**Honors Biology: Cell Biology**

# Essential Understanding: The fundamental processes of plants and animals depend on a variety of chemical reactions that occur in specialized areas of an organism’s cell.

*“Biology will relate every human gene to the genes of other animals and bacteria, to this great chain of being” -Walter Gilbert*



# Overview

This unit is designed to help students become familiar with the study of cells and the tools that are used for this. Students will be able to know the differences and similarities between Eukaryotic and Prokaryotic cells. This unit will require critical thinking, understanding the concept of studying cells, and analysis of problems.

**Guiding question 1: What are the fundamental units of life?**

# Lessons

\_\_\_\_\_\_\_\_Mind Map

\_\_\_\_\_\_\_\_Cell Structure and Function

\_\_\_\_\_\_\_\_Cell Processes and Energy

# Individual work

\_\_\_\_\_Read the overview with your color group and mark it up with questions or comments. (08/30)

\_\_\_\_\_Read: Prentice Hall Science Explorer: Cells & Heredity

\_\_\_\_\_ Ch 1 Section Assessments (09/27)

\_\_\_\_\_ Ch 2 Section Assessments (10/18)

\_\_\_\_\_Make Mind Map for Guiding Question (08/30)

\_\_\_\_\_Make vocabulary cards for the vocabulary in your Vocabulary List. Vocabulary cards must include definition and a sentence using the vocabulary word.

\_\_\_\_\_Participate in the lesson on the tower of life, 6 characteristics of living things, 4 needs of living things, and 16 patterns of life. Record the information on the graphic organizer. (09/30)

As a group, create a presentation showing the understanding of this lesson.

\_\_\_\_\_Reflect on the answer to Guiding Question 1. Update your mind map with the group presentation. (10/18)

# Group work/ Lab Work (TBA)

***Labs will be done in groups of 4 or 5.***

**Lab Handouts**: There will be a pre-lab for students to complete before the lab experiment, during the lab the students will gather the necessary data to complete the lab and answer the questions associated with the topic. After the necessary data is collected students will work on completing their lab notebook.

**Lab Notebook**: Every student is required to keep a lab notebook. The lab notebook will be each student’s personal “copy”. You will receive specific instructions on the lab notebook requirements.

This notebook will be graded on proper usage and completeness. *The lab notebook will be checked once a unit on the day of the assessment.*

**Formal Laboratory Report**: Each quarter honors students will put together a formally written laboratory report. This laboratory report is done individually (plagiarisms is not allowed). The report must be typed and include; Title, Purpose, Procedure, Materials, Observations, Data, Results, Conclusion and Citations. Citations must be in

# Assessment

\_\_\_\_\_**Research Project:** Research an organelle in the Eukaryotic cell, you must be able to create a presentation. Be sure to understand the function and importance of the organelle. (10/4)

\_\_\_\_\_**Personal Project:** Make a creative representation of mitosis. Be sure you understand the stages. This can include a cartoon, poem, song, painting, book, poster board, etc. (10/21)

**Honors**

Assignment for Cell Biology Unit

*Research a mammal or living organism by doing an in-depth study or analysis of its four needs to stay alive.(11/01)*

Assignment for every Biology Unit

*Formal lab report will be required for every lab. Report must be typed and follow the “Formal Lab Report” guidelines.*

**Vocabulary List**

**Ch 1 (all sections due 09/23)**

**Ch 1.1 cell, microscope, cell theory (08/30)**

**Ch 1.2 organelle, cell wall, cell membrane, nucleus, cytoplasm, mitochondria, endoplasmic reticulum, ribosome, Golgi body, chloroplast, vacuole, lysosome (09/09)**

**Ch 1.3 element, compound, carbohydrate, lipid, protein, amino acid, enzyme, nucleic acid, DNA, RNA (09/16)**

**Ch 1.4 selectively permeable, diffusion, osmosis, passive transport, active transport (09/23)**

**Ch 2 (all sections due 10/14)**

**Ch 2.1 photosynthesis, autotroph, heterotroph, pigment, chlorophyll, stomata (09/30)**

**Ch 2.2 respiration, fermentation (09/30)**

**Ch 2.3 cell cycle, interphase, replication, mitosis, chromosomes, cytokinesis (10/07)**

**Ch 2.4 cancer, mutation, tumor, chemotherapy (10/14)**

**Ch 3 (all section due 11/4)**

**Ch 3.1 heredity, trait, genetics, fertilization, purebreed, gene, alleles, dominant alleles, recessive alleles, hybrid (10/21)**

**Ch 3.2 probability, Punnett square, phenotype, genotype, homozygous, heterozygous, codominance (10/28)**

**Ch 3.3 meiosis (11/4)**

**Ch 3.4 mRNA, tRNA (11/4)**

**Ch 4 (all sections due 11/29)**

**Ch 4.1 multiple alleles, sex chromosomes, sex-linked gene, carrier (11/15)**

**Ch 4.2 genetic disorder, pedigree, karyoptype (11/18)**

**Ch 4.3 selective breeding, inbreeding, hybridization, clone, genetic engineering, gene therapy, genome (11/29)**

**Ch 5 (all sections due 12/9)**

**Ch 5.1 species, fossil, adaptation, evolution, scientific theory, natural selection, variation (12/2)**

**Ch 5.2 homologous structures, branching tree (12/2)**

**Ch 5.3 petrified fossil, mold, cast, relative dating, radioactive dating, radioactive element, half-life, fossil record, extinct, gradualism, punctuated equilibria (12/9)**