

Chapter 29 Comparing Invertebrates

Section 29–1 Invertebrate Evolution

(pages 745–750)



Key Concept

- What are the major trends in invertebrate evolution?

Introduction (page 745)

1. What are three places where fossils have been found that shed light on the origins of invertebrates?

a. _____

b. _____

c. _____

Origin of the Invertebrates (pages 745–747)

2. What are trace fossils? _____

3. Circle the letter of how old the fossils of the Ediacaran fauna are.

a. 700–600 years old

b. 6500–7500 years old

c. 60–75 million years old

d. 610–570 million years old

4. Is the following sentence true or false? Most fossils of Ediacaran fauna show little evidence of cell specialization. _____

5. What is the best known site of Cambrian fossils? _____

6. Circle the letter of each sentence that is true about animals of the Burgess Shale.

a. They were ancestors of most modern animal phyla.

b. They had features that are characteristic of most invertebrates living today.

c. They had specialized cells, tissues, and organs.

d. They were far less diverse than animals that lived earlier.

7. What features of the Burgess Shale animals made them so successful? _____

Invertebrate Phylogeny (page 747)

8. To which group of invertebrates are chordates most closely related?

9. Number the features below according to the sequence in which they evolved. Number the feature that evolved first 1.
- _____ a. Deuterostome development
 - _____ b. Tissues
 - _____ c. Coelom
 - _____ d. Protostome development

Evolutionary Trends (pages 748–750)

10. What does the appearance of each phylum in the fossil record represent in terms of evolution? _____

11. As larger and more complex animals evolved, in what ways did specialized cells join together? _____

12. Circle the letter of each animal group that has organ systems.
- a. flatworms
 - b. cnidarians
 - c. mollusks
 - d. arthropods
13. What are the two kinds of symmetry that invertebrates exhibit? _____

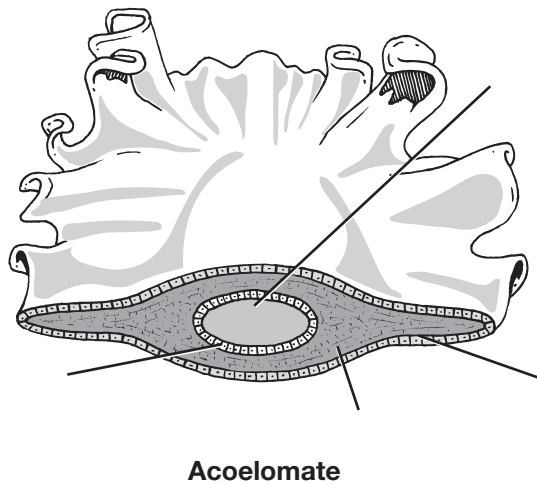
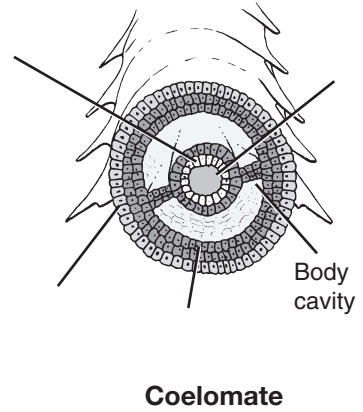
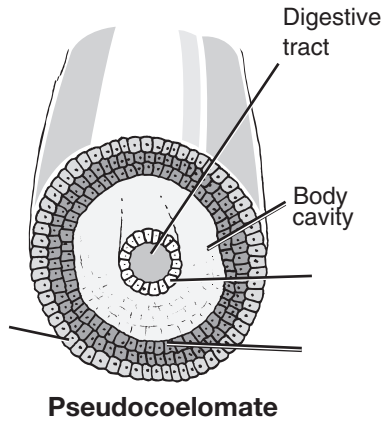
14. What is cephalization? _____

15. What body plan and lifestyle characterize invertebrates that have evolved cephalization? _____

16. What are the three germ layers that most invertebrates develop from?
- a. _____
 - b. _____
 - c. _____

17. What is a coelom? _____

18. Label each of the cross sections of the acoelomate, pseudocoelomate, and coelomate.



19. What does segmentation allow an animal to do with a minimum of new genetic material?

20. Most complex animal phyla have a true coelom that is lined completely with _____.

21. In most invertebrates, the zygote divides repeatedly to form a(an) _____.

22. What is the difference in early development between a protostome and a deuterostome?

23. Which groups of invertebrates are protostomes? _____

24. Complete the table that shows the general characteristics of the main groups of invertebrates.

Invertebrate	Germ Layer	Body Symmetry	Cephalization	Coelom
Sponges				
Cnidarians				
Flatworms				
Roundworms				
Annelids				
Mollusks				
Arthropods				
Echinoderms				

Reading Skill Practice

A good way to show similarities and differences between items is with a Venn diagram, which consists of two or more circles that overlap. Create Venn diagrams that compare these groups of invertebrates: (1) cnidarians and roundworms, (2) annelids and mollusks, and (3) arthropods and echinoderms. Use the table above for the information to be contained in your diagrams. For more information about Venn diagrams, see Organizing Information in Appendix A of your textbook.