

Inquiry Investigations™
Biotechnology Applications MODULE - 1278382
Grades: 7-10

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New Mexico Standards
Science
Grade 7

STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-A.	Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-A.1a.	<p>Use a variety of print and web resources to collect information, inform investigations, and answer a scientific question or hypothesis.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD /	I-A.2a.	Use models to explain the relationships between variables being investigated.

BENCHMARK / PROFICIENCY		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery
STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-B.	Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.2a.	<p>Critique procedures used to investigate a hypothesis.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.3a.	<p>Analyze and evaluate scientific explanations.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-

		<p>Degrading Microbes</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-C.	Use mathematical ideas, tools, and techniques to understand scientific knowledge.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.2a.	<p>Use mathematical expressions to represent data and observations collected in scientific investigations.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing

		<p>Electrophoresed DNA Profiles</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.3a.	<p>Select and use an appropriate model to examine a phenomenon.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.
BENCHMARK / STANDARD	II-A.	Know the forms and properties of matter and how matter interacts.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.1a.	<p>Explain how matter is transferred from one organism to another and between organisms and their environment (e.g., consumption, the water cycle, the carbon cycle, the nitrogen cycle).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Physical Science: Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.
BENCHMARK / STANDARD	II-B.	Explain the physical processes involved in the transfer, change, and conservation of energy.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.1a.	<p>Know how various forms of energy are transformed through organisms and ecosystems, including: sunlight and photosynthesis; energy transformation in living systems (e.g., cellular processes changing chemical energy to heat and motion); and effect of mankind's use of energy and other activities on living systems (e.g., global warming, water quality).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-A.	Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.2a.	<p>Populations and Ecosystems: Explain biomes (i.e., aquatic, desert, rainforest, grasslands, tundra) and describe the New Mexico biome.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.3a.	<p>Populations and Ecosystems: Explain how individuals of species that exist together interact with their environment to create an ecosystem (e.g., populations, communities, niches, habitats, food webs).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK /	II-A.4a.	Populations and Ecosystems: Explain the conditions and resources needed to sustain life in specific ecosystems.

PROFICIENCY		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-B.	Understand how traits are passed from one generation to the next and how species evolve.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.1a.	<p>Reproduction: Know that reproduction is a characteristic of all living things and is essential to the continuation of a species.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.3a.	<p>Reproduction: Know that, in sexual reproduction, an egg and sperm unite to begin the development of a new individual.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out

		<p>Who Is at Risk for SARS</p> <ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.4a.</p>	<p>Reproduction: Know that organisms that sexually reproduce fertile offspring are members of the same species.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.5a.</p>	<p>Heredity: Understand that some characteristics are passed from parent to offspring as inherited traits and others are acquired from interactions with the environment.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science

		<ul style="list-style-type: none"> Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.6a.	<p>Heredity: Know that hereditary information is contained in genes that are located in chromosomes, including: determination of traits by genes; traits determined by one or many genes; and more than one trait sometimes influenced by a single gene.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS Teacher Resource CD: Biotechnology in Agriculture and the Environment Teacher Resource CD: Biotechnology in Forensic Science Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.7a.	<p>Biological Evolution: Describe how typical traits may change from generation to generation due to environmental influences (e.g., color of skin, shape of eyes, camouflage, shape of beak).</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.9a.	<p>Biological Evolution: Know that organisms can acquire unique characteristics through naturally occurring genetic variations.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Teacher Resource CD: Biotechnology in Medicine
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.
BENCHMARK /	II-B.	Describe the structure of Earth and its atmosphere and explain how energy,

STANDARD		matter, and forces shape Earth's systems.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.3a.	<p>Know that changes to ecosystems sometimes decrease the capacity of the environment to support some life forms and are difficult and/or costly to remediate.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
STRAND / CONTENT STANDARD	NM.III.	Science and Society: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.
BENCHMARK / STANDARD	III-A.	Explain how scientific discoveries and inventions have changed individuals and societies.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.2a.	<p>Analyze how technologies have been responsible for advances in medicine (e.g., vaccines, antibiotics, microscopes, DNA technologies).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Medicine

**New Mexico Standards
Science
Grade 8**

STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-A.	Use scientific methods to develop questions, design and conduct experiments using appropriate technologies, analyze and evaluate results, make predictions, and communicate findings.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-A.1a.	<p>Evaluate the accuracy and reproducibility of data and observations.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-A.2a.	<p>Use a variety of technologies to gather, analyze and interpret scientific data.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-B.	Understand the processes of scientific investigation and how scientific inquiry results in scientific knowledge.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.1a.	<p>Examine alternative explanations for observations.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning

		<p>up Mini-Oil Spills in Various Shore Environments</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-B.2a.</p>	<p>Describe ways in which science differs from other ways of knowing and from other bodies of knowledge (e.g., experimentation, logical arguments, skepticism).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.3a.	<p>Know that scientific knowledge is built on questions posed as testable hypotheses, which are tested until the results are accepted by peers.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-C.	Use mathematical ideas, tools, and techniques to understand scientific knowledge.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.1a.	<p>Use mathematical expressions and techniques to explain data and observations and to communicate findings (e.g., formulas and equations, significant figures, graphing, sampling, estimation, mean).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a

		<p>Case History of Baby Mike</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.2a.	<p>Create models to describe phenomena.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-A.	Explain the diverse structures and functions of living things and the complex relationships between living things and their environments.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.1a.	<p>Describe how matter moves through ecosystems (e.g., water cycle, carbon cycle).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.2a.	<p>Describe how energy flows through ecosystems (e.g., sunlight, green plants, food for animals).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a

		Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.3a.	<p>Explain how a change in the flow of energy can impact an ecosystem (e.g., the amount of sunlight available for plant growth, global climate change).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-B.	Understand how traits are passed from one generation to the next and how species evolve.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.2a.	<p>Identify DNA as the chemical compound involved in heredity in living organisms.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
STRAND / CONTENT STANDARD	NM.II.	Content of Science: Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.
BENCHMARK / STANDARD	II-B.	Describe the structure of Earth and its atmosphere and explain how energy, matter, and forces shape Earth's systems.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.3a.	<p>Understand the geologic conditions that have resulted in energy resources (e.g., oil, coal, natural gas) available in New Mexico.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining

		Oil-Degrading Microbes
STRAND / CONTENT STANDARD	NM.III.	Science and Society: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.
BENCHMARK / STANDARD	III-A.	Explain how scientific discoveries and inventions have changed individuals and societies.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.1a.	Analyze the interrelationship between science and technology (e.g., germ theory, vaccines). <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.2a.	Describe how scientific information can help to explain environmental phenomena (e.g., floods, earthquakes, volcanoes, fire, extreme weather). <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes

New Mexico Standards
Science
Grade 9

STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-A.	Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-A.1a.	Describe the essential components of an investigation, including appropriate methodologies, proper equipment, and safety precautions. <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making

		<p>Cheese the Biotech Way</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.2a.</p>	<p>Design and conduct scientific investigations that include: testable hypotheses; controls and variables; methods to collect, analyze, and interpret data; results that address hypotheses being investigated; predictions based on results; re-evaluation of hypotheses and additional experimentation as necessary; error analysis.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.3a.</p>	<p>Use appropriate technologies to collect, analyze, and communicate scientific data (e.g., computers, calculators, balances, microscopes).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.4a.</p>	<p>Convey results of investigations using scientific concepts, methodologies, and expressions, including: scientific language and symbols; diagrams, charts, and other data displays; mathematical expressions and processes (e.g., mean, median, slope, proportionality); clear, logical, and concise communication; reasoned arguments.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading

		<p>a Simulated Oil Spill</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.5a.</p>	<p>Understand how scientific theories are used to explain and predict natural phenomena (e.g., plate tectonics, ocean currents, structure of atom).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human

		Karyotype
STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-B.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.2a.	<p>Use scientific reasoning and valid logic to recognize: faulty logic; cause and effect; the difference between observation and unsubstantiated inferences and conclusions; potential bias.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.3a.	<p>Understand how new data and observations can result in new scientific knowledge.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a

		Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.6a.	<p>Examine the scientific processes and logic used in investigations of past events (e.g., using data from crime scenes, fossils), investigations that can be planned in advance but are only done once (e.g., expensive or time-consuming experiments such as medical clinical trials), and investigations of phenomena that can be repeated easily and frequently.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-C.	Use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.1a.	<p>Create multiple displays of data to analyze and explain the relationships in scientific investigations.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up

		<p>Mini-Oil Spills in Various Shore Environments</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.2a.	<p>Use mathematical models to describe, explain, and predict natural phenomena.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.3a.	<p>Use technologies to quantify relationships in scientific hypotheses (e.g., calculators, computer spreadsheets and databases, graphing software, simulations, modeling).</p> <ul style="list-style-type: none"> • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.5a.	<p>Use mathematics to express and establish scientific relationships (e.g., scientific notation, vectors, dimensional analysis).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-A.	Understand how the survival of species depends on biodiversity and on complex interactions, including the cycling of matter and the flow of energy.
PERFORMANCE STANDARD /	II-A.1a.	Ecosystems: Know that an ecosystem is complex and may exhibit fluctuations around a

BENCHMARK / PROFICIENCY		<p>steady state or may evolve over time.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.2a.	<p>Ecosystems: Describe how organisms cooperate and compete in ecosystems (e.g., producers, decomposers, herbivores, carnivores, omnivores, predator-prey, symbiosis, mutualism).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.3a.	<p>Ecosystems: Understand and describe how available resources limit the amount of life an ecosystem can support (e.g., energy, water, oxygen, nutrients).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.4a.	<p>Ecosystems: Critically analyze how humans modify and change ecosystems (e.g., harvesting, pollution, population growth, technology).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.9a.	<p>Biodiversity: Understand variation within and among species, including: mutations and genetic drift; factors affecting the survival of an organism; natural selection.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Teacher Resource CD: Biotechnology in Medicine
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-B.	Understand the genetic basis for inheritance and the basic concepts of biological evolution.
PERFORMANCE STANDARD /	II-B.1a.	Genetics: Know how DNA carries all genetic information in the units of heredity called genes, including: the structure of DNA (e.g., subunits A, G, C, T); information-preserving

<p>BENCHMARK / PROFICIENCY</p>		<p>replication of DNA; alteration of genes by inserting, deleting, or substituting parts of DNA.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.2a.</p>	<p>Genetics: Use appropriate vocabulary to describe inheritable traits (i.e., genotype, phenotype).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment

		<ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.4a.</p>	<p>Genetics: Identify traits that can and cannot be inherited.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.5a.</p>	<p>Genetics: Know how genetic variability results from the recombination and mutation of genes, including: sorting and recombination of genes in sexual reproduction result in a change in DNA that is passed on to offspring; radiation or chemical substances can cause mutations in cells, resulting in a permanent change in DNA.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science

		<ul style="list-style-type: none"> Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.6a.	<p>Genetics: Understand the principles of sexual and asexual reproduction, including meiosis and mitosis.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS Teacher Resource CD: Biotechnology in Agriculture and the Environment Teacher Resource CD: Biotechnology in Forensic Science Teacher Resource CD: Biotechnology in Medicine Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.7a.	<p>Genetics: Know that most cells in the human body contain 23 pairs of chromosomes including one pair that determines sex, and that human females have two X chromosomes and human males have an X and a Y chromosome.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Teacher Resource CD: Biotechnology in Forensic Science Teacher Resource CD: Biotechnology in Medicine Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.8a.	<p>Biological Evolution: Describe the evidence for the first appearance of life on Earth as one-celled organisms, over 3.5 billion years ago, and for the later appearance of a diversity of multicellular organisms over millions of years.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing

		<p>Karyotypes</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.9a.</p>	<p>Biological Evolution: Critically analyze the data and observations supporting the conclusion that the species living on Earth today are related by descent from the ancestral one-celled organisms.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.10a.</p>	<p>Biological Evolution: Understand the data, observations, and logic supporting the conclusion that species today evolved from earlier, distinctly different species, originating from the ancestral one-celled organisms.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret

		<ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.11a.	<p>Biological Evolution: Understand that evolution is a consequence of many factors, including the ability of organisms to reproduce, genetic variability, the effect of limited resources, and natural selection.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Teacher Resource CD: Biotechnology in Medicine
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-C.	Understand the characteristics, structures, and functions of cells.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-C.1a.	<p>Structure and Function: Know that cells are made of proteins composed of combinations of amino acids.</p> <ul style="list-style-type: none"> Teacher Resource CD: Biotechnology in Agriculture and the Environment Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-C.2a.	<p>Structure and Function: Know that specialized structures inside cells in most organisms carry out different functions, including: parts of a cell and their functions (e.g., nucleus, chromosomes, plasma, and mitochondria); storage of genetic material in DNA; similarities and differences between plant and animal cells; prokaryotic and eukaryotic cells.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS Teacher Resource CD: Biotechnology in Agriculture and the Environment Teacher Resource CD: Biotechnology in Forensic Science Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK /	II-C.5a.	Structure and Function: Explain how cells differentiate and specialize during the growth of an organism, including: differentiation, regulated through the selected expression of

PROFICIENCY		<p>different genes; specialized cells, response to stimuli (e.g., nerve cells, sense organs).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-C.7a.	<p>Biochemical Mechanisms: Describe how most cell functions involve chemical reactions, including: promotion or inhibition of biochemical reactions by enzymes; processes of respiration (e.g., energy production, ATP); communication from cell to cell by secretion of a variety of chemicals (e.g., hormones).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.
BENCHMARK / STANDARD	II-B.	Examine the scientific theories of the origin, structure, energy, and evolution of Earth and its atmosphere, and their interconnections.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.10a.	<p>Geochemical Cycles: Describe the composition and structure of Earth's materials, including: the major rock types (i.e., sedimentary, igneous, metamorphic) and their formation; natural resources (e.g., minerals, petroleum) and their formation.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
STRAND / CONTENT STANDARD	NM.III.	Science and Society: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.
BENCHMARK / STANDARD	III-A.	Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.1a.	<p>Science and Technology: Know how science enables technology but also constrains it, and recognize the difference between real technology and science fiction (e.g., rockets vs. antigravity machines; nuclear reactors vs. perpetual-motion machines; medical X-rays vs. Star-Trek tricorders).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.2a.</p>	<p>Science and Technology: Understand how advances in technology enable further advances in science (e.g., microscopes and cellular structure; telescopes and understanding of the universe).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.3a.</p>	<p>Science and Technology: Evaluate the influences of technology on society (e.g., communications, petroleum, transportation, nuclear energy, computers, medicine, genetic engineering) including both desired and undesired effects, and including some historical examples (e.g., the wheel, the plow, the printing press, the lightning rod).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.4a.</p>	<p>Science and Technology: Understand the scientific foundations of common technologies (e.g., kitchen appliances, radio, television, aircraft, rockets, computers, medical X-rays, selective breeding, fertilizers and pesticides, agricultural equipment).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.5a.</p>	<p>Science and Technology: Understand that applications of genetics can meet human needs and can create new problems (e.g., agriculture, medicine, cloning).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue

		<p>People of Troublesome Creek</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.7a.	<p>Science and Technology: Describe how human activities have affected ozone in the upper atmosphere and how it affects health and the environment.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.9a.	<p>Science and Society: Describe how scientific knowledge helps decision makers with local, national, and global challenges (e.g., Waste Isolation Pilot Project [WIPP], mining, drought, population growth, alternative energy, climate change).</p> <ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.10a.	<p>Science and Society: Describe major historical changes in scientific perspectives (e.g., atomic theory, germs, cosmology, relativity, plate tectonics, evolution) and the experimental observations that triggered them.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.11a.	<p>Science and Society: Know that societal factors can promote or constrain scientific discovery (e.g., government funding, laws and regulations about human cloning and genetically modified organisms, gender and ethnic bias, AIDS research, alternative-energy research).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Teacher Resource CD: Biotechnology in Agriculture and the

		<p>Environment</p> <ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.12a.	<p>Science and Society: Explain how societies can change ecosystems and how these changes can be reversible or irreversible.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.17a.	<p>Science and Individuals: Identify important questions that science cannot answer (e.g., questions that are beyond today's science, decisions that science can only help to make, questions that are inherently outside of the realm of science).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.18a.	<p>Science and Individuals: Understand that scientists have characteristics in common with other individuals (e.g., employment and career needs, curiosity, desire to perform public service, greed, preconceptions and biases, temptation to be unethical, core values including honesty and openness).</p> <ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine

New Mexico Standards

Science Grade 10

STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-A.	Use accepted scientific methods to collect, analyze, and interpret data and observations and to design and conduct scientific investigations and communicate results.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-A.1a.	<p>Describe the essential components of an investigation, including appropriate methodologies, proper equipment, and safety precautions.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading

		<p>a Simulated Oil Spill</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.2a.</p>	<p>Design and conduct scientific investigations that include: testable hypotheses; controls and variables; methods to collect, analyze, and interpret data; results that address hypotheses being investigated; predictions based on results; re-evaluation of hypotheses and additional experimentation as necessary; error analysis.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.3a.</p>	<p>Use appropriate technologies to collect, analyze, and communicate scientific data (e.g., computers, calculators, balances, microscopes).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.4a.</p>	<p>Convey results of investigations using scientific concepts, methodologies, and expressions, including: scientific language and symbols; diagrams, charts, and other data displays; mathematical expressions and processes (e.g., mean, median, slope, proportionality); clear, logical, and concise communication; reasoned arguments.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up

		<p>Mini-Oil Spills in Various Shore Environments</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>I-A.5a.</p>	<p>Understand how scientific theories are used to explain and predict natural phenomena (e.g., plate tectonics, ocean currents, structure of atom).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype

STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-B.	Understand that scientific processes produce scientific knowledge that is continually evaluated, validated, revised, or rejected.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.2a.	<p>Use scientific reasoning and valid logic to recognize: faulty logic; cause and effect; the difference between observation and unsubstantiated inferences and conclusions; potential bias.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-B.3a.	<p>Understand how new data and observations can result in new scientific knowledge.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD /	I-B.6a.	Examine the scientific processes and logic used in investigations of past events (e.g., using data from crime scenes, fossils), investigations that can be planned in advance but

BENCHMARK / PROFICIENCY		<p>are only done once (e.g., expensive or time-consuming experiments such as medical clinical trials), and investigations of phenomena that can be repeated easily and frequently.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
STRAND / CONTENT STANDARD	NM.I.	Scientific Thinking and Practice: Understand the processes of scientific investigations and use inquiry and scientific ways of observing, experimenting, predicting, and validating to think critically.
BENCHMARK / STANDARD	I-C.	Use mathematical concepts, principles, and expressions to analyze data, develop models, understand patterns and relationships, evaluate findings, and draw conclusions.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.1a.	<p>Create multiple displays of data to analyze and explain the relationships in scientific investigations.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case

		<p>History of Baby Mike</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.2a.	<p>Use mathematical models to describe, explain, and predict natural phenomena.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.3a.	<p>Use technologies to quantify relationships in scientific hypotheses (e.g., calculators, computer spreadsheets and databases, graphing software, simulations, modeling).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	I-C.5a.	<p>Use mathematics to express and establish scientific relationships (e.g., scientific notation, vectors, dimensional analysis).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-A.	Understand how the survival of species depends on biodiversity and on complex interactions, including the cycling of matter and the flow of energy.
PERFORMANCE STANDARD /	II-A.1a.	Ecosystems: Know that an ecosystem is complex and may exhibit fluctuations around a

BENCHMARK / PROFICIENCY		<p>steady state or may evolve over time.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.2a.	<p>Ecosystems: Describe how organisms cooperate and compete in ecosystems (e.g., producers, decomposers, herbivores, carnivores, omnivores, predator-prey, symbiosis, mutualism).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.3a.	<p>Ecosystems: Understand and describe how available resources limit the amount of life an ecosystem can support (e.g., energy, water, oxygen, nutrients).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.4a.	<p>Ecosystems: Critically analyze how humans modify and change ecosystems (e.g., harvesting, pollution, population growth, technology).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-A.9a.	<p>Biodiversity: Understand variation within and among species, including: mutations and genetic drift; factors affecting the survival of an organism; natural selection.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Teacher Resource CD: Biotechnology in Medicine
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-B.	Understand the genetic basis for inheritance and the basic concepts of biological evolution.
PERFORMANCE STANDARD /	II-B.1a.	Genetics: Know how DNA carries all genetic information in the units of heredity called genes, including: the structure of DNA (e.g., subunits A, G, C, T); information-preserving

<p>BENCHMARK / PROFICIENCY</p>		<p>replication of DNA; alteration of genes by inserting, deleting, or substituting parts of DNA.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.2a.</p>	<p>Genetics: Use appropriate vocabulary to describe inheritable traits (i.e., genotype, phenotype).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment

		<ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.4a.</p>	<p>Genetics: Identify traits that can and cannot be inherited.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.5a.</p>	<p>Genetics: Know how genetic variability results from the recombination and mutation of genes, including: sorting and recombination of genes in sexual reproduction result in a change in DNA that is passed on to offspring; radiation or chemical substances can cause mutations in cells, resulting in a permanent change in DNA.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science

		<ul style="list-style-type: none"> Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.6a.	<p>Genetics: Understand the principles of sexual and asexual reproduction, including meiosis and mitosis.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS Teacher Resource CD: Biotechnology in Agriculture and the Environment Teacher Resource CD: Biotechnology in Forensic Science Teacher Resource CD: Biotechnology in Medicine Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.7a.	<p>Genetics: Know that most cells in the human body contain 23 pairs of chromosomes including one pair that determines sex, and that human females have two X chromosomes and human males have an X and a Y chromosome.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Teacher Resource CD: Biotechnology in Forensic Science Teacher Resource CD: Biotechnology in Medicine Virtual Laboratory: Preparation and Analysis of a Human Karyotype
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.8a.	<p>Biological Evolution: Describe the evidence for the first appearance of life on Earth as one-celled organisms, over 3.5 billion years ago, and for the later appearance of a diversity of multicellular organisms over millions of years.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing

		<p>Karyotypes</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.9a.</p>	<p>Biological Evolution: Critically analyze the data and observations supporting the conclusion that the species living on Earth today are related by descent from the ancestral one-celled organisms.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>II-B.10a.</p>	<p>Biological Evolution: Understand the data, observations, and logic supporting the conclusion that species today evolved from earlier, distinctly different species, originating from the ancestral one-celled organisms.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret

		<ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.11a.	<p>Biological Evolution: Understand that evolution is a consequence of many factors, including the ability of organisms to reproduce, genetic variability, the effect of limited resources, and natural selection.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait Teacher Resource CD: Biotechnology in Medicine
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Life Science: Understand the properties, structures, and processes of living things and the interdependence of living things and their environments.
BENCHMARK / STANDARD	II-C.	Understand the characteristics, structures, and functions of cells.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-C.1a.	<p>Structure and Function: Know that cells are made of proteins composed of combinations of amino acids.</p> <ul style="list-style-type: none"> Teacher Resource CD: Biotechnology in Agriculture and the Environment Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-C.2a.	<p>Structure and Function: Know that specialized structures inside cells in most organisms carry out different functions, including: parts of a cell and their functions (e.g., nucleus, chromosomes, plasma, and mitochondria); storage of genetic material in DNA; similarities and differences between plant and animal cells; prokaryotic and eukaryotic cells.</p> <ul style="list-style-type: none"> Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS Teacher Resource CD: Biotechnology in Agriculture and the Environment Teacher Resource CD: Biotechnology in Forensic Science Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK /	II-C.5a.	Structure and Function: Explain how cells differentiate and specialize during the growth of an organism, including: differentiation, regulated through the selected expression of

PROFICIENCY		<p>different genes; specialized cells, response to stimuli (e.g., nerve cells, sense organs).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-C.7a.	<p>Biochemical Mechanisms: Describe how most cell functions involve chemical reactions, including: promotion or inhibition of biochemical reactions by enzymes; processes of respiration (e.g., energy production, ATP); communication from cell to cell by secretion of a variety of chemicals (e.g., hormones).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science
STRAND / CONTENT STANDARD	NM.II.	The Content of Science: Earth and Space Science: Understand the structure of Earth, the solar system, and the universe, the interconnections among them, and the processes and interactions of Earth's systems.
BENCHMARK / STANDARD	II-B.	Examine the scientific theories of the origin, structure, energy, and evolution of Earth and its atmosphere, and their interconnections.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	II-B.10a.	<p>Geochemical Cycles: Describe the composition and structure of Earth's materials, including: the major rock types (i.e., sedimentary, igneous, metamorphic) and their formation; natural resources (e.g., minerals, petroleum) and their formation.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
STRAND / CONTENT STANDARD	NM.III.	Science and Society: Understand how scientific discoveries, inventions, practices, and knowledge influence, and are influenced by, individuals and societies.
BENCHMARK / STANDARD	III-A.	Examine and analyze how scientific discoveries and their applications affect the world, and explain how societies influence scientific investigations and applications.
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.1a.	<p>Science and Technology: Know how science enables technology but also constrains it, and recognize the difference between real technology and science fiction (e.g., rockets vs. antigravity machines; nuclear reactors vs. perpetual-motion machines; medical X-rays vs. Star-Trek tricorders).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.2a.</p>	<p>Science and Technology: Understand how advances in technology enable further advances in science (e.g., microscopes and cellular structure; telescopes and understanding of the universe).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.3a.</p>	<p>Science and Technology: Evaluate the influences of technology on society (e.g., communications, petroleum, transportation, nuclear energy, computers, medicine, genetic engineering) including both desired and undesired effects, and including some historical examples (e.g., the wheel, the plow, the printing press, the lightning rod).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret

		<ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Virtual Laboratory: Preparation and Analysis of a Human Karyotype
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.4a.</p>	<p>Science and Technology: Understand the scientific foundations of common technologies (e.g., kitchen appliances, radio, television, aircraft, rockets, computers, medical X-rays, selective breeding, fertilizers and pesticides, agricultural equipment).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 2 Activity 1: Making Cheese the Biotech Way • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Biotechnology Applications: Unit 2 Lab 5 Activity 1: Diagnosing a Gene Defect • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Biotechnology Applications: Unit 3 Lab 7 Activity 1: Comparing Electrophoresed DNA Profiles • Biotechnology Applications: Unit 4 Lab 8 Activity 1: Case of the Second Examination • Biotechnology Applications: Unit 4 Lab 8 Activity 2: Finding Out Who Is at Risk for SARS • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
<p>PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY</p>	<p>III-A.5a.</p>	<p>Science and Technology: Understand that applications of genetics can meet human needs and can create new problems (e.g., agriculture, medicine, cloning).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue

		<p>People of Troublesome Creek</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.7a.	<p>Science and Technology: Describe how human activities have affected ozone in the upper atmosphere and how it affects health and the environment.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.9a.	<p>Science and Society: Describe how scientific knowledge helps decision makers with local, national, and global challenges (e.g., Waste Isolation Pilot Project [WIPP], mining, drought, population growth, alternative energy, climate change).</p> <ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.10a.	<p>Science and Society: Describe major historical changes in scientific perspectives (e.g., atomic theory, germs, cosmology, relativity, plate tectonics, evolution) and the experimental observations that triggered them.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.11a.	<p>Science and Society: Know that societal factors can promote or constrain scientific discovery (e.g., government funding, laws and regulations about human cloning and genetically modified organisms, gender and ethnic bias, AIDS research, alternative-energy research).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 1 Activity 1: Genetically Modified Crops • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 3 Lab 6 Activity 1: Modeling DNA Profiles to Solve a Mystery • Teacher Resource CD: Biotechnology in Agriculture and the

		<p>Environment</p> <ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.12a.	<p>Science and Society: Explain how societies can change ecosystems and how these changes can be reversible or irreversible.</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Biotechnology Applications: Unit 1 Lab 3 Activity 2: Cleaning up Mini-Oil Spills in Various Shore Environments • Biotechnology Applications: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.17a.	<p>Science and Individuals: Identify important questions that science cannot answer (e.g., questions that are beyond today's science, decisions that science can only help to make, questions that are inherently outside of the realm of science).</p> <ul style="list-style-type: none"> • Biotechnology Applications: Unit 2 Lab 4 Activity 1: Taking a Case History of Baby Mike • Biotechnology Applications: Unit 2 Lab 4 Activity 2: Analyzing Karyotypes • Biotechnology Applications: Unit 2 Lab 4 Activity 3: The Blue People of Troublesome Creek • Biotechnology Applications: Unit 2 Lab 4 Activity 4: Uncovering a Family Secret • Biotechnology Applications: Unit 2 Lab 4 Activity 5: Creating a Pedigree to Analyze a Family Trait
PERFORMANCE STANDARD / BENCHMARK / PROFICIENCY	III-A.18a.	<p>Science and Individuals: Understand that scientists have characteristics in common with other individuals (e.g., employment and career needs, curiosity, desire to perform public service, greed, preconceptions and biases, temptation to be unethical, core values including honesty and openness).</p> <ul style="list-style-type: none"> • Teacher Resource CD: Biotechnology in Agriculture and the Environment • Teacher Resource CD: Biotechnology in Forensic Science • Teacher Resource CD: Biotechnology in Medicine