Getting to Know: Plants

Although plants may not seem complex, they can accomplish what few other organisms on Earth can do—they can make their own food using sunlight, water, and carbon dioxide. Nearly every other form of life on Earth depends directly or indirectly on plants to live. We depend on plants for food, shelter, medicine, and clothing, and to meet many other needs.

Plants are so essential to our lives that we sometimes take them for granted. In fact, there is such a diversity of plants in the world that it is helpful to think about the characteristics that all plants have in common.

Plant leaves are specialized structures that take in sunlight and perform photosynthesis.

What are plants?

Plants are complex multicellular organisms that cannot move their bodies to change location. They obtain energy through photosynthesis. Like all living things, they are made up of cells. Specialized plant cells form tissues, which make up structures such as leaves, stems, flowers, and roots.

Misconception 1: ***I thought that plants are not alive because they cannot move around. Don't all living things move?***

Plants really are living organisms! Not every living thing can move. However, plants do respond to their environment. Plants respond to their environment in many ways. For example, the tendrils of some kinds of vines respond to touch by curling. This allows the vine to grab onto objects for support. Plants can also grow toward a light source.

How do plants produce food?

All living things need to take in energy. Animals obtain energy by eating, but plants get energy by performing *photosynthesis*. Plant cells contain *chloroplasts*, unique organelles that use the Sun's energy, carbon dioxide, and water to produce a sugar called *glucose* during photosynthesis. Photosynthesis occurs primarily in a plant's leaves, which also collect sunlight and absorb carbon dioxide, then release oxygen and water vapor. Photosynthesis also occurs in other plant structures. In fact, some plants don't have leaves.

In what other ways are plants unique?

Water is essential for plant survival because, like all cells, plant cells need water to perform basic life processes. Plants need water to perform photosynthesis and to maintain their shape. *Roots* bring water and nutrients into the plant, and the *xylem* and *phloem* carry the water and other nutrients through the stems and the leaves. *Stems* provide a central structure for the plant and hold the organism in position so the other structures can function properly. *Leaves* contain the cells that conduct photosynthesis. Leaves also contain tiny pores called *stomata*, from which water leaves the plant. The movement of water and gases through a plant's body is referred to *transpiration*, and it is an important part of both the water and carbon cycles.

A plant's roots draw in the water it needs to perform photosynthesis and other life processes.

Flowers are structures that perform reproductive functions. Flowering plants produce male and female cells. The male cells are called *pollen* and the female cells are called *ova*. When a flowering plant is fertilized, it produces offspring in the form of seeds. However, not all plants reproduce flowers. Simpler plants, like mosses, lack these specialized structures. These plants reproduce using simple reproductive cells called *spores*.

Most plants can reproduce both sexually and asexually. Sexual reproduction occurs by seeds or spores. Asexual reproduction can occur through other means such as vegetation and budding. You will learn more about the different methods of plant reproduction in this lesson.

Misconception 2: ***Two individuals are needed for sexual reproduction. Plants cannot move. That must mean that plants do not reproduce sexually.***

Although plants cannot move from place to place, they have adaptations that allow sex cells to travel from a male plant to a female plant. Male sex cells are contained in pollen, which floats on the wind. Many flowering plants also have adaptations to attract pollinators such as insects, bats, and birds. Pollen sticks to these animals when they feed on nectar inside flowers. Then they carry the pollen from male to female parts of flowers.

Now that you know a little more about plants, let's get started with our lesson. There are many more details to learn!