

* Cell Reading Guide *

SECTION 1-2

SECTION SUMMARY

Looking Inside Cells

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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

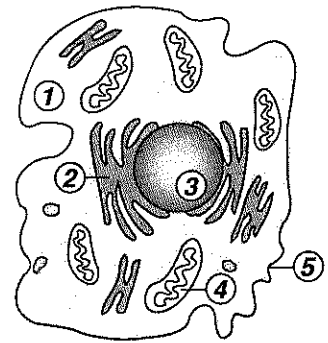
Looking Inside Cells

◆ Understanding Main Ideas

Identify each of the cell structures in the figure.

- 1. _____
- 2. _____
- 3. _____
- 4. _____
- 5. _____

Simplified Animal Cell



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◆ 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.