

Section 16–2 Evolution as Genetic Change

(pages 397–402)

Key Concepts

- How does natural selection affect single-gene and polygenic traits?
- What is genetic drift?
- What is the Hardy-Weinberg principle?

Natural Selection on Single-Gene Traits (pages 397–398)

1. Is the following sentence true or false? Natural selection on single-gene traits cannot lead to changes in allele frequencies. _____
2. If a trait made an organism less likely to survive and reproduce, what would happen to the allele for that trait? _____

3. If a trait had no effect on an organism’s fitness, what would happen to the allele for that trait? _____

Natural Selection on Polygenic Traits (pages 398–399)

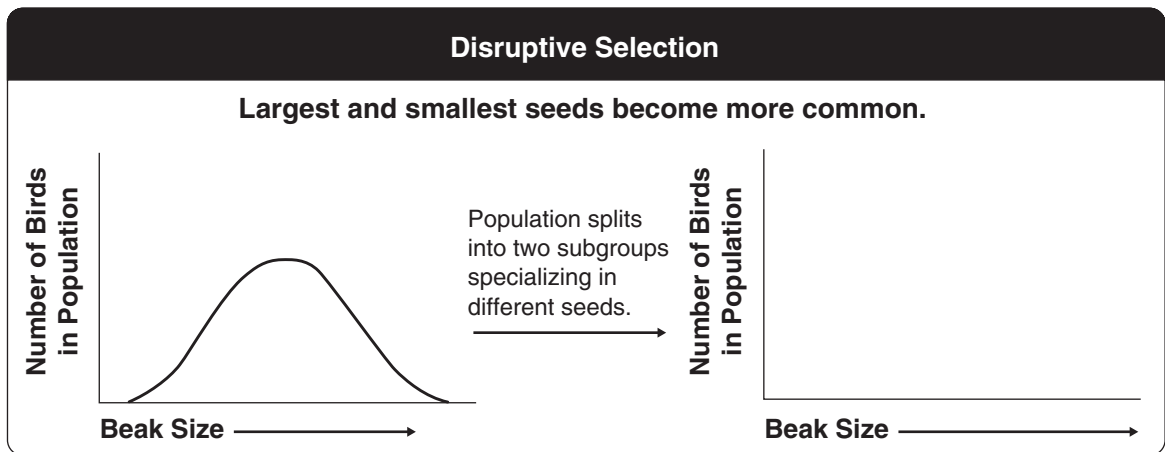
4. List the three ways that natural selection can affect the distributions of phenotypes.
 - a. _____
 - b. _____
 - c. _____

Match the type of selection with the situation in which it occurs.

Type of Selection	Situation
_____ 5. Directional	a. Individuals at the upper and lower ends of the curve have higher fitness than individuals near the middle.
_____ 6. Stabilizing	b. Individuals at one end of the curve have higher fitness than individuals in the middle or at the other end.
_____ 7. Disruptive	c. Individuals near the center of the curve have higher fitness than individuals at either end.

8. An increase in the average size of beaks in Galápagos finches is an example of _____ selection.
9. Is the following sentence true or false? The weight of human infants at birth is under the influence of disruptive selection. _____

10. Draw the missing graph to show how disruptive selection affects beak size.



Genetic Drift (page 400)

11. Is the following sentence true or false? Natural selection is the only source of evolutionary change. _____
12. Random change in allele frequencies in small populations is called _____.
13. A situation in which allele frequencies change as a result of the migration of a small subgroup of a population is known as the _____.
14. What is an example of the founder effect? _____

Evolution Versus Genetic Equilibrium (page 401–402)

15. What does the Hardy-Weinberg principle state? _____

16. The situation in which allele frequencies remain constant is called _____.
17. List and describe the five conditions required to maintain genetic equilibrium.
 - a. _____

 - b. _____

c. _____

d. _____

e. _____

18. Is it common for a population to remain in genetic equilibrium? Explain your answer.

Reading Skill Practice

When you read about related concepts, making a graphic organizer such as a Venn diagram can help you focus on their similarities and differences. Make a Venn diagram comparing and contrasting single-gene and polygenic traits. For more information on Venn diagrams, see Appendix A of your textbook. Do your work on a separate sheet of paper.