

# PHOTOSYNTHESIS 101

A STEP-BY-STEP LOOK ON HOW PLANTS  
CREATE THEIR FOOD.



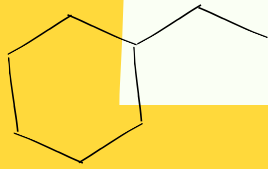
## ABSORPTION OF LIGHT

Photosynthesis begins with the absorption of light by the green pigment on plants called chlorophyll. These pigments are attached to the proteins found in the thylakoids of chloroplasts.

After the light energy is absorbed, it will then be utilized to remove electrons in common donors like water, thereby forming oxygen. Afterwards, the electrons will be moved to quinone (Q), a primary electron receptor similar to CoQ in the electron transfer chain.

## ELECTRON TRANSFER

Electrons go through a chain of electron transfer molecules in the thylakoid membrane, moving further from the primary electron acceptor until it reaches the final electron acceptor, which is usually NADP<sup>+</sup>. In the transfer process of electrons, a proton gradient develops as a result of protons being pumped out of the membrane.



## GENERATION OF ATP



Through the F<sub>0</sub>F<sub>1</sub> complex, protons move from the thylakoid lumen to the stroma. This process generates ATP from ADP and Pi, similar to the generation of ATP in the electron transport chain.

## CARBON FIXATION



The NADP and ATP generated in steps 2 and 3 serve as the energy source for carbon fixation. In this step, electrons initiate the reduction of carbon into six-carbon sugar molecules. As these processes are independent from light, they are aptly called dark reactions, as opposed to the previous steps which rely on light energy and are referred to as light reactions.

## GROWTH

The entire process of photosynthesis ultimately results in the production of sugar, the primary food source of the plant. This by-product allows the plant to grow in terms of physical structure, including the expansion of its roots.

Information source  
<https://microbenotes.com/photosynthesis/>