

Inquiry Investigations™
Genetics and Inheritance MODULE - 1282831
Grades: 7-10

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Michigan Curriculum Standards
Science
Grade 7

STRAND / STANDARD CATEGORY	MI.S.	Science Processes
STANDARD	S.IP.	Inquiry Process: Develop an understanding that scientific inquiry and reasoning involves observing, questioning, investigating, recording, and developing solutions to problems.
GRADE LEVEL EXPECTATION	S.IP.M.1.	Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.
EXPECTATION	S.IP.07.11.	<p>Generate scientific questions based on observations, investigations, and research.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
EXPECTATION	S.IP.07.12.	<p>Design and conduct scientific investigations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment

EXPECTATION	S.IP.07.13.	<p>Use tools and equipment (spring scales, stop watches, meter sticks and tapes, models, hand lens, thermometer, models, sieves, microscopes, hot plates, pH meters) appropriate to scientific investigations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
EXPECTATION	S.IP.07.16.	<p>Identify patterns in data.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling

		<p>DNA Replication</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.S.	Science Processes
STANDARD	S.IA.	Inquiry Analysis and Communication: Develop an understanding that scientific inquiry and investigations require analysis and communication of findings, using appropriate technology.
GRADE LEVEL EXPECTATION	S.IA.M.1.	Inquiry includes an analysis and presentation of findings that lead to future questions, research, and investigations.
EXPECTATION	S.IA.07.12.	Evaluate data, claims, and personal knowledge through collaborative science

		<p>discourse.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>EXPECTATION</p>	<p>S.IA.17.13.</p>	<p>Communicate and defend findings of observations and investigations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring

		<p>DNA's Structure - the Double Helix</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>EXPECTATION</p>	<p>S.IA.07.14.</p>	<p>Draw conclusions from sets of data from multiple trials of a scientific investigation to draw conclusions.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a

		<p>Genetic Cross to Demonstrate the Law of Incomplete Dominance</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>EXPECTATION</p>	<p>S.IA.07.15.</p>	<p>Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments, or data.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating

		<p>Meiosis and Fertilization</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.S.	Science Processes
STANDARD	S.RS.	Reflection and Social Implications: Develop an understanding that claims and evidence for their scientific merit should be analyzed. Understand how scientists decide what constitutes scientific knowledge. Develop an understanding of the importance of reflection on scientific knowledge and its application to new situations to better understand the role of science in society and technology.
GRADE LEVEL EXPECTATION	S.RS.M.1.	Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision-making and the application of science throughout history and within society.
EXPECTATION	S.RS.07.11.	<p>Evaluate the strengths and weaknesses of claims, arguments, and data.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete

		<p>Dominance</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>EXPECTATION</p>	<p>S.RS.07.15.</p>	<p>Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
EXPECTATION	S.RS.07.19.	<p>Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.P.	Physical Science
STANDARD	P.PM.	Properties of Matter: Develop an understanding that all matter has observable attributes with physical and chemical properties that are described, measured, and compared. Understand that states of matter exist as solid, liquid, or gas; and have physical and chemical properties. Understand all matter is composed of combinations of elements, which are organized by common attributes and characteristics on the Periodic Table. Understand that substances can be classified as mixtures or compounds and according to their physical and chemical properties.
GRADE LEVEL EXPECTATION	P.PM.M.2.	Elements and Compounds- Elements are composed of a single kind of atom that are grouped into families with similar properties on the periodic table. Compounds are composed of two or more different elements. Each element and compound has a unique set of physical and chemical properties such as boiling point, density, color, conductivity, and reactivity.
EXPECTATION	P.PM.07.21.	<p>Identify the smallest component that makes up an element.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix
EXPECTATION	P.PM.07.23.	<p>Illustrate the structure of molecules using models or drawings (water, carbon dioxide, salt).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix
STRAND / STANDARD CATEGORY	MI.L.	Life Science
STANDARD	L.OL.	<p>Organization of Living Things: Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life which include the need for air, water and a source of energy. Understand that all life forms can be classified as producers, consumers, or decomposers as they are all part of a global food chain where food/energy is supplied by plants which need light to produce food/energy. Develop an understanding that plants and animals can be classified by observable traits and physical characteristics. Understand that all living organisms are composed of cells and they exhibit cell growth and division. Understand that all plants and animals have a definite life cycle, body parts, and systems to perform specific life functions.</p>
GRADE LEVEL EXPECTATION	L.OL.M.3.	Growth and Development- Following fertilization, cell division produces a small cluster of cells that then differentiate by appearance and function to form the basic tissue of an embryo.
EXPECTATION	L.OL.07.31.	<p>Describe growth and development in terms of increase of cell number and/or cell size.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.L.	Life Science
STANDARD	L.OL.	<p>Organization of Living Things: Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life which include the need for air, water and a source of energy. Understand that all life forms can be classified as producers, consumers, or decomposers as they are all part of a global food chain where food/energy is supplied by plants which need light to produce food/energy. Develop an understanding that plants and animals can be classified by observable traits and physical characteristics. Understand that all living organisms are composed of cells and they exhibit cell growth and division. Understand that all plants and animals have a definite life cycle, body parts, and systems to perform specific life functions.</p>
GRADE LEVEL EXPECTATION	L.OL.M.6.	Photosynthesis- Plants are producers; they use the energy from light to make sugar molecules from the atoms of carbon dioxide and water. Plants use these sugars along with minerals from the soil to form fats, proteins, and carbohydrates. These products can be used immediately, incorporated into the cells of a plant as the plant grows, or stored for later use.
EXPECTATION	L.OL.07.63.	<p>Describe evidence that plants make, use and store food.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment

		Assortment
STRAND / STANDARD CATEGORY	MI.L.	Life Science
STANDARD	L.HE.	Heredity: Develop an understanding that all life forms must reproduce to survive. Understand that characteristics of mature plants and animals may be inherited or acquired and that only inherited traits are passed on to their young. Understand that inherited traits can be influenced by changes in the environment and by genetics.
GRADE LEVEL EXPECTATION	L.HE.M.2.	Reproduction- Reproduction is a characteristic of all living systems; because no individual organism lives forever, reproduction is essential to the continuation of every species. Some organisms reproduce asexually. Other organisms reproduce sexually.
EXPECTATION	L.HE.07.21.	<p>Compare how characteristics of living things are passed on through generations, both asexually and sexually.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the

		<p>Royal Mystery</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
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**Michigan Curriculum Standards
Science
Grade 8**

STRAND / STANDARD CATEGORY	MI.S.	Science Processes
STANDARD	S.IP.	Inquiry Process: Develop an understanding that scientific inquiry and reasoning involves observing, questioning, investigating, recording, and developing solutions to problems.
GRADE LEVEL EXPECTATION	S.IP.M.1.	Inquiry involves generating questions, conducting investigations, and developing solutions to problems through reasoning and observation.
EXPECTATION	S.IP.07.11.	<p>Generate scientific questions based on observations, investigations, and research.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining

		<p>Human Variation in Blood</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>EXPECTATION</p>	<p>S.IP.07.12.</p>	<p>Design and conduct scientific investigations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent

		Assortment
EXPECTATION	S.IP.07.13.	<p>Use tools and equipment (spring scales, stop watches, meter sticks and tapes, models, hand lens, thermometer, models, sieves, microscopes, hot plates, pH meters) appropriate to scientific investigations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
EXPECTATION	S.IP.07.16.	Identify patterns in data.

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.S.	Science Processes
STANDARD	S.IA.	Inquiry Analysis and Communication: Develop an understanding that scientific inquiry and investigations require analysis and communication of findings, using appropriate technology.
GRADE LEVEL	S.IA.M.1.	Inquiry includes an analysis and presentation of findings that lead to future

EXPECTATION		questions, research, and investigations.
EXPECTATION	S.IA.07.12.	<p>Evaluate data, claims, and personal knowledge through collaborative science discourse.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
EXPECTATION	S.IA.17.13.	<p>Communicate and defend findings of observations and investigations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling

		<p>DNA Replication</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
EXPECTATION	S.IA.07.14.	<p>Draw conclusions from sets of data from multiple trials of a scientific investigation to draw conclusions.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a

		<ul style="list-style-type: none"> Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>EXPECTATION</p>	<p>S.IA.07.15.</p>	<p>Use multiple sources of information to evaluate strengths and weaknesses of claims, arguments, or data.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent

		<p>Assortment</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.S.	Science Processes
STANDARD	S.RS.	Reflection and Social Implications: Develop an understanding that claims and evidence for their scientific merit should be analyzed. Understand how scientists decide what constitutes scientific knowledge. Develop an understanding of the importance of reflection on scientific knowledge and its application to new situations to better understand the role of science in society and technology.
GRADE LEVEL EXPECTATION	S.RS.M.1.	Reflecting on knowledge is the application of scientific knowledge to new and different situations. Reflecting on knowledge requires careful analysis of evidence that guides decision-making and the application of science throughout history and within society.
EXPECTATION	S.RS.07.11.	<p>Evaluate the strengths and weaknesses of claims, arguments, and data.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>EXPECTATION</p>	<p>S.RS.07.15.</p>	<p>Demonstrate scientific concepts through various illustrations, performances, models, exhibits, and activities.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
EXPECTATION	S.RS.07.19.	Describe how science and technology have advanced because of the contributions of many people throughout history and across cultures. <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.P.	Physical Science
STANDARD	P.PM.	Properties of Matter: Develop an understanding that all matter has observable attributes with physical and chemical properties that are described, measured, and compared. Understand that states of matter exist as solid, liquid, or gas; and have physical and chemical properties. Understand all matter is composed of combinations of elements, which are organized by common attributes and characteristics on the Periodic Table. Understand that substances can be classified as mixtures or compounds and according to their physical and chemical properties.
GRADE LEVEL EXPECTATION	P.PM.M.2.	Elements and Compounds- Elements are composed of a single kind of atom that are grouped into families with similar properties on the periodic table. Compounds are composed of two or more different elements. Each element and compound has a unique set of physical and chemical properties such as boiling point, density, color, conductivity, and reactivity.
EXPECTATION	P.PM.07.21.	Identify the smallest component that makes up an element. <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix
EXPECTATION	P.PM.07.23.	<p>Illustrate the structure of molecules using models or drawings (water, carbon dioxide, salt).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix
STRAND / STANDARD CATEGORY	MI.L.	Life Science
STANDARD	L.OL.	<p>Organization of Living Things: Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life which include the need for air, water and a source of energy. Understand that all life forms can be classified as producers, consumers, or decomposers as they are all part of a global food chain where food/energy is supplied by plants which need light to produce food/energy. Develop an understanding that plants and animals can be classified by observable traits and physical characteristics. Understand that all living organisms are composed of cells and they exhibit cell growth and division. Understand that all plants and animals have a definite life cycle, body parts, and systems to perform specific life functions.</p>
GRADE LEVEL EXPECTATION	L.OL.M.3.	Growth and Development- Following fertilization, cell division produces a small cluster of cells that then differentiate by appearance and function to form the basic tissue of an embryo.
EXPECTATION	L.OL.07.31.	<p>Describe growth and development in terms of increase of cell number and/or cell size.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.L.	Life Science
STANDARD	L.OL.	<p>Organization of Living Things: Develop an understanding that plants and animals (including humans) have basic requirements for maintaining life which include the need for air, water and a source of energy. Understand that all life forms can be classified as producers, consumers, or decomposers as they are all part of a global food chain where food/energy is supplied by plants which need light to produce food/energy. Develop an understanding that plants and animals can be classified by observable traits and physical characteristics. Understand that all living organisms are composed of cells and they exhibit cell growth and division. Understand that all plants and animals have a definite life cycle, body parts, and systems to perform specific life functions.</p>
GRADE LEVEL EXPECTATION	L.OL.M.6.	Photosynthesis- Plants are producers; they use the energy from light to make sugar molecules from the atoms of carbon dioxide and water. Plants use these sugars along with minerals from the soil to form fats, proteins, and carbohydrates. These products can be used immediately, incorporated into the cells of a plant as the plant grows, or stored for later use.
EXPECTATION	L.OL.07.63.	Describe evidence that plants make, use and store food.

		<ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.L.	Life Science
STANDARD	L.HE.	Heredity: Develop an understanding that all life forms must reproduce to survive. Understand that characteristics of mature plants and animals may be inherited or acquired and that only inherited traits are passed on to their young. Understand that inherited traits can be influenced by changes in the environment and by genetics.
GRADE LEVEL EXPECTATION	L.HE.M.2.	Reproduction- Reproduction is a characteristic of all living systems; because no individual organism lives forever, reproduction is essential to the continuation of every species. Some organisms reproduce asexually. Other organisms reproduce sexually.
EXPECTATION	L.HE.07.21.	<p>Compare how characteristics of living things are passed on through generations, both asexually and sexually.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining

		<p>Human Variation in Blood</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
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**Michigan Curriculum Standards
Science
Grade 9**

STRAND / STANDARD CATEGORY	MI.B1.	Biology: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	B1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	B1.1A.	<p>Generate new questions that can be investigated in the laboratory or field.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.1B.</p>	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population

		<ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B1.1C.	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity-length, volume, weight, time interval, temperature-with the appropriate level of precision).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B1.1D.	<p>Identify patterns in data and relate them to theoretical models.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.1E.</p>	<p>Describe a reason for a given conclusion using evidence from an investigation.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.1h.</p>	<p>Design and conduct a systematic scientific investigation that tests a hypothesis. Draw conclusions from data presented in charts or tables.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B1.	Biology: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	B1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	B1.2A.	<p>Critique whether or not specific questions can be answered through scientific investigations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the

		<p>Frequency of Common Human Traits in a Population</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.2B.</p>	<p>Identify and critique arguments about personal or societal issues based on scientific evidence.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.2D.</p>	<p>Evaluate scientific explanations in a peer review process or discussion format.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding

		<p>the Human Genome</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
GRADE LEVEL EXPECTATION	B1.2E.	<p>Evaluate the future career and occupational prospects of science fields.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B1.2f.	<p>Critique solutions to problems, given criteria and scientific constraints.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance

		<ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B1.2h.	<p>Describe the distinctions between scientific theories, laws, hypotheses, and observations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B1.2i.	<p>Explain the progression of ideas and explanations that leads to science theories that are part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity

		<ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p1.	Cells (prerequisite)
GRADE LEVEL EXPECTATION	L2.p1B.	<p>Explain the importance of both water and the element carbon to cells. (prerequisite)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	L2.p1E.	<p>Compare and contrast how different organisms accomplish similar functions (e.g., obtain oxygen for respiration, and excrete waste). (prerequisite)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p3.	Plants as Producers (prerequisite)
GRADE LEVEL EXPECTATION	L2.p3B.	<p>Explain the origins of plant mass. (prerequisite)</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	L2.p3C.	<p>Predict what would happen to plants growing in low carbon dioxide atmospheres. (prerequisite)</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p4.	Animals as Consumers (prerequisite)
GRADE LEVEL	L2.p4A.	Classify different organisms based on how they obtain energy for growth and

EXPECTATION		development. (prerequisite) <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p5.	Common Elements (prerequisite)
GRADE LEVEL EXPECTATION	L2.p5A.	Recognize the six most common elements in organic molecules (C, H, N, O, P, S). (prerequisite) <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	L2.p5B.	Identify the most common complex molecules that make up living organisms. (prerequisite) <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.1.	Transformation of Matter and Energy in Cells
GRADE LEVEL EXPECTATION	B2.1C.	Explain cell division, growth, and development as a consequence of an increase in cell number, cell size, and/or cell products. <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.2.	Organic Molecules
GRADE LEVEL EXPECTATION	B2.2C.	Describe the composition of the four major categories of organic molecules (carbohydrates, lipids, proteins, and nucleic acids). <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B2.2D.	Explain the general structure and primary functions of the major complex organic molecules that compose living organisms. <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.2x.	Proteins
GRADE LEVEL EXPECTATION	B2.2f.	Explain the role of enzymes and other proteins in biochemical functions (e.g., the protein hemoglobin carries oxygen in some organisms, digestive enzymes, and hormones). <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.3x.	Homeostasis
GRADE LEVEL EXPECTATION	B2.3d.	<p>Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.4.	Cell Specialization
GRADE LEVEL EXPECTATION	B2.4B.	<p>Describe how various organisms have developed different specializations to accomplish a particular function and yet the end result is the same (e.g., excreting nitrogenous wastes in animals, obtaining oxygen for respiration).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B2.4C.	<p>Explain how different organisms accomplish the same result using different structural specializations (gills vs. lungs vs. membranes).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting

		<p>Genetic Disease</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B2.4g.	<p>Explain that some structures in the modern eukaryotic cell developed from early prokaryotes, such as mitochondria, and in plants, chloroplasts.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.6x.	Internal/External Cell Regulation
GRADE LEVEL EXPECTATION	B2.r6b.	<p>Explain that complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division. Note that cell behavior can also be affected by molecules from other parts of the organism, such as hormones. (recommended)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND / STANDARD CATEGORY	MI.B3.	Biology: Interdependence of Living Systems and the Environment: Students describe the processes of photosynthesis and cellular respiration and how energy is transferred through food webs. They recognize and analyze the consequences of the dependence of organisms on environmental resources and the interdependence of organisms in ecosystems.
STANDARD	B3.1.	Photosynthesis and Respiration
GRADE LEVEL EXPECTATION	B3.1A.	<p>Describe how organisms acquire energy directly or indirectly from sunlight.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B3.	Biology: Interdependence of Living Systems and the Environment: Students describe the processes of photosynthesis and cellular respiration and how energy is transferred through food webs. They recognize and analyze the consequences of the dependence of organisms on environmental resources and the interdependence of organisms in ecosystems.
STANDARD	B3.5x.	Environmental Factors
GRADE LEVEL EXPECTATION	B3.5d.	<p>Describe different reproductive strategies employed by various organisms and explain their advantages and disadvantages.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries

STANDARD	L4.p2.	Heredity and Environment (prerequisite)
GRADE LEVEL EXPECTATION	L4.p2A.	<p>Explain that the traits of an individual are influenced by both the environment and the genetics of the individual. Acquired traits are not inherited; only genetic traits are inherited. (prerequisite)</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific

		proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	B4.1.	Genetics and Inherited Traits
GRADE LEVEL EXPECTATION	B4.1A.	<p>Draw and label a homologous chromosome pair with heterozygous alleles highlighting a particular gene location.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.1B.	<p>Explain that the information passed from parents to offspring is transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a

		<ul style="list-style-type: none"> Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
<p>GRADE LEVEL EXPECTATION</p>	<p>B4.1c.</p>	<p>Differentiate between dominant, recessive, codominant, polygenic, and sex-linked traits.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the

		<p>Frequency of Human Traits in a Population</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B4.1d.	<p>Explain the genetic basis for Mendel's laws of segregation and independent assortment.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Teacher Resource CD: Genetics and Heredity • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B4.1e.	<p>Determine the genotype and phenotype of monohybrid crosses using a Punnett Square.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment

STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	B4.2.	DNA
GRADE LEVEL EXPECTATION	B4.2A.	<p>Show that when mutations occur in sex cells, they can be passed on to offspring (inherited mutations), but if they occur in other cells, they can be passed on to descendant cells only (noninherited mutations).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.2B.	<p>Recognize that every species has its own characteristic DNA sequence.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.2C.	<p>Describe the structure and function of DNA.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery

		<ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.2D.	<p>Predict the consequences that changes in the DNA composition of particular genes may have on an organism (e.g., sickle cell anemia, other).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.2E.	<p>Propose possible effects (on the genes) of exposing an organism to radiation and toxic chemicals.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B4.	<p>Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries</p>
STANDARD	B4.2x.	DNA, RNA, and Protein Synthesis
GRADE LEVEL EXPECTATION	B4.2f.	<p>Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms.</p> <ul style="list-style-type: none"> • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.2g.	<p>Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Teacher Resource CD: The DNA Connection
STRAND / STANDARD	MI.B4.	<p>Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in</p>

CATEGORY		chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	B4.3.	Cell Division - Mitosis and Meiosis
GRADE LEVEL EXPECTATION	B4.3A.	<p>Compare and contrast the processes of cell division (mitosis and meiosis), particularly as those processes relate to production of new cells and to passing on genetic information between generations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	B4.3B.	<p>Explain why only mutations occurring in gametes (sex cells) can be passed on to offspring.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.3C.	<p>Explain how it might be possible to identify genetic defects from just a karyotype of a few cells.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.3e.	<p>Recognize that genetic variation can occur from such processes as crossing over, jumping genes, and deletion and duplication of genes.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing
GRADE LEVEL EXPECTATION	B4.3f.	<p>Predict how mutations may be transferred to progeny.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	B4.4x.	Genetic Variation
GRADE LEVEL EXPECTATION	B4.4a.	<p>Describe how inserting, deleting, or substituting DNA segments can alter a gene. Recognize that an altered gene may be passed on to every cell that develops from it and that the resulting features may help, harm, or have little or no effect on the offspring's success in its environment.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.4b.	<p>Explain that gene mutation in a cell can result in uncontrolled cell division called cancer. Also know that exposure of cells to certain chemicals and radiation increases mutations and thus increases the chance of cancer.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.4c.	<p>Explain how mutations in the DNA sequence of a gene may be silent or result in phenotypic change in an organism and in its offspring.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding

		<p>the Human Genome</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B5.	Biology: Evolution and Biodiversity: Students recognize that evolution is the result of genetic changes that occur in constantly changing environments. They can explain that modern evolution includes both the concepts of common descent and natural selection. They illustrate how the consequences of natural selection and differential reproduction have led to the great biodiversity on Earth.
STANDARD	B5.2.	Molecular Evidence
GRADE LEVEL EXPECTATION	B5.2c.	<p>Trace the relationship between environmental changes and changes in the gene pool, such as genetic drift and isolation of subpopulations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B5.	Biology: Evolution and Biodiversity: Students recognize that evolution is the result of genetic changes that occur in constantly changing environments. They can explain that modern evolution includes both the concepts of common descent and natural selection. They illustrate how the consequences of natural selection and differential reproduction have led to the great biodiversity on Earth.
STANDARD	B5.3.	Natural Selection
GRADE LEVEL EXPECTATION	B5.3A.	<p>Explain how natural selection acts on individuals, but it is populations that evolve. Relate genetic mutations and genetic variety produced by sexual reproduction to diversity within a given population.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B5.3e.	<p>Explain how changes at the gene level are the foundation for changes in populations and eventually the formation of new species.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance

GRADE LEVEL EXPECTATION	B5.3f.	<p>Demonstrate and explain how biotechnology can improve a population and species.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.C1.	<p>Chemistry: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.</p>
STANDARD	C1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	C1.1B.	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>C1.1C.</p>	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity-length, volume, weight, time interval, temperature-with the appropriate level of precision).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the

		<p>Frequency of Human Traits in a Population</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.C1.	Chemistry: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	C1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	C1.2E.	<p>Evaluate the future career and occupational prospects of science fields.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	C1.2f.	<p>Critique solutions to problems, given criteria and scientific constraints.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining

		<p>Human Variation in Blood</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	C1.2i.	<p>Explain the progression of ideas and explanations that lead to science theories that are part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.C4.	<p>Chemistry: Properties of Matter: Compounds, elements, and mixtures are categories used to organize matter. Students organize materials into these categories based on their chemical and physical behavior. Students understand the structure of the atom to make predictions about the physical and chemical properties of various elements and the types of compounds those elements will form. An understanding of the organization the Periodic Table in terms of the outer electron configuration is one of the most important tools for the chemist and student to use in prediction and explanation of the structure and behavior of atoms.</p>
STANDARD	C4.3x.	Solids
GRADE LEVEL EXPECTATION	C4.3d.	<p>Compare the strength of the forces of attraction between molecules of different elements. (For example, at room temperature, chlorine is a gas and iodine is a solid.)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting
GRADE LEVEL EXPECTATION	C4.3f.	<p>Identify the elements necessary for hydrogen bonding (N, O, F).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting
GRADE LEVEL EXPECTATION	C4.3g.	<p>Given the structural formula of a compound, indicate all the intermolecular forces present (dispersion, dipolar, hydrogen bonding).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting
STRAND / STANDARD CATEGORY	MI.E1.	Earth Science: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	E1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	E1.1B.	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	E1.1C.	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity-length, volume, weight, time interval, temperature-with the appropriate level of precision).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL	E1.1f.	Predict what would happen if the variables, methods, or timing of an investigation were

EXPECTATION		<p>changed.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.E1.	Earth Science: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	E1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	E1.2E.	Evaluate the future career and occupational prospects of science fields.

		<ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	E1.2f.	<p>Critique solutions to problems, given criteria and scientific constraints.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	E1.2i.	<p>Explain the progression of ideas and explanations that lead to science theories that are part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity

		<ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.P1.	Physics: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	P1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	P1.1B.	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance

		<ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	P1.1C.	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity, length, volume, weight, time interval, temperature with the appropriate level of precision).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.P1.	<p>Physics: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.</p>

STANDARD	P1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	P1.2E.	Evaluate the future career and occupational prospects of science fields. <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	P1.2f.	Critique solutions to problems, given criteria and scientific constraints. <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	P1.2i.	Explain the progression of ideas and explanations that lead to science theories that are

		<p>part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.P4.	Physics: Forms of Energy and Energy Transformations: Energy is a useful conceptual system for explaining how the universe works and accounting for changes in matter. Energy is not a 'thing.' Students develop several energy-related ideas.
STANDARD	P4.r7x.	Quantum Theory of Waves (recommended)
GRADE LEVEL EXPECTATION	P4.r7a.	<p>Calculate and compare the energy in various electromagnetic quanta (e.g., visible light, x-rays). (recommended)</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix

**Michigan Curriculum Standards
Science
Grade 10**

STRAND / STANDARD CATEGORY	MI.B1.	Biology: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	B1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	B1.1A.	<p>Generate new questions that can be investigated in the laboratory or field.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.1B.</p>	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.1C.</p>	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity-length, volume, weight, time interval, temperature-with the appropriate level of precision).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance

		<ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B1.1D.	<p>Identify patterns in data and relate them to theoretical models.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B1.1E.	<p>Describe a reason for a given conclusion using evidence from an investigation.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About

		<p>Base Pairs</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.1h.</p>	<p>Design and conduct a systematic scientific investigation that tests a hypothesis. Draw conclusions from data presented in charts or tables.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a

		<p>Genetic Cross to Demonstrate the Law of Dominance</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B1.	Biology: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	B1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	B1.2A.	<p>Critique whether or not specific questions can be answered through scientific investigations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	B1.2B.	<p>Identify and critique arguments about personal or societal issues based on scientific evidence.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
GRADE LEVEL EXPECTATION	B1.2D.	<p>Evaluate scientific explanations in a peer review process or discussion format.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
GRADE LEVEL EXPECTATION	B1.2E.	<p>Evaluate the future career and occupational prospects of science fields.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B1.2f.	<p>Critique solutions to problems, given criteria and scientific constraints.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B1.2h.</p>	<p>Describe the distinctions between scientific theories, laws, hypotheses, and observations.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent

		Assortment
GRADE LEVEL EXPECTATION	B1.2i.	<p>Explain the progression of ideas and explanations that leads to science theories that are part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p1.	Cells (prerequisite)
GRADE LEVEL EXPECTATION	L2.p1B.	<p>Explain the importance of both water and the element carbon to cells. (prerequisite)</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	L2.p1E.	<p>Compare and contrast how different organisms accomplish similar functions (e.g., obtain oxygen for respiration, and excrete waste). (prerequisite)</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p3.	Plants as Producers (prerequisite)
GRADE LEVEL EXPECTATION	L2.p3B.	<p>Explain the origins of plant mass. (prerequisite)</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	L2.p3C.	<p>Predict what would happen to plants growing in low carbon dioxide atmospheres. (prerequisite)</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent

		Assortment
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p4.	Animals as Consumers (prerequisite)
GRADE LEVEL EXPECTATION	L2.p4A.	Classify different organisms based on how they obtain energy for growth and development. (prerequisite) <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	L2.p5.	Common Elements (prerequisite)
GRADE LEVEL EXPECTATION	L2.p5A.	Recognize the six most common elements in organic molecules (C, H, N, O, P, S). (prerequisite) <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	L2.p5B.	Identify the most common complex molecules that make up living organisms. (prerequisite) <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.1.	Transformation of Matter and Energy in Cells
GRADE LEVEL EXPECTATION	B2.1C.	Explain cell division, growth, and development as a consequence of an increase in cell number, cell size, and/or cell products. <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.2.	Organic Molecules
GRADE LEVEL EXPECTATION	B2.2C.	Describe the composition of the four major categories of organic molecules (carbohydrates, lipids, proteins, and nucleic acids). <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B2.2D.	Explain the general structure and primary functions of the major complex organic molecules that compose living organisms. <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.

STANDARD	B2.2x.	Proteins
GRADE LEVEL EXPECTATION	B2.2f.	<p>Explain the role of enzymes and other proteins in biochemical functions (e.g., the protein hemoglobin carries oxygen in some organisms, digestive enzymes, and hormones).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.3x.	Homeostasis
GRADE LEVEL EXPECTATION	B2.3d.	<p>Identify the general functions of the major systems of the human body (digestion, respiration, reproduction, circulation, excretion, protection from disease, and movement, control, and coordination) and describe ways that these systems interact with each other.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.4.	Cell Specialization
GRADE LEVEL EXPECTATION	B2.4B.	<p>Describe how various organisms have developed different specializations to accomplish a particular function and yet the end result is the same (e.g., excreting nitrogenous wastes in animals, obtaining oxygen for respiration).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B2.4C.	<p>Explain how different organisms accomplish the same result using different structural specializations (gills vs. lungs vs. membranes).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B2.4g.	<p>Explain that some structures in the modern eukaryotic cell developed from early prokaryotes, such as mitochondria, and in plants, chloroplasts.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B2.	Biology: Organization and Development of Living Systems: Students describe the general structure and function of cells. They can explain that all living systems are composed of cells and that organisms may be unicellular or multicellular.
STANDARD	B2.6x.	Internal/External Cell Regulation
GRADE LEVEL EXPECTATION	B2.r6b.	<p>Explain that complex interactions among the different kinds of molecules in the cell cause distinct cycles of activities, such as growth and division. Note that cell behavior can also be affected by molecules from other parts of the organism, such as hormones. (recommended)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND / STANDARD CATEGORY	MI.B3.	Biology: Interdependence of Living Systems and the Environment: Students describe the processes of photosynthesis and cellular respiration and how energy is transferred through food webs. They recognize and analyze the consequences of the dependence of organisms on environmental resources and the interdependence of organisms in ecosystems.
STANDARD	B3.1.	Photosynthesis and Respiration
GRADE LEVEL EXPECTATION	B3.1A.	<p>Describe how organisms acquire energy directly or indirectly from sunlight.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B3.	Biology: Interdependence of Living Systems and the Environment: Students describe the processes of photosynthesis and cellular respiration and how energy is transferred through food webs. They recognize and analyze the consequences of the dependence of organisms on environmental resources and the interdependence of organisms in ecosystems.
STANDARD	B3.5x.	Environmental Factors
GRADE LEVEL EXPECTATION	B3.5d.	<p>Describe different reproductive strategies employed by various organisms and explain their advantages and disadvantages.</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent

		Assortment
STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	L4.p2.	Heredity and Environment (prerequisite)
GRADE LEVEL EXPECTATION	L4.p2A.	<p>Explain that the traits of an individual are influenced by both the environment and the genetics of the individual. Acquired traits are not inherited; only genetic traits are inherited. (prerequisite)</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance

		<ul style="list-style-type: none"> • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	B4.1.	Genetics and Inherited Traits
GRADE LEVEL EXPECTATION	B4.1A.	<p>Draw and label a homologous chromosome pair with heterozygous alleles highlighting a particular gene location.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.1B.	<p>Explain that the information passed from parents to offspring is transmitted by means of genes that are coded in DNA molecules. These genes contain the information for the production of proteins.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About

		<p>Base Pairs</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection
<p>GRADE LEVEL EXPECTATION</p>	<p>B4.1c.</p>	<p>Differentiate between dominant, recessive, codominant, polygenic, and sex-linked traits.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing

		<p>Genetic Disease</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: Genetics and Inheritance • Teacher Resource CD: The DNA Connection • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B4.1d.</p>	<p>Explain the genetic basis for Mendel's laws of segregation and independent assortment.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Teacher Resource CD: Genetics and Heredity • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>B4.1e.</p>	<p>Determine the genotype and phenotype of monohybrid crosses using a Punnett Square.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	B4.2.	DNA
GRADE LEVEL EXPECTATION	B4.2A.	<p>Show that when mutations occur in sex cells, they can be passed on to offspring (inherited mutations), but if they occur in other cells, they can be passed on to descendant cells only (noninherited mutations).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.2B.	<p>Recognize that every species has its own characteristic DNA sequence.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.2C.	<p>Describe the structure and function of DNA.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.2D.	<p>Predict the consequences that changes in the DNA composition of particular genes may have on an organism (e.g., sickle cell anemia, other).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.2E.	<p>Propose possible effects (on the genes) of exposing an organism to radiation and toxic chemicals.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B4.	<p>Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries</p>
STANDARD	B4.2x.	DNA, RNA, and Protein Synthesis
GRADE LEVEL EXPECTATION	B4.2f.	<p>Demonstrate how the genetic information in DNA molecules provides instructions for assembling protein molecules and that this is virtually the same mechanism for all life forms.</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.2g.	<p>Describe the processes of replication, transcription, and translation and how they relate to each other in molecular biology.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.B4.	Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries
STANDARD	B4.3.	Cell Division - Mitosis and Meiosis
GRADE LEVEL EXPECTATION	B4.3A.	<p>Compare and contrast the processes of cell division (mitosis and meiosis), particularly as those processes relate to production of new cells and to passing on genetic information between generations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
GRADE LEVEL EXPECTATION	B4.3B.	<p>Explain why only mutations occurring in gametes (sex cells) can be passed on to offspring.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.3C.	<p>Explain how it might be possible to identify genetic defects from just a karyotype of a few cells.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.3e.	<p>Recognize that genetic variation can occur from such processes as crossing over, jumping genes, and deletion and duplication of genes.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic

		Origins through DNA Sequencing
GRADE LEVEL EXPECTATION	B4.3f.	<p>Predict how mutations may be transferred to progeny.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B4.	<p>Biology: Genetics: Students recognize that the specific genetic instructions for any organism are contained within genes composed of DNA molecules located in chromosomes. They explain the mechanism for the direct production of specific proteins based on inherited DNA. Students diagram how occasional modifications in genes and the random distribution of genes from each parent provide genetic variation and become the raw material for evolution. Content Statements, Performances, and Boundaries</p>
STANDARD	B4.4x.	Genetic Variation
GRADE LEVEL EXPECTATION	B4.4a.	<p>Describe how inserting, deleting, or substituting DNA segments can alter a gene. Recognize that an altered gene may be passed on to every cell that develops from it and that the resulting features may help, harm, or have little or no effect on the offspring's success in its environment.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Heredity Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	B4.4b.	<p>Explain that gene mutation in a cell can result in uncontrolled cell division called cancer. Also know that exposure of cells to certain chemicals and radiation increases mutations and thus increases the chance of cancer.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B4.4c.	<p>Explain how mutations in the DNA sequence of a gene may be silent or result in phenotypic change in an organism and in its offspring.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B5.	<p>Biology: Evolution and Biodiversity: Students recognize that evolution is the result of genetic changes that occur in constantly changing environments. They can explain that modern evolution includes both the concepts of common descent and natural selection. They illustrate how the consequences of natural selection and differential reproduction have led to the great biodiversity on Earth.</p>
STANDARD	B5.2.	Molecular Evidence
GRADE LEVEL EXPECTATION	B5.2c.	<p>Trace the relationship between environmental changes and changes in the gene pool, such as genetic drift and isolation of subpopulations.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance
STRAND / STANDARD CATEGORY	MI.B5.	<p>Biology: Evolution and Biodiversity: Students recognize that evolution is the result of genetic changes that occur in constantly changing environments. They can explain that modern evolution includes both the concepts of common descent and natural selection. They illustrate how the consequences of natural selection and differential reproduction have led to the great biodiversity on Earth.</p>
STANDARD	B5.3.	Natural Selection
GRADE LEVEL EXPECTATION	B5.3A.	<p>Explain how natural selection acts on individuals, but it is populations that evolve. Relate genetic mutations and genetic variety produced by sexual reproduction to diversity within a given population.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B5.3e.	<p>Explain how changes at the gene level are the foundation for changes in populations and eventually the formation of new species.</p>

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance
GRADE LEVEL EXPECTATION	B5.3f.	<p>Demonstrate and explain how biotechnology can improve a population and species.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.C1.	<p>Chemistry: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.</p>
STANDARD	C1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	C1.1B.	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a

		<p>Family Pedigree</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>C1.1C.</p>	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity-length, volume, weight, time interval, temperature-with the appropriate level of precision).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND / STANDARD CATEGORY	MI.C1.	Chemistry: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	C1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	C1.2E.	<p>Evaluate the future career and occupational prospects of science fields.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	C1.2f.	<p>Critique solutions to problems, given criteria and scientific constraints.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	C1.2i.	<p>Explain the progression of ideas and explanations that lead to science theories that are part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.C4.	<p>Chemistry: Properties of Matter: Compounds, elements, and mixtures are categories used to organize matter. Students organize materials into these categories based on their chemical and physical behavior. Students understand the structure of the atom to make predictions about the physical and chemical properties of various elements and the types of compounds those elements will form. An understanding of the organization the Periodic Table in terms of the outer electron configuration is one of the most important tools for the chemist and student to use in prediction and explanation of the structure and behavior of atoms.</p>
STANDARD	C4.3x.	Solids
GRADE LEVEL EXPECTATION	C4.3d.	<p>Compare the strength of the forces of attraction between molecules of different elements. (For example, at room temperature, chlorine is a gas and iodine is a solid.)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting
GRADE LEVEL EXPECTATION	C4.3f.	<p>Identify the elements necessary for hydrogen bonding (N, O, F).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic

		Origins through DNA Fingerprinting
GRADE LEVEL EXPECTATION	C4.3g.	<p>Given the structural formula of a compound, indicate all the intermolecular forces present (dispersion, dipolar, hydrogen bonding).</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting
STRAND / STANDARD CATEGORY	MI.E1.	Earth Science: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	E1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	E1.1B.	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding

		<p>the Human Genome</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>E1.1C.</p>	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity-length, volume, weight, time interval, temperature-with the appropriate level of precision).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>E1.1f.</p>	<p>Predict what would happen if the variables, methods, or timing of an investigation were changed.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment

STRAND / STANDARD CATEGORY	MI.E1.	Earth Science: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	E1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	E1.2E.	<p>Evaluate the future career and occupational prospects of science fields.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	E1.2f.	<p>Critique solutions to problems, given criteria and scientific constraints.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population

		<ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
GRADE LEVEL EXPECTATION	E1.2i.	<p>Explain the progression of ideas and explanations that lead to science theories that are part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.P1.	<p>Physics: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.</p>
STANDARD	P1.1.	Scientific Inquiry
GRADE LEVEL EXPECTATION	P1.1B.	<p>Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting

		<p>Genetic Disease</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>GRADE LEVEL EXPECTATION</p>	<p>P1.1C.</p>	<p>Conduct scientific investigations using appropriate tools and techniques (e.g., selecting an instrument that measures the desired quantity, length, volume, weight, time interval, temperature with the appropriate level of precision).</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent

		Assortment
STRAND / STANDARD CATEGORY	MI.P1.	Physics: Inquiry, Reflection, and Social Implications: Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation.
STANDARD	P1.2.	Scientific Reflection and Social Implications
GRADE LEVEL EXPECTATION	P1.2E.	Evaluate the future career and occupational prospects of science fields. <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Heredity • Teacher Resource CD: The DNA Connection
GRADE LEVEL EXPECTATION	P1.2f.	Critique solutions to problems, given criteria and scientific constraints. <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs • Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication • Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix • Genetics and Inheritance: Unit 2 Lab 2 Activity 1: Applying the Laws of Chance to Genetics • Genetics and Inheritance: Unit 2 Lab 2 Activity 2: Modeling a Genetic Cross to Demonstrate the Law of Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 3: Modeling a Genetic Cross to Demonstrate the Law of Incomplete Dominance • Genetics and Inheritance: Unit 2 Lab 2 Activity 4: Modeling a Dihybrid Cross to Demonstrate the Law of Independent Assortment • Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization • Genetics and Inheritance: Unit 3 Lab 4 Activity 1: Determine the Frequency of Common Human Traits in a Population • Genetics and Inheritance: Unit 3 Lab 4 Activity 2: Taste Tests and the Hardy-Weinberg Principle • Genetics and Inheritance: Unit 3 Lab 4 Activity 3: Constructing a Family Pedigree • Genetics and Inheritance: Unit 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 1: Analyze Genetic Origins through DNA Fingerprinting • Genetics and Inheritance: Unit 3 Lab 5 Activity 2: Analyze Genetic Origins through DNA Sequencing • Genetics and Inheritance: Unit 3 Lab 5 Activity 3: Understanding the Human Genome • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • Genetics and Inheritance: Unit 4 Lab 7 Activity 1: Case of the Royal Mystery

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GRADE LEVEL EXPECTATION	P1.2i.	<p>Explain the progression of ideas and explanations that lead to science theories that are part of the current scientific consensus or core knowledge.</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity Teacher Resource CD: The DNA Connection
STRAND / STANDARD CATEGORY	MI.P4.	Physics: Forms of Energy and Energy Transformations: Energy is a useful conceptual system for explaining how the universe works and accounting for changes in matter. Energy is not a 'thing.' Students develop several energy-related ideas.
STANDARD	P4.r7x.	Quantum Theory of Waves (recommended)
GRADE LEVEL EXPECTATION	P4.r7a.	<p>Calculate and compare the energy in various electromagnetic quanta (e.g., visible light, x-rays). (recommended)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 1 Lab 1 Activity 1: Learning About Base Pairs Genetics and Inheritance: Unit 1 Lab 1 Activity 2: Modeling DNA Replication Genetics and Inheritance: Unit 1 Lab 1 Activity 3: Exploring DNA's Structure - the Double Helix

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