

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

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Arizona Academic Standards
Science
Grade 7

STRAND	AZ.SC07-S1.	Inquiry Process
CONCEPT	SC07-S1C1.	Observations, Questions, and Hypotheses: Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C1-01.	<p>Formulate questions based on observations that lead to the development of a hypothesis (See M07-S2C1-01).</p> <ul style="list-style-type: none"> • Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase • Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY	SC07-S1C1-02.	Select appropriate resources for background information related to a question, for use in the design of a controlled investigation (See W07-S3C6-01, R07-S3C1-06, and R07-S3C2-

LEVEL		<p>03).</p> <ul style="list-style-type: none"> • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C1-03.	<p>Explain the role of a hypothesis in a scientific inquiry.</p> <ul style="list-style-type: none"> • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SC07-S1.	Inquiry Process
CONCEPT	SC07-S1C2.	Scientific Testing (Investigating and Modeling): Design and conduct controlled investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C2-01.	<p>Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.</p> <ul style="list-style-type: none"> • Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth

		<p>Curves</p> <ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C2-03.	<p>Conduct a controlled investigation, utilizing multiple trials, to test a hypothesis using scientific processes.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C2-04.	<p>Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and

		<p>Function</p> <ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SC07-S1.	Inquiry Process
CONCEPT	SC07-S1C3.	Analysis and Conclusions: Analyze and interpret data to explain correlations and results; formulate new questions.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C3-01.	<p>Analyze data obtained in a scientific investigation to identify trends. (See M07-S2C1-07 and M07-S2C1-08) .</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and

		<p>Fertilization</p> <ul style="list-style-type: none"> Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SC07-S1C3-03.</p>	<p>Analyze results of data collection in order to accept or reject the hypothesis.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SC07-S1C3-05.</p>	<p>Formulate a conclusion based on data analysis.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of

		<p>Mitochondria</p> <ul style="list-style-type: none"> Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SC07-S1C3-06.</p>	<p>Refine hypotheses based on results from investigations.</p> <ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SC07-S1C3-07.</p>	<p>Formulate new questions based on the results of a previous investigation.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in

		<p>Onion Roots</p> <ul style="list-style-type: none"> Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SC07-S1.	Inquiry Process
CONCEPT	SC07-S1C4.	Communication: Communicate results of investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C4-01.	<p>Choose an appropriate graphic representation for collected data: line graph; double bar graph; stem and leaf plot; histogram (See M07-S2C1-03).</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C4-02.	<p>Display data collected from a controlled investigation. (See M07-S2C1-03).</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C4-03.	<p>Communicate the results of an investigation with appropriate use of qualitative and quantitative information. (See W07-S3C2-01) .</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function

		<ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SC07-S1C4-04.</p>	<p>Write clear, step-by-step instructions for following procedures (without the use of personal pronouns) (See W07-S3C3-01) .</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves

		<ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S1C4-05.	<p>Communicate the results and conclusion of the investigation. (See W07-S3C6-02) .</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SC07-S2.	History and Nature of Science
CONCEPT	SC07-S2C1.	History of Science as a Human Endeavor: Identify individual, cultural, and technological contributions to scientific knowledge.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S2C1-01.	<p>Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Rachel Carson [scientist], supports Strand 4; Luis Alvarez [scientist] and Walter Alvarez [scientist], support Strand 6; Percival Lowell [scientist], supports Strand 6; Copernicus [scientist], supports Strand 6).</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S2C1-02.	Describe how a major milestone in science or technology has revolutionized the thinking of the time (e.g., global positioning system, telescopes, seismographs, photography).

		<ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S2C1-03.	<p>Analyze the impact of a major scientific development occurring within the past decade.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S2C1-04.	<p>Analyze the use of technology in science-related careers.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
STRAND	AZ.SC07-S2.	History and Nature of Science
CONCEPT	SC07-S2C2.	Nature of Scientific Knowledge Understand how science is a process for generating knowledge.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S2C2-01.	<p>Describe how science is an ongoing process that changes in response to new information and discoveries.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S2C2-02.	<p>Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S2C2-03.	<p>Apply the following scientific processes to other problem solving or decision making situations: Observing; questioning; communicating; comparing; measuring; classifying; predicting; organizing data; inferring; generating hypotheses; identifying variables.</p> <ul style="list-style-type: none"> Cell Process: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots

		<ul style="list-style-type: none"> Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SC07-S4.	Life Science
CONCEPT	SC07-S4C3.	Populations of Organisms in an Ecosystem: Analyze the relationships among various organisms and their environment.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S4C3-04.	Evaluate data related to problems associated with population growth (e.g., overgrazing, forest management, invasion of non-native species) and the possible solutions. <ul style="list-style-type: none"> Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC07-S4C3-06.	Create a model of the interactions of living organisms within an ecosystem. <ul style="list-style-type: none"> Cell Structure and Function: Teacher Resource CD

Grade 8

STRAND	AZ.SC08-S1.	Inquiry Process
CONCEPT	SC08-S1C1.	Observations, Questions, and Hypotheses: Formulate predictions, questions, or hypotheses based on observations. Locate appropriate resources.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C1-01.	Formulate questions based on observations that lead to the development of a hypothesis. (See M08-S2C1-01). <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in

		<p>Onion Roots</p> <ul style="list-style-type: none"> Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C1-03.	<p>Generate a hypothesis that can be tested.</p> <ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SC08-S1.	Inquiry Process
CONCEPT	SC08-S1C2.	Scientific Testing (Investigating and Modeling): Design and conduct controlled investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C2-01.	<p>Demonstrate safe behavior and appropriate procedures (e.g., use and care of technology, materials, organisms) in all science inquiry.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase

		<ul style="list-style-type: none"> Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C2-02.	<p>Design a controlled investigation to support or reject a hypothesis.</p> <ul style="list-style-type: none"> Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C2-03.	<p>Conduct a controlled investigation to support or reject a hypothesis.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab

PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C2-04.	<p>Perform measurements using appropriate scientific tools (e.g., balances, microscopes, probes, micrometers).</p> <ul style="list-style-type: none"> • Cell Types and Organization: Teacher Resource CD • Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase • Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SC08-S1.	Inquiry Process
CONCEPT	SC08-S1C3.	Analysis and Conclusions: Analyze and interpret data to explain correlations and results; formulate new questions.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C3-01.	<p>Analyze data obtained in a scientific investigation to identify trends. (See M08-S2C1-08).</p> <ul style="list-style-type: none"> • Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells

		<ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C3-03.	<p>Interpret data that show a variety of possible relationships between two variables, including: positive relationship; negative relationship; no relationship.</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C3-04.	<p>Formulate a future investigation based on the data collected.</p> <ul style="list-style-type: none"> Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C3-08.	<p>Formulate new questions based on the results of a previous investigation.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles

		<ul style="list-style-type: none"> Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SC08-S1.	Inquiry Process
CONCEPT	SC08-S1C4.	Communication: Communicate results of investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C4-01.	<p>Communicate the results of an investigation.</p> <ul style="list-style-type: none"> Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis

		<ul style="list-style-type: none"> Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C4-02.	<p>Choose an appropriate graphic representation for collected data: line graph; double bar graph; stem and leaf plot; histogram (See M08-S2C1-03).</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C4-03.	<p>Present analyses and conclusions in clear, concise formats (See W08-S3C6-02).</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C4-04.	<p>Write clear, step-by-step instructions for conducting investigations or operating equipment (without the use of personal pronouns) (See W08-S3C3-01).</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant

		<p>Pigments</p> <ul style="list-style-type: none"> Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S1C4-05.	<p>Communicate the results and conclusion of the investigation. (See W08-S3C6-02).</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SC08-S2.	History and Nature of Science
CONCEPT	SC08-S2C1.	History of Science as a Human Endeavor: Identify individual, cultural, and technological contributions to scientific knowledge.

PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S2C1-01.	<p>Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations (e.g., Watson and Crick [scientists], support Strand 4; Rosalind Franklin [scientist], supports Strand 4; Charles Darwin [scientist], supports Strand 4; George Washington Carver [scientist, inventor], supports Strand 4; Joseph Priestley [scientist], supports Strand 5; Sir Frances Bacon [philosopher], supports Strand 5; Isaac Newton [scientist], supports Strand 5).</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S2C1-03.	<p>Evaluate the impact of a major scientific development occurring within the past decade.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
STRAND	AZ.SC08-S2.	History and Nature of Science
CONCEPT	SC08-S2C2.	Nature of Scientific Knowledge: Understand how science is a process for generating knowledge.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S2C2-01.	<p>Apply the following scientific processes to other problem solving or decision making situations: Observing; questioning; communicating; comparing; measuring; classifying; predicting; organizing data; inferring; generating hypotheses; identifying variables.</p> <ul style="list-style-type: none"> Cell Process: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase

		<ul style="list-style-type: none"> Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S2C2-02.	<p>Describe how scientific knowledge is subject to change as new information and/or technology challenges prevailing theories.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S2C2-03.	<p>Defend the principle that accurate record keeping, openness, and replication are essential for maintaining an investigator's credibility with other scientists and society.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization
STRAND	AZ.SC08-S4.	Life Science
CONCEPT	SC08-S4C2.	Reproduction and Heredity: Understand the basic principles of heredity.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S4C2-01.	<p>Explain the purposes of cell division: growth and repair; reproduction.</p> <ul style="list-style-type: none"> Cell Growth: Teacher Resource CD Cell Reproduction and the Cell Cycle: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves
STRAND	AZ.SC08-S4.	Life Science
CONCEPT	SC08-S4C4.	Diversity, Adaptation, and Behavior: Identify structural and behavioral adaptations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S4C4-01.	<p>Explain how an organism's behavior allows it to survive in an environment.</p> <ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth

		<p>Curves</p> <ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S4C4-02.	<p>Describe how an organism can maintain a stable internal environment while living in a constantly changing external environment.</p> <ul style="list-style-type: none"> Cell Growth: Teacher Resource CD Cell Process: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S4C4-03.	<p>Determine characteristics of organisms that could change over several generations.</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S4C4-04.	<p>Compare the symbiotic and competitive relationships in organisms within an ecosystem (e.g., lichen, mistletoe/tree, clownfish/sea anemone, native/non-native species).</p> <ul style="list-style-type: none"> Cell Structure and Function: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S4C4-06.	<p>Describe the following factors that allow for the survival of living organisms: protective coloration; beak design; seed dispersal; pollination.</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD
STRAND	AZ.SC08-S5.	Physical Science
CONCEPT	SC08-S5C1.	Properties and Changes of Properties in Matter: Understand physical and chemical properties of matter.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S5C1-02.	<p>Identify different kinds of matter based on the following chemical properties: Reactivity; pH; oxidation (corrosion).</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S5C1-03.	<p>Identify the following types of evidence that a chemical reaction has occurred: formation of a precipitate; generation of gas; color change; absorption or release of heat.</p>

		<ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S5C1-04.	Classify matter in terms of elements, compounds, or mixtures. <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SC08-S5C1-05.	Classify mixtures as being homogeneous or heterogeneous. <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments

Grade 9

STRAND	AZ.SCHS-S1.	Inquiry Process
CONCEPT	SCHS-S1C1.	Observations, Questions, and Hypotheses: Formulate predictions, questions, or hypotheses based on observations. Evaluate appropriate resources.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C1-02.	Develop questions from observations that transition into testable hypotheses. <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical

		<p>Test for Catalase</p> <ul style="list-style-type: none"> Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C1-03.	<p>Formulate a testable hypothesis.</p> <ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C1-04.	<p>Predict the outcome of an investigation based on prior evidence, probability, and/or modeling (not guessing or inferring).</p> <ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S1.	Inquiry Process
CONCEPT	SCHS-S1C2.	Scientific Testing (Investigating and Modeling): Design and conduct controlled investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C2-01.	<p>Demonstrate safe and ethical procedures (e.g., use and care of technology, materials, organisms) and behavior in all science inquiry.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase

		<ul style="list-style-type: none"> Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C2-02.	<p>Identify the resources needed to conduct an investigation.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C2-03.	<p>Design an appropriate protocol (written plan of action) for testing a hypothesis: Identify dependent and independent variables in a controlled investigation. Determine an appropriate method for data collection (e.g., using balances, thermometers, microscopes, spectrophotometer, using qualitative changes). Determine an appropriate method for recording data (e.g., notes, sketches, photographs, videos, journals (logs), charts, computers/calculators).</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function

		<ul style="list-style-type: none"> • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase • Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SCHS-S1C2-04.</p>	<p>Conduct a scientific investigation that is based on a research design.</p> <ul style="list-style-type: none"> • Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical

		<p>Test for Catalase</p> <ul style="list-style-type: none"> Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C2-05.	<p>Record observations, notes, sketches, questions, and ideas using tools such as journals, charts, graphs, and computers. .</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SCHS-S1.	Inquiry Process
CONCEPT	SCHS-S1C3.	Analysis, Conclusions, and Refinements: Evaluate experimental design, analyze data to explain results and propose further investigations. Design models.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C3-01.	<p>Interpret data that show a variety of possible relationships between variables, including: positive relationship; negative relationship; no relationship.</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase

<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SCHS-S1C3-02.</p>	<p>Evaluate whether investigational data support or do not support the proposed hypothesis.</p> <ul style="list-style-type: none"> • Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase • Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SCHS-S1C3-04.</p>	<p>Evaluate the design of an investigation to identify possible sources of procedural error, including: sample size; trials; controls; analyses.</p> <ul style="list-style-type: none"> • Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling

		<ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SCHS-S1C3-07.</p>	<p>Propose further investigations based on the findings of a conducted investigation.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>STRAND</p>	<p>AZ.SCHS-S1.</p>	<p>Inquiry Process</p>

CONCEPT	SCHS-S1C4.	Communication: Communicate results of investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C4-01.	<p>For a specific investigation, choose an appropriate method for communicating the results. (See W09-S3C2-01 and W10-S3C3-01).</p> <ul style="list-style-type: none"> • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C4-02.	<p>Produce graphs that communicate data. (See MHS-S2C1-02).</p> <ul style="list-style-type: none"> • Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves • Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C4-03.	<p>Communicate results clearly and logically. .</p> <ul style="list-style-type: none"> • Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria • Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function • Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells

		<ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S2.	History and Nature of Science
CONCEPT	SCHS-S2C1.	History of Science as a Human Endeavor: Identify individual, cultural, and technological contributions to scientific knowledge.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C1-02.	Describe how diverse people and/or cultures, past and present, have made important contributions to scientific innovations. <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C1-03.	Analyze how specific changes in science have affected society. . <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C1-04.	Analyze how specific cultural and/or societal issues promote or hinder scientific advancements. <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
STRAND	AZ.SCHS-S2.	History and Nature of Science
CONCEPT	SCHS-S2C2.	Nature of Scientific Knowledge: Understand how science is a process for generating knowledge.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C2-01.	Specify the requirements of a valid, scientific explanation (theory), including that it be logical; subject to peer review; public; respectful of rules of evidence. <ul style="list-style-type: none"> Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C2-02.	Explain the process by which accepted ideas are challenged or extended by scientific innovation.

		<ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C1.	The Cell: Understand the role of the cell and cellular processes.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-01.	<p>Describe the role of energy in cellular growth, development, and repair.</p> <ul style="list-style-type: none"> Cell Growth: Teacher Resource CD Cell Process: Teacher Resource CD Cell Reproduction and the Cell Cycle: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cells and Energy: Teacher Resource CD Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-02.	<p>Compare the form and function of prokaryotic and eukaryotic cells and their cellular components.</p> <ul style="list-style-type: none"> Cell Process: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical

		Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-03.	<p>Explain the importance of water to cells.</p> <ul style="list-style-type: none"> • Cell Process: Teacher Resource CD • Cell Structure and Function: Teacher Resource CD • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-04.	<p>Analyze mechanisms of transport of materials (e.g., water, ions, macromolecules) into and out of cells: passive transport; active transport.</p> <ul style="list-style-type: none"> • Cell Process: Teacher Resource CD • Cell Structure and Function: Teacher Resource CD • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells • Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-05.	<p>Describe the purposes and processes of cellular reproduction.</p> <ul style="list-style-type: none"> • Cell Growth: Teacher Resource CD • Cell Reproduction and the Cell Cycle: Teacher Resource CD • Cell Types and Organization: Teacher Resource CD • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C2.	Molecular Basis of Heredity: Understand the molecular basis of heredity and resulting genetic diversity.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C2-01.	<p>Analyze the relationships among nucleic acids (DNA, RNA), genes, and chromosomes.</p> <ul style="list-style-type: none"> • Cell Reproduction and the Cell Cycle: Teacher Resource CD • Cell Structure and Function: Teacher Resource CD • Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization • Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization
PERFORMANCE OBJECTIVE /	SCHS-S4C2-02.	Describe the molecular basis of heredity, in viruses and living things, including DNA

PROFICIENCY LEVEL		<p>replication and protein synthesis.</p> <ul style="list-style-type: none"> • Cell Growth: Teacher Resource CD • Cell Reproduction and the Cell Cycle: Teacher Resource CD • Cell Types and Organization: Teacher Resource CD • Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots • Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C2-04.	<p>Describe how meiosis and fertilization maintain genetic variation.</p> <ul style="list-style-type: none"> • Cell Reproduction and the Cell Cycle: Teacher Resource CD • Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C3.	Interdependence of Organisms: Analyze the relationships among various organisms and their environment.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C3-01.	<p>Identify the relationships among organisms within populations, communities, ecosystems, and biomes.</p> <ul style="list-style-type: none"> • Cell Structure and Function: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C3-03.	<p>Assess how the size and the rate of growth of a population are determined by birth rate, death rate, immigration, emigration, and carrying capacity of the environment.</p> <ul style="list-style-type: none"> • Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C4.	Biological Evolution: Understand the scientific principles and processes involved in biological evolution.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C4-02.	<p>Explain how genotypic and phenotypic variation can result in adaptations that influence an organism's success in an environment.</p> <ul style="list-style-type: none"> • Cells and Energy: Teacher Resource CD
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C5.	Matter, Energy, and Organization in Living Systems (Including Human Systems): Understand the organization of living systems, and the role of energy within those systems.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-01.	<p>Compare the processes of photosynthesis and cellular respiration in terms of energy flow, reactants, and products.</p> <ul style="list-style-type: none"> • Cells and Energy: Teacher Resource CD • Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling • Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments

PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-02.	Describe the role of organic and inorganic chemicals (e.g., carbohydrates, proteins, lipids, nucleic acids, water, ATP) important to living things. <ul style="list-style-type: none"> Cell Structure and Function: Teacher Resource CD Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-03.	Diagram the following biogeochemical cycles in an ecosystem: Water; carbon; nitrogen. <ul style="list-style-type: none"> Cell Reproduction and the Cell Cycle: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-05.	Describe the levels of organization of living things from cells, through tissues, organs, organ systems, organisms, populations, and communities to ecosystems. <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C1.	Structure and Properties of Matter: Understand physical, chemical, and atomic properties of matter.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C1-04.	Separate mixtures of substances based on their physical properties. <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C2.	Motions and Forces: Analyze relationships between forces and motion.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C2-01.	Determine the rate of change of a quantity (e.g., rate of erosion, rate of reaction, rate of growth, velocity). <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C4.	Chemical Reactions: Investigate relationships between reactants and products in chemical reactions.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-02.	Identify the indicators of chemical change, including formation of a precipitate, evolution of a gas, color change, absorption or release of heat energy. <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon

		<p>Cycling</p> <ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-03.	<p>Represent a chemical reaction by using a balanced equation.</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-09.	<p>Predict the products of a chemical reaction using types of reactions (e.g., synthesis, decomposition, replacement, combustion).</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-11.	<p>Predict the effect of various factors (e.g., temperature, concentration, pressure, catalyst) on the equilibrium state and on the rates of chemical reaction.</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C5.	Interactions of Energy and Matter: Understand the interactions of energy and matter.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C5-01.	<p>Describe various ways in which matter and energy interact (e.g., photosynthesis, phase change).</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase

Grade 10

STRAND	AZ.SCHS-S1.	Inquiry Process
CONCEPT	SCHS-S1C1.	Observations, Questions, and Hypotheses: Formulate predictions, questions, or hypotheses based on observations. Evaluate appropriate resources.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C1-02.	<p>Develop questions from observations that transition into testable hypotheses.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function

		<ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C1-03.	<p>Formulate a testable hypothesis.</p> <ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C1-04.	<p>Predict the outcome of an investigation based on prior evidence, probability, and/or modeling (not guessing or inferring).</p> <ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S1.	Inquiry Process
CONCEPT	SCHS-S1C2.	Scientific Testing (Investigating and Modeling): Design and conduct controlled investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C2-01.	<p>Demonstrate safe and ethical procedures (e.g., use and care of technology, materials, organisms) and behavior in all science inquiry.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in

		<p>Model Cells</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SCHS-S1C2-02.</p>	<p>Identify the resources needed to conduct an investigation.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase

		<ul style="list-style-type: none"> Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C2-03.	<p>Design an appropriate protocol (written plan of action) for testing a hypothesis: Identify dependent and independent variables in a controlled investigation. Determine an appropriate method for data collection (e.g., using balances, thermometers, microscopes, spectrophotometer, using qualitative changes). Determine an appropriate method for recording data (e.g., notes, sketches, photographs, videos, journals (logs), charts, computers/calculators).</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C2-04.	<p>Conduct a scientific investigation that is based on a research design.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function

		<ul style="list-style-type: none"> Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
<p>PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL</p>	<p>SCHS-S1C2-05.</p>	<p>Record observations, notes, sketches, questions, and ideas using tools such as journals, charts, graphs, and computers. .</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves

		<ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SCHS-S1.	Inquiry Process
CONCEPT	SCHS-S1C3.	Analysis, Conclusions, and Refinements: Evaluate experimental design, analyze data to explain results and propose further investigations. Design models.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C3-01.	<p>Interpret data that show a variety of possible relationships between variables, including: positive relationship; negative relationship; no relationship.</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C3-02.	<p>Evaluate whether investigational data support or do not support the proposed hypothesis.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase

		<ul style="list-style-type: none"> Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C3-04.	<p>Evaluate the design of an investigation to identify possible sources of procedural error, including: sample size; trials; controls; analyses.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C3-07.	<p>Propose further investigations based on the findings of a conducted investigation.</p> <ul style="list-style-type: none"> Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells

		<ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
STRAND	AZ.SCHS-S1.	Inquiry Process
CONCEPT	SCHS-S1C4.	Communication: Communicate results of investigations.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C4-01.	<p>For a specific investigation, choose an appropriate method for communicating the results. (See W09-S3C2-01 and W10-S3C3-01).</p> <ul style="list-style-type: none"> Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical

		Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C4-02.	<p>Produce graphs that communicate data. (See MHS-S2C1-02).</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S1C4-03.	<p>Communicate results clearly and logically. .</p> <ul style="list-style-type: none"> Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 2 Lab 2 Activity 3 Identification of Mitochondria Cellular World Unit 2 Lab 2 Activity 4 Plant Cell Structure and Function Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S2.	History and Nature of Science
CONCEPT	SCHS-S2C1.	History of Science as a Human Endeavor: Identify individual, cultural, and technological contributions to scientific knowledge.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C1-02.	<p>Describe how diverse people and/or cultures, past and present, have made important contributions to scientific innovations.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE /	SCHS-S2C1-03.	Analyze how specific changes in science have affected society. .

PROFICIENCY LEVEL		<ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C1-04.	<p>Analyze how specific cultural and/or societal issues promote or hinder scientific advancements.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
STRAND	AZ.SCHS-S2.	History and Nature of Science
CONCEPT	SCHS-S2C2.	Nature of Scientific Knowledge: Understand how science is a process for generating knowledge.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C2-01.	<p>Specify the requirements of a valid, scientific explanation (theory), including that it be logical; subject to peer review; public; respectful of rules of evidence.</p> <ul style="list-style-type: none"> Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S2C2-02.	<p>Explain the process by which accepted ideas are challenged or extended by scientific innovation.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C1.	The Cell: Understand the role of the cell and cellular processes.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-01.	<p>Describe the role of energy in cellular growth, development, and repair.</p> <ul style="list-style-type: none"> Cell Growth: Teacher Resource CD Cell Process: Teacher Resource CD Cell Reproduction and the Cell Cycle: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cells and Energy: Teacher Resource CD Cellular World Unit 3 Lab 3 Activity 1 Osmoregulation in Cells Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments Cellular World Unit 5 Lab 5 Activity 1 Growth and Preparation of Onion Roots Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves

		<ul style="list-style-type: none"> Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase Why Cells Aren't Big: Virtual Lab
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-02.	<p>Compare the form and function of prokaryotic and eukaryotic cells and their cellular components.</p> <ul style="list-style-type: none"> Cell Process: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 1 Comparison of Plant and Animal Cell Organelles Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-03.	<p>Explain the importance of water to cells.</p> <ul style="list-style-type: none"> Cell Process: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-04.	<p>Analyze mechanisms of transport of materials (e.g., water, ions, macromolecules) into and out of cells: passive transport; active transport.</p> <ul style="list-style-type: none"> Cell Process: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 3 Lab 3 Activity 2 Osmosis and Diffusion in Model Cells Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C1-05.	<p>Describe the purposes and processes of cellular reproduction.</p> <ul style="list-style-type: none"> Cell Growth: Teacher Resource CD Cell Reproduction and the Cell Cycle: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth

		Curves
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C2.	Molecular Basis of Heredity: Understand the molecular basis of heredity and resulting genetic diversity.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C2-01.	Analyze the relationships among nucleic acids (DNA, RNA), genes, and chromosomes. <ul style="list-style-type: none"> Cell Reproduction and the Cell Cycle: Teacher Resource CD Cell Structure and Function: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 2 Lab 2 Activity 2 Identification of DNA and RNA in Plant Cells Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C2-02.	Describe the molecular basis of heredity, in viruses and living things, including DNA replication and protein synthesis. <ul style="list-style-type: none"> Cell Growth: Teacher Resource CD Cell Reproduction and the Cell Cycle: Teacher Resource CD Cell Types and Organization: Teacher Resource CD Cellular World Unit 5 Lab 5 Activity 2 Observing the Cell Cycle in Onion Roots Cellular World Unit 5 Lab 5 Activity 3 Modeling Mitosis Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C2-04.	Describe how meiosis and fertilization maintain genetic variation. <ul style="list-style-type: none"> Cell Reproduction and the Cell Cycle: Teacher Resource CD Cellular World Unit 5 Lab 5 Activity 4 Modeling Meiosis and Fertilization
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C3.	Interdependence of Organisms: Analyze the relationships among various organisms and their environment.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C3-01.	Identify the relationships among organisms within populations, communities, ecosystems, and biomes. <ul style="list-style-type: none"> Cell Structure and Function: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C3-03.	Assess how the size and the rate of growth of a population are determined by birth rate, death rate, immigration, emigration, and carrying capacity of the environment. <ul style="list-style-type: none"> Cellular World Unit 6 Lab 6 Activity 2 Investigating Cell Growth Curves
STRAND	AZ.SCHS-	Life Science

	S4.	
CONCEPT	SCHS-S4C4.	Biological Evolution: Understand the scientific principles and processes involved in biological evolution.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C4-02.	<p>Explain how genotypic and phenotypic variation can result in adaptations that influence an organism's success in an environment.</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD
STRAND	AZ.SCHS-S4.	Life Science
CONCEPT	SCHS-S4C5.	Matter, Energy, and Organization in Living Systems (Including Human Systems): Understand the organization of living systems, and the role of energy within those systems.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-01.	<p>Compare the processes of photosynthesis and cellular respiration in terms of energy flow, reactants, and products.</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-02.	<p>Describe the role of organic and inorganic chemicals (e.g., carbohydrates, proteins, lipids, nucleic acids, water, ATP) important to living things.</p> <ul style="list-style-type: none"> Cell Structure and Function: Teacher Resource CD Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-03.	<p>Diagram the following biogeochemical cycles in an ecosystem: Water; carbon; nitrogen.</p> <ul style="list-style-type: none"> Cell Reproduction and the Cell Cycle: Teacher Resource CD
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S4C5-05.	<p>Describe the levels of organization of living things from cells, through tissues, organs, organ systems, organisms, populations, and communities to ecosystems.</p> <ul style="list-style-type: none"> Cell Types and Organization: Teacher Resource CD Cellular World Unit 1 Lab 1 Activity 1 Learning About Cell Types Cellular World Unit 1 Lab 1 Activity 2 Learning About Cell Organization Cellular World Unit 6 Lab 6 Activity 1 Understanding Why Cells Aren't Big
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C1.	Structure and Properties of Matter: Understand physical, chemical, and atomic properties of matter.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C1-04.	Separate mixtures of substances based on their physical properties.

		<ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C2.	Motions and Forces: Analyze relationships between forces and motion.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C2-01.	<p>Determine the rate of change of a quantity (e.g., rate of erosion, rate of reaction, rate of growth, velocity).</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C4.	Chemical Reactions: Investigate relationships between reactants and products in chemical reactions.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-02.	<p>Identify the indicators of chemical change, including formation of a precipitate, evolution of a gas, color change, absorption or release of heat energy.</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-03.	<p>Represent a chemical reaction by using a balanced equation.</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-09.	<p>Predict the products of a chemical reaction using types of reactions (e.g., synthesis, decomposition, replacement, combustion).</p> <ul style="list-style-type: none"> Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C4-11.	<p>Predict the effect of various factors (e.g., temperature, concentration, pressure, catalyst) on the equilibrium state and on the rates of chemical reaction.</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase
STRAND	AZ.SCHS-S5.	Physical Science
CONCEPT	SCHS-S5C5.	Interactions of Energy and Matter: Understand the interactions of energy and matter.
PERFORMANCE OBJECTIVE / PROFICIENCY LEVEL	SCHS-S5C5-01.	<p>Describe various ways in which matter and energy interact (e.g., photosynthesis, phase change).</p> <ul style="list-style-type: none"> Cells and Energy: Teacher Resource CD Cellular World Unit 4 Lab 4 Activity 1 Investigating Carbon Cycling Cellular World Unit 4 Lab 4 Activity 2 A Closer Look at Catalase

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| | | <ul style="list-style-type: none">• Cellular World Unit 4 Lab 4 Activity 3 Investigating Plant Pigments• Cellular World Unit 7 Lab 7 Activity 1 Developing a Biochemical Test for Catalase |
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