

## MAPPING GRADE 5 SCIENCE INSTRUCTION

**Concept:** Cells / Kingdoms  
**PWC Strand:** Life Science

**CMS Unit Test:** Organization and Diversity of Life  
**Reporting Category:** Life Processes & Living Systems

**PWC Objective: 5.2.1**

The student will investigate and understand that organisms are made of cells and have distinguishing characteristics. Key concepts include:

- basic cell structures and functions **(SOL 5.5a)**
- kingdoms of living things **(SOL 5.5b)**
- vascular and nonvascular plants **(SOL 5.5c)**
- vertebrates and invertebrates **(SOL 5.5d)**

<b>What Students Should Know</b> (Critical Attributes)	<b>What Students Should Be Able To Do</b> (Essential Skills)
<p><b><u>Essential Questions:</u></b></p> <ul style="list-style-type: none"> <li>• How are plant cells and animal cells similar and different?</li> <li>• What are the five kingdoms of living things and how are living things grouped or classified into these kingdoms?</li> <li>• How are plants further grouped or classified?</li> <li>• How are animals further grouped or classified?</li> </ul> <p><b><u>Critical Attributes:</u></b></p> <p>5.5a Living things are made of cells. The cell is the smallest part (structure) of a living thing that can carryout all the life processes (functions).</p> <p>5.5a New cells come from existing cells. Cells are too small to be seen with the eye alone. Using a microscope, many small parts of the cell can be observed.</p> <p>5.5a Animal and plant cells are similar in that they each have a nucleus, cell membrane, cytoplasm, and vacuoles. Plant cells also have a cell wall and chloroplasts. They differ in shape—plant cells tend to be rectangular and animal cells tend to be spherical and at times, irregular.</p>	<ul style="list-style-type: none"> <li>• Draw, label, and describe the essential parts of plant and animal cells. (For plants include the nucleus, cell wall, cell membrane, vacuole, chloroplasts, and cytoplasm. For animals include the nucleus, cell membrane, vacuole, and cytoplasm.)</li> <li>• Compare and contrast plant and animal cells, and identify their major parts and functions.</li> <li>• Design an investigation to make observations of cells. Describe and demonstrate appropriate techniques of using a microscope including the proper placement of slide; use of fine and coarse focus; and focusing on cells.</li> </ul>

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<b>What Students Should Know</b> (Critical Attributes)	<b>What Students Should Be Able To Do</b> (Essential Skills)
5.5b Organisms that share similar characteristics can be organized into groups in order to help us understand similarities and differences.	<ul style="list-style-type: none"><li>• Compare and contrast the distinguishing characteristics of the five kingdoms of organisms.</li></ul>
5.5b Living things are categorized into large groups, or kingdoms, according to the characteristics they possess. The major kingdoms are Monera, Protist, Fungi, Plant, and Animal. <i>Note: This critical attribute is linked to objective 5.1 classifying, using a classification key, in the Reasoning and Logic Strand.</i>	<ul style="list-style-type: none"><li>• Group organisms into the five kingdoms using their characteristics.</li><li>• Classify plants as either vascular or nonvascular based on their characteristics. Name and describe two common examples of each group.</li></ul>
5.5c Plants can be further classified as either vascular or nonvascular, depending on what type of tissue they contain. Vascular plants have stems, roots, and leaves with tube-like structures that carry food and water. Xylem carries water and food from the roots to the leaves. Phloem carries food from the leaves to the other parts of the plant. Flowers, trees, grasses, ferns, and bushes are vascular plants. Nonvascular plants, such as mosses, do not have these specialized parts. Most plants are vascular plants.	
5.5d Animals can be classified as either vertebrates (animals with backbones) or invertebrates (animals without backbones). Vertebrates are classified into mammals, birds, reptiles, amphibians, and fish. The major invertebrate groups are sponges, cnidarians (stinging-celled), annelids (worms), mollusks (soft-bodied), echinoderms (spiny-skinned), and arthropods.	<ul style="list-style-type: none"><li>• Classify animals as either vertebrate or invertebrate based on their characteristics. Name and describe two common examples of each group.</li></ul>