

COLORADO ALIGNMENT FOR NIH SUPPLEMENT CELL BIOLOGY AND CANCER

| CELL BIOLOGY AND CANCER | | |
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| Colorado Model Content Standards: Science – Grades 9 – 12 | | |
| Activity | Standard | Descriptor |
| 3, 4, 5 | 1.1 | Ask questions and state hypotheses, using prior scientific knowledge to help design and guide their development and implementation of a scientific investigation. |
| 3, 4 | 1.2 | Select and use appropriate technologies to gather, process, and analyze data and to report information related to an investigation. |
| 2, 3, 4 | 1.4 | Recognize and analyze alternative explanations and models. |
| 2, 3, 4 | 1.5 | Construct and revise scientific explanations and models, using evidence, logic, and experiments that include identifying and controlling variables. |
| 2 | 3.5 | The human body functions in terms of interacting organ systems composed of specialized structures that maintain or restore health <i>(for example, mechanisms involved in homeostasis [balance], such as feedback in the endocrine system)</i> . |
| 2 | 3.10 | Cell reproduction/division has various processes and purposes (mitosis, meiosis, binary fission). |
| 2 | 3.11 | DNA has a general structure and function and a role in heredity and protein synthesis <i>(for example: replication of DNA and the role of RNA in protein synthesis)</i> . |
| 2, 3 | 3.12 | Genes serve as the vehicles for genetic continuity and the source of genetic diversity upon which natural selection can act. |
| All activities | 3.13 | Some traits can be inherited while others are due to the interaction of genes and the environment <i>(for example: skin cancer triggered by over-exposure to sunlight or contact with chemical carcinogens)</i> . |
| 2, 3 | 3.15 | Mutation, natural selection, and reproductive isolation can lead to new species and affect biodiversity. |
| 4 | 3.16 | An organism's adaptations <i>(for example, structure, behavior)</i> determine its niche (role) in the environment. |
| 4 | 3.17 | Variation within a population improves the chances that the species will survive under new environmental conditions. |
| 1, 2, 3, 4 | 3.18 | Organisms change over time in terms of biological evolution and genetics. |
| 4 | 5.1 | Print and visual media can be evaluated for scientific evidence, bias, or opinion. |
| 3 | 5.3 | Graphs, equations, or other models are used to analyze systems involving change and constancy <i>(for example: comparing the geologic time scale to shorter time frame, exponential growth, a mathematical expression for gas behavior, constructing a closed system such as aquarium)</i> . |
| 2 | 5.4 | There are cause-effect relationships within systems <i>(for example: the effect of temperature on gas volume, effect of carbon dioxide level on the greenhouse effect, effects of changing nutrients a the base of a food pyramid)</i> . |
| 2 | 5.5 | Scientific knowledge changes and accumulates over time; usually the changes that take place are small modifications of prior knowledge but major shifts in the scientific view of how the world works do occur. |

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| 2 | 5.6 | Interrelationships among science, technology, and human activity lead to further discoveries that impact the world in positive and negative ways. |
| 2, 3, 4 | 5.7 | There is a difference between a scientific theory and a scientific hypothesis. |
| Colorado Model Content Standards: Mathematics – Grades 9 – 12 | | |
| Activity | Standard | Benchmark |
| 1, 3 | 1.1 | Demonstrate meanings for real numbers, absolute value, and scientific notation using physical materials and technology in problem-solving situations. |
| 3 | 2.1 | Model real-world phenomena (for example, distance versus time relationships, compound interest, amortization tables, mortality rates) using functions, equations, inequalities, and matrices. |
| 1, 3 | 2.2 | Represent functional relationships using written explanations, tables, equations, and graphs, and describing the connections among these representations. |
| 3 | 2.3 | Solve problems involving functional relationships using graphing calculators and/or computers as well as appropriate paper-and-pencil techniques. |
| 3 | 3.4 | Draw conclusions about distributions of data based on analysis of statistical summaries (for example, the combination of mean and standard deviation, and differences between the mean and median). |
| 4 | 5.2 | Select and use appropriate techniques and tools to measure quantities in order to achieve specified degrees of precision, accuracy, and error (or tolerance) of measurements. |
| 1, 3 | 6.1 | Use ratios, proportions, and percents in problem-solving situations. |
| Colorado Model Content Standards: Reading & Writing – Grades 9 – 12 | | |
| Activity | Standard | Descriptor |
| All activities | 1.A | Using a full range of strategies to comprehend essays, speeches, autobiographies, and first-person historical documents in addition to directions, nonfiction material, technical writing, newspapers, and magazines. |
| 2, 3, 4 | 2.B | Conveying technical information in a written form appropriate to the audience. |
| All activities | 2.C | Supporting an opinion using various forms of persuasion (factual or emotional) in speaking and writing. |
| All activities | 2.F | Writing in various specialized fields such as career and academic interest areas (<i>for example, scientific, technical, business communications</i>). |
| 1, 2, 3, 4 | 4.B | Using reading, writing, listening, articulate speaking, and viewing to solve problems. |
| All activities | 5.B | Evaluating information in light of what they know and their specific needs. |
| 2, 3, 4, 5 | 5.D | Using strategies to gain information from journals, research studies, and technical documents. |
| 3, 4, 5 | 5.E | Using available technology to access information, conduct research, and produce a carefully documented product. |

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| National Health Education Standards – Grades 9 – 12: cited from pre-publication document of National Health Education Standards, Pre K-12, American Cancer Society, December 2005 – August 2006 | | |
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| Activity | Standard | Performance Indicator |
| 1, 5 | 1.12.1 | Predict how healthy behaviors can impact health status. |
| 1, 2 | 1.12.4 | Analyze how genetics and family history can impact personal health. |
| 4, 5 | 1.12.5 | Propose ways to reduce or prevent injuries and health problems. |
| 5 | 1.12.7 | Compare and contrast the benefits and barriers to practicing a variety of healthy behaviors. |
| 5 | 1.12.9 | Analyze the potential severity of injury or illness if engaging in unhealthy behaviors. |
| 1, 5 | 2.12.1 | Analyze how family influences the health of individuals. |
| 5 | 2.12.3 | Analyze how peers influence healthy and unhealthy behaviors. |
| 4, 5 | 2.12.5 | Evaluate the effect of media on personal and family health. |
| 1, 5 | 2.12.8 | Analyze the influence of personal values and beliefs on individual health practices and behaviors. |
| 1, 4, 5 | 2.12.9 | Analyze how some health risk behaviors can influence the likelihood of engaging in unhealthy behaviors. |
| 4, 5 | 2.12.10 | Analyze how public health policies and government regulations can influence health promotion and disease. |
| 2, 4, 5 | 3.12.1 | Evaluate the validity of health information, products, and services. |
| 5 | 5.12.1 | Examine barriers that can hinder healthy decision-making. |
| 5 | 5.12.2 | Determine the value of applying a thoughtful decision-making process in health related situations. |
| 5 | 5.12.3 | Justify when individual or collaborative decision-making is appropriate. |
| 5 | 5.12.5 | Predict the potential short and long-term impact of each alternative on self and others. |
| 5 | 5.12.6 | Defend the healthy choice when making decisions. |
| 5 | 5.12.7 | Evaluate the effectiveness of health-related decisions. |
| 5 | 7.12.1 | Analyze the role of individual responsibility for enhancing health. |
| 5 | 7.12.2 | Demonstrate a variety of healthy practices and behaviors that will maintain or improve the health of self and others. |
| 5 | 7.12.3 | Demonstrate a variety of behaviors to avoid or reduce health risks to self and others. |
| 5 | 8.12.2 | Demonstrate how to influence and support others to make positive health choices. |
| 5 | 8.12.4 | Adapt health messages and communication techniques to a specific target audience. |