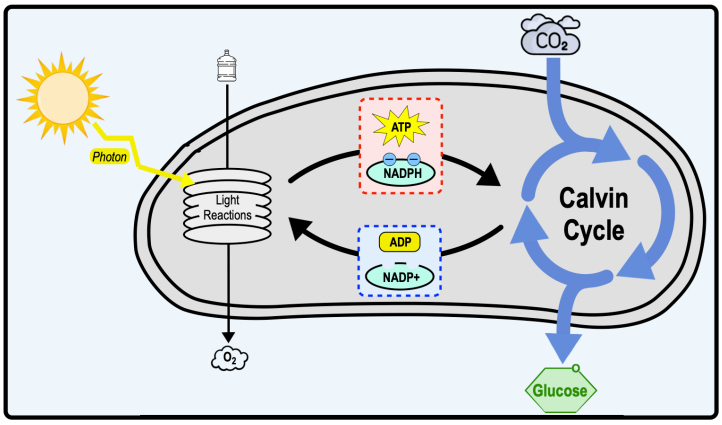
CONCEPT: CALVIN CYCLE

●2nd stage of photosynthesis using _____ & _____ from *light-reactions* to make organic molecules (Ex. glucose).

□ Occurs in the _____ of the chloroplast where it consumes _____ gas from the atmosphere.



PRACTICE: Where in a plant cell does the Calvin cycle take place?

a) Stroma. b) Thylakoid space. c) Thylakoid membrane. d) Chloroplast inner membrane.

3 Phases of the Calvin Cycle (C_3 Pathway)

1) _____ **Fixation**: the enzyme _____ adds CO_2 to the 5-Carbon sugar **Ribu**lose **Bis**Phosphate (**RuBP**).

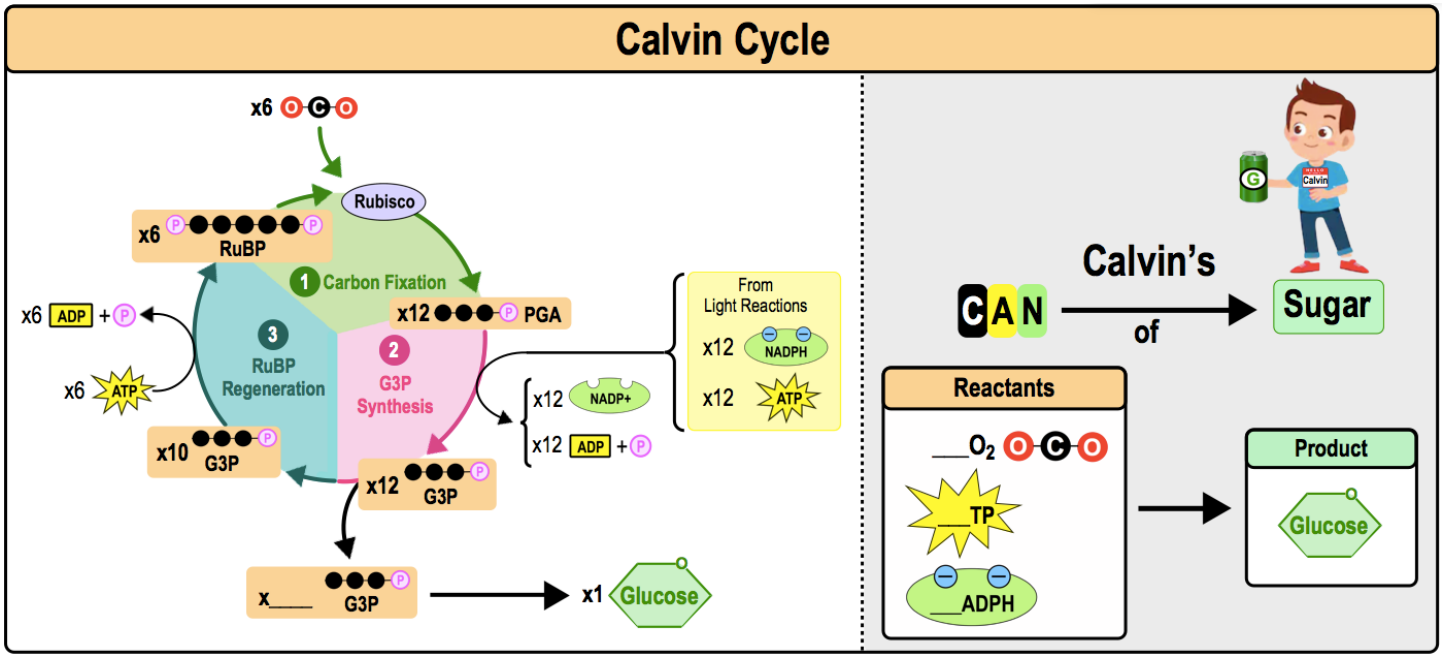
□ The first *stable* molecule produced is a _____-Carbon (C_3) molecule called **Phosphp**h**G**lycer**A**ldehyde **(PGA)**.

2) _____ **Synthesis**: uses the PGA to *synthesize* **G**lyceraldehyde-**3**-**P**hosphate (_____).

□ Cell uses _____ G3P molecules to synthesize _____.

3) _____ **Regeneration**: **G3P** is rearranged in a series of enzymatic reactions *driven by* ATP to *regenerate* **RuBP**.

EXAMPLE: Phases of the Calvin Cycle.



CONCEPT: CALVIN CYCLE

PRACTICE: The enzyme rubisco combines RuBP with a carbon atom from:

a) Glucose.
b) ATP.
c) Carbon monoxide.
d) Organic compounds.
e) Carbon dioxide.
f) NADPH.

PRACTICE: Which of the following processes occurs during the Calvin cycle?

a) Reduction of NADPH.
b) Release of oxygen.
c) Regeneration of RuBP.
d) Production of ATP.

PRACTICE: The function of the light reactions is to _____, while the function of the Calvin Cycle is to _____.

a) Convert light energy into chemical energy; Store chemical energy in the form of organic molecules.
b) Use light energy to produce ATP; Use chemical energy to produce ATP.
c) Store light energy; Use light energy to produce carbon.
d) Transfer heat captured from light to electrons; Use electrons to generate organic molecules.