

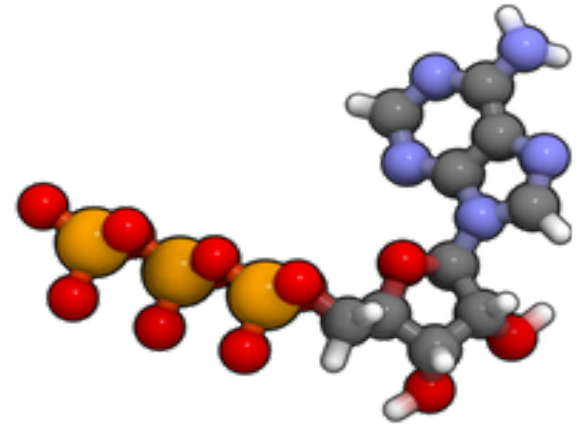
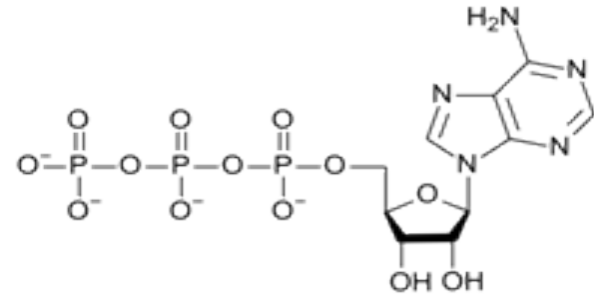
Bioenergetics

Question

- How do plants get their energy?

Answer

- Plants perform cellular respiration to make ATPs.
- ATPs is the energy molecule for the cell.
 - Analogy: a fully charged battery



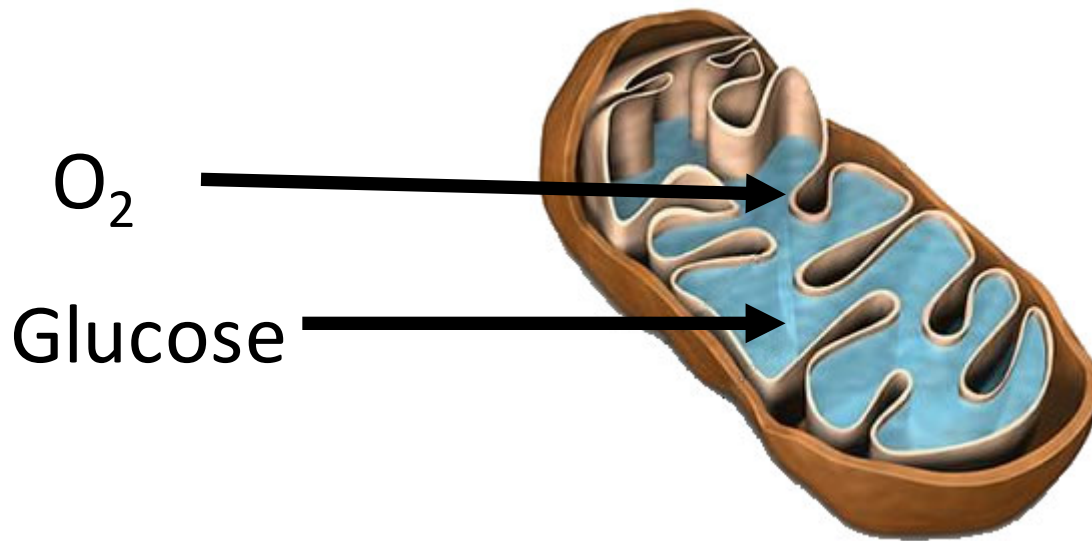
Cellular Respiration

- Plant cells have mitochondria that perform cellular respiration to make ATP (chemical energy).



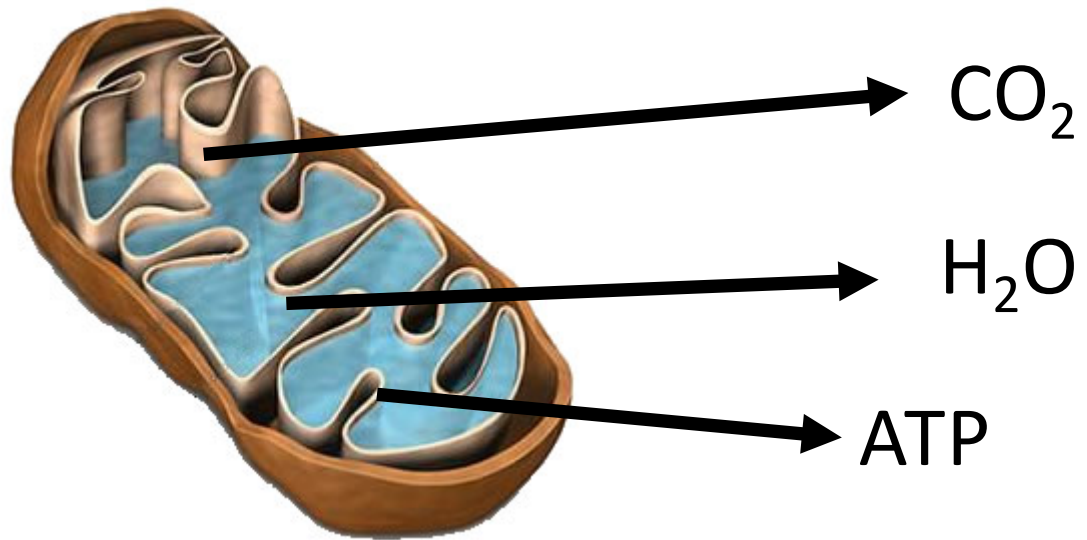
Cellular Respiration Reactants

- Inputs of cellular respiration = O_2 + Glucose



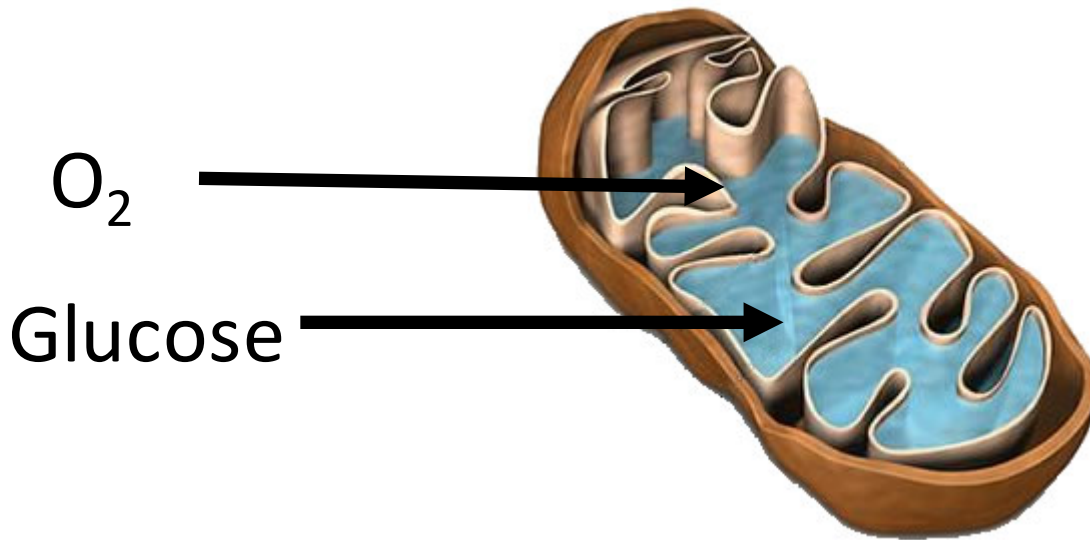
Cellular Respiration Products

- Outputs of cellular respiration = $\text{CO}_2 + \text{H}_2\text{O} + \text{ATP}$



Question

- If plant cells need oxygen gas and glucose to make ATPs, where do they get them?



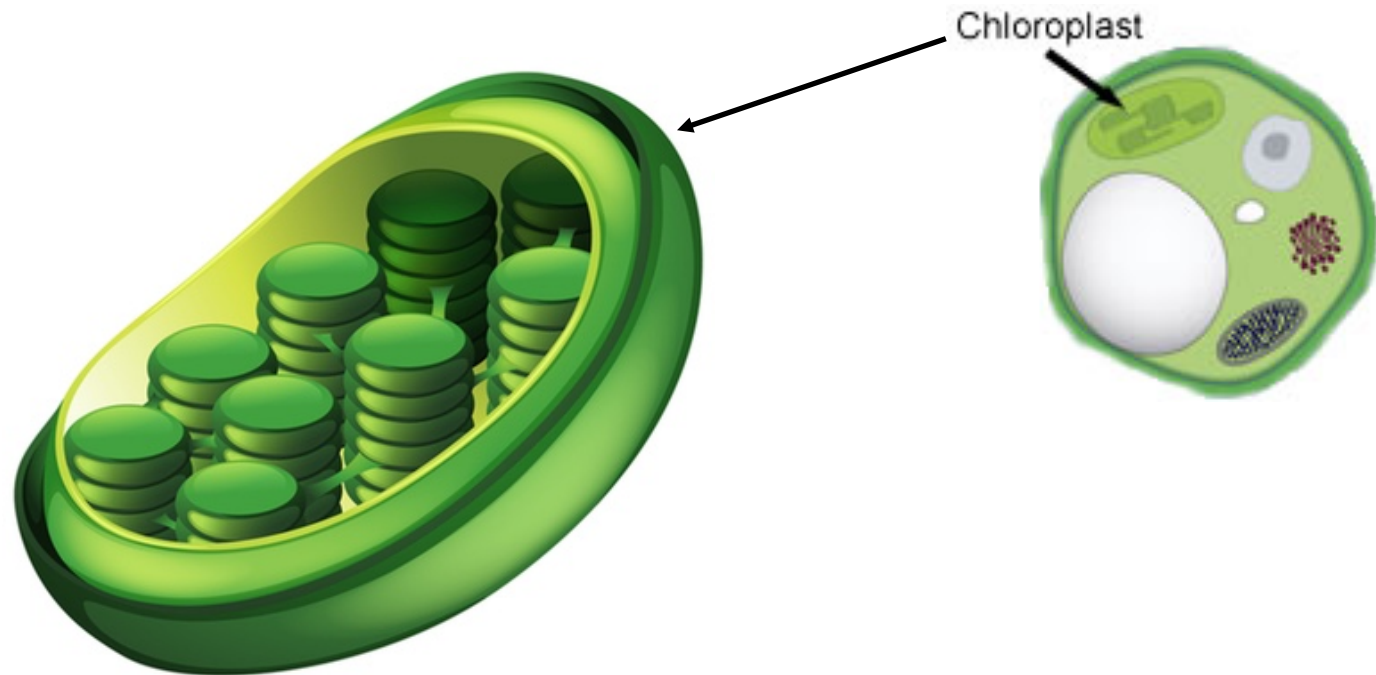
Answer

- Plants will perform photosynthesis to make the food (glucose) required to do cellular respiration.
- Plants also use glucose to make other molecules.



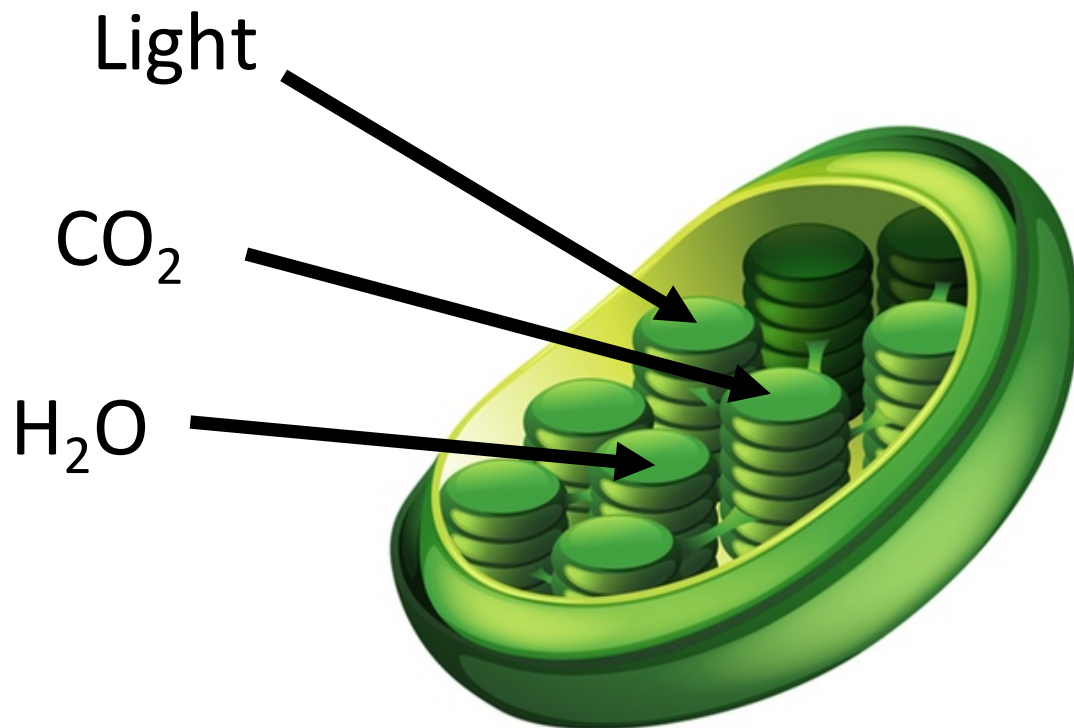
Photosynthesis

- Plant cells have chloroplasts that perform photosynthesis to make Glucose (sugar).



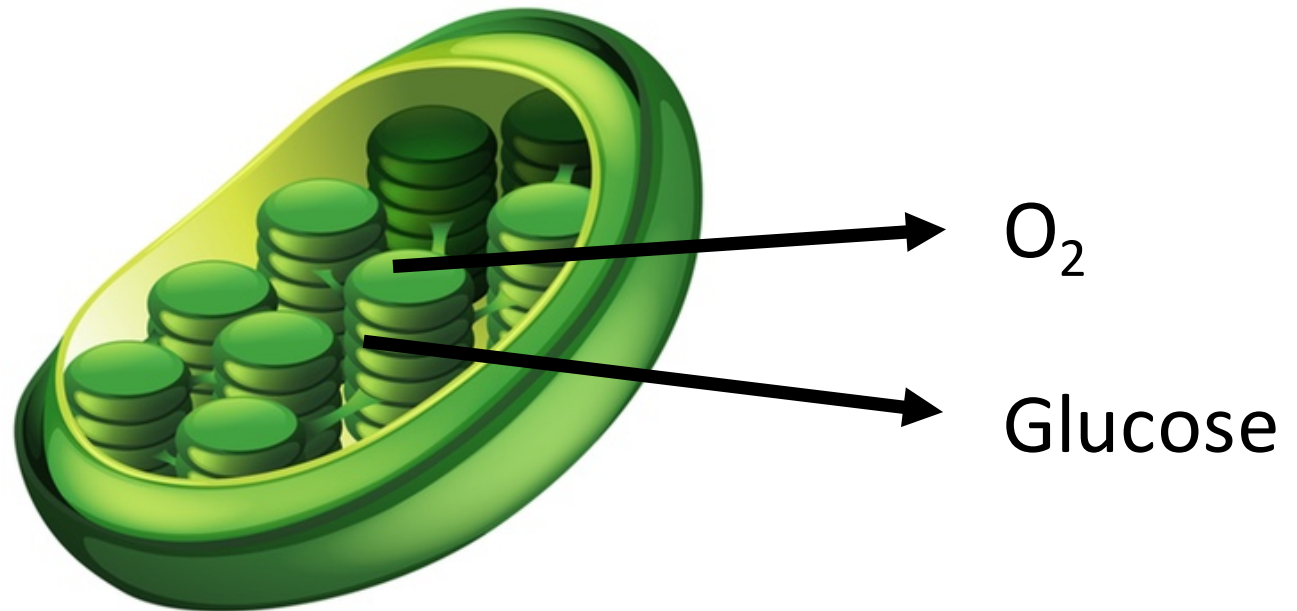
Photosynthesis Reactants

- Inputs of photosynthesis = CO_2 + H_2O + Light Energy



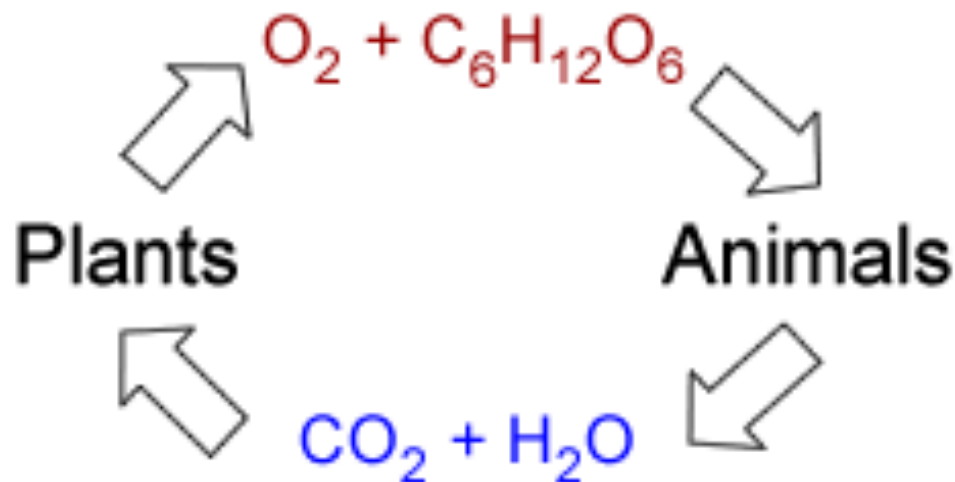
Photosynthesis Products

- Outputs of photosynthesis = O_2 + Glucose (sugar)



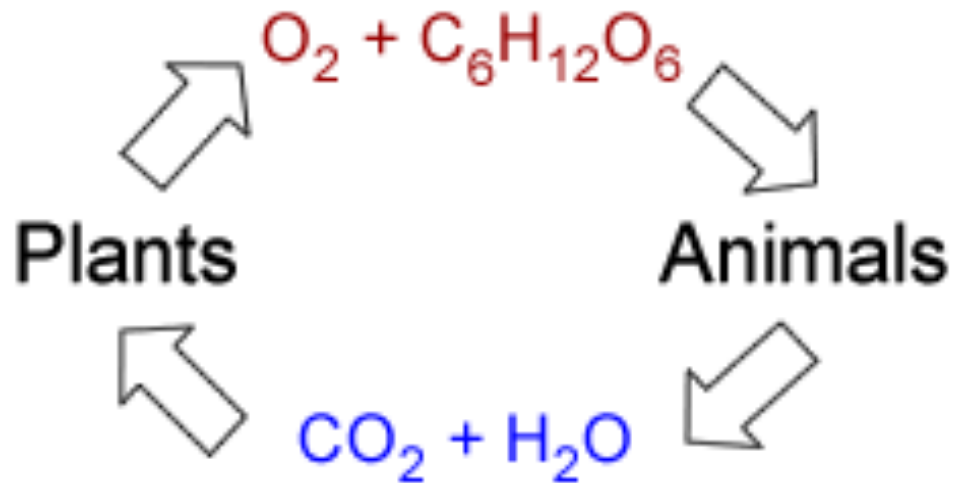
Big Picture Cycle

- Plants drink water and take in carbon dioxide to perform photosynthesis to make glucose ($C_6H_{12}O_6$) and oxygen gas.
- Animals breathe in the oxygen gas and eat the glucose and make water and carbon dioxide.



Bioenergetics Cycle

- Plants perform photosynthesis.
- Animals and plants perform cellular respiration.



ATP ADP Cycle

- ATP = Adenosine TRI Phosphate = 3 Phosphates
- ADP = Adenosine DI Phosphate = 2 Phosphates
- The chemical energy in food is used to make ATP

