

Genotype and Phenotype Encyclopedia Article

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Genotype and Phenotype

Genotype is the genetic constitution of an organism and phenotype is the outward manifestation of the genetic constitution. The genotype determines potential characteristics and limitations of the individual organism from embryo to adulthood. For organisms that reproduce sexually, genotype embodies the entire complex of genes inherited from both parents. Genotype can be demonstrated mathematically to show that individual offspring inherit different traits from their parents. Genes for certain traits can be recessive or dominant, which determines the likelihood of their expression as phenotype in a given individual.

Phenotype is the observable features of an organism, such as size, skin or fur color, eye color, etc. Phenotype is determined by the interaction of genotype and the environment. Phenotype can refer to an individual, or to a group of physically similar organisms. Phenotype can change throughout the life of an individual due to environmental changes, and changes due to aging. Different individuals with the same genotype can have different phenotypes if raised in different environments.