

GLENCOE CORRELATION
BIOLOGY: THE DYNAMICS OF LIFE
IDAHO
Science Standards

STANDARDS	PAGE REFERENCES
648. UNIFYING CONCEPTS OF SCIENCE	
01. Understand systems, order, and organization.	
a. Know the scientific meaning and application of the concepts of system, order, and organization.	SE: 6-7, 38-52, 443-459 <i>Design Your Own BioLab</i> 58-59 <i>Investigate BioLab</i> 84-85, 460-461 <i>MiniLab</i> 446, 453 <i>Inside Story</i> 609 <i>Focus On</i> 1070-1073 TWE: VL 40 CA 50, 452 In 444
02. Understand concepts and processes of evidence, models, and explanation.	
a. Know that observations and data are evidence on which to base scientific explanations.	SE: 11-12, 15, 19-21 <i>Inside Story</i> 17 <i>MiniLab</i> 22 <i>Internet BioLab</i> 24-25, 238-239 <i>Design Your Own BioLab</i> 734-735 <i>Focus On</i> 1060-1061 TWE: AL 12
b. Use models to explain how things work.	SE: <i>Investigate BioLab</i> 104-105, 302-303, 354-355, 386-387 <i>MiniLab</i> 228, 398 <i>Problem-Solving Lab</i> 291, 957 TWE: UM 146, 260, 269, 270, 319, 398 Pro 147
c. Develop scientific explanations based on scientific knowledge, logic, and analysis.	SE: <i>Design Your Own BioLab</i> 58-59, 834-835 <i>Investigate BioLab</i> 104-105 <i>Problem-Solving Lab</i> 115, 154, 203, 514, 896
04. Understand the theory that evolution is a process that relates to the gradual changes in the universe and of equilibrium as a physical state.	
a. Know that the present arises from materials and forms of the past.	SE: 369-372, 375-379, 381-385 <i>MiniLab</i> 371 <i>Inside Story</i> 373 <i>Biology and Society</i> 368 TWE: AL 382-383
b. Understand evolution as a series of changes, some gradual and some sporadic, that account for present form and function of objects, organisms, and natural or technical systems.	SE: 9-10, 381-385, 393-413 <i>Problem-Solving Lab</i> 397 <i>MiniLab</i> 398 <i>Internet BioLab</i> 414-415 TWE: Pro 394, 400, 410 RM 395 UM 398 CA 399

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05. Understand concepts of form and function	
a. Know that form refers to function and function refers to form.	SE: 175-181, 281-285, 288-295, 396-399, 605-608 <i>Inside Story</i> 286-287 <i>MiniLab</i> 608 TWE: UM 289 IS 606
649. CONCEPTS OF SCIENTIFIC INQUIRY	
01. Understand scientific inquiry and develop critical thinking skills.	
a. Identify questions and concepts that guide scientific investigations.	SE: 12-14, 380-385 <i>Design Your Own BioLab</i> 58-59, 164-165, 330-331, 496-497 TWE: AL 12-13
b. Design and conduct scientific investigations.	SE: <i>Design Your Own BioLab</i> 58-59, 164-165, 330-331, 522-523, 570-571, 734-735, 756-757, 834-835, 910-911, 964-965 TWE: AL 12-13
c. Use technology and mathematics to improve investigations and communication.	SE: 20-23 <i>MiniLab</i> 112 <i>Problem-Solving Lab</i> 20 <i>Investigate BioLab</i> 104-105, 626-627 <i>Internet BioLab</i> 238-239 <i>Connection to Math</i> 276, 416 <i>BioTechnology</i> 304, 966
d. Formulate and revise scientific explanations and models using logic and evidence.	SE: <i>Problem-Solving Lab</i> 154 <i>Internet BioLab</i> 274-275 <i>Biology and Society</i> 388 <i>Investigate BioLab</i> 436-437 <i>Design Your Own BioLab</i> 964-965 <i>Focus On</i> 1060-1061
e. Recognize and analyze alternative explanations and models.	SE: 380-383 <i>Biology and Society</i> 388 TWE: VL 383 CA 388 FYO 388 CDiv 407
f. Communicate and defend a scientific argument.	SE: <i>Problem-Solving Lab</i> 447 TWE: A 127 CA 378 Pro 1061
g. Know the differences among observations, hypotheses, and theories.	SE: 18 <i>Inside Story</i> 17 <i>BioDigest</i> 30 <i>Focus On</i> 1060-1061 TWE: Ex 18

STANDARDS	PAGE REFERENCES
650. CONCEPTS OF PHYSICAL SCIENCE	
01. Understand the structure of atoms.	
a. Know the function and location of the protons, neutrons, and electrons.	SE: 142-143 <i>Study Guide</i> 167 <i>BioDigest</i> 244 TWE: D 142 CBA 143 IS 143
c. Know the characteristics of isotopes.	SE: 144, 244 TWE: Dis 144 CA 144 A 145
02. Understand the structure and function of matter and molecules and their interactions.	
a. Know how atoms interact with one another by transferring or sharing electrons.	SE: 145-147 TWE: QD 146 UM 146
b. Know how bonds between atoms are created when electrons are sheared or transferred to form molecules or ionic substances.	SE: 145-147
c. Know how the physical properties of compounds reflect the nature of the interactions among its molecules.	SE: 145-146, 152-153 <i>Problem-Solving Lab</i> 154 TWE: CD 153
d. Know how solids, liquids, and gases differ in the energy that bonds them together.	See Glencoe's <i>Physical Science</i> pages 488-491.
03. Understand chemical reactions.	
a. Know that chemical reactions may release or consume energy.	SE: 221-225, 907
b. Know that chemical reactions can occur in time periods that vary from very fast to very slow and that catalysts can affect the rate of a chemical reaction.	SE: 147-148, 161, 163 <i>Inside Story</i> 162 <i>Design Your Own BioLab</i> 164-165 TWE: AL 160-161
c. Identify chemical reactions that are occurring all around us.	SE: 147-151 <i>Design Your Own BioLab</i> 164-165 TWE: AL 160-161
651. CELLULAR AND MOLECULAR CONCEPTS	
01. Understand the cell is the basis of form and function for all living things and how living things carry out their life functions.	
a. Know that cells have particular structures that underlie their functions.	SE: 175-187, 905-906, 943 <i>MiniLab</i> 906 TWE: DI 178
b. Know that most cell functions involve chemical reactions.	SE: 174, 221-228, 230-237 <i>MiniLab</i> 228 <i>Inside Story</i> 229 <i>Problem-Solving Lab</i> 235 TWE: IS 223 In 227 Rein 232 BJ 234

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c. Know that cells store and use information in the form of DNA to guide their functions.	SE: 180-181, 281-285, 288-290 <i>Inside Story</i> 286-287 TWE: IS 285
d. Know that cell functions are regulated by expressed genes that provide code for the synthesis of proteins.	SE: 288-295 <i>Problem-Solving Lab</i> 291 <i>MiniLab</i> 293 TWE: UM 289 CA 292
e. Know that cellular differentiation is regulated through the expression of different genes. A single cell can differentiate to form the many specialized cells, tissues, and organs.	SE: 210, 676-677, 679 <i>Inside Story</i> 678
02. Understand the form and function of DNA.	
a. Know that the instructions for specifying the characteristics of the organism are carried in DNA.	SE: 163, 180-182, 203-204, 263, 281, 349-350
b. Know that genetic information is both encoded in genes and replicated.	SE: 211, 263, 265-269, 281-285 <i>Inside Story</i> 286-287 TWE: Pro 286
c. Know that most of the cells in a human contain 23 pairs of chromosomes, and that transmission of chromosomal information to offspring occurs through the combination of egg and sperm cells.	SE: 269-270, 328-329, 1005-1006 <i>Inside Story</i> 1001
d. Know that changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism whereas others can change cells and organisms. Only mutations in gametes can create the variation that changes an organism's offspring.	SE: 296-301 <i>Problem-Solving Lab</i> 299 <i>MiniLab</i> 300 TWE: UPK 296 En 297 IS 298 Ex 301
e. Know that DNA plays a major role in health issues. Through the development of new technologies we have discovered new information about the human genome, medical disorders, and forensic sciences.	SE: 296-301 <i>Careers in Biology</i> 297 <i>Problem-Solving Lab</i> 361
652. INTERDEPENDENCE OF ORGANISMS AND BIOLOGICAL CHANGE	
01. Understand the theory of biological evolution.	
a. Know that the theory of evolution explains how species evolve over time and how evolution is the consequence of interactions of: <ul style="list-style-type: none"> • potential of a species to increase its numbers • genetic variability • a finite supply of resources • selection by the environment of those offspring better able to survive and leave offspring. 	SE: 393-399, 404-413 <i>Problem-Solving Lab</i> 397 <i>MiniLab</i> 398, 407 <i>Internet BioLab</i> 414 TWE: Pro 394, 410 UM 398, 412 UA 406 Rein 408 QD 410

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b. Know that natural selection and its evolutionary consequences provide a scientific explanation for the fossil record of ancient life forms, as well as for the striking molecular similarities observed among the diverse species of organisms.	SE: 393-397, 399-403 TWE: IS 401 TPK 401
c. Know that the theory of evolution explains how different species of plants, animals, and microorganisms that live on earth today are related by descent from common ancestors.	SE: 399-403, 409-413 TWE: Act 400 D 401 TPK 401 IS 401 Por 402 CD 411
d. Know that biological classifications are based on similarities, which reflect their evolutionary relationships.	SE: 421, 423-435, 444-453, 456-459 <i>MiniLab</i> 446, 453 <i>Problem-Solving Lab</i> 447 <i>Inside Story</i> 454-455 TWE: Ex 449 Act 451 UM 453 Pro 457
02. Understand the interdependence of organisms.	
a. Know that atoms and molecules cycle among the living and nonliving components of the biosphere.	SE: 52-54, 56-57, 133 <i>Inside Story</i> 55 TWE: QD 53 Rein 53 Pro 55
b. Trace energy flows through ecosystems in one direction, from photosynthetic organisms to herbivores to carnivores and decomposers.	SE: 46-52 <i>Problem-Solving Lab</i> 50 TWE: CA 48, 50 Rein 49, 51 BJ 49 UM 51
c. Know that organisms both cooperate and compete in ecosystems.	SE: 42-45 <i>Section Assessment</i> 45 TWE: CB 43 Rein 44 RM 44
d. Know that living organisms have the capacity to produce populations of infinite size, but environments and resources are finite.	SE: 65-66, 92-93 <i>MiniLab</i> 92 <i>Inside Story</i> 94 TWE: Ex 45 VL 66 IS 66
e. Know that human beings live within the world's ecosystems. Increasingly, humans modify ecosystems as a result of population growth, technology, and consumption.	SE: 116-120 <i>Biology and Society</i> 60, 600, 716 TWE: En 119

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653. MATTER, ENERGY, AND ORGANIZATION IN LIVING SYSTEMS	
01. Understand the relationship between matter, energy, and organization to trace matter as it cycles and energy as it flows through living systems and between living systems and the environment.	
a. Know that all matter tends toward more disorganized states.	SE: 52-53 <i>*Topic can be discussed during discussion of cycling of matter.</i>
b. Know that living systems require a continuous input of energy to maintain their chemical and physical organization.	SE: 9, 46, 48-52, 221-222, 224 TWE: UA 221
c. Know that the energy for life is primarily derived from the sun through photosynthesis.	SE: 46, 221, 225-228, 230 <i>Problem-Solving Lab 50</i> <i>BioDigest 133</i> TWE: CA 53
d. Understand cellular respiration and the synthesis of macromolecules.	SE: 231-232, 234 <i>Inside Story 233</i> <i>BioDigest 247</i> TWE: A 237
e. Know that chemical bonds of food molecules contain energy, which is released when the bonds are broken.	SE: 221-224, 231, 917 <i>Problem-Solving Lab 222</i> <i>BioDigest 247</i> TWE: UA 221
f. Know that cells usually store energy as Adenosine Triphosphate (ATP).	SE: 221-224, 231 <i>Problem-Solving Lab 222</i> <i>BioDigest 247</i> TWE: UM 222 DI 224
g. Know that the distribution and abundance of organisms and populations in ecosystems are limited by the availability of matter and energy.	SE: 93, 70-83* <i>Inside Story 94</i> TWE: TPK 98 <i>*Relate that biomes differ in the available amount of matter and energy (e.g., marine photic zone vs. tropical rain forest); thus affecting the abundance of organisms and their distribution.</i>
h. Trace how matter cycles and energy flows through different levels of organization of living systems – cells, organs, organisms, communities – and between living systems and the physical environment.	SE: 46-54, 56-57, 184-185, 224, 231-232, 234 <i>Inside Story 55</i> TWE: CA 53
02. Understand the individual behavior of organisms and their interactions in populations and communities as influenced by physiological and environmental factors.	
a. Know that multi-cellular animals have nervous systems that generate behavior.	SE: 7-8, 702, 707, 724, 821, 861, 862, 944-946, 948-950 <i>MiniLab 860</i> <i>Investigate BioLab 874-875</i>
b. Know that the nerve cells communicate with each other by secreting specific excitatory and inhibitory molecules.	SE: 944-946 <i>BioDigest 1052</i> TWE: VL 944

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c. Know that organisms have behavioral responses to internal changes and to external stimuli. The broad patterns of behavior have evolved to ensure reproductive success.	SE: 7-8, 860-861, 862-867 <i>MiniLab</i> 860 <i>Investigate BioLab</i> 874-875 TWE: Rein 863 VL 865
d. Know that behaviors often have an adaptive logic when viewed in terms of natural selection.	SE: 860-861, 862-863 <i>MiniLab</i> 860 TWE: Rein 865 VL 865
654. EARTH AND SPACE SYSTEMS	
01. Understand scientific theories of origin and subsequent changes in the universe and earth systems.	
a. Know that current scientific theory suggests that the Sun, the Earth, and the rest of the solar system formed from a nebular cloud of dust and gas.	See Glencoe's <i>Earth Science: Geology, the Environment, and the Universe</i> , pages 793-797.
b. Know methods used to estimate geologic time (e.g., observing rock sequences and using fossils to correlate the sequences at various locations).	SE: 370-372, 374-375 <i>Investigate BioLab</i> 386-387 TWE: CDiv 370 CA 374 DI 379
c. Know that interactions among the solid earth, the oceans, the atmosphere, and organisms have resulted in the ongoing change of the earth system. Some activities are observable (earthquakes and volcanic eruptions) but many take place over hundreds of millions of years.	SE: 369, 378-379, 382, 384 TWE: CA 378 BE 466
d. Know that the development of life caused dramatic changes in the composition of the earth's atmosphere.	SE: 384 <i>BioDigest</i> 467 TWE: QD 377
02. Understand geo-chemical cycles and energy in the earth system.	
a. Know that earth systems have internal and external sources of energy, both of which create heat. The sun is the major external source of energy.	SE: 75, 369 <i>Physical Science Connection</i> 369
d. Know that the heating of the earth's surface and atmosphere by the sun drive convection within the atmosphere and oceans, producing winds and ocean currents.	SE: 75 TWE: CA 75
f. Know that the movement of matter through the solid earth, oceans, and atmosphere is driven by the earth's internal and external sources of energy. These movements are often accompanied by a change in the physical and chemical properties of matter.	SE: 52-54, 56-57 <i>Inside Story</i> 55 TWE: REIN 53 Pro 55

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655. TECHNOLOGY	
01. Understand the relationship between science and technology and develop the abilities of technological design and application.	
a. Know the ways that science advances technology and technology advances science.	SE: 21-23, 349-353 <i>BioTechnology</i> 166, 304, 688, 966 TWE: BR 12 Pro 16 BJ 353
b. Recognize that science and technology are pursued for different purposes. Scientific inquiry is driven by the desire to understand the natural world and technological design is driven by the need to meet human needs and solve human problems.	SE: 3-4, 11, 21-23 <i>Biology and Society</i> 388 <i>BioTechnology</i> 304, 356, 966 TWE: DI 30
c. Know that critical thinking, creativity, imagination, and a good knowledge base are all required in the work of science and engineering.	SE: 11-18 <i>*Design Your Own BioLab</i> 58-59, 164-165, 330-331, 834-835 TWE: A 30 BR 12 <i>*These skills are necessary for designing experiments.</i>
d. Know the elements of technological design, which include the following: <ul style="list-style-type: none"> • Identify a problem or design and opportunity. • Propose designs and choose between alternative solutions. • Implement a proposed solution. • Evaluate the solution and its consequences. • Communicate the problem, process, and solution. 	SE: <i>Design Your Own BioLab</i> 834-835 <i>*Aspects of technological design can be incorporated into this activity.</i>
e. Use available technology to assist in solving problems.	SE: 22-23, 351-353 <i>Internet BioLab</i> 24-25, 126-127, 626-627 <i>Investigate BioLab</i> 188-189 TWE: CA 101
656. PERSONAL AND SOCIAL PERSPECTIVES	
01. Understand common environmental quality issues, both natural and human induced.	
a. Identify issues including but not limited to: <ul style="list-style-type: none"> • water quality • air quality • hazardous waste • forest health 	SE: 118-120 <i>Biology and Society</i> 60, 600 <i>Connection to Chemistry</i> 106 TWE: GF 600
02. Understand the cause and effects of population change.	
a. Understand the impact of technological development and the growth of human population on the living and nonliving environment.	SE: 101, 103, 116, 118-120 <i>Biology and Society</i> 60 <i>MiniLab</i> 102 <i>Connection to Chemistry</i> 106 <i>Physical Science Connection</i> 119 TWE: EN 118

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b. Understand the impact of population change on natural resources and community infrastructure.	SE: 91-93, 96-99, 101, 103 <i>MiniLab</i> 102
03. Understand the importance of natural resources and the need to manage and conserve them.	
a. Understand the differences between renewable and nonrenewable resources.	SE: 121 <i>Physical Science Connection</i> 118 TWE: EN 117 <i>*The resources discussed in these locators can incorporate a discussion of renewable and nonrenewable resources.</i>
b. Understand the differences between preservation and conservation.	SE: 121-125 <i>Biology and Society</i> 854 TWE: CA 123 CD 123 DI 125 A 125
c. Understand the role and effect of management of natural resources.	SE: 121-125 <i>Biology and Society</i> 60, 600, 854 <i>Problem-Solving Lab</i> 125 TWE: TP 122 CD 123 A 125
04. Understand different uses of technology in science and how they affect our standard of living.	
a. Identify examples of technologies used in scientific fields such as but not limited to the following: <ul style="list-style-type: none"> • weather forecasting • food production • environmental cleanup • advances in medicine • communications • the space program 	SE: 345, 347-348, 351-353 <i>BioTechnology</i> 166, 356, 660 TWE: BJ 353
657. HISTORY OF SCIENCE	
01. Understand the significance of major scientific milestones.	
a. Understand the social and economic impact of historical scientific events.	SE: 281-283, 380-383, 1024-1025, 1029-1030, 1039-1040 TWE: CA 1028 EN 1038
b. Understand the contributions of notable scientists.	SE: 171-172, 281-283, 380-382, 384-385, 393-396, 1024-1025, 1039 TWE: VL 381 BJ 1039

STANDARDS	PAGE REFERENCES
658. INTERDISCIPLINARY CONCEPTS	
01. Understand that interpersonal relationships are important in scientific endeavors.	
a. Know the importance of working in interdisciplinary teams to solve scientific problems.	SE: 370-371, 428-435 <i>Connection to Chemistry</i> 106, 812 <i>Biology and Society</i> 388 <i>Connection to Math</i> 416 <i>Connection to Physics</i> 778 <i>Connection to Earth Science</i> 736 TWE: QD 432
02. Understand technical communication.	
a. Read for information.	SE: 341-345 <i>Focus On</i> 1064-1065 <i>BioTechnology</i> 304, 966 <i>Biology and Society</i> 1044 <i>Skill Handbook</i> 1092-1094 <i>Reference Handbook</i> 1108 TWE: EN 282 CA 344
b. Write and articulate technical information.	SE: <i>BioTechnology</i> 688, 1018 TWE: CA 344 BJ 353 A 355 AB 356

Codes Used for TWE Pages

A	Assessment
AB	Applying BioTechnology
Act	Activity
AL	Additional Lab
BE	Bellringer
BJ	Biology Journal
BR	Brainstorming
CA	Challenge Activity
CB	Content Background
CBA	Chalkboard Activity
CD	Concept Development
CDiv	Cultural Diversity
D	Display
DI	Daily Intervention
Dis	Discussion
En	Enrichment
Ex	Extension
FYO	Forming Your Opinion
GF	Going Further
In	Inquiry
IS	Inclusion Strategies
Por	Portfolio
Pro	Project
QD	Quick Demo
Rein	Reinforcement
RM	Revealing Misconceptions
TP	TechPrep
TPK	Tying to Prior Knowledge
UA	Using an Analogy
UM	Using Models
UPK	Using Prior Knowledge
VL	Visual Learning