WINK SHEET— Cellular Energy

Theme: Cells transform energy that organisms need to perform essential life functions through a complex sequence of reactions in which chemical energy is transferred from one system of interacting molecules to another.

Expectations:

* Develop and use models to explain how chemical reactions among ATP, ADP, and inorganic phosphate act to transfer chemical energy within cells.
* Develop and revise models to describe how photosynthesis transforms light energy into stored chemical energy.
* Construct scientific arguments to support claims that chemical elements in the sugar molecules produced by photosynthesis may interact with other elements to form amino acids, lipids, nucleic acids or other large organic molecules.
* Develop models of the major inputs and outputs of cellular respiration (aerobic and anaerobic) to exemplify the chemical process in which the bonds of molecules are broken, the bonds of new compounds are formed and a net transfer of energy results.
* Plan and conduct scientific investigations or computer simulations to determine the relationship between variables that affect the processes of fermentation and/or cellular respiration in living organisms and interpret the data in terms of real world phenomena.

Objectives: On a scale of 0-5, with 0 being "I know absolutely nothing" and 5 being "I am exceptionally confident in my ability," please rank your understanding of each objective at the end of the unit.

- _____Recognize the structure of ATP and ADP
- _____Trace the flow of energy through the ATP/ADP cycle
- _____Identify the reactants and products of the reactions of photosynthesis and respiration
- _____Discuss the role of electron carrier molecules to both photosynthesis and respiration
- _____Summarize factors that affect the rate of photosynthesis
- _____Differentiate between the light dependent and light independent reactions
- _____Relate the process of photosynthesis to the process of respiration
- _____Describe the function of glycolysis, the krebs cycle and the electron transport chain to the production of energy in respiration
- _____Differentiate between cellular respiration and fermentation

Textbook: We will be covering pages 112-148 in your textbook. Please mark which statements apply to your use of the textbook on this unit.

- _____I read the entire reading for this chapter
- _____I read part of the reading for this chapter
- _____I used the textbook to assist in my understanding of vocabulary from this unit
- _____I used the textbook to assist in my understanding of the objectives
- _____We have a text book?
- _____Other_____

Vocabulary:

- ATP
- ADP
- Photosynthesis
- Chloroplasts
- Thylakoid
- Grana
- Stroma
- Light Dependent Reaction
- Calvin Cycle
- Light independent reaction
- Glycolysis
- Aerobic Respiration
- Anaerobic Respiration
- Fermentation
- Pyruvic Acid
- Pyruvate
- Citric Acid Cycle
- Krebs cycle
- Electron transport chain
- Lactic Acid Fermentation
- Alcoholic Fermentation

Activities

- Photosynthesis Lab
- Respiration Lab
- Modeling Photosynthesis and Respiration