

UNIT OF STUDY

Title: Cellular Respiration	Subject/Course: Biology	Length: 1 Week
Topic: Molecules and Cell 4	Grade: 10 th grade	Designer: Woods
UNIT GOALS AND EXPECTATIONS		
IMPORTANT CONCEPTS/UNDERSTANDINGS: The energy for life primarily derives from the sun. Plants capture energy by absorbing light and using it to form strong (covalent) chemical bonds between the atoms of carbon-containing (organic) molecules. These molecules can be used to assemble larger molecules with biological activity (including proteins, DNA, sugars, and fats). In addition, the energy stored in bonds between the atoms (chemical energy) can be used as sources of energy for life processes. The chemical bonds of food molecules contain energy. Energy is released when the bonds of food molecules are broken and new compounds with lower energy bonds are formed. Cells usually store their energy temporarily in phosphate bonds of a small high-energy compound called ATP. All organisms require a continuous input of energy to maintain their chemical and physical organizations. This energy derives primarily from the sun which is the basis of all energy found on Earth.	ESSENTIAL QUESTIONS: How are plant cells different from animal cells? How do heterotrophs obtain energy from their environment?	
STUDENT LEARNING EXPECTATIONS: MC.2.B.5 Compare and contrast the structures of an animal cell to a plant cell by analyzing <ul style="list-style-type: none">Cell walls vs. cell membraneChlorophyllChloroplasts vs. mitochondria MC.3.B.2 Describe and model the conversion of stored energy in organic molecules into usable cellular energy(ATP) through cellular respiration: <ul style="list-style-type: none">glycolysiscitric acid cycleelectronxtransport chain	MC.3.B.3 Compare and contrast aerobic and anaerobic respiration based on the number of ATP produced: <ul style="list-style-type: none">lactic acid fermentationalcoholic fermentation MC.3.B.1 Compare and contrast the structure and function of mitochondria and chloroplasts based on cellular respiration and photosynthesis as energy conversion pathways (MC.3.B.5)	
SPECIFIC DECLARATIVE KNOWLEDGE –know Explain what cellular respiration is. Describe what happens during the process of photosynthesis. Name the two types of fermentation. Describe what happens during the Krebs cycle. Identify three pathways the body uses to release energy during exercise.	SPECIFIC PROCEDURAL KNOWLEDGE –do Compare photosynthesis and cellular respiration.	
UNIT ASSESSMENTS (Include tasks related to Dimensions 3 and 4 and Bloom’s Taxonomy)		
Predict what changes in photosynthesis and cellular respiration will occur when environmental changes occur. “Is Cellular Respiration better than fermentation?”- Problem Solving Lab 9-3 Current Event Open Response Fermentation-Making Root Beer Lab- Cooperative Group Work using TI-83		

Traditional Assessments: Guest Speaker/Field Trip Photosynthesis/Respiration/Fermentation Test	Other Evidence of Learning: Bellringers Informal Questioning	
ACTIVITIES AND LEARNING EXPERIENCES		Resources
Fermentation-Making Root Beer Lab- Cooperative Group Work using TI-83 Powerpoint Discussion Establish Habits of Mind for Science in Critical Thinking, Creative thinking, and Self Regulated Thinking Vocabulary Strategy Daily Notebook Entries		Prentice Hall Textbook: Biology TI-83's Internet Powerpoint Lab Equipment
Career Connections		
Nutritionist		