



BIOLOGY

The Dynamics of Life

© 2004

STANDARDS	PAGE REFERENCES
<p>1. CONCEPTS AND PROCESSES</p> <p>In the context of unifying concepts and processes, students develop an understanding of scientific content through inquiry. Science is a dynamic process; concepts and content are best learned through inquiry and investigation.</p> <hr/> <p>LIFE SYSTEMS</p>	
<p>1. The Cell: Students explain the processes of life, which necessitates an understanding of relationship between structure and function of the cell and cellular differentiation. They identify activities taking place in an organism related to metabolic activities in cells, including growth, regulation, transport, and homeostasis. Students differentiate between asexual and sexual reproduction.</p>	<p>Student Edition: 6-10, 172, 173-174, 175-176, 179-187, 195-200, 203-210, 225-230, 231-237, 265-266, 505, 634 <i>BioDigest</i> 246-247 <i>MiniLab</i> 198, 634 Teacher Wraparound Edition: CA 199; UM 184</p>
<p>2. Molecular Basis of Heredity: Students demonstrate an understanding that organisms ensure species continuity by passing genetic information from parent to offspring. They utilize genetic information to make predictions about possible offspring. Students apply concepts of molecular biology (DNA and genes) to recent discoveries.</p>	<p>Student Edition: 7, 253-262, 263-270, 281-284, 309-314, 315-320, 323-328, 341-348, 349-353 <i>Design Your Own BioLab</i> 330-331 <i>Internet BioLab</i> 274-275 <i>Investigate BioLab</i> 354-355 <i>MiniLab</i> 310, 343 <i>Problem-Solving Lab</i> 311, 353 Teacher Wraparound Edition: AL 350; IS 261; UM 260</p>

STANDARDS	PAGE REFERENCES
<p>3. Biological Evolution: Students explain how species evolve over time. They understand that evolution is the consequence of various interactions, including the genetic variability of offspring due to mutation and recombination of genes, and the ensuing selection by the environment of those offspring better able to survive and leave additional offspring. Students discuss natural selection and that its evolutionary consequences provide a scientific explanation for the great diversity of organisms as evidenced by the fossil record. They examine how different species are related by descent from common ancestors. Students are able to explain how organisms are classified based on similarities that reflect their evolutionary relationships, with species being the most fundamental unit of classification.</p>	<p>Student Edition: 7, 9-10, 393-403, 404-413, 447-449, 450-453, 456-459 <i>Internet BioLab</i> 414-415 <i>Investigate BioLab</i> 460-461 <i>MiniLab</i> 453 <i>Problem-Solving Lab</i> 397 Teacher Wraparound Edition: DI 409; PR 400; UM 398, 453; VL 395</p>
<p>4. Interdependence of Organisms: Students investigate the inter-relationships and interdependence of organisms, including the ecosystem concept, energy flow, competition for resources, and human effects on the environment.</p>	<p>Student Edition: 41, 42-45, 46-52, 97-99, 116-120 <i>Biology and Society</i> 60, 600 <i>Design Your Own BioLab</i> 58-59 <i>Problem-Solving Lab</i> 50 Teacher Wraparound Edition: CA 50; CB 43; PR 41</p>
<p>5. Matter, Energy, and Organization in Living Systems: Students describe the need of living systems for a continuous input of energy to maintain chemical and physical stability. They explain the unidirectional flow of energy and organic matter through a series of trophic levels in living systems. Students investigate the distribution and abundance of organisms in ecosystems, which are limited by the availability of matter and energy and the ability of the living system to recycle materials.</p>	<p>Student Edition: 9, 46-52, 65-66, 221-224 <i>BioDigest</i> 133-134 <i>Physical Science Connection</i> 53 <i>Problem-Solving Lab</i> 50 Teacher Wraparound Edition: CA 53; RT 57; VL 66</p>
<p>6. Behavior and Adaptation: Students examine behavior as the sum of responses of an organism to stimuli in its environment, which evolves through adaptation, increasing the potential for species survival. They identify adaptations as characteristics and behaviors of an organism that enhance the chance for survival and reproductive success in a particular environment.</p>	<p>Student Edition: 859-867 <i>Investigate BioLab</i> 874-875 <i>MiniLab</i> 860 Teacher Wraparound Edition: EX 867; RE 863; VL 863, 865</p>

STANDARDS	PAGE REFERENCES
<p><u>2. SCIENCE AS INQUIRY</u> Students demonstrate knowledge, skills, and habits of mind necessary to safely perform scientific inquiry. Inquiry is the foundation for the development of content, teaching students the use of processes of science that enable them to construct and develop their own knowledge. Inquiry requires appropriate field, classroom, and laboratory experiences with suitable facilities and equipment.</p>	
<p>1. Students research scientific information and present findings through appropriate means.</p>	<p>Student Edition: <i>Biology and Society</i> 26 <i>BioTechnology</i> 660, 688, 1018 Teacher Wraparound Edition: AB 356; BJ 353; CA 388; GF 388, 498, 688</p>
<p>2. Students use inquiry to conduct scientific investigations.</p> <ul style="list-style-type: none"> • Pose problems and identify questions and concepts to design and conduct an investigation. • Collect, organize, analyze and appropriately represent data. • Give priority to evidence in drawing conclusions and making connections to scientific concepts. • Clearly and accurately communicate the result of the investigation. 	<p>Student Edition: <i>Design Your Own BioLab</i> 58-59, 164-165, 496-497, 734-735, 756-757 <i>Internet BioLab</i> 24-25, 274-275, 414-415, 598-599 Teacher Wraparound Edition: AS 59, 165, 757</p>
<p>3. Students clearly and accurately communicate the result of their own work as well as information from other sources.</p>	<p>Student Edition: <i>Design Your Own BioLab</i> 522-523, 910-911, 964-965 <i>Internet BioLab</i> 24-25, 126-127, 598-599 Teacher Wraparound Edition: AS 25, 523, 911, 965</p>
<p>4. Students investigate the relationships between science and technology and the role of technological design in meeting human needs.</p>	<p>Student Edition: 22-23, 341-348, 349-353 <i>BioTechnology</i> 304, 966 <i>MiniLab</i> 343 <i>National Geographic</i> 1064-1065 <i>Problem-Solving Lab</i> 353 Teacher Wraparound Edition: BJ 353; GF 304</p>

STANDARDS	PAGE REFERENCES
<p>5. Students properly use appropriate scientific and safety equipment, recognize hazards and safety symbols, and observe standard safety procedures.</p>	<p>Student Edition: 14-15 <i>Design Your Own BioLab</i> 164-165, 496-497, 910-911, 964-965 <i>Internet BioLab</i> 544-545, 756-757 <i>Reference Handbook</i> 1107-1109 Teacher Wraparound Edition: IN 15</p>
<p>3. HISTORY AND NATURE OF SCIENCE IN PERSONAL AND SOCIAL DECISIONS Students recognize the nature of science, its history, and its connections to personal, social, economic, and political decisions. Historically, scientific events have had significant impacts on our cultural heritage.</p>	
<p>1. Students examine the nature and history of science.</p> <ul style="list-style-type: none"> • As scientific knowledge evolves, it impacts personal, social, economic, and political decisions. • The historical misuse of scientific information to make personal, social, economic, and political decisions. 	<p>Student Edition: 21-22, 341-348, 349-353, 380-383 <i>Biology and Society</i> 388, 600, 990, 1044 <i>Connection to Chemistry</i> 106 <i>Section Assessment</i> 23 (#5) Teacher Wraparound Edition: AS 352; BJ 353; QD 342</p>
<p>2. Students examine how scientific information is used to make decisions.</p> <ul style="list-style-type: none"> • Interdisciplinary connections of the sciences and connections to other subject areas and career opportunities. • The role of science in solving personal, local, national, and global problems. • The origins, limitations, and conservation of natural resources, including Wyoming examples. 	<p>Student Edition: 121-125 <i>Biology and Society</i> 60, 498, 600, 854, 1044 <i>Careers in Biology</i> 38, 297, 958 <i>Connection to Chemistry</i> 106 <i>Connection to Health</i> 572 Teacher Wraparound Edition: MA 123; TS 600</p>