

## What Animals Do to Survive

(Page 658-659, 751-757)

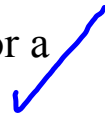


Animals carry out the following essential functions:

- feeding
- digestion
- respiration
- circulation
- excretion
- response
- movement
- reproduction



Many body functions help animals maintain homeostasis, or a relatively stable internal environment.



## Feeding and Digestion

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Invertebrates have evolved many different ways of obtaining food.

intracellular digestion -> process in which food is digested inside the cell

-> simplest organisms use this method  
(sponges)

extracellular digestion -> process in which food is broken down outside the cells in a digestive tract

-> more complex organisms use this method  
(mollusks, annelids, arthropods, echinoderms)

\* Flatworms and cnidarians use both types of digestion

Invertebrates have a variety of digestive systems.

Simple animals ingest food and expel wastes through a single opening.

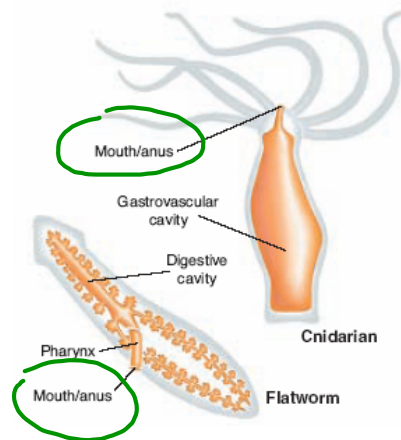


Figure 29-8  
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More complex animals digest food in a tube called the digestive tract. Food enters the body through the mouth, and wastes leave through the anus.

A one-way digestive tract often has specialized regions, such as stomach and intestines. Specialization of the digestive tract allows food to be processed more efficiently, because each step in the process takes place in order, at a specific place along the digestive tract.

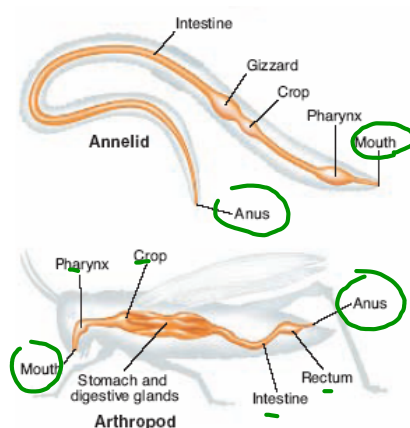


Figure 29-8  
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pharynx - muscular tube

- connects the mouth to the rest of the digestive tract
- serves as a passageway for food and air

crop - in earthworms, part of the digestive system in which food can be stored

gizzard - in earthworms, part of the digestive tract in which food is ground into smaller pieces

## Respiration

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All animals must exchange oxygen and carbon dioxide with the environment.

\*All respiratory organs have large surface areas that are in contact with the air or water. Also, for diffusion to occur the respiratory surfaces must be moist. }

Many aquatic invertebrates exchange gases through gills.

\*gills - feathery structures that expose a large surface area to the water  
 - rich in blood vessels that bring blood close to the surface for gas exchange

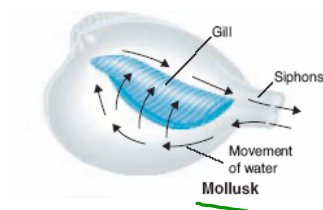


Figure 29-9  
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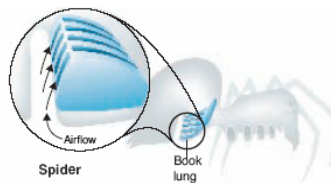
} siphon - tubelike structure through which water enters and leaves a mollusk's body

} In terrestrial invertebrates, respiratory surfaces are covered with water or mucus to minimize water loss. In addition, air is moistened as it travels through the body to the respiratory surface.

Invertebrates have several types of respiratory surfaces.

### Spider

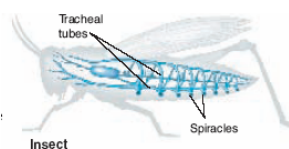
book lungs - made of parallel, sheetlike layers of thin tissues that contain blood vessels



### Grasshopper

spiracles - small openings located along the side of the body through which air enters and leaves the body

tracheal tubes - where gases diffuse in and out of surrounding body fluids



# Circulation

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Most complex animals move blood through their bodies using one or more hearts and either an open or closed circulatory system

- open circulatory system - one or more hearts or heartlike organs pump blood through blood vessels into a system of sinuses, or body cavities
- blood comes into direct contact with tissues

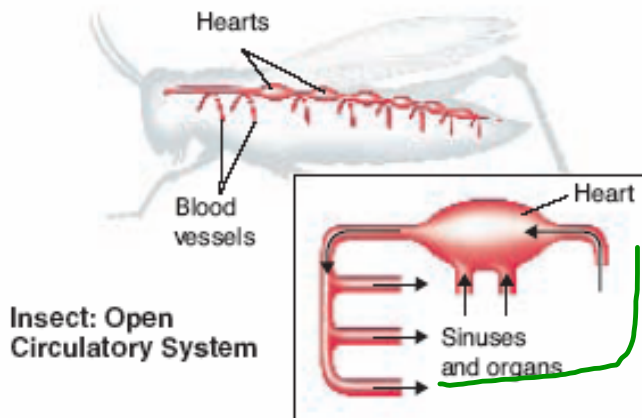


Figure 29-10  
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- ✓ closed circulatory system - a heart or heartlike organ forces blood through vessels that extend throughout the body
- materials reach tissues by diffusing across the walls of blood vessels

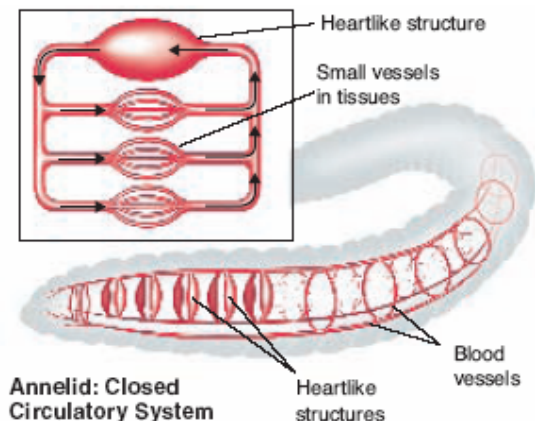


Figure 29-10 \*  
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1. What are the two types of body symmetry (2)?
2. What percentage of the animal kingdom do vertebrates make up?
3. What are the three germ layers (3)?
4. \_\_\_\_\_ is the concentration of sensory organs and nerve cells at the front end of the body.(1)
5. Name the hollow ball of cells the zygote becomes after numerous cell divisions.
6. Name two phylum of the Animalia kingdom (2).
7. The body cavities are lined with mesodermal tissues are called \_\_\_\_\_
8. \_\_\_\_\_ an animal whose mouth is formed from the blastopore.
9. \_\_\_\_\_ an animal whose anus is formed from the blastopore.