Photosynthesis

By:

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Photosynthesis

Photosynthesis is the process of transferring light energy into chemical energy for plants.

Photosynthesis plays an important role in our lives since they take in carbon dioxide and gives us oxygen which we need to live

Autotroph

An organism that creates nutrients from inorganic substances or from the environment; usually plants, algae, and protists.

Drawing

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Light Reac
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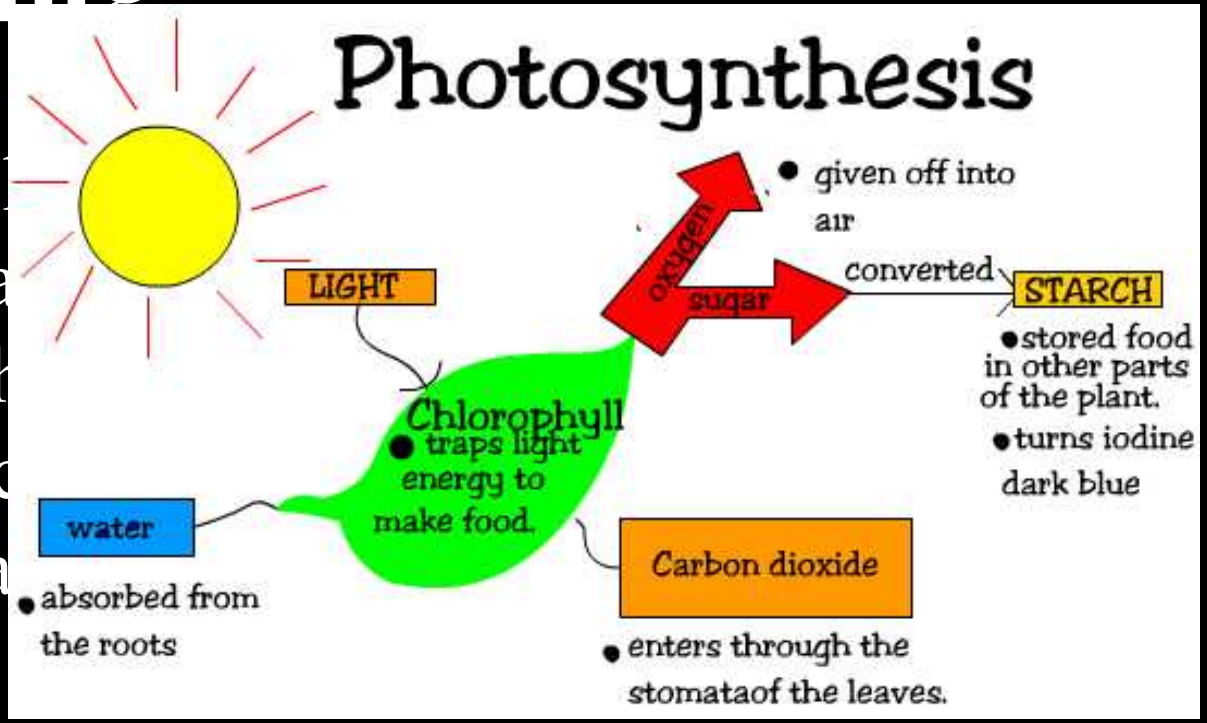
Cycle.



Light Reactions (Stage 1)

The first stage of Photosynthesis. The reactions in photosynthesis that are triggered by the absorption of light through photosystems I and II; includes the passage of electrons along the transport chain, the creation of NADPH and oxygen, and the creation of ATP. Also water is being split in the process releasing oxygen.

Equation

$$6\ CO_2 + 12\ H_2O \rightarrow C_6H_{12}O_6 + 6\ O_2 + 6\ H_2O$$

Photosystem 1 and 2

Photosystem 1:

-re-excites the electrons to a higher energy state

-Converts NADP+ TO NADPH

-NADPH Is then fed into the calvin cycle

-both 1 and 2 take place in the thylakoid membrane

Photosystem 2:

-excites electrons to remove electrons from water.

-light dependent

-produces ATP molecules

-actually comes before photosystem 1 despite being #2

Calvin Cycle (Stage 2)

- A biochemical pathway of photosynthesis where carbon dioxide is converted into glucose using ATP.

<u>Three Phases Of The Calvin Cycle</u>

1. Carbon fixation
2. Reduction
3. Regeneration of RuBP

(Ribulose bisphosphate)

Calvin Cycle Cont.

Carbon Fixation: During carbon fixation the incoming carbon dioxide becomes bound to a RuBP by the enzyme rubisco and will break down into 6 compound products which then break down into three.

Reduction: The carbon compound becomes a sugar product.

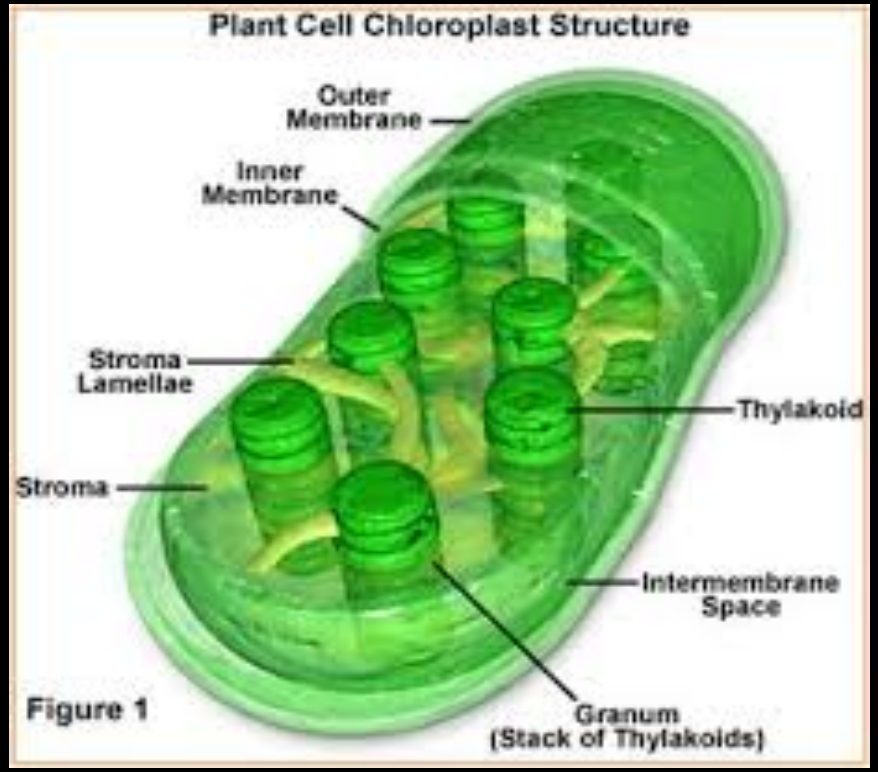
Regeneration: The RuBP regenerates to start the entire cycle over again.

*Not light dependent

Chlorophyll

A pigment that reacts with carbon dioxide, sunlight, and water to create carbohydrates, which makes most plants appear green.

Organelle Structure



Chloroplast: The organelle in which photosynthesis happens in plants.