

PHOTOSYNTHESIS ENERGY CONVERSION

The Transformation of Solar Energy to Chemical Energy



1. Light-Dependent Reactions

Location: Thylakoid Membrane

INPUT

OUTPUT

Solar Energy (Photons)

ATP

H₂O (Water)

NADPH

NADP⁺ / ADP

O₂ (Oxygen)

2. Light-Independent Reactions

Location: Stroma (Calvin Cycle)

INPUT

OUTPUT

ATP / NADPH

G3P (Sugar)

CO₂ (Carbon Dioxide)

ADP / Pi

RuBP

NADP⁺

Energy Transformation Summary

- Radiant Energy:** Captured by chlorophyll pigments.
- Intermediate Energy:** Stored briefly in ATP and NADPH molecules.
- Stable Chemical Energy:** Converted into the covalent bonds of glucose (C₆H₁₂O₆).