


## Biology Curriculum Bundle #6

<b>Title</b>		<b>Suggested Dates</b>
DNA & Protein Synthesis		12/7-12/18 (8 days)

<b>Big Idea/Enduring Understanding</b>	<b>Guiding Questions</b>
DNA is the code for making of proteins used for structure and function.	<ul style="list-style-type: none"> <li>▪ How does DNA convey traits?</li> <li>▪ How is DNA replication related to the process of mitosis?</li> </ul>

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><b>6 The student knows the structures and functions of nucleic acids in the mechanisms of genetics.</b></p> <p><b>6A</b> Describe components of deoxyribonucleic acid (DNA), and illustrate how information for specifying the traits of an organism is carried in the DNA</p>	<p><i>Including</i></p> <ul style="list-style-type: none"> <li>• Structure of a DNA molecule                             <ul style="list-style-type: none"> <li>○ Shape</li> <li>○ Antiparallel structure (i.e. 3' to 5', 5' to 3')</li> <li>○ Type of sugar</li> <li>○ Nitrogen bases</li> <li>○ Phosphates</li> <li>○ Hydrogen bonds</li> </ul> </li> <li>• Recognize the significance of nucleotide sequence in determining traits</li> <li>• Genes are found on chromosomes, code for proteins</li> </ul> <p><i>(6A) identify components of DNA, and describe how information for specifying the traits of an organism is carried in the DNA</i></p>	<p>BIO_6_DNA_Structure BIO_6_DNA_modeling BIO_6_GeneticsTEXTTEAM (Dominant Fly lesson)</p>
<p><b>6 The student knows the structures and functions of nucleic acids in the mechanisms of genetics.</b></p> <p><b>6B</b> Explain replication, transcription, and translation using models of DNA and ribonucleic acid (RNA).</p>	<p><i>Including</i></p> <ul style="list-style-type: none"> <li>• Base pair sequences (codon anti-codon relationship)</li> <li>• Describe the steps in DNA replication</li> <li>• Relate DNA replication to cell division</li> <li>• Differentiate among mRNA, tRNA, and rRNA</li> <li>• Describe the steps of transcription and its purpose</li> <li>• Describe the steps of translation and its role in</li> </ul>	<p>BIO_6_Genetics TEXTTEAMS</p>

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	<p>protein synthesis</p> <ul style="list-style-type: none"> <li>• Differentiate between transcription and translation</li> <li>• Interpret a codon chart for translation</li> </ul> <p><i>(6C) explain the purpose and process of transcription and translation using models of DNA and RNA</i></p>	
<p><b>3 Uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p><b>3A</b> 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><b>2 Uses scientific methods during fields &amp; laboratory investigations.</b></p> <p><b>2D</b> Communicate valid conclusions</p>	<p>Such as</p> <ul style="list-style-type: none"> <li>• lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.</li> </ul> <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><b>3 Uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p>3D Describe connection between biology and future careers.</p>	<p>Such as laboratory technician, forensic scientist.</p>	
<p><b>3 Uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p><b>3F</b> Research and describe the history of biology and contributions of scientists</p>	<p>Such as James Watson, Francis Crick, Rosalind Franklin, Frederick Griffith, Alfred Hershey, Martha Chase</p>	
<p><b>5 The student knows how an organism grows and how specialized cells, tissues, and organs develop.</b></p> <p><b>5C</b> 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"> <li>• Atom, Molecule, Organelle, Cell, Tissue, Organ, Organ system, Organism, Population, Community, Ecosystem, Biome, Biosphere</li> </ul> <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>	