

CHAPTER

4

DIRECTED READING WORKSHEET

Cells: The Basic Units of Life

As you read Chapter 4, which begins on page 78 of your textbook, answer the following questions.

What if . . . ? (p. 78)

1. Where does Dr. Margulis think the energy-producing structures in cells came from?

2. What will you study in this chapter?

What Do You Think? (p. 79)

Answer these questions in your ScienceLog now. Then later, you'll have a chance to revise your answers based on what you've learned.

Investigate! (p. 79)

3. What type of cells are used in this activity?
- | | |
|----------------|----------------|
| a. plant cells | c. dog cells |
| b. frog cells | d. human cells |

Section 1: Organization of Life (p. 80)

4. All of the items necessary for _____ are contained in a single cell.

Chapter 4, continued

Cells: Starting Out Small (p. 80)

Mark each of the following statements *True* or *False*.

- 5. _____ All cells are too small to be seen without a microscope.
- 6. _____ You began as a single cell.
- 7. _____ All your cells look and act the same.
- 8. Look at Figure 2. How many cells do you have in your body?

Tissues: Cells Working in Teams (p. 81)

- 9. Cells that have similar functions group together to form _____.
- 10. What are three examples of cells that make up tissues pictured in the text?

Organs: Teams Working Together (p. 81)

- 11. Organs are made up of groups of _____.
- 12. Look at Figure 4. Your _____ is the largest and most visible organ in your body.

Organ Systems: A Great Combination (p. 82)

- 13. What is an organ system?
- 14. What would happen if your digestive system stopped working?

Chapter 4, continued

Organisms: Independent Living (p. 83)

15. Some organisms are made of one cell. True or False? (Circle one.)
16. Are the cells of your body considered organisms? Why or why not?

17. You are an example of a unicellular organism. True or False? (Circle one.)

The Big Picture (p. 83)

Choose the term in Column B that best matches the example or definition in Column A, and write the corresponding letter in the space provided. Terms may be used more than once.

Column A	Column B
___ 18. an ocean	a. organism
___ 19. the people, dogs, and cats in a town	b. population
___ 20. a group of organisms of the same kind that live in the same area	c. community
___ 21. all the ladybird beetles in the forest	d. ecosystem
___ 22. the soil, rocks, trees, ladybird beetles, and other organisms in a forest	
___ 23. a ladybird beetle	
___ 24. groups of organisms living in the same area and the nonliving things that affect them	
___ 25. a dog	
___ 26. two or more different groups of organisms living in the same area	
___ 27. the oak trees, flowers, lizards, and other organisms in a forest	

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Review (p. 84)

Now that you've finished Section 1, review what you learned by answering the Review questions in your ScienceLog.

Chapter 4, continued

Section 2: The Discovery of Cells (p. 85)

1. Why were cells discovered by accident?

Seeing the First Cells (p. 85)

2. What did Robert Hooke see when he looked at a thin slice of cork with his compound microscope?

3. *Cell* means _____ in Latin.

4. Did Hooke think that cells were found in all organisms? Explain.

Seeing Cells in Other Life-Forms (p. 86)

5. Anton van Leeuwenhoek did NOT

- a. see bacteria.
- b. discover that frog and human blood cells are the same shape.
- c. discover that yeast are unicellular organisms.
- d. see small organisms in pond scum.

The Cell Theory (p. 86)

6. When did scientists realize that all organisms contain cells?

7. The basic unit of _____ in all living things is the cell.

8. Rudolf Virchow realized that all cells come from

_____ cells.

Chapter 4, continued

Cell Similarities (p. 87)

Choose the cell feature in Column B that best matches the phrase in Column A, and write the corresponding letter in the space provided.

Column A	Column B
<p>___ 9. barrier between the inside of a cell and its environment</p>	<p>a. cytoplasm b. cell membrane c. DNA d. organelles</p>
<p>___ 10. structures a cell uses to live, grow, and reproduce</p>	
<p>___ 11. the fluid in a cell and almost everything in the fluid</p>	
<p>___ 12. controls all activities of a cell and contains the information needed for a cell to make new cells</p>	

Giant Amoeba Eats New York City (p. 88)

13. Could an amoeba become large enough to eat New York City? Why or why not?

14. In addition to being able to grow larger, what is another benefit of being multicellular?

Chapter 4, continued

Two Types of Cells (p. 90)

Answer the following questions after reading pages 90–91. Each of the following statements is false. Change the underlined word to make the statement true. Write the new word in the space provided.

- 15. Eukaryotic cells have circular DNA.

- 16. Prokaryotic cells contain membrane-covered organelles that make proteins.

- 17. Cell walls surround all eukaryotic cells.

- 18. A eukaryotic cell has DNA inside the ribosome.

- 19. Prokaryotic cells are also called algae.

Review (p. 91)

Now that you’ve finished Section 2, review what you learned by answering the Review questions in your ScienceLog.

Section 3: Eukaryotic Cells: The Inside Story (p. 92)

- 1. What two things helped scientists see more cell detail?

Holding It All Together (p. 92)

- 2. Which of the following is NOT a function of the cell membrane?
 - a. It brings nutrients inside the cell and lets out waste products.
 - b. It prevents the cell wall from tearing.
 - c. It keeps the cytoplasm inside the cell.
 - d. It interacts with things outside the cell.
- 3. Considering that trees don’t have bones, how do they stand up straight?

Chapter 4, continued

The Cell's Library (p. 93)

4. In a eukaryotic cell, the largest organelle is the _____.
5. The dark spot inside the nucleus is the _____.
6. Why do you think the nucleus is called the cell's library?

Protein Factories (p. 94)

7. Would cells die if they didn't have ribosomes? Explain.

The Cell's Delivery System (p. 94)

8. What are the functions of the endoplasmic reticulum? (Circle all that apply.)
 - a. It stores DNA.
 - b. It makes lipids.
 - c. It moves substances to different places in the cell.
 - d. It breaks down harmful chemicals.
9. _____ cause the surface of some ER to look rough.

The Cell's Power Plants (p. 95)

10. The _____ from broken-down food molecules is transferred to a special molecule called ATP.
11. Mitochondria need _____ to make ATP.
12. A chloroplast is an energy-converting organelle found in _____ and _____.
13. According to the endosymbiotic theory, mitochondria and chloroplasts originated as bacteria. True or False? (Circle one.)

The Cell's Packaging Center (p. 96)

14. The Golgi complex processes, packages, and transports materials sent to it from the _____.

Chapter 4, continued

The Cell's Storage Centers (p. 97)

15. Where do vesicles come from?

16. Why does wilted lettuce become crispy when it is soaked in water?

Packages of Destruction (p. 98)

17. Lysosomes do NOT

- a. contain enzymes.
- b. store liquids in the cell.
- c. destroy damaged organelles.
- d. protect the cell from invaders.

18. Why don't humans have webbed fingers?

Plant or Animal? (p. 99)

19. If you look at a cell through a microscope, how can you tell whether it is a plant cell or an animal cell?

Review (p. 99)

Now that you've finished Section 3, review what you learned by answering the Review questions in your ScienceLog.