

The Necessities of Life

Key Concept Every living thing needs water, a place to live, and food in order to survive.

What You Will Learn

- The cells of every living thing need water and food in order to function properly.
- Proteins, carbohydrates, lipids, ATP, and nucleic acids are molecules that support the functions of cells.

Why It Matters

Understanding the needs of living things will help you recognize how humans are similar to other organisms.

Vocabulary

- producer
- consumer
- decomposer
- protein
- carbohydrate
- lipid
- phospholipid
- ATP
- nucleic acid

READING STRATEGY

Graphic Organizer In your **Science Journal**, make a Spider Map that shows proteins, carbohydrates, lipids, ATP, and nucleic acids as nutrients that living things need.



7.1.a Students know cells function similarly in all living organisms.

▶ Would it surprise you to learn that you have the same basic needs as a tree, a frog, and a fly? Almost every organism has the same basic needs: water, air, a place to live, and food.

Water

You may know that your body is made mostly of water. In fact, water makes up approximately 70% of your cells and the cells of almost all living things. Most of the chemical reactions involved in metabolism require water. But organisms differ greatly in terms of how much water they need and how they get it. You could survive for only about three days without water. You get water from the fluids you drink and the food you eat. The desert-dwelling kangaroo rat never drinks. It gets all of its water from food.

Standards Check Why do cells require water? 7.1.a

Air

Air is a mixture of several gases, including oxygen, nitrogen, and carbon dioxide. Most living things use oxygen in the chemical process that releases energy from food. Oxygen may come from the air or may be dissolved in water. The European diving spider in **Figure 1** goes to great lengths to get oxygen. Green plants, algae, and some bacteria need carbon dioxide as well as oxygen. They use oxygen and carbon dioxide to produce food and oxygen through the process of photosynthesis (FOHT oh SIN tuh sis).

Although most living things need air, some do not. Organisms that can live without air are *anaerobic*. A kind of bacterium that causes sickness in humans, *Clostridium botulinum*, is anaerobic. It will not grow in the presence of air.

Figure 1 This spider surrounds itself with an air bubble that provides the spider with a source of oxygen underwater.



A Place to Live

All living things need a place to live that has all of the things that they need to survive. Some organisms, such as elephants, must have a large amount of space. Other organisms may live their entire life in one small area.

Space on Earth is limited. Often, organisms must compete with each other for food, water, and other necessities. Many animals, including the warbler in **Figure 2**, will claim a particular space. After claiming a space, they try to keep other animals away.

Food

All living things need food. Food gives organisms energy and the raw materials needed to carry out life processes. Organisms use nutrients from food to make cells and build body parts. But not all organisms get food in the same way. In fact, every kind of organism can be placed into one of three groups based on how it gets food.

Making Food

Some organisms, such as plants, are producers. **Producers** make their own food through photosynthesis. Like most producers, plants use the sun's energy to make food from water and carbon dioxide. Some producers get energy and food from the chemicals in their environment.

Taking Food

Other organisms are consumers. **Consumers** must eat (consume) other organisms, such as plants or animals, to get food. The frog in **Figure 3** is a consumer. It gets the energy that it needs by eating insects and other organisms.

Some consumers get their food by breaking down the nutrients in dead organisms or in animal wastes. These organisms are **decomposers**. Decomposers are consumers because they must eat their food. The mushroom in **Figure 3** is a decomposer.

Figure 3 *The frog is a consumer. The mushroom is a decomposer. The green plants are producers.*



Figure 2 *A warbler's song is more than just a pretty tune. The warbler is protecting its home by telling other warblers to stay out of its territory.*

producer (proh DOOS uhr) an organism that can make its own food by using energy from its surroundings

consumer (kuhn SOOM uhr) an organism that eats other organisms or organic matter

decomposer (DEE kuhm POHZ uhr) an organism that gets energy by breaking down the remains of dead organisms or animal wastes and consuming or absorbing the nutrients

