



Lab-Aids Correlations for

2023 NORTH CAROLINA STANDARD COURSE OF STUDY STANDARDS K-12 SCIENCE, BIOLOGY

This document is intended to show how the SEPUP *Science and Global Issues: Biology 3rd edition*, materials align with the [2023 North Carolina Standard Course of Study, K-12 Science, Biology](#) standards.

ABOUT OUR PROGRAMS

Lab-Aids has based 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.

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, and are available as full year courses, or separately, as units, each taking 3-8 weeks to complete, as listed below.

SCIENCE AND GLOBAL ISSUES: BIOLOGY UNITS

Unit	Number of Activities	Issue Focus
Sustainability: Changing Human Impact	4 activities (Introductory sequence)	Asking questions and defining problems Developing and using models Developing possible solutions
Ecology: Living on Earth	17 activities	Interdependent relationships in ecosystems Cycles of matter and energy transfer in ecosystems Ecosystem dynamics, functioning, and resilience Biodiversity and humans Defining and delimiting engineering problems
Cells: Improving Global Health	17 activities	Structure and function Organization for matter and energy flow in organisms Cycles of matter and energy transfer in ecosystems Stability and change (Homeostasis)

Unit	Number of Activities	Issue Focus
Genetics: Feeding the World	17 activities	Variation of traits Inheritance of traits Growth and development of organisms Structure and function Adaptation
Evolution: Managing Change	15 activities	Natural selection Adaptation Social interactions and group behavior Evidence of common ancestry and diversity Biodiversity and humans Developing possible solutions

ABOUT THE LAB-AIDS CITATIONS

Unit title: Activity Number	Citations included in the correlation document are as follows: <i>Ecology:</i> 6, 7, 9, 10* * indicates where standard is assessed
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Strand: From Molecules to Organisms- Structures and Processes		
Standard	Objectives	Science and Global Issues: Biology Unit: Activity #
LS.Bio.1 Analyze how the relationship between structure and function supports life processes within organisms.	LS.Bio.1.1 Construct an explanation to illustrate relationships between structure and function of major macromolecules essential for life.	Genetics 7-8, 10,
	LS.Bio.1.2 Carry out investigations to illustrate how enzymes act as catalysts for biochemical reactions and how environmental factors affect enzyme activity.	Genetics 10
	LS.Bio.1.3 Use models to explain how the structure of organelles determines its function and supports overall cell processes.	Cells 2, 6 Genetics 8
	LS.Bio.1.4 Construct explanations to compare prokaryotic and eukaryotic cells in terms of structures and degree of complexity.	Genetics 3, 7, 11 (partial) There is background information in the Teacher Edition on prokaryotes vs. eukaryotes, but this information does not appear in the SB.
	LS.Bio.1.5 Construct an explanation to summarize how DNA and RNA direct the synthesis of proteins.	Genetics 7-8
LS.Bio.2 Analyze the growth and development processes of organisms.	LS.Bio.2.1 Use models to illustrate how cellular division results in the reproduction, growth, and repair of organisms.	Genetics 3-5
	LS.Bio.2.2 Construct an explanation to illustrate that proteins regulate gene expression resulting in cellular differentiation, specialized cells with specific functions, and uncontrolled cell growth.	Genetics 7-9

Strand: From Molecules to Organisms- Structures and Processes		
Standard	Objectives	Science and Global Issues: Biology Unit: Activity #
LS.Bio.3 Analyze the relationship between biochemical processes and energy use.	LS.Bio.3.1 Carry out investigations to explain how homeostasis is maintained through feedback mechanisms.	Cells 3-8
	LS.Bio.3.2 Use models to illustrate how photosynthesis transforms light energy into chemical energy.	Cells 11-12 Ecology 7
	LS.Bio.3.3 Use models to illustrate how cellular respiration [aerobic and anaerobic] transforms chemical energy into ATP.	Cells 10, 14-15 Ecology 7
Strand: Ecosystems- Interactions, Energy, and Dynamics		
LS.Bio.4 Analyze the relationships between matter and energy within ecosystems.	LS.Bio.4.1 Use models to illustrate how processes in organisms contribute to the flow of energy and the cycling of matter within an ecosystem.	Ecology 6-10
	LS.Bio.4.2 Use models to explain the relationship between the flow of energy and cycling of matter among organisms in an ecosystem.	Ecology 6-10
LS.Bio.5 Understand ecosystem dynamics, functioning, and resilience.	LS.Bio.5.1 Use mathematics and computational thinking to explain how interactions between organisms (predator/prey, competition) affect carrying capacity and maintain stability in an ecosystem.	Ecology 1-3
	LS.Bio.5.2 Engage in argument from evidence to evaluate various solutions to reduce the impact of human activities on biodiversity and ecosystem health.	Ecology 12-17
Strand: Heredity- Inheritance and Variation of Traits		
LS.Bio.6 Understand genetic mechanisms for variation.	LS.Bio.6.1 Use models to explain how DNA is passed from parents to offspring through the processes of meiosis and fertilization in sexual reproduction.	Genetics 4-5, 11
	LS.Bio.6.2 Construct an explanation to summarize how inheritable genetic variations may result from: new genetic combinations in meiosis, mutations during replication, or mutations caused by environmental factors.	Genetics 7, 9-12

Strand: From Molecules to Organisms- Structures and Processes		
Standard	Objectives	Science and Global Issues: Biology Unit: Activity #
LS.Bio.7 Understand types of inheritance and how the environment can influence traits.	LS.Bio.7.1 Use mathematics and computational thinking to predict the variation and distribution of expressed traits based on: Mendelian inheritance, co-dominance, incomplete dominance, multiple alleles, and sex-linked inheritance.	Genetics 4-5, 12
	LS.Bio.7.2 Analyze and interpret data to explain how polygenic traits result in a wide range of phenotypes.	Genetic 5, 12
	LS.Bio.7.3 Construct an explanation to summarize how traits result from interactions of genetic factors (multiple genes and/or alleles) and environmental factors.	Genetics 7-8
LS.Bio.8 Understand applications of genetics and biotechnology.	LS.Bio.8.1 Analyze and interpret data to compare DNA samples.	Genetics 13
	LS.Bio.8.2 Obtain and communicate information that summarizes the impact of biotechnology applications on the individual, society, and the environment, including agriculture and medicine.	Genetics 14-17
Strand: Biological Evolution- Unity and Diversity		
LS.Bio.9 Understand natural selection as a mechanism for biological evolution.	LS.Bio.9.1 Analyze and interpret data to summarize how various factors such as geographic isolation, pesticide resistance, antibiotic resistance can influence natural selection.	Evolution 6, 11-12
	LS.Bio.9.2 Construct an explanation to illustrate how common ancestry and biological evolution are supported by multiple lines of empirical evidence.	Evolution 9-10
	LS.Bio.9.3 Use models to illustrate the conditions required for natural selection, including the overproduction of offspring, inherited variation, and the struggle to survive.	Evolution 1-6
	LS.Bio.9.4 Construct an explanation to explain how natural selection leads to adaptations within populations.	Evolution 1-6, 11-15

Strand: From Molecules to Organisms- Structures and Processes		
Standard	Objectives	<i>Science and Global Issues: Biology</i> Unit: Activity #
LS.Bio.10 Analyze evolutionary relationships among organisms.	LS.Bio.10.1 Construct explanations to illustrate how varying environmental conditions may result in: changes in the number of individuals of a species, the emergence of new species over time, or the extinction of other species.	Evolution 1-8
	LS.Bio.10.2 Use models (including dichotomous keys, scientific nomenclature, cladograms, phylogenetic trees) to identify organisms and exemplify relationships.	Evolution 6, 10