

# PHOTOSYNTHESIS: MOLECULAR OVERVIEW

Biological Process Study Reference



## 1. Light-Dependent Reactions

**Location:** Thylakoid Membrane

*[Diagram: Photolysis & Electron Transport]*

- Chlorophyll absorbs solar photons.
- H<sub>2</sub>O molecules split (Photolysis).
- Oxygen is released as a byproduct.
- Energy stored in **ATP** and **NADPH**.

## 2. The Calvin Cycle

**Location:** Stroma

*[Diagram: Carbon Fixation Cycle]*

- CO<sub>2</sub> enters via leaf stomata.
- Carbon Fixation (catalyzed by RuBisCO).
- ATP and NADPH are consumed.
- Synthesis of **G3P/Glucose**.

## Key Components

- **Chloroplast:** The specialized organelle.
- **Chlorophyll:** Pigment reflecting green light.
- **Stomata:** Pores for gas exchange.
- **Xylem:** Transports water from roots.

## Environmental Factors

- **Light Intensity:** Increases rate to a saturation point.
- **CO<sub>2</sub> Concentration:** Essential substrate.
- **Temperature:** Influences enzymatic activity.

