

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

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Arkansas Curriculum Frameworks
Science
Grade 7

STRAND/CONTENT STANDARD	AR.1.	Nature of Science: Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.1.	Processes of Science: Interpret evidence based on observations <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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.7.2.</p>	<p>Processes of Science: Analyze components of experimental design used to produce empirical evidence: hypothesis, replication, sample size, appropriate use of control, use of standardized variables</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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.3.	<p>Processes of Science: Interpret scientific data using mean, median, mode, and range using SI units</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Inheritance Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.4.	<p>Processes of Science: Construct and interpret scientific data using histograms, circle graphs, scatter plots, double line graphs, line graphs by approximating line of best fit</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

		<p>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
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.7.5.	<p>Processes of Science: Communicate results and conclusions from scientific inquiry</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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.7.6.</p>	<p>Processes of Science: Develop and implement strategies for long-term, accurate data collection</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:

		<p>Modeling a 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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.7.7.</p>	<p>Characteristics of Science: Distinguish between questions that can and cannot be answered by science</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

		<p>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
STRAND/CONTENT STANDARD	AR.2.	Life Science: Living Systems: Characteristics, Structure, and Function: Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	LS.2.7.8.	<p>Structure and Function: Investigate functions of human body systems</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STRAND/CONTENT STANDARD	AR.3.	Life Science: Life Cycles, Reproduction, and Heredity: Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.7.8.	<p>Heredity and Reproduction: Identify the number and source of chromosomes in human body cells</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1:

		<p>Simulating Meiosis and Fertilization</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 Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.7.9.	<p>Heredity and Reproduction: Identify the number and source of chromosomes in human sex 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
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.7.10.	<p>Heredity and Reproduction: Explain the role of cell division</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND/CONTENT STANDARD	AR.5.	Physical Science: Matter: Properties and Changes: Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.7.2.	<p>Properties of Matter: Create models of common compounds: water, carbon dioxide, salt, iron oxide, ammonia</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

Arkansas Curriculum Frameworks

Science

Grade 8

STRAND/CONTENT STANDARD	AR.1.	Nature of Science: Characteristics and Processes of Science: Students shall demonstrate and apply knowledge of the characteristics and processes of science using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.8.1.	<p>Processes of Science: Justify conclusions based on appropriate and unbiased 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:

		<p>Modeling 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.2.</p>	<p>Processes of Science: Evaluate the merits of empirical evidence based on experimental design: hypothesis, replication, sample size, appropriate use of control, use of standardized independent and dependent variables</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 3: Constructing a Family Pedigree • 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.1.8.3.	<p>Processes of Science: Formulate a testable problem using experimental design</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

		<p>Independent 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 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.4.</p>	<p>Processes of Science: Analyze a set of scientific data using mean, median, mode, and range using SI units</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a

		<p>Population</p> <ul style="list-style-type: none"> • Teacher Resource CD: Genetics and Inheritance • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.7.</p>	<p>Processes of Science: Communicate results and conclusions from scientific inquiry following peer review</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

		<p>Population</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.8.</p>	<p>Processes of Science: Develop and implement strategies for long-term, accurate data collection</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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.1.8.9.</p>	<p>Characteristics of Science: Generate questions that can and cannot be answered by science</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

		<p>Dominance</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND/CONTENT STANDARD	AR.2.	Life Science: Living Systems: Characteristics, Structure, and Function: Students shall demonstrate and apply knowledge of living systems using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	LS.2.8.7.	<p>Structure and Function: Classify cells as eukaryotic or prokaryotic</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND/CONTENT STANDARD	AR.3.	Life Science: Life Cycles, Reproduction, and Heredity: Students shall demonstrate and apply knowledge of life cycles, reproduction, and heredity using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.1.	<p>Heredity and Reproduction: Identify and explain why inherited characteristics of living things depend on genes</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:

		<p>Diagnosing 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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>LS.3.8.2.</p>	<p>Heredity and Reproduction: Differentiate between dominant and recessive 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 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"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.3.	<p>Heredity and Reproduction: Observe and classify traits as dominant or recessive: tongue rolling, detached earlobes, widow's peak, hitchhiker's thumb, dimples, unibrow</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 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
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.5.	<p>Heredity and Reproduction: Interpret simple genetic crosses using Punnett Squares</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

		<p>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 3 Lab 4 Activity 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood 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
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.6.	<p>Heredity and Reproduction: Predict patterns that emerge from simple genetic crosses</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood 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
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.7.	<p>Heredity and Reproduction: Conduct investigations demonstrating that the phenotype of a genetic trait is the result of genotype</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:

		<p>Modeling a 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 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>LS.3.8.8.</p>	<p>Heredity and Reproduction: Explain how genetic variation within a species is a result of dominant traits and recessive 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

		<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 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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.11.	<p>Heredity and Reproduction: Investigate careers, scientists, and historical breakthroughs related to genetics</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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	LS.3.8.13.	<p>Regulation and Behavior: Identify basic ideas related to biological evolution: diversity of species, variations within species, adaptations, natural selection, extinction of a species</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

		<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 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 2: Calculating the Frequency of Human Traits in a Population • Teacher Resource CD: Genetics and Inheritance
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>LS.3.8.16.</p>	<p>Regulation and Behavior: Identify genetic traits that make organisms more likely to survive and reproduce in a particular 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 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:

		<p>Using Punnett Squares to Determine Genotypes and Phenotypes</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 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
STRAND/CONTENT STANDARD	AR.5.	Physical Science: Matter: Properties and Changes: Students shall demonstrate and apply knowledge of matter, including properties and changes, using appropriate safety procedures, equipment, and technology
STANDARD/STUDENT LEARNING EXPECTATION	PS.5.8.4.	<p>Properties of Matter: Create atomic models of common elements</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

**Arkansas Curriculum Frameworks
Science
Grade 9**

STRAND/CONTENT STANDARD	AR.1.AP.	Anatomy and Physiology: Organization of the Human Body: Students shall explore the organizational structures of the body from the molecular to the organism level.
STANDARD/STUDENT LEARNING EXPECTATION	OHB.1.AP.4	<p>Describe relative positions, body planes, body regions and body quadrants</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STANDARD/STUDENT LEARNING EXPECTATION	OHB.1.AP.5	<p>Identify the major body cavities and the subdivisions of each cavity</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STRAND/CONTENT STANDARD	AR.2.AP.	Anatomy and Physiology: Cellular Chemistry: Students shall understand the role of chemistry in body processes.
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.4	<p>Explain the role of ionic, covalent, and hydrogen bonds in the human body</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
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.9	<p>Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.10	<p>Describe the characteristics and importance of enzymes</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/CONTENT STANDARD	AR.3.AP.	Anatomy and Physiology: Anatomy and Physiology of the Cell: Students shall understand that cells are the basic, structural, and functional units of life.
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.3	<p>Describe the structure and function of organelles and cell parts</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.5	<p>Differentiate among replication, transcription, and translation</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.6	<p>Differentiate between mitosis and meiosis</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.7	<p>Explain the consequences of abnormal cell division</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/CONTENT STANDARD	AR.10.AP.	Anatomy and Physiology: Body Systems: Students shall describe the anatomy and physiology of the cardiovascular system.
STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.1	<p>Identify the components of the cardiovascular system</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood

STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.2	Discuss the physiological mechanisms of the cardiovascular system <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.3	Identify the macroscopic, microscopic, and molecular structure of the cardiovascular system <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.4	Describe disorders associated with the cardiovascular system <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STRAND/CONTENT STANDARD	AR.17.AP.	Anatomy and Physiology: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.2	Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting scientific investigations <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:

		<p>Analyze Genetic Origins through DNA Sequencing</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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.4	<p>Gather and analyze data using appropriate summary statistics</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.5	<p>Formulate valid conclusions without bias</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 • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.6	<p>Communicate experimental results using appropriate reports, figures, and 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:

		<p>Modeling 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
STRAND/CONTENT STANDARD	AR.18.AP.	Anatomy and Physiology: Nature of Science: Students shall demonstrate an understanding of current life science theories.
STANDARD/STUDENT LEARNING EXPECTATION	NS.18.AP.2	<p>Relate the development of the cell theory to current trends in cellular biology</p> <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 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 • 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.18.AP.4</p>	<p>Relate the chromosome theory of heredity to recent findings in genetic research (e.g., Human Genome Project-HGP, chromosome therapy)</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:

		<p>Diagnosing 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
STRAND/CONTENT STANDARD	AR.19.AP.	Anatomy and Physiology: Nature of Science: Students shall use mathematics, science equipment, and technology as tools to communicate and solve life science problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.19.AP.1	<p>Collect and analyze scientific data using appropriate mathematical calculations, figures, and 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 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.19.AP.2</p>	<p>Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware)</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 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

		<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 • 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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.19.AP.3</p>	<p>Utilize technology to communicate research findings</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
STRAND/CONTENT STANDARD	AR.20.AP.	Anatomy and Physiology: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.20.AP.1	<p>Compare and contrast human biology concepts in pure science and applied science</p> <ul style="list-style-type: none"> 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 Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity
STANDARD/STUDENT LEARNING EXPECTATION	NS.20.AP.2	<p>Discuss why scientists should work within ethical parameters</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.1.B.	Biology: Molecules and Cells: Students shall demonstrate an understanding of the role of chemistry in life processes.
STANDARD/STUDENT LEARNING EXPECTATION	MC.1.B.1	<p>Describe the structure and function of the major organic molecules found in living systems: carbohydrates, proteins, enzymes, lipids, nucleic acids</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	MC.1.B.2	<p>Describe the relationship between an enzyme and its substrate molecule(s)</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/CONTENT STANDARD	AR.2.B.	Biology: Molecules and Cells: Students shall demonstrate an understanding of the structure and function of cells.

STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.2	Compare and contrast prokaryotes and eukaryotes <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.3	Describe the role of sub-cellular structures in the life of a cell: organelles, ribosomes, cytoskeleton <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.4	Relate the function of the plasma (cell) membrane to its structure <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.5	Compare and contrast the structures of an animal cell to a plant cell <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.6	Compare and contrast the functions of autotrophs and heterotrophs <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.8	Describe the main events in the cell cycle, including the differences in plant and animal cell division: interphase, mitosis, cytokinesis <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.10	Analyze the meiotic maintenance of a constant chromosome number from one generation to the next <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND/CONTENT STANDARD	AR.3.B.	Biology: Molecules and Cells: Students shall demonstrate an understanding of how cells obtain and use energy (energetics).
STANDARD/STUDENT LEARNING EXPECTATION	MC.3.B.1	Compare and contrast the structure and function of mitochondria and chloroplasts <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND/CONTENT STANDARD	AR.4.B.	Biology: Heredity and Evolution: Students shall demonstrate an understanding of heredity.
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.1	Summarize the outcomes of Gregor Mendel's experimental procedures

		<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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.2	<p>Differentiate among the laws and principles of inheritance: dominance, segregation, 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 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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.3	<p>Use the laws of probability and Punnett squares to predict genotypic and phenotypic ratios</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		<ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood • 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>HE.4.B.4</p>	<p>Examine different modes of inheritance: sex linkage, codominance, crossing over, incomplete dominance, multiple alleles</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 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
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.5	<p>Analyze the historically significant work of prominent geneticists</p> <ul style="list-style-type: none"> 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 Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.6	<p>Evaluate karyotypes for abnormalities: monosomy, trisomy</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/CONTENT STANDARD	AR.5.B.	Biology: Heredity and Evolution: Students shall investigate the molecular basis of genetics.
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.1	<p>Model the components of a DNA nucleotide and an RNA nucleotide</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

STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.2	<p>Describe the Watson-Crick double helix model of DNA, using the base-pairing rule (adenine-thymine, cytosine-guanine)</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
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.3	<p>Compare and contrast the structure and function of DNA and RNA</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
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.4	<p>Describe and model the processes of replication, transcription, and translation</p> <ul style="list-style-type: none"> • Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.5	<p>Compare and contrast the different types of mutation events, including point mutation, frameshift mutation, deletion, and inversion</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

		<ul style="list-style-type: none"> Teacher Resource CD: Genetics and Inheritance
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.6	<p>Identify effects of changes brought about by mutations: beneficial, harmful, neutral</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/CONTENT STANDARD	AR.6.B.	Biology: Heredity and Evolution: Students shall examine the development of the theory of biological evolution.
STANDARD/STUDENT LEARNING EXPECTATION	HE.6.B.3	<p>Analyze the effects of mutations and the resulting variations within a population in terms of natural selection</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/CONTENT STANDARD	AR.9.B.	Biology: Ecology and Behavioral Relationships: Students shall demonstrate an understanding of the ecological impact of global issues.
STANDARD/STUDENT LEARNING EXPECTATION	EBR.9.B.3	<p>Assess current world issues applying scientific themes (e.g., global changes in climate, epidemics, pandemics, ozone depletion, UV radiation, natural resources, use of technology, and public policy)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.11.B.	Biology: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.11.B.1	<p>Develop and explain the appropriate procedure, controls, and variables (dependent and independent) in scientific experimentation</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

		<p>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 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.11.B.2</p>	<p>Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting 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

		<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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.11.B.4	<p>Gather and analyze data using appropriate summary statistics</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.11.B.5	<p>Formulate valid conclusions without bias</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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.11.B.6</p>	<p>Communicate experimental results using appropriate reports, figures, and 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 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/CONTENT STANDARD	AR.12.B.	Biology: Nature of Science: Students shall demonstrate an understanding of current life science theories.
STANDARD/STUDENT LEARNING EXPECTATION	NS.12.B.4	<p>Relate the development of the cell theory to current trends in cellular biology</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	NS.12.B.5	<p>Describe the relationship between the germ theory of disease and our current knowledge of immunology and control of infectious diseases</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
STANDARD/STUDENT LEARNING EXPECTATION	NS.12.B.6	<p>Relate the chromosome theory of heredity to recent findings in genetic research (e.g., Human Genome Project-HGP, chromosome therapy)</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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.12.B.7	<p>Research current events and topics in biology</p> <ul style="list-style-type: none"> 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 Genetics and Inheritance: Unit 4 Lab 7 Activity 2:

		<p>Calculating the Frequency of Human Traits in a Population</p> <ul style="list-style-type: none"> Teacher Resource CD: Genetics and Heredity
STRAND/CONTENT STANDARD	AR.13.B.	Biology: Nature of Science: Students shall use mathematics, science equipment, and technology as tools to communicate and solve life science problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.13.B.1	<p>Collect and analyze scientific data using appropriate mathematical calculations, figures, and 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 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

		<p>Population</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.13.B.2</p>	<p>Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware)</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 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

		<p>Dominance</p> <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.13.B.3</p>	<p>Utilize technology to communicate research findings</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/CONTENT STANDARD	AR.14.B.	Biology: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.14.B.1	<p>Compare and contrast biological concepts in pure science and applied science</p> <ul style="list-style-type: none"> 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 Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity
STANDARD/STUDENT LEARNING EXPECTATION	NS.14.B.2	<p>Discuss why scientists should work within ethical parameters</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.9.C.	Chemistry: Bonding: Students shall understand the process of covalent bonding.
STANDARD/STUDENT LEARNING EXPECTATION	B.9.C.4	<p>Identify the strengths and effects of intermolecular forces (van der Waals): hydrogen bonding, dipole-dipole, dipole-induced dipole, dispersion forces (London)</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/CONTENT STANDARD	AR.33.C.	Chemistry: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.33.C.2	<p>Research and apply appropriate safety precautions (refer to Arkansas Safety Lab Guide) when designing and/or conducting 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:

		<p>Modeling a 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 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/CONTENT STANDARD	AR.3.ES.	Environmental Science: Social Perspectives: Students shall understand the impact of human activities on the environment.
STANDARD/STUDENT LEARNING EXPECTATION	SP.3.ES.9	<p>Evaluate personal and societal benefits when examining health, population, resource, and environmental issues</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STANDARD/STUDENT LEARNING EXPECTATION	SP.3.ES.10	<p>Predict the long-term societal impact of specific health, population, resource, and environmental issues</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STANDARD/STUDENT LEARNING EXPECTATION	SP.3.ES.11	<p>Investigate the effect of public policy decisions on health, population, resource, and environmental issues</p>

		<ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.4.ES.	Environmental Science: Nature of Science: Students shall use mathematics, science equipment, and technology as tools to communicate and solve environmental science problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.4.ES.1	<p>Collect and analyze scientific data using appropriate mathematical calculations, figures and 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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.4.ES.2	<p>Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware)</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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.4.ES.3	<p>Utilize technology to communicate research findings</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/CONTENT STANDARD	AR.5.ES.	Environmental Science: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.5.ES.2	<p>Explain why scientists should work within ethical parameters</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.1.PS.	Physical Science: Chemistry: Students shall demonstrate an understanding of matter's composition and structure.
STANDARD/STUDENT LEARNING EXPECTATION	C.1.PS.5	<p>Distinguish among atoms, ions, and isotopes</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/CONTENT STANDARD	AR.4.PS.	Physical Science: Chemistry: Students shall classify organic compounds.
STANDARD/STUDENT LEARNING EXPECTATION	C.4.PS.4	<p>Describe organic compounds and their functions in the human body: carbohydrates, lipids, proteins, nucleic acids</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND/CONTENT STANDARD	AR.10.PS.	Physical Science: Nature of Science: Students shall design and safely conduct a scientific inquiry to solve valid problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.10.PS.2	<p>Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting 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

		<p>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 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 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/CONTENT STANDARD	AR.13.PS.	Physical Science: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.13.PS.5	<p>Describe in detail the methods used by scientists in their research</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND/CONTENT STANDARD	AR.17.P.	Physics: Nature of Science: Students shall safely design and conduct a scientific inquiry to solve valid problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.P.2	<p>Research and apply appropriate safety precautions (ADE Guidelines) when designing and/or conducting 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

		<p>Independent 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 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
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Arkansas Curriculum Frameworks
Science
Grade 10

STRAND/CONTENT STANDARD	AR.1.AP.	Anatomy and Physiology: Organization of the Human Body: Students shall explore the organizational structures of the body from the molecular to the organism level.
STANDARD/STUDENT LEARNING EXPECTATION	OHB.1.AP.4	Describe relative positions, body planes, body regions and body quadrants <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STANDARD/STUDENT LEARNING EXPECTATION	OHB.1.AP.5	Identify the major body cavities and the subdivisions of each cavity <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STRAND/CONTENT STANDARD	AR.2.AP.	Anatomy and Physiology: Cellular Chemistry: Students shall understand the role of chemistry in body processes.
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.4	Explain the role of ionic, covalent, and hydrogen bonds in the human

		<p>body</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
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.9	<p>Compare the structure and function of carbohydrates, lipids, proteins, and nucleic acids</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	CC.2.AP.10	<p>Describe the characteristics and importance of enzymes</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/CONTENT STANDARD	AR.3.AP.	<p>Anatomy and Physiology: Anatomy and Physiology of the Cell: Students shall understand that cells are the basic, structural, and functional units of life.</p>
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.3	<p>Describe the structure and function of organelles and cell parts</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.5	<p>Differentiate among replication, transcription, and translation</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.6	<p>Differentiate between mitosis and meiosis</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	APC.3.AP.7	<p>Explain the consequences of abnormal cell division</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/CONTENT STANDARD	AR.10.AP.	<p>Anatomy and Physiology: Body Systems: Students shall describe the anatomy and physiology of the cardiovascular system.</p>

STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.1	Identify the components of the cardiovascular system <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.2	Discuss the physiological mechanisms of the cardiovascular system <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.3	Identify the macroscopic, microscopic, and molecular structure of the cardiovascular system <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STANDARD/STUDENT LEARNING EXPECTATION	BS.10.AP.4	Describe disorders associated with the cardiovascular system <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 6 Activity 1: Examining Human Variation in Blood
STRAND/CONTENT STANDARD	AR.17.AP.	Anatomy and Physiology: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.2	Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting scientific investigations <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:

		<p>Using Punnett Squares to Determine Genotypes and Phenotypes</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 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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.17.AP.4</p>	<p>Gather and analyze data using appropriate summary statistics</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease • 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

STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.5	<p>Formulate valid conclusions without bias</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
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.AP.6	Communicate experimental results using appropriate reports,

		<p>figures, and 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 • 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/CONTENT STANDARD	AR.18.AP.	Anatomy and Physiology: Nature of Science: Students shall demonstrate an understanding of current life science theories.

STANDARD/STUDENT LEARNING EXPECTATION	NS.18.AP.2	<p>Relate the development of the cell theory to current trends in cellular biology</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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.18.AP.4	<p>Relate the chromosome theory of heredity to recent findings in genetic research (e.g., Human Genome Project-HGP, chromosome therapy)</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 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/CONTENT STANDARD	AR.19.AP.	Anatomy and Physiology: Nature of Science: Students shall use mathematics, science equipment, and technology as tools to communicate and solve life science problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.19.AP.1	<p>Collect and analyze scientific data using appropriate mathematical calculations, figures, and 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 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 • 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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.19.AP.2</p>	<p>Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware)</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 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

		<p>Phenotypes</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 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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.19.AP.3</p>	<p>Utilize technology to communicate research findings</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:

		<p>Analyze Genetic Origins through DNA Fingerprinting</p> <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
STRAND/CONTENT STANDARD	AR.20.AP.	Anatomy and Physiology: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.20.AP.1	<p>Compare and contrast human biology concepts in pure science and applied science</p> <ul style="list-style-type: none"> 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 Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity
STANDARD/STUDENT LEARNING EXPECTATION	NS.20.AP.2	<p>Discuss why scientists should work within ethical parameters</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.1.B.	Biology: Molecules and Cells: Students shall demonstrate an understanding of the role of chemistry in life processes.
STANDARD/STUDENT LEARNING EXPECTATION	MC.1.B.1	<p>Describe the structure and function of the major organic molecules found in living systems: carbohydrates, proteins, enzymes, lipids, nucleic acids</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	MC.1.B.2	<p>Describe the relationship between an enzyme and its substrate molecule(s)</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/CONTENT STANDARD	AR.2.B.	Biology: Molecules and Cells: Students shall demonstrate an understanding of the structure and function of cells.
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.2	Compare and contrast prokaryotes and eukaryotes <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.3	Describe the role of sub-cellular structures in the life of a cell: organelles, ribosomes, cytoskeleton <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.4	Relate the function of the plasma (cell) membrane to its structure <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.5	Compare and contrast the structures of an animal cell to a plant cell <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.6	Compare and contrast the functions of autotrophs and heterotrophs <ul style="list-style-type: none"> Virtual Laboratory: Mendelian Genetics Law of Dominance Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.8	Describe the main events in the cell cycle, including the differences in plant and animal cell division: interphase, mitosis, cytokinesis <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	MC.2.B.10	Analyze the meiotic maintenance of a constant chromosome number from one generation to the next <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND/CONTENT STANDARD	AR.3.B.	Biology: Molecules and Cells: Students shall demonstrate an understanding of how cells obtain and use energy (energetics).
STANDARD/STUDENT LEARNING EXPECTATION	MC.3.B.1	Compare and contrast the structure and function of mitochondria and chloroplasts <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STRAND/CONTENT	AR.4.B.	Biology: Heredity and Evolution: Students shall demonstrate an

STANDARD		understanding of heredity.
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.1	<p>Summarize the outcomes of Gregor Mendel's experimental procedures</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 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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.2	<p>Differentiate among the laws and principles of inheritance: dominance, segregation, 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 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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.3	<p>Use the laws of probability and Punnett squares to predict genotypic and phenotypic ratios</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 4: Using Punnett Squares to Determine Genotypes and

		<p>Phenotypes</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 6 Activity 1: Examining Human Variation in Blood • 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>HE.4.B.4</p>	<p>Examine different modes of inheritance: sex linkage, codominance, crossing over, incomplete dominance, multiple alleles</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:

		<p>Examining 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
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.5	<p>Analyze the historically significant work of prominent geneticists</p> <ul style="list-style-type: none"> 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 Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity
STANDARD/STUDENT LEARNING EXPECTATION	HE.4.B.6	<p>Evaluate karyotypes for abnormalities: monosomy, trisomy</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/CONTENT STANDARD	AR.5.B.	Biology: Heredity and Evolution: Students shall investigate the molecular basis of genetics.
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.1	<p>Model the components of a DNA nucleotide and an RNA nucleotide</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

		<ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.2	<p>Describe the Watson-Crick double helix model of DNA, using the base-pairing rule (adenine-thymine, cytosine-guanine)</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
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.3	<p>Compare and contrast the structure and function of DNA and RNA</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
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.4	<p>Describe and model the processes of replication, transcription, and translation</p> <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.5	<p>Compare and contrast the different types of mutation events, including point mutation, frameshift mutation, deletion, and inversion</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:

		<p>Diagnosing Genetic Disease</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease Teacher Resource CD: Genetics and Inheritance
STANDARD/STUDENT LEARNING EXPECTATION	HE.5.B.6	<p>Identify effects of changes brought about by mutations: beneficial, harmful, neutral</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/CONTENT STANDARD	AR.6.B.	Biology: Heredity and Evolution: Students shall examine the development of the theory of biological evolution.
STANDARD/STUDENT LEARNING EXPECTATION	HE.6.B.3	<p>Analyze the effects of mutations and the resulting variations within a population in terms of natural selection</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/CONTENT STANDARD	AR.9.B.	Biology: Ecology and Behavioral Relationships: Students shall demonstrate an understanding of the ecological impact of global issues.
STANDARD/STUDENT LEARNING EXPECTATION	EBR.9.B.3	<p>Assess current world issues applying scientific themes (e.g., global changes in climate, epidemics, pandemics, ozone depletion, UV radiation, natural resources, use of technology, and public policy)</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.11.B.	Biology: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.11.B.1	<p>Develop and explain the appropriate procedure, controls, and variables (dependent and independent) in scientific experimentation</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

		<p>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 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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.11.B.2</p>	<p>Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting 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

		<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
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.11.B.4</p>	<p>Gather and analyze data using appropriate summary statistics</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 4: Using Punnett Squares to Determine Genotypes and Phenotypes • Genetics and Inheritance: Unit 3 Lab 5 Activity 4: Diagnosing Genetic Disease

		<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
STANDARD/STUDENT LEARNING EXPECTATION	NS.11.B.5	<p>Formulate valid conclusions without bias</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

		<p>Population</p> <ul style="list-style-type: none"> • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
<p>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.11.B.6</p>	<p>Communicate experimental results using appropriate reports, figures, and 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 • 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
STRAND/CONTENT STANDARD	AR.12.B.	Biology: Nature of Science: Students shall demonstrate an understanding of current life science theories.
STANDARD/STUDENT LEARNING EXPECTATION	NS.12.B.4	<p>Relate the development of the cell theory to current trends in cellular biology</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 2 Lab 3 Activity 1: Simulating Meiosis and Fertilization
STANDARD/STUDENT LEARNING EXPECTATION	NS.12.B.6	<p>Relate the chromosome theory of heredity to recent findings in genetic research (e.g., Human Genome Project-HGP, chromosome therapy)</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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.12.B.7	<p>Research current events and topics in biology</p> <ul style="list-style-type: none"> 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 Genetics and Inheritance: Unit 4 Lab 7 Activity 2: Calculating the Frequency of Human Traits in a Population Teacher Resource CD: Genetics and Heredity
STRAND/CONTENT STANDARD	AR.13.B.	Biology: Nature of Science: Students shall use mathematics, science equipment, and technology as tools to communicate and solve life science problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.13.B.1	Collect and analyze scientific data using appropriate mathematical

		<p>calculations, figures, and 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 • 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.13.B.2	Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras,

		<p>computer software and hardware)</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 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>STANDARD/STUDENT LEARNING EXPECTATION</p>	<p>NS.13.B.3</p>	<p>Utilize technology to communicate research findings</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 • Virtual Laboratory: Mendelian Genetics Law of Dominance • Virtual Laboratory: Mendelian Genetics Law of Independent Assortment
STRAND/CONTENT STANDARD	AR.14.B.	Biology: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.14.B.1	<p>Compare and contrast biological concepts in pure science and applied science</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 5:

		<p>Predicting Genetic Disease</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
STANDARD/STUDENT LEARNING EXPECTATION	NS.14.B.2	<p>Discuss why scientists should work within ethical parameters</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.9.C.	Chemistry: Bonding: Students shall understand the process of covalent bonding.
STANDARD/STUDENT LEARNING EXPECTATION	B.9.C.4	<p>Identify the strengths and effects of intermolecular forces (van der Waals): hydrogen bonding, dipole-dipole, dipole-induced dipole, dispersion forces (London)</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/CONTENT STANDARD	AR.33.C.	Chemistry: Nature of Science: Students shall design and safely conduct scientific inquiry.
STANDARD/STUDENT LEARNING EXPECTATION	NS.33.C.2	<p>Research and apply appropriate safety precautions (refer to Arkansas Safety Lab Guide) when designing and/or conducting 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

		<p>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 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 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/CONTENT STANDARD	AR.3.ES.	Environmental Science: Social Perspectives: Students shall understand the impact of human activities on the environment.
STANDARD/STUDENT LEARNING EXPECTATION	SP.3.ES.9	<p>Evaluate personal and societal benefits when examining health, population, resource, and environmental issues</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STANDARD/STUDENT LEARNING EXPECTATION	SP.3.ES.10	<p>Predict the long-term societal impact of specific health, population, resource, and environmental issues</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STANDARD/STUDENT LEARNING EXPECTATION	SP.3.ES.11	<p>Investigate the effect of public policy decisions on health, population, resource, and environmental issues</p> <ul style="list-style-type: none"> Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT STANDARD	AR.4.ES.	Environmental Science: Nature of Science: Students shall use mathematics, science equipment, and technology as tools to communicate and solve environmental science problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.4.ES.1	Collect and analyze scientific data using appropriate mathematical calculations, figures and tables

		<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
STANDARD/STUDENT LEARNING EXPECTATION	NS.4.ES.2	Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware)

		<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 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
STANDARD/STUDENT LEARNING EXPECTATION	NS.4.ES.3	<p>Utilize technology to communicate research findings</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 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/CONTENT STANDARD	AR.5.ES.	Environmental Science: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.5.ES.2	<p>Explain why scientists should work within ethical parameters</p> <ul style="list-style-type: none"> • Genetics and Inheritance: Unit 3 Lab 5 Activity 5: Predicting Genetic Disease
STRAND/CONTENT	AR.1.PS.	Physical Science: Chemistry: Students shall demonstrate an

STANDARD		understanding of matter's composition and structure.
STANDARD/STUDENT LEARNING EXPECTATION	C.1.PS.5	Distinguish among atoms, ions, and isotopes <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/CONTENT STANDARD	AR.4.PS.	Physical Science: Chemistry: Students shall classify organic compounds.
STANDARD/STUDENT LEARNING EXPECTATION	C.4.PS.4	Describe organic compounds and their functions in the human body: carbohydrates, lipids, proteins, nucleic acids <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND/CONTENT STANDARD	AR.13.PS.	Physical Science: Nature of Science: Students shall describe the connections between pure and applied science.
STANDARD/STUDENT LEARNING EXPECTATION	NS.13.PS.5	Describe in detail the methods used by scientists in their research <ul style="list-style-type: none"> Teacher Resource CD: The DNA Connection
STRAND/CONTENT STANDARD	AR.17.P.	Physics: Nature of Science: Students shall safely design and conduct a scientific inquiry to solve valid problems.
STANDARD/STUDENT LEARNING EXPECTATION	NS.17.P.2	Research and apply appropriate safety precautions (ADE Guidelines) when designing and/or conducting scientific investigations <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

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