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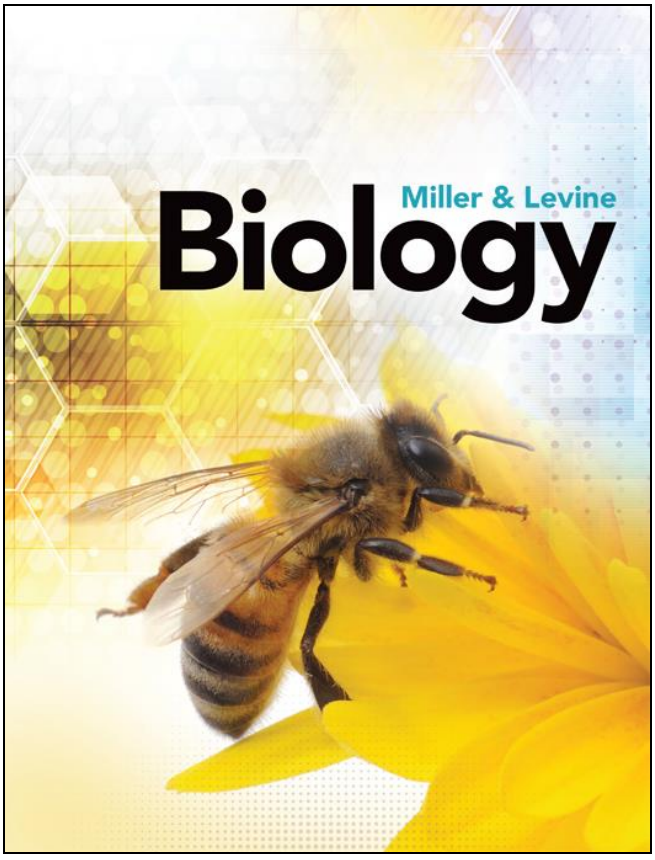

To the

Tennessee Academic Standards for Science Biology I

Pearson

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to the
Tennessee Academic Standards for Science — Biology I

Introduction

This document demonstrates how ***Miller & Levine Biology ©2019*** meets the Tennessee Academic Standards for Science Tennessee, Biology I (Grades 9-12). Correlation page references are to the Student and Teacher's Editions and cited at the page level.

Renowned Author Team Ken Miller and Joe Levine have created a comprehensive on-level program to inspire students to interact with trusted and up-to-date biology content. The authors' unique storytelling style engages students in biology, with a greater focus on written and visual analogies. This innovative and fresh new program was developed for modern biology classrooms with a focus on STEM integration and 21st century education.

Problem-Based Learning The Problem-Based Learning Strand introduced in each unit opener immerses students in an active learning environment with lab investigations, STEM projects, virtual activities, and authentic readings. When students each the end of the unit, they use their newly acquired scientific knowledge and data to design, test, and evaluate a solution to the presented problem.

Performance-Based Assessment Authentic assessments of STEM learning allow students to demonstrate mastery of the chapter concepts and new standards. All Performance-Based Assessments feature real-world problems and focus on science inquiry, engineering, and STEM practices.

Case Studies Students directly interact with science phenomena in every chapter as they learn about a real-world science problem. Throughout the lessons, students find case study connections in data analysis activities, labs, diagrams, illustrations, and interactivities.

Interactive Learning Students interact with digital art, videos, and animations through interactive prompts or questions, making ***Miller & Levine Biology*** relevant to their lives.

Reading and Study Support *Biology Foundations: Reading and Study Guide Workbook* includes lesson summaries, vocabulary help, and reading tools. Practice focuses on key concepts and science literacy to improve students' understanding of scientific text.

PearsonRealize.com PearsonRealize.com is your online destination for the complete Miller & Levine Biology digital curriculum. A single sign-on provides access to biology content, assessments, resources, management tools, and real-time student data. Realize directly syncs with providers such as Google® and OpenEd to provide a seamless digital experience.

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BIO1.LS1.1 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.	**SE/TE:** 22-29, 36-37, 242-243, 246-269, 539, 688
BIO1.LS1.2 Evaluate comparative models of various cell types with a focus on organic molecules that make up cellular structures.	**SE/TE:** 243, 246-269, 418-423, 905, 924
BIO1.LS1.3 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.	**SE/TE:** 343-348, 393-399, 418-427
BIO1.LS1.4 Demonstrate how DNA sequence information is decoded through transcriptional and translational processes within the cell in order to synthesize proteins. Examine the relationship of structure and function of various types of RNA and the importance of this relationship in these processes.	**SE/TE:** 250, 343-348, 440-450
BIO1.LS1.5 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 which should cause an effect on the structure and function of a protein.	**SE/TE:** 55-57, 60-61, 250-252, 418-423
BIO1.LS1.6 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.	**SE/TE:** 345-352, 393-399

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BIO1.LS1.7 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.	**SE/TE:** 256-257, 260-265, 282-284
BIO1.LS1.8 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.	**SE/TE:** 254, 286-297, 313
BIO1.LS1.9 Create a model of aerobic respiration demonstrating flow of matter and energy out of a cell. Use the model to explain energy transfer mechanisms. Compare aerobic respiration to alternative processes of glucose metabolism.	**SE/TE:** 310-322
BIO1.LS2.1 Analyze mathematical and/or computational representations of population data that support explanations of factors that affect population size and carrying capacities of populations within an ecosystem. Examine a representative ecosystem and, based on interdependent relationships present, predict population size effects due to a given disturbance.	**SE/TE:** 145-155, 179, 195
BIO1.LS2.2 Create a model tracking carbon atoms between inorganic and organic molecules in an ecosystem. Explain human impacts on climate based on this model.	**SE/TE:** 114-115, 123-128, 137, 208-210
BIO1.LS2.3 Analyze through research the cycling of matter in our biosphere and explain how biogeochemical cycles are critical for ecosystem function.	**SE/TE:** 118-131, 137, 205-217, 302

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BIO1.LS2.4 Analyze data demonstrating the decrease in biomass observed in each successive trophic level. Construct an explanation considering the laws of conservation of energy and matter and represent this phenomenon in a mathematical model to describe the transfer of energy and matter between trophic levels.	**SE/TE:** 118-123, 302
BIO1.LS2.5 Analyze examples of ecological succession, identifying and explaining the order of events responsible for the formation of a new ecosystem in response to extreme fluctuations in environmental conditions or catastrophic events.	**SE/TE:** 173-185, 210
BIO1.LS3.1 Model chromosome progression through meiosis and fertilization in order to argue how the processes of sexual reproduction lead to both genetic similarities and variation in diploid organisms. Compare and contrast the processes of sexual and asexual reproduction, identifying the advantages and disadvantages of each.	**SE/TE:** 340-349, 393-399
BIO1.LS3.2 Explain how protein formation results in phenotypic variation and discuss how changes in DNA can lead to somatic or germ line mutations.	**SE/TE:** 457-461, 580-584, 597-599
BIO1.LS3.3 Through pedigree analysis, identify patterns of trait inheritance to predict family member genotypes. Use mathematical thinking to predict the likelihood of various types of trait transmission.	**SE/TE:** 383-389, 479, 498-499

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BIO1.LS4.1 Evaluate scientific data collected from analysis of molecular sequences, fossil records, biogeography, and 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).	**SE/TE:** 255, 558-567, 576, 585-591, 624-625, 631, 803, 804, 807-808, 810, 812-813, 814-815, 817-821
BIO1.LS4.2 Using a model that demonstrates the change in allele frequencies resulting in evolution of a population over many generations, identify causative agents of change.	**SE/TE:** 585-595, 655
BIO1.LS4.3 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.	**SE/TE:** 188-189, 224, 230-231
BIO1.ETS2.1 Obtain, evaluate, and communicate information on how molecular biotechnology may be used in a variety of fields.	**SE/TE:** 505-519, 528-529, 532-533
BIO1.ETS2.2 Investigate the means by which karyotypes are utilized in diagnostic medicine.	**SE/TE:** 477, 480-484, 494, 502
BIO1.ETS2.3 Analyze scientific and ethical arguments to support the pros and cons of application of a specific biotechnology technique such as stem cell usage, in vitro fertilization, or genetically modified organisms.	**SE/TE:** 271, 358-363, 484-495, 504-505, 516-519, 524-529, 536