


## Biology Curriculum Bundle #4

Title		Suggested Dates
Biochemistry		10/26-11/13 (12 days)

Big Idea/Enduring Understanding	Guiding Questions
The study of biochemistry lays the foundation for understanding metabolism and other cell functions.	<ul style="list-style-type: none"> <li>▪ What is the role of bio-macromolecules in organisms?</li> <li>▪ What is the role of enzymes in biological processes?</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>9 The student knows metabolic processes and energy transfers that occur in living organisms.</b></p> <p><b>9A</b> Compare the structures and functions of different types of biomolecules.</p> <ul style="list-style-type: none"> <li>• Carbohydrates</li> <li>• Lipids</li> <li>• Proteins</li> <li>• Nucleic acids; DNA, RNA.</li> </ul>	<p><i>Including</i></p> <ul style="list-style-type: none"> <li>• Recognize carbohydrates provide cellular energy, cell membrane functions and support.</li> <li>• Recognize phospholipids as the basic structure of cell membranes.</li> <li>• Recognize enzymes as the principal regulator of most chemical activity.</li> <li>• Recognize amino acids as the building blocks of proteins.</li> <li>• Recognize proteins are the “work horses” of the cell.</li> <li>• Identify and describe the chemical elements in living matter (valence electrons, bonding, and periodic table information)                             <ul style="list-style-type: none"> <li>○ Carbon</li> <li>○ Hydrogen</li> <li>○ Oxygen</li> <li>○ Nitrogen</li> <li>○ Phosphorous</li> </ul> </li> </ul> <p><i>(9A) compare the structures and functions of different types of biomolecules, including carbohydrates, lipids, proteins, and nucleic acids</i></p>	<p>BIO_4_McMush Lab</p>
<p><b>3 Uses critical thinking and scientific problem solving to make informed decisions.</b></p> <p><b>3B</b> Evaluate promotional claims that relate to biological</p>	<p><i>(3C) draw inferences based on data related to promotional materials for products and services</i></p>	<p>BIO_4_Caloric Value of Food BIO_4_Nutrition</p>

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<p>issues such as product labeling and advertisements.</p> <p><b>9 The student knows metabolic processes and energy transfers that occur in living organisms.</b></p> <p><b>9C</b> Investigate and identify the effects of enzymes on food molecules.</p>	<p><b>Including</b></p> <ul style="list-style-type: none"> <li>• Effect on rate of chemical reactions, such as pepsin or amylase.</li> <li>• Not consumed and reusable.</li> <li>• pH scale and the effect of pH on enzyme action</li> </ul> <p><i>(9C) identify and investigate the role of enzymes</i></p>	<p>BIO_4_The Need for Speed Enzymes            BIO_4_Acids and Bases(PAP)  <a href="#">Enzyme Simulation</a> (web link)            BIO_4_Hair Chemistry</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><b>NOTE:</b> 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><a href="#">Evolution series on PBS</a> (web link – also should be in school library)</p>
<p><b>2 Uses scientific methods during fields &amp; laboratory investigations.</b></p> <p><b>2D</b> Communicate valid conclusions</p>	<p><b>Such as</b></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><b>3F</b> Research and describe the history of biology and contributions of scientists</p>	<p><b>Such as</b></p> <ul style="list-style-type: none"> <li>• Linus Pauling, Frederick Miescher, Thomas Cech</li> </ul>	
<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><b>Including (in sequence)</b></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>	