


Biology Curriculum Bundle #7

Title	Suggested Dates
Genetics and Society 	1/5-1/29 (16 days)

Big Idea/Enduring Understanding	Guiding Questions
Genetics has strong personal and societal implications.	<ul style="list-style-type: none"> ▪ How do mutations in DNA affect traits in organisms and the diversity of a population? ▪ How has genetics affected agriculture, medicine, and society?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p>6 The student knows the structures and functions of nucleic acids in the mechanisms of genetics.</p> <p>6D Compare genetic variations observed in plants and animals.</p>	<p><i>Including</i></p> <ul style="list-style-type: none"> • Describe Gregor Mendel’s work with pea plants • Explain Mendel’s three conclusions: <ul style="list-style-type: none"> ○ Principle of dominance ○ Law of segregation ○ Law of independent assortment • Solve single-trait and double–trait genetic problems, using Punnett squares • Blood Type and Rh Factor • Explain the difference between genotype and phenotype <p><i>(6F) predict possible outcomes of various genetic combinations such as monohybrid crosses, dihybrid crosses and non-Mendelian inheritance</i></p>	<p>BIO_6_GeneticsTEXTTEAMS (multiple activities)</p>
<p>6 The student knows the structures and functions of nucleic acids in the mechanisms of genetics.</p> <p>6C Identify and illustrate how changes in DNA cause mutations and evaluate the significance of these changes.</p>	<p><i>Including</i></p> <ul style="list-style-type: none"> • Mutation as a source for change in the protein synthesized and its results in genetic diversity and evolutionary change • Identify mutations occur in base sequence such as <ul style="list-style-type: none"> ○ Insertion ○ Deletion ○ Frame shift ○ Translocation 	<p>BIO_6_GeneticsTEXTTEAMS Karyotype Puzzle (web link) BIO_7_Pedigree Lab</p>

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<p>6F Identify and analyze karyotypes.</p>	<ul style="list-style-type: none"> • Compare normal karyotype to abnormal karyotype • Analyze a pedigree • <i>DNA fingerprinting</i> • <i>Genetic modifications</i> <p>Describe the causes and results of several human genetic disorders such as sex-linked, nondisjunction, dominant and recessive. The disorders include</p> <ul style="list-style-type: none"> • Albinism • PKU • Hemophilia • Colorblindness • Down's syndrome <p><i>(6E) identify and illustrate changes in DNA and evaluate the significance of these changes</i></p>	
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3C Evaluate the impact of research on scientific thought, society, and the environment.</p>	<p>Such as</p> <ul style="list-style-type: none"> • stem cell research • Genetically modified organisms • <p><i>(3D) evaluate the impact of scientific research on society and the environment</i></p>	<p>Stem Cell Research Policy Lesson Plan: Create an Advocacy Brochure (web link)</p>
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3A Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.</p>	<p>NOTE: Can use debates on current topics and reading/discussing current events.</p> <p><i>(3A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student</i></p>	<p>Evolution series on PBS (web link – also should be in school library)</p>
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2D Communicate valid conclusions</p>	<p>Such as</p> <ul style="list-style-type: none"> • lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports. <p><i>(2H) communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.</i></p>	
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p>	<p>Such as genetic counseling, laboratory technician, physician.</p>	

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<p>3D Describe connection between biology and future careers.</p>		
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3F Research and describe the history of biology and contributions of scientists</p>	<p>Such as Gregor Mendel, Kary Mullis, Francis Collins, Barbara McClintock, John Craig Venter, Thomas Hunt Morgan.</p>	
<p>5 The student knows how an organism grows and how specialized cells, tissues, and organs develop.</p> <p>5C Sequence the levels of organization in multicellular organisms to relate the parts to each other and to the whole.</p>	<p>Including (in sequence)</p> <ul style="list-style-type: none"> • Atom, Molecule, Organelle, Cell, Tissue, Organ, Organ system, Organism, Population, Community, Ecosystem, Biome, Biosphere <p><i>(10C) analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.</i></p>	