



Chapter 18 Exercises

Review Questions

- Which scientific concept did Charles Darwin and Alfred Wallace independently discover?
 - mutation
 - natural selection
 - overbreeding
 - sexual reproduction
- Which of the following situations will lead to natural selection?
 - The seeds of two plants land near each other and one grows larger than the other.
 - Two types of fish eat the same kind of food, and one is better able to gather food than the other.
 - Male lions compete for the right to mate with females, with only one possible winner.
 - all of these
- Which description is an example of a phenotype?
 - A certain duck has a blue beak.
 - A mutation occurred to a flower.
 - Most cheetahs live solitary lives.
 - both a. and c.
- Which situation is most likely an example of convergent evolution?
 - Squid and humans have eyes similar in structure.
 - Worms and snakes both move without legs.
 - Some bats and birds have wings that allow them to fly.
 - all of these
- Which situation would most likely lead to allopatric speciation?
 - Flood causes the formation of a new lake.
 - A storm causes several large trees to fall down.
 - A mutation causes a new trait to develop.
 - An injury causes an organism to seek out a new food source.
- What is the main difference between dispersal and vicariance?
 - One leads to allopatric speciation, whereas the other leads to sympatric speciation.
 - One involves the movement of the organism, and the other involves a change in the environment.
 - One depends on a genetic mutation occurring, and the other does not.
 - One involves closely related organisms, and the other involves only individuals of the same species.
- Which variable increases the likelihood of allopatric speciation taking place more quickly?
 - lower rate of mutation
 - longer distance between divided groups
 - increased instances of hybrid formation
 - equivalent numbers of individuals in each population
- What is the main difference between autopolyploid and allopolyploid?
 - the number of chromosomes
 - the functionality of the chromosomes
 - the source of the extra chromosomes
 - the number of mutations in the extra chromosomes
- Which reproductive combination produces hybrids?
 - when individuals of the same species in different geographical areas reproduce
 - when any two individuals sharing the same habitat reproduce
 - when members of closely related species reproduce
 - when offspring of the same parents reproduce

10. Which condition is the basis for a species to be reproductively isolated from other members?
 - a. It does not share its habitat with related species.
 - b. It does not exist out of a single habitat.
 - c. It does not exchange genetic information with other species.
 - d. It does not undergo evolutionary changes for a significant period of time.
11. Which situation is *not* an example of a prezygotic barrier?
 - a. Two species of turtles breed at different times of the year.
 - b. Two species of flowers attract different pollinators.
 - c. Two species of birds display different mating dances.
 - d. Two species of insects produce infertile offspring.
12. Which term is used to describe the continued divergence of species based on the low fitness of hybrid offspring?
 - a. reinforcement
 - b. fusion
 - c. stability
 - d. punctuated equilibrium
13. Which components of speciation would be least likely to be a part of punctuated equilibrium?
 - a. a division of populations
 - b. a change in environmental conditions
 - c. ongoing gene flow among all individuals
 - d. a large number of mutations taking place at once

Critical Thinking Questions

14. If a person scatters a handful of garden pea plant seeds in one area, how would natural selection work in this situation?
15. Why do scientists consider vestigial structures evidence for evolution?
16. How does the scientific meaning of “theory” differ from the common vernacular meaning?
17. Explain why the statement that a monkey is more evolved than a mouse is incorrect.
18. Why do island chains provide ideal conditions for adaptive radiation to occur?
19. Two species of fish had recently undergone sympatric speciation. The males of each species had a different coloring through which the females could identify and choose a partner from her own species. After some time, pollution made the lake so cloudy that it was hard for females to distinguish colors. What might take place in this situation?
20. Why can polyploidy individuals lead to speciation fairly quickly?
21. What do both rate of speciation models have in common?
22. Describe a situation where hybrid reproduction would cause two species to fuse into one.