

THE CALVIN CYCLE

Light-Independent Reactions of Photosynthesis

Stage 1 Carbon Fixation

CO₂ molecules combine with RuBP (5-carbon sugar) facilitated by the enzyme **RuBisCO**, creating an unstable 6-carbon intermediate that splits into two 3-PGA molecules.

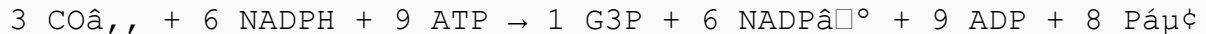
Stage 2 Reduction

ATP and NADPH are used to convert 3-PGA into **G3P** (a high-energy sugar). One G3P molecule leaves the cycle to eventually form glucose.

Stage 3 Regeneration

The remaining G3P molecules use additional ATP to rearrange back into **RuBP**, allowing the cycle to begin again and accept more CO₂.

NET EQUATION (3 Turns) :



Reactants (Inputs)

- Carbon Dioxide (from atmosphere)
- ATP (from Light Reactions)
- NADPH (from Light Reactions)

Products (Outputs)

- G3P (Sugar precursor)
- ADP + P_i (Return to Thylakoid)
- NADP[°] (Return to Thylakoid)