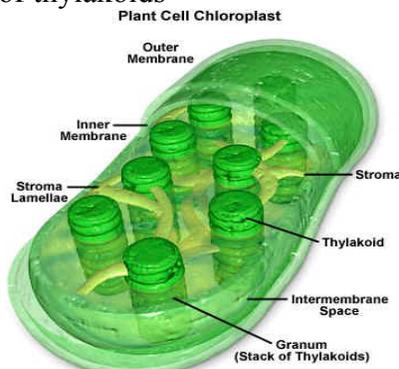


## Photosynthesis Study Guide (Chapter 8)

- Photosynthesis – an organism’s ability to convert light energy into chemical energy
  - occurs within photoautotrophs (make own food with sunlight)
  - occurs in plant’s chloroplasts
    - chlorophyll – green pigment required for photosynthesis
- Chloroplast – plant cell structure bounded by inner and outer membranes
  - stroma – fluid-filled region containing enzymes required to make carbohydrates
  - thylakoids – sacs where the chlorophyll is located
    - lumen – fluid-filled region that facilitates photosynthesis
  - granum – a stack of thylakoids



- Chlorophyll – pigment that has the ability to absorb many wavelengths of light
  - Chlorophyll A – most dominant, bright green, absorbs almost every wavelength
  - Chlorophyll B – yellowish-green, accessory
  - absorption spectrum – pigment’s ability to absorb light
- Photosynthesis Equation:
  - $6\text{CO}_2 + 12\text{H}_2\text{O} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2 + 6\text{H}_2\text{O}$
- Photosynthesis Phases:
  - Light-dependent – light is captured by chlorophyll, water molecules split creating high-energy molecules ATP and  $\text{NADPH}^+$  (use energy for next phase)
    - Photo system – unit of proteins, chlorophyll that has the ability to capture light energy and transfer electrons inside thylakoids
    - Electron transport chain – movement of electrons from one membrane potential to the next, causes photolysis
    - Photolysis – use of light to split water molecule
    - (Photo)phosphorylation – addition of phosphate group to a molecule

### Non-cyclic

