

AN INDUCTION COURSE IN BIOCHEMISTRY, 2019-2020

CHAPTER 2

- 1. **Exergonic reactions** – proceeds with a net release of free energy used to generate work
- 2. **Endergonic reactions** – is one that absorbs free energy from its surroundings and to use it to generate work

FREE ENERGY, ENTHALPY	FREE ENERGY, ENTHALPY
Exergonic	Exergonic
Endergonic	Endergonic/endergonic
Exergonic	Exergonic
Exergonic/endergonic	Exergonic/endergonic

- 3. **Exergonic energy** – energy is generated due to reaction, ex. falling pencil, an electron
- 4. **Potential energy** – energy stored in the body or system due to its position in a field or field (stretching a spring to its position)
- 5. **Chemical energy** – potential of a chemical substance to undergo a transformation through a chemical reaction (storing chemical energy)
- 6. **The direction of thermodynamics**
 - a. Energy can be conserved and transformed
 - b. Energy cannot be created or destroyed
- 7. **The second law of thermodynamics**
 - a. Spontaneous changes that do not require outside energy increase the entropy, or disorder, of the system
- 8. **Structure of ATP**
 - a. 3 phosphate molecules and one adenine base
- 9. **Energy ATP provides energy (also used for stabilizing cell's energy levels)**
 - a. Catabolism – release
 - b. Anabolism – input
- 10. **Enthalpy the model**
 - a. A measurement of energy for systems, as to track the energy changes (change in system) in "thermodynamic theory"
- 11. **Properties of enzymes**
 - a. Reaction specific – each enzyme is catalyze specific
 - b. Reversible – can reverse the reaction
- 12. **Factors affecting enzymes**
 - a. enzyme concentration – positive correlation
 - b. substrate concentration – positive correlation
 - c. temperature – increase followed optimum T, decrease follow optimum T
 - d. pH – positive slope, activity changes
 - e. pH – positive slope, pH changes
 - f. activation
 - g. inhibition
- 13. **Enthalpy the model** – free T changes (THERMODYNAMICS)
- 14. **Enthalpy the model** – free T changes (THERMODYNAMICS)