

A glossary of common terms in genetics and evolution

Condensed from “*What is evolution*” by Ernst Mayr

Adaptation	Any property of an organism believed to add to its fitness.
Allele	One of the alternative forms (nucleotide sequences) of a gene.
Allopatric	Pertaining to populations or species, the ranges of which do not overlap
Biological species	Groups of actually or potentially interbreeding natural populations that are reproductively isolated from other such groups
Chromosomes	Structural elements found in the nucleus of the eukaryotic cell and containing the major part of the hereditary material (i.e. genes).
Clone	Genetically identical individuals produced by any process of asexual reproduction
Coevolution	The parallel evolution of two kinds of organisms that are interdependent.
Crossing-over	The exchange of corresponding segments between maternal and paternal chromosomes.
Deme	A local population of potentially interbreeding individuals.
Diploid	Possessing a double set of chromosomes, one set derived from the mother, the other set from the father.
Epistasis	Interaction between two or more genes.
Evolution	The gradual process by which the living world has developed.
Fertilization	Fusion between the male gamete and the female gamete. It results in the joining of a haploid set of paternal chromosomes with a haploid set of maternal chromosomes in the newly formed zygote, which is diploid.
Gamete	A male or female reproductive cell; spermatozoon or ovum.
Gene	A genetic unit situated on a particular locus of a chromosome.
Genetic drift	The occurrence of changes in gene frequency brought about not by natural selection, but by chance. It occurs especially in small populations.

Genotype	The set of genes of an individual (<i>cf</i> phenotype).
Group selection	The theory that a social group can be the object of selection if the cooperative interaction among the members of the group enhances the fitness of the group.
Haploid	Possessing a single set of chromosomes, like the gametes.
Heterozygous	Possessing two different alleles of a particular gene on a pair of homologous chromosomes.
Homozygous	Possessing identical alleles of a particular gene on a pair of homologous chromosomes.
Kin selection	Selective advantage due to the altruistic interaction of individuals sharing part of the same genotype (e.g. siblings).
Macroevolution	Evolution above the species level; the evolution of higher taxa and the production of evolutionary novelties, such as new structures.
Meiosis	A special form of nuclear division that occurs during the formation of the gametes in sexually reproducing organisms.
Microevolution	Evolution at or below the species level.
Mitosis	The typical cell division of somatic cells. Each daughter cell receives a full complement of chromosomes.
Molecular clock	The clocklike regularity of the change of a gene or genotype over geological time scales.
Mutation	Any inheritable alteration in the genetic material, most commonly an error of replication during cell division.
Natural selection	The process by which, in every generation, individuals of lower fitness are removed from the population.
Niche	A configuration of properties of the environment making it suitable for occupation by a species.
Parapatric	Pertaining to contiguously living but non-overlapping populations or species.

Phenotype	The total of all observable features of a developing or developed individual. The phenotype is the result of interaction between the genotype and the environment.
Phylogeny	The inferred lines of descent of a group of organisms.
Pleiotropic	Pertaining to how a gene may affect several aspects of the phenotype.
Polygenic inheritance	Inheritance of a trait governed by several genes. Their effect is cumulative.
Polymorphism	The simultaneous occurrence of several different alleles or discontinuous phenotypes in a population, with the frequency of even the rarest type higher than can be maintained by recurrent mutation.
Preadapted	Pertaining to a character capable of adopting a new function or ecological role without loss of fitness.
Punctuated equilibria	Alternation of extremely rapid and normal or slow evolutionary change in a phyletic lineage, as a result of speciation evolution.
Recapitulation	Appearance of a structure or other attribute of a larval or immature individual of a species that resembles a similar attribute of the adults of an ancestral species.
Recessive gene	A gene that is unable to express its effect when it is present in the heterozygous state.
Recombination	A reshuffling of genes in a new zygote as a result of crossing-over and reassortment of the chromosomes during meiosis. A new set of genotypes is thus produced in each generation.
Reductionism	The belief that higher levels of integration in a complex system can be fully explained through a knowledge of the smallest components.
Saltation	A sudden event resulting in a discontinuity or gap, such as the production of a new species or higher taxon.
Sex-linkage	The type of linkage produced when a gene is located on the X or the Y chromosome.
Sexual selection	Selection for attributes that enhance reproductive success.

Speciation, allopatric	The origin of a new species by the acquisition of effective isolating mechanisms by a geographically isolated portion of the parental species.
Speciation, sympatric	Speciation without geographical isolation; the origin of a new set of isolating mechanisms within a deme.
Symbiosis	The usually mutually beneficial interaction of individuals of two different species.
Sympatric	Pertaining to species the ranges of which overlap; species coexisting in the same area.
Taxon	A monophyletic group of organisms (or lower taxa) that can be recognized by sharing a definite set of characters.
Zygote	A fertilized egg; the individual that results from the union of two gametes and their nuclei.