

SPANISH FORK High School 2013-2014

Learning Objectives for

Biology

Characteristics and Classification of Life

Students will identify the characteristics of life and use classification schemes to group organisms.

- T1. I can describe the essential characteristics of life
- T2. I can explain the history of classification of living organisms and use modern classification groupings
- T3. I can identify unknown organisms using a taxonomic key and use rules of classification to create a key
- T4. I can collect, preserve, and identify organisms to create a biological collection

Cells and Cellular Processes

Students will describe the basic chemistry of living cells.

- C1. I can identify the properties of water and describe why these properties are important to life
- C2. I can list the main elements and macromolecule in cells and describe the structure and function of each of the 4 main types of macromolecules

Students will differentiate between structure and function of cells and cell parts.

- C3. I can paraphrase the main ideas of cell theory and explain the development of this theory
- C4. I can compare and contrast prokaryotic and eukaryotic cells
- C5. I can differentiate and describe the structure and function of cell organelles and parts
- C6. I can explain and model how cells regulate transport of materials

Students will describe the cycling of matter and flow of energy in living organisms.

- C7. I can describe the processes of photosynthesis and cellular respiration
- C8. I can use food chains, food webs, and ecological pyramids to explain the cycling of matter and the flow of energy in photosynthesis and cellular respiration

Reproduction and Inheritance

Students will explain sexual and asexual reproduction.

- R1. I can distinguish between mitosis and meiosis and diagram how each creates new cells
- R2. I can compare the advantages/disadvantages of sexual and asexual reproductive strategies and give examples of organisms that use each strategy

Students will predict patterns of inheritance in sexually reproducing organisms.

- R3. I can explain and apply Mendelian principles, including: alleles, dominance and recessiveness, segregation, and independent assortment, and use Punnett square to predict patterns of inheritance
- R4. I can use Punnett squares and pedigrees to predict patterns of inheritance resulting from crosses that display incomplete dominance, co-dominance, sex linked traits, multiple alleles and polygenic traits.

Students will explain the structure and replication of DNA/RNA.

- R5. I can model the structure of DNA, summarize the history of its discovery, and explain how it replicates
- R6. I can model the process of protein formation including transcription and translation
- R7. I can explain how mutations in DNA occur and can impact organisms

Evolution

Students will explain the history and theory of evolution.

- E1. I can explain the development of the theory of evolution by natural selection
- E2. I can differentiate between natural and artificial selection
- E3. I can present evidence for the processes and patterns of evolution
- E4. I can describe how evolutionary relationships are shown in modern classification schemes

Organs and Organisms

Students will explain the structure and function of organs and organ systems.

- O1. I can list and give examples of the levels of complexity in living things
- O2. I can identify the structure and function of organs and organ systems in plants and animals

Students will describe interactions among organism and the environment.

- O3. I can differentiate between biotic and abiotic factors in an environment
- O4. I can distinguish how organisms interact with one another – competition, predator/prey, symbiosis