

**SECTION 1-2****SECTION SUMMARY****Looking Inside Cells****1****Guide for Reading**

- ◆ What role do the cell membrane and nucleus play in the cell?
- ◆ What functions do other organelles in the cell perform?
- ◆ How do bacterial cells differ from plant and animal cells?

Inside a cell are tiny structures called **organelles**, which carry out specific functions in the cell. Organelles include the cell wall, cell membrane, and nucleus.

The **cell wall** is a rigid layer of nonliving material that surrounds plant cells. It helps protect and support a cell. Although the cell wall is stiff, many materials can pass through it.

In cells that do not have cell walls, the **cell membrane** is the outside boundary that separates the cell from its environment. There are tiny openings, or pores, in the cell membrane through which materials can enter or leave the cell. **One of the cell membrane's main functions is to control what substances come into and out of a cell.**

The **nucleus** is a large, oval structure that acts as the "brain" of the cell. **You can think of the nucleus as the cell's control center, directing all of the cell's activities.** The nucleus is surrounded by a nuclear membrane. Materials pass in and out of the nucleus through small openings, or pores, in the nuclear membrane. Floating in the nucleus are thin strands called **chromatin**, which contains the genetic material, or the instructions for cell functions. The nucleus also contains the nucleolus, a structure where ribosomes are made.

The **cytoplasm** is the region between the cell membrane and the nucleus. Many cell organelles are found in the cytoplasm. **The organelles function to produce energy, build and transport needed materials, and store and recycle wastes.** Rod-shaped organelles called **mitochondria** produce energy. A maze of passageways called the **endoplasmic reticulum** carries proteins and other materials from one part of the cell to another. Small, grainlike bodies called **ribosomes** produce proteins. Collections of sacs and tubes called **Golgi bodies** distribute proteins and other materials throughout the cell. In plants and some other organisms, large, green structures called **chloroplasts** capture energy from sunlight and use it to produce food for the cell. A large sac called a **vacuole** stores food and other materials in the cell. Small, round structures called **lysosomes** break down food and recycle old cell parts.

A bacterial cell is smaller than a plant or animal cell. **While a bacterial cell does have a cell wall and a cell membrane, it does not contain a nucleus.** A bacterial cell also contains ribosomes but none of the other organelles found in plant or animal cells.

In many-celled organisms, the cells are often quite different from each other. The structure of each kind of cell is suited to the function it carries out in the organism.

**SECTION 1-2 REVIEW AND REINFORCE**

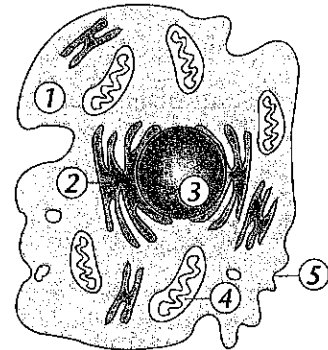
**Looking Inside Cells**

**◆ Understanding Main Ideas**

Identify each of the cell structures in the figure.

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_

*Simplified Animal Cell*



**1**

**◆ Building Vocabulary**

Fill in the blank to complete each statement.

- 6. \_\_\_\_\_ are tiny cell structures that carry out specific functions within the cell.
- 7. The rigid layer of nonliving material that surrounds plant cells is called the \_\_\_\_\_.
- 8. In cells without cell walls, the \_\_\_\_\_ forms the outside boundary that separates the cell from its environment.
- 9. The \_\_\_\_\_ is a large, oval structure that directs all of the cell's activities.
- 10. Strands of genetic material floating in the nucleus are referred to as \_\_\_\_\_.
- 11. The region between the cell membrane and the nucleus is called the \_\_\_\_\_.
- 12. \_\_\_\_\_ produce most of the energy the cell needs to carry out its functions.
- 13. A maze of passageways called the \_\_\_\_\_ carries proteins and other materials from one part of the cell to another.
- 14. \_\_\_\_\_ function as factories to produce proteins.
- 15. \_\_\_\_\_ receive proteins and other newly formed materials and distribute them to other parts of the cell.
- 16. Organelles called \_\_\_\_\_ capture energy from sunlight and use it to produce food for the cell.
- 17. The storage area of a cell is called a(n) \_\_\_\_\_.
- 18. \_\_\_\_\_ are small, round structures in cells that break down large food particles into smaller ones.