



BIOLOGY

The Dynamics of Life

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STANDARDS

PAGE REFERENCES

Scientific Inquiry (Nature of Science Unifying Concept A)

Scientific inquiry is the process by which humans systematically examine the natural world. Scientific inquiry is a human endeavor and involves observation, reasoning, insight, energy, skill, and creativity. Scientific inquiry is used to formulate and test explanations of nature through observation, experiments, and theoretical or mathematical models. Scientific explanations and evidence are constantly reviewed and examined by others. Questioning, response to criticism and open communication are integral to the process of science.

By the end of grade band, students know and are able to do everything required in earlier grades and:

N.12.A Students understand that a variety of communication methods can be used to share scientific information.

N.12.A.1 Students know tables, charts, illustrations and graphs can be used in making arguments and claims in oral and written presentations. E/S

Student Edition:

Design Your Own BioLab 910-911

Internet BioLab 24-25, 414-415

MiniLab 92, 407

Skill Handbook 1099-1101

Teacher Wraparound Edition:

AS 25, 911; MA 407

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<p>N.12.A.2 Students know scientists maintain a permanent record of procedures, data, analyses, decisions, and understandings of scientific investigations. I/S</p>	<p>The following references can be incorporated into a discussion of scientific endeavors.</p> <p>Student Edition: 16-18, 380-383, 393-396 <i>National Geographic: Focus On</i> 1060-1061</p> <p>Teacher Wraparound Edition: CA 17; CB 1061; PR 1061; QD 15</p>
<p>N.12.A.3 Students know repeated experimentation allows for statistical analysis and unbiased conclusions. E/S</p>	<p>Student Edition: <i>Internet BioLab</i> 24-25, 414-415 <i>Investigate BioLab</i> 104-105, 386-387 <i>Section Assessment 23</i> (#1)</p> <p>Teacher Wraparound Edition: BR 15; CA 21</p>
<p>N.12.A.4 Students know how to safely conduct an original scientific investigation using the appropriate tools and technology. E/L</p>	<p>Student Edition: 14-15 <i>Chapter Assessment 28</i> (#13) <i>Design Your Own BioLab</i> 164-165, 496-497, 964-965 <i>Internet BioLab</i> 544-545 <i>Reference Handbook</i> 1107-1109</p> <p>Teacher Wraparound Edition: IN 15</p>
<p>N.12.A.5 Students know models and modeling can be used to identify and predict cause-effect relationships. I/S</p>	<p>Student Edition: <i>Design Your Own BioLab</i> 58-59 <i>Investigate BioLab</i> 302-303, 354-355 <i>MiniLab</i> 122, 1028 <i>Problem-Solving Lab</i> 957</p>
<p>N.12.A.6 Students know organizational schema can be used to represent and describe relationships of sets. E/S</p>	<p>Students can use observations and data to organize items and information.</p> <p>Student Edition: <i>Design Your Own BioLab</i> 570-571 <i>Investigate BioLab</i> 188-189, 460-461, 810-811 <i>MiniLab</i> 376, 446, 453, 589 <i>Problem-Solving Lab</i> 50</p> <p>Teacher Wraparound Edition: AL 454-455</p>

STANDARDS	PAGE REFERENCES
<p>Science, Technology, and Society (Nature of Science Unifying Concept B) Technology defines a society or era. It can shape the environment in which people live, and it has increasingly become a larger part of people’s lives. While many of technology’s effects on society are regarded as desirable, other effects are seen as less desirable. These concepts are shared across subject areas such as science, math, technology, social studies and language arts. The development and use of technology affects society and the environment in which we live, and, at the same time, society influences the development of technology and its impact on culture.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>N.12.B Students understand the impacts of science and technology in terms of costs and benefits to society.</p>	
<p>N.12.B.1 Students know science, technology, and society influenced one another in both positive and negative ways. E/S</p>	<p>Student Edition: 21-23, 345, 347-348, 351-353 <i>Biology and Society</i> 498, 1044 <i>BioTechnology</i> 304, 660, 688 <i>Chapter Assessment</i> 28 (#14) <i>Connection to Chemistry</i> 106 <i>National Geographic: Focus On</i> 1064-1065 <i>Section Assessment</i> 23 (#5) Teacher Wraparound Edition: AL 350-351; BJ 353; EN 345</p>
<p>N.12.B.2 Students know consumption patterns, conservation efforts, and cultural or social practices in countries have varying environmental impacts. E/S</p>	<p>Student Edition: 103, 116-120, 121-125 <i>Biology and Society</i> 26, 60, 600, 725 <i>Problem-Solving Lab</i> 124 <i>Section Assessment</i> 103 (#4) Teacher Wraparound Edition: BA 836; CD 123; GF 836; TS 600</p>
<p>N.12.B.3 Students know the influence of ethics on scientific enterprise. E/S</p>	<p>Discussion of ethics can be incorporated into the following discussions of the scientific enterprise. Student Edition: 11-18, 21-23 <i>Biology and Society</i> 854, 990, 1044 <i>Chapter Assessment</i> 29 (#21) <i>Problem-Solving Lab</i> 16 <i>Section Assessment</i> 23 (#5) Teacher Wraparound Edition: EN 345</p>

STANDARDS	PAGE REFERENCES
N.12.B.4 Students know scientific knowledge builds on previous information. E/S	Student Edition: 16, 171-173, 281-283, 380-385, 393-396 <i>National Geographic: Focus On</i> 1060-1061 <i>Section Assessment 23 (#3)</i> Teacher Wraparound Edition: CD 394; TL 250
Heredity (Life Science Unifying Concept A) Heredity is the genetic passing of a set of instructions from generation to generation. These instructions are encoded as DNA and may manifest themselves as characteristics. Some characteristics are inherited, and some result from interactions with the environment.	
By the end of grade band, students know and are able to do everything required in earlier grades and:	
L.12.A Students understand how genetic information is passed from one generation to another.	
L.12.A.1 Students know genetic information passed from parents to offspring is coded in the DNA molecule. E/S	Student Edition: 163, 253, 263-266, 281 <i>Why It's Important</i> 250, 252
L.12.A.2 Students know DNA molecules provide instructions for assembling protein molecules. E/S	Student Edition: 163, 180-181, 211, 281, 288-295 <i>BioDigest</i> 362 <i>Investigate BioLab</i> 302-303 <i>MiniLab</i> 293 <i>Section Assessment 295 (#1)</i> Teacher Wraparound Edition: QD 289; UM 289; VL 362
L.12.A.3 Students know all body cells in an organism develop from a single cell and contain essentially identical genetic instructions. E/S	Student Edition: 203, 204, 206-210, 265 <i>BioDigest</i> 247
L.12.A.4 Students know several causes and effects of somatic versus sex cell mutations. E/S	Student Edition: 211-212, 296-301 <i>MiniLab</i> 300 <i>Problem-Solving Lab</i> 299 <i>Section Assessment 301 (#4)</i> Teacher Wraparound Edition: IS 298; UPK 296

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L.12.A.5 Students know how to predict patterns of inheritance. E/S	Student Edition: 260-262, 309-314, 315-320 <i>Internet BioLab</i> 274-275 <i>MiniLab</i> 310 <i>Problem-Solving Lab</i> 311, 318 Teacher Wraparound Edition: BJ 260; CD 260; EX 261; IS 261; QD 312
Structure of Life (Life Science Unifying Concept B) All living things are composed of cells. Cells range from very simple to very complex and have structures which perform functions for the organism. Cells and structures can be damaged or fail because of intrinsic failures or disease.	
By the end of grade band, students know and are able to do everything required in earlier grades and:	
L.12.B Students understand that all life forms, at all levels of organization, use specialized structure and similar processes to meet life's needs.	
L.12.B.1 Students know cell structures and their functions. E/S	Student Edition: 176-178, 179-187 <i>BioDigest</i> 246 <i>MiniLab</i> 182 <i>Problem-Solving Lab</i> 180 Teacher Wraparound Edition: CA 183; DI 183; MA 187
L.12.B.2 Students know the human body has a specialized anatomy and physiology composed of an hierarchical arrangement of differentiated cells. E/S	Student Edition: 210, 893, 895, 901-902, 905-906, 943, 975-976 <i>BioDigest</i> 1048 <i>Problem-Solving Lab</i> 906 <i>Section Assessment</i> 210 (#3) Teacher Wraparound Edition: VL 1049
L.12.B.3 Students know disease disrupts the equilibrium that exists in a healthy organism. E/S	Student Edition: 1023-1024, 1028-1029, 1041 <i>Section Assessment</i> 1030 (#4)

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<p>Organisms and Their Environment (Life Science Unifying Concept C) A variety of ecosystems and communities exist on Earth. Ecosystems are dynamic interactions of organisms and their environment. Ecosystems have distinct characteristics and components that allow certain organisms to thrive. Change in one or more components can affect the entire ecosystem.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>L.12.C Students understand that ecosystems display patterns of organization, change, and stability as a result of the interactions and interdependencies among the living and non-living components of the Earth.</p>	
<p>L.12.C.1 Students know relationships of organisms and their physical environment. E/S</p>	<p>Student Edition: 37, 65-66, 78-75 <i>BioDigest</i> 132 <i>MiniLab</i> 36 <i>Problem-Solving Lab</i> 37 Teacher Wraparound Edition: AL 38-39, 76-77; CA 37</p>
<p>L.12.C.2 Students know how changes in an ecosystem can affect biodiversity and biodiversity's contribution to an ecosystem's stability. E/S</p>	<p>Student Edition: 67-69, 113-114 <i>BioDigest</i> 135 <i>Focus on Adaptations</i> 134 Teacher Wraparound Edition: AS 112</p>
<p>L.12.C.3 Students know the amount of living matter an environment can support is limited by the availability of matter, energy, and the ability of the ecosystem to recycle materials. E/S</p>	<p>Student Edition: 65-66, 73, 74, 76 Teacher Wraparound Edition: IN 81; IS 66, 79; UST 80</p>
<p>L.12.C.4 Students know the unique geologic, hydrologic, climatic, and biological characteristics of Nevada's bioregions. E/S</p>	<p>The following references can be incorporated into a discussion about biomes. Student Edition: 78 <i>National Geographic: Focus On</i> 1062-1063 Teacher Wraparound Edition: BJ 78; IN 78; PO 75; PR 1063</p>

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<p>Diversity of Life (Life Science Unifying Concept D) Evidence suggests that living things change over periods of time. These changes can be attributed to genetic and/or environmental influences. This process of change over time is called biological evolution. The diversity of life on Earth is classified using objective characteristics. Scientific classification uses a hierarchy of groups and subgroups based on similarities that reflect evolutionary relationships.</p>	
<p>By the end of grade band, students know and are able to do everything required in earlier grades and:</p>	
<p>L.12.D Students understand biological evolution and diversity of life.</p>	
<p>L.12.D.1 Students know organisms can be classified based on evolutionary relationships. E/S</p>	<p>Student Edition: 445, 447-449, 452-456 <i>BioDigest</i> 469 <i>MiniLab</i> 453 <i>Problem-Solving Lab</i> 447 Teacher Wraparound Edition: IN 452; UM 453; VL 452</p>
<p>L.12.D.2 Students know similarity of DNA sequences gives evidence of relationships between organisms. E/S</p>	<p>Student Edition: 402-403, 451 <i>BioTechnology</i> 462 <i>Problem-Solving Lab</i> 447 Teacher Wraparound Edition: GF 462; TTPK 401; VL 451</p>
<p>L.12.D.3 Students know the fossil record gives evidence for natural selection and its evolutionary consequences. E/S</p>	<p>Student Edition: 370, 393, 399-400 <i>BioDigest</i> 468 Teacher Wraparound Edition: IS 401; VL 400</p>
<p>L.12.D.4 Students know the extinction of species can be a natural process. E/S</p>	<p>Student Edition: 115, 375, 377, 378 <i>Section Assessment</i> 120 (#1) Teacher Wraparound Edition: CA 115; RM 114</p>
<p>L.12.D.5 Students know biological evolution explains diversity of life. E/S</p>	<p>Student Edition: 10, 395-399, 454-455, 457-459</p>

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L.12.D.6 Students know the concepts of natural and artificial selection. E/S	<p>Student Edition: 337-338, 395-396, 407-409 <i>BioDigest</i> 468 <i>National Geographic: Focus On</i> 1066-1067 <i>Section Assessment</i> 403 (#1)</p> <p>Teacher Wraparound Edition: PR 394; VL 395</p>