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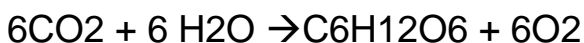
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## Biology Homework 2-3.1: Photosynthesis

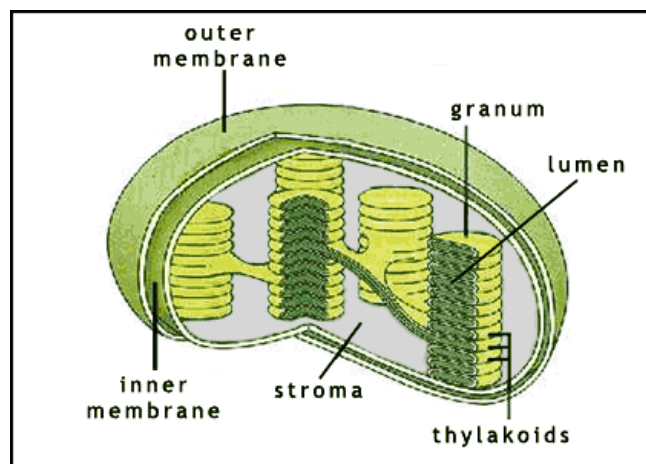
All organisms need energy, but only some living things can directly use the energy of sunlight. **Autotrophs** (producers) make their own food by obtaining energy from sunlight (or inorganic compounds). **Heterotrophs** (consumers) cannot make their own food, and must get their energy from food sources.

**Photosynthesis**- carried out in the chloroplasts of plants; uses carbon dioxide to store energy in the form of glucose (organic molecules); produces oxygen.



**Chloroplasts**- found in the cells of green plants-convert light energy into chemical energy, stores energy in food molecules. Chloroplasts contain the pigment chlorophyll, which absorbs mostly blue and red light, and reflects green and yellow (giving plants their green appearance).

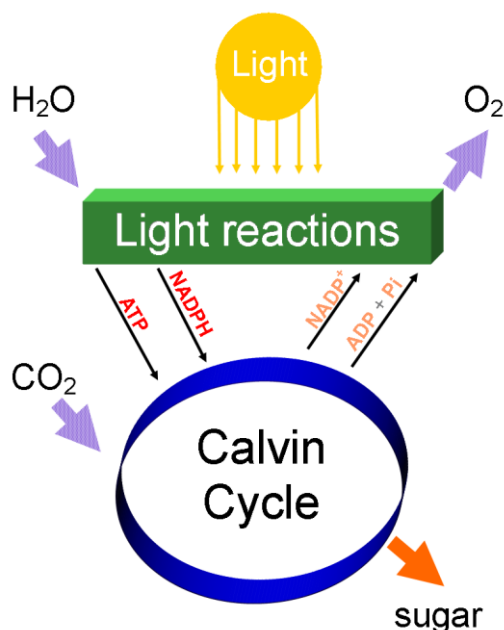
**Photosynthesis occurs in two stages:**



- **Light-dependent stage** - occurs in the thylakoid membrane, the energy of sunlight is converted into energy carrier molecules (ATP and NADPH) used in the second stage
- **Light-independent stage** (Calvin Cycle) - occurs in the stroma, uses the energy from the first stage and CO<sub>2</sub> to form glucose.

**The rate of photosynthesis can be affected by:**

- The amount of water available
- The amount of sunlight available
- Temperature (must be within an optimal range since the reactions of photosynthesis depend on enzymes)



The plant uses the energy stored in the sugar molecule to carry out life processes. The sugar molecule is also used to build more complex carbohydrates, which can be used in growth and development.

1. Energy flows through an ecosystem from—
  - a. the sun to autotrophs to heterotrophs
  - b. the sun to heterotrophs to autotrophs
  - c. autotrophs to heterotrophs and back to autotrophs
  - d. heterotrophs to autotrophs and back to heterotrophs
  
2. Which of the following is not an autotroph?
  - a. Blue-green bacteria
  - b. Algae
  - c. Plants
  - d. Humans
  
3. Glucose is produced during photosynthesis. Which type of biomolecule is glucose?
  - a. carbohydrate
  - b. lipid
  - c. protein
  - d. nucleic acid
  
4. The process by which plants and other autotrophs use light energy to make sugar from water and carbon dioxide is called—
  - a. Diffusion
  - b. Chloroplast
  - c. Photosynthesis
  - d. Cellular respiration
  
5. During photosynthesis, what organelle converts carbon dioxide and water into glucose?
  - a. Mitochondria
  - b. Nucleus
  - c. Golgi apparatus
  - d. Chloroplast
  
6. During a solar eclipse the moon covers the sun and there is darkness during the day. Which of the following is most likely to occur as a result of this?
  - a. The amount of oxygen produced by plants would decrease
  - b. The amount of oxygen produced by plants would increase
  - c. The amount of carbon dioxide produced by plants would decrease
  - d. The amount of carbon dioxide produced by plants would increase
  
7. The ultimate source of energy for all living things is
  - a. Air
  - b. Sunlight
  - c. Oxygen
  - d. Carbon dioxide