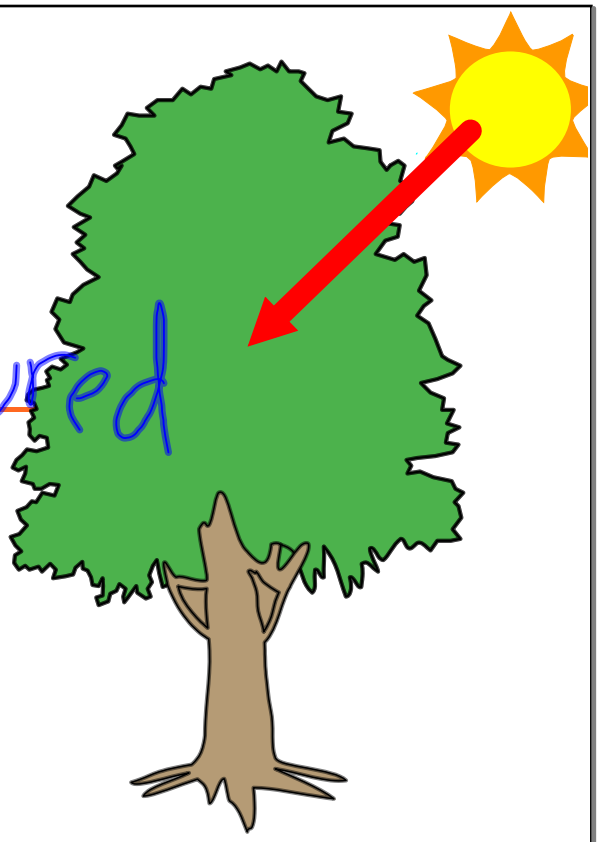
Photosynthesis

5-2

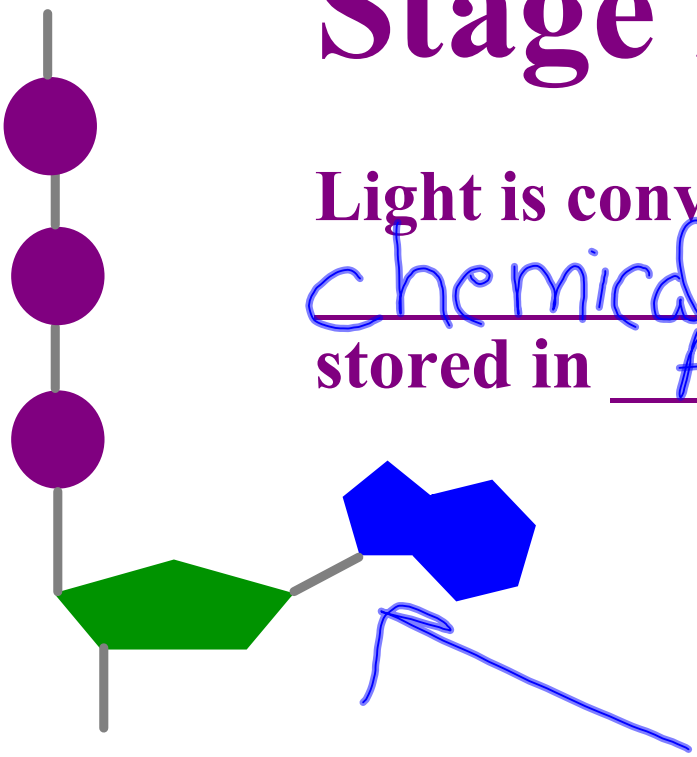
3 stages

Stage 1

Energy is captured from sunlight.



Stage 2



Light is converted to chemical energy and stored in ATP

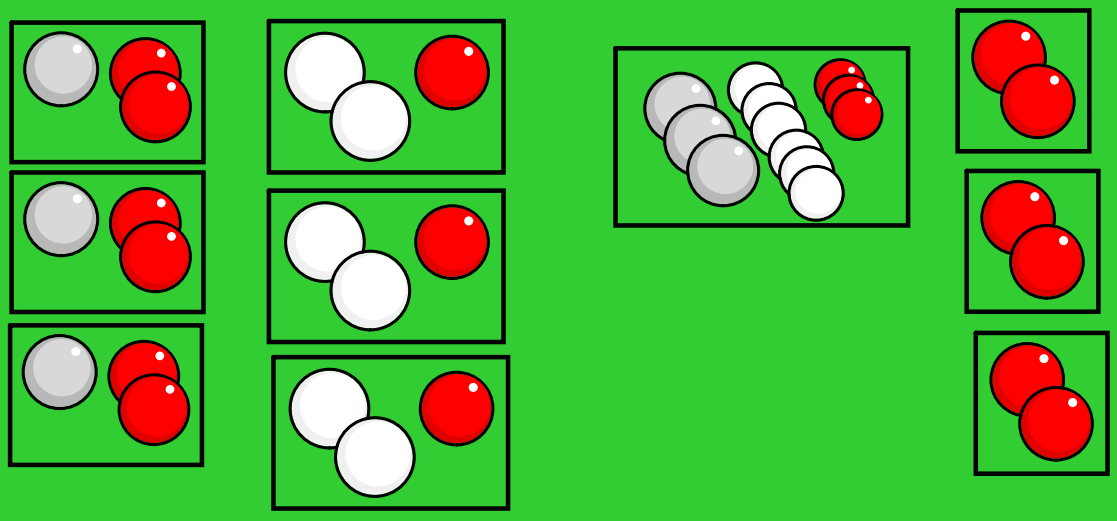
Stage 3

The ATP powers formation of organic compounds using CO_2

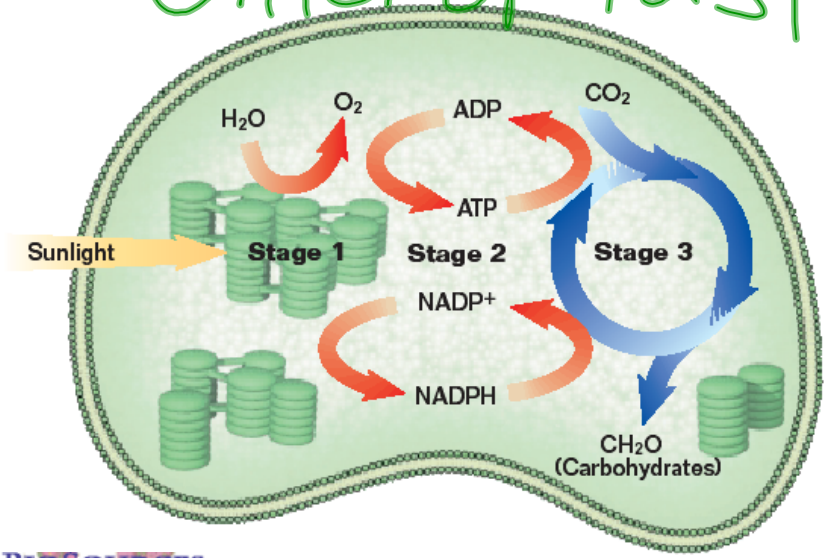
carbon dioxide

Carbon dioxide Water Sugar Oxygen

$$3CO_2 + 3H_2O \rightarrow C_3H_6O_3 + 3O_2$$



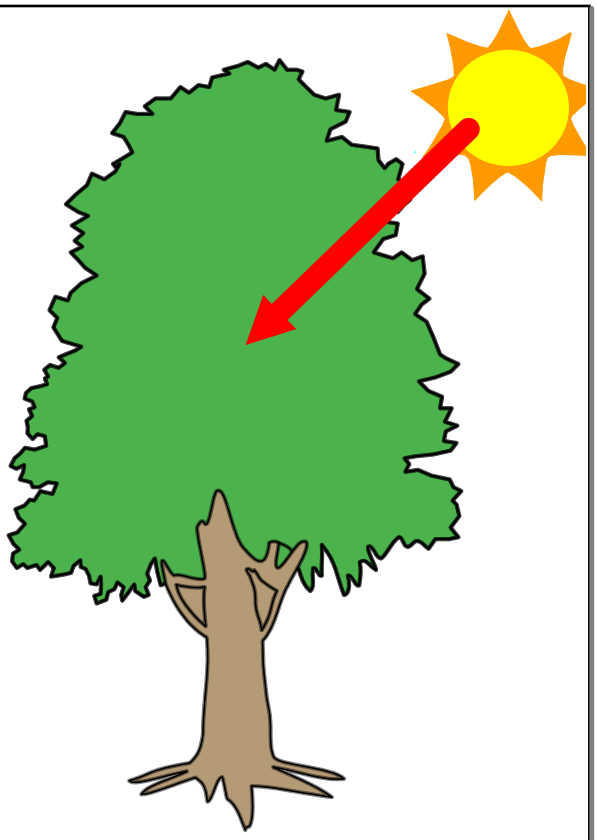
Chloroplast



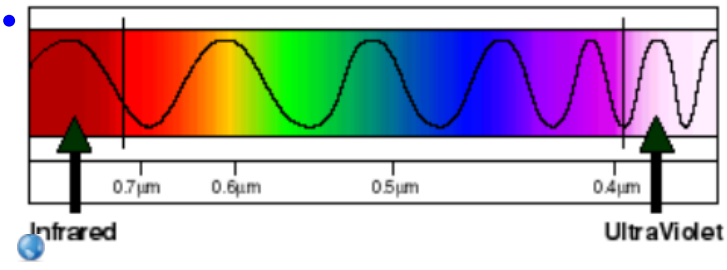
BIOSOURCES
TEACHING TRANSPARENCIES

Stage 1

Energy is captured from sunlight.

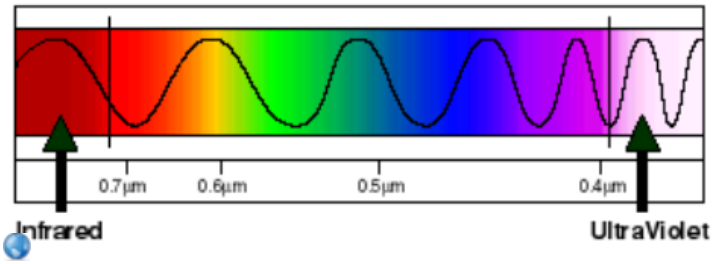


There are different wavelength of light.



http://imagers.gsfc.nasa.gov/ems/visible.html

Pigments absorb only certain **wavelengths and** reflect **others.**



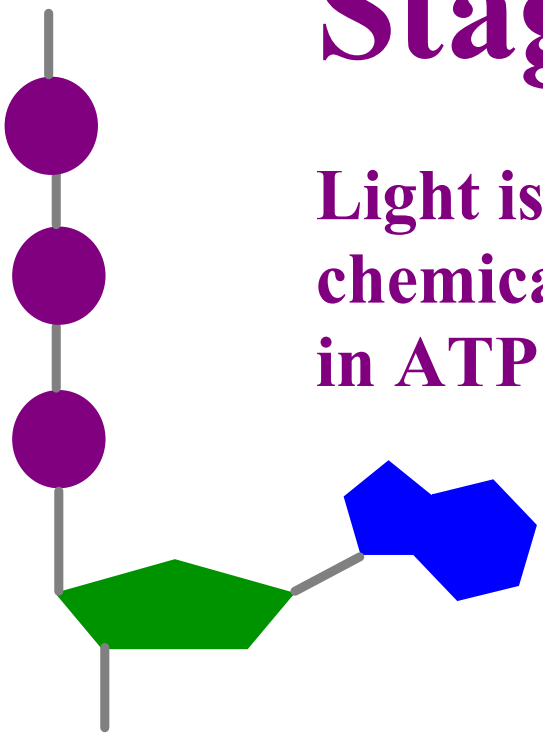
http://imagers.gsfc.nasa.gov/ems/visible.html

Chlorophyll- the primary pigment in plants/chloroplast **absorbs mostly** blue **and** red **light and reflect** green **and** yellow

Thylakoids-disk shaped structures with clusters of pigments embedded in the membranes

Excited electrons jump around in the thylakod membrane.

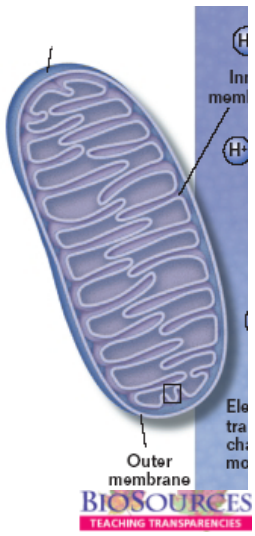
Stage 2



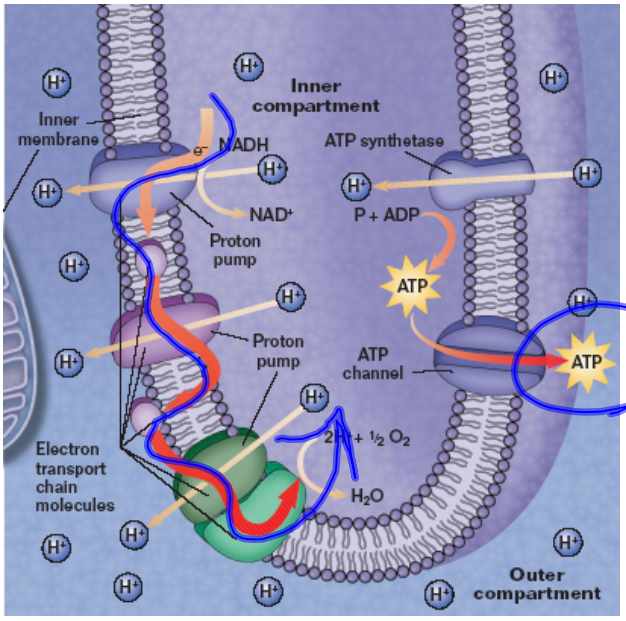
Light is converted to chemical energy and stored in ATP

Electron Transport Chain- series of molecules through which the excited electrons pass along the thylakoid membrane.

What is this?

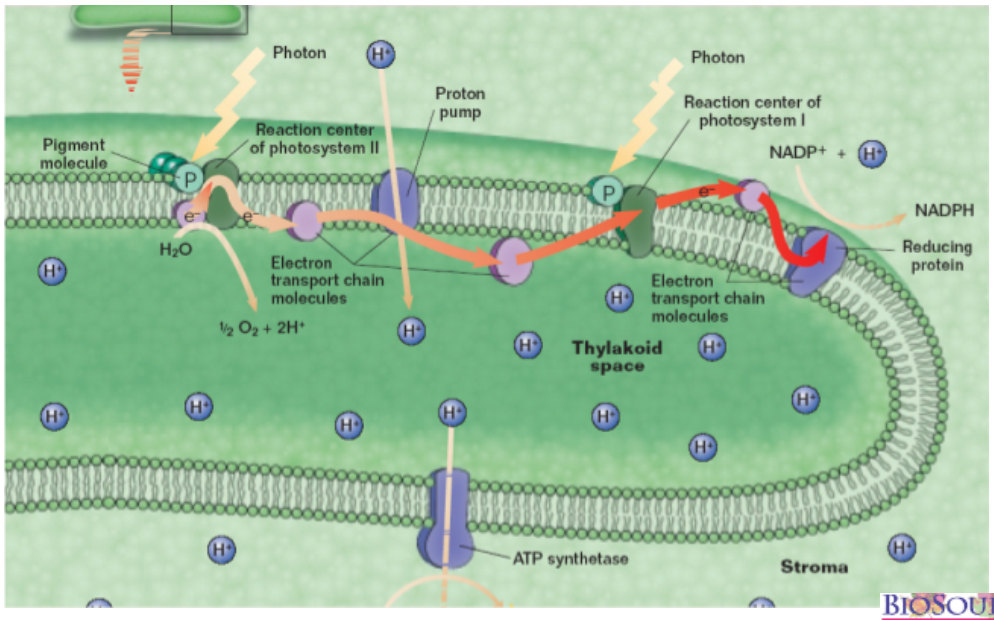


Mitochondria



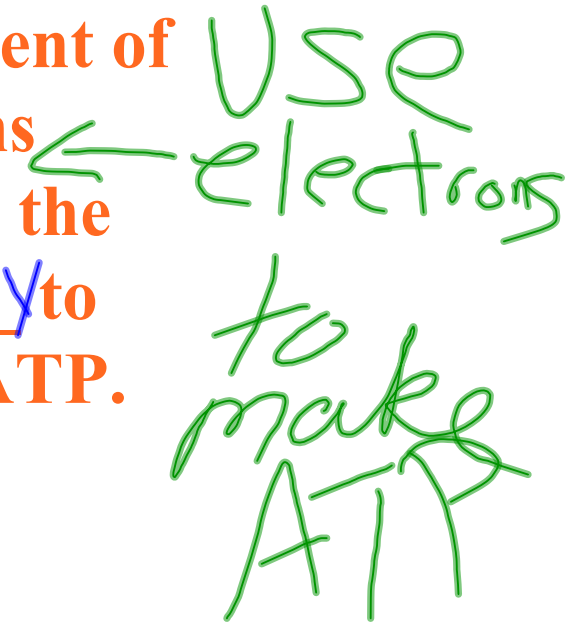
ATP

BIOSOURCES TEACHING TRANSPARENCIES



BIOSOURCES TEACHING TRANSPARENCIES

Movement of electrons provide the energy to make ATP.



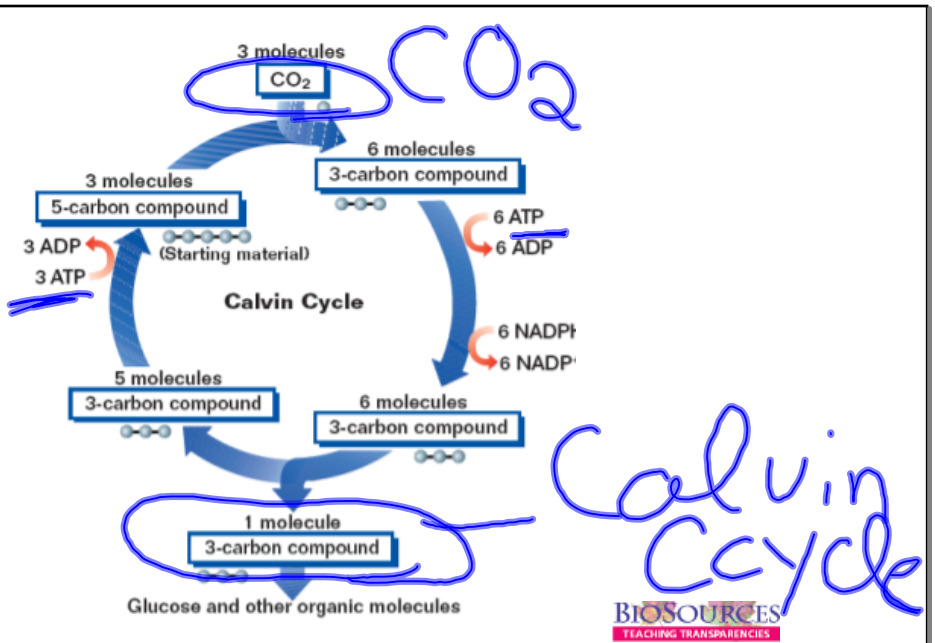
Stage 3

The ATP powers formation of organic compounds using CO_2

$$3CO_2 + 3H_2O \rightarrow C_3H_6O_3 + 3O_2$$

Carbon Water Sugar oxygen

Transfer of carbon dioxide **to organic compounds in called carbon dioxide** fixation.



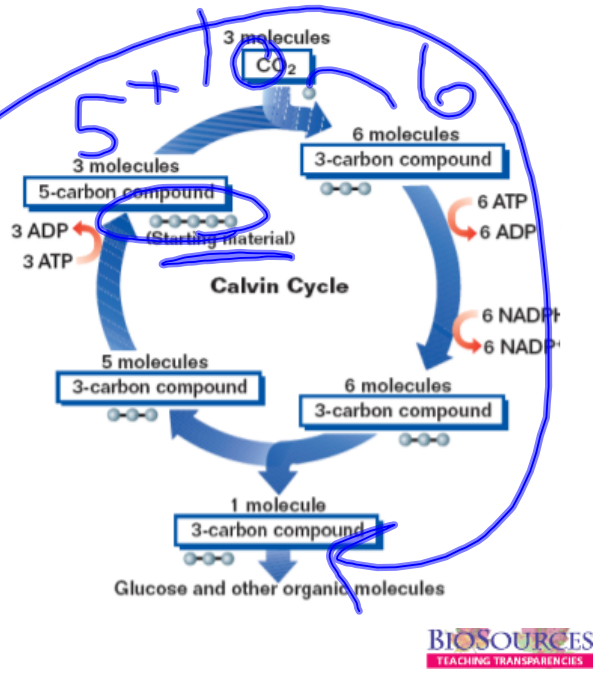
CO_2

Calvin Cycle

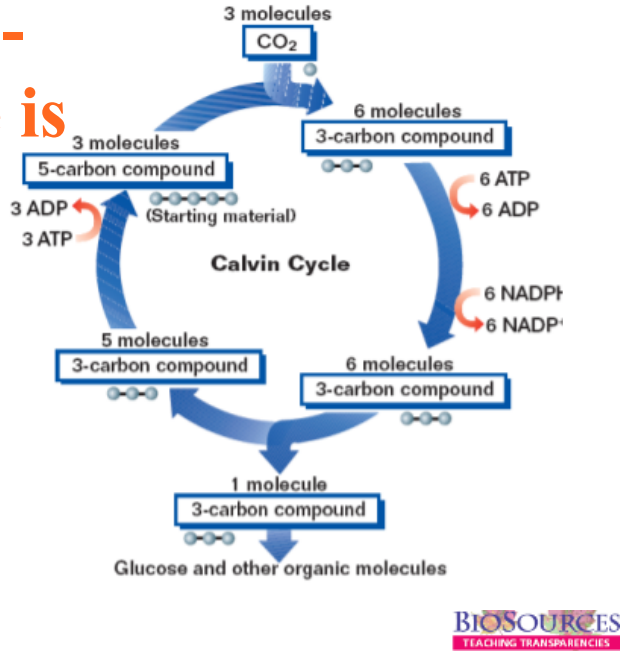
Go to this website for an Interactive Calvin Cycle

http://www.science.smith.edu/departments/Biology/Bio231/calvin.html

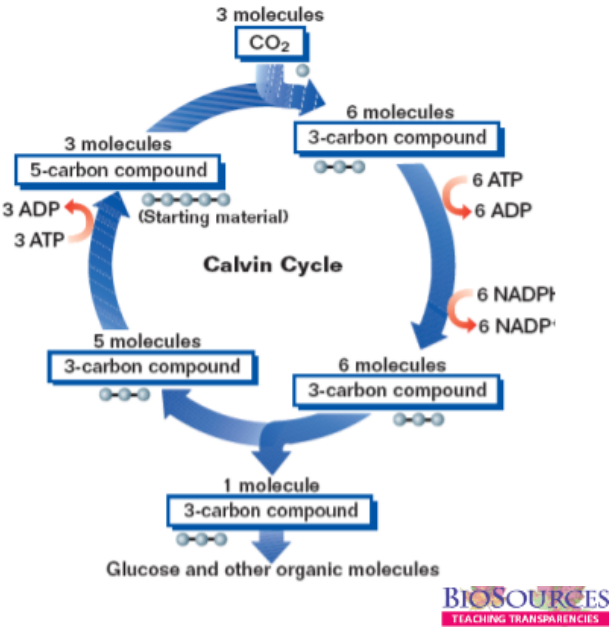
The Calvin Cycle begins when a carbon atom from a CO_2 molecule is added to a five-carbon molecule.



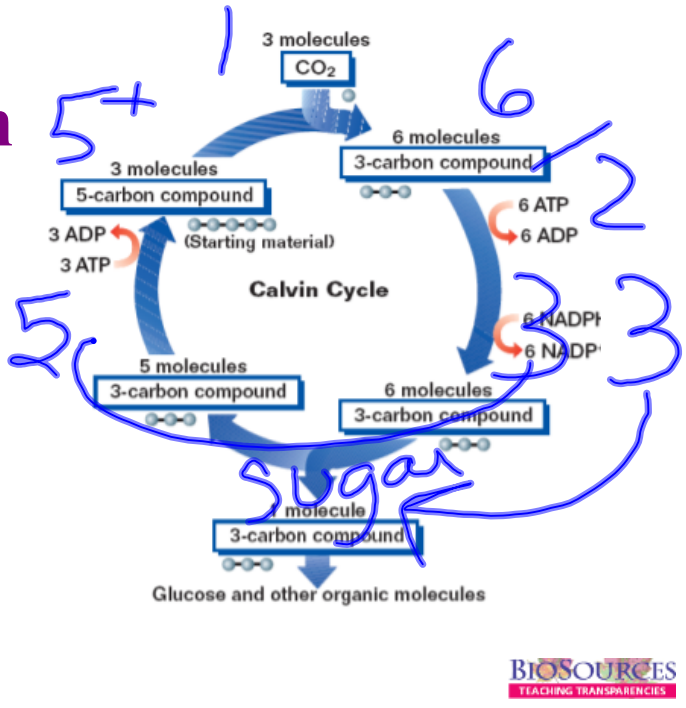
The resulting six-carbon molecule is unstable and splits into two.



One of the 3 carbon molecules is used to make organic compounds like sugar.



The other 3 carbon molecules is used to make five-carbon molecules.



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