Glossary

The following glossary was modified from the dictionaries on the National Cancer Institute's Web site, available from *http://www.cancer.gov*.

acute lymphocytic leukemia: A disease in which too many infection-fighting white blood cells called lymphocytes are found in the blood and bone marrow. In this disease, the developing lymphocytes do not mature and become too numerous. The immature cells are not able to fight infection well and can interfere with the function of other blood cells. Acute lymphocytic leukemia progresses quickly and can occur in adults and children.

acute myelogenous leukemia: Acute myelogenous (or myeloid) leukemia is a disease in which cancer cells are found in the blood and bone marrow. The cells that will develop into red blood cells, which carry oxygen, platelets, which form clots, or granulocytes, a type of white blood cell, do not mature and become too numerous. Acute myelogenous leukemia progresses quickly and can occur in adults or children.

adenocarcinoma: Cancer that begins in cells that line certain internal organs.

adenoma: Noncancerous tumor of glandular tissue, such as the mucosa of the stomach and colon.

allele: One of the variant forms of a gene at a particular locus, or location, on a chromosome. Different alleles produce variation in inherited characteristics such as hair color or blood type. In an individual, one form of the allele (the dominant one) may be expressed more than another form (the recessive one).

alpha-fetoprotein: Protein often found in abnormal amounts in the blood of patients with liver cancer.

Ames test: Mutagenesis assay (a measure of mutagenic ability) that involves specially engineered strains of bacteria. Because of the relationship between mutagenicity and carcinogenicity, the test is used as a rapid and relatively inexpensive first screening of untested chemicals suspected to be carcinogens.

anaplastic: Term used to describe cancer cells that divide rapidly and bear little or no resemblance to normal cells.

angiogenesis: Blood vessel formation, which usually accompanies the growth of malignant tissue.

angiosarcoma: Type of cancer that begins in the lining of blood or lymph vessels.

apoptosis: Normal cellular process involving a programmed series of events leading to the death of a cell.

asymptomatic: Presenting no signs or symptoms of disease.

ataxia telangiectasia: Rare, hereditary disorder characterized by problems with muscle coordination, immunodeficiency, inadequate DNA repair, and an increased risk of developing cancer.

atypical hyperplasia: Benign (noncancerous) condition in which tissue has certain abnormal features.

basal cell: Small, round cell found in the lower part, or base, of the epidermis, the outer layer of the skin.

basal cell carcinoma: Type of skin cancer that arises from the basal cells.

benign: Not cancerous; does not invade nearby tissue or spread to other parts of the body.

benign tumor: Noncancerous growth that does not spread to other parts of the body.

biological therapy: Treatment to boost or restore the ability of the body's immune system, either directly or indirectly, to fight cancer or to lessen side effects that may be caused by some cancer treatments. Also known as immunotherapy, biotherapy, or biological-response-modifier therapy.

biopsy: Removal of a sample of cells or tissue, which is then examined under a microscope or with other tests to check for cancer cells.

bone marrow: Soft, spongy tissue in the center of large bones that produces white blood cells, red blood cells, and platelets.

bone marrow aspiration: Removal of a small sample of bone marrow (usually from the hip bone, breast bone, or thigh bone) through a needle for examination under a microscope to see whether cancer cells are present. This procedure may be done at the same time as a bone marrow biopsy.

bone marrow biopsy: Removal of a sample of bone with bone marrow inside it using a large needle. The cells are checked to see whether they are cancerous. If cancerous plasma cells are found, the pathologist estimates how much of the bone marrow is affected.

bone marrow transplantation: Procedure in which doctors replace marrow destroyed by treatment with high doses of anticancer drugs or radiation. The replacement marrow may be taken from the patient before treatment or may be donated by another person.

bone scan: Technique to create images of bones on a computer screen or on film. A small amount of radioactive material is injected and travels through the bloodstream. It collects in the bones, especially in abnormal areas of the bones, and is detected by a scanner.

brachytherapy: Internal radiation therapy using an implant of radioactive material placed directly into or near the tumor.

***BRCA1*:** Gene located on chromosome 17 that normally helps restrain cell growth. Inheriting certain altered versions of *BRCA1* predisposes an individual to breast, ovarian, prostate, or other types of cancer.

***BRCA2*:** Gene located on chromosome 13 that normally helps to suppress cell growth. A person who inherits certain changes in *BRCA2* has a higher risk of breast, ovarian, prostate, or other types of cancer.

breast reconstruction: Surgery to rebuild a breast's shape after a mastectomy.

Burkitt lymphoma: Type of non-Hodgkin lymphoma that most often occurs in children and young adults. The disease causes a rapidly growing tumor in the abdomen, jaw, or central nervous system.

cancer: Term for a group of more than 100 diseases in which abnormal cells divide without control. Cancer cells can invade nearby tissues and can spread through the bloodstream and lymphatic system to other parts of the body.

cancer stem cells: A small population of cells inside tumors that have the ability to self-renew while giving rise to different types of cells. It is thought that cancer stem cells might be resistant to many cancer drugs and may reconstitute a tumor after chemotherapy has eradicated the bulk of tumor cells.

carcinogen: Any substance that is known to cause cancer.

carcinogenesis: Process by which normal cells are transformed into cancer cells.

carcinoma: Cancer that begins in the skin or in tissues lining or covering of an organ.

carcinoma in situ: A group of abnormal cells that remain in the place where they first formed. They have not spread to other tissues.

CEA assay: 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, with some other diseases, or who smoke.

cell cycle: Sequence of events by which cells enlarge and divide. Includes stages typically named G1, S, G2, and M.

chemoprevention: Use of natural or laboratory-made substances to reduce the risk of, or delay the development or recurrence of, cancer.

chemotherapy: Treatment with anticancer drugs.

chronic lymphocytic leukemia: A disease in which too many infection-fighting lymphocytes (white blood cells) are found in the body. The developing lymphocytes do not mature correctly and too many are made. The lymphocytes cannot fight infection as they should and are found in the blood and the bone marrow. Chronic lymphocytic leukemia normally progresses slowly and usually occurs in people over 60 years of age.

chronic myelogenous leukemia: A disease in which too many white blood cells are made in the bone marrow. Chronic myelogenous leukemia affects the cells that develop into specific white blood cells called granulocytes. The cells do not mature and become too numerous. The immature cells are then found in the blood and bone marrow. This disease progresses slowly and usually occurs in people who are middle-aged or older, although it can occur in children.

clinical trial: Research study that involves patients. Each study is designed to find better ways to prevent, detect, diagnose, or treat cancer and to answer scientific questions.

colonoscopy: Procedure that uses a flexible fiber optic endoscope to examine the internal surface of the colon along its entire length.

combination chemotherapy: Treatment in which two or more chemicals are used to obtain more-effective results.

computed tomography: X-ray procedure that uses a computer to produce a detailed picture of a cross-section of the body; also called CAT or CT scan.

contact inhibition: Inhibition of cell division in normal (noncancerous) cells when they contact a neighboring cell.

CT (or CAT) scan: See computed tomography.

cytokine: A substance produced by cells of the immune system that can affect the immune response. Cytokines can also be produced in the laboratory by recombinant DNA technology and given to people to affect immune responses.

cytotoxic: Poisonous to cells. In chemotherapy, used to describe an agent that is poisonous to cancer cells.

death rate: Number of deaths per 100,000 people per year; also called mortality rate.

diagnosis: Process of identifying a disease by the signs and symptoms.

dysplasia: Abnormal cells that are not cancer.

dysplastic nevi: Atypical moles; moles whose appearance is different from that of common moles. Dysplastic nevi are generally larger than ordinary moles and have irregular or indistinct borders. Their color often is not uniform and ranges from pink or even white to dark brown or black; they are usually flat, but parts may be raised above the skin surface.

encapsulated: Confined to a specific area and surrounded by a thin layer of tissue.

endometrial: Having to do with the endometrium, the layer of tissue that lines the uterus.

environmental tobacco smoke: Smoke that comes from the burning end of a cigarette or other smoked tobacco product and smoke that is exhaled by smokers. Also called ETS or secondhand smoke. Inhaling ETS is called involuntary or passive smoking.

epidemiology: Study of the patterns, causes, and control of disease in groups of people.

epidermis: Upper or outer layer of the two main layers of cells that make up the skin.

Epstein-Barr virus: Virus that has been associated with the development of infectious mononucleosis and also with certain cancers including Burkitt lymphoma.

estrogen: Female hormone produced by the ovary. Responsible for secondary sex characteristics and cyclic changes in the lining of the uterus and vagina.

etiology: The cause or origin of disease.

familial polyposis: Inherited condition in which several hundred polyps develop in the colon and rectum. These polyps have a high potential to become malignant.

fecal occult blood test: Test to reveal blood in the feces, which may be a sign of colon cancer.

fiber: Parts of fruits and vegetables that cannot be digested. Also called bulk or roughage.

fibroid: Benign smooth-muscle tumor, usually in the uterus or gastrointestinal tract.

gene: The basic unit of heredity.

gene therapy: An experimental treatment in which foreign genetic material (DNA or RNA) is inserted into a person's cells. In studies of gene therapy for cancer, researchers are trying to improve the body's natural ability to fight the disease or to make the tumor more sensitive to other kinds of therapy.

genetic: Inherited; having to do with information that is passed from parents to children through DNA in the genes.

genome: The complete genetic material of an organism.

genome-wide association study (GWAS): An approach that involves scanning markers across the complete sets of DNA, or genomes, of many people to find genetic variations associated with a particular disease. Such studies are particularly useful in finding genetic variants that contribute to common, complex diseases, such as asthma, cancer, diabetes, heart disease, and mental illnesses. Once new genetic associations are identified, researchers can use the information to develop better strategies to detect, treat, and prevent the disease.

grade: Describes how closely a cancer resembles normal tissue of its same type, along with the cancer's probable rate of growth and tendency to spread.

grading: System for classifying cancer cells in terms of how malignant or aggressive they appear microscopically. The grading of a tumor indicates how quickly cancer cells are likely to spread and plays a role in treatment decisions.

herpes virus: Member of the herpes family of viruses. One type of herpes virus is sexually transmitted and causes sores on the genitals.

heterozygous/heterozygosity: Possessing two different forms of a particular gene, one inherited from each parent.

homozygous/homozygosity: Possessing two identical forms of a particular gene, one inherited from each parent.

hormonal therapy: Treatment of cancer by removing, blocking, or adding hormones.

human papillomaviruses: Viruses that can cause abnormal tissue growth. Some papillomaviruses are sexually transmitted. Some of these sexually transmitted viruses cause wartlike growths on the genitals. Long-term infections of certain types of papillomaviruses can cause cervical cancer. Papillomaviruses may also play a role in cancers of the anus, vagina, vulva, penis, skin, and throat.

hyperplasia: Precancerous condition in which there is an increase in the number of normal cells in an organ or tissue.

imaging: Tests that produce pictures of areas inside the body.

immunotherapy: Treatment to boost or restore the ability of the immune system to fight cancer, infections, and other diseases. Also called biotherapy or biological-modifier-response therapy.

incidence: Number of new cases of a disease diagnosed each year.

incidence rate: Number of new cases per year per 100,000 people.

in situ cancer: Cancer that has remained within the tissue in which it originated.

invasion: As related to cancer, the spread of cancer cells into healthy tissue adjacent to the tumor.

invasive cancer: Cancer that has spread beyond the layer of tissue in which it developed.

keratin: Insoluble protein that is the major constituent of the outer layer of the skin, nails, and hair.

lesion: Area of abnormal tissue.

leukemia: Cancer of the blood-forming tissue, such as the bone marrow, which causes large numbers of cells to be produced and enter the bloodstream.

lifetime risk: Probability that a person, over the course of a lifetime, will develop a type of cancer.

Li-Fraumeni syndrome: Rare family predisposition to multiple cancers, caused by an alteration in the p53 tumor-suppressor gene.

lumen: The cavity or channel within a tube or tubular organ, such as the lumen of the gut.

malignant: Cancerous; can invade nearby tissue and spread to other parts of the body.

melanin: Skin pigment (substance that gives the skin its color). Dark-skinned people have more melanin than do light-skinned people.

melanocyte: Cell in the skin and eyes that produces and contains the pigment called melanin.

melanoma: Cancer of the cells that produce melanin. Melanoma usually begins in a mole but can also begin in other pigmented tissues, such as in the eye.

metastasis: The spread of cancer from one part of the body to another.

metastasize: To spread from one part of the body to another. When cancer cells metastasize and form secondary tumors, the cells in the metastatic tumor are like those in the original (primary) tumor.

mole: A benign growth on the skin (usually dark in color) that is formed by a cluster of melanocytes. See also nevus.

monoclonal: Population of cells that was derived by cell division from a single ancestral cell.

morbidity: Disease.

mortality: Death.

mutagen: Any substance that is known to cause mutations.

mutagenesis: Process by which mutations occur.

mutation: Any change in the DNA of a cell. Mutations may be caused by mistakes during cell division, or they may be caused by exposure to DNA-damaging agents in the environment. Mutations can be harmful, beneficial, or have no effect. If they occur in cells that make eggs or sperm, they can be inherited; if mutations occur in other types of cells, they are not inherited. Certain mutations may lead to cancer or other diseases.

National Cancer Institute (NCI): The largest of the 27 separate institutes, centers, and divisions of the National Institutes of Health. The NCI coordinates the federal government's cancer research program.

National Institutes of Health (NIH): One of eight health agencies of the Public Health Service (the Public Health Service is part of the U.S. Department of Health and Human Services). Composed of 27 separate institutes and centers, NIH is the largest biomedical research facility in the world.

necrosis: Cell death.

neoplasia: Abnormal and uncontrolled growth of cells.

neoplasm: An abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Can be benign or malignant.

nevus: Medical term for a benign growth on the skin that is formed by a cluster of melanocytes, also called a mole.

non-Hodgkin lymphoma: One of the several types of lymphoma (cancer that develops in the lymphatic system) that are not Hodgkin lymphoma. Hodgkin lymphoma is rare and occurs most often in people aged 15 to 40 and in people over 55. All other lymphomas are grouped together and called non-Hodgkin lymphoma.

nonmelanoma skin cancer: Skin cancer that does not involve melanocytes. Basal cell cancer and squamous cell cancer are nonmelanoma skin cancers.

oncogene: A gene that is a mutated form of a gene involved in normal cell growth. Oncogenes may cause the growth of cancer cells. Mutations in genes that become oncogenes can be inherited or caused by being exposed to substances in the environment that cause cancer.

oncogenic: Having the capacity to cause cancer.

oncologist: Doctor who specializes in treating cancer. Some oncologists specialize in a particular type of cancer treatment. For example, a radiation oncologist specializes in treating cancer with radiation.

oncology: Study of cancer encompassing its physical, chemical, and biologic properties.

oopherectomy: Surgical removal of one or both ovaries.

p53: Gene that normally inhibits the growth of tumors, which can prevent or slow the spread of cancer.

palliative treatment: Treatment that does not alter the course of a disease, but improves the quality of life.

penetrance: The likelihood that a given gene will actually result in disease; the proportion of people with a particular genetic change (such as a mutation in a specific gene) who exhibit signs and symptoms of a disorder.

polyclonal: Population of cells that was derived by cell division from more than one ancestral cell.

polymorphism: A common variation or mutation in DNA.

polyp: A growth that protrudes from a mucous membrane, such as the colon.

precancerous: Term used to describe a condition that may or is likely to become cancer.

progesterone: Female hormone produced by the ovaries and placenta; responsible for preparing the uterine lining for implantation of an early embryo.

prognosis: Probable outcome or course of a disease; the chance of recovery or recurrence.

prophylactic: Treatment administered or taken to prevent or protect from disease.

proto-oncogene: A gene involved in normal cell growth. Mutations (changes) in a proto-oncogene may cause it to become an oncogene, which can cause the growth of cancer cells.

radiation therapy: Treatment with high-energy rays (such as X-rays) to kill cancer cells and shrink tumors. The radiation may come from outside the body (external radiation) or from radioactive materials placed directly in the tumor (implant radiation). Also called radiotherapy.

radioactive: Giving off radiation.

radon: Radioactive gas that is released by uranium, a substance found in soil and rock. When too much radon is breathed in, it can damage lung cells and lead to lung cancer.

relative risk: Comparison of the risk of developing cancer in persons with a certain type of exposure or characteristic with the risk in persons who do not have this exposure or characteristic.

remission: Decrease in or disappearance of the signs and symptoms of cancer. When this happens, the disease is said to be "in remission." A remission can be temporary or permanent.

retinoblastoma: Eye cancer caused by the loss of both copies of the tumor-suppressor gene RB; the inherited form typically occurs in childhood because one gene is missing from the time of birth.

retrovirus: A type of virus that has an RNA genome. The RNA acts as a template for the production of DNA that is integrated into the DNA of the host cell. Many retroviruses are believed to be oncogenic.

risk factor: Something that increases the chance of developing a disease.

Rous sarcoma virus: Chicken retrovirus that was the first virus shown to cause a malignancy.

sarcoma: Malignant tumor that begins in connective and supportive tissue.

screening: Checking for disease when there are no symptoms.

secondary tumor: A term that is used to describe either a new primary cancer or a metastasis.

SEER Program: Surveillance, Epidemiology, and End Results Program of the National Cancer Institute. Started in 1973, SEER collects cancer incidence data in 17 geographic areas covering about 28 percent of the total U.S. population.

side effect: Problem that occurs when treatment affects healthy cells. Common side effects of cancer treatment are fatigue, nausea, vomiting, decreased blood cell counts, hair loss, and mouth sores.

single-nucleotide polymorphism (SNP): The most common type of change in DNA (molecules inside cells that carry genetic information). SNPs occur when a single nucleotide (building block of DNA) is replaced with another. These changes may cause disease and may affect how a person reacts to bacteria, viruses, drugs, and other substances.

somatic cell: Any of the body cells except the reproductive cells.

squamous cell cancer: Type of cancer that arises from the squamous cells, which are thin, flat cells that look like fish scales. Squamous cells are found in the skin, the lining of hollow organs, and the passages of the respiratory and digestive tracts.

stage: Extent of a cancer, especially whether the disease has spread from the original site to other parts of the body.

staging: Doing exams and tests to learn the extent of the cancer, especially whether it has spread from its original site to other parts of the body.

stem cells: Cells from which other types of cells develop; for example, blood cells develop from blood-forming stem cells.

stroma: The nonmalignant host cells and extracellular matrix in which a tumor grows.

stromal cell: A type of cell that makes up certain types of connective tissue (supporting tissue that surrounds other tissues and organs).

sun protection factor (SPF): Scale for rating the level of sunburn protection in sunscreens. Sunscreens with a value of 2 through 11 give minimal protection against sunburns. Sunscreens with a value of 12 through 29 give moderate protection. SPFs of 30 or higher give high protection against sunburn.

sunscreen: Substance that helps protect the skin from the sun's harmful rays. Using lotions or creams that contain sunscreens can protect the skin from damage that may lead to cancer. See also SPF.

survival rate: Proportion of patients alive at some point after their initial diagnosis of cancer.

telomerase: An enzyme in cells that helps keep them alive by adding DNA to telomeres. Each time a cell divides, the telomeres lose a small amount of DNA and become shorter. Over time, the chromosomes become damaged and the cells die. Telomerase helps keep this from happening. Cancer cells usually have more telomerase than most normal cells.

telomere: Ends of a chromosome. In vertebrate cells, each telomere consists of thousands of copies of the same DNA sequence, repeated again and again. Telomeres become shorter each time a cell divides; when one or more telomeres reach a minimum length, cell division stops. This mechanism limits the number of times a cell can divide.

testosterone: Male sex hormone.

transformation: Change that a normal cell undergoes as it becomes malignant.

tumor: Abnormal mass of tissue that results when cells divide more than they should or do not die when they should. Tumors perform no useful body function. They may be either benign (not cancerous) or malignant (cancerous).

tumor marker: Substance in tissue, blood, or other body fluids that may suggest that a person has cancer.

tumor microenvironment: The normal cells, molecules, and blood vessels that surround and feed a tumor cell. A tumor can change its microenvironment, and the microenvironment can affect how a tumor grows and spreads.

tumor-suppressor gene: A type of gene that makes a protein called a tumor-suppressor protein that helps control cell growth. Mutations in tumor-suppressor genes may lead to cancer.

tumorigenesis (oncogenesis): The process by which normal cells become cancerous.

ultraviolet (UV) radiation: Invisible rays that are part of the energy that comes from the sun. UV radiation that reaches the Earth's surface is made up of two types of rays, called UVA and UVB. Ultraviolet radiation also comes from sun lamps and tanning beds. It can cause skin damage, premature aging, melanoma, and other types of skin cancer. It can also cause problems with the eyes and the immune system. Skin specialists recommend that people use sunscreens that protect the skin from both kinds of ultraviolet radiation.

X-chromosome inactivation: Process by which one of the two X chromosomes in each cell from a female mammal becomes condensed and inactive. This process ensures that most genes on the X chromosome are expressed to the same extent in both males and females.

X-ray: High-energy radiation used in low doses to diagnose diseases and in high doses to treat cancer.

xeroderma pigmentosum: Hereditary disease characterized by extreme sensitivity to ultraviolet radiation, including sunlight and a tendency to develop skin cancers. Caused by inadequate DNA repair.