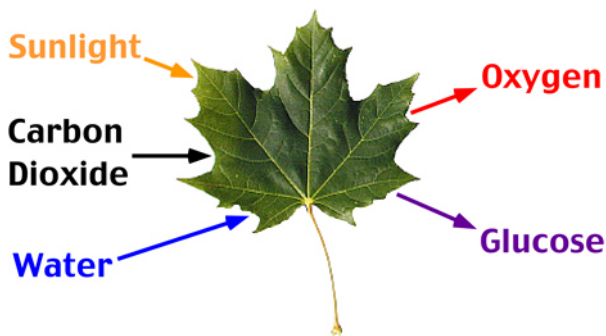


Photosynthesis and Cellular Respiration

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Photosynthesis Vs Respiration



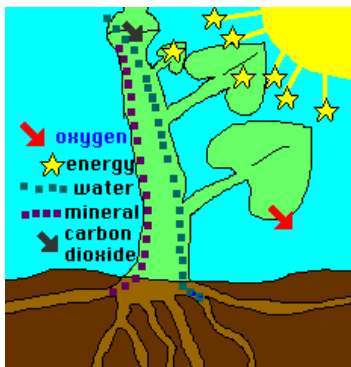
Plants give off oxygen that is used by both humans and most other animals. Certain processes are required for plants to perform their important functions. They are [photosynthesis](#) and [cellular respiration](#). They have some common characteristics and in certain characteristics they differ from each other.

What is Photosynthesis?

- The process where green plants use sunlight, carbon dioxide, and water to make food and oxygen.
- Organisms make high-energy compounds

What is Respiration?

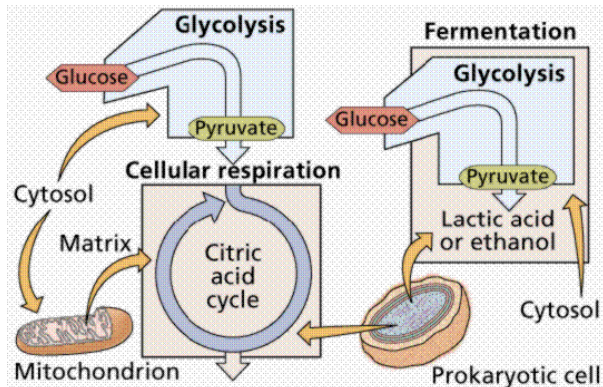
- The process where cells use this food to release stored energy.
- Involves the breakdown of compounds through chemical ["oxidation"](#).



Photosynthesis

This phenomenon occurs in [chlorophyll](#) containing plant cells. The plant cells use the compound chlorophyll to take the energy from sunlight, and combine it with carbon dioxide and water and produce oxygen and glucose. The event described as

Respiration



Mitochondria, the cell factory within the cell make use of the glucose molecule. [Mitochondria](#) takes glucose breaks it down into atoms, and by mixing it with the atoms from more oxygen, produces carbon dioxide, water and energy. This reaction can be described as



The energy produced in this way by the mitochondria is in a form that can be easily utilized by all cells.

ATP:

This energy is stored in the form of [ATP](#), or adenosine triphosphate, in which the covalent bonds between atoms store a lot of energy.

Factors Affecting Photosynthesis

The process of photosynthesis is influenced by various factors like temperature, carbon dioxide, sunlight and water.

Difference between Photosynthesis and Cellular Respiration

Photosynthesis

- Occurs in plants and some [bacteria](#).
- Occurs within the chloroplasts.
- Uses H_2O , sunlight and CO_2
- Produces O_2 and glucose.

Respiration

- Occurs in all living organisms.
- Occurs within the mitochondria
- Uses O₂ and [glucose](#)
- Gives off energy, CO₂ and H₂

Overall Effects of Cellular Respiration and Photosynthesis

We can simply say that respiration involves taking electrons away from a substrate (oxidation), and in the process the substrate is degraded so that its carbon atoms are released as CO₂. Oxygen is consumed here.

Glycolysis is an anaerobic catabolism of glucose that occurs in all the cells and produces two molecules of pyruvate and two molecules of ATP. It produces oxygen as a byproduct.

Thus, photosynthesis and cellular oxidation are nearly opposite [biochemical processes](#).

Want to know more about Photosynthesis? [Click here](#) to schedule live homework help from a certified tutor!

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Reference Links:

- <http://www.youtube.com/watch?v=Y-8txUujHv0>
- http://www.youtube.com/watch?v=C1_uez5WX1o
- <http://www.youtube.com/watch?v=xbJ0nbzt5Kw>
- <http://en.wikipedia.org/wiki/Photosynthesis>
- http://en.wikipedia.org/wiki/Cellular_respiration

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