

PHOTOSYNTHESIS - PART I: THE SUN AND LIGHT

Not all of the light from the **Sun** makes it to the surface of the Earth. Even the light that does make it here is reflected and spread out. The little light that does make it here is enough for the plants of the world to survive and go through the process of **photosynthesis**. Light is actually energy, electromagnetic energy to be exact. When that energy gets to a green plant, all sorts of reactions can take place to store energy in the form of sugar molecules.

Remember we said that not all the energy from the Sun makes it to plants? Even when light gets to a plant, the plant doesn't use all of it. It actually uses only certain colors to make photosynthesis happen. Plants mostly absorb **red** and **blue** wavelengths. When you see a color, it is actually a color that the object does NOT absorb. In the case of green plants, they do not absorb light from the green range.

PART II: THE CHLOROPLAST

Chloroplasts are the food producers of the cell. They are only found in plant cells and some **protists**. Animal cells do not have chloroplasts. Every green **plant** you see is working to convert the energy of the sun into sugars. Plants are the basis of all life on Earth. They create sugars, and the byproduct of that process is the oxygen that we breathe. That process happens in the chloroplast. **Mitochondria** work in the opposite direction and break down the sugars and nutrients that the cell receives.

PART III: THE MOLECULES

Chlorophyll is the magic compound that can grab that sunlight and start the whole process. Chlorophyll is actually quite a varied compound. There are four (4) types: a, b, c, and d. Chlorophyll can also be found in many microorganisms and even some prokaryotic cells. However, as far as plants are concerned, the chlorophyll is found in the chloroplasts. The other big molecules are water (H_2O), carbon dioxide (CO_2), oxygen (O_2) and glucose ($C_6H_{12}O_6$). Carbon dioxide and water combine with light to create oxygen and glucose. That glucose is used in various forms by every creature on the planet. Animal cells require oxygen to survive. Animal cells need an aerobic environment (one with oxygen).

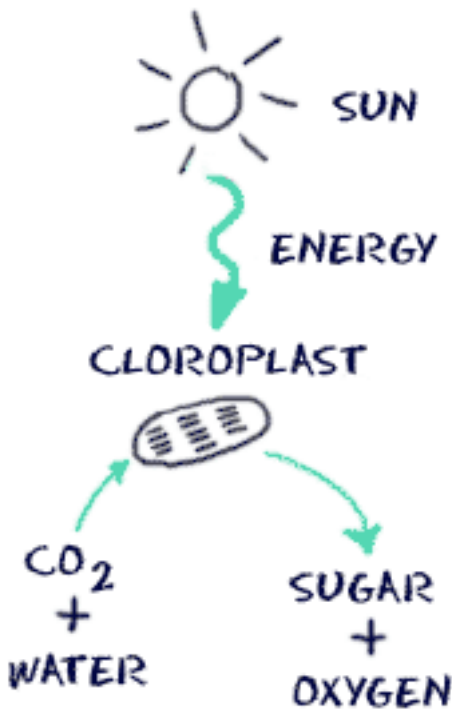
PART IV: LIGHT AND DARK REACTIONS

The whole process doesn't happen all at one time. The process of photosynthesis is divided into two main parts. The first part is called the **light dependent reaction**. This reaction happens when the light energy is captured and pushed into a chemical called ATP. The second part of the process happens when the ATP is used to make glucose (the **Calvin Cycle**). That second part is called the **light independent reaction**.

Questions to answer:

1) Describe 2 interesting things that you read about regarding **plants** and **light**.

2) Explain in a paragraph what this picture is showing about the process of photosynthesis.



3) Look up and define 3 words that are new or you learned about through this reading:

