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# Glossary

- Acetylation.**—The introduction of one or more acetyl groups into an organic compound.
- Allele.**—One of several alternate forms of a gene.
- Amino acid.**—Any one of a class of organic chemical compounds characterized by the presence of an amino group (NH<sub>2</sub>) and a carboxyl group (COOH) attached to either side of a central carbon atom. They are the primary building blocks of proteins; 20 major types are found.
- Anemia.**—A condition characterized by a decreased oxygen-carrying capacity of the red blood cells because of reduced number of cells, too little hemoglobin, or malfunctioning hemoglobin.
- Assay.**—Any technique that measures a biological response.
- Biologically significant.**—An exposure or dose that can cause detectable damage or disease.
- Carcinogen/carcinogenesis.**—An agent that induces cancer.
- Carrier.**—An individual apparently normal, but possessing a single copy of a recessive gene obscured by a dominant allele; a heterozygote.
- Centromere.**—A specialized region of a chromosome that holds the two chromatids together and that is involved in directing chromosome movements during cellular reproduction.
- Chromatid.**—One of the two daughter strands of a duplicated chromosome that is still joined by a single centromere.
- Chromosomal aberration.**—An abnormality of chromosome structure or number.
- Chromosomes.**—The structures in the cell nucleus that store and transmit genetic information.
- Clastogen.**—Chromosome-damaging agent.
- Codominant.**—Alleles are codominant if each is expressed independent of the presence of the other; the effects of expression are additive.
- Cyanosis.**—Slightly bluish, grayish, slate-like, or dark purple discoloration of the skin due to the presence of abnormal amounts of reduced hemoglobin in the blood.
- Cytogenetics.**—The study of the relationship of the microscopic appearance of the chromosomes and their behavior to the genotype and phenotype of the individual.
- Deletion.**—A chromosomal aberration involving the loss of a portion of a chromosome.
- Deoxyribonucleic acid (DNA).**—The genetic material of all cells.
- Dominant.**—An allele that exerts its phenotypic effect when present either in homozygous or heterozygous form.
- Dose-response.**—An increasing biological response with increasing dose of a chemical or ionizing radiation.
- Dosimeter.**—Device or methodology for measuring the dose of a chemical or ionizing radiation to a biological system.
- Duplication.**—A chromosomal aberration in which a portion of a chromosome is present more than once; may involve whole genes, parts of genes, or series of genes.
- Endpoint.**—The particular biological response being measured.
- Erythrocyte.**—Mature hemoglobin-rich red blood cell involved in oxygen transport.
- Gene.**—A unit of heredity. At present, genes are usually equated with units of function, that is, the sequence of DNA required to code for one polypeptide chain or one RNA molecule.
- Genetic monitoring.**—The periodic testing of workers to assess damage to their DNA or chromosomes from exposure to hazardous substances or agents.
- Genetic predisposition.**—Susceptibility to illness on the basis of one's inherited genetic constitution and triggered by an environmental stress.
- Genetic screening.**—A one-time test to determine the presence of particular genetic traits in individuals. For this report, the term is limited to the screening of workers for genetic traits that might cause them to be at increased risk for occupational disease.
- Genetic tests.**—Those tests that determine a person's genetic makeup or that identify changes (damage) in the genetic material of certain cells for the purpose of identifying people who may be at risk of disease when exposed to hazardous substances.
- Genotoxic.**—Damaging to the genetic material.
- Genotype.**—The genetic constitution of an organism (to be distinguished from its physical appearance or phenotype).
- Germ cell.**—The male and female reproductive cells; egg and sperm.
- Hemoglobin.**—Protein carrier of oxygen found in red blood cells. Composed of two pairs of polypeptide chains and an iron-containing heme group.
- Hemolytic.**—Pertinent to the breaking down of red blood cells.
- Heterozygous.**—Having different alleles at a genetic locus.
- Homozygous.**—Having indistinguishable alleles at a particular locus on both chromosomes.
- Human leukocyte antigens (HLAs).**—A set of im-

- munologic proteins found on the surface of all cells; each person's set is thought to be as unique as fingerprints.
- Hypoxia.**—Result of lack of an adequate amount of oxygen in inspired air such as occurs at high altitudes; reduced oxygen content.
- Initiation.**—The first step in the development of cancer.
- Inversion.**—A chromosome rearrangement in which a central segment produced by two breaks is inverted prior to repair of the breaks.
- In vitro.**—Pertaining to experiments done in a cell-free system. The term is sometimes used to include the growth of cells from multicellular organisms under cell culture conditions.
- In vivo.**—Pertaining to experiments done in a system such that the organism remains intact, either at the level of the cell (for bacteria) or at the level of the whole organism (for animals).
- Ionizing radiation.**—High energy electromagnetic radiation, associated with gamma and X-rays, which is capable of changing the electronic structure of atoms.
- Karyotype.**—A chart made from a photograph of the chromosomes in which the homologous pairs are matched and arranged in numerical order from the longest to the shortest pair.
- Leukocyte.**—White blood cell.
- Locus (pl—loci).**—The position of a gene on a chromosome.
- Lymphocyte.**—One of the major groups of white blood cells.
- Messenger RNA (mRNA).**—Type of RNA that carries the transcribed genetic code from the DNA to the protein-synthesizing enzymes to direct protein synthesis.
- Mutagen/mutagenesis.**—Any substance that damages the genetic material.
- Nucleotide base.**—Structural unit of nucleic acids.
- Nucleus.**—A relatively large spherical body inside a cell that contains the chromosomes in their uncoiled, threadlike state.
- Oxidation.**—Chemical reaction where there is a loss of electrons.
- Phenotype.**—Appearance or observable nature of an individual as determined by his or her genotype and the influence of the environment. Individuals that appear alike may be genetically different.
- ppm.**—parts per million.
- Predictive value.**—The likelihood that a person with a positive test result has the disease or that a person with a negative result does not have the disease. Also refers to the likelihood that the index or marker (chromosome damage) predicts the occurrence of a disease.
- Promotion.**—The second step in the development of cancer.
- Protein.**—A linear array of amino acids joined by peptide bonds. In their biologically active states, proteins are folded into specific three-dimensional structures and function as catalysts in metabolism and to some extent as structural elements of cells and tissues.
- Recessive.**—An allele which exerts its phenotypic effect only when present in homozygous form, otherwise being masked by the dominant allele.
- Reduction.**—Chemically, the acceptance of electrons; used as the opposite of oxidation.
- Relative risk.**—The ratio of the incidence of disease among exposed persons divided by the same rate among nonexposed persons.
- Reliability.**—The ability of the same specimen to give the same result repeatedly when measured by different laboratories or by different individuals in the same laboratory on several occasions.
- Sensitivity.**—The ability of a test to identify correctly those who have a disease.
- Serum.**—The liquid portion of the blood that carries the blood cells.
- Somatic cell.**—All cells of the body except the germ cells.
- Specificity.**—The ability of a test to identify correctly those who do not have the trait or disease which is being tested.
- Teratogen/teratogenesis.**—An agent that interferes with embryonic development.
- Trait.**—A distinguishing feature; a characteristic or property of an individual.
- Transcription.**—In gene function, the complementary copying of the genetic code from DNA to messenger RNA.
- Translation.**—In gene function, decoding the messenger RNA into an amino acid sequence in the production of a protein.
- Translocation.**—A chromosomal aberration in which a portion of one chromosome is attached to another chromosome; often a reciprocal exchange of segments between two chromosomes.
- Validity.**—The extent to which a test will correctly classify true susceptible and true nonsusceptible individuals; sensitivity and specificity are components of validity.