



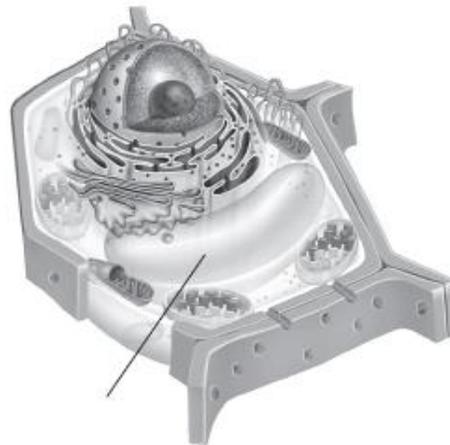
Chapter 7.2 Guided Reading

Lesson Summary

- Cell Organization Eukaryotic cells contain a nucleus and many specialized structures. Cytoplasm is the fluid portion of a cell. Organelles are structures that have specialized functions in eukaryotic cells. The nucleus contains DNA and controls the activity of a cell.
- Organelles That Store, Clean Up, and Support These structures include:
  - vacuoles: membrane-enclosed saclike structures that store water, salts, and organic molecules
  - lysosomes: organelles filled with enzymes that break down large molecules and organelles no longer useful
  - the cytoskeleton: a network of protein filaments; helps cell maintain its shape and is involved in movement
  - centrioles: organelles made from tubulins; they help organize cell division in animal cells
- Organelles That Build Proteins Three kinds of organelles work with the nucleus to make and distribute proteins:
  - ribosomes: small particles of RNA and protein found throughout the cytoplasm in all cells; they produce proteins by following coded instructions from DNA
  - the endoplasmic reticulum (ER): an internal membrane system where lipid components of the cell membrane are assembled, along with proteins and other materials
  - the Golgi apparatus: an organelle that appears as a stack of flattened membranes; it modifies, sorts, and packages proteins and other materials from the ER for storage in the cell or release outside the cell
- Organelles That Capture and Release Energy Two types of organelles act as power plants of the cells. Both types are surrounded by two membranes.
  - Chloroplasts capture the energy from sunlight and convert it into food that contains chemical energy in a process called photosynthesis. Cells of plants (and other organisms contain chloroplasts, which contain chlorophyll.
  - Mitochondria are found in all eukaryotic cells; they convert the chemical energy stored in food to a usable form.

Organelles That Store, Clean Up, and Support

1. What are vacuoles? \_\_\_\_\_
2. In the diagrams of the animal cell and the plant cell, label the structures indicated by the lines.



3. What is the role of lysosomes in the cell? Why is this role vital? \_\_\_\_\_  
\_\_\_\_\_

Organelles That Build Proteins

4. What are ribosomes? What do they do? \_\_\_\_\_  
\_\_\_\_\_
5. What is the difference between rough ER and smooth ER? \_\_\_\_\_



- 6. Lynn Margulis has suggested that mitochondria and chloroplasts are descendants of ancient \_\_\_\_\_.
- 7. What are chromosomes? \_\_\_\_\_
- 8. Most nuclei contain a small, dense region known as the \_\_\_\_\_.
- 9. The nucleolus is where the assembly of \_\_\_\_\_ begins.

*Match the organelle with its description.*

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|---------------------------|--|
| 10. _____ Ribosome        | a. Uses energy from sunlight to make energy-rich food                              |
| 11. _____ ER              | b. Stack of membranes in which enzymes attach carbohydrates and lipids to proteins |
| 12. _____ Golgi apparatus | c. Uses energy from food to make high energy compounds                             |
| 13. _____ Lysosome        | d. An internal membrane system in which parts membranes and proteins are built     |
| 14. _____ Vacuole         | e. Saclike structure that stores materials   |
| 15. _____ Chloroplast     | f. Small particle of RNA and protein that produces protein                         |
| 16. _____ Mitochondrion   | g. Filled with enzymes used to break down food into particles that can be used     |

**True/False Practice: If the statement is True, write "True." Correct if false.**

- 1. Prokaryotes are usually much larger cells than eukaryotes. \_\_\_\_\_
- 2. If a cell of an organism contains (has) a nucleus, the organism is a prokaryote. \_\_\_\_\_
- 3. The cell is the basic unit of structure and function in living things. \_\_\_\_\_
- 4. In most cells, the structure that controls the cell's activities is the ribosomes. \_\_\_\_\_
- 5. The cell wall is a flexible boundary between cell and its environment. \_\_\_\_\_
- 6. Despite differences in size and shape, at some point all cells have DNA and a plasma membrane. \_\_\_\_\_
- 7. The main difference in a eukaryotic cell from a prokaryotic cell is the presence of a cell wall. \_\_\_\_\_
- 8. The cell theory states that all living things are made up of cells. \_\_\_\_\_
- 9. The cell theory states that all cells store their DNA in the nucleus. \_\_\_\_\_
- 10. The cell theory states that cells are the basic units of structure and function in living things. \_\_\_\_\_
- 11. The cell theory states that new cells are produced from existing cells. \_\_\_\_\_
- 12. Mitochondria are found in plant and animal cells, and chloroplasts are found in plant cells only. \_\_\_\_\_
- 13. The word organelle simply means "specialized organs." \_\_\_\_\_
- 14. Some examples of prokaryotes are plants, animals, and fungi. \_\_\_\_\_
- 15. Some examples of eukaryotes are bacteria. \_\_\_\_\_
- 16. Anton van Leeuwenhoek used a microscope to see cork and named them "cells". \_\_\_\_\_
- 17. The fluid portion of the cell outside the nucleus that contains nutrients is called the cytoplasm. \_\_\_\_\_
- 18. Vacuoles are usually much larger and more numerous in plants than animals. \_\_\_\_\_
- 19. Plant cells usually have a circular, flexible shape. \_\_\_\_\_