

Name: \_\_\_\_\_

Date: \_\_\_\_\_ Period #: \_\_\_\_\_

## **Photosynthesis Webquest**

1. View the overall process of photosynthesis

<http://earthguide.ucsd.edu/earthguide/diagrams/photosynthesis/photosynthesis.html>

What are the reactants (starting materials)?

Carbon dioxide, sunlight, water, nutrients, and the plant

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2. Go to [http://www.pbs.org/wgbh/nova/methuselah/phot\\_flash.html](http://www.pbs.org/wgbh/nova/methuselah/phot_flash.html)

- Click on the Cycle

- Click on Atomic Shuffle

o What are the names of the holes in the leaves? stomata

o What is the equation for photosynthesis?  $12 \text{ H}_2\text{O} + 6 \text{ CO}_2 = \text{C}_6\text{H}_{12}\text{O}_6 + 6 \text{ H}_2\text{O} + 6 \text{ O}_2$

- Click on Three Puzzlers

o If all of its oxygen was removed, would a plant be able to survive? Explain your answer.

no, it needs oxygen to break down the carbohydrate molecules and release the energy stored in those molecules

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3. Go to the website [http://www.phschool.com/science/biology\\_place/biocoach/photosynth/overview.html](http://www.phschool.com/science/biology_place/biocoach/photosynth/overview.html)

- Concept 1 An Overview of Photosynthesis

o During photosynthesis energy changes forms. Solar (light) energy is converted to what type of energy during photosynthesis? chemical energy of sugars and other organic compounds

- Concept 2 Electromagnetic Spectrum

o What is the range in wavelengths of visible light? 400 to 700 nanometers

4. Go to the website [http://highered.mcgraw-](http://highered.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::535::535::/sites/dl/free/0072437316/120072/bio13.swf)

[hill.com/olcweb/cgi/pluginpop.cgi?it=swf::535::535::/sites/dl/free/0072437316/120072/bio13.swf](http://highered.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::535::535::/sites/dl/free/0072437316/120072/bio13.swf)

::Photosynthetic Electron Transport and ATP Synthesis chloroplasts

a. Which organelle is the site of photosynthesis? \_\_\_\_\_

b. What are the stacks of membranes inside the chloroplast? thylakoids

c. What is the semiliquid substance inside the chloroplast? stroma

d. From what molecule (reactant) does photosystem II get its replacement electrons from?  
water

5. Go to the website

<http://www.wiley.com/legacy/college/boyer/0470003790/animations/photosynthesis/photosynthesis.htm>

- a. In your own words, describe the process of photosynthesis at the molecular level.

Plants have molecules that absorb light energy. These molecules are called pigments. Chlorophyll is the main pigment used in photosynthesis. Plants use energy captured by chlorophyll to change carbon dioxide and water into food. The food is in the form of simple sugar glucose. They also give off oxygen to the environment.

- b. What is the role of the NADPH molecule in photosynthesis?

to serve as a source of reducing power for biosynthesis

- c. Click on Strategy/Players tab on the left.

- i. What are the two main stages of photosynthesis?

light and dark reactions

granum

- ii. Hover over the chloroplast. What are stacks of thylakoids called? \_\_\_\_\_

- d. Click on light reactions. What happens when light strikes the pigments?

pigments within plant cells directly absorb light