

Standard Code	Standards
HS-BIO-LO.01.00.0	Demonstrate understanding of the relationship between Structure and Function in living things at a molecular, cellular, tissue, organ, organ system and organism level, as well as the relationship between organizational levels.
HS-BIO-LO.01.A.0	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.
HS-BIO-LO.01.A.a	In order for information stored in DNA to direct cellular processes, a gene needs to be transcribed from DNA to RNA and then must be translated by the cellular machinery into a protein or an RNA molecule.
HS-BIO-LO.01.A.b	The protein and RNA products from transcription and translation determine cellular activities and the unique characteristics of an individual.
HS-BIO-LO.01.B.0	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.
HS-BIO-LO.01.B.a	Construct an explanation that specialized cells organized into tissues provide specific functions as part of organs and organ systems in an organism. For example, nerve tissue sending a signal to smooth muscle in an artery to deliver the proper materials that the multicellular organism needs to process.
HS-BIO-LO.01.C.0	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.
HS-BIO-LO.01.C.a	Develop and use models to exemplify how the cell membrane serves to maintain homeostasis of the cell through both active and passive transport processes.
HS-BIO-LO.01.C.b	Define and describe the problems that organisms face in maintaining homeostasis within different environments (including water of varying solute concentrations).
HS-BIO-LO.01.C.c	Plan, conduct, and analyze investigations to determine how various environmental factors (including temperature and pH) affect enzyme activity and the rate of biochemical reactions.
HS-BIO-LO.02.00.0	Demonstrate understanding of the flow of Matter and Energy in Organisms and Ecosystems
HS-BIO-LO.02.A.0	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
HS-BIO-LO.02.B.0	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.
HS-BIO-LO.02.C.0	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 new compounds are formed resulting in a net transfer of energy.
HS-BIO-LO.02.D.0	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
HS-BIO-LO.02.E.0	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.
HS-BIO-LO.03.00.0	Demonstrate understanding of the Interdependent Relationships between living and nonliving things in Ecosystems

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HS-BIO-LO.03.A.0	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.
HS-BIO-LO.03.B.0	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
HS-BIO-LO.03.C.0	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.
HS-BIO-LO.03.D.0	Design, evaluate, refine and test a solution for reducing the impacts of human activities on the environment and biodiversity.
HS-BIO-LO.03.E.0	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.
HS-BIO-LO.03.F.0	Identify and demonstrate ways individuals and groups can act as God's stewards of all God's creations including the environment and all living things.
HS-BIO-LO.04.00.0	Demonstrate understanding of the relationship between DNA, genes, the traits of organisms and the variation of traits in a population, as well as the application of these relationships to society.
HS-BIO-LO.04.A.0	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
HS-BIO-LO.04.A.a	Explain that in multicellular organisms the zygote produced during fertilization undergoes a series of cell divisions that lead to clusters of cells that go on to specialize and become the organism's tissues and organs.
HS-BIO-LO.04.B.0	Summarize the relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.
HS-BIO-LO.04.C.0	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.
HS-BIO-LO.04.D.0	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
HS-BIO-LO.04.E.0	Obtain, evaluate and communicate information on how biotechnology (including gel electrophoresis, plasmid-based transformation, cloning, stem cell research and DNA fingerprinting) may be used in the fields of medicine, agriculture, and forensic science.
HS-BIO-LO.04.E.a	Construct an opinion about the moral and ethical issues of biotechnology using the positions of the Church and general positions of scientific ethics in the application of these techniques.
HS-BIO-LO.05.00.0	Demonstrate understanding of the process of Natural Selection and how it and other processes influence Evolution
HS-BIO-LO.05.A.0	Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence including: DNA sequences, anatomical structures, and embryological development.

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HS-BIO-LO.05.B.0	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (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.
HS-BIO-LO.05.C.0	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.
HS-BIO-LO.05.D.0	Construct an explanation based on evidence for how natural selection leads to adaptation of populations.
HS-BIO-LO.05.E.0	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (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.
HS-BIO-LO.05.F.0	Communicate Church doctrine as related to the process of evolution and the source of life.
HS-BIO-SI.06.00.0	The student will demonstrate an understanding of how scientific inquiry, and mathematical modeling and analysis can be used appropriately to query, answer and develop solutions.
HS-BIO-SI.06.A.0	Apply established rules for significant digits, both in reading scientific instruments and in calculating derived quantities from measurement
HS-BIO-SI.06.B.0	Use appropriate laboratory apparatuses, technology and techniques safely and accurately when conducting a scientific investigation
HS-BIO-SI.06.C.0	Use scientific instruments to record measurement data in appropriate metric units that reflect the precision and accuracy of each particular instrument
HS-BIO-SI.06.D.0	Design a scientific investigation with appropriate methods of control to test a hypothesis (including independent and dependent variables), and evaluate the designs of sample investigations
HS-BIO-SI.06.E.0	Organize and interpret the data from a controlled scientific investigation by using (including calculations in scientific notation, formulas, and dimensional analysis), graphs, tables, models, diagrams, and/or technology
HS-BIO-SI.06.F.0	Evaluate the results of a controlled scientific investigation in terms of whether they refute or verify the hypothesis
HS-BIO-SI.06.G.0	Evaluate conclusions based on qualitative and quantitative data (including the impact of parallax, instrument malfunction, or human error) on experimental design
HS-BIO-SI.06.H.0	Evaluate a technological design or product on the basis of designated criteria (including cost, time, and materials)
HS-BIO-SI.06.I.0	Communicate and defend a scientific argument or conclusion
HS-BIO-SI.06.J.0	Use appropriate safety procedures when conducting investigations