

**SECTION 1-1**

**SECTION SUMMARY**

# What Is Life?

**Guide for Reading**

- ◆ What characteristics do all living things share?
- ◆ What do living things need to survive?

**O**rganisms are living things. All living things share six important characteristics. **All living things have a cellular organization, contain similar chemicals, use energy, grow and develop, respond to their surroundings, and reproduce.**

A **cell** is the basic unit of structure and function in an organism. **Unicellular**, or single-celled, organisms include bacteria, the most numerous organisms on Earth. **Multicellular** organisms are composed of many cells.

Cells are composed of chemicals. The most abundant chemical in cells is water. Other chemicals called carbohydrates are a cell's energy source. Proteins and lipids are the building materials of cells. Nucleic acids are the genetic materials that direct the cell's activities.

All living cells use energy. Organisms use energy for such things as growth and repair of damaged parts.

Living things grow and develop. Growth is the process of becoming larger. **Development** is the process of change that occurs during an organism's life to produce a more complex organism.

A change in an organism's surroundings that causes the organism to react is called a **stimulus**. An organism reacts to a stimulus with a **response**—an action or change in behavior.

Another characteristic of organisms is the ability to **reproduce**, or produce offspring that are similar to the parents. People once believed the mistaken idea that living things arise from nonliving sources—an idea called **spontaneous generation**. Controlled experiments helped disprove spontaneous generation. In a **controlled experiment**, a scientist carries out two tests that are identical in every respect except for one factor, called the **variable**.

All organisms need four things to stay alive. **Living things must satisfy their basic needs for energy, water, living space, and stable internal conditions.**

Organisms that make their own food are called **autotrophs**. Organisms that cannot make their own food are called **heterotrophs**. Heterotrophs consume other autotrophs or heterotrophs. All organisms need food, water, and shelter. Some organisms compete for food and space.

Because conditions in their surroundings can change, organisms must be able to keep the conditions inside their bodies constant. The maintenance of stable internal conditions despite changes in surroundings is called **homeostasis**.

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