New (Application, Award, Grant)
Refers to an application that has not received prior funding.

New Drug Application (NDA)
An application submitted by the manufacturer of a drug to the FDA after clinical trials have been completed for a license to market the drug for a specified indication(s).

NIH Clinical Center
The central clinical research facility of the NIH intramural program. The Clinical Center includes a hospital complex, outpatient clinics, and adjacent laboratories.

Noncompeting Continuation
A year of continued support for an existing grant. Applications for this continued support do not undergo peer review but are administratively reviewed and are funded based on a prior award commitment.

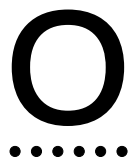
Non-Hodgkin´s Lymphoma
A cancer of the lymphatic system. Non-Hodgkin's lymphoma is related to Hodgkin's disease but is made up of different cell types. (See also ***Lymphoma***.)

Noninvasive (non-in-vā́-siv**)**
Cancer that has not spread into surrounding tissues, such as tissue surrounding the ducts or lobules of the breast.

Northern Blot
Technique for detecting specific mRNAs.

Nuclear Grade (nū́-klē-er grād**)**
An estimation of a cancerous tumor's potential aggressiveness based on the microscopic examination of the nuclei found within individual cancer cells. The nucleus (plural = nuclei) is the part of the cell that contains DNA.

Nucleotide (nū́-klē-ō-tīd**)**
Nucleic acid chains are composed of subunits called nucleotides.



OCN

Oncology Certified Nurse. A registered nurse who has met the requirements and successfully completed a certification examination in oncology.

Oligonucleotide (oĺ-i-gō-nū́-klē-ō-tīd**)**

Short DNA/RNA strand with linear sequence of up to 20 nucleotides bonded together.

Oncogene (oń-kō-jēn**)**

One of a large number of genes that can help make a cell cancerous. Typically, a mutant form of a normal gene (proto-oncogene) involved in controlling the rate of cell growth or division.

Oncology (on-koĺ-o-jē**)**

The study and treatment of cancer. Doctors who specialize in oncology are called oncologists.

Oncology Clinical Nurse Specialist

A registered nurse with a master's degree who specializes in the education and treatment of cancer patients.

Ostomy (oś-to-mē**)**

A suffix that refers to a surgically created passage connecting an internal organ with the skin or with other internal organs.

P

p53 Gene

A normally occurring tumor suppressor gene that is frequently inactivated in a variety of human neoplasms.

Palliative Treatment (paĺ-ē-ă-tiv**)**

Treatment aimed at the relief of pain and symptoms of disease but not intended to cure the disease.

Pap (Papanicolaou) Smear

A test to detect cancer of the cervix.

Papilloma (pap-i-lṓ-mă**)**

A benign tumor derived from epithelial structures such as skin, mucous membranes, or glandular ducts.

Paracentesis (paŕ-ă-sen-tḗ-sis**)**

Removal of fluid from the abdomen under local anesthesia using a needle and syringe.

Pathogen or Pathogenic Microorganism

Microorganisms that can cause disease when they infect a host.

Pathology (pa-thoĺ-ō-jē**)**

The study of disease by examining tissues and body fluids under the microscope. A doctor who specializes in pathology is called a pathologist.

Penetrance

A term indicating the likelihood that a given gene alteration will actually result in disease. A gene mutation is considered to have complete penetrance if it is always associated with an illness; it has incomplete penetrance if it is not.

Peptide (peṕ-tīd**)**

Biochemical formed by the linkage of up to 50 amino acids to form a chain. Longer chains are called proteins.

Percentile Rank

The percentage of reviewed applications with priority scores equal to or better than the particular application under review. Percentile rank is usually based on all the applications reviewed in three consecutive meetings within a given study section. (See also ***Priority Score***, ***Study Section***.)

Petechiae (pe-tḗ-kē-ī**)**

Tiny areas of bleeding under the skin, usually caused by a low platelet count.

Phagocytosis (faǵ-ō-sī-tṓ-sis**)**

Process by which particulate material is engulfed by a cell.

Phase I Trials

Involves the initial introduction of an investigational new drug into humans. Phase I trials are closely monitored and may be conducted in patients or healthy

volunteers. The studies are designed to determine the metabolic and pharmacologic actions of the drug in humans; safety; side effects associated with increasing doses; and, if possible, early evidence of effectiveness.

Phase II Trials

Includes controlled clinical studies of effectiveness of the drug for a particular indication or indications in patients with the disease or condition under study, and determination of common, short-term side effects and risks associated with the drug. Phase II studies are typically well controlled, closely monitored, and usually involve no more than several hundred patients.

Phase III Trials

Includes expanded controlled studies. They are performed after preliminary evidence of drug effectiveness has been obtained. They are intended to gather the additional information about effectiveness and safety that is needed to evaluate the overall benefit-risk relationship of the drug and to provide an adequate basis for physician labeling. These studies usually include anywhere from several hundred to several thousand subjects.

Phase IV Trials

Postmarketing studies, carried out after licensure of the drug. Generally, a Phase IV trial is a randomized, controlled trial that is designed to evaluate the long-term safety and efficacy of a drug for a given indication. Phase IV trials are important in evaluating AIDS drugs because many drugs for HIV infection have been given accelerated approval with small amounts of clinical data about the drugs' effectiveness.

Phenotype (fḗ-nō-tīp**)**

Characteristic(s) manifested by an organism as a result of its particular genetic constitution (i.e., genotype) interacting with its environment.

Phlebitis (fle-bī́-tis**)**

A painful inflammation of the veins.

Photosensitivity (fō-tō-sen-si-tiv́-i-tē**)**

Extreme sensitivity to the sun, leaving the patient prone to sunburns. This can be a side effect of some cancer drugs and radiation.

Placebo (pla-sḗ-bō**)**

An inert substance often used in clinical trials for comparison to actual drugs.

Placebo Controlled Study

A method of investigation of drugs in which an inactive substance (the placebo) is given to one group of patients, while the drug being tested is given to another group. The results obtained in the two groups are then compared to see if the investigational treatment is more effective in treating the condition.

Plasma (plaź-mă**)**

The liquid portion of the blood that contains numerous proteins and minerals and is necessary for normal body functioning.

Plasmid (plaź-mid**)**
A small, independently replicating piece of cytoplasmic DNA that can be transferred from one organism to another. Plasmids can become incorporated into the DNA of the host or remain independent.

Platelet Count
The number of platelets in a blood sample.

Platelets (plāt́-lets**)**
One of the main components of the blood, which forms clots to seal injured areas and prevent hemorrhage.

Ploidy Status (ploý-dē**) (Also known as DNA Index.)**
The number of chromosome sets contained in a cell. A normal human cell contains 46 chromosomes arranged in 23 pairs. Cancerous cells sometimes contain multiple copies of these 23 chromosome pairs.

Polymerase Chain Reaction (PCR) (poĺ-i-mer-āz**)**
In vitro method for producing large amounts of specific DNA or RNA fragments of defined length and sequence from small amounts of short oligonucleotide flanking sequences (primers).

Polyp (poĺ-ip**)**
A growth of tissue protruding into a body cavity, such as a nasal or rectal polyp. Polyps may be benign or malignant.

Population Research
See ***Epidemiology Research***.

Port-Implanted
A catheter connected to a quarter-sized disc that is surgically placed just below the skin in the chest or abdomen. The tube is inserted into a large vein or artery, directly into the bloodstream. Fluids, drugs, or blood products can be infused, and blood can be drawn through a needle stuck into the disc. (Examples: Port-o-cath, Infusaport, Lifeport.)

Predisposition
A condition of special susceptibility to a disease from birth.

Prevention
Primary prevention refers to measures designed to inhibit tumor occurrence (e.g., avoiding cancer-causing substances and practices, or ingesting nutrients associated with a reduced cancer risk); secondary prevention refers to measures designed to inhibit tumor progression to a more aggressive stage, usually by detecting it early and treating it immediately; tertiary prevention refers to measures designed to minimize the impact of established tumors on life expectancy and quality of life (e.g., increasing the specificity of therapy to treat the tumor effectively while decreasing debilitating side effects, and providing physical and psychological rehabilitation).

Primary Cancer
The original site where cancer occurs.

Principal Investigator (PI)
The grant applicant who is responsible for the scientific and technical direction of a project and in whose name the grant application is submitted.

Priority Score
The score assigned to an application by an ***Initial Review Group*** (***Study Section***). The score is a quantitative indicator of scientific and technical merit that ranges from 1.00 (of highest merit) to 5.00 (of lowest merit).

Probe
A specific sequence of single-stranded DNA, typically labeled with a radioactive atom, which is designed to bind to, and thereby single out, a particular segment of DNA.

Progesterone (prō-jeś-ter-ōn**)**
Female hormone produced by the ovaries that aids in menstrual cycle regulation. It is key in egg maturation and preparing the uterus for pregnancy. Some breast cancers are activated by progesterone. (See also ***Progesterone Receptor***.)

Progesterone Receptor
A protein in breast cancer and other cells to which progesterone attaches. Progesterone receptors are not present in all breast cancer cells, but a large number of progesterone receptors indicates that progesterone aids the growth of the cancer. (See also ***Progesterone***.)

Prognosis (prog-nŏ́-sis**)**
The projected outcome of a disease; life expectancy.

Program Announcement (PA)
A formal statement that describes and gives notice to the grantee community of the existence of an NIH-wide or individual Institute/Center extramural research activity and invites applications for grant or cooperative agreement support.

Program Director
The NCI official who is responsible for overseeing and monitoring the scientific or programmatic aspects and progress of grants in his or her portfolio. He or she works closely with grants management staff.

Proposal
A formal request for contract support of a specific project or activity.

Prospective Study
See ***Cohort Study***.

Prostate-Specific Antigen (PSA)
A protein in the blood produced by prostate tissue that serves as a tumor marker.

Prosthesis (pros-thĕ́-sis**)**
Artificial replacement of a missing body part.

Protease (pró-tē-āz**)**
An enzyme that splits proteins into their constituent peptides.

Protein (prő-tēn**)**

A large molecule composed of one or more chains of amino acids in a specific order; the order is determined by the base sequence of nucleotides in the gene coding for the protein. Proteins are required for the structure, function, and regulation of the body's cells, tissues, and organs, and each protein has unique functions. Examples are hormones, enzymes, and antibodies.

Proteolysis (prō-tē-oĺ-i-sis**)**

The splitting of proteins to form smaller polypeptides.

Proteomics

The study of the structure and function of all proteins produced by the genome.

Protocol (prő-tō-kol**)**

The detailed plan for conducting a clinical trial. It states the trial's rationale, purpose, drug or vaccine dosages, length of study, routes of administration, who may participate, and other aspects of trial design.

Proto-Oncogene (prő-tō-oń-kō-jēn**)**

A normal cellular gene that encodes a protein, usually involved in regulation of cell growth or proliferation, that can be mutated into a cancer-promoting oncogene, either by changing the protein-coding segment or by altering the regulation of the protein.

Protoplasm (prő-tō-plazm**)**

The cytoplasm plus the nucleus of a cell.

Provirus (pro-vĺ-rus**)**

The integrated DNA form of a retrovirus genome.

Q

Currently, there are no terms listed under "Q."

R

R01

An activity code assigned by the NIH to identify traditional, investigator-initiated research projects. The award is intended to support a discrete, circumscribed project.

Radiation Therapy

X-ray treatment that damages or kills cancer cells.

Radical Prostatectomy (pros-tă-teḱ-tō-mē**)**

Surgical removal of the prostate and the surrounding tissue.

Radiologist

A doctor who specializes in the use of X-rays to diagnose and treat disease.

Randomized Trial

A study in which participants are randomly (i.e., by chance) assigned to one of two or more treatment arms or regimens of a clinical trial. Occasionally, placebos are utilized. Randomization minimizes the differences among groups by equally distributing people with particular characteristics among all the trial arms.

Rb Gene

A tumor-suppressor gene identified by genetic analysis of retinoblastoma, and also frequently inactivated in sarcomas and lung carcinomas, that encodes a protein involved in regulation of the process of making RNA from a DNA template in the nucleus of a cell. (See also ***Retinoblastoma***.)

Receptor

Any cell-associated protein that binds a specific extracellular signaling molecule that induces a cellular response.

Recombinant DNA (rē-koḿ-bi-nant**)**

Any DNA molecule formed by joining DNA fragments from different sources.

Recurrence

The reappearance of a disease after a period of remission.

Red Blood Cells (Erythrocytes)

Cells in the blood that deliver oxygen to tissues and take carbon dioxide from them. (See also ***Erythrocyte***.)

Red Blood Count (RBC)

The number of red blood cells seen in a blood sample.

Regression

The shrinkage of a cancer.

Relapse

The reappearance of a disease after its apparent cessation.

Remission
Complete or partial disappearance of the signs and symptoms of disease.

Renewal
See ***Competing Continuation***.

Request for Application (RFA)
A formal NCI announcement that invites **grant or cooperative agreement** applications in a well-defined scientific area to support specific program initiatives, indicating the amount of funds set aside for the competition and the estimated number of awards to be made. RFAs are published in the *NIH Guide for Grants and Contracts* (**http://grants.nih.gov/grants/guide/index.html**).

Request for Proposal (RFP)
A formal announcement that invites **contract** proposals to support specific program initiatives.

Research Centers
Research center grants support multidisciplinary, long-term research and development programs at research centers, usually associated with outside institutions. Research centers usually have a clinical orientation.

Research Project Grant (RPG)
Primarily investigator-initiated, scientific research grants. Such grants may be assigned a variety of activity codes, such as R01, P01, etc.

Restriction Enzymes
Enzymes that can cut strands of DNA at specific base sequences.

Retinoblastoma (reť-i-nō-blas-tṓ-mă**)**
An eye tumor in children that is frequently inherited.

Retrospective Study
See ***Case-Control Study***.

Retrovirus (reť-ro-vī́-rŭs**)**
A type of virus containing an RNA genome that replicates in cells by first making a DNA copy of the RNA, a process termed reverse transcription.

Reverse Transcriptase (tran-skriṕ-tās**)**
An enzyme in retroviruses that can construct DNA molecules using RNA as a template.

Ribonuclease (RNAse) (rī́-bō-nú-klē-āz**)**
An enzyme that splits RNA into smaller units.

Risk Factor
Anything that increases a person's chances of developing cancer—for example, smoking and lung cancer.

RNA (Ribonucleic Acid) (rī́-bō-nu-klḗ-ik**)**
Polymer formed from covalently linked ribonucleotide monomers. In cells, DNA is transcribed into complementary RNA (mRNA), which in turn specifies the order of amino acids in proteins. (See also ***DNA***, ***mRNA***.)

S

Sarcoma (sar-kṓ-mă**)**
Cancer of connective tissue arising from cells of mesodermal origin.

SBIR Award
Small Business Innovation Research Award. A grant program for small businesses designed to support projects that may have commercial viability.

SEER Program
The Surveillance, Epidemiology, and End Results Program. A cancer registry mandated under the National Cancer Act of 1971 to operate and maintain a population-based cancer reporting system, periodically reporting estimates of cancer incidence and mortality in the United States.

Sentinel Node
The first lymph node into which a tumor is likely to spread. The sentinel node is identified by injecting a "tracer" (colored dye or radioactive substance) into the area from which a tumor is removed during surgery, and determining which lymph node is the first node to "take up" the tracer. For breast cancers, the sentinel node is in the armpit (axillary) region.

Sequence
The linear order of monomer units in a large molecule, such as nucleotides in DNA and amino acids in proteins.

Sequencing
Determination of the order of nucleotides (base sequences) in a DNA or RNA molecule, or the order of amino acids in a protein.

Shingles
See ***Herpes Varicella Zoster Virus***.

Side Effects
Secondary effects of drugs used for disease treatment.

Sigmoidoscopy (siǵ-moy-doś-kō-pē**)**
The visual examination of the rectum and lower colon using a flexible tubular instrument called a sigmoidoscope.

Signaling Molecule
General term for any extracellular or intracellular molecule involved in mediating the response of a cell to its external environment or other cells. Extracellular signaling molecules include hormones and growth factors.

Signal-Transduction Pathway
A series of coupled intracellular events, triggered by binding of a signaling molecule to a cell receptor, that occur in a sequential fashion to convert an extracellular signal into a cellular response.

Somatic Cells (sō-maẗ-ik**)**
Includes any cells of the body, with the exception of reproductive cells (eggs or sperm).

Southern Blot
Technique for detecting specific DNA sequences.

S-Phase Fraction
An indication of the number of tumor cells that are in the process of replicating their DNA in preparation for cell division.

Spinal Tap
Removal of a small amount of fluid that bathes the brain and spinal cord for microscopic examination for cancer cells or other conditions. (See ***Lumbar Puncture***.)

SPORE Program
Specialized Programs of Research Excellence (SPOREs) to promote interdisciplinary research between basic and clinical scientists.

Sputum (spŭ-tŭm**)**
Secretions produced by the lungs.

Staging
Determination of extent of the cancer in the body.

Stem Cell
Relatively undifferentiated cell that can continue dividing indefinitely, giving rise to daughter cells that can undergo terminal differentiation into particular cell types.

Steroids
A type of hormone that is usually fat soluble and interacts with the cell nucleus. Most sex hormones are steroids.

Stoma (stŏ-mă**)**
An artificial opening between two cavities or between a cavity and the surface of the body.

Stomatitis (stŏ-mă-tī-tis**)**
Temporary inflammation and soreness of the mouth.

Study Section
A panel of experts established according to scientific disciplines or current research areas for the primary purpose of evaluating the scientific and technical merit of grant applications. Also called Scientific Review Groups (SRGs).

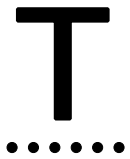
Success Rate
The percentage of reviewed applications that receives funding. It is computed by dividing the number of competing applications funded by the sum of applications reviewed and applications eliminated during triage. Applications that have one or more amendments in the same fiscal year are counted only once in the success rate computation. (See also ***Triage***.)

Supplemental

A request for additional funds, either for the current operating year or for any future year, when funding had previously been committed, usually for an expansion of the project's scope or to meet unforeseen costs.

Systemic Disease (sis-teḿ-ik**)**

A disease that affects the entire body instead of a specific organ.



Tag
A specific oncoprotein expressed in prostatic cancer cells.

Tamoxifen (tă-moḱ-si-fen**)**
An antiestrogen drug that may be given to women with estrogen-receptive tumors to block estrogen from entering the breast tissues.

Taste Alteration
A temporary change in taste perception.

Telomerase (tel-ő-mer-ās**)**
An enzyme that will elongate the telomere of a chromosome but not other parts or genes.

Telomere (teĺ-ō-mēr**)**
The end portion of a chromosome. This part does not contain any genes that code for proteins.

Thoracentesis (Pleural Tap) (thoŕ-ă-sen-tḗ-sis**)**
A procedure to remove fluids from the area between the two layers (pleura) covering the lung.

Thrombocytopenia (throḿ-bō-sī-tō-pḗ-nē-ă**)**
An abnormally low number of platelets (thrombocytes). If the platelet count is too low, bleeding could occur.

T Lymphocyte (T Cell)
A lymphocyte that undergoes a developmental stage in the thymus. T cells have many functions in the immune response, including cytotoxicity (lysis), inflammatory (activate macrophages), and helper (activate B cells).

Total Costs
The sum of the direct costs and the facilities and administrative costs of research.

Toxicity (tok-siś-i-tē**)**
The quality of substances that cause ill effects.

Tracheostomy (trā́-kē-oś-tō-mē**)**
A surgical opening through the trachea in the neck to provide an artificial airway.

Training
Training awards support the research training of scientists for careers in the behavioral and biomedical sciences. Training awards consist of institutional training grants and individual fellowships.

Transcription
Process whereby one strand of a DNA molecule is used as a template for synthesis (transcription) of a complementary RNA (mRNA). RNA polymerase

and various accessory proteins called transcription factors form a complex that initiates transcription.

Transfection

The introduction of DNA into a recipient cell and its subsequent integration into the recipient cell's chromosomal DNA.

Transformation

Permanent, heritable alteration in the properties of a eucaryotic cell. In the case of cultured animal cells, usually refers to the acquisition of cancer-like properties following treatment with a virus or a carcinogen.

Transgene

A cloned gene that is introduced and stably incorporated into a plant or animal and is passed on to successive generations.

Transgenic

Referring to any plant or animal carrying a transgene.

Translational Research

Research focusing on the bridge between basic laboratory research findings and application to settings involving patients and populations.

Triage (trē-ahzh**)**

The process of eliminating from further review those submitted requests judged to be of noncompetitive quality.

Tumor (tū-mŏr**)**

A mass of cells, generally derived from a single cell, that is not controlled by normal regulators of cell growth. Tumors can be either benign or malignant.

Tumor Marker

A chemical substance found in increased amounts in the body fluids of some cancer patients. The presence of a tumor marker in the blood for a specific cancer can be an indication that cancer is present in the body. Tumor markers can be used as part of the diagnostic process but generally cannot provide a definitive diagnosis. Tumor markers are also used to monitor the progress of treatment as well as possible recurrence of cancer after treatment.

Tumor Progression

The development of increasing malignancy during the pathogenesis of a neoplasm.

Tumor Promoter

A compound that leads to neoplasm development by stimulating the proliferation of cells that have already sustained carcinogen-induced mutations.

Tumor Suppressor Gene

A normal cellular gene whose loss of function leads to tumor development. These genes act as brakes on the cell cycle. They check cell-cycle progression and can hold cells in a static condition, thereby preventing cells from becoming cancerous. The p53 gene and Rb gene are examples.

U

Ultrasound Examination (uĺ-tră-sownd**)**
A diagnostic imaging technique using high-frequency sound waves.

Ureterostomy (yū-rḗ-ter-oś-tō-mē**)**
A surgical procedure consisting of cutting the ureters from the bladder and connecting them to an opening (see ***Stoma***) on the abdomen, allowing urine to flow into a collection bag.

V

Venipuncture (veń-i-punk-chur**)**
Puncturing a vein to obtain blood samples, start an intravenous drip, or give medication.

Vesicant (veś-i-kănt**)**
A medication or agent that may cause blistering.

Virus (vī́-rŭs**)**
A tiny infectious agent that is smaller than a bacterium, consisting of nucleic acid enclosed in a protein coat and capable of replicating within a host cell and spreading from cell to cell. The common cold is caused by a virus, and the herpes simplex virus causes cold sores.

Western Blot
Technique for detecting specific proteins.

White Blood Cells (WBCs)
Leukocytes. General term for a variety of cells responsible for fighting invading germs, infection, and allergy-causing agents. Specific white blood cells include granulocytes and lymphocytes.

Wild Type
The typical form of an organism as ordinarily encountered in nature, in contrast to natural or laboratory mutations.

X-Ray
High-energy electromagnetic radiation used to diagnose and treat disease. Diagnostic test using high energy to visualize internal body organs. (See also ***Radiation Therapy***.)

Xenograft (zěń-o-graft**)**
A graft from one species to another.

Currently, there are no terms listed under "Y."

Currently, there are no terms listed under "Z."

List of Abbreviations

AB.....Antibody
ABMT.....Autologous Bone Marrow Transplant
ACTH.....Adrenocorticotropic Hormone
AFP.....Alpha Fetoprotein
AIDS.....Acquired Immune Deficiency Syndrome
APC.....Adenomatous Polyposis Coli
ARC.....AIDS-Related Complex
ASSIST.....American Stop Smoking Intervention Study
BAC.....Bacterial Artificial Chromosome
BMR.....Basal Metabolic Rate
BRDPI.....Biomedical Research and Development Price Index
BRM.....Biological Response Modifier
BSA.....Board of Scientific Advisors
BSC.....Board of Scientific Counselors
CALGB.....Cancer and Leukemia Group B
CAM.....Cell-Adhesion Molecule
CAT.....Computerized Axial Tomography
CBC.....Complete Blood Count
CCOP.....Community Clinical Oncology Program
CCSG.....Cancer Center Support Grants
cDNA.....Complementary DNA
CDC.....Centers for Disease Control and Prevention
CEA.....Carcinoembryonic Antigen
CFR.....Code of Federal Regulations
CGAP.....Cancer Genome Anatomy Project
CMV.....Cytomegalovirus
CNS.....Central Nervous System
CSF.....Colony Stimulating Factor
CSR.....Center for Scientific Review
CT.....Computerized Tomography
CTEP.....Cancer Therapy Evaluation Program
DCC.....Deleted in Colon Carcinoma
DCIS.....Ductal Carcinoma *in situ*
DCLG.....Director's Consumer Liaison Group
DES.....Diethylstilbestrol
DNA.....Deoxyribonucleic Acid
DoD.....Department of Defense
DSMB.....Data Safety and Monitoring Board
ECG.....Electrocardiogram
ECOG.....Eastern Cooperative Oncology Group
EGF.....Epidermal Growth Factor
EGFr.....Epidermal Growth Factor Receptor
EKG.....Electrocardiogram
ELISA.....Enzyme-Linked Immunosorbent Assay
EM.....Electron Microscopy
EORTC....European Organization for Research and Treatment of Cancer
EP.....Erythropoietin
FAR.....Federal Acquisition Regulations
FDA.....Food and Drug Administration
FGF.....Fibroblast Growth Factor
FOA.....Funding Opportunity Announcement
GAP.....Guanosine Triphosphatase-Activating Protein
GCRC.....General Clinical Research Centers
GLP.....Good Laboratory Practice
GMP.....Good Manufacturing Practice
GOG.....Gynecologic Oncology Group
GVHD.....Graft Versus Host Disease
HHV-8.....Human Herpes Virus 8
HIV.....Human Immunodeficiency Virus
HL-A.....Human Leukocyte Antigens
HNPCC.....Hereditary Non-Polyposis Colorectal Cancer
HPLC.....High-Performance Liquid Chromatography
HPV.....Human Papilloma Virus
HRT.....Hormone Replacement Therapy
IACUC.....Institutional Animal Care and Use Committee
IFN.....Interferon
IGF..... Insulin-Like Growth Factor
IL.....Interleukin
IM.....Intramuscular
IND.....Investigational New Drug
IRB.....Institutional Review Board
IRG.....Initial Review Group
IV.....Intravenous
KS.....Kaposi's Sarcoma
LCIS.....Lobular Carcinoma *in situ*
LP.....Lumbar Puncture
LTF.....Long-Term Follow-Up
MAB.....Monoclonal Antibody
MDR.....Multidrug Resistance
MERIT.....Method to Extend Research in Time Award

MOAB…….Monoclonal Antibody
MRI……..Magnetic Resonance Imaging
mRNA…….Messenger RNA
NCAB……..National Cancer Advisory Board
NCDDG…..National Cooperative Drug Discovery Groups
NDA……New Drug Application
NGF…….Nerve Growth Factor
NHGRI……National Human Genome Research Institute
NIAID……..National Institute of Allergy and Infectious Diseases
NIGMS…...National Institute of General Medical Sciences
NIH……..National Institutes of Health
NMR……Nuclear Magnetic Resonance
NRSA…….National Research Service Award
NSABP…...National Surgical Adjuvant Breast and Bowel Program (Project)
NSCLC…...Non-Small Cell Lung Cancer
NSF…….National Science Foundation
OCN……Oncology Certified Nurse
OHRP…….Office of Human Research Protections
OI…….Opportunistic Infection
P01……..Program Project Grant
P30……..Cancer Center Support Grant
P50……..Specialized Center Grant
PA……Program Announcement
PCR…….Polymerase Chain Reaction
PD……Program Director
PDGF……..Platelet Derived Growth Factor
PDQ…….Physician's Data Query
PET……..Positron Emission Tomography
PI……..Principal Investigator
PRMS…….Protocol Review and Monitoring System
PSA…….Prostate-Specific Antigen
R01……..Research Project Grant
RAC…….Recombinant DNA Advisory Committee
RAPID……Rapid Access to Prevention Intervention Development (Program)
RBC……Red Blood Count/Cell
RFA…….Request for Application
RFLP……..Restriction Fragment Length Polymorphism
RFP…….Request for Proposal
RNA……Ribonucleic Acid
RPG……Research Project Grant
SBIR……...Small Business Innovation Research Program
SCLC……..Small-Cell Lung Cancer
SEER……..Surveillance, Epidemiology, and End Results Program
SEP…….Special Emphasis Panel
SERM…….Selective Estrogen Response Modifier
SNP…….Single Nucleotide Polymorphism
SPORE…...Specialized Programs of Research Excellence (SPOREs)
SRA……Scientific Review Administrator
STTR……..Small Business Technology Transfer Program
SWOG……Southwestern Oncology Group
TAM……Tamoxifen
TUNEL…...Transferase-mediated dUTP Nick End Labeling (an assay for apoptosis, or programmed cell death)
U01……..Cooperative Agreement
U10……..Clinical Research Cooperative Agreement
U19……..Research Program Cooperative Agreement
VZV…….Varicella Zoster Virus
WBC……White Blood Cell
WHO……World Health Organization
YAC…….Yeast Artificial Chromosome

References

Books and Articles

E. Benjamini and S. Leskowitz, *Immunology, A Short Course*, 2nd Edition, Wiley-Liss, New York, 1991.

Primer on Molecular Genetics (Program Report, 1991-1992), DOE Human Genome Program, Washington, DC, June 1992.

B. Alberts, D. Bray, J. Lewis, M. Raff, K. Roberts, J. Watson, *Molecular Biology of the Cell*, 3rd Edition, Garland Publishing, New York, 1994.

G.M. Cooper, *Oncogenes*, 2nd Edition, Jones and Bartlet, Sudbury, MA, 1995.

H. Lodish, D. Baltimore, A. Berk, S. Zipursky, P. Matsudaira, J. Darnell, *Molecular Cell Biology*, 3rd Edition, W. H. Freeman and Company (Scientific American Books), New York, 1995.

"Glossary of Cancer Terms," *Coping Magazine*, July/August 1998.

Consumer Reviewer Resource Book, Department of Defense, United States Army Medical and Materiel Command, 1999.

Understanding Genetic Research and Population-Based Studies, National Cancer Institute, Bethesda, MD, 1999.

Internet Sites

Breast Cancer Glossary.
http://www.cancer.gov/dictionary/

Cancer Glossary. Medicine Online.
http://www.meds.com/glossary.html

Glossary of Cancer Terms. Hartford Hospital, The Cancer Program.
http://www.harthosp.org/cancer/glossary.html

Glossary of HIV/AIDS-Related Terms. HIV/AIDS Treatment Information Service.
http://aidsinfo.nih.gov/

NHGRI Glossary of Genetic Terms.
http://www.genome.gov/10002096

NIH-Speak: A Glossary of NIH Terms.
www.aamc.org/research/adhocgp/pdfs/NIH-Glossary.pdf

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An electronic version of this document can be viewed and downloaded
from the Internet at http://deainfo.nci.nih.gov/consumer.htm

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