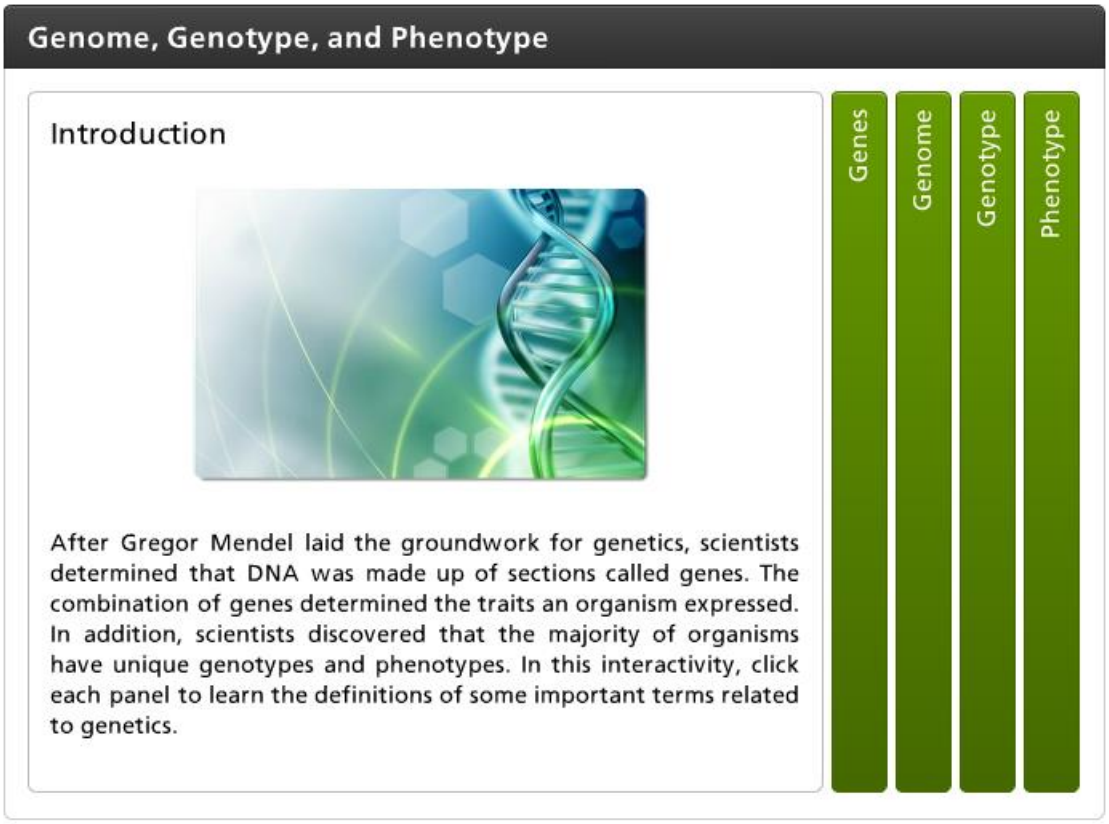
Module 5: Mendelian Genetics and Genetic Disorders
Topic 1 Content: Genome, Genotype, and Phenotype Notes

Introduction



After Gregor Mendel laid the groundwork for genetics, scientists determined that DNA was made up of sections called genes. The combination of genes determined the traits an organism expressed. In addition, scientists discovered that the majority of organisms have unique genotypes and phenotypes. In this interactivity, click each panel to learn the definitions of some important terms related to genetics.

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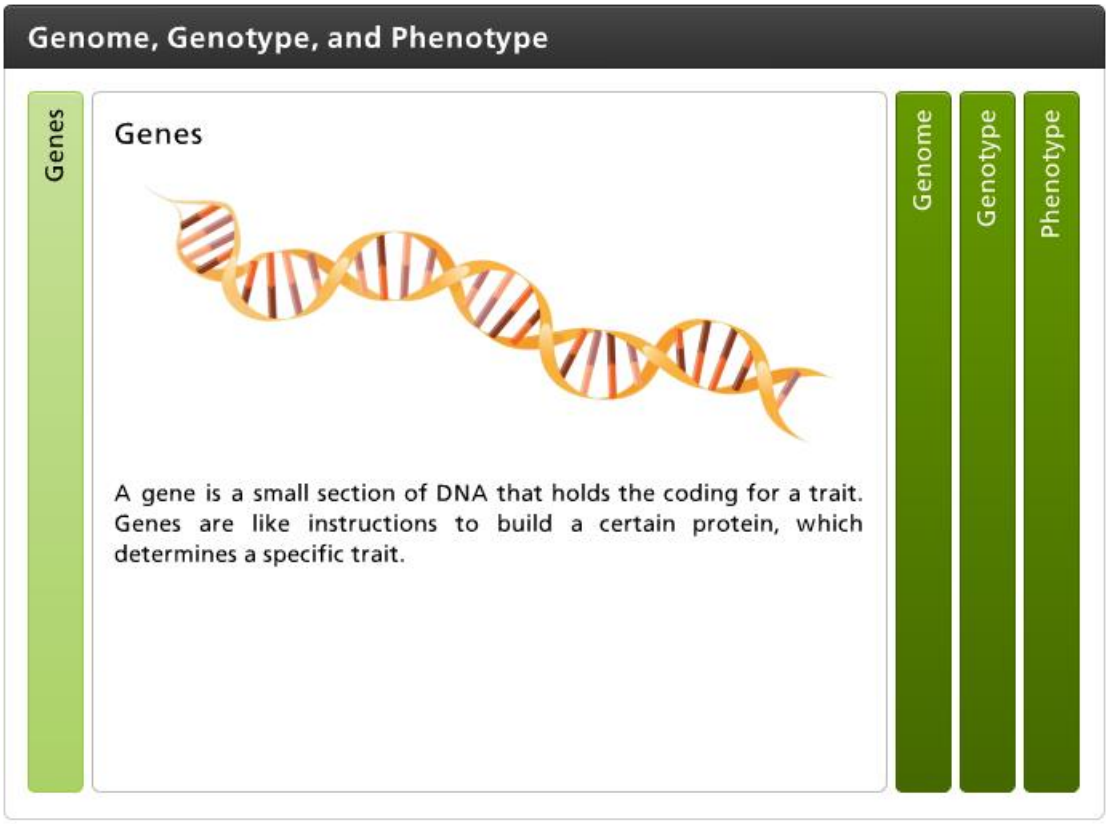
Genes



A gene is a small section of DNA that holds the coding for a trait. Genes are like instructions to build a certain protein, which determines a specific trait.

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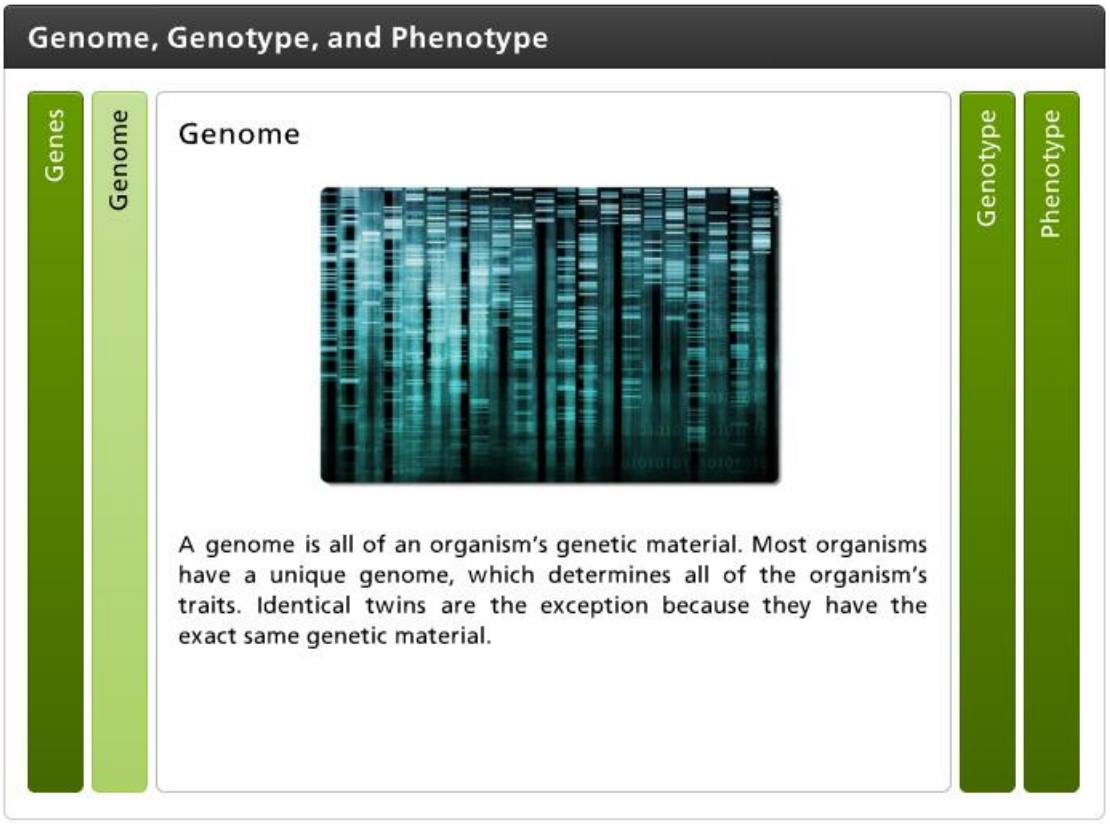
Genome



A genome is all of an organism's genetic material. Most organisms have a unique genome, which determines all of the organism's traits. Identical twins are the exception because they have the exact same genetic material.

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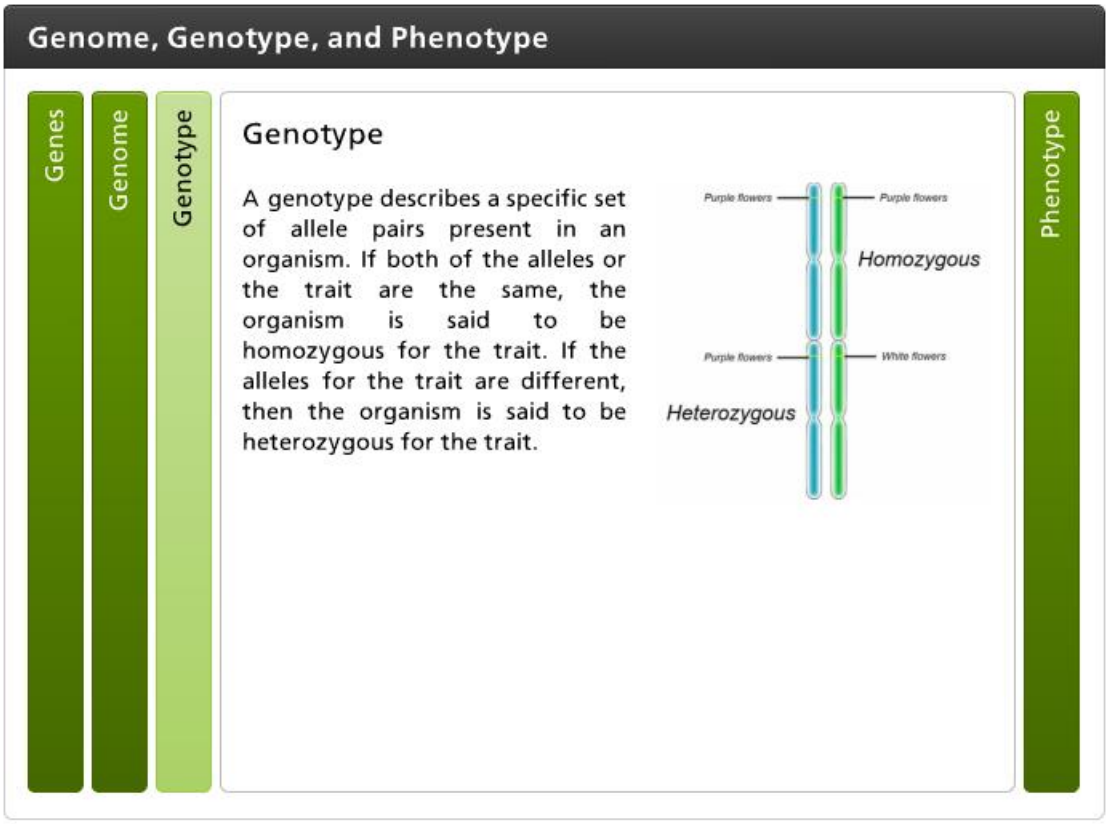
Genotype



A genotype describes a specific set of allele pairs present in an organism. If both of the alleles or the trait are the same, the organism is said to be homozygous for the trait. If the alleles for the trait are different, then the organism is said to be heterozygous for the trait.

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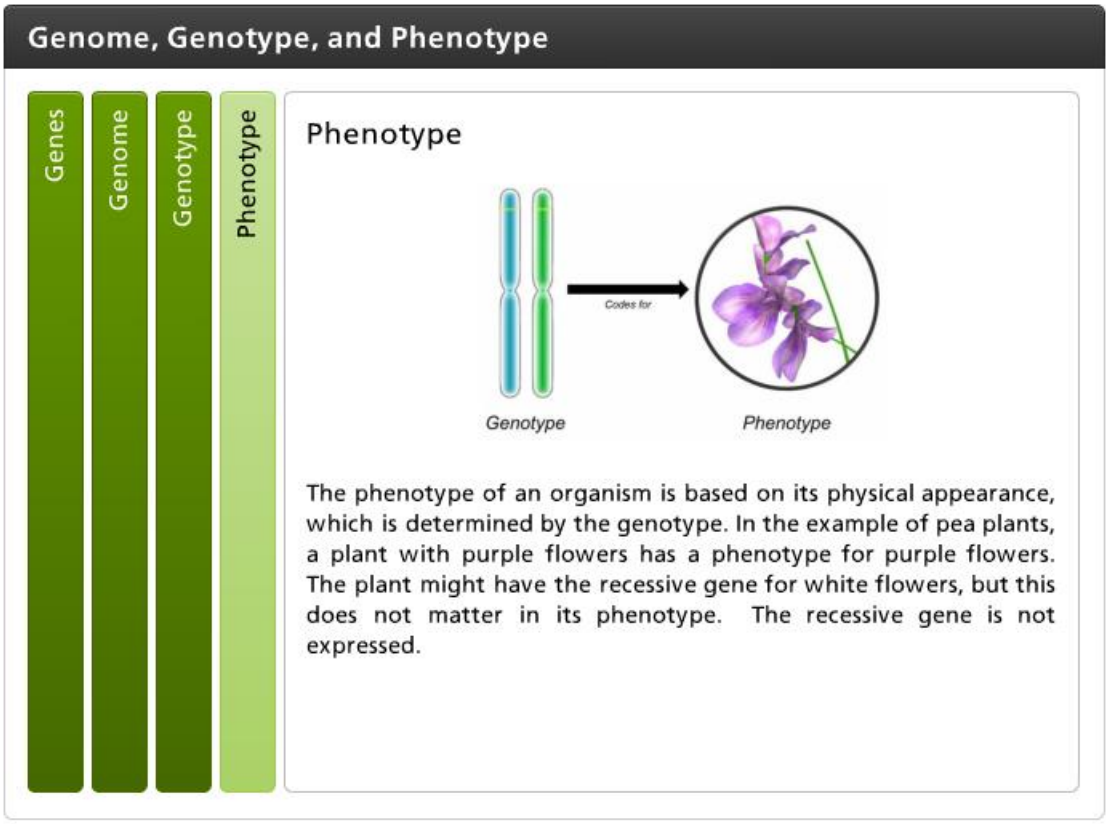
Phenotype



The phenotype of an organism is based on its physical appearance, which is determined by the genotype. In the example of pea plants, a plant with purple flowers has a phenotype for purple flowers. The plant might have the recessive gene for white flowers, but this does not matter in its phenotype. The recessive gene is not expressed.