

CHAPTER

3

DIRECTED READING

Cell Structure

► Section 3-1: Looking at Cells

Microscopes Reveal Cell Structure

Mark each statement below T if it is true or F if it is false.

- _____ 1. A large dog is approximately 2 m tall.
- _____ 2. A dime is approximately 6 cm in diameter.
- _____ 3. A blood cell is about 0.1 mm long.
- _____ 4. A meter is approximately 3 ft.
- _____ 5. A light microscope can be used to view objects as small as 1 nm.

In the space provided, explain how the terms in each pair differ in meaning.

- 6. magnification, resolution

- 7. light microscope, electron microscope

Microscopes Have Different Uses and Limitations

Read each question, and write your answer in the space provided.

- 8. What is the difference between a magnifying glass and a compound light microscope?

- 9. What is the difference between a transmission electron microscope and a scanning electron microscope?

► Section 3-2: Cell Features

The Cell Theory Has Three Parts

Mark each statement below T if it is true or F if it is false.

- _____ 1. All organisms are made of many cells.
- _____ 2. The cell membrane prevents all substances from entering the cell and leaving the cell.
- _____ 3. Cells arise from existing cells.
- _____ 4. All cells contain ribosomes.
- _____ 5. If a cell's surface-area-to-volume ratio is too high, substances cannot move through the cell quickly enough to meet the cell's needs.
- _____ 6. The structures inside a cell are suspended in a system of microscopic fibers called the cytoplasm.

Prokaryotes Do Not Contain Internal Compartments

Read each question, and write your answer in the space provided.

7. What are prokaryotes?

8. What is the difference between flagella and cell walls?

9. How are cell walls important to bacterial cells?

Eukaryotic Cells Are Organized

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|----------------------|---|
| _____ 10. eukaryote | a. short hairlike structures |
| _____ 11. organelles | b. cell structures that carry out specific activities |
| _____ 12. nucleus | c. houses the cell's DNA |
| _____ 13. cilia | d. cells contain nuclei |

The Structure and Function of Cell Membranes Are Closely Related

Complete each statement by writing the correct term or phrase in the space provided.

14. The _____ of a phospholipid is polar, and the long _____ are nonpolar.
15. The _____ is made of a double layer of phospholipids.

Read each question, and write your answer in the space provided.

16. What keeps proteins within the lipid bilayer?

17. What are the functions of the cell membrane?

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|-------------------------------|--|
| _____ 18. cell-surface marker | a. assists chemical reactions inside the cell |
| _____ 19. receptor protein | b. recognizes and binds to substances outside the cell |
| _____ 20. enzyme | c. helps substances move across the cell membrane |
| _____ 21. transport protein | d. identifies cell type |

► Section 3-3: Cell Organelles

The Nucleus Directs Cell Activities and Stores DNA

Read each question, and write your answer in the space provided.

1. What two substances are made in the nucleus and move into the cytoplasm?

2. What substance is stored in the nucleus?

An Internal Membrane System Processes Proteins

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|--------------------------------|---|
| _____ 3. endoplasmic reticulum | a. packages and distributes proteins |
| _____ 4. Golgi apparatus | b. small membrane-bound sac |
| _____ 5. vesicle | c. internal membranes that move substances through the cell |
| _____ 6. lysosomes | d. small organelles that contain digestive enzymes |
| _____ 7. rough ER | e. cellular structures on which proteins are made |
| _____ 8. smooth ER | f. does not have attached ribosomes |
| _____ 9. ribosomes | g. has attached ribosomes |

Mitochondria Produce ATP

Read each question, and write your answer in the space provided.

10. What is ATP?

11. What function do mitochondria perform?

Plant Cells Contain Structures That Animal Cells Lack

In the space provided, write Plants if the structure is found in plant cells, or Animals if the structure is found in animal cells. Write Both if the structure is found in both plant cells and animal cells.

- | |
|---------------------------|
| _____ 12. cell membrane |
| _____ 13. ribosomes |
| _____ 14. nucleus |
| _____ 15. cell wall |
| _____ 16. mitochondria |
| _____ 17. chloroplasts |
| _____ 18. central vacuole |