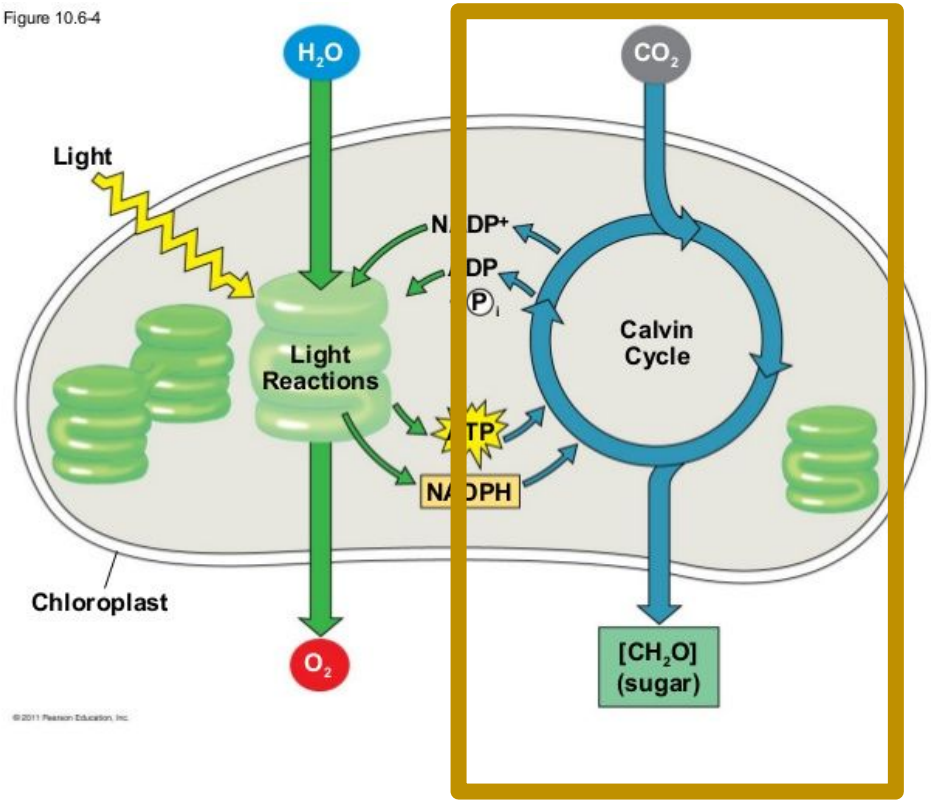
Light Independent Reactions

The ATP and NADPH formed from the light-dependent reaction contain chemical energy that cannot be stored for very long.

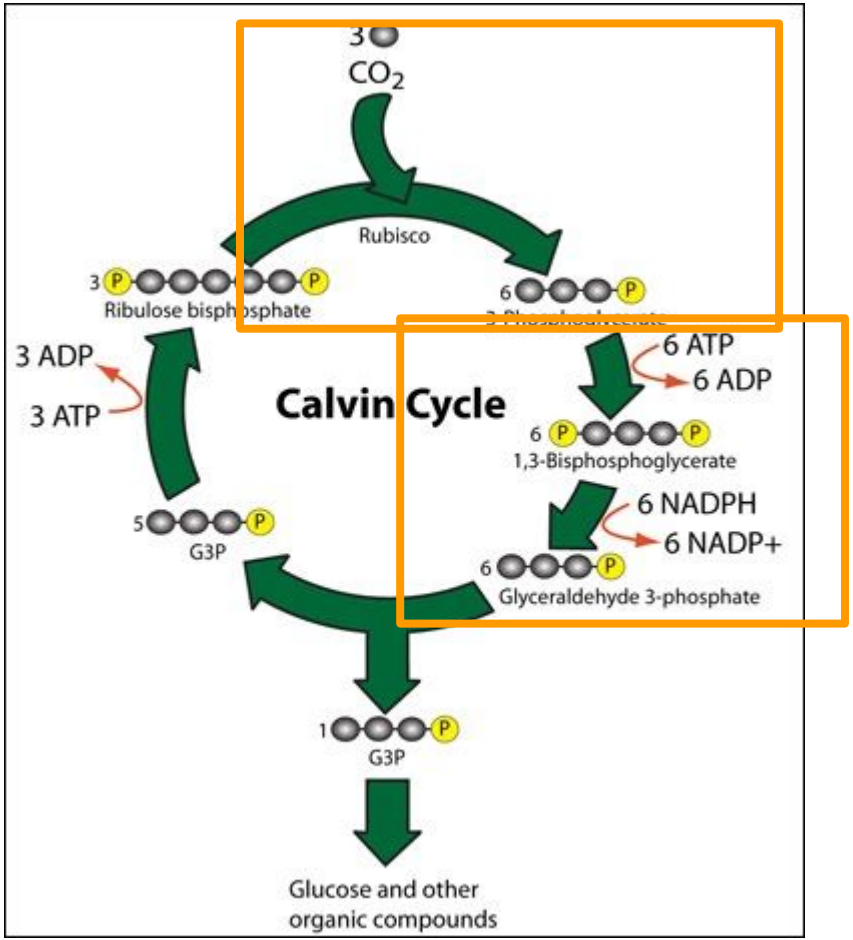
The Calvin cycle (light independent reaction) uses ATP and NADPH to produce sugar which can be stored for longer.



The Calvin cycle does not require light and takes place in the stroma.

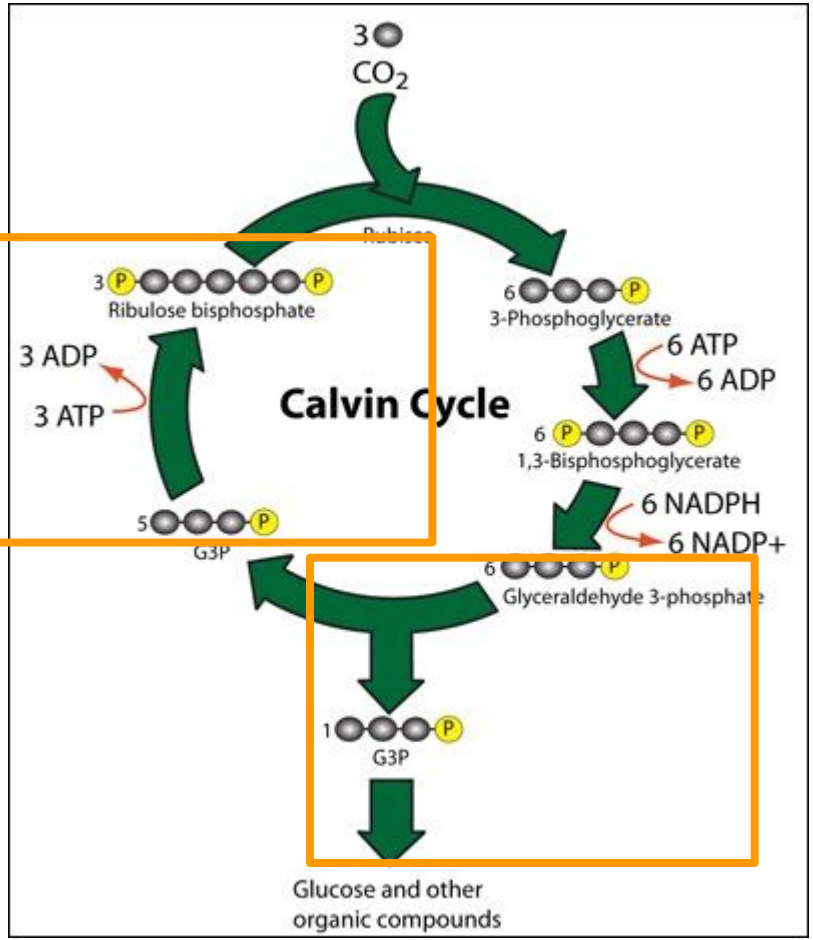
Step 1: 6 carbon dioxide molecules enter from the atmosphere and combine with other carbon to form 12 3-carbon molecules

Step 2: the 12 3-carbon molecules are then converted into higher energy forms. This energy comes from ATP and NADPH



Step 3: two of the 12 3-carbon molecule are removed from the cycle. These are used to produce sugar and other compounds needed for growth.

Step 4: The remaining 10 3-carbon molecules are converted back into 6 5-carbon molecules.
These are joined with the next incoming CO2 to restart the cycle.



The Calvin cycle uses six molecules of carbon dioxide to produce a single 6-carbon sugar molecule.

The sugar is used to meet the plant's energy needs and to build more complex macromolecules.

If the plant is eaten, the stored energy can be used by the consuming organism.