

# **SPANISH FORK High School**

## **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