

Word Roots

aneu- = without (*aneuploidy*: a chromosomal aberration in which certain chromosomes are present in extra copies or are deficient in number)

anti- = opposite (*anticodon*: a specialized base triplet on one end of a tRNA molecule that recognizes a particular complementary codon on an mRNA molecule)

capsa- = a box (*capsid*: the protein shell that encloses the viral genome)

-centesis = a puncture (*amniocentesis*: a technique for determining genetic abnormalities in a fetus by the presence of certain chemicals or defective fetal cells in the amniotic fluid, obtained by aspiration from a needle inserted into the uterus)

co- = together (*codominance*: phenotype in which both dominant alleles are expressed in the heterozygote)

cyto- = cell (*cytogenetic maps*: charts of chromosomes that locate genes with respect to chromosomal features)

di- = two (*dihybrid cross*: a breeding experiment in which offspring of a cross of parental varieties differing in two traits are mated)

electro- = electricity (*electroporation*: a technique to introduce recombinant DNA into cells by applying a brief electrical pulse to a solution containing cells)

epi- = beside; **-stasis** = standing (*epistasis*: a phenomenon in which one gene alters the expression of another gene that is independently inherited)

exo- = out, outside, without (*exon*: a coding region of a eukaryotic gene that is expressed)

geno- = offspring (*genotype*: the genetic makeup of an organism)

helic- = a spiral (*helicase*: an enzyme that untwists the double helix of DNA at the replication forks)

hemo- = blood (*hemophilia*: a human genetic disease caused by a sex-linked recessive allele, characterized by excessive bleeding following injury)

hetero- = different (*heterozygous*: having two different alleles for a trait)

homo- = alike (*homozygous*: having two identical alleles for a trait)

intro- = within (*intron*: a noncoding, intervening sequence within a eukaryotic gene)

liga- = bound or tied (*DNA ligase*: a linking enzyme for DNA replication)

lyto- = loosen (*lytic cycle*: a type of viral replication cycle resulting in the release of new phages by death or lysis of the host cell)

mono- = one (*monohybrid cross*: a breeding experiment that crosses offspring of a cross of parental varieties differing in a single character)

mono- = one (*monosomic*: a chromosomal condition in which a particular cell has only one copy of a chromosome, instead of the normal two; the cell is said to be monosomic for that chromosome)

morph- = form; **-gen** = produce (*morphogen*: a substance that provides positional information in the form of a concentration gradient along an embryonic axis)

muta- = change; **-gen** = producing (*mutagen*: a physical or chemical agent that causes mutations)

muta- = change; **-genesis** = origin, birth (*in vitro muta-genesis*: a technique to discover the function of a gene by introducing specific changes into the sequence of a cloned gene, reinserting the mutated gene into a cell, and studying the phenotype of the mutant)

non- = not; **dis-** = separate (*nondisjunction*: an accident of meiosis or mitosis in which both members of a pair of homologous chromosomes or both sister chromatids fail to move apart properly)

pedi- = a child (*pedigree*: a family tree describing the occurrence of heritable characters in parents and offspring across as many generations as possible)

-phage = to eat (*bacteriophages*: viruses that infect bacteria)

pheno- = appear (*phenotype*: the physical and physiological traits of an organism)

pleio- = more (*pleiotropy*: when a single gene impacts more than one characteristic)

poly- = many (*poly-A tail*: the modified end of the 3' end of an mRNA molecule consisting of the addition of some 50 to 250 adenine nucleotides)

poly- = many (*polyploidy*: a chromosomal alteration in which the organism possesses more than two complete chromosome sets)

poly- = many; **gene-** = produce (*polygenic*: an additive effect of two or more gene loci on a single phenotypic character)

poly- = many; **morph-** = form (*single nucleotide polymorphisms*: one-base-pair variations in the genome sequence)

pro- = before (*provirus*: viral DNA that inserts into a host genome)

proto- = first, original; **onco-** = tumor (*proto-oncogene*: a normal cellular gene corresponding to an oncogene)

pseudo- = false (*pseudogenes*: DNA segments very similar to real genes but which do not yield functional products)

re- = again; **com-** = together; **bin-** = two at a time (*recombinant*: an offspring whose phenotype differs from that of the parents)

retro- = backward (*retrotransposons*: transposable elements that move in a genome as an RNA intermediate, a transcript of the retrotransposon DNA)

retro- = backward (*retrovirus*: an RNA virus that reproduces by transcribing its RNA into DNA and then inserting the DNA into a cellular chromosome)

semi- = half (*semiconservative model*: type of DNA replication in which the replicated double helix consists of one old strand, derived from the parent molecule, and one newly made strand)

telos- = an end (*telomere*: the protective structure at each end of a eukaryotic chromosome)

trans- = across (*transformation*: a phenomenon in which external DNA is assimilated by a cell)

trans- = across (*translocation*: attachment of a chromosomal fragment to a nonhomologous chromosome)

trans- = across; **-script** = write (*transcription*: the synthesis of RNA on a DNA template)

tri- = three; **soma-** = body (*trisomic*: a chromosomal condition in which a particular cell has an extra copy of one chromosome, instead of the normal two; the cell is said to be trisomic for that chromosome)

virul- = poisonous (*virulent virus*: a virus that reproduces only by a lytic cycle)