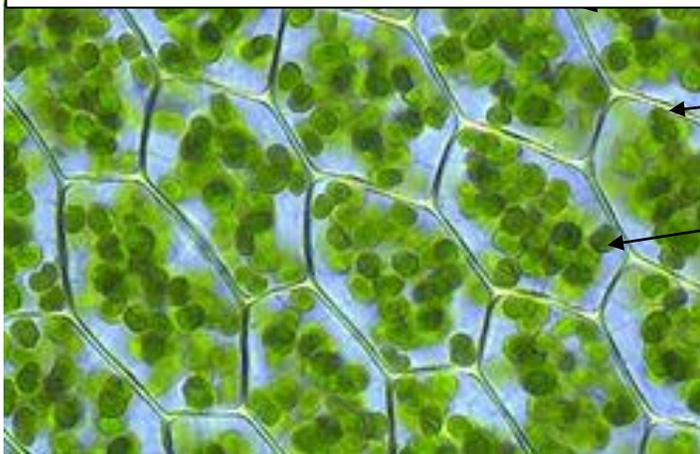


# PHOTOSYNTHESIS!



- Hexagon structures are **plant cells**
- The hexagons are the plant **cell walls** → 
- The round, green structures are **chloroplasts** 
- The **green pigment** inside the round structures is called **Chlorophyll**



**Photosynthesis:** the process that plants use to produce energy for themselves; they take in water and carbon dioxide to produce sugar (energy) and oxygen (released into atmosphere).

**Chloroplast-** a structure or organelle found in plant leaves; the chloroplast contains chlorophyll; the chloroplasts are round and found inside the plant cell wall.

**Chlorophyll** – the green pigment found inside chloroplasts; this green pigment is needed in order for photosynthesis to occur.

**Carbon Dioxide- (CO<sub>2</sub>)** - (3 atoms total; 1 atom of Carbon; 2 atoms of Oxygen); the gas that plants take in through their **stomata** to use for photosynthesis; we breathe out CO<sub>2</sub>; plants take it in

**Oxygen – (O<sub>2</sub>)** - (2 atoms of Oxygen; the oxygen we breathe is found in our atmosphere as O<sub>2</sub>); Oxygen is a gas that plants give off as a result of photosynthesis; plants produce it and give it off; we breathe it (nice arrangement); **Do you have living plants in your house?**

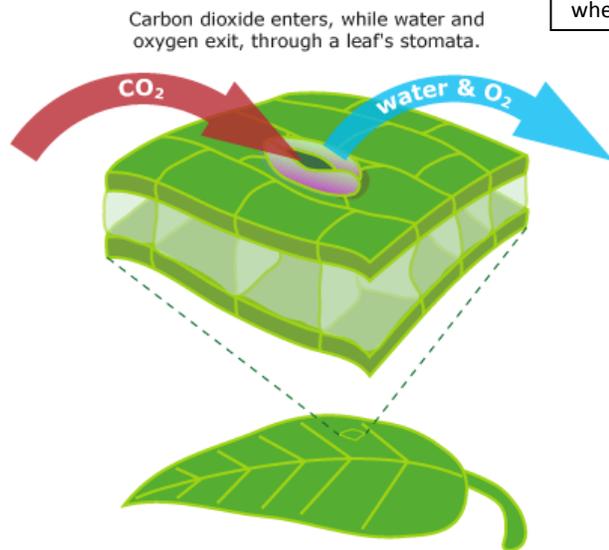
**Glucose** – (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>) - (6 atoms of Carbon, 12 atoms of Hydrogen and 6 atoms of Oxygen; 24 total atoms in one molecule of glucose); Glucose is a form of sugar that the plant produces for itself during Photosynthesis; this sugar provides energy for the plant to grow, reproduce and produce fruit

## The Law of Conservation of Mass

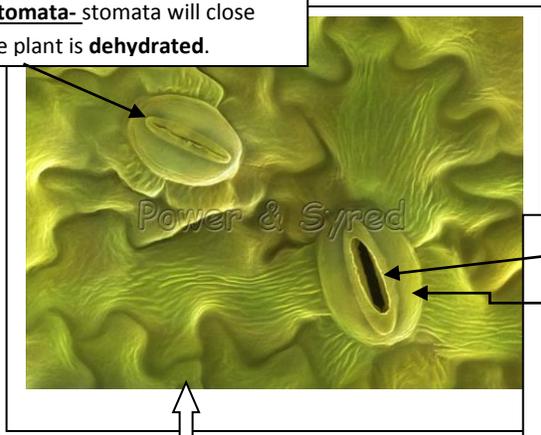
- Established in 1789 by French Chemist Antoine Lavoisier
- States that mass is neither created nor destroyed in any ordinary chemical reaction.
- Or more simply, the mass of substances produced (products) by a chemical reaction is always equal to the mass of the reacting substances (reactants).

**The balanced chemical equation for photosynthesis is :** **6CO<sub>2</sub> + 6H<sub>2</sub>O ⇌ C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> + 6O<sub>2</sub>**

**Stomata**—the microscopic pore (opening) in the leaf that can open and close; it is through this opening that carbon dioxide enters the leaf for photosynthesis; oxygen leaves the leaf through the stomata; water can also leave the leaf through the stomata (this is called **transpiration**)



**Closed stomata**- stomata will close when the plant is **dehydrated**.



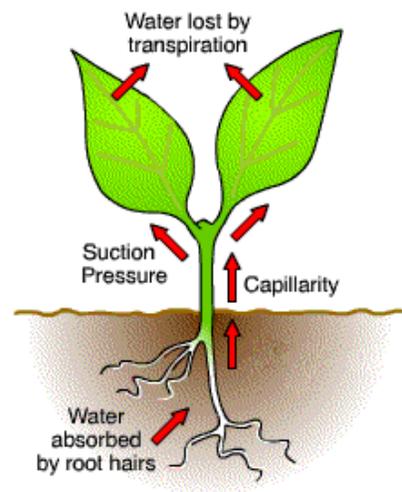
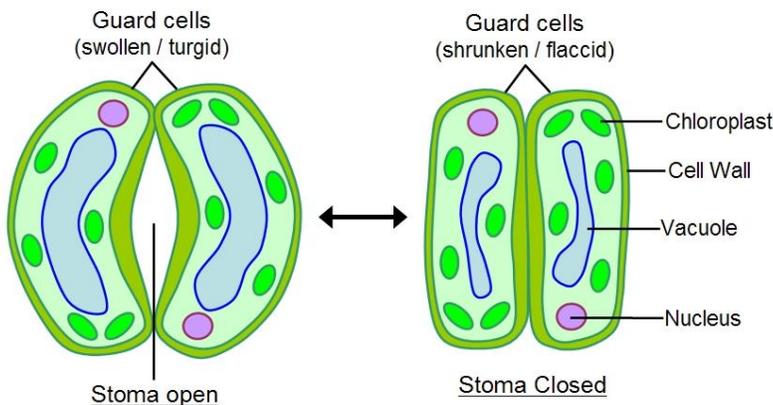
**Open stoma** surrounded by **guard cells** – stoma opens when plant has plenty of water.

This is an actual photograph of a **stoma (opening)** surrounded by **guard cells**. This is where **Carbon Dioxide** enters the leaf and **Oxygen** leaves the leaf. **Water** also leaves the leaf through this opening (called **transpiration**).

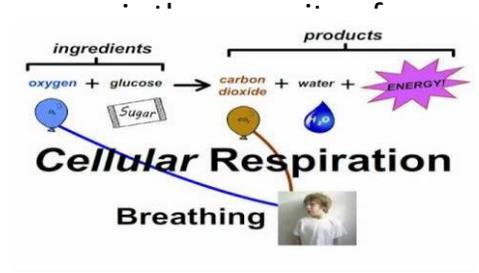
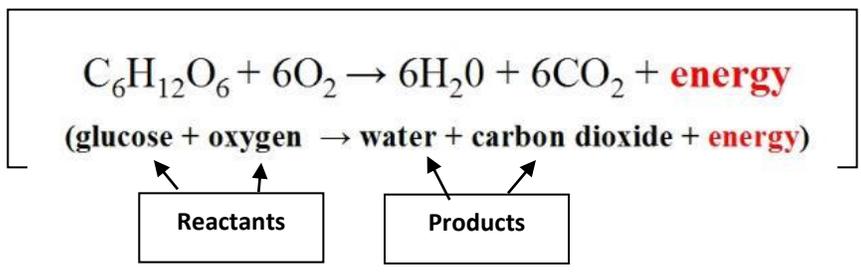
- Stomata open when plant has plenty of water.
- Stomata close when plant is dehydrated (lacking water).

### Stomata

- **Stomata** (sing. **stoma**) = pores in a leaf, mostly on the undersurface
- Each pore is surrounded by a pair of **guard cells**
- Guard cells can change shape to open or close the stoma



**RESPIRATION:** the chemical process that occurs in animals to provide energy; process where animals take in sugar and oxygen to create energy and give off carbon dioxide and water; this



# Transpiration Process

