

**Inquiry Investigations™**  
**Cellular World MODULE - 1271974**  
**Grades: 7-10**

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**Washington D.C. Learning Standards**  
**Science**  
**Grade 7**

<b>CONTENT STANDARD</b>	<b>DC.7.1.</b>	Scientific Thinking and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>7.1.4.</b>	<p>Recognize testable hypotheses in investigations that pertain to the content under study, and write instructions others can follow in carrying out the investigation.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>

		<ul style="list-style-type: none"> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.1.6.	<p>Incorporate circle charts, bar and line graphs, diagrams, scatter plots, and symbols into writing, such as lab or research reports, to serve as visual displays of evidence for claims and/or conclusions.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.1.7.	<p>Recognize whether evidence is consistent with a proposed explanation, and know that different explanations can be given for the same evidence and that partial evidence may be exploited for reasons other than truth seeking.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.1.8.	<p>Question claims based on vague attributes or on authority, such as 'Leading doctors say...', or on statements made by celebrities or others outside the area of their particular expertise.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
CONTENT STANDARD	DC.7.3.	<p><b>Biological Classification: Broad Concept: Similarities are used to classify organisms since they may be used to infer the degree of relatedness among organisms. As a basis for understanding this concept, students:</b></p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.3.1.	<p>Recognize and describe that a key distinction among organisms is between autotrophs, such as green plants (which use energy from sunlight to make their own food), and heterotrophs, such as animals and fungi (which consume other organisms as food and harvest energy from them).</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.3.4.	<p>Describe how similarities among organisms are found in external and internal anatomical features, including specific characteristics at the cellular level, such as the number of chromosomes.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>

CONTENT STANDARD	DC.7.4.	Cell Biology: Broad Concept: All living things are composed of cells, from just one to many quadrillions, whose details usually are visible only through a microscope. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.1.	<p>Investigate and explain that all living things are composed of one or more cells; cells are organisms' basic units of structure and function; and cells come only from existing cells (Theodor Schwann's and Matthias Schleiden's cell theory).</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.2.	<p>Describe that the way in which cells function is similar in all living organisms.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Process: Teacher Resource CD</li> </ul>

		<ul style="list-style-type: none"> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>7.4.3.</p>	<p>Explain that in those cells that contain a nucleus (eukaryotic plant and animal cells), the nucleus is the main repository for genetic information.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a</li> </ul>

		Biochemical Test for Catalase
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.4.	<p>Identify cells, such as bacteria and blue-green algae, as prokaryotes. Explain that prokaryotic cells differ from eukaryotic cells most prominently in that they don't have a membrane-bound nucleus. Know their genetic information is in a threadlike mass, often a very long loop of DNA.</p> <ul style="list-style-type: none"> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.5.	<p>Know intracellular bodies with specific functions are called organelles. Describe that important among them are mitochondria which liberate energy for the work that cells do, and chloroplasts which capture sunlight energy for photosynthesis.</p> <ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.6.	<p>Describe that plant cells have chloroplasts and a cellulose cell wall, and animal cells do not.</p> <ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> </ul>

		<ul style="list-style-type: none"> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>7.4.7.</p>	<p>Observe and explain that about two-thirds of the mass of a typical cell is accounted for by water, and that water gives cells many of their properties.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.8.	<p>Describe how the most basic chemical functions of organisms, such as extracting energy from food and getting rid of wastes, are started or carried out completely within the cell.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Process: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.9.	<p>Explain how cells in multicellular organism continually divide to make more cells for growth and repair, and various organs and tissues function to serve the needs of cells for food, air, and waste removal.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.10.	<p>Recognize that many organisms are single celled (e.g., bacteria, yeasts) and explain how this one cell must carry out all of the basic functions of</p>

		<p>life.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.4.11.	<p>Construct a chart and describe that multicellular organisms are organized hierarchically from cells to tissues to organs to organ systems to organisms.</p> <ul style="list-style-type: none"> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
CONTENT STANDARD	DC.7.5.	<p>Genetics: Broad Concept: Every organism requires information in the form of a set of instructions that specifies its traits. Those traits may be modified by environmental influences. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.5.1.	<p>Describe that heredity is the passage of information for developing and maintaining the organism's body from one generation to another, that genes are the basic units of heredity, and they are made of DNA, consisting of very long molecules located in the chromosomes of each cell.</p> <ul style="list-style-type: none"> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.5.2.	<p>Explain how, in asexual reproduction, offspring are an almost identical copy of the mother cell.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell</li> </ul>

		Growth Curves
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.5.3.	<p>Explain how, in sexual reproduction, a single reproductive cell from a female (female gamete, egg, or ovum) merges with a specialized cell from a male (male gamete or spermatozoon) to make a fertilized egg (zygote). This carries genetic information from both parental gametes and multiplies to form the complete organism.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.7.7.	Human Body: Broad Concept: Human beings have body systems for obtaining and providing energy, defense, reproduction, and the coordination of body functions. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.7.2.	<p>Explain that human beings have many similarities and differences, and the similarities make it possible for human beings to donate blood and organs to one another.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.7.3.	<p>Explain how the amount of food energy (usually measured in Calories) that a person requires varies with body weight, age, sex, activity level, and metabolic rate.</p> <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.7.5.	<p>Identify specific examples of how viruses, bacteria, fungi, and more complex parasites may infect the human body and interfere with normal body functions.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> </ul>
CONTENT STANDARD	DC.7.8.	Ecology: Broad Concept: Organisms in ecosystems exchange energy and nutrients among themselves and with the physical environment. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.8.2.	<p>Describe how two types of organisms may interact in a competitive or cooperative relationship, such as producer/consumer, predator/prey, parasite/hosts, or as symbionts.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.8.3.	<p>Illustrate and explain how plants use the energy from light to make simple sugars, and more complex molecules, from carbon dioxide and water through a process called photosynthesis. Understand this produces food that can be used immediately or stored for later use.</p> <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.8.5.	<p>Describe how organisms that eat plants break down the plant structures to produce the materials and energy that they need to survive, and in turn, other organisms consume them.</p> <ul style="list-style-type: none"> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	7.8.8.	<p>Explain why in urban environments, a species (mostly human beings) settles in dense concentrations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>

**Grade 8**

CONTENT STANDARD	DC.8.1.	<p><b>Scientific Thinking and Inquiry: Broad Concept:</b> Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.1.1.	<p>Describe how scientific knowledge is subject to modification and refinement as new information challenges prevailing theories.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.1.2.	<p>Test hypotheses that pertain to the content under study.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.1.5.	<p>Write clear step-by-step instructions (procedural summaries) for conducting investigations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> </ul>

		<ul style="list-style-type: none"> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>8.1.6.</p>	<p>Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>8.1.7.</p>	<p>Use tables, charts, and graphs in making arguments and claims in presentations about lab work.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>

PERFORMANCE STANDARD/ESSENTIAL SKILL	8.1.9.	<p>Explain why arguments may be invalid if based on very small samples of data, biased samples, or experiments in which there was no control sample.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.1.12.	<p>Apply simple mathematical models to problems (e.g., formulas such as <math>F = ma</math>).</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.8.2.	Structure of Matter: Broad Concept: Elements have distinct macroscopic properties and atomic structures. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.2.1.	<p>Explain that all matter is made up of atoms that are far too small to see directly through an optical microscope.</p> <ul style="list-style-type: none"> <li>Cell Types and Organization: Teacher Resource CD</li> </ul>
CONTENT STANDARD	DC.8.3.	Reactions: Broad Concept: Chemical reactions are processes in which atoms are rearranged into different combinations of molecules. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.3.1.	<p>Discover and explain how elements and compounds (reactants) react with each other to form products with different properties.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.3.5.	<p>Investigate and explain that reactions occur at different rates, slow to fast, and that reaction rates can be changed by changing the concentration of reactants, the temperature, the surface areas of solids and by using a catalyst.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.3.6.	<p>Recognize that solutions can be acidic, basic, or neutral depending on the concentration of hydrogen ions in the solution. Understand that because this concentration can vary over a very large range, the logarithmic (each</p>

		<p>increase of one in the pH scale is an increase of 10 times in concentration) pH scale is used to describe how acidic or basic a solution is.</p> <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.3.7.	<p>Recognize that indicators of chemical changes include temperature change, the production of a gas, the production of a precipitate, or a color change.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.8.4.	<p>Density and Buoyancy: Broad Concept: All objects experience a buoyant force when immersed in a fluid. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.4.2.	<p>Know density is mass per unit volume.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.4.3.	<p>Investigate and explain that equal volumes of different substances usually have different masses and, therefore, different densities.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	8.4.5.	<p>Determine the density of substances (regular and irregular solids, and liquids) from direct measurements of mass and volume, or of volume by water displacement.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>

#### Grade 9

CONTENT STANDARD	DC.ES.1.	<p>Earth Science: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.1.	<p>Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a</li> </ul>

		Biochemical Test for Catalase
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.3.	<p>Recognize the cumulative nature of scientific evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.4.	<p>Recognize the use and limitations of models and theories as scientific representations of reality.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.7.	<p>Use hypotheses to choose what data to pay attention to and what additional data to seek, and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and</li> </ul>

		<p>Preparation of Onion Roots</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.13.	<p>Apply mathematical relationships involving proportionalities, linear relations, quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.B.1.	<p>Biology: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.1.	<p>Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.3.	<p>Recognize the cumulative nature of scientific evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.4.	<p>Recognize the use and limitations of models and theories as scientific representations of reality.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.6.	<p>Plan and conduct scientific investigations to explore new phenomena, to check on previous results, to verify or falsify the prediction of a theory, and to use a crucial experiment to discriminate between competing theories.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.7.	<p>and what additional data to seek, and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at</li> </ul>

		<p>Catalase</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.11.	<p>Formulate and revise explanations using logic and evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.13.	<p>Apply mathematical relationships involving linear and quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.B.2.	<p>Biology: Chemistry of Living Things: Broad Concept: Living things are made of atoms bonded together to form molecules, some of the most important of which are large and contain carbon (i.e., 'organic' compounds). As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.3.	<p>Describe the central role of carbon in the chemistry of living things because of its ability to combine in many ways with itself and other elements.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.4.	<p>Know that living things are made of molecules largely consisting of</p>

		<p>carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.6.	<p>Observe and explain the role of enzymatic catalysis in biochemical processes.</p> <ul style="list-style-type: none"> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.7.	<p>Explain the hierarchical organization of living things from least complex to most complex (subatomic, atomic, molecular, cellular, tissue, organs, organ system, organism, population, community, ecosystem, biosphere).</p> <ul style="list-style-type: none"> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
CONTENT STANDARD	DC.B.3.	<p>Biology: Cell Biology: Broad Concept: All living things are composed of cells. All the fundamental life processes of a cell are either chemical reactions or molecular interactions. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.1.	<p>Compare and contrast the general anatomy and constituents of prokaryotic and eukaryotic cells and their distinguishing features: Prokaryotic cells do not have a nucleus and eukaryotic cells do. Know prokaryotic organisms are classified in the Monera Kingdom and that organisms in the other four kingdoms have eukaryotic cells.</p> <ul style="list-style-type: none"> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.2.	<p>Understand the function of cellular organelles and how the organelles work together in cellular activities (e.g., enzyme secretion from the pancreas).</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Process: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cell Types and Organization: Teacher Resource CD</li> </ul>

		<ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>B.3.3.</p>	<p>Observe and describe that within the cell are specialized parts for the transport of materials, energy capture and release, waste disposal, and motion of the whole cell or of its parts.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of</li> </ul>

		<p>Mitochondria</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>B.3.4.</p>	<p>Describe the organelles that plant and animal cells have in common (e.g., ribosomes, golgi bodies, endoplasmic reticulum) and some that differ (e.g., only plant cells have chloroplasts and cell walls).</p> <ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and</li> </ul>

		Fertilization
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.5.	<p>Demonstrate and explain that cell membranes act as highly selective permeable barriers to penetration of substances by diffusion or active transport.</p> <ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.6.	<p>Explain that some structures in the eukaryotic cell, such as mitochondria, and in plants, chloroplasts, have apparently evolved by endosymbiosis (one organism living inside another, to the advantage of both) with early prokaryotes.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.7.	<p>Describe that the work of the cell is carried out by structures made up of many different types of large (macro) molecules that it assembles, such as proteins, carbohydrates, lipids, and nucleic acids.</p> <ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of</li> </ul>

		<p>Mitochondria</p> <ul style="list-style-type: none"> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.8.	<p>Demonstrate that most cells function best within a narrow range of temperature and pH; extreme changes usually harm cells, by modifying the structure of their macromolecules and, therefore, some of their functions.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Process: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.9.	<p>Explain that a complex network of proteins provides organization and shape to cells.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Process: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant</li> </ul>

		<p>Pigments</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>B.3.10.</p>	<p>Explain that complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Process: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>B.3.11.</p>	<p>Describe that all growth and development of organisms is a consequence of an increase in cell number, size, and/or products.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell</li> </ul>

		<p>Cycle in Onion Roots</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.13.	<p>Explain why communication and/or interaction are required between cells to coordinate their diverse activities.</p> <ul style="list-style-type: none"> <li>Cell Process: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.14.	<p>Recognize and describe that cellular respiration is important for the production of ATP, which is the basic energy source for cell metabolism.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.15.	<p>Differentiate between the functions of mitosis and meiosis: Mitosis is a process by which a cell divides into each of two daughter cells, each of which has the same number of chromosomes as the original cell. Meiosis is a process of cell division in organisms that reproduce sexually, during which the nucleus divides eventually into four nuclei, each of which contains half the usual number of chromosomes.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.17.	<p>Describe that all organisms begin their life cycles as a single cell, and in multicellular organisms the products of mitosis of the original zygote form the embryonic body.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.B.4.	<p>Biology: Genetics: Broad Concept: Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.2.	<p>Describe how the discovery of the structure of DNA by James D. Watson, Francis Crick made it possible to interpret the genetic code on the basis of a nucleotide sequence. Know the important contribution of Rosalind</p>

		<p>Franklin's data to this discovery, i.e., the careful X-ray crystallography on DNA that provided Watson and Crick the clue they needed to build the correct structure.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.3.	<p>Explain how hereditary information is passed from parents to offspring in the form of 'genes' which are long stretches of DNA consisting of sequences of nucleotides. Explain that in eukaryotes, the genes are contained in chromosomes, which are bodies made up of DNA and various proteins.</p> <ul style="list-style-type: none"> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.4.	<p>Know every species has its own characteristic DNA sequence.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.8.	<p>Explain the mechanisms of genetic mutations and chromosomal recombinations, and when and how they are passed on to offspring.</p> <ul style="list-style-type: none"> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.9.	<p>Understand and explain that specialization of cells is almost always due to different patterns of gene expression rather than differences in the genes</p>

SKILL		<p>themselves.</p> <ul style="list-style-type: none"> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.10.	<p>Explain how the sorting and recombination of genes in sexual reproduction result in a vast variety of potential allele combinations in the offspring of any two parents.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.12.	<p>Explain how the actions of genes, patterns of inheritance, and the reproduction of cells and organisms account for the continuity of life.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.B.6.	<b>Biology: Plant Biology: Broad Concept: Plants are essential to animal life on Earth. As a basis for understanding this concept, students:</b>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.6.1.	<p>Describe the structure and function of roots, leaves, flowers, and stems of plants.</p> <ul style="list-style-type: none"> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.6.3.	<p>Know that about 250,000 species of flowering plants have been identified.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.6.4.	<p>Explain the photosynthesis process: Plants make food in their leaves and chlorophyll found in the leaves can make food the plant can use from carbon dioxide, water, nutrients, and energy from sunlight.</p> <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant</li> </ul>

		Pigments
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.6.5.	<p>Explain that during the process of photosynthesis, plants release oxygen into the air.</p> <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.6.7.	<p>Recognize that plants have a greater problem with 'unpredictable environments' because they cannot seek shelter as many animals can.</p> <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> </ul>
CONTENT STANDARD	DC.B.8.	Biology: Ecosystems: Broad Concept: Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.8.2.	<p>Describe how factors in an ecosystem, such as the availability of energy, water, oxygen, and minerals and the ability to recycle the residue of dead organic materials, cause fluctuations in population sizes.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.8.3.	<p>Explore and explain how changes in population size have an impact on the ecological balance of a community and how to analyze the effects.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.C.1.	Chemistry: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.1.1.	<p>Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.1.3.	<p>Recognize the cumulative nature of scientific evidence.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a</li> </ul>

		Biochemical Test for Catalase
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.1.4.	<p>Recognize the use and limitations of models and theories as scientific representations of reality.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.1.7.	<p>Use hypotheses to choose what data to pay attention to and what additional data to seek, and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why</li> </ul>

		<p>Cells Aren't Big</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.1.13.	<p>Apply mathematical relationships involving linear and quadratic equations, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.C.2.	<p>Chemistry: Properties of Matter: Broad Concept: Physical and chemical properties can be used to classify and describe matter. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.2.1.	<p>Investigate and classify properties of matter, including density, melting point, boiling point, and solubility.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.2.2.	<p>Determine the definitions of and use properties such as mass, volume, temperature, density, melting point, boiling point, conductivity, solubility, and color to differentiate between types of matter.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.2.6.	<p>Write equations that describe chemical changes and reactions.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> </ul>
CONTENT STANDARD	DC.C.8.	<p>Chemistry: Conservation of Matter: Broad Concept: The microscopic conservation of atoms in chemical reactions implies the macroscopic principle of conservation of matter and the ability to calculate the mass of products and reactants. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.8.2.	<p>Describe chemical reactions by writing balanced chemical equations and balancing redox equations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.8.7.	<p>Convert the mass of a molecular substance to moles, number of particles, or volume of gas at standard temperature and pressure.</p>

		<ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.8.11.	<p>Describe the effect of changes in reactant concentration, changes in temperature, the surface area of solids, and the presence of catalysts on reaction rates.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.C.10.	Chemistry: Chemical Equilibrium: Broad Concept: Chemical equilibrium is a dynamic process at the molecular level. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.10.2.	<p>Describe the factors that affect the rate of a chemical reaction (temperature, concentration) and the factors that can cause a shift in equilibrium (concentration, pressure, volume, temperature).</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.10.3.	<p>Explain why rates of reaction are dependent on the frequency of collision, energy of collisions, and orientation of colliding molecules.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.10.4.	<p>Observe and describe the role of activation energy and catalysts in a chemical reaction.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.C.11.	Chemistry: Solutions: Broad Concept: Solutions are mixtures of two or more substances that are homogeneous on the molecular level. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.11.4.	<p>Calculate the concentration units of solutions such as molarity, percent by mass or volume, parts per million (ppm), or parts per billion (ppb).</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
CONTENT STANDARD	DC.C.13.	Chemistry: Organic and Biochemistry: Broad Concept: The bonding characteristics of carbon lead to the possibility of many different molecules of many sizes, shapes, and chemical properties. This

		provides the biochemical basis of life. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.13.2.	Describe how large molecules (polymers) such as proteins, nucleic acids, and starch are formed by repetitive combinations of simple subunits (monomers). <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> </ul>
CONTENT STANDARD	DC.P.1.	Physics: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.1.	Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems. <ul style="list-style-type: none"> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.3.	Recognize the cumulative nature of scientific evidence. <ul style="list-style-type: none"> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.4.	Recognize the use and limitations of models and theories as scientific representations of reality. <ul style="list-style-type: none"> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.7.	Use hypotheses to choose what data to pay attention to and what additional data to seek and to guide the interpretation of the data. <ul style="list-style-type: none"> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>

PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.13.	<p>Apply mathematical relationships involving linear and quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.P.4.	<p>Physics: Mechanics of Fluids: Broad Concept: All objects experience a buoyant force when immersed in a fluid. As a basis for understanding this concept, students:</p>

PERFORMANCE STANDARD/ESSENTIAL SKILL	P.4.3.	Identify that the pressure in an incompressible fluid (e.g., water) is a function of density; depth; and gravitational acceleration. <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.P.5.	Physics: Heat and Thermodynamics: Broad Concept: Energy cannot be created or destroyed; however, in many processes energy is transformed into the microscopic form called heat energy, that is, the energy of the disordered motion of atoms. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.5.5.	Describe how in everyday practice, temperature is measured with a thermometer, a device containing a part that has a thermometric parameter (a quantity that changes with temperature). <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.E.1.	Environmental Science: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.1.	Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems. <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.3.	Recognize the cumulative nature of scientific evidence. <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.4.	Recognize the use and limitations of models and theories as scientific representations of reality. <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.6.	Plan and conduct scientific investigations to explore new phenomena, to check on previous results, to verify or falsify the prediction of a theory,

SKILL		<p>and to use a crucial experiment to discriminate between competing theories.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.7.	<p>Use hypotheses to choose what data to pay attention to and what additional data to seek, and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.11.	<p>Formulate and revise explanations using logic and evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.13.	<p>Apply mathematical relationships involving linear and quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.E.3.	<p>Environmental Science: Ecosystems: Broad Concept: Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.3.5.	<p>Know that organisms may interact in a competitive or cooperative relationship, such as producer/consumer, predator/prey, parasite/hosts, or as symbionts and explain how these interactions contribute to the stability of an ecosystem.</p> <ul style="list-style-type: none"> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.3.7.	<p>Explain how water, carbon, phosphorus and nitrogen cycle between abiotic resources and organic matter in an ecosystem and how oxygen cycles via photosynthesis and respiration. Diagram the cycling of carbon, nitrogen, phosphorus, and water in an ecosystem.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
PERFORMANCE	E.3.11.	<p>Describe how adaptations in physical structure or behavior may improve</p>

STANDARD/ESSENTIAL SKILL		<p>an organism's chance for survival and impact an ecosystem.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> </ul>
CONTENT STANDARD	DC.E.4.	Environmental Science: Populations: Broad Concept: The amount of life any environment can support is limited by the available energy, water, oxygen, and minerals, and by the ability of ecosystems to recycle organic materials from the remains of dead organisms. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.4.2.	<p>Demonstrate how resources, such as food supply, the availability of water, and shelter, influence populations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.4.3.	<p>Demonstrate and explain how fluctuations in population size and population growth rates are determined by such factors as birth rate, death rate, and migration rate.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.4.4.	<p>Describe the effect of overpopulation (i.e., resource depletion and potential elimination of species), the role of predators in maintaining ecosystem stability, and methods of population management.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.E.7.	Environmental Science: Energy in the Earth System: Broad Concept: Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.7.4.	<p>Describe how energy derived from the sun is used by green plants to produce chemical energy in the form of sugars (photosynthesis), and this energy is transferred along a food chain from producers (plants) to consumers to decomposers.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.7.5.	<p>Illustrate the flow of energy through various trophic levels of food chains and food webs within an ecosystem. Describe how each link in a food web stores some energy in newly made structures and how much of the energy is dissipated into the environment as heat. Understand that a continual input of energy from sunlight is needed to keep the process going.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> </ul>
CONTENT STANDARD	DC.E.8.	Environmental Science: Environmental Quality: Broad Concept: Environmental quality is linked to natural and human-induced hazards, and the ability of science and technology to meet local, national, and global challenges. As a basis for understanding this concept, students:

PERFORMANCE STANDARD/ESSENTIAL SKILL	E.8.3.	Describe the historical and current methods of water management and recycling, including the waste treatment practices of landfills, incineration, reuse/recycle and source reduction. <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
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**Grade 10**

CONTENT STANDARD	DC.ES.1.	Earth Science: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.1.	Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems. <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.3.	Recognize the cumulative nature of scientific evidence. <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.4.	Recognize the use and limitations of models and theories as scientific representations of reality. <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.7.	Use hypotheses to choose what data to pay attention to and what additional data to seek, and to guide the interpretation of the data. <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.10.	Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering

		<p>when appropriate.)</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	ES.1.13.	<p>Apply mathematical relationships involving proportionalities, linear relations, quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.B.1.	<p>Biology: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:</p>
PERFORMANCE	B.1.1.	<p>Know the elements of scientific methodology (identification of a problem,</p>

STANDARD/ESSENTIAL SKILL		<p>hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.3.	<p>Recognize the cumulative nature of scientific evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.4.	<p>Recognize the use and limitations of models and theories as scientific representations of reality.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.6.	<p>Plan and conduct scientific investigations to explore new phenomena, to check on previous results, to verify or falsify the prediction of a theory, and to use a crucial experiment to discriminate between competing theories.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.7.	<p>and what additional data to seek, and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a</li> </ul>

		Biochemical Test for Catalase
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.11.	<p>Formulate and revise explanations using logic and evidence.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> </ul>

PERFORMANCE STANDARD/ESSENTIAL SKILL	B.1.13.	<p>Apply mathematical relationships involving linear and quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.B.2.	Biology: Chemistry of Living Things: Broad Concept: Living things are made of atoms bonded together to form molecules, some of the most important of which are large and contain carbon (i.e., 'organic' compounds). As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.3.	<p>Describe the central role of carbon in the chemistry of living things because of its ability to combine in many ways with itself and other elements.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.4.	<p>Know that living things are made of molecules largely consisting of carbon, hydrogen, nitrogen, oxygen, phosphorus, and sulfur.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.6.	<p>Observe and explain the role of enzymatic catalysis in biochemical processes.</p> <ul style="list-style-type: none"> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.2.7.	<p>Explain the hierarchical organization of living things from least complex to most complex (subatomic, atomic, molecular, cellular, tissue, organs, organ system, organism, population, community, ecosystem, biosphere).</p> <ul style="list-style-type: none"> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
CONTENT STANDARD	DC.B.3.	Biology: Cell Biology: Broad Concept: All living things are composed of cells. All the fundamental life processes of a cell are either chemical reactions or molecular interactions. As a basis for understanding this

		concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.1.	<p>Compare and contrast the general anatomy and constituents of prokaryotic and eukaryotic cells and their distinguishing features: Prokaryotic cells do not have a nucleus and eukaryotic cells do. Know prokaryotic organisms are classified in the Monera Kingdom and that organisms in the other four kingdoms have eukaryotic cells.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.2.	<p>Understand the function of cellular organelles and how the organelles work together in cellular activities (e.g., enzyme secretion from the pancreas).</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>B.3.3.</p>	<p>Observe and describe that within the cell are specialized parts for the transport of materials, energy capture and release, waste disposal, and motion of the whole cell or of its parts.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cell Process: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>B.3.4.</p>	<p>Describe the organelles that plant and animal cells have in common (e.g., ribosomes, golgi bodies, endoplasmic reticulum) and some that differ (e.g., only plant cells have chloroplasts and cell walls).</p>

		<ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>
<p><b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b></p>	<p>B.3.5.</p>	<p>Demonstrate and explain that cell membranes act as highly selective permeable barriers to penetration of substances by diffusion or active transport.</p> <ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
<p><b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b></p>	<p>B.3.6.</p>	<p>Explain that some structures in the eukaryotic cell, such as mitochondria, and in plants, chloroplasts, have apparently evolved by endosymbiosis (one organism living inside another, to the advantage of both) with early prokaryotes.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.7.	<p>Describe that the work of the cell is carried out by structures made up of many different types of large (macro) molecules that it assembles, such as proteins, carbohydrates, lipids, and nucleic acids.</p> <ul style="list-style-type: none"> <li>Cell Process: Teacher Resource CD</li> <li>Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.8.	<p>Demonstrate that most cells function best within a narrow range of temperature and pH; extreme changes usually harm cells, by modifying the structure of their macromolecules and, therefore, some of their functions.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resoruce CD</li> <li>Cell Process: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.9.	<p>Explain that a complex network of proteins provides organization and shape to cells.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resoruce CD</li> </ul>

		<ul style="list-style-type: none"> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>B.3.10.</p>	<p>Explain that complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Process: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at</li> </ul>

		<p>Catalase</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.11.	<p>Describe that all growth and development of organisms is a consequence of an increase in cell number, size, and/or products.</p> <ul style="list-style-type: none"> <li>Cell Growth: Teacher Resource CD</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.13.	<p>Explain why communication and/or interaction are required between cells to coordinate their diverse activities.</p> <ul style="list-style-type: none"> <li>Cell Process: Teacher Resource CD</li> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.14.	<p>Recognize and describe that cellular respiration is important for the production of ATP, which is the basic energy source for cell metabolism.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.15.	<p>Differentiate between the functions of mitosis and meiosis: Mitosis is a process by which a cell divides into each of two daughter cells, each of which has the same number of chromosomes as the original cell. Meiosis is a process of cell division in organisms that reproduce sexually, during which the nucleus divides eventually into four nuclei, each of which contains half the usual number of chromosomes.</p>

		<ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.3.17.	<p>Describe that all organisms begin their life cycles as a single cell, and in multicellular organisms the products of mitosis of the original zygote form the embryonic body.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.B.4.	<p><b>Biology: Genetics: Broad Concept: Genes are a set of instructions encoded in the DNA sequence of each organism that specify the sequence of amino acids in proteins characteristic of that organism. As a basis for understanding this concept, students:</b></p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.2.	<p>Describe how the discovery of the structure of DNA by James D. Watson, Francis Crick made it possible to interpret the genetic code on the basis of a nucleotide sequence. Know the important contribution of Rosalind Franklin's data to this discovery, i.e., the careful X-ray crystallography on DNA that provided Watson and Crick the clue they needed to build the correct structure.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.3.	<p>Explain how hereditary information is passed from parents to offspring in the form of 'genes' which are long stretches of DNA consisting of sequences of nucleotides. Explain that in eukaryotes, the genes are contained in chromosomes, which are bodies made up of DNA and various proteins.</p> <ul style="list-style-type: none"> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>

PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.4.	<p>Know every species has its own characteristic DNA sequence.</p> <ul style="list-style-type: none"> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.8.	<p>Explain the mechanisms of genetic mutations and chromosomal recombinations, and when and how they are passed on to offspring.</p> <ul style="list-style-type: none"> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Structure and Function: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.9.	<p>Understand and explain that specialization of cells is almost always due to different patterns of gene expression rather than differences in the genes themselves.</p> <ul style="list-style-type: none"> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.10.	<p>Explain how the sorting and recombination of genes in sexual reproduction result in a vast variety of potential allele combinations in the offspring of any two parents.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	B.4.12.	<p>Explain how the actions of genes, patterns of inheritance, and the reproduction of cells and organisms account for the continuity of life.</p> <ul style="list-style-type: none"> <li>• Cell Growth: Teacher Resource CD</li> <li>• Cell Reproduction and the Cell Cycle: Teacher Resource CD</li> <li>• Cell Types and Organization: Teacher Resource CD</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
<b>CONTENT STANDARD</b>	<b>DC.B.6.</b>	<b>Biology: Plant Biology: Broad Concept: Plants are essential to animal life on Earth. As a basis for understanding this concept, students:</b>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>B.6.1.</b>	Describe the structure and function of roots, leaves, flowers, and stems of plants. <ul style="list-style-type: none"> <li>Cell Types and Organization: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>B.6.3.</b>	Know that about 250,000 species of flowering plants have been identified. <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>B.6.4.</b>	Explain the photosynthesis process: Plants make food in their leaves and chlorophyll found in the leaves can make food the plant can use from carbon dioxide, water, nutrients, and energy from sunlight. <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>B.6.5.</b>	Explain that during the process of photosynthesis, plants release oxygen into the air. <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>B.6.7.</b>	Recognize that plants have a greater problem with 'unpredictable environments' because they cannot seek shelter as many animals can. <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> </ul>
<b>CONTENT STANDARD</b>	<b>DC.B.8.</b>	<b>Biology: Ecosystems: Broad Concept: Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept, students:</b>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>B.8.2.</b>	Describe how factors in an ecosystem, such as the availability of energy, water, oxygen, and minerals and the ability to recycle the residue of dead organic materials, cause fluctuations in population sizes. <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>B.8.3.</b>	Explore and explain how changes in population size have an impact on the ecological balance of a community and how to analyze the effects.

		<ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
<b>CONTENT STANDARD</b>	<b>DC.C.1.</b>	<b>Chemistry: Scientific Investigation and Inquiry: Broad Concept:</b> Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>C.1.1.</b>	<p>Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>C.1.3.</b>	<p>Recognize the cumulative nature of scientific evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>C.1.4.</b>	<p>Recognize the use and limitations of models and theories as scientific representations of reality.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>C.1.7.</b>	<p>Use hypotheses to choose what data to pay attention to and what additional data to seek, and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>C.1.10.</b>	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.1.13.	<p>Apply mathematical relationships involving linear and quadratic equations, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.C.2.	<p>Chemistry: Properties of Matter: Broad Concept: Physical and chemical properties can be used to classify and describe matter. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.2.1.	<p>Investigate and classify properties of matter, including density, melting point, boiling point, and solubility.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.2.2.	<p>Determine the definitions of and use properties such as mass, volume, temperature, density, melting point, boiling point, conductivity, solubility, and color to differentiate between types of matter.</p>

		<ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.2.6.	<p>Write equations that describe chemical changes and reactions.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> </ul>
CONTENT STANDARD	DC.C.8.	Chemistry: Conservation of Matter: Broad Concept: The microscopic conservation of atoms in chemical reactions implies the macroscopic principle of conservation of matter and the ability to calculate the mass of products and reactants. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.8.2.	<p>Describe chemical reactions by writing balanced chemical equations and balancing redox equations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.8.7.	<p>Convert the mass of a molecular substance to moles, number of particles, or volume of gas at standard temperature and pressure.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.8.11.	<p>Describe the effect of changes in reactant concentration, changes in temperature, the surface area of solids, and the presence of catalysts on reaction rates.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.C.10.	Chemistry: Chemical Equilibrium: Broad Concept: Chemical equilibrium is a dynamic process at the molecular level. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.10.2.	<p>Describe the factors that affect the rate of a chemical reaction (temperature, concentration) and the factors that can cause a shift in equilibrium (concentration, pressure, volume, temperature).</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.10.3.	<p>Explain why rates of reaction are dependent on the frequency of collision, energy of collisions, and orientation of colliding molecules.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.10.4.	<p>Observe and describe the role of activation energy and catalysts in a chemical reaction.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.C.11.	Chemistry: Solutions: Broad Concept: Solutions are mixtures of two or more substances that are homogeneous on the molecular level. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.11.4.	<p>Calculate the concentration units of solutions such as molarity, percent by mass or volume, parts per million (ppm), or parts per billion (ppb).</p> <ul style="list-style-type: none"> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
CONTENT STANDARD	DC.C.13.	Chemistry: Organic and Biochemistry: Broad Concept: The bonding characteristics of carbon lead to the possibility of many different molecules of many sizes, shapes, and chemical properties. This provides the biochemical basis of life. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	C.13.2.	<p>Describe how large molecules (polymers) such as proteins, nucleic acids, and starch are formed by repetitive combinations of simple subunits (monomers).</p> <ul style="list-style-type: none"> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> </ul>
CONTENT STANDARD	DC.P.1.	Physics: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.1.	<p>Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>

PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.3.	<p>Recognize the cumulative nature of scientific evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.4.	<p>Recognize the use and limitations of models and theories as scientific representations of reality.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.7.	<p>Use hypotheses to choose what data to pay attention to and what additional data to seek and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell</li> </ul>

		<p>Cycle in Onion Roots</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>Why Cells Aren't Big: Virtual Lab</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.1.13.	<p>Apply mathematical relationships involving linear and quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
CONTENT STANDARD	DC.P.4.	<p>Physics: Mechanics of Fluids: Broad Concept: All objects experience a buoyant force when immersed in a fluid. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.4.3.	<p>Identify that the pressure in an incompressible fluid (e.g., water) is a function of density; depth; and gravitational acceleration.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.P.5.	<p>Physics: Heat and Thermodynamics: Broad Concept: Energy cannot be created or destroyed; however, in many processes energy is transformed into the microscopic form called heat energy, that is, the energy of the disordered motion of atoms. As a basis for understanding this concept, students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	P.5.5.	<p>Describe how in everyday practice, temperature is measured with a thermometer, a device containing a part that has a thermometric parameter (a quantity that changes with temperature).</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
CONTENT STANDARD	DC.E.1.	<p>Environmental Science: Scientific Investigation and Inquiry: Broad Concept: Scientific progress is made by asking relevant questions and conducting careful investigations. As a basis for understanding this concept, and to address the content in this grade, students should develop their own questions and perform investigations. Students:</p>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.1.	<p>Know the elements of scientific methodology (identification of a problem, hypothesis formulation and prediction, performance of experimental tests, analysis of data, falsification, developing conclusions, reporting results) and be able to use a sequence of those elements to solve a problem or test a hypothesis. Also understand the limitations of any single scientific method (sequence of elements) in solving problems.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell</li> </ul>

		<p>Cycle in Onion Roots</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.3.	<p>Recognize the cumulative nature of scientific evidence.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.4.	<p>Recognize the use and limitations of models and theories as scientific representations of reality.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.6.	<p>Plan and conduct scientific investigations to explore new phenomena, to check on previous results, to verify or falsify the prediction of a theory, and to use a crucial experiment to discriminate between competing theories.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.7.	<p>Use hypotheses to choose what data to pay attention to and what additional data to seek, and to guide the interpretation of the data.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.1.10.	<p>Select and use appropriate tools and technology to perform tests, collect data, analyze relationships, and display data. (The focus is on manual graphing, interpreting graphs, and mastery of metric measurements and units, with supplementary use of computers and electronic data gathering when appropriate.)</p>

		<ul style="list-style-type: none"> <li>• Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types</li> <li>• Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization</li> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> <li>• Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells</li> <li>• Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots</li> <li>• Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis</li> <li>• Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization</li> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> <li>• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> <li>• Why Cells Aren't Big: Virtual Lab</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>E.1.11.</p>	<p>Formulate and revise explanations using logic and evidence.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles</li> <li>• Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells</li> <li>• Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria</li> <li>• Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function</li> </ul>
<p>PERFORMANCE STANDARD/ESSENTIAL SKILL</p>	<p>E.1.13.</p>	<p>Apply mathematical relationships involving linear and quadratic equations, simple trigonometric relationships, exponential growth and decay laws, and logarithmic relationships to scientific situations.</p> <ul style="list-style-type: none"> <li>• Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>

		<ul style="list-style-type: none"> <li>Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase</li> </ul>
<b>CONTENT STANDARD</b>	<b>DC.E.3.</b>	<b>Environmental Science: Ecosystems: Broad Concept: Stability in an ecosystem is a balance between competing effects. As a basis for understanding this concept, students:</b>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>E.3.5.</b>	<p>Know that organisms may interact in a competitive or cooperative relationship, such as producer/consumer, predator/prey, parasite/hosts, or as symbionts and explain how these interactions contribute to the stability of an ecosystem.</p> <ul style="list-style-type: none"> <li>Cell Structure and Function: Teacher Resource CD</li> <li>Cells and Energy: Teacher Resource CD</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>E.3.7.</b>	<p>Explain how water, carbon, phosphorus and nitrogen cycle between abiotic resources and organic matter in an ecosystem and how oxygen cycles via photosynthesis and respiration. Diagram the cycling of carbon, nitrogen, phosphorus, and water in an ecosystem.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> <li>Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>E.3.11.</b>	<p>Describe how adaptations in physical structure or behavior may improve an organism's chance for survival and impact an ecosystem.</p> <ul style="list-style-type: none"> <li>Cells and Energy: Teacher Resource CD</li> </ul>
<b>CONTENT STANDARD</b>	<b>DC.E.4.</b>	<b>Environmental Science: Populations: Broad Concept: The amount of life any environment can support is limited by the available energy, water, oxygen, and minerals, and by the ability of ecosystems to recycle organic materials from the remains of dead organisms. As a basis for understanding this concept, students:</b>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>E.4.2.</b>	<p>Demonstrate how resources, such as food supply, the availability of water, and shelter, influence populations.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>E.4.3.</b>	<p>Demonstrate and explain how fluctuations in population size and population growth rates are determined by such factors as birth rate, death rate, and migration rate.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>
<b>PERFORMANCE STANDARD/ESSENTIAL SKILL</b>	<b>E.4.4.</b>	<p>Describe the effect of overpopulation (i.e., resource depletion and potential elimination of species), the role of predators in maintaining ecosystem stability, and methods of population management.</p> <ul style="list-style-type: none"> <li>Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>

CONTENT STANDARD	DC.E.7.	Environmental Science: Energy in the Earth System: Broad Concept: Energy and matter have multiple forms and can be changed from one form to another. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.7.4.	Describe how energy derived from the sun is used by green plants to produce chemical energy in the form of sugars (photosynthesis), and this energy is transferred along a food chain from producers (plants) to consumers to decomposers. <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> <li>• Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling</li> <li>• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments</li> </ul>
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.7.5.	Illustrate the flow of energy through various trophic levels of food chains and food webs within an ecosystem. Describe how each link in a food web stores some energy in newly made structures and how much of the energy is dissipated into the environment as heat. Understand that a continual input of energy from sunlight is needed to keep the process going. <ul style="list-style-type: none"> <li>• Cells and Energy: Teacher Resource CD</li> </ul>
CONTENT STANDARD	DC.E.8.	Environmental Science: Environmental Quality: Broad Concept: Environmental quality is linked to natural and human-induced hazards, and the ability of science and technology to meet local, national, and global challenges. As a basis for understanding this concept, students:
PERFORMANCE STANDARD/ESSENTIAL SKILL	E.8.3.	Describe the historical and current methods of water management and recycling, including the waste treatment practices of landfills, incineration, reuse/recycle and source reduction. <ul style="list-style-type: none"> <li>• Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots</li> <li>• Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves</li> </ul>