7.1 Life Is Cellular

Lesson Objectives: 1. State the cell theory. 2. Describe how the different types of microscopes work. 3. Distinguish between prokaryotes and eukaryotes.

Lesson Summary

The Discovery of the Cell The invention of the microscope in the 1600s enabled researchers to see cells for the first time. Robert Hooke named the empty chambers he observed in cork "cells."

Cells are the basic units of life.

Cell theory, states: All living things are made of cells. Cells are the basic units of structure and function in living things. New cells are produced from existing cells.

Prokaryotes and Eukaryotes Cells come in an amazing variety of shapes and sizes, but all cells contain DNA. Also, all cells are surrounded by a thin flexible barrier called a **cell membrane.** There are two basic categories of cells based on whether they contain a nucleus. The **nucleus** (plural: nuclei) is a large membrane-enclosed structure that contains DNA. **Eukaryotes** are cells that enclose their DNA in nuclei. **Prokaryotes** are cells that do not enclose their DNA in nuclei.

The Discovery of the Cell

For Questions 1–2, complete each statement by writing the correct word or words.

1. The invention of the _____ made the discovery of cells possible.

2. Robert Hooke used the name _____ to refer to the tiny empty chambers he saw when he observed magnified cork.

Exploring the Cell

For Questions 3–5, write True if the statement is true. or change the underlined word(s) make the statement true.

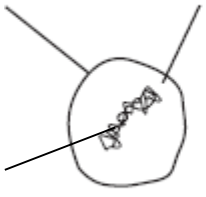
3. The size of the image formed by a light microscope is unlimited because light that passes through matter is diffracted.
4. Fluorescent dyes help scientists see the movement of compounds and structures in living cells.
5. Transmission electron microscopes form a 3-D image of the surface of a specimen.

Prokaryotes and Eukaryotes

Prokaryotes are simple cells. They lack a nucleus. Your body is made up of eukaryotic cells. Eukaryotes have a nucleus that holds DNA. They also have organelles.

Look at the diagrams below. Follow the directions.

6. Label the prokaryotic cell and its parts.
7. Label the eukaryotic cell and its parts.



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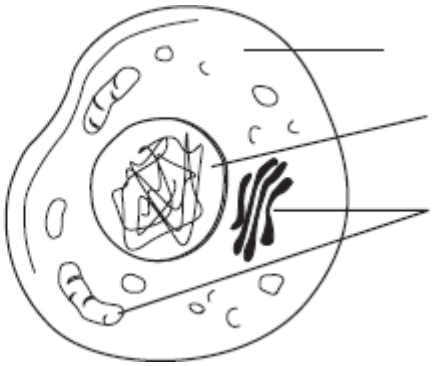

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8. Compare and contrast the two types of cells by completing the table.

	Prokaryotic Cell	Eukaryotic Cell
Cell membrane		
Nucleus		
Cell size		
Complexity		

9. Complete the table about the two categories of cells.

Two Categories of Cells			
Category	**Definition**	**Size range**	**Examples**
Prokaryotic cells			
Eukaryotic cells			

10. Which category of cells—prokaryotic or eukaryotic—is your body composed of? _____

11. Circle the correct answer. Bacteria are _____ cells.

a. prokaryotic b. eukaryotic

12. Give two other examples of living things that are eukaryotic.

a. _____ b. _____

13. Recall that in science, a theory is a well-tested explanation that unifies a broad range of observations and hypotheses and enables scientists to make accurate predictions about new situations. How does the cell theory demonstrate this definition of theory?

_____

_____

_____

14. (circle all true statements) Prokaryotes

a. grow and reproduce.
b. include many large, multicellular organisms.
c. are more complex than cells of eukaryotes.
d. have cell membranes and cytoplasm.

15. Are all eukaryotes large, multicellular organisms? _____