Advanced (Honors) Biology Name_____
Mrs. Senegar-Mitchell

CHAPTER 5 – The Working Cell

Chapter Reading Guide

WORD ROOTS

a. **endo-** = _____ (*endergonic reaction*: a reaction that _____ from its surroundings)

b. **endo-** = _____; **cyto-** = _____(*endocytosis*: the movement of materials _____.)

c. **ex-** = _____(*exergonic reaction*: a reaction that proceeds with a _____)

d. **hyper-** = _____; **-tonus** = _____ (*hypertonic*: a solution with a _____)

e. **hypo-** = _____ (*hypotonic*: a solution with a _____)

Reading Guide

1. What chemical process(es) are responsible for light production in fireflies?

2. Compare and contrast kinetic energy, potential energy, chemical energy, and heat.

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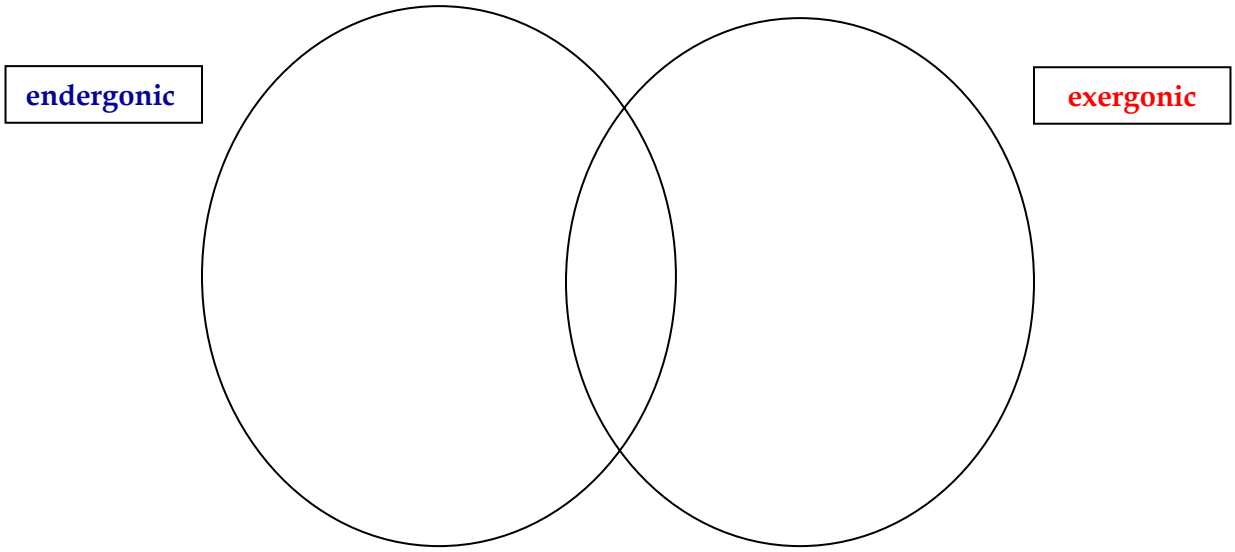
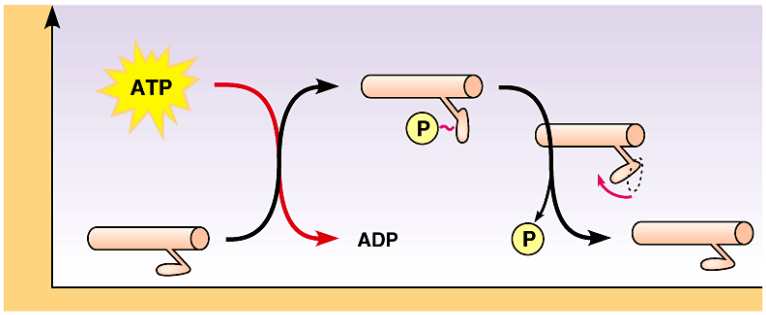
3. Define the first and second laws of thermodynamics. Explain how the nature of energy transformations (***energy can be transferred or transformed but neither created or destroyed***) is guided by these laws of thermodynamics.

4. Define and compare/contrast (similarities and differences) endergonic and exergonic reactions. Explain how cells use these reactions to survive.



5. Using figure 5.4B, explain how ATP functions as an energy shuttle. Begin by labeling the diagram and defining the terms you use.



6. Explain how enzymes speed up chemical reactions.

7. Describe the structure of an enzyme-substrate interaction.

8. Explain how the cellular environment affects enzyme activity.

9. Explain how certain pesticides and antibiotics work by inhibiting enzymes. How does this affect your view of how you previously thought pesticides and antibiotics worked?

10. Relate the **structure** of phospholipid molecules to the **structure and properties** of cell membranes.

11. Describe the process of passive transport. Explain why osmosis is the passive transport of water.

12. Distinguish between hypertonic, hypotonic, and isotonic solutions.

Hypertonic	**Hypotonic**	**Isotonic**

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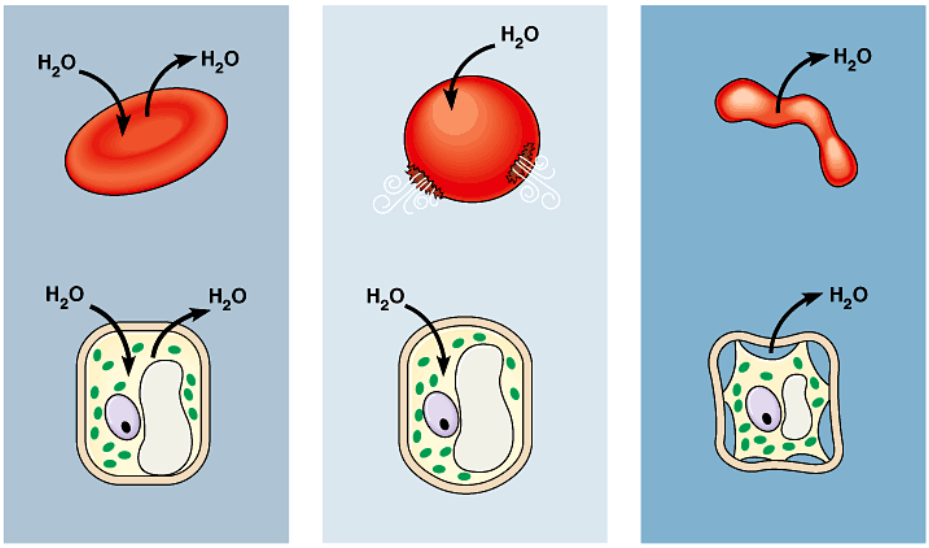
13. Explain how plant and animal cells change when placed into a hypertonic or hypotonic solution. Label the diagram and make explicit references to the design of the image below using our diagram dialogue strategy.



14. Compare the processes of facilitated diffusion and active transport.

15. Describe the central role of chloroplasts and mitochondria in harvesting energy

and making it available for cellular work.