

# Directed Reading

## Section: Looking at Cells

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

- |                                   |                     |
|-----------------------------------|---------------------|
| _____ 1. height of a human        | a. 2 cm             |
| _____ 2. diameter of a penny      | b. 2 $\mu\text{m}$  |
| _____ 3. diameter of a blood cell | c. 2 m              |
| _____ 4. length of a bacterium    | d. 20 cm            |
| _____ 5. length of a human hand   | e. 10 $\mu\text{m}$ |

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

6. magnification, resolution

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7. light microscope, electron microscope

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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?

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

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# Directed Reading

## Section: Cell Features

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

1. What is the cell theory?

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2. Why can small cells exchange substances more readily than large cells?

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3. What are prokaryotes?

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

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5. How are cell walls important to bacterial cells?

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

\_\_\_\_\_ 6. eukaryote

\_\_\_\_\_ 7. organelles

\_\_\_\_\_ 8. nucleus

\_\_\_\_\_ 9. cilia

a. short hairlike structures

b. cell structures that carry out specific activities

c. houses the cell's DNA

d. cells contain nuclei

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

10. The \_\_\_\_\_ of a phospholipid is polar, and the long \_\_\_\_\_ are nonpolar.

**Directed Reading *continued***

11. The \_\_\_\_\_ is made of a double layer of phospholipids.

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

12. What keeps proteins within the lipid bilayer?

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13. What are the functions of the cell membrane?

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

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|-------------------------------|--|
| _____ 14. cell-surface marker | a. assists chemical reactions inside the cell          |
| _____ 15. receptor protein    | b. recognizes and binds to substances outside the cell |
| _____ 16. enzyme              | c. helps substances move across the cell membrane      |
| _____ 17. transport protein   | d. identifies cell type                                |

# Directed Reading

## Section: Cell Organelles

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?

\_\_\_\_\_

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

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

7. What is ATP?

\_\_\_\_\_

\_\_\_\_\_

8. What function do mitochondria perform?

\_\_\_\_\_

\_\_\_\_\_

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

\_\_\_\_\_ 9. cell membrane

\_\_\_\_\_ 12. cell wall

\_\_\_\_\_ 10. ribosomes

\_\_\_\_\_ 13. mitochondria

\_\_\_\_\_ 11. nucleus

\_\_\_\_\_ 14. chloroplasts

# Active Reading

## Section: Cell Features

Read the passage below. Then answer the questions that follow.

Located in the lipid bilayer of the cell membrane are various proteins. The middle part of a membrane protein is mostly nonpolar; it is attracted to the interior of the lipid bilayer but is repelled by the water on either side of the lipid bilayer. In contrast, the inner and outer parts of the protein are mostly polar and are therefore attracted to water. This dual attraction to water holds the protein in the lipid bilayer. However, the motion and fluidity of phospholipids enable the cell-membrane proteins to move around within the lipid bilayer.

There are different types of proteins in the cell membrane. Each type plays a vital role in the life of a cell. Marker proteins, which are attached to a carbohydrate on the cell's surface, help other cells recognize their cell type—liver cell or heart cell, for example. Receptor proteins recognize and bind to specific substances, such as signal molecules; outside the cell. Various enzymes in the cell membrane are involved in important biochemical reactions in the cell. Transport proteins aid the movement of substances into and out of the cell.

### SKILL: RECOGNIZING CAUSE AND EFFECT

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

1. The first paragraph describes a cause-and-effect relationship between the structure of a membrane protein and the lipid bilayer. The cause in this relationship is the nonpolar middle part of a membrane protein. What is the effect?

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2. Another cause-and-effect relationship detailed in the first paragraph explains that the inner and outer parts of a membrane protein are attracted to water. What is the cause?

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**Active Reading** *continued*

3. What causes a membrane protein to be held in the lipid bilayer?

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4. The last sentence in the first paragraph describes another cause-and-effect relationship. Identify the cause and then the effect.

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5. What is the main idea of the second paragraph?

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**SKILL: ORGANIZING INFORMATION**

The second paragraph of this passage identifies three different types of proteins found in the cell membrane. Complete the table below by writing the correct words or phrases in the spaces provided.

Type of protein	Function
6.	7.
8.	9.
10.	11.

In the space provided, write the letter of the term or phrase that best answers the question.

- \_\_\_\_\_ 12. What is the function of enzymes found in the cell membrane?
- to move substances out of the cell
  - to bind to specific substances
  - to help cells recognize their cell type
  - to assist biochemical reactions in the cell

# Active Reading

## Section: Cell Organelles

Read the passage below. Then answer the questions that follow.

Vesicles that contain newly made proteins move through the cytosol from the ER to an organelle called the **Golgi apparatus**. The Golgi apparatus is a set of flattened, membrane-bound sacs that serves as the packaging and distribution center of the cell. Enzymes inside the Golgi apparatus modify the proteins that are received in vesicles from the ER. The modified proteins are then enclosed in new vesicles that bud from the surface of the Golgi apparatus. Many of these vesicles move to the cell membrane and release their contents outside the cell. Other vesicles include **lysosomes**, which are small, spherical organelles that contain the cell's digestive enzymes. The ER, the Golgi apparatus, and lysosomes are work together in the production, packaging, and distribution of proteins.

### SKILL: READING EFFECTIVELY

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

1. Describe where the vesicles containing newly made proteins move in the cell.

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2. What is the Golgi apparatus?

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3. Where do the new vesicles come from?

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**Active Reading** *continued*

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**4.** What are lysosomes?

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**In the space provided, write the letter of the term or phrase that best completes the statement.**

- \_\_\_\_\_ **5.** All of the following organelles are involved in the production, packaging, and distribution of proteins EXCEPT the
- a.** Golgi apparatus.
  - b.** cytosol.
  - c.** ER.
  - d.** lysosomes.

Skills Worksheet

# Vocabulary Review

In the blanks provided, fill in the letters of the term or phrase being described.

1. uses light to produce a magnified image          T    M
2. uses electrons to form a magnified image          C                M
3. when an image appears larger          G
4. measure of clarity of image      R
5. produces three-dimensional images of living organisms          N                N      
    I
6. all living things are made of cells          L    H
7. regulates what enters and leaves a cell          L                M
8. structure on which proteins are made          B
9. single-celled organism that lacks a nucleus          K
10. protrude from cell's surface and enable movement      F
11. carries out specific activities          G
12. hairlike structures      C
13. organism whose cells each have a nucleus          U
14. houses the cell's DNA          C
15. interior of cell          P
16. keeps cell membrane from collapsing          S
17. has a polar "head" and nonpolar "tails"          S
18. double layer of phospholipids          D                L

**Vocabulary Review** *continued*

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

- 19.** The \_\_\_\_\_ is an extensive system of internal membranes that move proteins and other substances through the cell.
- 20.** A(n) \_\_\_\_\_ is a small, membrane-bound sac.
- 21.** The \_\_\_\_\_ is the packaging and distribution center of the cell.
- 22.** The organelles that contain the cell's digestive enzymes are \_\_\_\_\_.
- 23.** The organelles that transfer energy from organic compounds to ATP are \_\_\_\_\_.
- 24.** Organelles that use light energy to make carbohydrates from carbon dioxide and water are \_\_\_\_\_.
- 25.** The \_\_\_\_\_ stores water and may contain many substances, such as ions, nutrients, and wastes.
- 26.** The cell membrane of a plant is surrounded by a thick \_\_\_\_\_, which supports and protects the cell.

Skills Worksheet

# Concept Mapping

Using the terms and phrases provided below, complete the concept map showing the characteristics of cells.

animal cells

chloroplasts

flagella

cell membrane

cilia

plant cells

cell wall

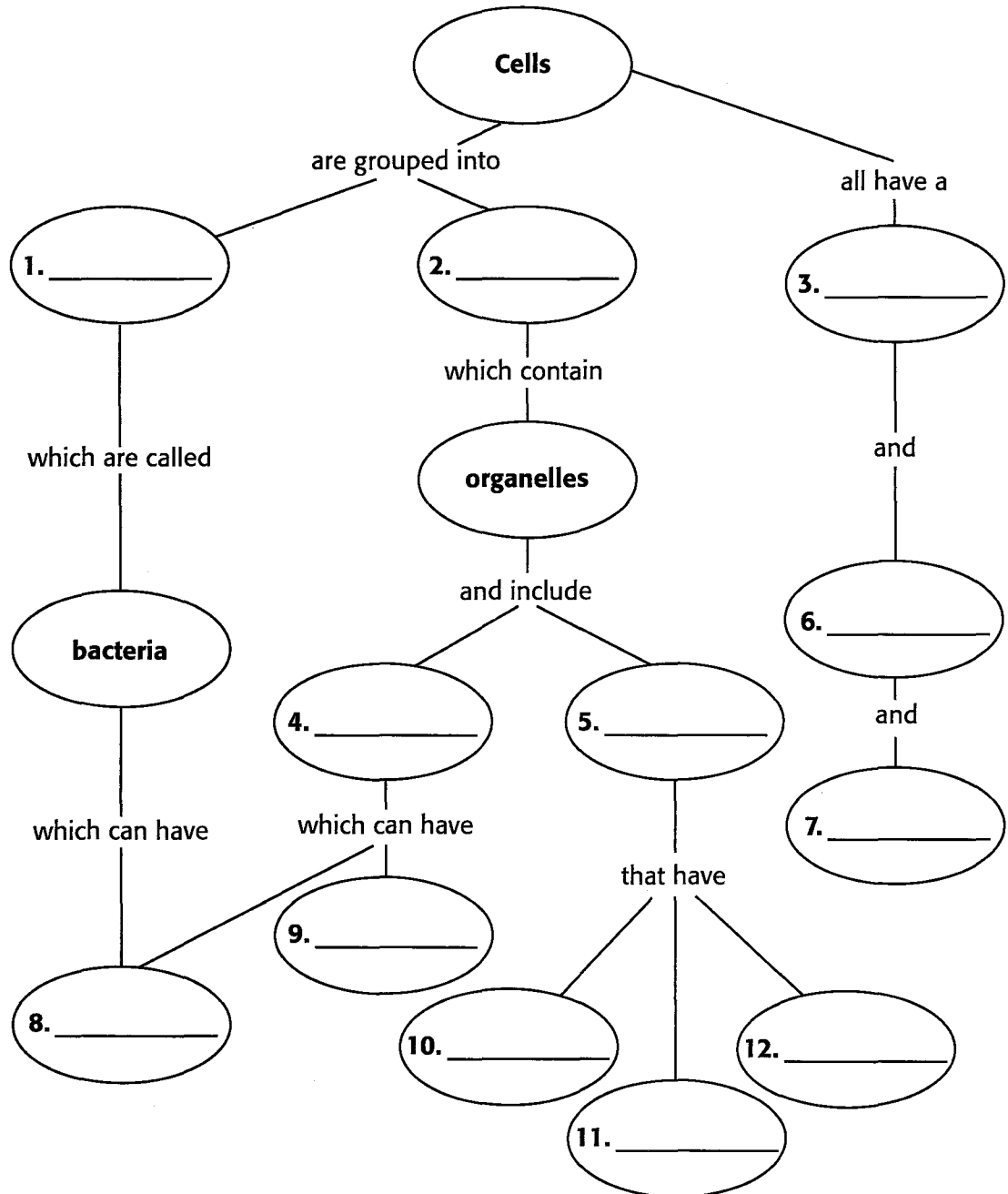
cytoplasm

prokaryotes

central vacuole

eukaryotes

ribosomes





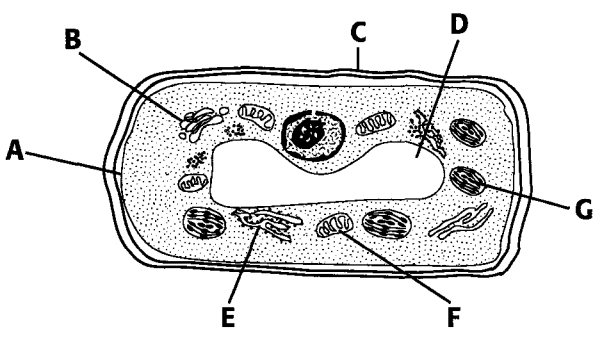
**Test Prep Pretest** *continued*

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

7. A cell's boundary is called the \_\_\_\_\_  
\_\_\_\_\_ .
8. In a bacterium, the \_\_\_\_\_ provides structure and support.
9. In the cell membrane, \_\_\_\_\_ aid the movement of substances into and out of a cell.
10. In plant cells, rigidity is provided by a large, membrane-bound sac called the \_\_\_\_\_ .
11. Nuclear \_\_\_\_\_ allow certain substances to pass into and out of the nucleus of a cell.
12. Vesicles that contain a cell's digestive enzymes are called \_\_\_\_\_ .
13. The "head" of a phospholipid is \_\_\_\_\_ , so it is attracted to water, while the "tails" are \_\_\_\_\_ , so they are repelled by water.
14. The cytoskeleton is a network of protein fibers that support the shape of a cell and may be involved in the movement of \_\_\_\_\_ .
15. If a compound microscope has a  $50\times$  objective lens and a  $10\times$  ocular lens, a viewed image appears \_\_\_\_\_ times larger than its actual size.
16. Mitochondria contain their own \_\_\_\_\_ , so they can produce their own proteins.

**Test Prep Pretest *continued***

**Questions 17–23 refer to the figure below.**



- 17. The structure labeled *A* is the \_\_\_\_\_ .
- 18. The organelle labeled *B* is the \_\_\_\_\_ .
- 19. The structure labeled *C* is the \_\_\_\_\_ .
- 20. The structure labeled *D* is the \_\_\_\_\_ .
- 21. The organelle labeled *E* is the \_\_\_\_\_ .
- 22. The organelle labeled *F* is a(n) \_\_\_\_\_ .
- 23. The organelle labeled *G* is a(n) \_\_\_\_\_ .

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

24. List the three parts of the cell theory.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

25. List the primary differences between prokaryotic cells and eukaryotic cells.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_