

Activity - Photosynthesis

BIG IDEA

How does sunlight eating work? Well, it is a lot like making a batch of chocolate chip cookies. The raw ingredients like flour, butter, eggs, dough, and chocolate chips go into the dough. During the cooking process the dough becomes cookies, but you also get a by-product which is the delicious smell of cookies baking in the oven.

Photosynthesis is a lot like that. The raw ingredients go in, the result comes out, and the by-product (the oxygen we breathe) is just an awesome extra.

PREPARE

Prepare 36 small square pieces of paper, and find a large piece of green cloth which is large enough to hold all 36 pieces of paper. Label the squares of paper as follows:

- C (6 squares)
- H (12 squares)
- O (18 squares)

The green cloth will represent the plant's leaf. The cards will be used to build the molecules.

TEACH

Explain that water comes up through the roots and into the leaves of the plant. **Make 6 molecules of water (H₂O)** by laying down the cards in groups on the cloth.

Air comes into the plant's leaves through stomata, little openings like mouths on the underside of the leaf. **Make 6 molecules of carbon dioxide (CO₂)** on the cloth.

If a plant has air and water but does not have sunlight, it will not be able to make any food with its raw ingredients. It will starve to death. Isn't it true that you can water a plant but if you put it in a dark closet, it will still die? The sunlight's energy is used in two ways. First, it is used to break apart the water. **Break apart the little chains of cards** on the cloth that are representing H₂O and CO₂.

Then, the chlorophyll captures all that energy from the sun and stores it away for later in the form of a sugar. Now that the bonds are broken, you can **rearrange the cards to form a long molecule of glucose, which is sugar (C₆H₁₂O₆)**.

What is left over? The remaining cards form pairs because oxygen likes to hold hands. **Form molecules of O₂**. Then let that oxygen — the wonderful life-giving totally awesome accidental by-product of photosynthesis — **float out of the leaf and off the cloth** through the stomata. When we inhale, we take that oxygen in and when we exhale, we give off carbon dioxide as our lung exhaust. The plants need our waste as their raw ingredients for life, and we need their waste as ours. The cycle never ends!