1st Quarter - Cellular Systems and Cycling of Energy

Performance Expectation	OSDE Assessment Boundaries (Grade-Level)	BAPS Assessment Boundaries (Honors)
HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.	Assessment does not include interactions and functions at the molecular or chemical level.	Assessment may include a focus at the molecular or chemical level. Students should understand the properties of a phospholipid bilayer and how the molecular structure results in polar and nonpolar regions. Assessment will include the cellular process involved in the feedback mechanisms and modes of molecular transport across a cellular membrane.
HS-LS1-3: Plan and conduct an investigation to provide evidence of the importance of maintaining homeostasis in living organisms.	Assessment does not include the cellular process involved in the feedback mechanism.	
HS-LS1-7: Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in the new compounds are formed resulting in a net transfer of energy.	Assessment should not include identification of the steps or specific processes involved in cellular respiration (e.g. glycolysis and Kreb's Cycle).	Assessment will require students' understanding of some basic steps in glycolysis and the Kreb's Cycle (including enzymes and reactants/products involved).
HS-LS1-5: Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.	The assessment should provide evidence of students' abilities to describe the inputs and outputs of photosynthesis not the specific biochemical steps. (e.g. photosystems, electron transport, and Calvin Cycle.)	The assessment will include the specific biochemical steps of photosynthesis, as well as reactants and products.
HS-LS2-5: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	Assessment does not include the specific chemical steps of photosynthesis and respiration.	Assessment will not include the specific chemical steps of photosynthesis and respiration.
HS-LS2-3: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	Assessment does not include the specific chemical processes of either aerobic or anaerobic respiration.	Assessment will require students' understanding of the hydrolysis of ATP (ATP replenishment) and synthesis of ATP from ADP. Also comparison of processes in mitochondria and chloroplasts.

2nd Quarter - Heredity and Molecular Genetics

Performance Expectation	OSDE Assessment Boundaries (Grade-Level)	BAPS Assessment Boundaries (Honors)
HS-LS1-4: Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	Assessment does not include specific gene control mechanisms or rote memorization of the steps of mitosis.	Assessment will include the steps of mitosis and how mitosis promoting factors change during the life cycle of the cell.
HS-LS3-2: Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.	Assessment does not include the phases of meiosis or the biochemical mechanisms of specific steps in the process.	Assessment will include knowledge of the specific steps of meiosis and a basic understanding of crossing over and its role in segregation.
HS-LS1-6: Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.	Assessment does not include the details of the specific chemical reactions or identification of macromolecules.	Assessment will require students to compare and contrast between monosaccharides (glucose, fructose), disaccharides (i.e. sucrose), and polysaccharides. Also required: identification of carbohydrates, lipids, proteins, and nucleic acids based on structure and composition.
HS-LS1-1: Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells.	Assessment does not include identification of specific cell or tissue types, whole body systems, specific protein structures and functions, or the biochemistry of protein synthesis.	Assessment will include students differentiating between fibrous and globular proteins and understanding how examples contribute to the whole body system.
HS-LS3-1: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.	Assessments may include codominance, incomplete dominance, and sex-linked traits, but should not include dihybrid crosses.	Assessment will include the application of dihybrid crosses.

3rd Quarter - Natural Selection and Adaptations

Performance Expectation	OSDE Assessment Boundaries (Grade-Level)	BAPS Assessment Boundaries (Honors)
HS-LS4-1: Analyze and evaluate how evidence such as similarities in DNA sequences, anatomical structures, and order of appearance of structures during embryological development contribute to the scientific explanation of biological diversity.	The assessment should provide evidence of students' abilities to evaluate and analyze evidence (e.g. cladograms, analogous/homologous structures, and fossil records).	The assessment will also require students to create a phylogenetic tree or simple cladograms that correctly represents evolutionary history and speciation from a provided data set.
HS-LS4-2: Construct an explanation based on evidence that biological diversity is influenced by (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	Assessment does not include genetic drift, gene flow through migration, and co-evolution.	The assessment will include students' description of speciation in an isolated population and connect it to change in gene frequency due to change in environment, natural selection and/or genetic drift.
HS-LS4-3: Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	The assessment should provide evidence of students' abilities to analyze shifts in numerical distribution of traits as evidence to support explanations. Analysis is limited to basic statistical and graphical analysis, not gene frequency calculations.	The assessment will require the use of the Hardy Weinberg formula to calculate and analyze gene frequencies.
HS-LS4-4: Construct an explanation based on evidence for how natural selection leads to adaptation of populations.	The assessment should measure students' abilities to differentiate types of evidence used in explanations.	The assessment will require students to connect changes in biotic/abiotic factors to changes in gene frequencies, maybe even measure abilities to predict changes in gene frequencies due to environmental changes.
HS-LS4-5: Synthesize, communicate, and evaluate the information that describes how changes in environmental conditions can affect the distribution of traits in a population causing: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	The assessment should provide evidence of students' abilities to explain the cause and effect for how changes to the environment affect distribution or disappearance of traits in species.	The student is able to apply mathematical methods to data from a real or simulated population to predict what will happen to the population in the future.

4th Quarter - Ecosystem Dynamics and Cycling of Matter

Performance Expectation	OSDE Assessment Boundaries (Grade-Level)	BAPS Assessment Boundaries (Honors)
HS-LS2-8: Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce.	The assessment should provide evidence of students' abilities to (1) distinguish between group versus individual behavior, (2) identify evidence supporting the outcomes of group behavior, and (3) develop logical and reasonable arguments based on evidence.	The assessment will require the student to give specific examples of group behavior and how it increases the survival of an individual and how it is related to selection.
HS-LS2-1: Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.	Assessment does not include deriving mathematical equations to make comparisons.	The student is able to predict the effects of a change of matter or energy availability on communities.
HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.	Assessment is limited to provided data.	Assessment will require students to independently acquire multiple data sets regarding factors affecting biodiversity and ecosystem populations.
HS-LS2-6: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.	The assessment should provide evidence of students' abilities to derive trends from graphical representations of population trends. Assessments should focus on describing drivers of ecosystem stability and change, not on the organismal mechanisms of responses and interactions.	The assessment will require students to justify the selection of the kind of data needed to answer scientific questions about the interaction of populations within communities. Students should be able to describe the stages of ecological succession and mechanisms for creating stability in an ecosystem.
HS-LS2-4: Use a mathematical representation to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.	The assessment should provide evidence of students' abilities to develop and use energy pyramids, food chains, food webs, and other models from data sets.	
HS-LS2-5*: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	Assessment does not include the specific chemical steps of photosynthesis and respiration.	Assessment will not include the specific chemical steps of photosynthesis and respiration.
HS-LS2-3*: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	Assessment does not include the specific chemical processes of either aerobic or anaerobic respiration.	Assessment will require students' understanding of the hydrolysis of ATP (ATP replenishment) and synthesis of ATP from ADP. Also comparison of processes in mitochondria and chloroplasts.

*HS-LS2-5 and HS-LS2-3 are also included in first quarter curriculum.