Photosynthesis Animation - The Biology of Plants

How does photosynthesis work? This clip—from an animation, produced by BioMEDIA Associates—explains the biology of plants.

By way of further explanation ... as people have pores (on their skin), leaves have pores (called "stomata"). Carbon dioxide—which plants need to live—is able to enter a leaf through its stomata.

Once inside the leaf, carbon dioxide is able to reach the leaf's chloroplasts. The chloroplasts contain a substance called chlorophyll.

Sunlight is important when plants make their own food during photosynethesis. Light from the sun is the energy which chlorophyll needs to bind carbon dioxide to the water which a plant gets through its roots.

When carbon dioxide and water combine, inside the plant, two new products—a carbohydrate, called "glucose," plus oxygen—are formed. The plant needs one of the products but does not need the other:

- The plant uses glucose;
- The plant discards oxygen (through its leaves).

When a plant discards oxygen through its leaves, that process is called "transpiration."

Transpiration is the reason why the world's biggest rainforests are sometimes called the "lungs of the world." All those leaves, on all those trees, are releasing oxygen into the surrounding environment.

Plants are the only living organisms in the world which can make their own food through this process of photosynethesis.

There is something else to know about the biology of plants. Just like people and animals, plants take in oxygen and release carbon dioxide in a process called "respiration." How respiration works, in plants, is described in this animation.

In "Botany: A Blooming History," Timothy Walker, from the BBC, tells us how simple and complicated photosynthesis is (all at the same time):

> *The air we breathe, and all the food we eat, is created from water, sunlight, carbon dioxide and a few minerals. That's it, nothing else. It sounds simple, but this process is one of the most fascinating and complicated in all of science. Without it there could be no life on earth. It's that important.*
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> *For centuries people believed that plants grew by eating soil. In the 17th century, pioneer botanists began to make the connection between the growth of a plant and the energy from the sun. They discovered how plants use water, sunlight and carbon dioxide to produce sugars - how, in fact, a plant grows.*
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> *The process of photosynthesis is still at the heart of scientific research today. Universities across the world are working hard to replicate in the lab what plants do with ruthless efficiency. Their goal is to produce a clean, limitless fuel and if they get it right it will change all our lives.*

To test your knowledge of photosynthesis, take a practice exam.

Credits:

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