

---

**Do Now**

**What is Earth's  
only source of  
energy?**



# Turning Light Into Food: Photosynthesis

9/21/10



## Agenda

1. Do Now
2. Objectives
3. What is Photosynthesis?
4. Where does it happen?
5. What happens during Photosynthesis?
6. 5 General Steps of Photosynthesis
7. Photosynthesis in action (video clip)
8. The two chemical reactions
9. The chemical equation of photosynthesis
10. Describing
11. What is the glucose used for?
12. Why is photosynthesis important?
13. Closing
14. Exit Slip

## Objectives

**SWBAT:**

Content

1. Describe the process of photosynthesis
2. Explain why photosynthesis is so important

Language

by

1. Note taking in class
2. Applying information from your notes

P=O

# What is Photosynthesis?

Photo = light    synthesis = to make

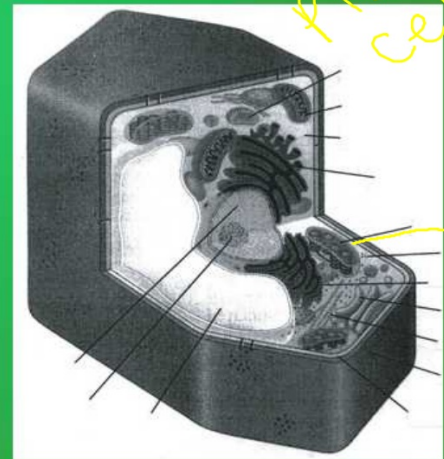
Photosynthesis = to make from light

• process during which light energy is changed into sugar (a form of chemical energy)

- The process of photosynthesis is a **chemical reaction**.

- most important chemical reaction on earth.

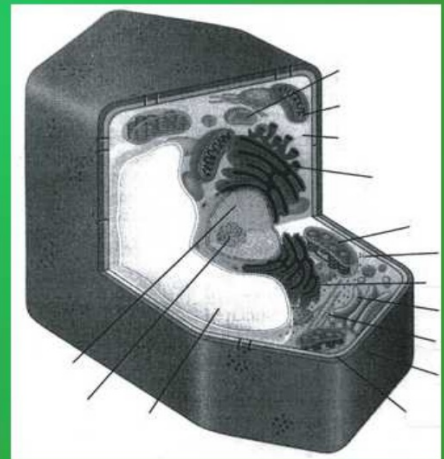
- happens in plants only
- happens in some alga
- happens in the plants/alga chloroplast



## Where does it happen?

-photosynthesis happens in the chloroplast  
with the help of the chlorophyll (the green pigment in plants)

- happens in all plants
- happens in some alga



chloroplast



Chlorophyll  
(green color)

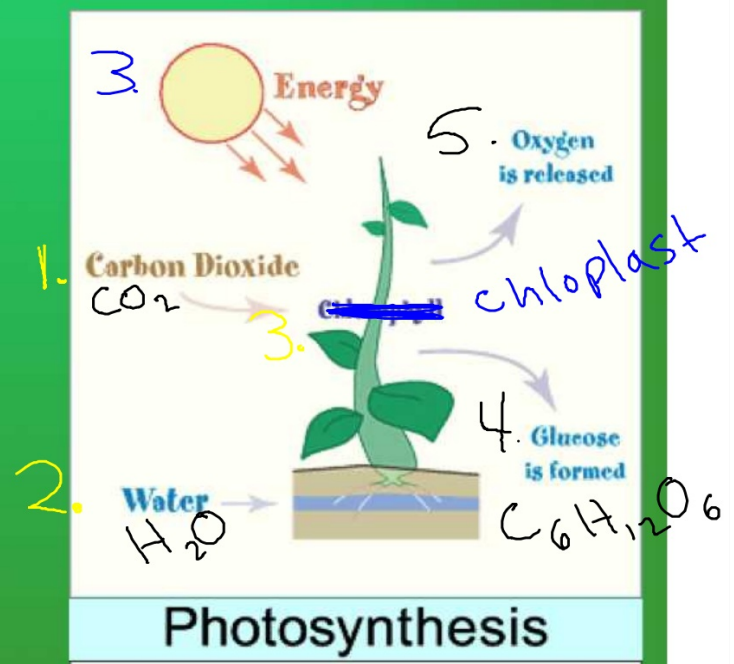


**What happens during  
photosynthesis?**

Plants turn sunlight  
into Sugar (glucose)

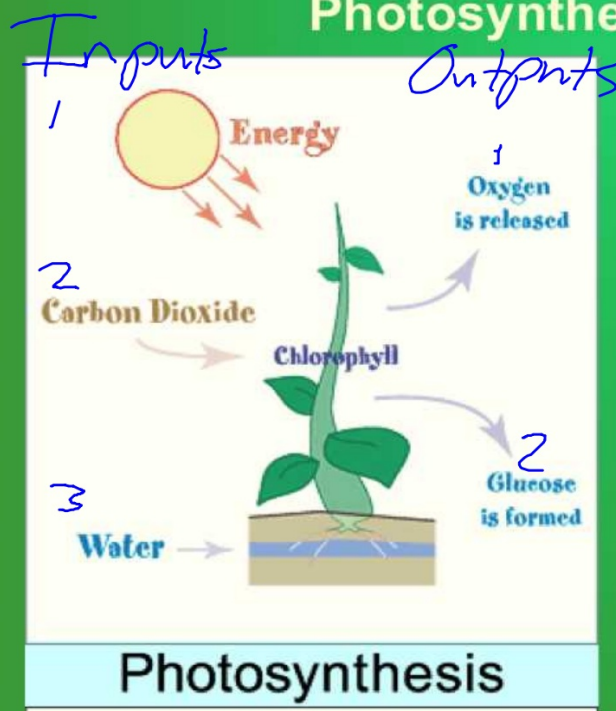
## 5 General Steps of Photosynthesis

- There are inputs and outputs
- 1. Carbon dioxide enters the leaf (input)
- 2. Water enters the roots (input)
- 3. Leaves capture light (sun) in chloroplast (input)
- 4. That energy is used to combine  $\text{CO}_2$  with  $\text{H}_2\text{O}$  to make glucose (a sugar/carbohydrate) (output)
- 5. Oxygen is also released from the plant (output)





## Photosynthesis in Action



- Check out this movie
- [www.youtube.com/watch?v=QXa7jMtcSFk](http://www.youtube.com/watch?v=QXa7jMtcSFk)

# The Two Chemical Reactions of Photosynthesis

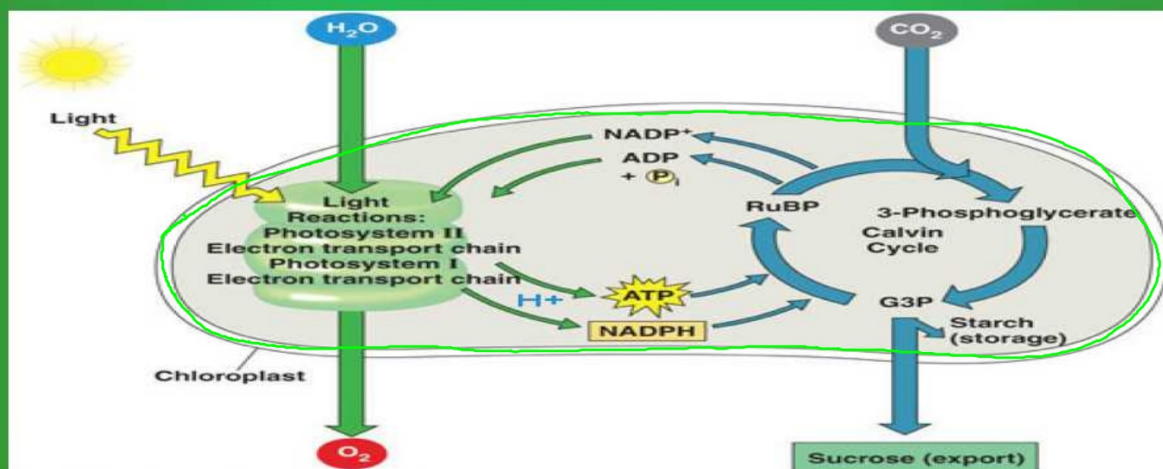
2 main reactions:

1. (Photo) Electron Transport Chain

- Sunlight is captured

2. 2. (Synthesis) Calvin Cycle

- Sugar is formed



---

**What is the chemical equation  
for photosynthesis?**

---

# The Chemical Equation for Photosynthesis



Light Energy



**What is the equation for the chemical reaction of photosynthesis?**



Six molecules of carbon dioxide react with six molecules of water to form 1 molecule of glucose (sugar) and six molecules of oxygen.

---



**Describe Photosynthesis**

---

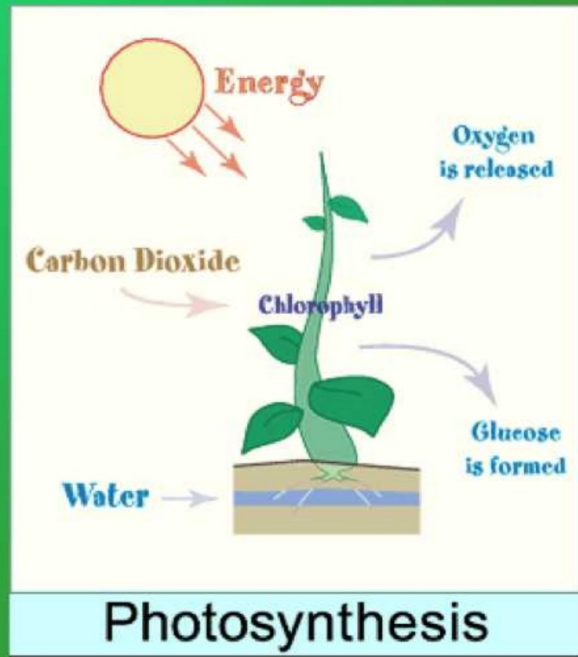


## Describe Photosynthesis

- 1. The process of changing light energy to chemical energy
- 2. Energy created is stored in sugar
- 3. Occurs in plants and some algae
  - Takes place in the **chloroplasts**, using **chlorophyll**, (the green pigment in plants)
- 4. Plants need light energy (sun), CO<sub>2</sub>, and H<sub>2</sub>O to complete photosynthesis
- 5.  $6\text{CO}_2 + 6\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$

## What is the Glucose used for?

- Some of the glucose is:
  - used by the plant for energy
  - stored as starch
  - built into plant tissue



## Why is this important to us?

- give us oxygen ( $O_2$ )
- gives us food (energy)

## **Why is this important to us?**

- our only source of energy is from the sun
- Animals cannot make our own food  
(change sunlight into glucose), so we must  
get our food from plants.
- 
- without photosynthesis, we would not be  
able to use our only source of energy

---

## **Why is this important to us?**

The oxygen released during photosynthesis is necessary for all living things.

---

**Learn more about  
photosynthesis at:**

<http://www.ftexploring.com/me/photosyn1.html>

---



