

## Table of Contents

### **PHOTOSYNTHESIS**

- Process of Photosynthesis
  - Light-Dependent Reactions
  - Calvin Cycle
- Factors Affecting Photosynthesis
  - Light Intensity
  - Carbon Dioxide Levels

# PHOTOSYNTHESIS

## - Process of Photosynthesis

Photosynthesis is the process by which green plants, algae, and some bacteria convert light energy into chemical energy. This process occurs in the chloroplasts of plant cells and involves the uptake of carbon dioxide and water, facilitated by sunlight and chlorophyll pigments. Through photosynthesis, plants produce glucose and oxygen as byproducts, essential for their growth and survival.

## - Light-Dependent Reactions

Light-dependent reactions are the first stage of photosynthesis that occur in the thylakoid membrane of chloroplasts. During these reactions, light energy is absorbed by chlorophyll and converted into chemical energy in the form of ATP and NADPH. The main products of light-dependent reactions are oxygen gas, ATP, and NADPH, which are essential for the subsequent dark reactions of photosynthesis.

## - Calvin Cycle

The Calvin Cycle is a series of biochemical reactions that take place in the stroma of chloroplasts during photosynthesis. During this cycle, carbon dioxide is fixed into organic molecules with the help of ATP and NADPH produced in the light-dependent reactions. The Calvin Cycle ultimately produces glucose, which is a form of stored energy for the plant.

Photosynthesis is the process by which green plants, algae, and some bacteria convert light energy into chemical energy. This process involves the absorption of carbon dioxide and the release of oxygen as a byproduct. Photosynthesis is crucial for sustaining life on Earth as it provides the necessary oxygen for respiration and forms the base of the food chain.

## - Factors Affecting Photosynthesis

The factors affecting photosynthesis include light intensity, carbon dioxide levels, and temperature. Light intensity influences the rate of photosynthesis as plants require light energy to convert water and carbon dioxide into glucose. Carbon dioxide levels impact the availability of a key resource for photosynthesis, while temperature affects the enzyme activity required for the process.

## - Light Intensity

Light intensity refers to the amount of light available per unit area. In photosynthesis, light intensity directly impacts the rate at which plants can convert light energy into chemical energy. Optimal light intensity is essential for maximizing the efficiency of photosynthesis in plants.

## - Carbon Dioxide Levels

Carbon dioxide levels are essential for photosynthesis, a process where plants convert CO<sub>2</sub> into glucose using sunlight. Plants rely on CO<sub>2</sub> to produce oxygen and glucose, serving as the foundation of the food chain. The increase in carbon dioxide levels can stimulate photosynthesis and boost plant growth.