

Life Science Unit 2- Desired Results

ESTABLISHED GOALS:

MS-LS1-1: Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. [Clarification Statement: Emphasis is on developing evidence that living things are made of cells, distinguishing between living and non-living cells, and understanding that living things may be made of one cell or many varied cells.]

MS-LS1-2: Develop and use a model to describe the functions, and basic processes of the cell. [Clarification Statement: Emphasis is on the cell functioning as a whole system and the primary role of identified parts of the cell, specifically the nucleus, chloroplasts, mitochondria, cell membrane, and cell wall. Basic processes of a cell should include, but are not limited to, cell growth and reproduction.]

Transfer
Students will be able to independently use their learning to...
 Support a scientific explanation or argument based on evidence
 Observe and explore a given system or concept to deepen scientific understanding

Meaning

Meaning

UNDERSTANDINGS

Students will understand that...

Phenomena that can be observed at one scale may not be observable at another scale. (MS-LS1-1)

Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts; therefore complex and natural designed structures/systems can be analyzed to determine how they function. (MS-LS1-2)

Systems may interact with other systems; they may have sub-systems and be part of larger complex systems. (MS-LS1-3)

Phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability. (MS-LS-4) (MS-LS1-5)

ESSENTIAL QUESTIONS

How do cells contribute to the functions of living organisms?

Trimester 1/2: Molecules to Organisms

Duration: 11 Weeks

Acquisition

<p>[State Assessment Boundary: Assessment of organelle structure/function relationships is limited to the cell wall and cell membrane. Assessment of the function of the other organelles is limited to their relationship to the whole cell. Assessment does not include the biochemical function of cells, cell parts, or specific stages of the cell cycle.</p> <p>MS-LS1-3: Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.</p> <p>[Clarification Statement: Emphasis is on the conceptual understanding that cells form tissues and tissues form organs specialized for particular body functions. Examples could include the interaction of subsystems within a system and the normal functioning of those systems.]</p> <p>[State Assessment Boundary: Assessment does not include the mechanism of one body system independent of others. Assessment is limited to the circulatory, excretory, digestive, respiratory, muscular, and nervous systems.]</p> <p>MS-LS1-4 Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of</p>	<p><i>Students will know...</i></p> <p>Structure and Functions:</p> <ul style="list-style-type: none"> ● All living things are made up of cells, which is the smallest unit that can be said to be alive. An organism may consist of one single cell (unicellular) or many different numbers and types of cells (multicellular). (MS-LS1-1) ● Within cells, special structures are responsible for particular functions, and the cell membrane forms the boundary that controls what enters and leaves the cell. (MS-LS1-2) ● In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form tissues and organs that are specialized for particular body functions. <p>Growth and Development of Organisms:</p> <ul style="list-style-type: none"> ● Animals engage in characteristic behaviors that increase the odds of reproduction. (MS-LS1-4) ● Plants reproduction in a variety of ways, sometimes depending on animal behavior and specialized features for reproduction. (MS-LS1-4) ● Genetic factors as well as local conditions affect the growth of the 	<p><i>Students will be skilled at...</i></p> <ul style="list-style-type: none"> ● Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation. (MS-LS1-1) ● Develop a model to describe phenomena (MS-LS1-2) ● Use an oral and written argument supported by evidence to support or refute an explanation or a model for a phenomena (MS-LS1-3), (MS-LS1-4) ● Construct a Scientific explanation based on valid and reliable evidence obtained from sources (including the student’s own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future (MS-LS1-5), (MS-LS1-6) ● Develop a model to describe unobservable mechanisms (MS-LS1-7) ● Gather, read and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used and describe how they are supported or not
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<p>animals and plants respectively. [Clarification Statement: Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds, and creating conditions for seed germination and growth. Examples of plant structure could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen and hard shells on nuts that squirrels bury.]</p> <p>MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. [Clarification Statement: Examples of local environmental conditions could include availability of food, light, space, and water. Examples of genetic factors could include large breed cattle and species of grass affecting growth of organisms. Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large</p>	<p>adult plant. (MS-LS1-5)</p> <p>Organization for Matter and Energy Flow in Organisms:</p> <ul style="list-style-type: none"> • Within individual organisms, food moves through a series of chemical reactions in which it is broken down and rearranged to form new molecules, to support growth, or to release energy. (MS-LS1-7) <p>Energy in Chemical Processes and Everyday Life:</p> <ul style="list-style-type: none"> • Cellular respiration in plants and animals involve chemical reactions with oxygen that release stored energy. In these processes, complex molecules containing carbon react with oxygen to produce carbon dioxide and other materials. (MS-LS1-7) <p>Information Processing:</p> <ul style="list-style-type: none"> • Each sense receptor responds to different inputs (electromagnetic, mechanical, chemical), transmitting them as signals that travel along nerve cells to the brain. The signals are then processed in the brain, resulting in immediate behaviors or memories. (MS-LS1-8) 	<p>supported by evidence (MS-LS1-8)</p>
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<p>ponds than they do in small ponds.]</p> <p><u>MS-LS1-7</u> Develop a model to describe how food molecules (sugars) are rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. [Clarification Statement: Emphasis is on describing that molecules are broken apart and put back together and in that process, energy is released.] [State Assessment Boundary: Assessment does not include details of the chemical reactions for photosynthesis or respiration.]</p> <p><u>MS-LS1-8:</u> Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage memories. [State Assessment Boundary: Assessment does not include mechanisms for the transmission of this information.]</p>		
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Stage 2 - Evidence

Evaluate Criteria	Assessment Evidence
	PERFORMANCE TASK(S):
	OTHER EVIDENCE: 6th Grade Introduction to Life Science Quarter 2 District Assessment: Molecules to Organisms - Structures and Processes

Stage 3 - Learning Plan

Summary of Key Learning Events and Instruction