

BSCS Biology An Ecological Approach

Chapter 14 Eukaryotes: Animals

I am a worm. The wondrous worm.

It's down under. I love to squirm.

To eat the dead. And living's my toil.

And what comes out makes magnificent soil.

The Bunjee Jumping Cows (Mel McMurrin and Kevin Beals)

Introduction

The animal kingdom is what many students think of when they hear the word biology. Animals are a large and diverse group of living organism. Animals share certain characteristics such as responding immediately to environmental challenges and most have the ability to move about.

Animal Ways

There are two basic animal shapes that are described in terms of **symmetry**. **Radial symmetry** is like the center (**body**) and spokes (**appendages**) of a wheel. **Bilateral symmetry** is a generalized shape in which the animal has a definite front (**anterior**) and tail (**posterior**) as well as a top (**dorsal**) side and bottom (**ventral**) side. As a general rule, the larger the animal, the more complex it becomes. Animal systems become more specialized to meet the basic needs of feeding, care, and reproduction.

Animal Groups

- The **sponges (Porifera)** are very simple, aquatic, and relatively unspecialized. They are **sessile**, that is not able to move about and appear very plantlike.
- The **cnidarians** are also sessile, but have defined **appendages** and primitive digestive and nervous systems. Cnidarians include **jellyfish, corals, and sea anemones**.
- Flatworms (**Platyhelminthes**) live in aquatic or moist environments. Some have a more advanced digestive system than the cnidarians while some, such as **tapeworms**, are parasitic.
- Roundworms (**Nematoda**) are the first animals with a true gut (openings at both ends of the organism).
- Mollusks (**Mollusca**) include mostly aquatic animals such as clams, squid, scallops, and snails. Some mollusks have a **shell** and all have a **mantle** which is a structure covering important organs.
- Earthworms belong to the segmented worm group (**Annelida**).
- Arthropods are a large group of animals with distinct body parts and a highly developed nervous system. Many go through a process of metamorphosis as they grow. The **larval** stage is the first stage after the egg in those animals with complete **metamorphosis**. **Crustaceans** are a distinct subgroup of the arthropods.
- **Chordates** are the highest group of animals on the evolutionary tree. They have a backbone and include **fish, amphibians, reptiles, birds, and mammals**. Birds and mammals are warm-blooded with a higher rate of **metabolism**. This group is the most complex and includes the largest examples of living animals.

Animal Systems

Systems in animals have developed to handle basic survival functions. They include the **digestive system** which makes food available and the **circulatory system** which transports fluids in an animal's body. The **excretory system** rids the body of waste and the **nervous system** helps to control muscles and receive stimuli. The muscle and skeletal systems provide for support and movement while the **reproductive systems** insure an animal's ability to reproduce new species. The ongoing process of **evolution** along with natural selection has allowed for animals to survive in very diverse environments.