

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](#)



Summary of Terms

- **Animals** A group of multicellular, heterotrophic eukaryotes that take food into their bodies for digestion.
- **Chordates** The animal group that includes tunicates, lancelets, and vertebrates that is characterized by four main features: a brain and spinal cord that run along the back of the body, a notochord, gill slits, and a tail that extends beyond the anus.
- **Ectotherm** An organism that uses behavior to regulate its body temperature, which may vary to some extent.
- **Endoskeleton** An internal skeleton, such as that found in echinoderms and chordates.
- **Endotherm** An organism that maintains a constant, high body temperature by breaking down food, releasing heat.
- **Exoskeleton** An external skeleton, such as that found in arthropods.
- **Fungi** A group of heterotrophic eukaryotes that obtain food by secreting digestive enzymes over organic matter and then absorbing the nutrients.
- **Prions** Incorrectly folded proteins that cause diseases, including mad cow disease and Creutzfeldt-Jacob disease.
- **Vertebrates** The animal group within the Chordates that include animals with backbones, such as several groups of fishes, as well as amphibians, reptiles (including birds), and mammals.
- **Virus** A small piece of genetic material wrapped in a protein coat that infects and reproduces within a host cell.



Detailed Chapter Summary

Fungi are heterotrophs. They obtain food by releasing digestive enzymes over organic matter and absorbing the nutrients. Many fungi are important decomposers. Some fungi are single-celled, and others are multicellular. Fungi may reproduce sexually or asexually, and many species use both

strategies at some point in their life cycles. Reproduction often occurs through the formation of tiny spores that are able to spread far and wide. Mushrooms are the spore-producing structures of some fungi. Mycorrhizae are associations between fungi and plant roots that benefit both species. These associations are essential to many plants.

Animals are multicellular, heterotrophic eukaryotes that obtain nutrients by ingesting organic matter. Animals reproduce sexually, and many species go through a juvenile larval period. Most animals also have muscles, sense organs, and nervous systems.

Sponges are sedentary marine species. They are the only animals that lack tissues.

Cnidarians such as jellyfish and sea anemones have two tissue layers separated by a jellylike middle layer. They use tentacles armed with barbed stinging cells to catch prey. A single opening serves as both mouth and anus. Global warming and ocean acidification threaten cnidarians such as corals as well as many other marine species. Coral bleaching could damage coral reefs, the most diverse marine ecosystems.

Flatworms such as tapeworms have distinct head and tail ends and back and belly sides.

Roundworms are a diverse group of small worms that move like flailing whips. Many roundworms are important decomposers.

Arthropods are a very diverse animal group that includes crustaceans, spiders, insects, and many other species. Arthropods have an exoskeleton that is repeatedly shed during growth, segmented bodies, and jointed legs. Insects are the most species-rich group of living organisms on Earth. All insects have three body parts and six legs, and most also have two pairs of wings.

Mollusks are soft-bodied animals with shells (lost in some species). Mollusks include bivalves, cephalopods such as octopuses and squids, and gastropods such as snails. Annelids are segmented worms such as earthworms and leeches.

Echinoderms include species such as starfish and sea urchins. They have an endoskeleton and move using tube feet.

Chordates include a few small animal groups as well as the vertebrates, animals with backbones. Important vertebrate groups include jawless fishes, cartilaginous fishes, ray-finned fishes, and terrestrial species such as amphibians, reptiles (including birds), and mammals. Reptiles and mammals are amniotes that are characterized by shelled eggs and a skin made of dead cells. These two features allow them to live in dry terrestrial habitats. The three main groups of mammals are the egg-laying monotremes, marsupials, and placentals. Ectotherms use behavior to regulate body temperature, whereas endotherms maintain a constant, high body temperature by breaking down large amounts of food, a process that releases heat. Birds and mammals are endotherms.



Viruses are small pieces of genetic material, either DNA or RNA, wrapped in a protein coat. Viruses are not made of cells, but they have genes and they evolve. Viruses can only reproduce within a host cell. They infect a host cell and then use the cell's resources to copy their genetic material and build new viral proteins. Viruses infect many different species and are responsible for many important human diseases.

Prions are incorrectly folded proteins that “reproduce” by converting normal proteins to the misfolded variety. Prions cause mad cow disease and the related Creutzfeldt-Jakob disease in humans.

Horizontal gene transfer describes the transfer of DNA from organism to organism through mechanisms other than the usual parent-offspring transmission. The origin of eukaryotic mitochondria and chloroplasts from prokaryotes (bacteria or archaea) is one example. Horizontal gene transfer is important in human history as well—the human genome actually consists of 8% viral DNA. The prominence of horizontal gene transfer in the history of life means that life is more interconnected than the separate branches of an evolutionary tree might suggest.

