

LIFE SCIENCES

GRADE	TOPICS	STANDARDS (NGSS ALIGNMENT)		BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
Essential Question: How do living organisms give evidence of God as the Designer, Creator, and Sustainer of life?		Big Idea: The complexity, order, and design of living organisms provide strong evidence of God as the Designer, Creator and Sustainer of life.		Bold = included content <i>Italic</i> = related content	TE = TEACHER EDITION SE = STUDENT EDITION SJ = STUDENT JOURNAL TT = TRY THIS LA = LESSON ACTIVITY EAL = EXPLORE-A-LAB MS = MATH IN SCIENCE ATBD = ACTIVITY TO BE DEVELOPED
K-2	Molecules to Organisms: Structures and Processes	S.K-2.LS.1	Use observations to describe patterns (e.g., animals need to take in food but plants do not, different kinds of food needed by different types of animals, requirement of plants to have light, all living things need water) of what plants and animals (including humans) need to survive. (K-LS1-1)	Level 1 – Ch. 1.1, 1.2, Ch. 2.3, Ch. 3.2 Level 2 – Ch. 1.1, 1.4, Ch. 2.1	Level 1 - ATBD Level 2 - ATBD
		S.K-2.LS.2	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs (e.g., designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills). (1-LS1-1)	Level 1 – Ch. 1.1, 1.2, Ch. 2.1, 2.2, 2.3 Level 2 – Ch. 1.2, 1.5	Level 1 - ATBD Level 2 - ATBD
		S.K-2.LS.3	Make observations to determine patterns in behavior of parents and offspring that help offspring survive (e.g., signals that offspring make such as crying, cheeping and the responses of parents such as feeding, comforting, protecting). (1-LS1-2)	Level 1 – Ch. 2.3 Level 2 – Ch. 1.4	Level 1 - ATBD Level 2 - ATBD
	Ecosystems: Interactions, Energy, and Dynamics	S.K-2.LS.4	Plan and conduct an investigation to determine if plants need sunlight and water to grow, ensuring that only one variable is tested at a time. (2-LS2-1)	Level 1 – Ch. 1.2 Level 2 – Ch. 1.1, 1.2	Level 1 - ATBD Level 2 - ATBD
		S.K-2.LS.5	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants. (2-LS2-2)	Level 1 – Ch. 1.2 <i>Level 2 – Ch. 1.2</i>	Level 1 - ATBD Level 2 - ATBD
	Heredity: Inheritance and Variation of Traits	S.K-2.LS.6	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents (e.g., leaves from same kind of plant are the same shape but can differ in size, young animals look similar to their parents but are not exactly the same). (1-LS3-1)	Level 1 – Ch. 1.2, Ch. 2.3	Level 1 - ATBD
	Life: Origins, Unity, and Diversity	S.K-2.LS.7	Make observations of plants and animals to compare the diversity of life in different habitats. (2-LS4-1)	Level 1 – Ch. 3.1 Level 2 – Ch. 2.1	Level 1 - ATBD Level 2 - ATBD
		S.K-2.LS.8	Apply scientific principles to begin to construct a personal model that explains how life began on earth and acknowledges God as the Creator.	<i>Level 1 – Ch. 1.1, Ch. 2.2, Ch. 8.1</i> <i>Level 2 – Ch. 8.1, 8.2</i>	Level 1 - ATBD Level 2 - ATBD
3-5	Molecules to Organisms: Structures and Processes	S.3-5.LS.1	Develop models (e.g., drawings, diagrams) to describe that organisms have unique and diverse life cycles but all have birth, growth, reproduction, and death in common. (3-LS1-1)	Level 3 – Ch. 1.3, Ch. 2.1, 2.2 Level 4 – Ch. 1.4 Level 5 – Ch. 1.3, Ch. 5.1, 5.2, 5.3, Ch. 6.1, 6.2	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD
		S.3-5.LS.2	Construct an argument that plants and animals have internal and external structures (e.g., thorns, stems, roots, colored petals, heart, stomach, lung, brain, skin) that function to support survival, growth, behavior, and reproduction. (4-LS1-1)	Level 3 – Ch. 2.1, Ch. 5.1, Ch. 6.1 Level 4 – Ch. 1.1, 1.3, 1.4, Ch. 2.1, 2.2 Level 5 – Ch. 3.1, 3.2, 3.3, 3.4, Ch. 4.3, Ch. 5.2, 5.3, Ch. 6.1, 6.2	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD
		S.3-5.LS.3	Use a model to describe systems of information transfer (e.g., nerves, hormones) that animals use to receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. (4-LS1-2)	Level 4 – Ch. 4.1, Ch. 5.2	Level 4 - ATBD
		S.3-5.LS.4	Support an argument that plants get the materials they need for growth chiefly from air and water. (5-LS1-1)	Level 3 – Ch. 2.1, 2.3 Level 4 – Ch. 1.1	Level 3 - ATBD Level 4 - ATBD
	Ecosystems: Interactions, Energy, and Dynamics	S.3-5.LS.5	Construct an argument that some animals form groups that help members survive. (3-LS2-1)	Level 4 – Ch. 2.2, Ch. 3.2 Level 5 – Ch. 3.3, Ch. 4.1, 4.3	Level 4 - ATBD Level 5 - ATBD
		S.3-5.LS.6	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment. (5-LS2-1)	Level 3 – Ch. 3.1 Level 4 – Ch. 3.1, 3.2, 3.3, 3.4 Level 5 – Ch. 4.1, 4.2, 4.3	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD
	Heredity: Inheritance and Variation of Traits	S.3-5.LS.7	Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. (3-LS3-1)	Level 3 – <i>Ch. 1.1</i> , 1.3, <i>Ch. 2.2</i> Level 4 – Ch. 1.1, 1.4 Level 5 – Ch. 1.3, <i>Ch. 6.1</i>	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD
		S.3-5.LS.8	Use evidence to support the explanation that traits can be influenced by the environment (e.g., Galapagos finches, peppered moth). (3-LS3-2)	Level 3 – <i>Ch. 3.1</i> , 3.2, 3.3, 3.4 Level 4 – Ch. 2.1, 2.2, Ch. 3.3 Level 5 – Ch. 3.1, 3.2, 3.3, 3.4	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD
	Life: Origins, Unity, and Diversity	S.3-5.LS.9	Analyze and interpret data (e.g., type, size, distributions) from fossils to provide evidence of the organisms and the environments (e.g., marine fossils on dry land, tropical plant fossils in Arctic areas, fossils of extinct organisms) in which they lived long ago. (3-LS4-1)	Level 4 – Ch. 8.2	Level 4 - ATBD
		S.3-5.LS.10	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing (e.g., plants with larger thorns are less likely to be eaten by predators, animals with better camouflage coloration are more likely to survive and to reproduce). (3-LS4-2)	Level 4 – Ch. 2.1, 2.2 Level 5 – Ch. 3.1, 3.2, 3.3	Level 4 - ATBD Level 5 - ATBD
		S.3-5.LS.11	Construct an argument with evidence (e.g., needs, characteristics) that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all. (3-LS4-3)	Level 3 – Ch. 3.1, 3.2, 3.3, 3.4 Level 4 – Ch. 2.1, 2.2, Ch. 3.3	Level 3 - ATBD Level 4 - ATBD
		S.3-5.LS.12	Make a claim about the merit of a plant or animal adaptation in response to an environmental change (e.g., land characteristics, water distribution, temperature, food, other organisms). (3-LS4-4)	<i>Level 3 – Ch. 3.2, 3.3, 3.4</i> Level 4 – Ch. 2.1, 2.2, Ch. 3.2, 3.3 Level 5 – Ch. 3.1, 3.2, 3.3, 3.4, Ch. 4.3	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD
		S.3-5.LS.13	Construct an argument with evidence to support that God has created within living things a pool of variations that allows organisms to adapt to changes in the environment.	Level 4 – Ch. 2.1, 2.2 Level 5 – Ch. 3.1, 3.2, 3.3, 3.4	Level 4 - ATBD Level 5 - ATBD
		S.3-5.LS.14	Apply scientific principles to construct a personal model that explains origins of life on earth and acknowledges God as the Creator.	Level 3 – Ch. 1.1 Level 4 – Ch. 1.1, 1.2, Ch. 4.1 Level 5 – Ch. 1.1, 1.2, 1.3	Level 3 - ATBD Level 4 - ATBD Level 5 - ATBD

LIFE SCIENCES CONTINUED

GRADE	TOPICS	STANDARDS (NGSS ALIGNMENT)	BY DESIGN CHAPTER CORRELATION	INQUIRY ACTIVITIES
6-8	Molecules to Organisms: Structures and Processes	S.6-8.LS.1 Conduct an investigation to provide evidence that living things are made of cells, either one cell or many different numbers and types of cells. (MS-LS1-1)	Level 6 – Ch. 1.1, Ch. 2.1, 2.2, 2.3 Level 7 – Ch. 1.1	Level 6 - ATBD Level 7 - ATBD
		S.6-8.LS.2 Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function. (MS-LS1-2)	Level 6 – Ch. 2.1, 2.2, 2.3, 2.4, Ch. 3.1, 3.2, 3.3 Level 7 – Ch. 4.1, Ch. 6.1	Level 6 - ATBD Level 7 - ATBD
		S.6-8.LS.3 Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells. (MS-LS1-3)	Level 6 – Ch. 2.3, Ch. 4.1, 4.2, 4.3, 4.4, 4.5	Level 6 - ATBD
		S.6-8.LS.4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors (e.g., nest building, herding, vocalization, colorful plumage) and specialized plant structures (e.g., bright flowers, flower nectar, odors that attract insects that transfer pollen, hard shells on nuts that squirrels bury) affect the probability of successful reproduction of animals and plants respectively. (MS-LS1-4)	Level 6 – Ch. 1.1 Level 7 – Ch. 3.3, 3.4 Level 8 – Ch. 1.1, Ch. 2.4, Ch. 3.3, Ch. 4.2, 4.4	Level 6 - ATBD Level 7 - ATBD Level 8 - ATBD
		S.6-8.LS.5 Construct a scientific explanation based on evidence (e.g., drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, fish growing larger in large ponds) for how environmental (e.g., availability of food, light, space, water) and genetic (e.g., large breed cattle and species of grass affecting growth) factors influence the growth of organisms. (MS-LS1-5)	Level 7 – Ch. 1.1, 1.2, 1.3, 1.4, Ch. 4.2, 4.3 Level 8 – Ch. 3.2, 3.3, Ch. 4.1, 4.3, 4.4	Level 7 - ATBD Level 8 - ATBD
		S.6-8.LS.6 Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. (MS-LS1-6)	Level 6 – Ch. 2.3, 2.4 Level 8 – Ch. 3.1	Level 6 - ATBD Level 8 - ATBD
		S.6-8.LS.7 Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. (MS-LS1-7)	Level 6 – Ch. 1.3, Ch. 2.4, Ch. 3.2 Level 7 – Ch. 1.2, 1.3, 1.4 Level 8 – Ch. 2.1	Level 6 - ATBD Level 7 - ATBD Level 8 - ATBD
		S.6-8.LS.8 Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories. (MS-LS1-8)	Level 6 – Ch. 4.2, 4.4, 4.5	Level 6 - ATBD
	Ecosystems: Interactions, Energy, and Dynamics	S.6-8.LS.9 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. (MS-LS2-1)	Level 8 – Ch. 4.1, 4.3, 4.4	Level 8 - ATBD
		S.6-8.LS.10 Construct an explanation that predicts patterns of interactions (e.g., competitive, predatory, mutually beneficial) among organisms across multiple ecosystems. (MS-LS2-2)	Level 8 – Ch. 4.1, 4.3, 4.4, 4.5	Level 8 - ATBD
		S.6-8.LS.11 Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem. (MS-LS2-3)	Level 6 – Ch. 1.1, 1.2, 1.3 Level 8 – Ch. 3.1, Ch. 4.1, 4.3	Level 6 - ATBD Level 8 - ATBD
		S.6-8.LS.12 Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. (MS-LS2-4)	Level 8 – Ch. 4.1, 4.3, 4.4	Level 8 - ATBD
		S.6-8.LS.13 Evaluate competing design solutions (e.g., scientific, economic, social considerations) for maintaining biodiversity and ecosystem services (e.g., water purification, nutrient recycling, soil erosion prevention, habitat enhancement). (MS-LS2-5)	Level 8 – Ch. 3.3, Ch. 4.1, Ch. 9.1, 9.2, 9.3, 9.4	Level 8 - ATBD
	Heredity: Inheritance and Variation of Traits	S.6-8.LS.14 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism. (MS-LS3-1)	Level 6 – Ch. 3.1, 3.2 Level 7 – Ch. 4.1	Level 6 - ATBD Level 7 - ATBD
		S.6-8.LS.15 Develop and use a model (e.g., Punnett squares, diagrams, simulations) to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. (MS-LS3-2)	Level 6 – Ch. 3.1 Level 7 – Ch. 4.1, 4.2, 4.3 Level 8 – Ch. 2.2, 2.3, 2.4	Level 6 - ATBD Level 7 - ATBD Level 8 - ATBD
	Life: Origins, Unity, and Diversity	S.6-8.LS.16 Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth, comparing and contrasting creationist and naturalist perspectives. (MS-LS4-1)	Level 6 – Ch. 10.1, 10.2, 10.3 Level 8 – Ch. 1.2, 1.3, Ch. 10.3	Level 6 - ATBD Level 8 - ATBD
		S.6-8.LS.17 Apply scientific principles to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms, comparing and contrasting creationist and naturalist perspectives. (MS-LS4-2)	Level 6 – Ch. 10.1, 10.2, 10.3 Level 8 – Ch. 1.3, Ch. 10.3	Level 6 - ATBD Level 8 - ATBD
		S.6-8.LS.18 Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. (MS-LS4-4)	Level 6 – Ch. 1.1 Level 7 – Ch. 4.2, 4.3 Level 8 – Ch. 1.1, Ch. 3.2, Ch. 4.2, 4.4	Level 6 - ATBD Level 7 - ATBD Level 8 - ATBD
		S.6-8.LS.19 Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms. (MS-LS4-5)	Level 7 – Ch. 4.4	Level 7 - ATBD
		S.6-8.LS.20 Use mathematical representations to support explanations of how natural selection may lead to increases and decreases of specific traits in populations over time. (MS-LS4-6)	Level 7 – Ch. 4.1, 4.2 Level 8 – Ch. 1.1, Ch. 4.2, 4.3, 4.4	Level 7 - ATBD Level 8 - ATBD
		S.6-8.LS.21 Apply scientific principles to construct and share a personal model that explains origins of life on earth and acknowledges God as the Creator.	Level 6 – Ch. 1.1, 1.2, 1.3 Level 7 – Ch. 1.1, Ch. 4.1 Level 8 – Ch. 1.1, 1.2, Ch. 10.2, 10.3	Level 6 - ATBD Level 7 - ATBD Level 8 - ATBD