**Pre-AP Energy Test Review**

*Refer to the following questions and vocabulary to help you to review for the test.*

* Required vocabulary: reactant, product, phosphorylation, producer, autotrophs, phototrophs, Cyanobacteria, heterotrophs, guard cells, stoma/stomata, cuticle, mesophyll, epidermis, aerobic, anaerobic, glycolysis, pyruvic acid/ pyruvate, monosaccharide, polysaccharide, starch, facultative anaerobe, wavelength of light, thylakoid membrane, stroma, thylakoids, grana/granum, photosystems, photolysis, electron transport, Calvin cycle, ATP synthase, rubisco, hydrogen pump, pyruvate, pyruvic acid/pyruvate, NAD+/ NADH, NADPH/NADP+, phosphorylation, proton pumps, and acetyl Co-A
* What is adenosine triphosphate (ATP)?
	+ Draw and label the ATP molecule
	+ What are the 3 parts that make-up ATP?
	+ How is energy released from the molecule?
	+ What is the function of ATP?
	+ What is the relationship between ADP and ATP?
* What is an autotroph?
	+ Give an example
	+ How does an autotroph obtain its energy?
* What is a heterotroph?
	+ Give an example
	+ How does a heterotroph obtain its energy?
* What is the function of photosynthesis?
	+ Where does photosynthesis occur in the cell (organelle)?
	+ What type of organism engages in photosynthesis?
	+ What are some characteristics of photosynthetic organisms?
	+ What is the chemical equation for photosynthesis?
		- What are the reactants?
		- What are the products?
	+ Draw the chloroplast.
		- label the thylakoid, grana, stroma, and photosystem
	+ What are the electron carriers in photosynthesis?
	+ What is the first step in photosynthesis?
* What are pigments?
	+ What is the function of a pigment?
	+ Give 2 examples of a pigment
	+ How is a pigment an adaptation of a plant for photosynthesis?
	+ What is the difference between chlorophyll a and b?
	+ Why do plants appear green?
		- What part of the light spectrum/wavelength of light is absorbed?
		- What part of the light spectrum/wavelength of light is reflected?
* Draw a cross-section of a leaf
	+ Label the guard cells, stomata, mesophyll, epidermis, cuticle, and epidermis
	+ What is the function of each structure?
* What are the stages of photosynthesis?
	+ Where does each stage occur in the chloroplast?
	+ What are the electron carriers involved?
	+ What is produced at each stage?
	+ What is required or not required at each stage?
	+ What is unique at each stage?
	+ What enzyme is involved during the light-dependent stage?
	+ What is photolysis?
* What are the factors that affect photosynthesis?
	+ How do they affect photosynthesis?
* What is the function of cellular respiration?
	+ Where does cellular respiration occur in the cell (organelle)?
	+ What must be present for cellular respiration to occur?
		- What is meant by the term, aerobic?
		- What is meant by the term, anaerobic?
	+ What type of organism engages in cellular respiration?
	+ Is this organelle present in animal and plant cells?
		- What does this imply about the organisms that rely on this organelle?
	+ What is the chemical equation for cellular respiration?
		- What are the reactants?
		- What are the products?
	+ Draw the mitochondrion.
		- label the matrix, mitochondrial membrane, and intermembrane space.
	+ What are the electron carriers in cellular respiration?
	+ What is the total number of ATP molecules produced during cellular respiration?
	+ What is the net gain of ATP molecules produced during cellular respiration?
	+ What happens to most of the energy stored in glucose?
* What are the stages of cellular respiration?
	+ Where does each stage occur in the mitochondrion?
	+ What are the electron carriers involved?
	+ What is produced at each stage?
	+ What is required or not required at each stage?
	+ What is unique at each stage?
	+ What is a hydrogen pump?
		- What is its function?
* What is fermentation?
	+ What is the function?
	+ Why does the body engage in fermentation instead of cellular respiration?
	+ Is fermentation aerobic or anaerobic?
	+ What is the total number of ATP molecules produced during fermentation?
	+ Where does fermentation occur in the cell?
	+ What is the first stage in fermentation?
	+ What is a facultative anaerobe?
		- Give an example of an organism that is a facultative anaerobe
	+ What are the types of fermentation?
		- Give an example of a product of each
		- What are the products of each?
		- What type of organisms that engage in each?
* Does the body rely on cellular respiration or fermentation for short bursts of energy?
* Does the body rely on cellular respiration or fermentation for long-term energy?
* How does cellular respiration and photosynthesis differ?
* How is cellular respiration and photosynthesis similar?