



Chapter 27 Exercises

Review Questions

- Which of the following is *not* a feature common to most animals?
 - development into a fixed body plan
 - asexual reproduction
 - specialized tissues
 - heterotrophic nutrient sourcing
- During embryonic development, unique cell layers develop into specific groups of tissues or organs during a stage called _____.
 - the blastula stage
 - the germ layer stage
 - the gastrula stage
 - the organogenesis stage
- Which of the following phenotypes would most likely be the result of a *Hox* gene mutation?
 - abnormal body length or height
 - two different eye colors
 - the contraction of a genetic illness
 - two fewer appendages than normal
- Which of the following organisms is most likely to be a diploblast?

a. sea star	c. jellyfish
b. shrimp	d. insect
- Which of the following is *not* possible?
 - radially symmetrical diploblast
 - diploblastic eucoelomate
 - protostomic coelomate
 - bilaterally symmetrical deuterostome
- An animal whose development is marked by radial cleavage and enterocoely is _____.
 - a deuterostome
 - an annelid or mollusk
 - either an acoelomate or eucoelomate
 - none of these
- Consulting the modern phylogenetic tree of animals, which of the following would *not* constitute a clade?

a. deuterostomes	c. Parazoa
b. lophotrochozoans	d. Bilateria
- Which of the following is thought to be the most closely related to the common animal ancestor?

a. fungal cells	c. plant cells
b. protist cells	d. bacterial cells
- As with the emergence of the Acoelomorpha phylum, it is common for _____ data to misplace animals in close relation to other species, whereas _____ data often reveals a different and more accurate evolutionary relationship.

a. molecular; morphological	c. fossil record; morphological
b. molecular; fossil record	d. morphological; molecular
- Which of the following periods is the earliest during which animals may have appeared?

a. Ordovician Period	c. Ediacaran Period
b. Cambrian Period	d. Cryogenian Period

11. What type of data is primarily used to determine the existence and appearance of early animal species?
 - a. molecular data
 - b. fossil data
 - c. morphological data
 - d. embryological development data
12. The time between 541–485 million years ago marks which period?
 - a. Cambrian Period
 - b. Silurian Period
 - c. Ediacaran Period
 - d. Devonian Period
13. Until recent discoveries suggested otherwise, animals existing before the Cambrian Period were believed to be:
 - a. small and ocean-dwelling
 - b. small and nonmotile
 - c. small and soft-bodied
 - d. small and radially symmetrical or asymmetrical
14. Plant life first appeared on land during which of the following periods?
 - a. Cambrian Period
 - b. Ordovician Period
 - c. Silurian Period
 - d. Devonian Period
15. Approximately how many mass extinction events occurred throughout the evolutionary history of animals?
 - a. 3
 - b. 4
 - c. 5
 - d. more than 5

Critical Thinking Questions

16. Why might the evolution of specialized tissues be important for animal function and complexity?
17. Describe and give examples of how humans display all of the features common to the animal kingdom.
18. How have *Hox* genes contributed to the diversity of animal body plans?
19. Using the following terms, explain what classifications and groups humans fall into, from the most general to the most specific: symmetry, germ layers, coelom, cleavage, and embryological development.
20. Explain some of the advantages brought about through the evolution of bilateral symmetry and coelom formation.
21. Describe at least two major changes to the animal phylogenetic tree that have come about due to molecular or genetic findings.
22. How is it that morphological data alone might lead scientists to group animals into erroneous evolutionary relationships?
23. Briefly describe at least two theories that attempt to explain the cause of the Cambrian explosion.
24. How is it that most, if not all, of the extant animal phyla today evolved during the Cambrian Period if so many massive extinction events have taken place since then?