CHAPTER 32
AN INTRODUCTION TO ANIMAL DIVERSITY

Learning objectives:

What Is an Animal?

1. List the characteristics that combine to define animals.
2. Describe the role of *Hox* genes in animal development.

The Origins of Animal Diversity

3. Describe the evidence that suggests animals may have first evolved over a half billion years ago.
4. Describe the evidence of animal life in the Neoproterozoic Era.
5. Explain the possible relationship of Ediacaran phyla to Cambrian animal phyla.
6. Explain the significance of the Cambrian explosion. Describe three hypotheses for the cause of the Cambrian explosion.
7. Distinguish between grades and clades of animal taxa.
8. Outline the major grades of the animal kingdom based on symmetry, embryonic germ layers, the presence or absence and type of coelom, and protostome or deuterostome development.
9. Distinguish between radial and bilateral symmetry. Explain how animal symmetry may match the animal's way of life.
10. Distinguish among the acoelomate, pseudocoelomate, and coelomate grades. Explain the functions of a body cavity.
11. Distinguish between the following pairs of terms:
    a. diploblastic and triploblastic
    b. spiral and radial cleavage
    c. determinant and indeterminate cleavage
12. Compare the developmental differences between protostomes and deuterostomes, including:
    a. pattern of cleavage
    b. fate of the blastopore
    c. coelom formation

New Views of Animal Phylogeny

13. Name five major features of animal phylogeny that are supported by systematic analyses of morphological characters and recent molecular studies.
14. Describe the alternate classifications of acoelomate flatworms that are supported by systematic analyses of morphological characters and recent molecular studies.
15. Describe the alternate relationships of annelids and arthropods that are supported by systematic analyses of morphological characters and recent molecular studies.
16. Distinguish between the ecdysozoans and the lophotrochozoans. Describe the characteristic features of each group.