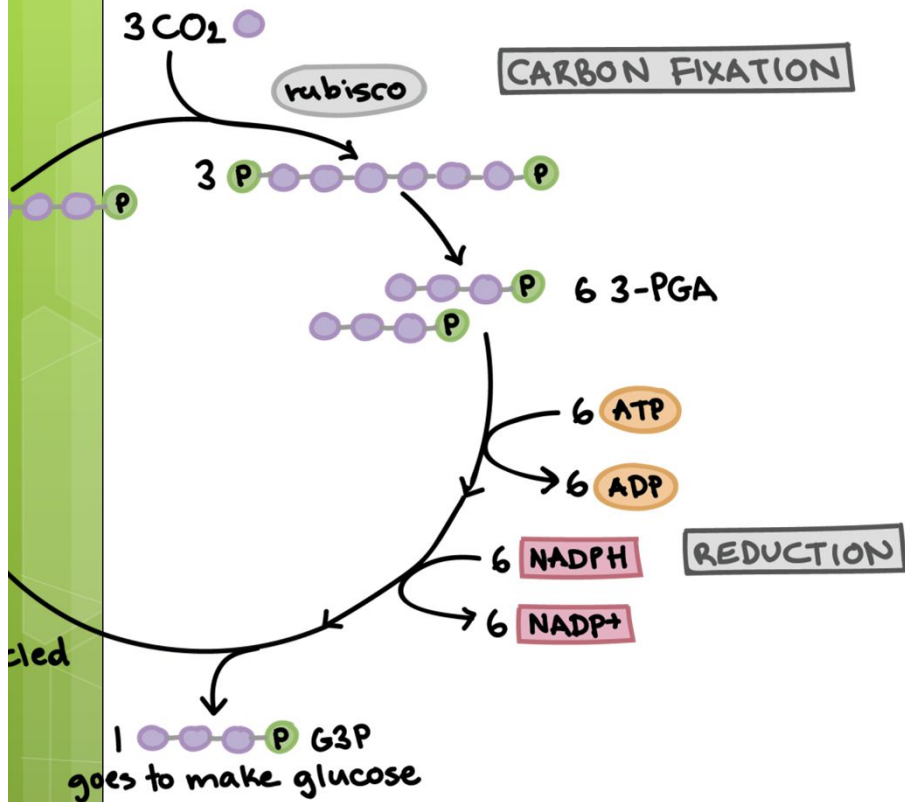


## Phase Two: Calvin Cycle

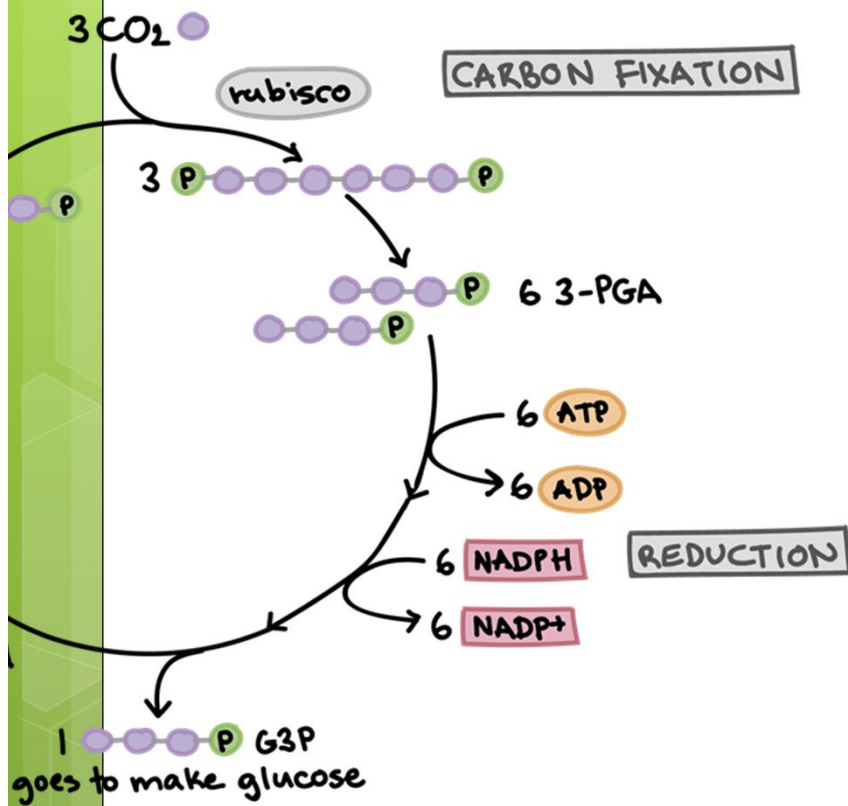
- Remember in Phase One:
  - Made NADPH and ATP
  - These can provide energy
- NADPH and ATP can't store energy long!
- **Main Idea: store energy in organic, glucose instead**
  - **Holds energy longer!**

# Phase Two: Calvin Cycle



- First step: carbon fixation
  - Carbon dioxide (CO<sub>2</sub>) combines with more carbons molecules
  - The molecule made is very large so it breaks into smaller parts
  - Final product in this step: many 3-C pieces

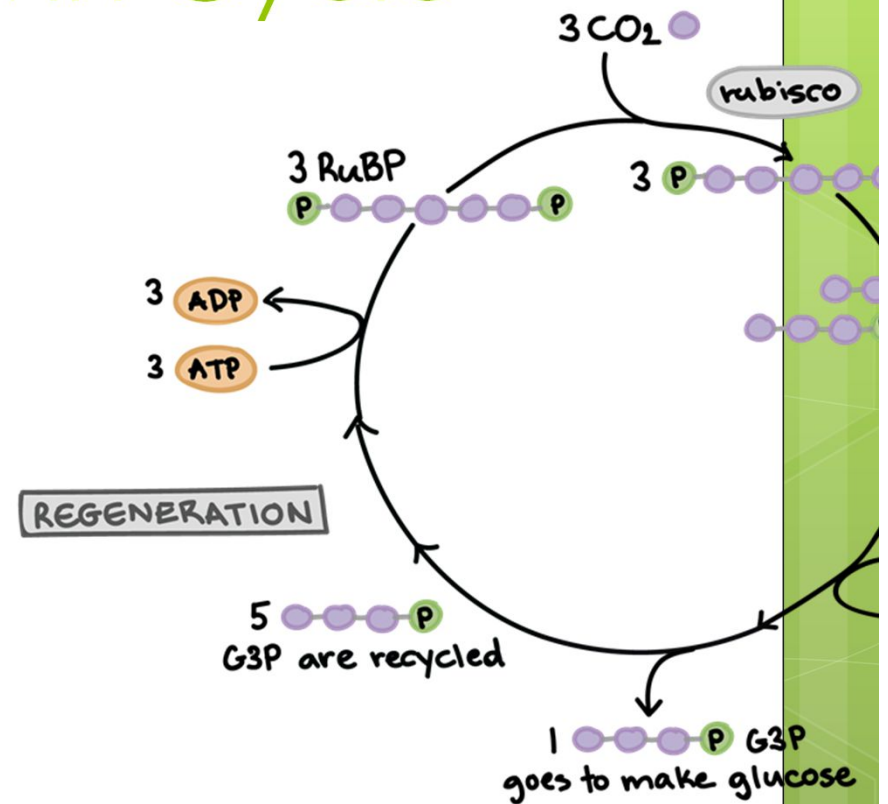
# Phase Two: Calvin Cycle



- Second step:
  - Energy from ATP and NADPH goes to the new 3-C molecule

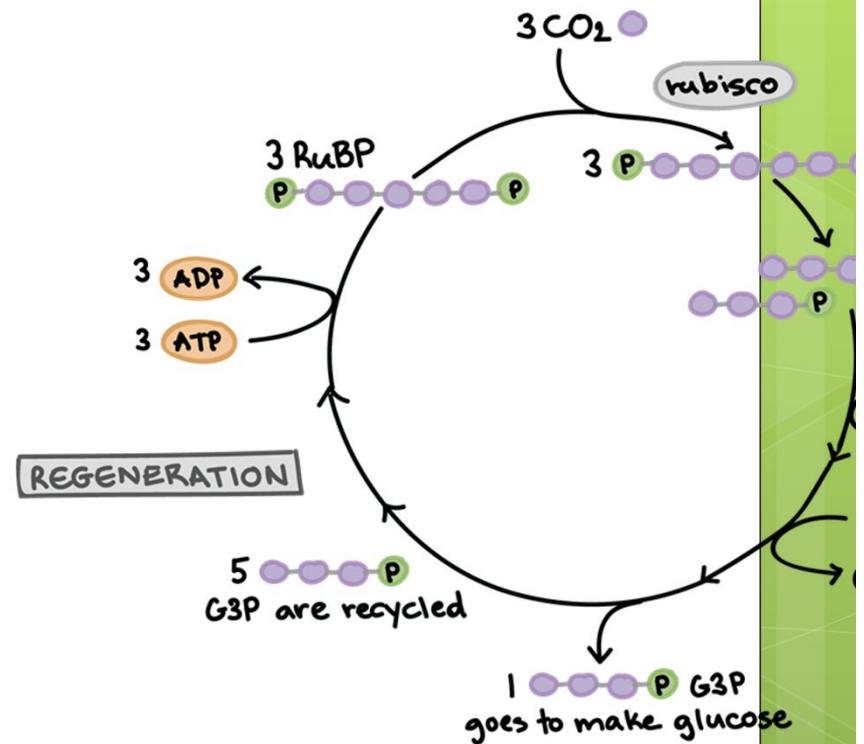
# Phase Two: Calvin Cycle

- Third step:
  - 1 of the new 3-C molecules leaves to make glucose
  - **Remember: glucose is a product**



# Phase Two: Calvin Cycle

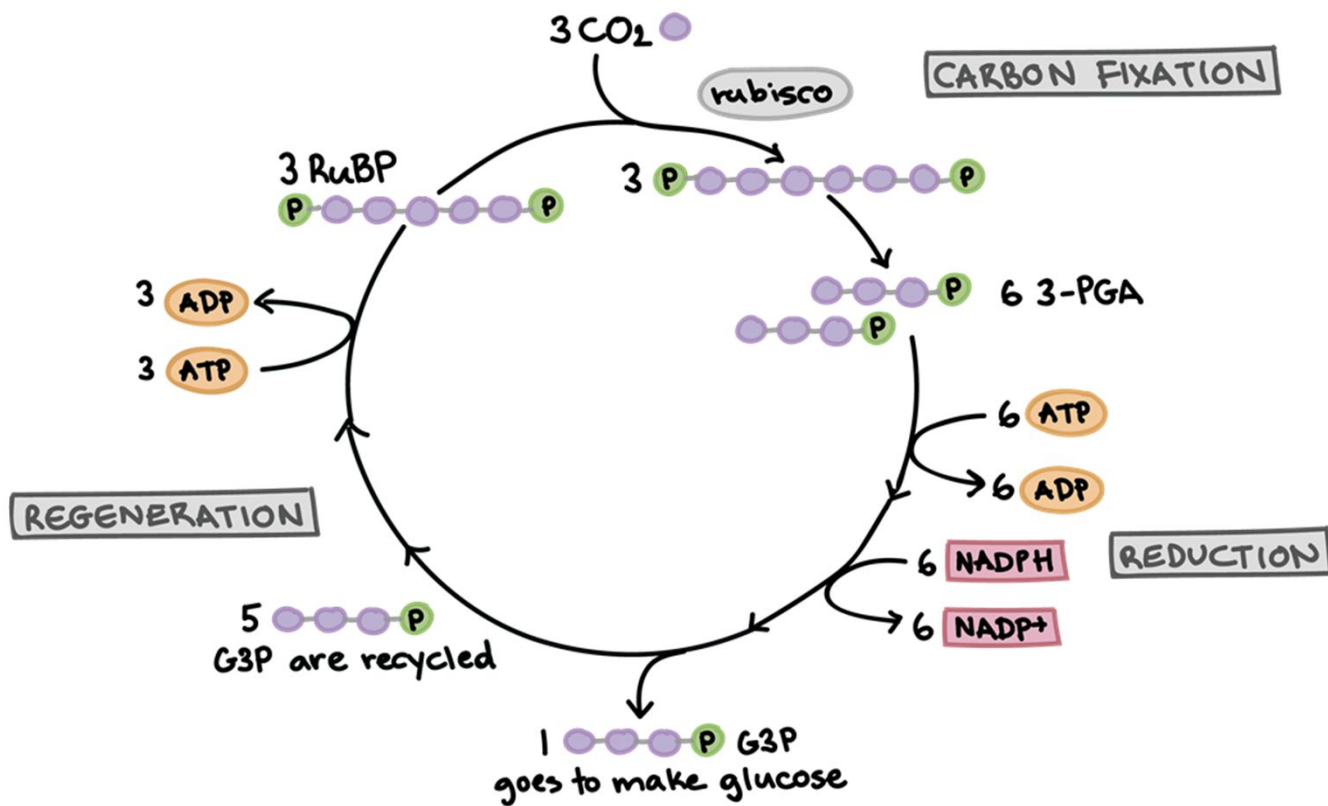
- Final step:
  - An enzyme comes in
  - Changes the 3-C molecules into 5-C compounds
  - These begin the cycle again with  $\text{CO}_2$



## Phase Two: Calvin Cycle

- Plants use the glucose formed as an energy source
  - Remember: glucose = sugar = carb = fast energy source
- Glucose can also be used to help plant structure

# Phase Two: Calvin Cycle





# Overall Equation:



Carbon dioxide

- Used in Calvin cycle
- Forms glucose



Water

- Used in light reaction
- Splits to form O<sub>2</sub>



Glucose

- Formed in Calvin cycle
- Energy source



Oxygen

- Formed in light reaction
- Used in cellular respiration