Glencoe

Academic Standards: Life Science
Grades 6-8

Life Science

STANDARDS	PAGE REFERENCES
GRADES 6-8	
I. HISTORY AND NATURE OF SCIENCE	
A. Scientific World View	
The student will understand that science is a way of knowing about the world that is characterized by empirical criteria, logical argument and skeptical review.	
1. The student will recognize how scientific knowledge is subject to change as new evidence becomes available, or as new theories cause scientists to look at old observations differently.	**Student Edition:** 10-11, 19, 21, 154-157 *National Geographic* 20 *Time: Science and History* 560 **Teacher Wraparound Edition:** CDIV 10; HS 560; TFYI 21; TTPK 154; VL 20 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 19, 27, 31 *Chapter 2: Cells* 30, 41 *Chapter 6: Adaptations over Time* 31 *Chapter 9: Plants* 27

Codes used for Teacher Wraparound Edition pages are the initial caps of headings on that page.

STANDARDS	PAGE REFERENCES
2. The student will explain natural phenomena by using appropriate physical, conceptual and mathematical models.	**Student Edition:** 12, 130-131, 692-693, 695 *Applying Math* 44, 131 *Applying Science* 11 *Lab* 133, 398, 787 *National Geographic* 694 *Science Online* 692 **Teacher Wraparound Edition:** DIF 692; MM 113; QD 113 **Teacher's Resources:** *Chapter 4: Cell Reproduction* 9-10, 11-13, 29 *Chapter 5: Heredity* 11-12 *Chapter 6: Adaptations over Time* 9-10 *Chapter 18: Nutrients and Digestion* 13-15 *Chapter 19: Circulation* 13-16 *Chapter 20: Respiration and Excretion* 9-12, 13-14 *Chapter 22: Regulation and Reproduction* 13-14 *Chapter 23: Immunity and Disease* 9-12 *Chapter 24: Interactions of Life* 13-16 *Chapter 25: The Nonliving Environment* 13-16
B. Scientific Inquiry	
The student will design and conduct scientific investigations.	
1. The student will formulate a testable hypothesis based on prior knowledge.	**Student Edition:** *Design Your Own Lab* 28-29, 174-175, 200-201, 292-293, 418-419, 702-703 **Teacher Wraparound Edition:** AIL 28, 200, 292, 418; QD 8 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 9-10 *Chapter 17: Structure and Movement* 9-11 *Chapter 19: Circulation* 30 *Chapter 26: Ecosystems* 9-10

STANDARDS	PAGE REFERENCES
2. The student will recognize that a variable is a condition that may influence the outcome of an investigation and know the importance of manipulating one variable at a time.	**Student Edition:** 9 *Design Your Own Lab* 28-29, 174-175, 200-201, 292-293, 418-419, 702-703 **Teacher Wraparound Edition:** AIL 28, 200, 292, 418 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 9-10, 25 *Chapter 26: Ecosystems* 9-10
3. The student will write a specific step-by-step procedure for a scientific investigation.	**Student Edition:** 9 *Design Your Own Lab* 28-29, 174-175, 200-201, 292-293, 418-419, 702-703 **Teacher Wraparound Edition:** AIL 28, 200, 292, 418 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 29 *Chapter 19: Circulation* 13-16
4. The student will explain how classroom scientific investigations relate to established scientific principles.	The following references can be used to meet this standard. **Student Edition:** *Design Your Own Lab* 28-29, 174-175, 200-201, 292-293, 418-419, 702-703 *Lab* 730-731 **Teacher Wraparound Edition:** AIL 28, 200, 292, 418; DIF 730 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 11-13 *Chapter 4: Cell Reproduction* 11-13 *Chapter 6: Adaptations over Time* 9-10 *Chapter 17: Structure and Movement* 9-11 *Chapter 19: Circulation* 13-16

STANDARDS	PAGE REFERENCES
C. Scientific Enterprise	
The student will know that science and technology are human efforts that both influence, and are influenced by, society.	
1. The student will give examples of the development of technology influencing scientific knowledge, and investigation and scientific knowledge influencing the development of technology.	**Student Edition:** 47, 50-51, 111 *National Geographic* 48-49 *Section Review* 51 #1 *Time: Science and Society* 294 **Teacher Wraparound Edition:** CB 49; DIF 50; SJ 48 **Teacher's Resources:** *Chapter 2: Cells* 30, 41 *Chapter 5: Heredity* 17, 25, 28, 42 *Chapter 22: Regulation and Reproduction* 28, 29 *Chapter 23: Immunity and Disease* 43 *Chapter 25: The Nonliving Environment* 31
D. Historic Perspectives	
The student will understand how scientific discovery, culture, societal norms and technology have influenced one another in different time periods.	
1. The student will cite examples of individuals throughout history who made discoveries and contributions in science and technology.	**Student Edition:** 22-23, 51, 110-112, 155-157, 657-658 *National Geographic* 659 *Time: Science and History* 58, 176, 560 **Teacher Wraparound Edition:** CC 9, 113; IH 658; TFYI 9 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 27, 31, 44 *Chapter 2: Cells* 30, 41 *Chapter 6: Adaptations over Time* 18 *Chapter 7: Bacteria* 16 *Chapter 16: Animal Behavior* 27 *Chapter 23: Immunity and Disease* 28, 43

STANDARDS	PAGE REFERENCES
2. The student will cite examples of how culture influences scientific and technological advances.	**Student Edition:** 11, 19, 32 *National Geographic* 20 *Oops! Accidents in Science* 264, 504 *Time: Science and Society* 532, 732 **Teacher Wraparound Edition:** CB 532; CC 597; TFYI 21; VL 20 **Teacher's Resources:** *Chapter 5: Heredity* 25, 28 *Chapter 22: Regulation and Reproduction* 28, 29 *Chapter 23: Immunity and Disease* 28 *Chapter 25: The Nonliving Environment* 31
IV. LIFE SCIENCE	
A. Cells	
The student will understand that all organisms are composed of cells that carry on the many functions needed to sustain life.	
1. The student will know that cells are the fundamental units of life.	**Student Edition:** 14, 38, 51, 96 *Section Review* 18 #1 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 17, 33 *Chapter 2: Cells* 38, 41
2. The student will distinguish between single-cellular and multicellular organisms.	**Student Edition:** 14, 38-39, 187 *Section Review* 45 #4 **Teacher Wraparound Edition:** QD 39; TTPK 186 **Teacher's Resources:** *Chapter 4: Cell Reproduction* 28 *Chapter 7: Bacteria* 9-10

STANDARDS	PAGE REFERENCES
3. The student will distinguish between plant and animal cells.	**Student Edition:** 39, 42, 241 *Lab* 46 *Section Review* 45 #5 **Teacher Wraparound Edition:** QD 39; RT 45; VL 41 **Teacher's Resources:** *Chapter 2: Cells* 13-16, 17, 19, 27, 47
4. The student will recognize that cells repeatedly divide for growth and repair.	**Student Edition:** 96-100 **Teacher Wraparound Edition:** CC 99; QD 99 **Teacher's Resources:** *Chapter 4: Cell Reproduction* 9-10, 15, 31, 42
5. The student will recognize that cells convert energy from food for the production of molecules necessary for life, and for life processes including cell growth and cell division.	**Student Edition:** 15, 42, 81, 83-85 **Teacher Wraparound Edition:** TTPK 81 **Teacher's Resources:** *Chapter 3: Cell Processes* 11-14, 27 *Chapter 8: Protists and Fungi* 11-13, 28 *Chapter 11: Plant Processes* 15, 18, 25, 29, 33
6. The student will recognize that specialized cells in multi-cellular organisms perform specialized functions.	**Student Edition:** 45, 104-107, 114, 255, 551, 595 *Science Online* 551 **Teacher Wraparound Edition:** MM 551 **Teacher's Resources:** *Chapter 9: Plants* 9-10 *Chapter 11: Plant Processes* 27 *Chapter 19: Circulation* 20, 28, 48 *Chapter 21: Control and Coordination* 27 *Chapter 23: Immunity and Disease* 18, 45-46

STANDARDS	PAGE REFERENCES
B. Diversity of Organisms	
The student will understand that living systems, at every level of organization, demonstrate the complementary nature of structure and function.	
1. The student will explain that individuals are composed of specialized cells, tissues, organs and organ systems that perform specialized functions.	**Student Edition:** 14, 45, 114, 215, 252-255, 540-545, 550-551, 568-571, 525-529 *Integrate Health* 255 *Section Review* 45 #3, 529 #3 **Teacher Wraparound Edition:** AC 254 **Teacher's Resources:** *Chapter 14: Fish, Amphibians, and Reptiles* 11-15 *Chapter 17: Structure and Movement* 27-31, 47, 48 *Chapter 18: Nutrients and Digestion* 19, 21-22, 28, 45-46 *Chapter 19: Circulation* 9-12, 19, 21, 27, 29, 48-49 *Chapter 20: Respiration and Excretion* 17-19, 25-26, 43-44 *Chapter 21: Control and Coordination* 20, 27 *Chapter 22: Regulation and Reproduction* 25, 26 *Chapter 23: Immunity and Disease* 18, 45-46
2. The student will recognize that an organism's body plan and its ability to regulate its internal environment enable it to make or find food, grow and reproduce in a constantly changing environment.	**Student Edition:** 15, 74-78, 337-338, 360, 365-367, 545, 577-580 *Applying Science* 580 *National Geographic* 79 **Teacher Wraparound Edition:** UA 15; TTPK 74, 577 **Teacher's Resources:** *Chapter 11: Plant Processes* 10-13, 27 *Chapter 18: Nutrients and Digestion* 19, 21-22, 28, 45-46 *Chapter 20: Respiration and Excretion* 19, 26, 28, 41, 43-44 *Chapter 22: Regulation and Reproduction* 9-11, 45-46

STANDARDS	PAGE REFERENCES
3. The student will recognize that behavioral responses of organisms may be determined by heredity and past experience.	**Student Edition:** 456-461, 462-466, 468-470 *Lab* 471 *MiniLab* 460 *Science Online* 468 *Section Review* 461 #4 **Teacher Wraparound Edition:** DIF 457; QD 458; TFYI 460 **Teacher's Resources:** *Chapter 16: Animal Behavior* 9-11, 13-14, 17, 19-20, 25, 40-41, 43-44
4. The student will use and create dichotomous keys.	**Student Edition:** 25-26 *Lab* 27, 261 *Lab: Model and Invent* 230-231 Section Review 26 #5 **Teacher Wraparound Edition:** AC 26; AS 27, 261 **Teacher's Resources:** *Chapter 1: Exploring and Classifying Life* 11-13, 28, 41 *Chapter 7: Bacteria* 9-10
5. The student will use the characteristics of an organism to identify the kingdom to which it belongs.	**Student Edition:** 23, 186-187, 210, 222-223, 240-241, 330 *Lab* 27 *Launch Lab* 5 *Reference Handbook* 848-581 **Teacher Wraparound Edition:** TTPK 330 **Teacher's Resources:** *Chapter 7: Bacteria* 27 *Chapter 8: Protists and Fungi* 15, 18-19, 43 *Chapter 9: Plants* 23 *Chapter 12: Introduction to Animals* 15, 28, 42

STANDARDS	PAGE REFERENCES
C. Interdependence of Life	
The student will understand that within ecosystems, complex interactions exist between organisms and the physical environment.	
1. The student will provide examples of the potentially irreversible effects of human activity on ecosystems.	**Student Edition:** 725, 749, 754, 755, 778-786 *Lab* 787 *Launch Lab* 769 *MiniLab* 772 *Section Review* 725 #2 **Teacher Wraparound Edition:** DI 773, 779; DIF 781; TFYI 785 **Teacher's Resources:** *Chapter 26: Ecosystems* 30 *Chapter 27: Conserving Resources* 28, 45
2. The student will define a population as all individuals of a species that exist together at a given place and time.	**Student Edition:** 686 *Section Review* 687 #4 **Teacher Wraparound Edition:** DIF 686; IM 686 **Teacher's Resources:** *Chapter 24: Interactions of Life* 19, 22, 27
3. The student will define an ecosystem as all populations living together and the physical factors with which they interact.	**Student Edition:** 685 **Teacher Wraparound Edition:** AS 687; CFU 687; RT 687; TFYI 685 **Teacher's Resources:** *Chapter 24: Interactions of Life* 19, 22, 27

STANDARDS	PAGE REFERENCES
4. The student will explain the factors that affect the number and types of organisms an ecosystem can support, including available resources, abiotic and biotic factors and disease.	**Student Edition:** 688, 690-692, 712-717 *Applying Science* 691 *Design Your Own Lab* 702-703 *MiniLab* 689 *National Geographic* 694 *Section Review* 695 #3-#4 **Teacher Wraparound Edition:** AC 691; RT 718; TTPK 688 **Teacher's Resources:** *Chapter 24: Interactions of Life* 13-16, 27, 45, 49 *Chapter 25: The Nonliving Environment* 17, 27 *Chapter 27: Conserving Resource* 9-12
D. Heredity	
The student will understand that heredity information is contained in genes which are inherited through both sexual and asexual reproduction.	
1. The student will recognize that inherited traits result from information contained in genes, which are located on chromosomes of each cell.	**Student Edition:** 98, 104-105, 112, 126 **Teacher Wraparound Edition:** AC 146; QD 131; UA 98 **Teacher's Resources:** *Chapter 4: Cell Reproduction* 11-13 *Chapter 5: Heredity* 9-10, 15, 29
2. The student will recognize that each gene carries a single unit of information and can influence more than one trait.	**Student Edition:** 112-114, 126, 128
3. The student will explain how inherited traits can be determined by one or many genes.	**Student Edition:** 134-136 *MiniLab* 136 **Teacher Wraparound Edition:** USW 136 **Teacher's Resources:** *Chapter 4: Heredity* 27, 30

STANDARDS	PAGE REFERENCES
4. The student will comprehend that interactions with the environment affect some inherited traits.	**Student Edition:** 136
5. The student will comprehend that reproduction is essential for the continuation of a species.	**Student Edition:** 17 **Teacher Wraparound Edition:** RC 17; TFYI 17; VL 17 **Teacher's Resources:** *Chapter 4: Cell Reproduction* 28 *Chapter 10: Plant Reproduction* 13-14
6. The student will compare and contrast the advantages and disadvantages of sexual and asexual reproduction.	**Student Edition:** 101-102, 104-105, 126 **Teacher Wraparound Edition:** AS 100 **Teacher's Resources:** *Chapter 10: Plant Reproduction* 15
E. Biological Populations Change Over Time	
The student will understand how biological evolution provides a scientific explanation for the fossil record of ancient life forms, as well as for the striking similarities observed among the diverse species of living organisms.	
1. The student will recognize extinction is a common event.	**Student Edition:** 167, 363 **Teacher Wraparound Edition:** AC 166; TFYI 171 **Teacher's Resources:** *Chapter 6: Adaptations over Time* 30, 44 *Chapter 14: Fish, Amphibians, and Reptiles* 34

STANDARDS	PAGE REFERENCES
2. The student will describe how the fossil record documents the appearance and diversification of many life forms.	**Student Edition:** 163-165, 167, 171-173, 241, 397, 435 *Integrate Earth Science* 167 *Science Online* 165 *Section Review* 169 #2 **Teacher Wraparound Edition:** DIF 171, 241 **Teacher's Resources:** *Chapter 6: Adaptations over Time* 26, 29, 32, 43-46
3. The student will explain how biological adaptations in structure, function and behavior enhance the reproductive success and survival of a species in a particular environment.	**Student Edition:** 158, 745, 748 *Lab* 162 *MiniLab* 748 *Section Assessment* 161 #5, 751 #6 **Teacher Wraparound Edition:** AS 162; QD 156 **Teacher's Resources:** *Chapter 6: Adaptations over Time* 11-14, 25, 42 *Chapter 12: Introduction to Animals* 11-14 *Chapter 14: Fish, Amphibians, and Reptiles* 31 *Chapter 16: Animal Behavior* 13-14, 28, 40-41 *Chapter 20: Respiration and Excretion* 28 *Chapter 25: The Nonliving Environment* 30, 32
4. The student will recognize that scientific evidence can be used to infer common ancestry among some organisms.	**Student Edition:** 163, 167-169, 171-173, 435 *Integrate Earth Science* 167 *Section Review* 161 #6, 173 #1 **Teacher Wraparound Edition:** DIF 171; TFYI 167; TTPK 170 **Teacher's Resources:** *Chapter 6: Adaptations over Time* 27, 29 *Chapter 9: Plants* 27

STANDARDS	PAGE REFERENCES
5. The student will explain how diversity of species develops through gradual processes over generations.	**Student Edition:** 156-161 *Applying Science* 157 *MiniLab* 159 **Teacher Wraparound Edition:** IL 160 **Teacher's Resources:** *Chapter 6: Adaptations over Time* 9-10, 17, 42
F. Flow of Matter and Energy	
The student will understand how the flow of energy and the recycling of matter contribute to a stable ecosystem.	
1. The student will know that plants use the energy in light to make sugars out of carbon dioxide and water.	**Student Edition:** 42, 82, 85, 305-307 *Lab* 86-87, 730-731 *Science Online* 306 *Section Assessment* 85 #5 **Teacher Wraparound Edition:** AIL 86; QD 306; UA 82; USW 305 **Teacher's Resources:** *Chapter 3: Cell Processes* 11-14, 27, 30 *Chapter 11: Plant Processes* 18, 29, 33 *Chapter 25: The Nonliving Environment* 21
2. The student will explain how energy is transferred through food chains and food webs in an ecosystem.	**Student Edition:** 727-728 **Teacher Wraparound Edition:** AC 727; CFU 729; DI 727; DIF 727; VL 728 **Teacher's Resources:** *Chapter 25: The Nonliving Environment* 29, 46, 47

STANDARDS	PAGE REFERENCES
3. The student will explain how the amount of useable energy available to organisms decreases as it passes through a food chain and/or food web.	**Student Edition:** 697, 727, 728-729 *Section Review* 729 #3-#4 **Teacher Wraparound Edition:** DIF 728; TFYI 728; UA 728 **Teacher's Resources:** *Chapter 25: The Nonliving Environment* 29
4. The student will know that the total amount of matter in a closed system remains the same as it is transferred between organisms and the physical environment even though its location or form changes.	**Student Edition:** 720-723, 725, 727 *Lab* 730-731 *National Geographic* 724 **Teacher Wraparound Edition:** DIF 727
5. The student will compare and contrast predator/prey, parasite/host and producer/consumer/decomposer relationships.	**Student Edition:** 696-697, 698, 700 **Teacher's Resources:** *Chapter 3: Cell Processes* 44 *Chapter 24: Interactions of Life* 9-11, 13-16, 29, 46 *Chapter 25: The Nonliving Environment* 29, 45

STANDARDS	PAGE REFERENCES
G. Human Organism	
The student will understand human body systems and their relationship to disease.	
1. The student will recognize that disease can be caused by genetics, infection by other organisms, exposure to environmental factors or a combination of these.	**Student Edition:** 54, 137-138, 139, 197, 218, 229, 657-658, 661-663, 666-669 *Lab* 665 *Section Review* 664 #2-#3 **Teacher Wraparound Edition:** AC 138; DI 138, 197; TFYI 197 **Teacher's Resources:** *Chapter 4: Cell Reproduction* 30 *Chapter 5: Heredity* 24, 30 *Chapter 6: Adaptations over Time* 28 *Chapter 7: Bacteria* 28, 39 *Chapter 12: Introduction to Animals* 30 *Chapter 18: Nutrients and Digestion* 30 *Chapter 19: Circulation* 31 *Chapter 23: Immunity and Disease* 13-14, 17, 26-27, 29, 30
2. The student will identify risks associated with natural, chemical and biological hazards.	**Student Edition:** 660-663, 668, 670, 782 **Teacher Wraparound Edition:** CC 662, 668, 782; CD 781; IM 669; TFYI 668 **Teacher's Resources:** *Chapter 4: Cell Reproduction* 30 *Chapter 6: Adaptations over Time* 28 *Chapter 7: Bacteria* 26 *Chapter 23: Immunity and Disease* 44 *Chapter 27: Conserving Resources* 31

STANDARDS	PAGE REFERENCES
3. The student will describe the structure and function of systems for digestion, respiration, reproduction, circulation, excretion, movement, control and coordination and for protection from disease, in the human organism.	**Student Edition:** 484-487, 496-497, 525-529, 594-595, 597-599, 654-656 *Lab* 583 *MiniLab* 541 **Teacher Wraparound Edition:** AS 582 **Teacher's Resources:** *Chapter 17: Structure and Movement* 19-22, 27-31, 46-50 *Chapter 18: Nutrients and Digestion* 19, 21-22, 28, 45-46 *Chapter 19: Circulation* 9-12, 19, 21, 27, 29, 48-49 *Chapter 20: Respiration and Excretion* 17-19, 25-26, 43-44 *Chapter 21: Control and Coordination* 19-20, 27, 31-32, 45 *Chapter 22: Regulation and Reproduction* 17-18, 25-26, 31 *Chapter 23: Immunity and Disease* 9-12, 18, 45