

CHAPTER 30

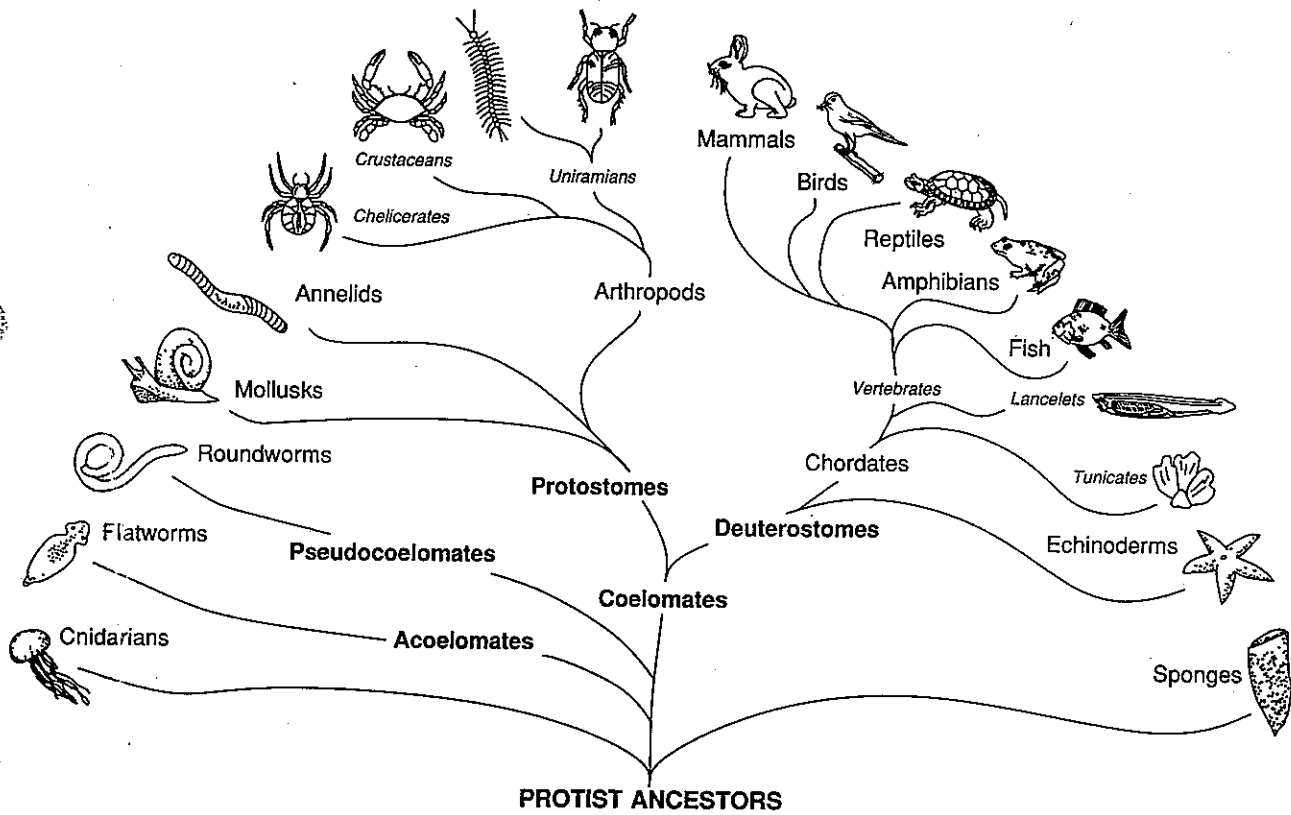
Comparing Invertebrates  
Section 30-1

**SKILL ACTIVITY**  
Identifying relationships

## Examining a Phylogenetic Tree

Scientists use organized diagrams to arrange information about different organisms. A phylogenetic tree is an example of such a diagram. In this activity you will examine a phylogenetic tree in order to determine the evolutionary relationships that exist among several groups of organisms.

Now examine the phylogenetic tree below, and answer the questions that follow.



1. Explain how a phylogenetic tree is arranged.

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2. What is the basis for the division of animals into protostomes and deuterostomes? How does this differ from the basis for the division of animals into acoelomates, pseudocoelomates, and coelomates?

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3. The cnidarians, roundworms, and annelids are on separate branches of the phylogenetic tree, yet they all have similar skeletons. Describe the type of skeleton that these animals have.

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4. Which branches of the tree include animals with endoskeletons?

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5. Where on the tree do you find animals that break down their food primarily through intracellular digestion—on the bottom or on the top of the tree?

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6. Which two branches of the tree include organisms that have only a single opening through which food enters and through which solid wastes are expelled?

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7. Which two branches of the tree include organisms with closed circulatory systems?

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8. Describe three trends in the evolution of the nervous system using examples from the tree.

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9. Some of the more complex animals can reproduce asexually by developing offspring from unfertilized eggs. Many of the simple invertebrates have different methods of asexual reproduction. Describe two such methods.

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CHAPTER 30

*Comparing Invertebrates*  
Section 30-2

**SKILL ACTIVITY**  
**Using tables**

## Comparing Form and Function Among Invertebrates

In order to adapt to their particular environment, animals eventually evolve specialized structures and systems. Biologists often use tables and charts to summarize the similarities and differences among structures of various animals. In this activity you will complete tables that compare characteristics of invertebrates and determine the influence each environment has on these traits.

Fill in the missing information in the following tables and then answer the questions below each table.

A.

	Cnidaria	Platyhelminthes	Mollusca	Annelida	Arthropoda	Echinodermata
Organism's environment						
Is every cell in contact with environment?						
Nitrogenous waste						
Structure that removes waste from blood						

1. What relationship exists between the environment in which an organism lives and the type of nitrogenous waste it excretes? Explain your answer. \_\_\_\_\_  
\_\_\_\_\_
2. Why is the cell membrane the structure for removal of nitrogenous wastes in the cnidarians, platyhelminthes, and echinoderms? \_\_\_\_\_  
\_\_\_\_\_
3. What nitrogenous wastes are associated with the conservation of water? \_\_\_\_\_  
\_\_\_\_\_

**B.**

	<b>Cnidaria</b>	<b>Platyhelminthes</b>	<b>Mollusca</b>	<b>Annelida</b>	<b>Arthropoda</b>	<b>Echinodermata</b>
Environment						
Methods of asexual reproduction						
Hermaphroditism						
Type of fertilization						
Cleavage						

4. What type of environment is usually associated with internal fertilization?

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5. What is the adaptive advantage of hermaphroditism to sessile organisms?

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6. Is fragmentation associated with aquatic environments or terrestrial environments?

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7. Explain why most land animals practice internal fertilization rather than external fertilization.

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*Comparing Invertebrates*

### Word Game

On the lines below, write the word or words that best fit the description on the left. When you are finished, the boxed-in letters will spell out one of the topics discussed in the chapter. Fill in that word or phrase in the space provided.

1. Animal whose mouth was formed from its blastopore

\_\_\_\_\_

2. Structures that absorb fluid from blood in the body sinuses of insects

\_\_\_\_\_  \_\_\_\_\_

3. Literally means the origin and development of a tribe

\_\_\_\_\_  \_\_\_\_\_

4. Word meaning body cavity

\_\_\_\_\_  \_\_\_\_\_

5. Animal without a body cavity

\_\_\_\_\_  \_\_\_\_\_

6. Breakdown of food outside the cells

\_\_\_\_\_  \_\_\_\_\_

7. Animal whose anus was formed from its blastopore

\_\_\_\_\_  \_\_\_\_\_

8. Union of sperm and egg that occurs inside the female body

\_\_\_\_\_  \_\_\_\_\_

9. Animal that has a body cavity completely lined with mesoderm

\_\_\_\_\_  \_\_\_\_\_

10. Hard, nonliving coating that encloses an arthropod's internal organs and muscles

11. Breakdown of food inside the cells

12. Word meaning false body cavity

13. Gradual change among organisms that is random and undirected

14. Kind of skeleton that does not contain hard structures

15. Skeleton located inside the body

16. Union of sperm and egg that occurs outside the body

Diagram that illustrates the evolutionary relationships among different groups of organisms