Name _____ Class _____ Date _____

7 Cell Structure and Function

7.1 Life Is Cellular

Lesson Objectives

- State the cell theory.
- Describe how the different types of microscopes work.
- 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."
- Anton van Leeuwenhoek was the first to observe living microorganisms.
- Cells are the basic units of life.
- Discoveries by German scientists Schleiden, Schwann, and Virchow led to the development of the cell theory, which 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.

Exploring the Cell Scientists use light microscopes and electron microscopes to explore the structure of cells.

- Compound light microscopes have lenses that focus light. They magnify objects up to 1000 times. Chemical stains and fluorescent dyes make cell structures easier to see.
- Electron microscopes use beams of electrons focused by magnetic fields. They offer much higher resolution than light microscopes. There are two main types of electron microscopes—transmission and scanning. Scientists use computers to add color to electron micrographs, which are photos of objects seen through a microscope.

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.

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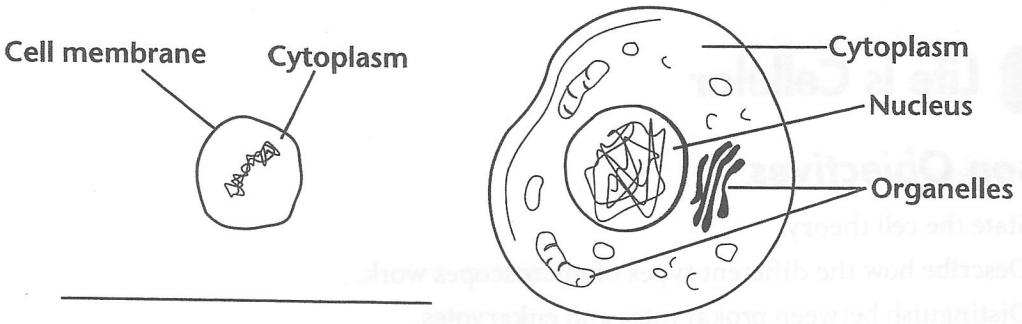
Prokaryotes and Eukaryotes

Look at the diagrams below. Label the *prokaryotic cell* and the *eukaryotic cell*.



_____ _____

Use the diagrams to answer the question.

11. Explain why you labeled each diagram as you did.

_____

_____

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

	Prokaryotic Cell	Eukaryotic Cell
Cell membrane	present	
Nucleus		present
Cell size		large
Complexity	simple	

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

_____

13. Is a bacterial cell a prokaryotic cell or a eukaryotic cell?

_____

14. 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?

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