

Diversity of Life 2

11.1 Fungi

11.2 Animals Part 1

11.3 Animals Part 2

11.4 Animals Part 3

11.5 Viruses and Prions

11.6 Life is Interconnected



End of Chapter Questions

Simple Review Questions

11.1 Fungi

1. How do fungi obtain food?

2. What are fungal spores?

3. Why are fungi essential to the growth and survival of most plants?

11.2 Animals Part 1: Sponges, Cnidarians, and Flatworms

4. How do animals obtain nutrients?



5. What single factor is most frequently responsible for coral bleaching?

6. Why do corals turn white during bleaching episodes?

7. Explain why ocean acidification threatens shelled marine species.

11.3 Animals Part 2: Roundworms, Arthropods, Mollusks, and Annelids

8. What are some features of arthropods?

9. Describe the three major groups of mollusks.

11.4 Animals Part 3: Echinoderms and Chordates

10. Why must amphibians live in moist habitats?



11. What is the difference between an ectotherm and an endotherm? Which vertebrates are ectotherms, and which are endotherms?

12. How do monotremes differ from other mammals?

11.5 Viruses and Prions

13. What is a virus? How do viruses reproduce?

14. What are prions? How do they “reproduce”?

11.6 Life Is Interconnected

15. How did the mitochondria and chloroplasts of eukaryotic cells originate?

16. What is horizontal gene transfer?

(CLICK TO CHECK YOUR ANSWERS)



Challenging Review Questions

11.1 Fungi

17. What do fungi and animals have in common? How do they differ?



18. What are you eating when you eat a mushroom?

19. Truffles are rare, expensive mushrooms used in high-end cooking. So far, people have been unable to farm truffles, so they must collect them from the wild, often using specially trained dogs to sniff out the delicacies. Truffle hunters know that the best place to look for truffles is near the roots of certain species of oak trees. Why are they found in association with only certain plants?

11.2 Animals Part 1: Sponges, Cnidarians, and Flatworms

20. The bluefire jellyfish in the photo has caught a fish. Name two different strategies used by cnidarians to obtain food.



21. What kinds of living things are corals? How do corals obtain nutrients?

22. How does global warming threaten corals and other marine life?

11.3 Animals Part 2: Roundworms, Arthropods, Mollusks, and Annelids

23. How do the muscles of roundworms and earthworms differ? What does this mean about the way each animal moves?

11.4 Animals Part 3: Echinoderms and Chordates

24. Why is a salamander more dependent on living in a moist habitat than a lizard?

25. Many snakes can survive eating just once every few weeks. Why can't birds do this?

11.5 Viruses and Prions

26. Viruses straddle the line between living and nonliving. How do viruses resemble living things? What features of living things do they lack?



27. What are some examples of viruses that make us sick? Does the fact that viral genes mutate very quickly have consequences for humans?

28. What are prions? What kinds of diseases do prions cause?

29. What is the relevance of horizontal gene transfer to evolution?

(CLICK TO CHECK YOUR ANSWERS)

Apply & Discuss Questions

30. What are some fungi you have encountered in the past month? Have you eaten any? Used any in baking? Seen any on your food or in the neighborhood?

31. Compare endoskeletons and exoskeletons. What do they have in common? What are the advantages and disadvantages of each?



32. Why are certain new viral diseases such as COVID 19 so devastating? What characteristics of the disease made the pandemic so harmful to human populations?

33. Classify the following animals: A sand dollar, a barnacle, an oyster, a conch, a lobster, a seal, a squid, a cow, a koala bear, a bat. Feel free to research the features of these living things online in order to help determine your answers.

(CLICK TO CHECK YOUR ANSWERS)



End of Chapter Solutions

Simple Review Solutions

1. Like animals, fungi are heterotrophs that obtain food from other organisms. Fungi release digestive enzymes over organic matter and then absorb the nutrients. This distinguishes them from animals, which digest food inside their bodies.
3. Fungi are essential to the survival and growth of many, perhaps most, plants. This is because in most plant species, roots form close associations with fungi called mycorrhizae. The fungus receives nutrients from the plant while helping roots absorb water and minerals from soil.
5. Coral bleaching is most often triggered by an increase in seawater temperature.
7. The extra hydrogen ions resulting from acidification react with carbonate, reducing the amount of carbonate in the water. Many marine animals—including corals, echinoderms, crustaceans, and mollusks—need carbonate to build their calcium carbonate shells. More acidic seawater also increases the rate of dissolution of their shells.
9. Bivalves have two hinged shells and include species such as clams, oysters, mussels, and scallops. Most bivalves are sedentary and feed by filtering small particles from the water. Cephalopods such as squids and octopuses are active predators that use arms (eight in octopuses and ten in squids) to capture prey. Cephalopods also have well-developed brains and eyes. Gastropods have a single, spiral shell and include species such as snails, abalone, and limpets. Most gastropods are herbivores.
11. All reptiles except birds are ectotherms. An ectotherm uses behavior to regulate its body temperature. For example, lizards bask in the sun to warm up and retreat to the shade to cool down. The body temperature of ectotherms vary, to some degree, depending on environmental conditions. Birds and mammals are endotherms. An endotherm maintains a constant, high body temperature by breaking down food—this process releases heat, which warms the body.
13. A virus is a small piece of genetic material wrapped in a protein coat. Viruses reproduce by infecting a host cell and then using the cell's resources to copy their genetic material and build viral proteins. These are then assembled to form new viruses.
15. the mitochondria and chloroplasts found in eukaryotic cells are remnants of bacteria or archaea that were captured by an early eukaryotic cell that later evolved a mutually beneficial relationship with them.

Challenging Review Solutions

17. Fungi and animals are both heterotrophs. However, fungi tend to release digestive enzymes out over their food and absorb the nutrients, whereas animals tend to ingest their food, taking it into their bodies for digestion.
19. The fungi associated with truffles form mycorrhizae with the roots of these oak trees.
21. Corals are animals in the group Cnidaria. Unlike other cnidarians, corals house dinoflagellates in their bodies and obtain the bulk of their nutrients from these photosynthesizers.



23. The muscles of roundworms all run longitudinally (from head to tail) down the body. As a result, roundworms move like flailing whips as muscles on alternate sides of the body contract. The muscles of annelids are arranged in both circular (around the body) and longitudinal (head-to-tail) orientations, allowing for great flexibility of motion. Unlike roundworms, for example, annelids are able to contract one part of the body while keeping the rest of the body still.

25. Birds are endotherms and need to break down a lot of food molecules to help maintain their high, stable body temperatures. Snakes are also unusual in that they have adaptations for eating very large prey – this is part of the reason why they don't need to eat as frequently.

27. Many answers are possible, as unfortunately there are many viruses that make us sick. For example, the cold and flu are both caused by viruses, as is Covid-19. Because viral genes mutate very quickly, the immunity we develop as a result of catching one cold will not prevent us from also catching the next cold. So, we continue to catch many viral diseases over and over again.

29. Darwin's theory of evolution focuses on offspring inheriting traits from their parents ("vertical" gene transfer). Horizontal gene transfer describes the transmission of DNA from one organism to another in a way other than this familiar parent to offspring transmission. Horizontal gene transfer can cause an organism to very quickly gain a trait, such as when antibiotic resistance is passed from one species of bacteria to another. This is not the gradual shaping of a trait through small-scale changes that was the focus of much of Darwin's work.

Apply & Discuss Solutions

31. Both endoskeletons and exoskeletons support an animal's body and provide places for muscles to attach to move the body. Exoskeletons also help protect animals, which endoskeletons can also do, though they don't tend to provide the complete casing of, for example, a crab's shell. On the other hand, endoskeletons can grow with the animal, whereas exoskeletons have to be shed.

33. Sand dollars are echinoderms. Barnacles are arthropods (crustaceans, specifically). Oysters are mollusks (bivalves). Conchs are mollusks (gastropods). Lobsters are arthropods (crustaceans). A seal is a mammal (placental). A squid is a mollusk (cephalopod). A cow is a mammal (placental). A koala is a mammal (marsupial). A bat is a mammal (placental).

