Lab-Aids Correlations for

Tennessee Academic Standards for Science:

Biology I

Din Seaver, Curriculum Development and Product Management
Lisa Kelp, Vice President, Learning and Development

This document is intended to show how the SEPUP *Science and Global Issues: Biology, 3rd Edition,* curriculum materials align with the Tennessee Academic Standards for Science: Biology I.

ABOUT LAB-AIDS

Lab-Aids has maintained its home offices and operations in Ronkonkoma, NY, since 1963. We publish over 200 kits and core curriculum programs to support science teaching and learning, grades 6-12. All core curricula support an inquiry-driven pedagogy, with support for literacy skill development and with assessment programs that clearly show what students know and are able to do as a result of program use. All programs have extensive support for technology and feature comprehensive teacher support. For more information, please visit www.lab-aids.com and navigate to the program of interest.

ABOUT SEPUP

Materials from the Science Education for Public Understanding Program (SEPUP) are developed at the Lawrence Hall of Science, at the University of California, Berkeley, and distributed nationally by Lab-Aids, Inc. Since 1987, development of SEPUP materials has been supported by grants from the National Science Foundation and other public and private sources. SEPUP programs include student books, equipment kits, teacher materials, and online digital content.

ABOUT THE LAB-AIDS CITATIONS

Citations included in the correlation document are as follows:

Unit title:	*Cells:*
Activity Number	2, 3, 4, 5, 6, 7, 8

Biology 1: Academic Standard	*Science and Global Issues Biology* Unit name: Activity number
BIO1.LS1: From Molecules to Organisms: Structures and Processes	
1) Construct an explanation based on evidence that the essential functions of life are primarily carried out through the work of proteins that are coded for by genes in DNA, as described by the Central Dogma (i.e., transcription, translation).	*Genetics:* 2, 7, 9, 10, 11, 12, 15
2) Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.	*Cells:* 1-5, 7, 8
3) Use a model to describe how differentiation in a multicellular organism creates specialized *Cells:* that perform diverse functions to work together to meet the needs of the entire organism, including human development	*Cells:* 6, 7, 8, 9, 10 *Genetics:* 2, 3, 4, 5, 11, 12
4) Create, or use, a model to describe how the process of photosynthesis converts light energy into the stored chemical energy of bonds created by converting CO2 and H2O into sugar and other organic molecules.	*Ecology:* 6, 7, 9-11, 12 *Cells:* 11, 12, 13, 15, 16
5) Construct an explanation based on evidence that matter taken into an organism can be broken down and recombined to make macromolecules necessary for life functions.	*Ecology:* 7, 8 *Cells:* 9, 11, 14,15, 16
6) Create, or use, a model to describe how cellular respiration transforms stored chemical energy of food resulting in a net transfer of energy. Compare aerobic respiration to alternative processes of glucose metabolism.	*Ecology:* 7, 8 *Cells:* 9, 10, 14, 15, 16
7) Construct an explanation from evidence to explain how the integrated functions of the brain in complex animals results in successful interpretation of input and generation of behaviors in response to those inputs.	*Evolution:* 3 Covers interpretation and generation of behaviors

Biology 1: Academic Standard	*Science and Global Issues Biology* Unit name: Activity number
BIO1.LS2: Ecosystems: Interactions, Energy, and Dynamics	
1) Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.	*Ecology:* 1, 2, 3, 4, 5, 13,14
2) Create, or use, a mathematical model to describe the transfer of energy from one trophic level to another. Explain how the inefficiency of energy transfer between trophic levels affects the relative number of organisms that can be supported at each trophic level and necessitates a constant input of energy from sunlight and inorganic compounds from the environment.	*Ecology:* 6, 8, 9, 10

Biology 1: Academic Standard	*Science and Global Issues Biology* Unit name: Activity number
BIO1.LS2: Ecosystems: Interactions, Energy, and Dynamics	
3) Obtain, evaluate, and communicate information based on evidence to describe how the impact of varying levels of disturbance is related to the resilience of an ecosystem.	*Ecology:*3-5, 13, 14, 15-17
4) Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.	Sustainablity 1-4 *Ecology:* 13-16, 17 *Genetics:* 16, 17 *Evolution:* 12, 13, 14, 15
5) Analyze data about the role of group behavior on individual and species' chances to survive and reproduce.	*Evolution:* 1, 3, 7, 8

Biology 1: Academic Standard	*Science and Global Issues Biology* Unit name: Activity number
BIO1.LS3: Heredity: Inheritance and Variation of Traits	
1) Engage in an argument from evidence that the process of cellular division (mitosis) creates diploid daughter *Cells:* that are genetically identical to the diploid parent *Cells:*.	*Genetics:* 3, 8
2) Engage in an argument from evidence that the process of meiosis exists to create genetic variation in a population from the creation of new combinations of genetic material in each of the haploid gametes.	*Genetics:* 1, 11, 12, 13
3) Ask questions to clarify that variation of traits arises from differences in genes (alleles) and how *Cells:* regulate gene expression.	*Genetics:* 4, 5, 8, 10, 11, 12
4) Construct an explanation based on evidence that genetic variations may result from (a) new genetic combinations via the processes of crossing over and random segregation of chromosomes during meiosis, (b) mutations that occur during replication, and/or (c) mutations caused by environmental factors. Evidence should include that mutations that occur in gametes can be passed to offspring.	*Genetics:* 1, 4-6, 11, 12-14

Biology 1: Academic Standard	*Science and Global Issues Biology* Unit name: Activity number
BIO1.LS4: Biological Change: Unity and Diversity	
1) Analyze and interpret scientific data that common ancestry and biological *Evolution:* are supported by multiple lines of empirical evidence (e.g. DNA sequences, amino acid sequences, anatomical structures, the fossil	*Evolution:* 6, 9, 10

Biology 1: Academic Standard	*Science and Global Issues Biology* Unit name: Activity number
BIO1.LS4: Biological Change: Unity and Diversity	
record, biogeography, or order of appearance of structures during embryological development).	
2) Apply concepts of statistics (i.e. probability) to support explanations that organisms in a population with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	*Ecology:* 2, 5, 14 *Genetics:* 6, 9, 14, 15, 16 *Evolution:* 1, 3, 4, 6, 12, 13
3) Analyze and interpret data that natural selection is influenced by (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment	*Genetics:* 9, 14-16 *Evolution:* 1-4, 5, 12
4) Construct an explanation based on evidence for how natural selection leads to adaptation in populations.	*Genetics:* 14-16 *Evolution:* 6, 11
5) Obtain, evaluate, and communicate information about how changes in environmental conditions may result in (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	*Genetics:* 16 ,17 *Evolution:* 1,3-7, 8, 12-15