

PEABODY BIOLOGY 2021-2022 Pacing Guide

Textbook: Biology
Miller and Levine
published by Pearson;
2019

Unit	Standards	Major Topics/Concepts
<p style="text-align: center;">Characteristics of Life and Cell Types</p>	<p style="text-align: center;">LS1.1 LS1.2</p>	<p>Compare and contrast existing models, identify patterns, and use structural and functional evidence to analyze the characteristics of life. Engage in argument about the designation of viruses as non-living based on these characteristics.</p> <p>Evaluate comparative models of various cell types with a focus on organic molecules that make up cellular structures.</p> <p><i>Science and Engineering Practices should be embedded and reinforced through actual experimentation throughout the course.</i></p>
<p style="text-align: center;">DNA and Protein Synthesis, Structure, and Function</p>	<p style="text-align: center;">LS1.3 LS1.4 LS1.5</p>	<p>Integrate evidence to develop a structural model of a DNA molecule. Using the model, develop and communicate an explanation for how DNA serves as a template for self-replication and encodes biological information.</p> <p>Demonstrate how DNA sequence information is decoded through transcriptional and translational processes within the cell in order to synthesize proteins.</p> <p>Examine the relationship of structure and function of various types of RNA and the importance of this relationship in these processes.</p> <p>Research examples that demonstrate the functional variety of proteins and construct an argument based on evidence for the importance of the molecular structure to its function. Plan and carry out a controlled investigation to test predictions about factors,</p>

		which should cause an effect on the structure and function of a protein.
Cell Cycle and Cell Transport	LS1.6 LS1.7	Create a model for the major events of the eukaryotic cell cycle, including mitosis. Compare and contrast the rates of cell division in various eukaryotic cell types in multicellular organisms. Utilize a model of a cell plasma membrane to compare the various types of cellular transport and test predictions about the movement of molecules into or out of a cell based on the homeostasis of energy and matter in cells.
Photosynthesis and Cellular Respiration	LS1.8 LS1.9	Create a model of photosynthesis demonstrating the net flow of matter and energy into a cell. Use the model to explain energy transfer from light energy into stored chemical energy in the product. Create a model of aerobic respiration demonstrating flow of matter and energy out of a cell. Use the model to

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	LS4.3 ETS2.1	embryology. Identify chronological patterns of change and communicate that biological evolution is supported by multiple lines of empirical evidence that identify similarities inherited from a common ancestor (homologies). Using a model that demonstrates the change in allele frequencies resulting in evolution of a population over many generations, identify causative agents of change. Identify ecosystem services and assess the role of biodiversity in support of these services. Analyze the role human activities have on disruption of these services. Obtain, evaluate, and communicate information on how molecular biotechnology may be used in a variety of fields.

**Final Comprehensive Benchmark
(covering all content)**

