[illegible] CHAPTERS [illegible]

CHAPTER [illegible]

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

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Catabolic	Anabolic
Hydrolysis	Dehydration Synthesis
Exergonic	Endergonic
Releases Energy	Requires Energy

- **Kinetic energy** – energy in motion due to motion, i.e. bullet passing an observer.
- **Potential energy** – energy stored in the body or spring due to its position in a bow (bend pointing, a spring in its position).
- **Chemical energy** – potential of a chemical substance to undergo a transformation through a chemical reaction (breaking 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 adenosine base.
- **Ways ATP transfers energy (also good for mobilizing cell's energy needs):**
  - Coupling – release
  - Coupling – input
- **Induced fit model:**
  - A 3D structure of enzymes fits substrate, as it binds the enzyme changes shape to a tighter fit. "conformational change"
- **Properties of enzymes:**
  - Structure Specific – each enzyme is substrate specific
  - Reusable – not consumed in reaction
- **Factors affecting enzymes:**
  - enzyme concentration – positive correlation
  - substrate concentration – positive correlation
  - temperature – increase factor until optimum T, decrease factor optimum T
  - salinity – positive shape, salinity changes
  - pH – positive shape, pH changes
  - activators
  - inhibitors
- **Denaturation** – loss 3D shape (TERTIARY, QUATERNARY)
- **Coenzymes** – non-protein, organic molecules, bind temporarily or permanently to enzyme near active site