



## Unit Planner: Unit 3: Cell Processes Science 7

Monday, August 1, 2020

\*Archdiocesan Essential Curriculum > 2020-2021 > Grade 7 > Science > Science 7 (BP) > Week 6 - Week 10

### Unit 3: Cell Processes

Stage 1: Desired Results	
<p>General Information</p> <p><b>In this unit, students will learn about how cells operate and work together. Students will learn about cell parts, cellular actions, and cellular organization. This unit will cover the following information:</b></p> <ul style="list-style-type: none"><li>• In multicellular organisms, the body is a system of multiple interacting subsystems. These subsystems are groups of cells that work together to form a hierarchy of tissues, organs, organ systems and the organism.</li><li>• Cells specialize for particular body functions.</li><li>• Photosynthesis &amp; respiration are processes involving chemical reactions in living things.</li><li>• 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.</li><li>• Cells maintain homeostasis by controlling the transportation of materials through a membrane in active and passive transport</li><li>• Cells divide in a process called mitosis: prophase, metaphase, anaphase, and telophase.</li></ul>	<p>Essential Question(s)</p> <ul style="list-style-type: none"><li>• What are the key processes cells undergo to maintain function?</li><li>• How do eukaryotic and prokaryotic cells take in substances and manufacture energy?</li><li>• Describe the process of photosynthesis as a plant's method of manufacturing energy.</li><li>• What is cellular respiration and how does it benefit an organism?</li><li>• What process do cells undergo to divide and specialize within an organism?</li><li>• How do cells transport material through their membranes actively and passively?</li></ul>
<p>Enduring Understandings and Knowledge</p> <p><b>Students will understand:</b></p> <ul style="list-style-type: none"><li>• How a plant uses sunlight to produce energy through photosynthesis.</li><li>• Cells go through a process called mitosis in order to divide and specialize.</li><li>• Prokaryotic and eukaryotic cells absorb different substances in order to manufacture energy.</li><li>• Organisms can be classified as either unicellular and multicellular.</li><li>• Cells move material through their membranes in processes called osmosis, diffusion, active and passive transport.</li></ul>	<p>Skills</p> <p><b>Students will be able to:</b></p> <ul style="list-style-type: none"><li>• 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.</li><li>• Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories</li><li>• Describe and model the phases of mitosis and explain what occurs at each step in the cell cycle</li><li>• Describe how cells use active and passive transport to move materials through a membrane.</li></ul>

<p>Connections to Catholic Identity / Other Subjects</p> <p><b>Religion</b></p> <ul style="list-style-type: none"> <li>Find a Catholic biologist and learn about him/her.</li> </ul> <p><b>ELA</b></p> <ul style="list-style-type: none"> <li>Use content to write in a style that the students are working on in class (narrative, argument/persuasive, informative, drama/poetry).</li> </ul> <p><b>Physical Education</b></p> <ul style="list-style-type: none"> <li>Work with the PE teacher to teach about organ systems, exercise, and health. Have students evaluate how organ systems and cellular processes work together to help athletes with the actions of their sport.</li> </ul>	<p>Vocabulary</p> <ul style="list-style-type: none"> <li>tissue</li> <li>organ</li> <li>organ system</li> <li>cellular respiration</li> <li>ATP</li> <li>glucose</li> <li>photosynthesis</li> <li>energy</li> <li>metabolism</li> <li>oxygen</li> <li>carbon dioxide</li> <li>dioxide</li> <li>cell transport (hypertonic, hypotonic, isotonic)</li> <li>osmosis</li> <li>diffusion</li> <li>passive transport</li> <li>active transport</li> <li>cell division</li> <li>cell cycle</li> <li>cytokinesis</li> <li>mitosis (all stages and phases)</li> </ul>
<p>Standards &amp; Frameworks Addressed</p> <p><b>NGSS: Science Performance Expectations (2013)</b>  <b><u>NGSS: MS Life Science</u></b>  <b>MS.Structure, Function, and Information Processing</b>  <b>Performance Expectations</b></p> <p>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.</p> <p>MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p> <p>MS-LS1-3. Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.</p> <p><b>MS.Matter and Energy in Organisms and Ecosystems Performance Expectations</b></p> <p>MS-LS1-6. 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.</p> <p>MS-LS1-7. 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.</p> <p><b>MS.Growth, Development, and Reproduction of Organisms Performance Expectations</b></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 animals and plants respectively.</p>	

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Access the interactive version of the NGSS [here](#)

## Teaching Ideas/Resources

- [\*Content Area Expert Resources\*](#)