

Big Idea 1: The process of evolution drives the diversity and unity of life

Student can...	4	3	2	1
1.1 Explain how different sources can lead to evolutionary change	I can defend the claim that evolutionary change is driven by random process	I can explain how different sources can lead to evolutionary change	I can describe the process of natural selection	I can identify the factors that lead to evolutionary change
1.2 Analyze lines of descent	I can evaluate evidence supporting lines of descent between organisms	I can analyze lines of descent	I can draw an evolutionary tree	I can identify processes or features that indicate common ancestry
1.3 Defend the claim that life continues to evolve within a changing environment	I can predict the genotypic changes of continual evolution of a species in an environment	I can defend the claim that life continues to evolve within a changing environment	I can summarize the role of speciation and extinction in the process of evolution	I can identify examples of the process of evolution
1.4 Use evidence to support/explain the critical theories of the origin of life	I can evaluate the merits of the theories of the origin of life	I can use evidence to support/explain the critical theories of the origin of life	I can explain the theories of the origin of life	I can identify the theories of evolution

Big Idea 2: Biological systems utilize free energy and molecular building blocks to grow, reproduce, and maintain homeostasis

Student can...	4	3	2	1
2.1 Explain the relationship between photosynthesis and cellular respiration in the flow of free energy	I can connect the cellular structures to the production of energy within an organism	I can explain the relationship between photosynthesis and cellular respiration in the flow of free energy	I can diagram the flow of free energy between an organism and the environment	I can describe why all living systems require an input of free energy
2.2 Explain how the movement of molecules across the membrane maintains homeostasis	I can predict the outcome of a disruption in the	I can explain how the movement of molecules across the membrane maintains homeostasis	I can describe how molecules move across the membrane	I can describe key features of the plasma membrane

	movement of molecules across the membrane			
2.3 Analyze the effects of disruptions to dynamic homeostasis in biological systems	I can connect differences in the environment with the evolution of homeostatic mechanisms.	I can analyze the effects of disruptions to dynamic homeostasis in biological systems.	I can predict how an organism will respond to a change in their external environment	I can identify relationships within biological systems

Big Idea 3: Living systems store, retrieve, transmit, and respond to information essential to life processes

Student can...	4	3	2	1
3.1 Analyze the roles of DNA, RNA, and proteins within the Central Dogma	I can infer the effects of an error occurring within the Central Dogma	I can analyze the roles of DNA, RNA, and proteins within the Central Dogma	I can connect the structures of DNA, RNA, and proteins to their function	I can explain the functions of DNA, RNA, and proteins
3.2 Connect meiosis to the passage of traits from parents to offspring	I can analyze the role of meiosis in increasing genetic diversity needed for evolution.	I can connect meiosis to the passage of traits from parents to offspring	I can trace a trait through a family.	I can describe the cell cycle, mitosis and meiosis
3.3 Relate gene expression to efficient cell function	I can connect gene expression to cell specialization	I can relate gene expression to efficient cell function	I can explain the purpose of gene expression	I can classify if a signal is intercellular or intracellular
3.4 Explain the multiple processes that increase variation in a population.	I can connect genetic variation to the process of evolution	I can explain the multiple processes that increase variation in a population	I can describe how a change in the genotype leads to a change in the phenotype	I can determine when genetic variation has occurred
3.5 Investigate cells communication pathways	I can infer the cellular response due to an alteration in the communication pathway	I can investigate cell communication pathways	I can describe the types of cellular communication	I can predict the cellular response to a signal

Big Idea 4: Biological systems interact, and these systems and their interactions possess complex properties

Student can...	4	3	2	1
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4.1 Explain how interactions of subcellular structures provide essential functions	I can predict the outcome of a loss of function in one of the organelles	I can explain how interactions of subcellular structures provide essential functions.	I can describe the interactions of subcellular organelles.	I can identify the functions of organelles in a cell
4.2 Connect organ structure to organ function	I can analyze the function of this organ to the overall survival of the organism	I can connect organ structure to organ function	I can describe the structure of the organs	I can identify the function of the organs
4.3 Relate organ function to body system functions	I can infer the effects of a breakdown of system interactions	I can relate organ function to body system functions	I can explain the function of the body system	I can describe the components in a body system

5. Design and conduct controlled physical, biological, and/or environmental systems.

Student can...	4	3	2	1
5.1: I can ask and refine questions to explain natural phenomena.	I can revise my questions based on new information.	I can ask questions to explain phenomena.	I can determine variables involved with phenomena.	I can make observations based off a phenomena.
5.2: I can explain phenomena utilizing relevant information.	I can support my claims with background research.	I can explain phenomena utilizing relevant information.	I can communicate information from various resources.	I can summarize the central idea of a source.
5.3: I can conduct an investigation using a clear, concise procedure.	I can create and conduct an investigation to answer a scientific question.	I can conduct an investigation using a clear, concise procedure.	I can determine the type of data that should be collected during an investigation..	I can identify independent variable, dependent variable, and constants in an investigation.
5.4: I can create an appropriate visual representation of data.	I can manipulate data or make inferences about the data.	I can create an appropriate visual representation of data.	I can make a visual representation of data.	I can collect data.
5.5: I can construct an explanation based on evidence	I can connect my explanation to the real-world.	I can construct an explanation based on evidence.	I can summarize supporting evidence	I can state a claim to answer a scientific question
5.6: I can evaluate the reliability and validity of data sets.	I can identify the causes of error in the investigation..	I can evaluate the reliability and validity of data sets.	I can assess the validity of data sets/	I can identify sources of error within the investigation.
5.7: I can develop models to support explanations, predict phenomena, analyze systems, and/or solve problems.	I can evaluate the merits and limitations of different models in order to select or revise a model that best fits the evidence.	I can develop models that support explanations, predict phenomena, analyze systems, and/or solve problems.	I can use a model to explain phenomena.	I can select an appropriate model to represent a phenomenon
5.8: I can design a solution to a real-world problem.	I can evaluate a solution to a real-world problem based on prioritized criteria and trade-offs.	I can design a solution to a real-world problem.	I can explain why the real-world problem needs to be solved.	I can identify a problem that can be solved.