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<tr><td>Strand 7.3: Structure and Function of Life</td><td colspan="2">Living things are made of smaller structures, which function to meet the needs of survival. The basic structural unit of all living things is the cell. Parts of a cell work together to function as a system. Cells work together and form tissues, organs, and organ systems. Organ systems interact to meet the needs of the organism. „</td></tr>
<tr><td>Standard: 7.3.1<br><br>(MS-LS1-A)</td><td colspan="2">Plan and carry out an investigation that provides evidence that the basic <u>structures</u> of living things are cells. Emphasize that cells can form single-celled or multicellular organisms and that multicellular organisms are made of different types of cells.</td></tr>
<tr><td>SEP/CCC</td><td>Planning and carrying out investigations<br>Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.</td><td><u>Structure and function</u><br>Phenomena that can be observed at one scale may not be observable at another scale.</td></tr>
<tr><td>DCI</td><td colspan="2">LS1.A: Structure and Function. 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).</td></tr>
<tr><td>Student Friendly Objectives</td><td colspan="2">I can do an investigation to provide evidence that all living things are made of cells.</td></tr>
<tr><td>Big Idea</td><td colspan="2">All living things are made of cells.</td></tr>
<tr><td rowspan="2">Vertical Learning Progression Alignment</td><td>Previous Science Content<br>(Discussed in K-5 Standards)</td><td>Future Science Content<br>(Discussed in 9-12 Standards)</td></tr>
<tr><td>● All organisms have external parts that they use to perform daily functions.<br>● Organisms have both internal and external macroscopic structures that allow for growth, survival, behavior, and reproduction.</td><td>● Systems of specialized cells within organisms help perform essential functions of life. Any one system in an organism is made up of numerous parts. Feedback mechanisms maintain an organism’s internal conditions within certain limits and mediate behaviors.<br>● Prokaryote vs Eukaryote Cells</td></tr>
<tr><td>6-8 Band</td><td colspan="2">● All living things are made up of cells. In organisms, cells work together to form tissues and organs that are specialized for particular body functions</td></tr>
<tr><td>What students will be doing:</td><td colspan="2">1. Identifying the phenomenon under investigation<br>a. From the given investigation plan, students identify and describe the phenomenon under investigation, which includes the idea that living things are made up of cells.<br>b. Students identify and describe the purpose of the investigation, which includes providing evidence for the following ideas: that all living things are made of cells (either one cell or many different numbers and types of cells) and that the cell is the smallest unit that can be said to be alive.<br>2. Identifying the evidence to address the purpose of the investigation<br>a. From the given investigation plan, students describe the data that will be collected and the evidence to be derived from the data, including:<br>i. The presence or absence of cells in living and nonliving things.<br>ii. The presence or absence of any part of a living thing that is not made up of cells.<br>iii. The presence or absence of cells in a variety of organisms, including single-celled and multicellular organisms, not just plants and animals.<br>iv. Different types of cells within one multicellular organism perform different functions.</td></tr>
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| | b. Students describe how the evidence collected will be relevant to the purpose of the investigation.<br>3. Planning the investigation<br>a. From the given investigation plan, students describe how the tools and methods included in the experimental design will provide the evidence necessary to address the purpose of the investigation, including that due to their small-scale size, cells are unable to be seen with the unaided eye and require engineered magnification devices to be seen.<br>b. Students describe how the tools used in the investigation are an example of how science depends on engineering advances.<br>4. Collecting the data<br>a. According to the given investigation plan, students collect and record data on the cellular composition of living organisms.<br>b. Students identify the tools used for observation at different magnifications and describe that different tools are required to observe phenomena related to cells at different scales.<br>c. Students evaluate the data they collect to determine whether the resulting evidence meets the goals of the investigation, including cellular composition as a distinguishing feature of living things. |