



South Carolina High School Biology Core Area Standards  
Correlations to Wright Group/McGraw-Hill's *Biology: Exploring the Science of Life*

<p>The skills of scientific inquiry, including a knowledge of the use of tools, will be assessed cumulatively on statewide tests. Students will therefore be responsible for the scientific inquiry indicators from all of their earlier grade levels.</p>		
<p><b>Standard B-1: The student will demonstrate an understanding of how scientific inquiry and technological design, including mathematical analysis, can be used appropriately to pose questions, seek answers, and develop solutions.</b></p>		
<p>B-1.1</p>	<p>Generate hypotheses based on credible, accurate, and relevant sources of scientific information.</p>	<p>Ch1, L2, Pg 9                      Ch1, CE, Pg 19                      Ch3, L3, Pg 46                      Ch4, CO, Pg 56                      Ch9, L4, Pg 165                      Ch11, L2, Pg 198                      Ch14, L3, Pg 251                      Ch14, CE, Pg 257                      Ch15, CO, Pg 258                      Ch15, CE, Pg 275                      Ch17, L1, Pg 297                      Ch18, L3, Pg 316                      Ch20, CE, Pg 373                      Ch21, L4, Pg 390                      Ch 21, CE Pg 397                      Laboratory Manual                      Student Workbook                      Student CD-ROM</p>
<p>B-1.2</p>	<p>Use appropriate laboratory apparatuses, technology, and techniques safely and accurately when conducting a scientific investigation.</p>	<p>Ch1, L2, Pg 10                      Ch8, L5, Pg 147                      Ch10, L1, Pg 171                      Ch11, L2, Pg 198                      Ch11, L4, Pg 202                      Ch12, L2, Pg 213                      Ch12, L5, Pg 220                      Ch13, L2, Pg 231                      Ch15, L1, Pg 260                      Ch15, L3, Pg 267                      Ch16, L3, Pg 287                      Ch17, L1, Pg 297                      Ch19, L2, Pg 339                      Ch20, L1, Pg 353                      Ch20, L6, Pg 360                      Laboratory Manual</p>

		Student Workbook Student CD-ROM
B-1.3	Use scientific instruments to record measurement data in appropriate metric units that reflect the precision and accuracy of each particular instrument.	Ch1, L3, Pgs 15-16 Ch1, CE, Pg 19 Ch2, L1, Pg 22 Ch10, L1, Pg 171 Ch12, L2, Pg 213 Ch17, L1 Pg 297 Ch20, L1, Pg 353 Ch21, L2, Pg 381 Laboratory Manual Student Workbook Student CD-ROM
B-1.4	Design a scientific investigation with appropriate methods of control to test a hypothesis (including independent and dependent variables), and evaluate the designs of sample investigations.	Ch1, L2, Pg 9 Ch2, L1, Pg 22 Ch3, L1, Pg 37 Ch9, L4, Pg 165 Ch11, L2, Pg 198 Ch12, L2, Pg 213 Ch13, L3, Pg 236 Ch24, L1, Pg 434 Laboratory Manual Student Workbook Student CD-ROM
B-1.5	Organize and interpret the data from a controlled scientific investigation by using mathematics, graphs, models, and/or technology.	Ch1, L2, Pg10-11 Ch1, CE, Pg 19 Ch4, L2, Pg 64 Ch10, L4, Pg 181 Ch12, CE, Pg 223 Ch14, CE, Pg 257 Ch20, L4, Pg 362 Laboratory Manual Student Workbook Student CD-ROM
B-1.6	Evaluate the results of a controlled scientific investigation in terms of whether they refute or verify the hypothesis.	Ch3, L1, Pg 37 Ch10, L1, Pg 171 Ch11, L2, Pg 198 Ch12, L2, Pg 213 Laboratory Manual Student Workbook Student CD-ROM

B-1.7	Evaluate a technological design or product on the basis of designated criteria (including cost, time, and materials).	Science Journals Student Workbook Student CD-ROM
B-1.8	Compare the processes of scientific investigation and technological design.	Science Journals Student Workbook Student CD-ROM
B-1.9	Use appropriate safety procedures when conducting investigations.	Ch1, L2, Pg 10 Ch8, L5, Pg 147 Ch16, L3, Pg 287 Ch20, L6, Pg 363 Laboratory Manual Student Workbook Student CD-ROM
<b>Standard B-2: The student will demonstrate an understanding of the structure and function of cells and their organelles.</b>		
B-2.1	Recall the three major tenets of cell theory (all living things are composed of one or more cells; cells are the basic units of structure and function in living things; and all presently existing cells arose from previously existing cells).	Ch2, L1, Pg 22 Ch3, L1, Pgs 35-38 Ch3, CE, Pg 55 Laboratory Manual Student Workbook Student CD-ROM
B-2.2	Summarize the structures and functions of organelles found in a eukaryotic cell (including the nucleus, mitochondria, chloroplasts, lysosomes, vacuoles, ribosomes, endoplasmic reticulum [ER], Golgi apparatus, cilia, flagella, cell membrane, nuclear membrane, cell wall, and cytoplasm).	Ch2, L1, Pg 22 Ch3, L2, Pgs 39-43 Ch3, CE, Pg 55 Ch4, L4, Pg 73 Ch8, L2, Pgs 136-137 Ch8, L3, Pg 139 Ch19, L1, Pg 331 Ch23, CE, Pg 431 Laboratory Manual Student Workbook Student CD-ROM
B-2.3	Compare the structures and organelles of prokaryotic and eukaryotic cells.	Ch3, L2, Pg 43 Ch3, CE, Pg 55 Ch6, L3, Pg 115 Ch6, CE, Pg 119 Ch7, L2, Pg 129 Ch7, CE, Pg 133 Laboratory Manual Student Workbook

		Student CD-ROM
B-2.4	Explain the process of cell differentiation as the basis for the hierarchical organization of organisms (including cells, tissues, organs, and organ systems).	Ch3, L5, Pgs 51-52 Ch6, L3, Pg 115 Ch19, L1, Pgs 331-335 Laboratory Manual Student Workbook Student CD-ROM
B-2.5	Explain how active, passive, and facilitated transport serve to maintain the homeostasis of the cell.	Ch2, L1, Pg 23 Ch3, L3, Pgs 44-47 Ch3, CE Pg 55 Ch20, CO, Pg 350 Laboratory Manual Student Workbook Student CD-ROM
B-2.6	Summarize the characteristics of the cell cycle: interphase (called G1, S, G2); the phases of mitosis (called prophase, metaphase, anaphase, and telophase); and plant and animal cytokinesis.	Ch3, L5, Pg 53 Ch4, L3, Pg 67 Laboratory Manual Student Workbook Student CD-ROM
B-2.7	Summarize how cell regulation controls and coordinates cell growth and division and allows cells to respond to the environment, and recognize the consequences of uncontrolled cell division.	Ch3, L5, Pgs 52-53 Ch24, L3, Pg 445 Laboratory Manual Student Workbook Student CD-ROM
B-2.8	Explain the factors that affect the rates of biochemical reactions (including pH, temperature, and the role of enzymes as catalysts).	Ch21, L2, Pgs 380-383 Ch24, L2, Pg 439 U1, SJ, Pg 81 Laboratory Manual Student Workbook Student CD-ROM
<b>Standard B-3: The student will demonstrate an understanding of the flow of energy within and between living systems.</b>		
B-3.1	Summarize the overall process by which photosynthesis converts solar energy into chemical energy and interpret the chemical equation for the process.	Ch2, L2, Pgs 25, 28 Ch3, L4, Pgs 48-50 Ch9, L3, Pgs 161-163 Ch9, CE, Pg 167 Ch11, L2, Pgs 197-198 Ch16, CE, Pg 293 Laboratory Manual

		Student Workbook Student CD-ROM
B-3.2	Summarize the basic aerobic and anaerobic processes of cellular respiration and interpret the chemical equation for cellular respiration.	Ch3, L4, Pgs 49-50 Ch9, L3, Pgs 162-163 Ch20, L1, Pg 353 Ch20, CE, Pg 373 Ch21, L3, Pg 386 Laboratory Manual Student Workbook Student CD-ROM
B-3.3	Recognize the overall structure of adenosine triphosphate (ATP)—namely, adenine, the sugar ribose, and three phosphate groups—and summarize its function (including the ATP-ADP [adenosine diphosphate] cycle).	Ch20, L1, Pg 353 Ch21, L3, Pg 386 Laboratory Manual Student Workbook Student CD-ROM
B-3.4	Summarize how the structures of organic molecules (including proteins, carbohydrates, and fats) are related to their relative caloric values.	Ch2, L3, Pgs 29-31 Laboratory Manual Student Workbook Student CD-ROM
B-3.5	Summarize the functions of proteins, carbohydrates, and fats in the human body.	Ch2, L3, Pgs 29-31 Ch21, L1, Pgs 375-376 Ch25, L1, Pg 450 Laboratory Manual Student Workbook Student CD-ROM
B-3.6	Illustrate the flow of energy through ecosystems (including food chains, food webs, energy pyramids, number pyramids, and biomass pyramids).	Ch2, L2, Pgs 25, 28 Ch3, CE, Pg 55 Ch8, L3, Pg 142 Ch8, L6, Pg 149 Ch16, L2, Pgs 283-285 Ch16, CE, Pg 293 Ch17, L3, Pgs 304-305 Ch17, CE, Pg 307 Ch18, L2, Pg 315 Laboratory Manual Student Workbook Student CD-ROM
<b>Standard B-4: The student will demonstrate an understanding of the molecular basis of heredity.</b>		
B-4.1	Compare DNA and RNA in terms of structure, nucleotides, and base pairs.	Ch2, L3, Pg 31 Ch4, L4, Pgs 71-73

		Laboratory Manual Student Workbook Student CD-ROM
B-4.2	Summarize the relationship among DNA, genes, and chromosomes.	Ch4, L3, Pgs 65, 70 Ch4, L4, Pg 71 Laboratory Manual Student Workbook Student CD-ROM
B-4.3	Explain how DNA functions as the code of life and the blueprint for proteins.	Ch2, L3, Pg 31 Ch4, L4, Pgs 72-73 Laboratory Manual Student Workbook Student CD-ROM
B-4.4	Summarize the basic processes involved in protein synthesis (including transcription and translation).	Ch4, L4, Pg 73 Laboratory Manual Student Workbook Student CD-ROM
B-4.5	Summarize the characteristics of the phases of meiosis I and II.	Ch4, L3, Pg 68-69 Laboratory Manual Student Workbook Student CD-ROM
B-4.6	Predict inherited traits by using the principles of Mendelian genetics (including segregation, independent assortment, and dominance).	Ch4, L1, Pgs 57-62 Ch4, L2, Pgs 63-64 Ch4, L3, Pg 69 Ch4, CE, Pg79 Laboratory Manual Student Workbook Student CD-ROM
B-4.7	Summarize the chromosome theory of inheritance and relate that theory to Gregor Mendel's principles of genetics.	Ch4, L1, Pgs 60-62 Ch4, L3, Pgs 65-66 Ch4, L3, Pgs 68-70 Ch4, L4, Pg 71 Laboratory Manual Student Workbook Student CD-ROM
B-4.8	Compare the consequences of mutations in body cells with those in gametes.	Ch5, L1, Pg 87 Ch23, L1, Pg 420 Laboratory Manual Student Workbook Student CD-ROM

B-4.9	Exemplify ways that introduce new genetic characteristics into an organism or a population by applying the principles of modern genetics.	Ch4, L5, Pgs 74-77 Ch4, CE, Pg 79 U2, SJ, Pgs 120-121 U4, SJ, Pg 206 Laboratory Manual Student Workbook Student CD-ROM
<b>Standard B-5: The student will demonstrate an understanding of biological evolution and the diversity of life.</b>		
B-5.1	Summarize the process of natural selection.	Ch5, L5, Pgs 102-103 Ch5, CE, Pg 105 Laboratory Manual Student Workbook Student CD-ROM
B-5.2	Explain how genetic processes result in the continuity of life-forms over time.	Ch5, L1, Pg 87 Ch5, L5, Pg 102 Ch5, CE, Pg 105 Laboratory Manual Student Workbook Student CD-ROM
B-5.3	Explain how diversity within a species increases the chances of its survival.	Ch5, L1, Pgs 84-87 Ch5, L4, Pg 95 Ch5, L5, Pg 102 Ch5, CE, Pg 105 Ch9, L2, Pg 160 Ch11, L4, Pgs 201, 203 Ch13, L2, Pgs 230, 234, 237 Laboratory Manual Student Workbook Student CD-ROM
B-5.4	Explain how genetic variability and environmental factors lead to biological evolution.	Ch5, L1, Pgs 86-87 Ch5, L5, Pgs 102-103 Ch5, CE, Pg 105 Ch9, L2, Pg 159 Ch9, CE, Pg 167 Ch10, L2, Pg 172 Ch15, L3, Pg 270 Ch18, L3, Pgs 316-318 U1, SJ, Pg 81 Laboratory Manual Student Workbook

		Student CD-ROM
B-5.5	Exemplify scientific evidence in the fields of anatomy, embryology, biochemistry, and paleontology that underlies the theory of biological evolution.	Ch5, L2, Pgs 90-91 Ch5, L3, Pgs 92-94 Ch5, L4, Pg 95-99 Ch5, CE, Pg 105 Ch6, L1, Pgs 108-109 Ch10, L1, Pg 169 Ch14, L1, Pg 243 Ch15, L1, Pg 261 Ch15, L3, Pg 270 Laboratory Manual Student Workbook Student CD-ROM
B-5.6	Summarize ways that scientists use data from a variety of sources to investigate and critically analyze aspects of evolutionary theory.	Ch5, L3, Pg 94 Ch5, L5, Pgs 100-101 Laboratory Manual Student Workbook Student CD-ROM
B-5.7	Use a phylogenetic tree to identify the evolutionary relationships among different groups of organisms.	Ch5, L4, Pg 96 Ch14, L1, Pg 243 Ch15, L1, Pg 261 Laboratory Manual Student Workbook Student CD-ROM
<b>Standard B-6: The student will demonstrate an understanding of the interrelationships among organisms and the biotic and abiotic components of their environments.</b>		
B-6.1	Explain how the interrelationships among organisms (including predation, competition, parasitism, mutualism, and commensalism) generate stability within ecosystems.	Ch8, L6, Pg 149 Ch8, CE, Pg 151 Ch12, L4, Pg 216 Ch16, L1, Pgs 280-282 Ch16, L2, Pg 285 Ch16, L4, Pg 291 Ch18, L1, Pg 310 Ch18, L2, Pgs 313-315 Ch18, L3, Pgs 316-318 Ch18, CE, Pg 325 Ch21, L3, Pg 386 Ch24, L2, Pgs 437-438 U5, SJ, Pg 276 Laboratory Manual Student Workbook

		Student CD-ROM
B-6.2	Explain how populations are affected by limiting factors (including density-dependent, density-independent, abiotic, and biotic factors).	Ch16, L1, Pg 282 Ch16, L2, Pg 284 Ch17, L1, Pgs 296-297 Ch18, L1, Pgs 309-312 Ch18, L3, Pgs 316-318 Ch18, L4, Pg 319 Ch18, CE, Pg 325 U4, SJ, Pg 207 Laboratory Manual Student Workbook Student CD-ROM
B-6.3	Illustrate the processes of succession in ecosystems.	Ch16, L4, Pgs 289-291 Ch16, CE, Pg 293 Laboratory Manual Student Workbook Student CD-ROM
B-6.4	Exemplify the role of organisms in the geochemical cycles (including the cycles of carbon, nitrogen, and water).	Ch16, L3, Pgs 286-288 Ch16, CE, Pg 293 Laboratory Manual Student Workbook Student CD-ROM
B-6.5	Explain how ecosystems maintain themselves through naturally occurring processes (including maintaining the quality of the atmosphere, generating soils, controlling the hydrologic cycle, disposing of wastes, and recycling nutrients).	Ch8, L6, Pg 149 Ch12, L3, Pg 215 Ch12, L4, Pgs 217-218 Ch16, L2, Pg 285 Ch16, L3, Pgs 286-291 Ch17, L2, Pg 300 Laboratory Manual Student Workbook Student CD-ROM
B-6.6	Explain how human activities (including population growth, technology, and consumption of resources) affect the physical and chemical cycles and processes of Earth.	Ch8, L3, Pg 142 Ch10, CE, Pg 185 Ch12, L3, Pg 215 Ch13, CE, Pg 239 Ch14, L3, Pg 249 Ch16, L3, Pgs 287-288 Ch17, L2, Pgs 299, 302 Ch17, L3, Pg 303 Ch17, CE, Pg 307 Ch18, L4, Pgs 319-323

		Ch18, CE, Pg 325 U2, SJ, Pg 121 U3, SJ, Pg 152 U4, SJ, Pg 207 U5, SJ, Pg 280 U6, SJ, Pg 327 Laboratory Manual Student Workbook Student CD-ROM
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