

# Animal Body Systems

## Section 26-2



# Support

**Key Idea:** An animal's **skeleton** provides a framework that supports the animal's body and is vital to an animal's **movement**.



- A **hydrostatic skeleton** is a water-filled cavity that is under pressure.
- An **exoskeleton** is a rigid external skeleton that encases the body of an animal.
- An **endoskeleton** is an internal skeleton made of bone and cartilage.



# Support

- Insects, clams, and crabs have exoskeletons.
- Humans and other vertebrates have endoskeletons.



# Digestive and Excretory Systems

**Key Idea:** The digestive system is responsible for **extracting** energy and nutrients from an animal's food, while the excretory system **removes** waste products from the animal's body.



The **gastrovascular cavity** is a digestive cavity with only one cavity. There are no specialized digestive cells.



# Digestive System

- In a digestive tract, food moves from one opening, the mouth, to a second, the anus.
- Digestive tracts allow for specialization and more efficient digestion.



# Excretory System

- Excretion is the removal of wastes produced by cellular metabolism.
- Simple aquatic invertebrates and some fishes excrete ammonia through their skin or gills.
- Land animals need to minimize water loss by converting ammonia to less toxic chemicals before passing them out of the body.





# Nervous System

**Key Idea:** The nervous system carries **information** about the environment through the body and coordinates **responses** and **behaviors**.

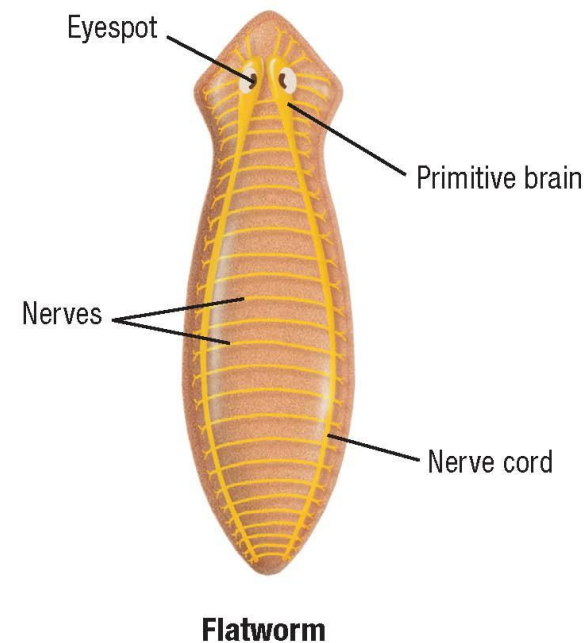
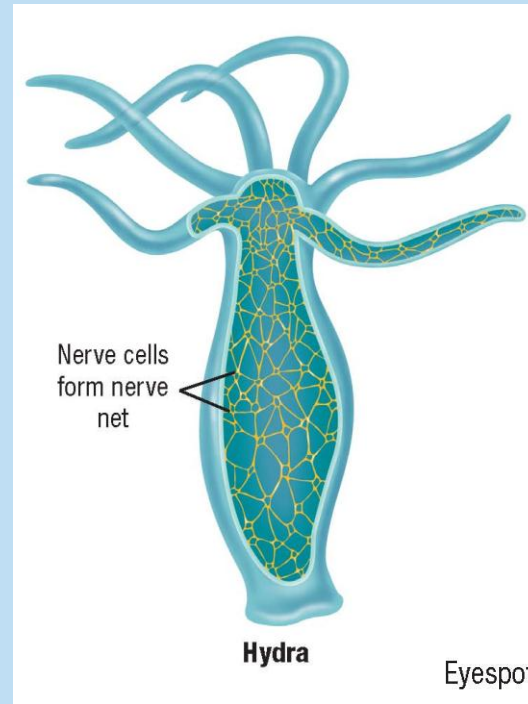


# Simple Nervous System

- All animals except sponges have nerve cells.
- In the simplest arrangement of nerves, called a *nerve net*, nerve cells do not coordinate actions efficiently.

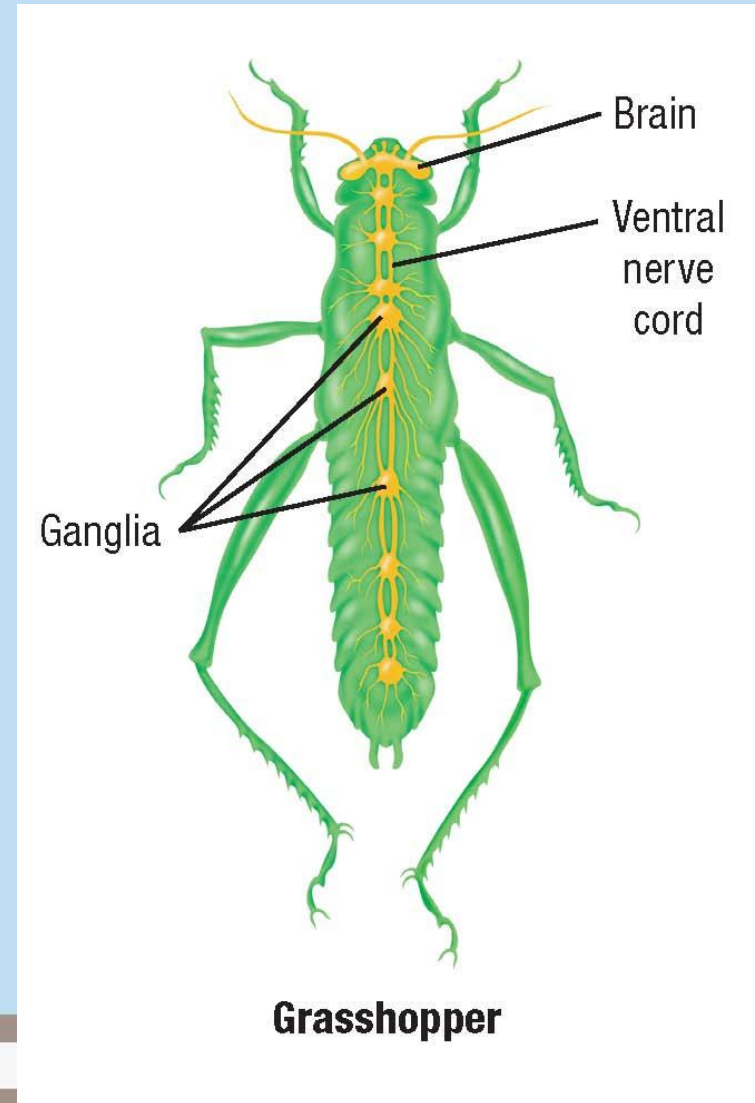


- Jellyfish and hydras have a nerve net.
- Many animals have clusters of nerve cells called *ganglia* that can coordinate responses.
- Flatworms have large more-complex ganglia, similar to a brain.



# Complex Nervous System

- More-complex invertebrates have a true brain with sensory structures, such as eyes, associated with it.
- Vertebrates have a relatively large brain.



# Respiratory and Circulatory Systems

**Key Idea:** The respiratory system is responsible for exchanging oxygen and carbon dioxide between the body and the environment. The circulatory system transports gases, nutrients, and other substances within the body.



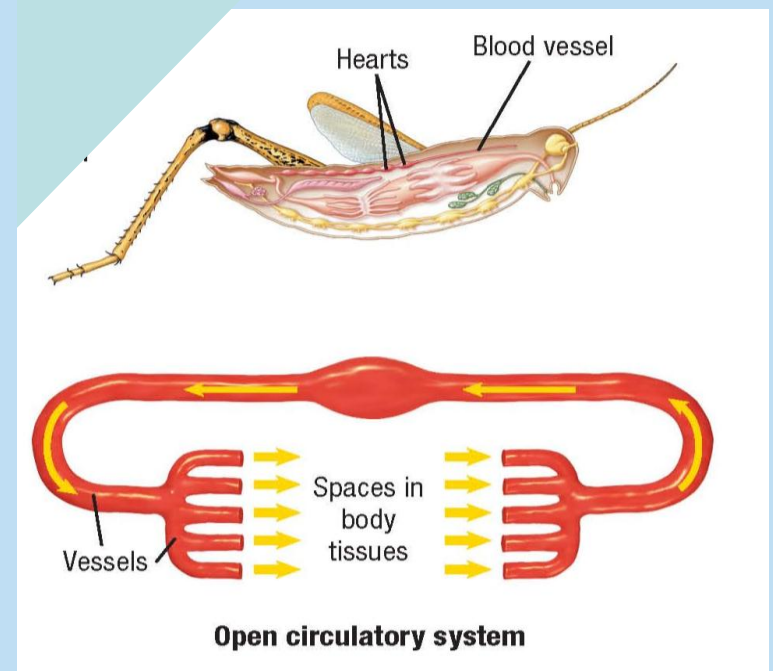
# Respiratory System

- Most animals have specialized respiratory systems.
- Aquatic animals respire by using thin projections of tissue called *gills*.
- A variety of respiratory organs, including lungs, have evolved in land animals.



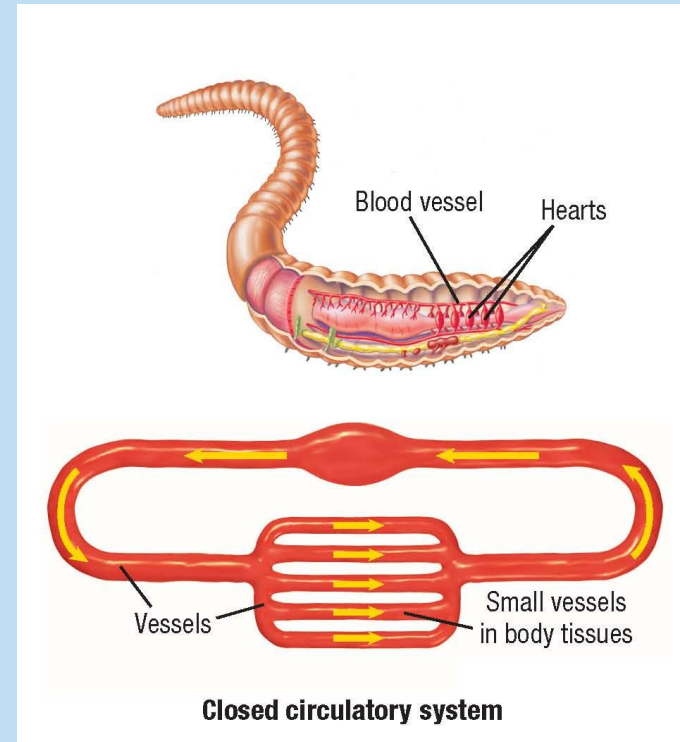
# Circulatory System

- In an *open circulatory system*, a heart pumps fluid containing oxygen and nutrients through vessels into the body cavity. The fluid provides oxygen and nutrients as it washes across the tissues.



# Circulatory System

- In a *closed circulatory system*, the blood is pumped through the body within vessels and is never in direct contact with the body's tissues.





# Reproduction

**Key Idea:** The two types of reproduction in animals are **asexual** and **sexual**.



# Asexual Reproduction

- Asexual reproduction occurs when an individual produces exact copies of itself and does not mix its genes with those of another.
- Sea stars and some salamanders and fishes reproduce asexually.



# Sexual Reproduction

- In sexual reproduction, a new individual is formed by the union of a male and female gamete.
- Some species can reproduce either asexually or sexually.

