AP BIO STUDY GUIDE (CHAPTERS 6, 7, & 10)

CHAPTER 6

- **Exergonic reaction** – proceeds with a net release of free energy and is spontaneous.
- **Endergonic reaction** – is one that absorbs free energy from its surroundings and is non-spontaneous.

BREAKING BONDS	BUILDING BONDS
Catabolic	Anabolic
Hydrolysis	Dehydration Synthesis
Exergonic	Endergonic
Order to Disorder	Disorder to Order

- **Kinetic energy** – energy it possesses due to motion. (a bullet passing an observer)
- **Potential energy** – energy stored in the body or system due to its position in a force field (stretching a spring to its position)
- **Chemical energy** – potential of a chemical substance to undergo a transformation through a chemical reaction (Making chemical bonds)
- **The first law of thermodynamics**
  - Energy can be transferred and transformed
  - Energy cannot be created or destroyed
- **The second law of thermodynamics**
  - Spontaneous changes that do not require outside energy increase the entropy, or disorder, of the universe
- **Structure of ATP**
  - 3 phosphate molecules and one nitrogenous base
- **3 ways ATP transfers energy (also good for stabilizing cell's energy needs)**
  - Catabolism – release
  - Anabolism – input
- **Induced fit model**
  - 3-D structure of enzyme fits substrate, as it binds the enzyme changes shape to a tighter fit. "conformational change"
- **Properties of enzymes**
  - Reaction Specific – each enzyme is substrate specific
  - Reusable – not consumed in reaction
- **Factors affecting enzymes**
  - enzyme concentration – positive correlation
  - substrate concentration – positive correlation
  - temperature – increase beyond optimum T, decrease below optimum T
  - salinity – protein shape; salinity changes
  - pH – protein shape; pH changes
  - activators
  - inhibitors
- **Denaturation** – lose 3D shape ([illegible])
- **Coenzymes** – non-protein, organic molecules, bind temporarily or permanently to enzyme near active site