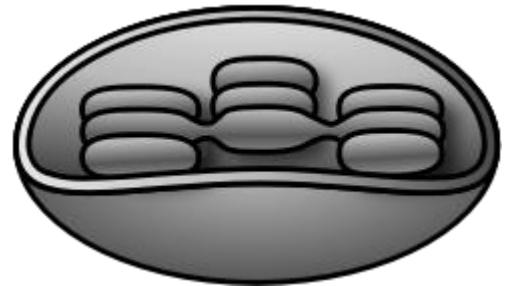


# Lesson 55: Photosynthesis Notes

## Chloroplasts, Light and Pigments

1. Label the chloroplast with the following parts:

- outer membrane**
- inner membrane**
- thylakoid**
- grana**
- intermembrane space**
- stroma.**



2. Chloroplasts contain saclike photosynthetic membranes called

\_\_\_\_\_ where chlorophyll molecules are embedded. When stacked, these sac-like membranes make up \_\_\_\_\_.

3. White light is made up of which colors?

4. List the primary pigment in plants.

5. What is an accessory pigment? Give at least two examples of accessory pigments.

6. Both chlorophyll a and b absorb \_\_\_\_\_ and \_\_\_\_\_ light, but both reflect \_\_\_\_\_ light.

# Lesson 55: Photosynthesis Notes (cont.)

## Photosynthesis

7. Write the overall equation for photosynthesis using words.
  
8. Write the overall equation for photosynthesis using chemical formulas.
  
9. Photosynthesis uses the energy of sunlight to convert water and carbon dioxide into oxygen and high-energy \_\_\_\_\_.
  
10. What are the two stages of photosynthesis called?
  - a.
  - b.

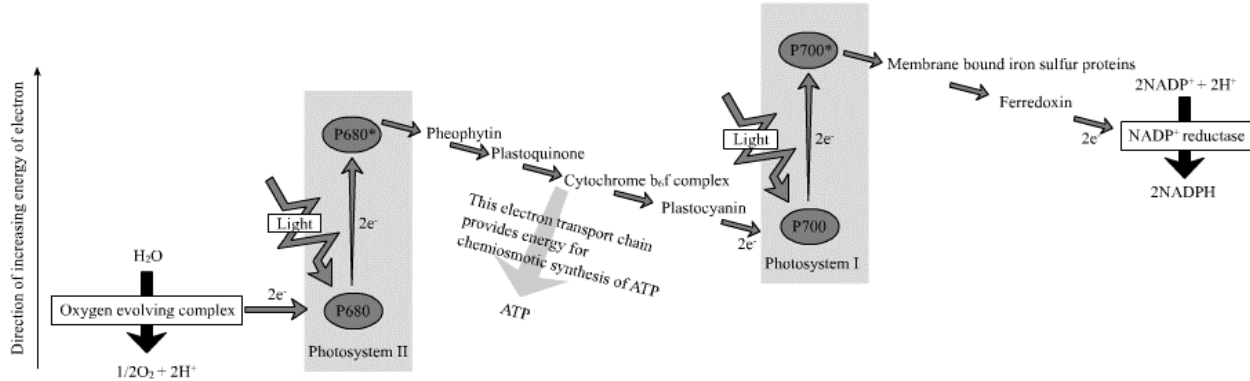
11. Complete the following table:

<b>Stage</b>	<b>Where It Occurs</b>	<b>What Goes In</b>	<b>What Comes Out</b>
<b>Light dependent reactions</b>			
<b>Light Independent Reactions (Calvin Cycle)</b>			

# Lesson 55: Photosynthesis Notes (cont.)

## Light Dependent Reactions

Make notes about the Light Reactions on this diagram as necessary.



"Z-scheme" by w>User:Bensaccount: <http://en.wikipedia.org/wiki/Image:Z-scheme.png>. Licensed under Creative Commons Attribution - Share Alike 3.0 via Wikimedia Commons - <http://commons.wikimedia.org/wiki/File:Z-scheme.png#mediaviewer/File:Z-scheme.png>

12. Complete the following summary of the Light Reactions using the word bank:

ATP    electron    NADPH    oxygen    photolysis

When light hits the photosystems, it jars loose an \_\_\_\_\_, which becomes energized and then enters an Electron Transport Chain.

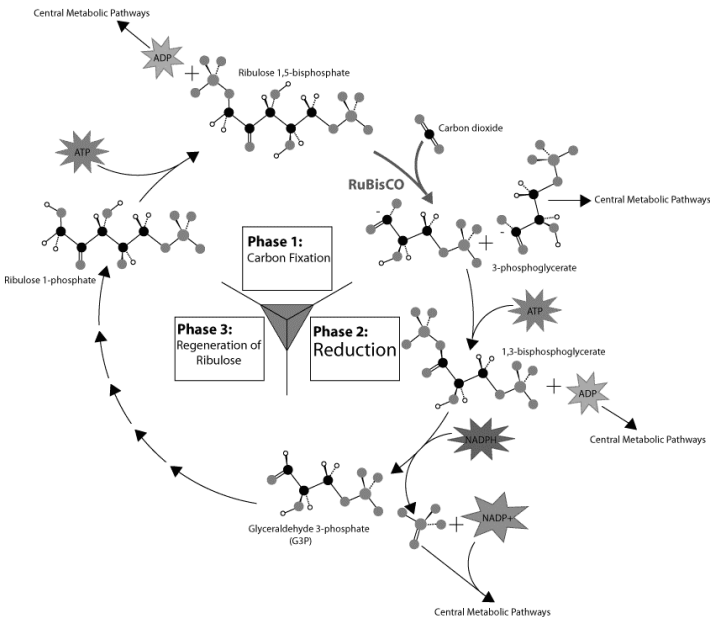
The Electron Transport Chains are used to generate \_\_\_\_\_ and \_\_\_\_\_, energy carrier molecules. Photosystem II's missing electron is replaced by the splitting of water, also called

\_\_\_\_\_, which gives off \_\_\_\_\_ gas as a by-product.

The oxygen we breathe originates from the \_\_\_\_\_ that plants use in photosynthesis.

## Light Independent Reactions (Calvin Cycle)

Make notes about the Calvin cycle on this diagram as necessary.



"Calvin-cycle2" by User: adenosine - <http://en.wikipedia.org/wiki/File:Calvin-cycle2.png#mediaviewer/File:Calvin-cycle2.png> Licensed under Creative Commons Attribution-Share Alike 2.5

13. True or False: The light independent reactions happen during the dark only.

14. What does it mean to "fix" carbon in the Calvin Cycle?

15. How many turns of the Calvin Cycle make a single molecule of glucose?

16. The Calvin Cycle uses ATP and NADPH energy to build the sugar glucose. Where did it get the ATP and NADPH?

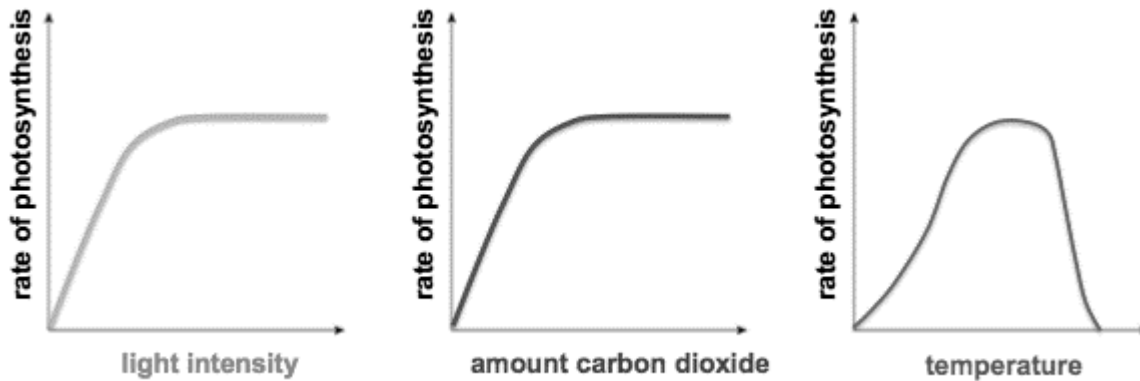
# Lesson 55: Photosynthesis Notes (cont.)

Biology with Lab

17. What are three factors that affect the rate at which photosynthesis occurs?

- a.
- b.
- c.

18. For each graph below, describe the reasons that the rate of photosynthesis changes:



19. Is the following sentence true or false? Increasing the intensity of light decreases the rate of photosynthesis.

20. What are stomata, and how do they help a plant with photosynthesis?