

Chapter
15**The Theory of Evolution, *continued*****Reinforcement and Study Guide****Section 15.2 Mechanisms of Evolution**

In your textbook, read about population genetics and evolution.

Determine if the statement is true. If it is not, rewrite the italicized part to make it true.

1. *Adaptations* of species are determined by the genes contained in the DNA code. _____
2. When Charles *Mendel* developed the theory of natural selection in the 1800s, he did not include a genetic explanation. _____
3. Natural selection can act upon an individual's *genotype*, the external expression of genes. _____
4. Natural selection operates on *an individual* over many generations. _____
5. The entire collection of genes among a population is its *gene frequency*. _____
6. If you know the *phenotypes* of all the organisms in a population, you can calculate the allelic frequency of the population. _____
7. A population in which frequency of alleles *changes* from generation to generation is said to be in genetic equilibrium. _____
8. A population that is in *genetic equilibrium* is not evolving. _____
9. Any factor that affects *phenotype* can change allelic frequencies, thereby disrupting the genetic equilibrium of populations. _____
10. Many *migrations* are caused by factors in the environment, such as radiation or chemicals, but others happen by chance. _____
11. Mutations are *important* in evolution because they result in genetic changes in the gene pool. _____
12. Genetic *equilibrium* is the alteration of allelic frequencies by chance processes. _____
13. Genetic drift is more likely to occur in *large* populations. _____
14. The factor that causes the greatest change in gene pools is *mutation*. _____
15. The type of natural selection by which one of the extreme forms of a trait is favored is called *disruptive selection*. _____

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*continued***

In your textbook, read about the evolution of species.

Complete each statement.

- 16.** _____ can occur only when either interbreeding or the production of fertile offspring is prevented among members of a population.
- 17.** _____ occurs when formerly interbreeding organisms are prevented from producing fertile offspring.
- 18.** Polyploid speciation is perhaps the fastest form of speciation because it results in immediate _____ .
- 19.** The hypothesis that species originate through a slow buildup of new adaptations is known as _____ .
- 20.** This hypothesis is supported by evidence from the _____ record.
- 21.** The hypothesis of _____ states that speciation may occur rapidly.

In your textbook, read about patterns of evolution.

Answer the following questions.

- 22.** What happened to the ancestor of the honey creeper when it left the mainland and encountered the diverse niches of Hawaii?

- 23.** What is adaptive radiation?

- 24.** Adaptive radiation is one example of divergent evolution. When does divergent evolution occur?

- 25.** When will convergent evolution occur?
