



Mechanisms of Evolution

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Module 8: Evolution and Natural Selection
Topic 2 Content: Mechanisms of Evolution Notes



Evolution occurs through changes to a population's gene pool, or the collection of different genes in a population. There are five different mechanisms for evolution. Click on each of the gears to learn about these mechanisms.

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recombination



parent alleles sort into different combinations during gamete formation

GENETIC VARIATION

Genetic variation occurs in two different ways - through mutations in genes and through recombination during meiosis. Mutations are random changes in the structure of a gene, or changes to DNA. These changes can create a new allele and can be passed on through generations. Recombination occurs during gamete formation when parental alleles sort themselves into different combinations.

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happens by chance

FOUNDER EFFECT

GENETIC DRIFT



Genetic drift occurs simply by chance. In some instances, a random event, like a natural disaster, can cause some alleles in a population to diminish or to disappear. This is called the bottleneck effect. Other times, a small sub-set of a population can become geographically isolated. Because the gene pool of the subset of the population is different from that of the population in general, this can cause a loss of genetic variation. This is called the founder effect.

GENE FLOW



Genetic Variation Decreases



Genetic Variation Increases



Gene flow occurs when individuals in a species move from one population to another. In the population receiving the individuals, the genetic variation can increase. In the population losing the individuals, the genetic variation can decrease.



In certain species, competition for mates creates a situation in which the female of the species must choose between many possible males. In these situations, there are certain traits that make males more appealing for reproduction. Because females tend to choose the males with these exaggerated traits, these traits can become more prominent over time in a species.



In populations, there is variety in phenotypes, which causes some of the individuals within the population to have phenotypes that make them better suited for the environment in which they live. Because those individuals are better suited for the environment, they survive and have the ability to reproduce, which means that they pass on those traits that made them better suited for the environment. This is called natural selection.