

# *Biology*

## **Quarter 1 Standards**

1. **Essential HS.L1U1.20:** I can ask questions and/or make predictions based on observations and evidence to demonstrate how cellular organization, structure, and function allow organisms to maintain homeostasis.
2. **PlusHS.Bio.L1U1.4:** I can develop and use models to explain the interdependency and interactions between cellular organelles.
3. **PlusHS.Bio.L1U1.5:** I can analyze and interpret data that demonstrates the relationship between cellular function and the diversity of protein functions.
4. **PlusHS.Bio.L1U1.6:** I can develop and use models to show how transport mechanisms function in cells.
5. **PlusHS.Bio.L1U1.7:** I can develop and use models to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms (plant and animal).

## **Quarter 2 Standards**

1. **Essential HS.L1U1.22:** I can construct an explanation for how cellular division (mitosis) is the process by which organisms grow and maintain complex, interconnected systems.
2. **Essential HS.L1U3.23:** I can obtain, evaluate, and communicate the ethical, social, economic and/or political implications of the detection and treatment of abnormal cell function.
3. **Essential HS.L2U1.21** - I can obtain, evaluate, and communicate data showing the relationship of photosynthesis and cellular respiration; flow of energy and cycling of matter.
4. **Essential HS.L3U1.24:** I can construct an explanation of how the process of sexual reproduction contributes to genetic variation.
5. **Essential HS.L3U3.26:** I can engage in argument from evidence regarding the ethical, social, economic, and/or political implications of a current genetic technology.
6. **Incorporated Earth Science Standard: HS.E1U1.12:** Develop and use models of the Earth that explains the role of energy and matter in Earth's constantly changing internal and external systems (geosphere, hydrosphere, atmosphere, biosphere).
7. **PlusHS.Bio.L2U1.8:** I can develop and use models to develop a scientific explanation that illustrates how photosynthesis transforms light energy into stored chemical energy and how cellular respiration breaks down macromolecules for use in metabolic processes.

- 8. PlusHS.Bio.L3U1.10:** I can use mathematics and computational thinking to explain the variation that occurs through meiosis and calculate the distribution of expressed traits in a population.

## Quarter 3 Standards

- 1. Essential HS.L3U1.25:** I can obtain, evaluate, and communicate information about the causes and implications of DNA mutation.
- 2. Essential HS.L3U3.26:** I can engage in argument from evidence regarding the ethical, social, economic, and/or political implications of a current genetic technology.
- 3. Essential HS.L4U1.27:** I can obtain, evaluate, and communicate evidence that describes how changes in frequency of inherited traits in a population can lead to biological diversity.
- 4. Essential HS.L4U1.28:** I can gather, evaluate, and communicate multiple lines of empirical evidence to explain the mechanisms of biological evolution.
- 5. Incorporated Earth Science Standard: HS.E1U1.11:** Analyze and interpret data to determine how energy from the sun affects weather patterns and climate.
- 6. Incorporated Earth Science Standard: HS.E1U1.13:** Evaluate explanations and theories about the role of energy and matter in geologic changes over time.
- 7. PlusHS.Bio.L1U1.9:** I can develop and use a model to communicate how a cell copies genetic information to make new cells during asexual reproduction (mitosis).
- 8. PlusHS.Bio.L3U1.10:** I can use mathematics and computational thinking to explain the variation that occurs through meiosis and calculate the distribution of expressed traits in a population.
- 9. PlusHS.Bio.L3.U1.11:** I can construct an explanation for how the structure of DNA and RNA determine the structure of proteins that perform essential life functions.
- 10. PlusHS.Bio.L3.U1.12:** I can analyze and interpret data on how mutations can lead to increased genetic variation in a population.
- 11. PlusHS.Bio.L4U1.13:** I can obtain, evaluate, and communicate multiple lines of empirical evidence to explain the change in genetic composition of a population over successive generations. -
- 12. PlusHS.Bio.L4U1.14:** I can construct an explanation based on scientific evidence that the process of natural selection can lead to adaptation.

## Quarter 4 Standards

1. **Essential HS.L2U1.21:** I can obtain, evaluate, and communicate data showing the relationship of photosynthesis and cellular respiration; flow of energy and cycling of matter.
2. **Essential HS.L2U1.19:** I can develop and use models that show how changes in the transfer of matter and energy within an ecosystem and interactions between species may affect organisms and their environment.
3. **Essential HS.L2U3.18:** I can obtain, evaluate, and communicate about the positive and negative ethical, social, economic, and political implications of human activity on the biodiversity of an ecosystem.
4. **Incorporated Earth Science Standard: E1U1.12:** Develop and use models of the Earth that explains the role of energy and matter in the Earth's constantly changing internal and external systems (geosphere, hydrosphere, atmosphere, biosphere)
5. **Incorporated Earth Science Standard: E1U3.11:** Develop and use quantitative model to illustrate the relationship among earth systems and the degree to which those relationships are being modified due to human activity.
6. **Incorporated Earth Science Standard: E1U3.14:** Engage in argument from evidence about the availability of natural resources, occurrence of natural hazards, changes in climate, and human activity and how they influence each other.
7. **PlusHS.Bio.L2U1.1:** I can develop a model showing the relationship between limiting factors and carrying capacity, and use the model to make predictions on how environmental changes impact biodiversity.
8. **PlusHS.Bio.L2U1.3:** I can use mathematics and computational thinking to support claims for the cycling of matter and flow of energy through trophic levels in an ecosystem.
9. **PlusHS.Bio.L4U1.2:** I can engage in argument from evidence that changes in environmental conditions or human interventions may change species diversity in an ecosystem.
10. **PlusHS.Bio.L2U1.8:** I can develop and use models to develop a scientific explanation that illustrates how photosynthesis transforms light energy into stored chemical energy and how cellular respiration breaks down macromolecules for use in metabolic processes.