

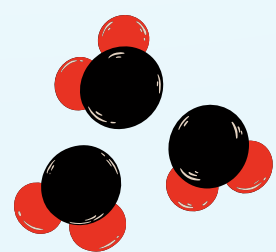
# PHOTOSYNTHESIS

**Carbon Dioxide + Water + Light --> Glucose + Oxygen**

Photosynthesis is the process in which green plants, algae, and some bacteria use sunlight, water, and carbon dioxide to make their own food. Herbivores obtain energy by eating these plants and in turn, carnivores eat the herbivores. As a foundational part of the food chain, almost all living organisms rely on photosynthesis.

## GLUCOSE

The plant uses glucose as chemical energy to help the plant grow. Glucose also provides chemical energy to organisms that may consume the plant.

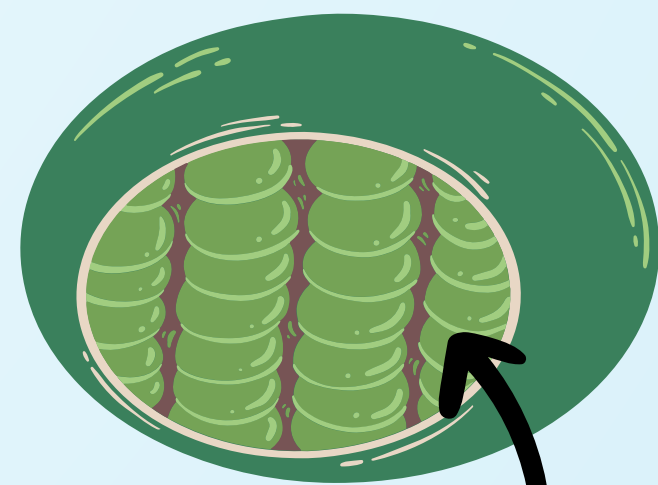


## CARBON DIOXIDE

Carbon dioxide, CO<sub>2</sub>, the molecule given off by humans and other living organisms, enters the plant through stomata. Stomata are tiny pores through which plants breathe. They are found on the top and underside of leaves, stems, roots, and flower petals.

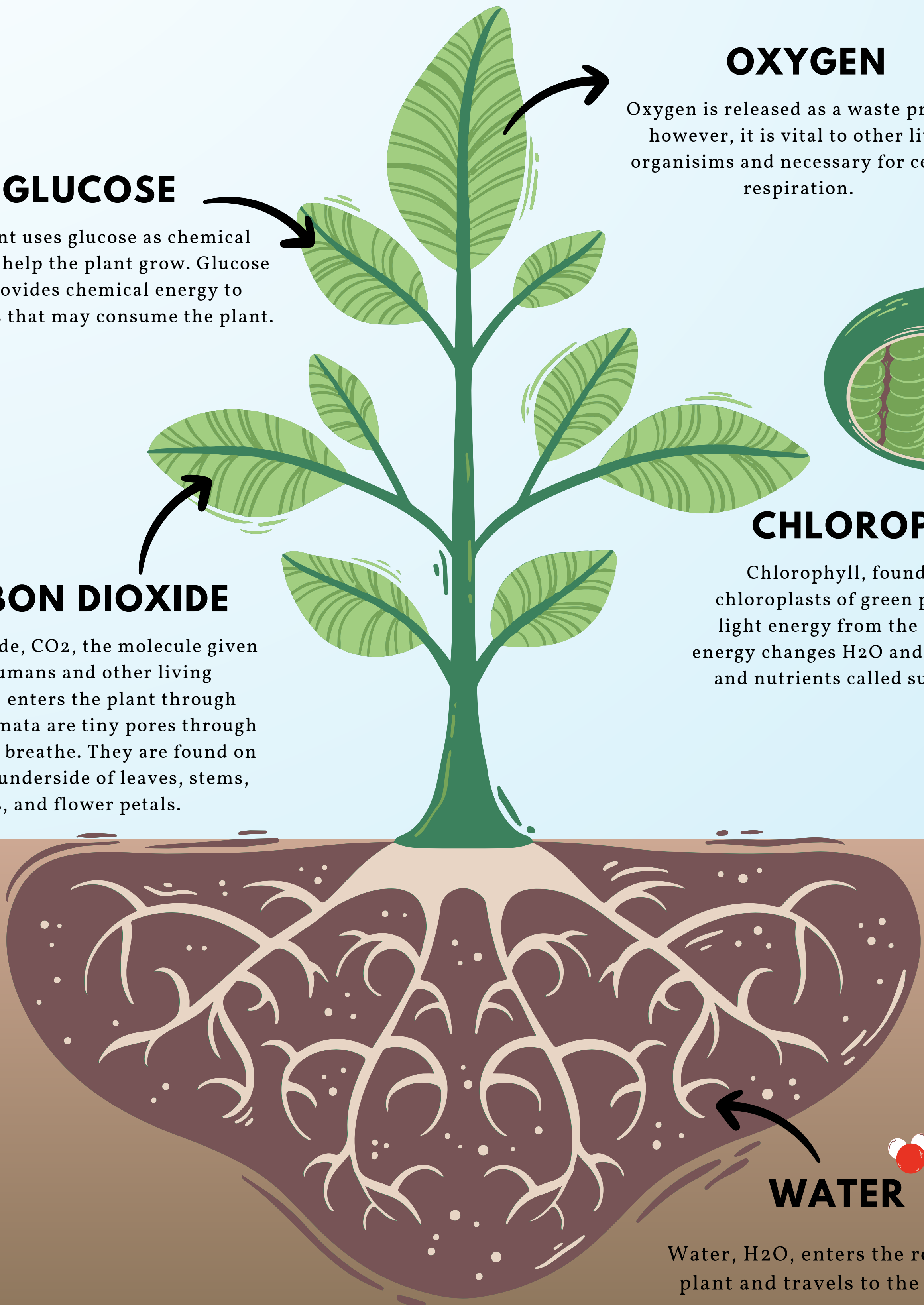
## OXYGEN

Oxygen is released as a waste product, however, it is vital to other living organisms and necessary for cellular respiration.



## CHLOROPHYLL

Chlorophyll, found within the chloroplasts of green plants, absorbs light energy from the sun. This light energy changes H<sub>2</sub>O and CO<sub>2</sub> into oxygen and nutrients called sugars (glucose).



## WATER

Water, H<sub>2</sub>O, enters the roots of a plant and travels to the leaves.



# CELLULAR RESPIRATION

**Glucose + Oxygen --> Carbon Dioxide + Water**

Glucose that is produced during photosynthesis is used by a plant to create other forms of energy, store a food supply for the plant, and carry out the processes needed for a plant to survive and grow. Much of the glucose is used to form other molecules, such as cellulose, which is used to form cell walls. The creation of these molecules and energy production happens through the process of cellular respiration. The chemical reaction that is the basis of cellular respiration is the reverse of photosynthesis. Glucose is broken down by the presence of oxygen while energy is given off in addition to carbon dioxide and water.

## OXYGEN

Oxygen enters the plant through its roots, stomata, and stems.

## WATER & CARBON DIOXIDE

Water, H<sub>2</sub>O, and carbon dioxide, CO<sub>2</sub>, are released into the atmosphere through the stomata

## GLUCOSE

Glucose, which is stored in the plant cells, is broken down in the presence of oxygen, releasing energy, as well as water and carbon dioxide as waste products.

## IS THERE A BALANCE?

It is often stated that plants "take in carbon dioxide and give off oxygen" which animals and other living organisms need for survival. However, through the process of cellular respiration, carbon dioxide and water are also produced by green plants. So where does the "plants give off oxygen" concept stem from? During hours of daylight, photosynthesis occurs more rapidly than cellular respiration so more oxygen is released than water and carbon dioxide.