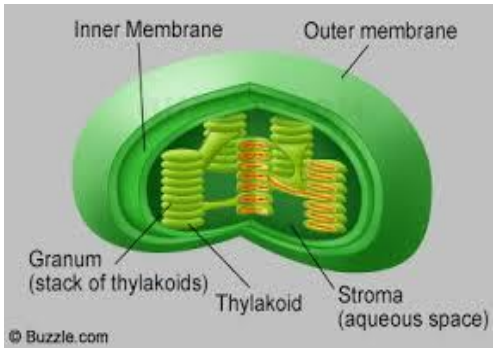
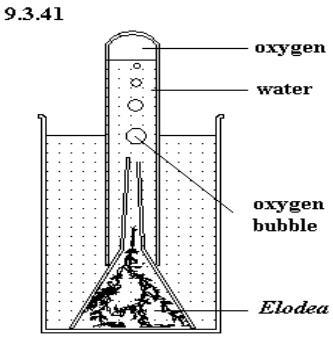
Photosynthesis | Topic Notes

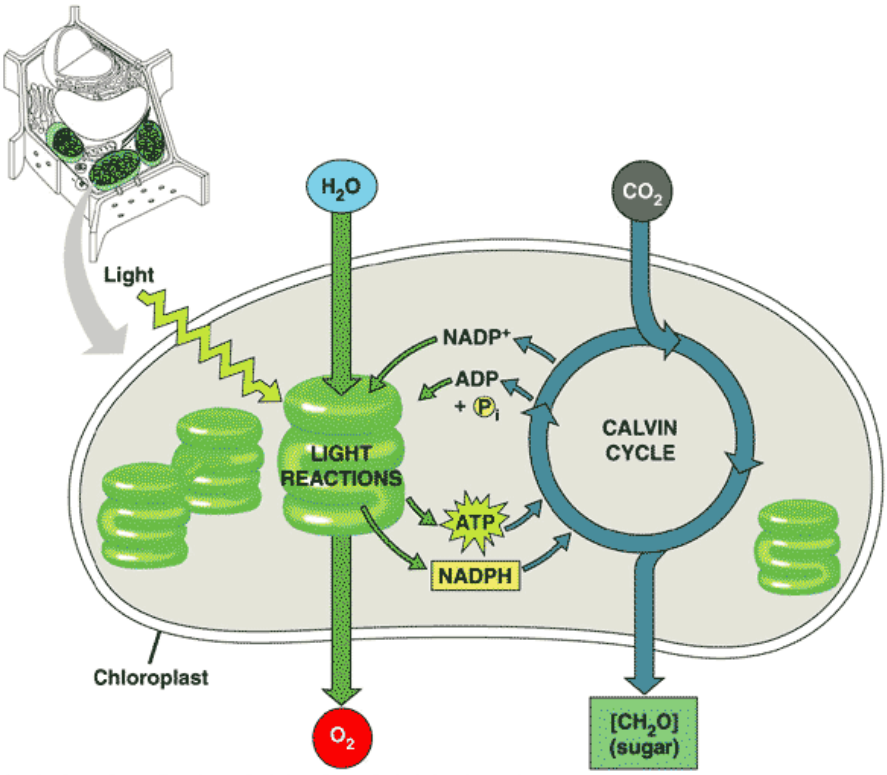
Photosynthesis is the process of producing sugars from CO_2 and H_2O, using sunlight as a source of energy.

Balanced chemical equation: $6CO_2 + H2O \xrightarrow{\text{light}} C_6H_{12}O_6 + O_2$ (Chlorophyll)





- The internal part of the **chloroplast** consists of the ***stroma*** (a watery fluid) and stacks of ***thylakoid membranes*** collectively called a ***granum.*** The thylakoid membranes contain the ***chlorophyll*** pigments (this is formed form magnesium plants obtain from the soil) which are arranged into clusters called ***photosystems***.
- **Photolysis** is the splitting of H_2O into electrons, Hydrogen ions (protons) and oxygen.
- Chlorophyll molecules absorb sunlight energy, causing *electrons to be released from the chlorophyll molecules*. The lost electrons are *replaced by those produced in photolysis*. Hydrogen *ions are* *stored in a* *proton pool* and *oxygen is* *either* *released into* *the* *atmosphere or* *used in* *respiration* *within the* *leaf*. The electrons (from the chlorophyll molecule), protons (from the proton pool) and CO_2 from the atmosphere are *all joined* *together to* *make* *carbohydrates*



(firstly glucose which may be converted into other molecules needed by cells or stored as starch).