

**EST:** Expressed sequence tag. See sequence tagged site.

**Eukaryote:** Cell or organism with membrane-bound, structurally discrete nucleus and other well-developed subcellular compartments. Eukaryotes include all organisms except viruses, bacteria, and blue-green algae. Compare prokaryote. See chromosome.

**Evolutionarily conserved:** See conserved sequence.

**Exogenous DNA:** DNA originating outside an organism.

**Exon:** The protein-coding DNA sequence of a gene. Compare intron.

**Exonuclease:** An enzyme that cleaves nucleotides sequentially from free ends of a linear nucleic acid substrate.

**Expressed gene:** See gene expression.

## F

**FISH (fluorescence in situ hybridization):** A physical mapping approach that uses fluorescein tags to detect hybridization of probes with metaphase chromosomes and with the less-condensed somatic interphase chromatin.

**Flow cytometry:** Analysis of biological material by detection of the light-absorbing or fluorescing properties of cells or subcellular fractions (i.e., chromosomes) passing in a narrow stream through a laser beam. An absorbance or fluorescence profile of the sample is produced. Automated sorting devices, used to fractionate samples, sort successive droplets of the analyzed stream into different fractions depending on the fluorescence emitted by each droplet.

**Flow karyotyping:** Use of flow cytometry to analyze and separate chromosomes on the basis of their DNA content.

## G

**Gamete:** Mature male or female reproductive cell (sperm or ovum) with a haploid set of chromosomes (23 for humans).

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

**Gene expression:** The process by which a gene's coded information is converted into the structures present and operating in the cell. Expressed genes include those that are transcribed into mRNA and then translated into protein and those that are transcribed into RNA but not translated into protein (e.g., transfer and ribosomal RNAs).

**Gene family:** Group of closely related genes that make similar products.

**Gene library:** See genomic library.

**Gene mapping:** Determination of the relative positions of genes on a DNA molecule (chromosome or plasmid) and of the distance, in linkage units or physical units, between them.

**Gene product:** The biochemical material, either RNA or protein, resulting from expression of a gene. The amount of gene product is used to measure how active a gene is; abnormal amounts can be correlated with disease-causing alleles.

**Genetic code:** The sequence of nucleotides, coded in triplets (codons) along the mRNA, that determines the sequence of amino acids in protein synthesis. The DNA sequence of a gene can be used to predict the mRNA sequence, and the genetic code can in turn be used to predict the amino acid sequence.

**Genetic engineering technology:** See recombinant DNA technology.

**Genetic map:** See linkage map.

**Genetic material:** See genome.

**Genetics:** The study of the patterns of inheritance of specific traits.

**Genome:** All the genetic material in the chromosomes of a particular organism; its size is generally given as its total number of base pairs.

**Genome project:** Research and technology development effort aimed at mapping and sequencing some or all of the genome of human beings and other organisms.

**Genomic library:** A collection of clones made from a set of randomly generated overlapping DNA fragments representing the entire genome of an organism. Compare library, arrayed library.

**Guanine (G):** A nitrogenous base, one member of the base pair G-C (guanine and cytosine).