CHAPTER 6 – METABOLISM

Reading guide, video, quiz

Objectives

1. Metabolism and energy
2. Explain the 1st and 2nd thermodynamics laws
3. Explain the differences between various types of energy
4. Understand the energy coupling
   1. Video: exergonic and endergonic reactions coupling
5. Understand the activation energy
6. Understand the enzyme function

Reading guide

1. Metabolism and energy
   1. Define metabolism
   2. The relationship between metabolism and life is …
   3. Types of metabolic paths
2. Energy:
   1. Define energy
   2. Types of energy
   3. Explain potential & kinetic energies using figure 6.6
3. 1st and 2nd thermodynamics laws
   1. State the 1st law of thermodynamics
   2. State the 2nd law of thermodynamics
   3. Explain how these laws applies to the examples in figures 6.11 & 6.12
4. Free energy
   1. Gibbs energy formula
   2. Exergonic vs. endergonic
   3. Find example of exergonic and endergonic in figure 6.8
   4. Energetic coupling
5. Activation energy
   1. Activation energy definition
   2. Transition state
   3. Explain using an example
6. Enzymes and the speed of the reaction
   1. Catalyst is ….
   2. Active sites
   3. Mechanism of action
      1. lock & key
      2. induced fit
   4. Regulation
      1. activation vs. inhibition
      2. allosteric vs. competitive
      3. feedback inhibition

Video – energy coupling:

1. exergonic vs. endergonic reactions
2. example: cellular respiration vs. photosynthesis

Video quiz:

1. Endergonic reaction:
   1. Makes energy
   2. Requires energy
   3. both a & b
   4. neither a or b
2. Which organisms can do both, cellular respiration and photosynthesis:
   1. Animals
   2. Humans
   3. Plants
   4. Mushrooms
3. Which process is an exergonic process?
   1. active transport
   2. ATP-synthesis
   3. ATP-hydrolysis
   4. mechanical work