

Study Guide

CHAPTER 27

Section 1: Echinoderm Characteristics

In your textbook, read about echinoderm characteristics.

Use each of the terms below only once to complete the passage.

- | | | | |
|--------------------|------------------|------------------------------|----------------------|
| adaptations | adult | classes | endoskeletons |
| larval | tube feet | water-vascular system | |

Echinoderms are marine animals with spiny (1) _____. Echinoderms also have radial symmetry in the (2) _____ stage of life. In the (3) _____ stage, echinoderms have features that link them to relatives that evolved after them. Two main features of echinoderms are the (4) _____ and the (5) _____. Echinoderms have a variety of (6) _____ for feeding and movement. There are six major (7) _____ of living echinoderms.

In your textbook, read about the body structure of echinoderms.

Match the definition in Column A with the term in Column B.

Column A

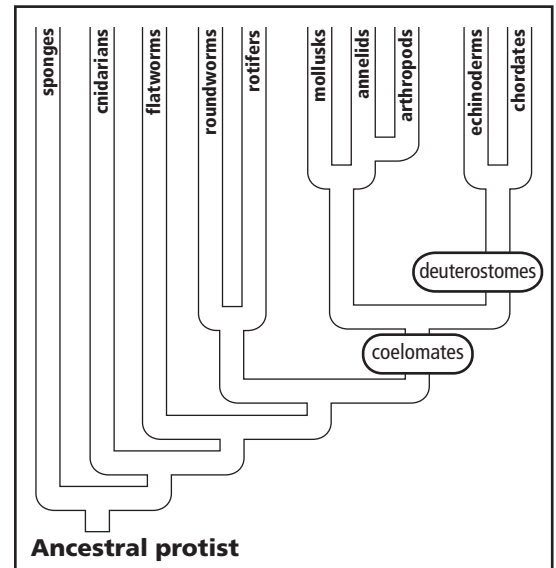
- _____ 8. strainer-like opening to the water-vascular system
- _____ 9. structure used for movement and respiration
- _____ 10. muscular sac that forces water into the tube feet
- _____ 11. system of fluid-filled, closed tubes that work together for movement and obtaining food
- _____ 12. pincers that aid in catching food

Column B

- A. pedicellaria
- B. water-vascular system
- C. madreporite
- D. tube foot
- E. ampulla

Refer to the evolutionary diagram on the right. Write the name of the group that best completes each statement.

- 13. Deuterostomes include _____ and _____.
- 14. Mollusks, annelids, and arthropods are _____.
- 15. The most primitive group after the ancestral protists is the _____.



Study Guide, Section 1: Echinoderm Characteristics continued

In your textbook, read about echinoderm diversity.

Complete the table by checking the correct column(s) for each description.

Description	Asterozoa	Ophiurozoa	Echinozoa	Holothurozoa	Crinozoa
16. Often five-armed					
17. Have arms that can break off and regenerate					
18. Cucumber shape					
19. Sessile for some part of life					
20. No suction cups on tube feet					
21. Move using arms					
22. Burrow in rocky areas or sand					
23. Long stalks or feathery, branching arms					
24. Body encased in a test with spines					
25. Leathery outer body					

In your textbook, read about the ecology of echinoderms.

For each statement below, write true or false.

- _____ 26. Sea cucumbers are sources of food for people in some Asian countries.
- _____ 27. When the numbers of sea urchins decline in some areas, algae also decreases.
- _____ 28. Sea urchins and sea cucumbers stir up sediment on the ocean floor, which is harmful to the marine ecosystem.
- _____ 29. The crown-of-thorns sea star feeds on coral polyps and can destroy a coral reef.
- _____ 30. Sea otters eat sea urchins. When the numbers of sea otters decline, the numbers of sea urchins increase, and then the sea urchins overgraze kelp forest habitats.

CHAPTER 27

Study Guide

Section 2: Invertebrate Chordates

In your textbook, read about invertebrate chordate features.

In the space at the left, write the letter of the term or phrase that best answers each question.

- _____ 1. Fossil evidence and recent molecular data indicate that humans are more closely related to which animal than to any other invertebrate?
 - A. amphioxus
 - B. crinoid
 - C. sea star
 - D. tunicate

- _____ 2. Which structure do all chordates possess at some point in their development?
 - A. backbone
 - B. fins
 - C. gills
 - D. notochord

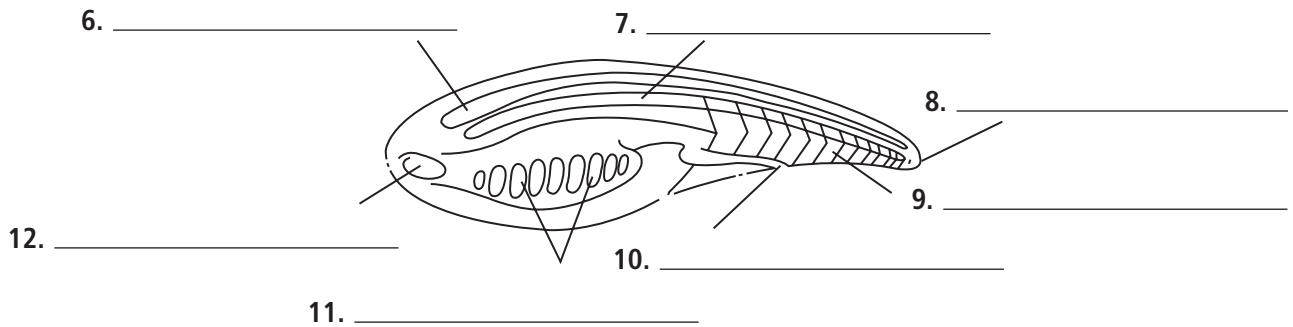
- _____ 3. Which characteristic is most helpful to a free-swimming animal?
 - A. eye spot
 - B. leathery skin
 - C. postanal tail
 - D. thyroid gland

- _____ 4. In chordates, the anterior end of the dorsal tubular nerve cord becomes which structure?
 - A. brain
 - B. digestive organ
 - C. muscles
 - D. spinal cord

- _____ 5. The ancestral thyroid glands were cells that secreted which substance to aid in filter feeding?
 - A. hormones
 - B. iodine
 - C. mucus
 - D. salt

Label the diagram of the lancelet (amphioxus). Use these choices:

- anus**
- notochord**
- dorsal tubular nerve cord**
- pharyngeal pouches**
- mouth**
- postanal tail**
- muscle blocks**



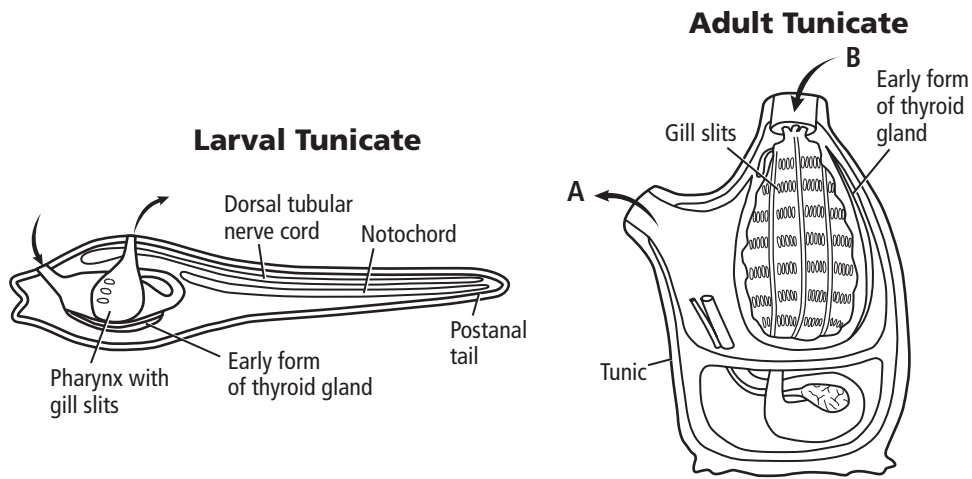
For each statement below, write true or false.

- _____ 13. During your early development, your notochord became your backbone.
- _____ 14. Invertebrate chordates have a backbone.
- _____ 15. In living aquatic chordates, pharyngeal pouches are used for filter feeding.

Study Guide, Section 2: Invertebrate Chordates continued

In your textbook, read about the diversity of invertebrate chordates.

Refer to the diagrams of a larval tunicate and an adult tunicate. Respond to each statement.



16. Tell which structure in the adult tunicate gave rise to its name. _____

17. State which structure labeled A or B in the adult tunicate is the excurrent siphon. _____

18. List the structures in the larval tunicate that disappear in the adult.

Complete the table by checking the correct column(s) for each description.

Description	Lancelets	Tunicates
19. Belong to the genus <i>Branchiostoma</i>		
20. Often called sea squirts		
21. Are filter feeders		
22. Take in water through the incurrent siphon		
23. Are fishlike, but do not have scales		
24. Have tails only as larvae		
25. One individual produces both eggs and sperm		
26. Burrow into the sand in shallow seas		
27. Retain chordate characteristics throughout life		
28. Have gill slits through which water exits the body		
29. Use a heart and blood vessels for circulation		