2.4 Chemical Reactions & Enzymes
Chemical Reactions

-process that changes one set of chemicals into another.

*Some are slow, others are fast.
*Reactants - elements or compounds that enter into a chemical reaction
*Products - elements or compounds made (produced) by a chemical reaction.
Ex. \[ \text{H}_2\text{O} + \text{CO}_2 \rightarrow \text{H}_2\text{CO}_3 \]

Reactants \hspace{2cm} \text{products}
Energy in Reactions

-energy is released or absorbed whenever chemical bonds are formed or chemical reactions take place
- chemical reactions that release energy happen on their own or **spontaneously**

- chemical reactions that **absorb** energy will not occur without a source of energy.

**Activation Energy**—energy that is needed to get a reaction started.
**Enzymes**

*play essential roles in controlling chemical pathways, making materials the cell needs, releasing energy, & transferring information*

Catalyst—substance that speeds up the rate of a chemical reaction. They work by lowering the activation energy.
Enzymes- proteins that act as biological catalysts -speed up chemical reactions that take place in cells (lock)

Substrates- enzymes of enzyme catalyzed reactions (key)

Active site- enzyme that substrates bind to (key hole)