

Extraction of Life

Grade Level: 3 rd -5 th grade	Topic: Wheat and Genetics	Estimated Time: 50 minutes
<p>Brief Lesson Description: Students will unravel plant genetics by identifying structures within a plant cell, discovering the location of DNA inside each cell. Using wheat as an example, students will follow a procedure to extract plant DNA. Throughout the guided discussion and experiment, students will explore careers related to plant science and facts about Michigan agriculture.</p>		
<p><u>Next Generation Science Standards:</u></p> <p>Performance Expectation(s):</p> <p>3-LS3-1: 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.</p> <p>LS3.B: Variation of Traits: Different organisms vary in how they look and function because they have different inherited information.</p> <p>3-LS3-2: Use evidence to support the explanation that traits can be influenced by the environment.</p> <p>4-LS1-1: Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.</p> <p>5-PS1-1: Develop a model to describe that matter is made of particles too small to be seen.</p> <p><u>National Agricultural Literacy Outcomes:</u></p> <p>T3.3-5 f: Identify careers in food, nutrition and health.</p> <p>T4.3-5 c: Identify examples of how the knowledge of inherited traits is applied to farmed plants and animals in order to meet specific objectives (i.e., increased yields, better nutrition, etc.).</p> <p>T4.3-5 d: Provide examples of science being applied in farming for food, clothing, and shelter products.</p> <p>T5.3-5 b: Discover that there are many jobs in agriculture.</p> <p>T5.3-5 d: Explain the value of agriculture and how it is important in daily life.</p>		
<p>Specific Learning Outcomes</p> <p>Students will:</p> <ol style="list-style-type: none"> 1. Identify components of DNA including phosphates, sugars, nitrogen bases (adenine, thymine, cytosine, and guanine), and double-helix twisting structure. 2. Explain the function of the cell wall, cytoplasm, nucleus and chromosomes of a plant cell, recognizing cells are too small to be seen with the naked eye. 3. Name one career related to the study of genetics. 		
<p>Narrative / Background Information</p>		
<p>Prior Student Knowledge:</p> <ol style="list-style-type: none"> 1. Students should be familiar with: <ol style="list-style-type: none"> a. Basic role of a farmer b. Plants are living organisms c. Basic role of a scientist d. Humans and plants inherit traits/genetic material from their parents 		