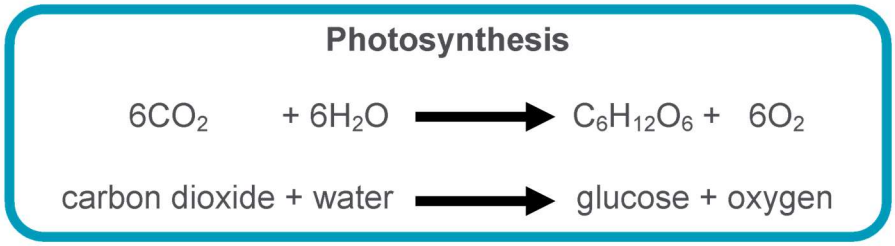
Introduction to Photosynthesis POSTER

Photosynthesis Equation



Background:

The Ecological Importance of Photosynthesis

Photosynthetic organisms, including plants, algae, and some bacteria, play a key ecological role. They introduce chemical energy and fixed carbon dioxide from the air into ecosystems by using light to synthesize sugars. Since these organisms produce their own food, (autotrophs)—that is, fix their own carbon—using light energy, they are called **photoautotrophs** (literally, self-feeders that use light). Humans, and other organisms that can't convert carbon dioxide to organic compounds themselves, are called **heterotrophs**, meaning different-feeders. Heterotrophs must get fixed carbon by eating other organisms or their by-products. Animals, fungi, and many prokaryotes and protists are heterotrophs.

What is Photosynthesis?

Photosynthesis is the process in which light energy is converted to chemical energy in the form of sugars. In a process driven by light energy, glucose molecules (or other sugars) are constructed from water and carbon dioxide, and oxygen is released as a byproduct. The glucose molecules provide organisms with two crucial resources: energy and fixed—organic—carbon.

- **Energy.** The glucose molecules serve as fuel for cells: their chemical energy can be harvested through processes like cellular respiration and fermentation, which generate adenosine triphosphate or ATP a small, energy-carrying molecule—for the cell's immediate energy needs.
- **Fixed carbon.** Carbon from carbon dioxide—inorganic carbon—can be incorporated into organic molecules; this process is called **carbon fixation**, and the carbon in organic molecules is also known as **fixed carbon**. The carbon that's fixed and incorporated into sugars during photosynthesis can be used to build other types of organic molecules needed by cells- like biomolecules/ macromolecules. (Can you name some?)

Directions

1. You will receive a sheet of 11.5 x 18 inch paper and fold it into 3 sections
   - **Section 1: Light dependent reactions**
   - **Section 2: Light Independent / Calvin Cycle**
   - **Section 3: Factors that Affect Photosynthesis**
2. Read pages 235- 241 in the book, (also scanned online)& read through Photosynthesis poster rubric
   a. Compiling Information/ notes
   b. Draw the poster the 2 reactions described in section 1 and 2.
   c. Do a little research on the internet or on my Weebly: thedelinercell.weebly.com site to explain the differences in C3, C4, and CAM plants.
3. You will have 3 days to work on your poster and then you will present your information to 2 different people in the room and make sense of your information.