# Notes for Photosynthesis and Cellular Respiration

## **Photosynthesis**

- Plants, cyanobacteria, algae, and phytoplankton are all able to photosynthesize.
- Light is made up of photons of energy that travel in electromagnetic waves from the Sun towards Earth. (Photo – light /synthesis – to make)
- Different wavelengths of visible light produce different colors of light.
- Pigments are chemicals that absorb some light colors and reflect others.
- Chlorophyll is a pigment found in chloroplasts of plant cells that absorbs blue and red light but reflects green light.
- Accessory pigments also absorb light but can only be seen in the fall when then the light intensity decreases and plants can no longer make chlorophyll.
- During photosynthesis, light energy is used to split water molecules into hydrogen and oxygen atoms.

### **Photosynthesis**

• The oxygen is released into the air, while the hydrogen atoms are combined with carbon dioxide molecules to produce glucose sugar ( $C_6H_{12}O_6$ ).

### **Cellular Respiration**

- Other organisms obtain glucose by eating plants or eating animals that previously ate plants.
- The glucose travels to all our cells via the blood stream.
- Inside the mitochondria of cells, oxygen is used to help break down glucose into water, carbon dioxide, and ATP energy molecules.
- Our cells use ATP to perform all of life's functions.

#### **Connection**

- The products of one are the reactants of the other.
- CO<sub>2</sub> + H<sub>2</sub>O + Light Energy → C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> + O<sub>2</sub> + ATP Energy
  Photosynthesis Cellular Respiration