

## Section 8.3- The Reactions of Photosynthesis

### Standards

1f. Usable energy is captured from sunlight by chloroplasts and is stored through the synthesis (making) of sugar from carbon dioxide

**At the end of this lecture you should know:**

### Review Questions

1. What light collecting pigment converts sunlight energy into chemical energy the plant can use to drive photosynthetic reactions?

2. In the equation for the light-dependent reaction, which are the reactants and which are the products?

Reactants:

Products:

### Fill In Notes

- I. Inside a chloroplast
  - A. In \_\_\_\_\_, photosynthesis takes place inside \_\_\_\_\_.
    1. Saclike photosynthetic membranes inside chloroplasts are called \_\_\_\_\_.
    - a. Stacks of thylakoids are called \_\_\_\_\_.
    2. The light collecting units of the chloroplast composed of chlorophyll and other pigment clusters are known as \_\_\_\_\_.
  - B. List the 2 parts (reactions) of photosynthesis.
  - C. The light-dependent reaction takes place in the \_\_\_\_\_.
  - D. The Calvin Cycle takes place in the \_\_\_\_\_.
- II. Electron Carrier
  - A. Where does the energy in the electrons in chlorophyll come from?
  - B. A \_\_\_\_\_ is a compound that can accept a pair of high-energy electrons and transfer them with their energy to another molecule.
    1. The process of transferring high-energy electrons from one molecule to another is called the \_\_\_\_\_.
    2. Name the electron carrier in photosynthesis.
    3. The conversion of \_\_\_\_\_ to \_\_\_\_\_ is one way in which energy in sunlight can be trapped in chemical form.
- III. Light-Dependent Reactions
  - A. Light-dependent reactions require \_\_\_\_\_ as the energy source.
  - B. Write a chemical equation for the light-dependent reaction.
  - C. The energy created by the diffusion of hydrogen ions through \_\_\_\_\_ is used to make ATP.

### Lecture Notes

IV. The Calvin Cycle

- A. Where does the energy needed to drive the Calvin Cycle come from?
  - 1. Name the 2 molecules that provide the energy to drive the Calvin Cycle.
- B. Write a chemical equation for the Calvin Cycle.

3. In the equation for the Calvin cycle, which are the reactants and which are the products?

Reactants:

Products:

- C. What product of the Calvin Cycle can other organisms eat to obtain energy?

4. Explain how a lack of sunlight can decrease the rate of photosynthesis.

V. Factors Affecting Photosynthesis

- A. List the 3 factors that can affect the rate at which photosynthesis occurs.

5. What is the overall purpose of photosynthesis for a plant?

**Summary/Thinking Map**

Draw a flow map that illustrates the cycle between the Light-Dependent Reaction and the Calvin Cycle. Be sure to include all reactants and products of the Light-Dependent Reaction and the Calvin Cycle.

**Key Vocabulary**

**Define the Key Vocabulary for this section. Be sure to number and underline your Key Vocabulary word.**