

The Animals

Vocabulary

radial symmetry	deuterostome	invertebrate	nematocyst
bilateral symmetry	vertebrate	germ layer	amniotic egg
protostome	notochord	coelom	

Textbook pp. 96–107

MAIN IDEA: Animals are an extremely large and diverse group of heterotrophic multicellular eukaryotes.

1. What are three ways in which animals differ from plants and fungi? **K/U**
2. List six characteristics all animals have. **R/U**
3. Animals range in complexity from the simplest, in the phylum _____, to the most complex, in the phylum _____; **T/A**
4. Among animals, only members of the phylum Porifera are stationary, or _____, as adults and lack _____ cells. **K/U**
5. In **Table 1**, describe the typical limb of an arthropod, an echinoderm, and a member of each major class of chordate listed. **K/U**

Table 1 Selected animals groups and limb types

Group	Typical limb
Arthropod	
Echinoderm	
Agnathans	
Chondrichthyes	
Actinopterygii	
Amphibia	
Reptilia	
Aves	
Mammalia	

STUDY TIP

Inner, Middle, Outer

It may help you to remember which body tissues develop from the different germ layers by remembering that the prefix *ecto-* refers to the outside, the prefix *endo-* refers to the inside, and the prefix *meso-* refers to the middle. Look for other instances of these prefixes in biology vocabulary.

MAIN IDEA: Most animals develop from an embryo with three germ layers: the endoderm, mesoderm, and ectoderm.

6. Match the terms on the left with the correct definition on the right. **K/U**
- (a) germ layer (i) the middle layer
 - (b) ectoderm (ii) body cavity that contains the internal organs
 - (c) endoderm (iii) cells in a developing animal embryo that give rise to specialized tissues
 - (d) mesoderm (iv) the inner layer
 - (e) coelom (v) the outer layer
7. Fill in **Table 2** with the specialized tissues that develop from each germ layer. **K/U**

Table 2 Tissues in Each Germ Layer

Germ layer	Specialized tissues
ectoderm	
endoderm	
mesoderm	

MAIN IDEA: The simplest animals are the Porifera and Cnidaria. Most animals are protostomes: arthropods, nematodes, mollusks, annelids, rotifers, or platyhelminthes. Humans have many important interactions with protostomes.

8. The Porifera include about 8000 species of _____. The Porifera have _____ symmetry. The Cnidaria include about 9000 species of _____, _____, _____, and _____. Cnidaria have _____ symmetry. **K/U**
9. During protostome development, the _____ develops before the _____. **K/U**
10. Protostomes have _____ symmetry. **K/U**
11. Complete **Table 3** below with an example and two key body features of each of the major protostome phyla. **T/I**

Table 3 Examples and Features of Major Protostome Phyla

Phylum	Example	Key features
Arthropoda		
Nematoda		
Annelida		
Mollusca		
Rotifera		
Platyhelminthes		

12. In **Table 4** below, list an example of each type of human–protostome interaction. **171**

Table 4 Examples of Human–Protostome Interactions

Human–Protostome interaction type	Example
competition	
pathogens	
vectors	
food	
economic benefits	

MAIN IDEA: Deuterostomes include the echinoderms and chordates.

13. Echinoderms are _____ symmetrical as larvae but _____ symmetrical as adults. They typically have tube feet controlled by a water-filled _____ system. **170**
14. In **Figure 1**, circle the labels representing characteristics that distinguish chordates from other animals. **171 A**

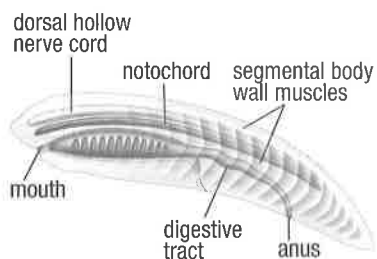


Figure 1

15. What are two characteristics that make a chordate a vertebrate? **171**
16. In **Table 5** below, give examples of how the features listed have allowed vertebrates to live on land. **171**

Body feature	How it assisted on land
bony skeleton	
paired limbs	
waterproof skin	
amniotic egg	

MAIN IDEA: The diversity of animals is threatened by many human activities, but our affinity for animals motivates us to protect them and their habitats.

17. Name one type of animal threatened by habitat destruction, one threatened by pollution, and one threatened by climate change. **171**

STUDY TIP

Who's On First?

To help distinguish protostomes and deuterostomes, remember that *stome* is from the Greek word for mouth, the prefix *proto-* is from the Greek word for *first*, and *deutero-* is from the Greek word for *second*.