2023-2024
Jackson County Schools
7th Grade Science Pacing Guide

1st Quarter

All Things Cells

***Focus Standard 7.3 - Cell Structure and Function** Proficiency Scale (AMSTI) Proficiency Scale (APlus)
Construct an explanation of the function (e.g., mitochondria releasing energy during cellular respiration) of specific cell structures (i.e., nucleus, cell membrane, cell wall, ribosomes, mitochondria, chloroplasts, and vacuoles) for maintaining a stable environment.

***Focus Standard 7.4 - Structure and Function of Human Body Systems** Proficiency Scale (AMSTI) Proficiency Scale (APlus)
Construct models and representations of organ systems (e.g., circulatory, digestive, respiratory, muscular, skeletal, nervous) to demonstrate how multiple interacting organs and systems work together to accomplish specific functions.

Standard 7.2 - Cell Reproduction Proficiency Scale (APlus)
Gather and synthesize information to explain how prokaryotic and eukaryotic cells differ in structure and function, including the methods of asexual and sexual reproduction.

Standard 7.1 - Cell Theory
Engage in argument from evidence to support claims of the cell theory.

Writing Component - Narrative
Example- You're a superbug that has invaded the human body. Tell the reader about your adventures.

Additional Resources:
Hudson Alpha Resource
Cell Reproduction Overview (APlus)
AMSTI Formative Assessment Sets

2nd Quarter

Variation of Traits

***Focus Standard 7.12 - Genetics** Proficiency Scale (AMSTI)
Construct and use models (e.g., monohybrid crosses using Punnett squares, diagrams, and simulations) to explain that genetic variations between parent and offspring (e.g., different alleles, mutations) occur as a result of genetic differences in randomly inherited genes located on chromosomes and that additional variations may arise from alteration of genetic information.

***Focus Standard 7.13 - Genetic Mutations** Proficiency Scale (AMSTI)
Construct an explanation from evidence to describe how genetic mutations result in harmful, beneficial, or neutral effects to the structure and function of an organism.

Standard 7.14 - Technology and Genetics Proficiency Scale (APlus) (12, 13, 14)
Gather and synthesize information regarding the impact of technologies (e.g., hand pollination, selective breeding, genetic engineering, genetic modification, gene therapy) on the inheritance and/or appearance of desired traits in organisms.

Writing Component - Expository
Example - Explain how dog breeders can get the popular Golden Doodle dog. Be sure to include terms like alleles and Punnett squares.
Example - Explain how gene therapy might be used in the future.

Additional Resources:
Hudson Alpha Resource
Variation of Traits Overview (APlus)
AMSTI Formative Assessment Sets

3rd Quarter

BioEnergetics

***Focus Standard 7.5 - Cycling of Matter and Energy** Proficiency Scale (AMSTI)
Examine the cycling of matter between abiotic and biotic parts of ecosystems to explain the flow of energy and the conservation of matter.

Standard 7.5a
Obtain, evaluate, and communicate information about how food is broken down through chemical reactions to create new molecules that support growth and/or release energy as it moves through an organism.

Standard 7.5b
Generate a scientific explanation based on evidence for the role of photosynthesis and cellular respiration in the cycling of matter and flow of energy into and out of organisms.

***Focus Standard 7.6 - Resource Availability** Proficiency Scale (AMSTI) Proficiency Scale (APlus) (5a, 5b, 6)
Analyze and interpret data to provide evidence regarding how resource availability impacts individual organisms as well as populations of organisms within an ecosystem.

EcoSystems

***Focus Standard 7.8 - Ecosystem Interactions** Proficiency Scale (AMSTI)
Construct an explanation to predict patterns of interactions in different ecosystems in terms of the relationships between and among organisms (e.g., competition, predation, mutualism, commensalism, parasitism).

***Focus Standard 7.10 - Successful Reproduction** Proficiency Scale (AMSTI)
Use evidence and scientific reasoning to explain how characteristic animal behaviors (e.g., building nests to protect young from cold, herding to protect young from predators, attracting mates for breeding by producing special sounds and displaying colorful plumage, transferring pollen or seeds to create conditions for seed germination and growth) and specialized plant structures (e.g., flower brightness, nectar, and odor attracting birds that transfer pollen; hard outer shells on seeds providing protection prior to germination) affect the probability of successful reproduction of both animals and plant

Standard 7.7 - Population Shifts
Use empirical evidence from patterns and data to demonstrate how changes to physical or biological components of an ecosystem (e.g., deforestation, succession, drought, fire, disease, human activities, invasive species) can lead to shifts in populations.

Standard 7.9 - Maintaining Biodiversity
Engage in argument to defend the effectiveness of a design solution that maintains biodiversity and ecosystem services (e.g., using scientific, economic, and social considerations regarding purifying water, recycling nutrients, and preventing soil erosion).

Standard 7.11 - Growth of Organisms Proficiency Scale (APlus) (7,8,9,10,11)
Analyze and interpret data to predict how environmental conditions (e.g., weather, availability of nutrients, location) and genetic factors (e.g., selective breeding of cattle or crops) influence the growth of organisms (e.g., drought decreasing plant growth, adequate supply of nutrients for maintaining normal plant growth, identical plant seeds growing at different rates in different weather conditions, fish growing larger in large ponds than in small ponds).

Writing Component - Descriptive
Example- Describe how predator-prey relationships work in an ecosystem of your choice.

Additional Resources:
Hudson Alpha Resource
BioEnergetics Overview (APlus)
Ecosystems Overview (APlus)
AMSTI Formative Assessment Sets

4th Quarter

Unity and Diversity of Organisms

***Focus Standard 7.16 - Anatomical Similarities and Differences** Proficiency Scale (AMSTI)
Construct an explanation based on evidence (e.g., cladogram, phylogenetic tree) for the anatomical similarities and differences among modern organisms and between modern and fossil organisms, including living fossils (e.g., alligator, horseshoe crab, nautilus, coelacanth).

***Focus Standard 7.18 - Natural Selection** Proficiency Scale (AMSTI)
Construct an explanation from evidence that natural selection acting over generations may lead to the predominance of certain traits that support successful survival and reproduction of a population and to the suppression of other trait.

Standard 7.17 - Embryological Development
Obtain and evaluate pictorial data to compare patterns in the embryological development across multiple species to identify relationships not evident in the adult anatomy.

Standard 7.15 - Patterns of Change Proficiency Scale (APlus) (15,16,17,18)
Analyze and interpret data for patterns of change in anatomical structures of organisms using the fossil record and the chronological order of fossil appearance in rock layers.

Writing Component - Expository
Example- Standard 7.18 (Construct an explanation from evidence that natural selection acting over generations may lead to the predominance of certain traits that support successful survival and reproduction of a population and to the suppression of other trait.)

Additional Resources:
Unity and Diversity Overview (APlus)
AMSTI Formative Assessment Sets