

Answers to section 16 1 genes and variation pages 393 396

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Can natural selection on single gene traits Cannot lead to changes in allele frequencies? Natural selection on single-gene traits can lead to changes in allele frequencies and, thus, to changes in phenotype frequencies. Natural selection on polygenic traits can affect the distributions of phenotypes in three ways: directional selection, stabilizing selection, or disruptive selection.

Is the following sentence true or false: natural selection is the only source of evolutionary change? Selection for adaptation is not the only cause of evolution. Species change can also be caused by neutral mutations that have no detriment or benefit to an individual, genetic drift or gene flow.

What does the number of phenotypes produced for a given trait depend on? The number of phenotypes produced for a given trait depends on how many genes control the trait.

What factors increase genetic variation in gene pools?

What produces a change in a single gene? A single gene disorder is caused by variations (or mutations) in the DNA sequence of a specific gene. The DNA changes affect the product that the gene codes for—usually a protein—causing it to be altered or missing.

How do you calculate allele frequency? An allele frequency is calculated by dividing the number of times the allele of interest is observed in a population by the total number of copies of all the alleles at that particular genetic locus in the population.

Does natural selection lead to evolution? Through this process of natural selection, favorable traits are transmitted through generations. Natural selection can lead to speciation, where one species gives rise to a new and distinctly different species. It is one of the processes that drives evolution and helps to explain the diversity of life on Earth.

Why does natural selection only act on heritable variation? Natural selection needs some starting material, and that starting material is heritable variation. For natural selection to act on a feature, there must already be variation, and that variation must be able to be passed on to offspring.

Does genetic mutation cause evolution? Mutations are essential to evolution; they are the raw material of genetic variation. Without mutation, evolution could not occur.

What does the natural selection act directly on? Natural selection acts on the phenotype of an organism, the observable traits, because this is what interacts with the environment. The genotype, or genetic makeup, of an organism controls the phenotype. Natural selection is happening all the time in different populations.

Does genetic drift occur more in larger or smaller populations? Allele frequencies will thus change over time in this population due to chance events — that is, the population will undergo genetic drift. The smaller the population size (N), the more important the effect of genetic drift.

How does natural selection affect a single gene trait? natural selection on single-gene traits can favor one phenotype over the other, which leads to changes in allele frequencies. individuals near the center of a distribution curve have higher fitness than those at either end of the curve.

When two bases on a DNA sequence are swapped, it is called? Base substitution Base substitutions are the simplest type of gene-level mutation, and they involve the swapping of one nucleotide for another during DNA replication.

What is another name for the evolutionary force called gene flow? Gene flow — also called migration — is any movement of individuals, and/or the genetic material they carry, from one population to another.

What is the difference between a gene mutation and a chromosomal mutation?

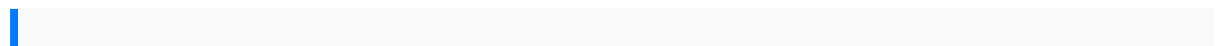
All mutations fall into two basic categories: Those that produce changes in a single gene are known as gene mutations. Those that produce changes in whole chromosomes are known as chromosomal mutations.

Can natural selection change allele frequency? Natural selection is certainly an important mechanism of allele-frequency change, and it is the only mechanism that generates adaptation of organisms to their environments. Other mechanisms, however, can also change allele frequencies, often in ways that oppose the influence of selection.

Is it true or false natural selection causes allele frequencies to change? Natural Selection. Natural selection occurs when there are differences in fitness among members of a population. As a result, some individuals pass more genes to the next generation than do other members of the population. This causes allele frequencies to change over time.

What effect does natural selection have on single gene traits in Quizlet? natural selection on single-gene traits can favor one phenotype over the other, which leads to changes in allele frequencies.

Does natural selection act on traits but it affects the frequency of alleles in a population? Natural selection only acts on the population's heritable traits: selecting for beneficial alleles and thus increasing their frequency in the population, while selecting against deleterious alleles and thereby decreasing their frequency—a process known as adaptive evolution.



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