

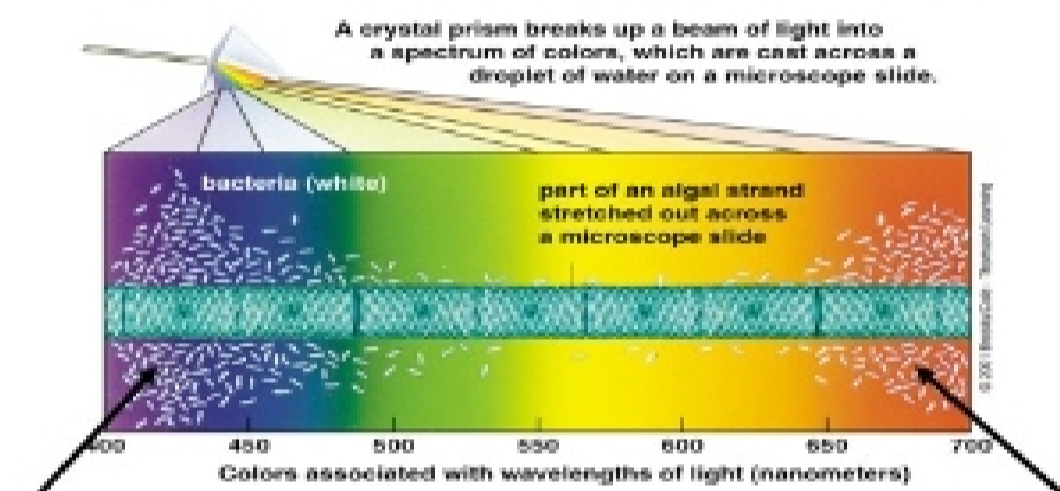
Chapter 7:

Capturing Solar Energy: Photosynthesis

Part I: The "Pieces" of Photosynthesis

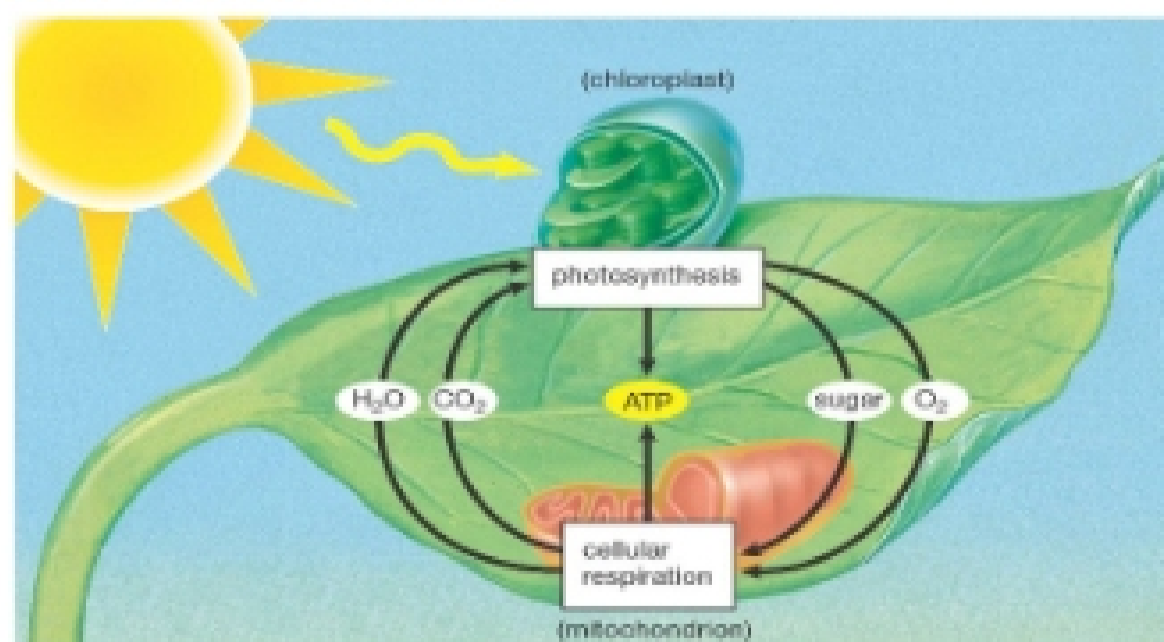
7.1 What Is Photosynthesis?

- For most organisms, energy is derived from sunlight, either directly or indirectly
- Those organisms that can directly trap sunlight do so by photosynthesis
- Process by which solar energy is trapped and stored as chemical energy in the bonds of a sugar
- **Englemann's Experiment**
 - Certain bacterial cells will move toward places where **oxygen concentration is high**
 - Photosynthesis produces oxygen as a by-product



Notice that the bacteria (white specks) concentrate in 2 separate color regions, where oxygen concentration is higher

- Cellular respiration= aerobic respiration
- **Photosynthesis and Cellular Respiration are Linked Processes**
 - **Photosynthesis**
 - Energy-storing pathway (storing sugar for long term)
 - Releases oxygen
 - Requires carbon dioxide (reactant)
 - **Aerobic Respiration**
 - Energy-releasing pathway
 - Requires oxygen (reactant)
 - Releases carbon dioxide



- o Chloroplasts are organelles with a double membrane enclosing a fluid called the **stroma**
- o Embedded in the stroma are disk-shaped membranous sacs called **thylakoids**
- o The **LIGHT DEPENDENT REACTIONS occur in** and adjacent to the membranes of the **thylakoids**
- o The **DARK REACTIONS (Calvin cycle)** capture carbon dioxide and produce sugar **occur in** the **stroma**

o **Chloroplast Anatomy**

