

VERMONT ALIGNMENT FOR NIH SUPPLEMENT CELL BIOLOGY AND CANCER

CELL BIOLOGY AND CANCER		
Vermont Science G.E.s: High School		
Activity	G.E.	Statement
3, 4	S9-12:1:1	Framing testable questions showing evidence of observations and prior knowledge to illustrate cause and effect.
3, 4	S9-12:1:2	Developing a testable question appropriate to the scientific domain being investigated.
3, 4	S9-12:2:1	Developing a testable/guiding hypothesis and predictions based upon evidence of scientific principles.
3, 4	S9-12:2:2	Predicting results (evidence) that support the hypothesis.
3, 4	S9-12:2:3	Clearly distinguishing cause and effect within a testable/guiding hypothesis.
3, 4	S9-12:3:1	Writing a plan related to the question and prediction that includes: a. Procedures that incorporate appropriate protection (e.g., no food in lab area). b. Appropriate tools, units of measurement and degree of accuracy. c. Components that reflect current scientific knowledge and available technology. d. Use of scientific terminology that supports the identified procedures
3, 4	S9-12:4:1	Collecting significant data by completing multiple trials
3, 4	S9-12:4:2	Evaluating and revising procedures as investigation progresses.
3, 4	S9-12:5:1	Representing data quantitatively to the appropriate level of precision through the use of mathematical calculations.
3, 4	S9-12:5:3	Recording accurate data, free of bias.
3, 4	S9-12:6:3	Critically examining and explaining the relationship of evidence to the findings of others (e.g., classmates or scientists in the field).
2, 3, 4	S9-12:7:1	Proposing, synthesizing, and evaluating alternative explanations for experimental results.
3, 4	S9-12:7:2	Citing experimental evidence within an explanation.
2, 3, 4	S9-12:7:3	Including logically consistent position to explain observed phenomena.
2, 3, 4	S9-12:7:4	Comparing an experimental conclusion to other proposed explanations by peer review (e.g., students, scientists or local interest groups).
2, 3, 4	S9-12:7:5	Conducting objective scientific analysis and evaluating potential bias in the interpretation of evidence.
3, 4	S9-12:7:6	Identifying and evaluating uncontrolled variables inherent in experimental model.
4, 5	S9-12:8:2	Predicting/recommending how scientific conclusions can be applied to civic, economic or social issues.
3, 4, 5	S9-12:8:3	Proposing and evaluating new questions, predictions, procedures and technology for further investigations.
1, 2, 3	S9-12:40:3	Explaining how alteration of a DNA sequence may affect physical/chemical characteristics of the human body (e.g., sickle-cell anemia, cancer genetic engineering).
2	S9-12:41:1	Diagramming a feedback loop that illustrates how several human body systems work together to restore homeostasis

VERMONT ALIGNMENT FOR NIH SUPPLEMENT CELL BIOLOGY AND CANCER

		in response to an external stimulus (environmental/behavioral) (e.g., exercise, immune response, fight/flight, stress, drugs, normal cellular metabolism, any nervous system response).
1, 2, 3, 5	S9-12:41:2	Explaining examples of how the human body may be affected by the state of the internal or external environment and by heredity and by life experience (e.g., effects of malnutrition).
1, 5	S9-12:41:3	Using evidence to predict and explain how the effect of various environmental or hereditary factors influence the continuation of the human species (reproductive success) (e.g., anorexia and/or steroid use, radiation/toxic wastes/drug use, mutagenic agents and/or improper diet/obesity).
5	S9-12:42:1	Identifying a variety of nonspecific means of protection for the human body and explaining how these maintain human health (i.e., prevent disease).
2, 3	S9-12:42:3	Showing through models/diagrams/graphic organizers how specific biological abnormalities alter the normal functioning of human systems (e.g., feedback diagram).

Vermont Mathematics G.E.s: High School

Activity	G.E.	Statement
3	MHS:1	Accurately solves problems involving conceptual understanding and magnitude of real numbers, or simple vectors.
3	MHS:7	Estimates and evaluates the reasonableness of numerical computations and solutions, including those carried out with technology.
3	MHS:19:1	Solves and models problems by formulating, extending, or generalizing linear and common nonlinear functions/relations.)
3	MHS:19:2	And makes connections among representations of functions/relations (equations, tables, graphs, symbolic notation, text).
1, 3	MHS:23	Interprets a given representation(s) (box-and-whisker or scatter plots, histograms, frequency charts) to make observations, to answer questions or justify conclusions, to make predictions, or to solve problems.
3	MHS:25	Organizes and displays data using scatter plots, histograms, or frequency distributions to answer questions related to the data, to analyze the data or to solve problems; or identifies representations or elements of representations that best display a given set of data or situation, consistent with the representations required in MHS: 23.
3, 4	MHS:28	In response to a question, designs investigations, considers how data-collection methods affect the nature of the data set (i.e., sample size, bias, randomization, control group), collects data using observations, surveys and experiments, purposes and justifies conclusions and predictions based on the data.
3	MHS:29	Compares and contrasts theoretical and experimental probabilities of events; and determines and/or interprets the expected outcome of an event.
3	MHS:30	Demonstrate understanding of mathematical problem solving and communication by: <ul style="list-style-type: none"> • Approach and Reasoning—The strategies and skills used to solve the problem, and the reasoning that supports the approach; • Execution—The answer and the mathematical work that supports it; • Observations and Extensions—Demonstration of observation, connections, application, extensions, and

VERMONT ALIGNMENT FOR NIH SUPPLEMENT CELL BIOLOGY AND CANCER

		<p>generalizations;</p> <ul style="list-style-type: none"> • Mathematical Communication—The use of mathematical vocabulary and representation to communicate the solution; and • Presentation—Effective communication of how the problem was solved, and of the reasoning used.
Vermont Reading G.E.s: High School		
Activity	G.E.	Statement
All activities	RHS:3	Identifying multisyllabic words by using knowledge of sounds, syllables, derivational roots and affixes, including foreign language derivations.
All activities	RHS:6:2	Selecting appropriate words or explaining the use of words in context, including connotation and denotation; or use of precise or technical vocabulary, including content-specific vocabulary; or use of words with multiple meanings.
All activities	RHS:7	Uses comprehension strategies (flexibly and as needed) while reading literary and informational text.
2, 3, 4	RHS:12:1	Obtaining information from text features (e.g., transitional devices, table of contents, glossary, index, bold or italicized text, headings, graphic organizers, charts and graphs, illustrations, or subheadings).
All activities	RHS:12:2	Using information from the text to answer questions or to state the central idea or provide supporting key details.
All activities	RHS:12:3	Organizing information to show understanding or relationships among facts, ideas, and events (e.g., representing key points within text through charting, mapping, paraphrasing, summarizing, comparing/contrasting, or outlining).
All activities	RHS:16:1	Explaining connections about information within a text, across texts, or to related ideas.
All activities	RHS:16:2	Synthesizing and evaluating information within or across text(s) (e.g., constructing appropriate titles; or formulating assertions or controlling ideas).
All activities	RHS:16:5	Making inferences about causes or effects.
All activities	RHS:19	<p>Demonstrates participation in a literate community by...</p> <ul style="list-style-type: none"> • Self-selecting reading materials in line with reading ability and personal interests • Participating in in-depth discussions about text, ideas, and student writing by offering comments and supporting evidence, recommending books and other materials, and responding to the comments and recommendations of peers, librarians, teachers, and others.
Vermont Writing G.E.s: High School		
Activity	G.E.	Statement
All activities	WHS:2:1	Applying rules of standard English usage to correct grammatical errors.
All activities	WHS:2:2	Applying capitalization rules.
All activities	WHS:2:3	Applying appropriate punctuation rules to various sentence patterns.
All activities	WHS:3:1	Independently applying spelling knowledge in proofreading and editing of writing.
All activities	WHS:4:2	Using the paragraph form: indenting, main idea, supporting details.

VERMONT ALIGNMENT FOR NIH SUPPLEMENT CELL BIOLOGY AND CANCER

All activities	WHS:4:4	Using a format and text structure appropriate to the purpose of the writing.
All activities	WHS:5:1	Selecting key ideas to set context appropriate to audience.
All activities	WHS:5:2	Making thematic connections between texts, prior knowledge, or the broader world of ideas.
All activities	WHS:7:3	Using effective voice and tone (word choice and sentence patterns) for desired effect on reader.
All activities	WHS:7:4	Excluding loosely related or extraneous information.
All activities	WHS:8:1	Using an organizational text structure appropriate to focus/controlling idea.
3, 4	WHS:8:2	Selecting appropriate information to set context throughout the report; may include a lead/hook.
3, 4	WHS:8:4	Drawing a conclusion by synthesizing information from report and relating it to broader ideas/concepts.
All activities	WHS:9:1	Stating and maintaining a focus/controlling idea/thesis (purpose).
All activities	WHS:9:2	Writing with a sense of audience, if appropriate.
All activities	WHS:10:1	Including facts and details relevant to focus/controlling idea, and excluding extraneous information.
3, 4	WHS:10:2	Including sufficient details or facts for appropriate depth: naming, describing, explaining, comparing, use of visual images.
3, 4	WHS:13:2	Using and defining specific technical vocabulary, appropriate to audience and purpose.
3, 4	WHS:13:4	Using details and examples to help the reader understand and visualize the process.
3, 4	WHS:13:6	Providing a conclusion that advances the reader's understanding or appreciation of the process.
5	WHS:15:2	Stating and maintaining a clear position on the problem or issue (purpose) in persuasive writing.
5	WHS:16:3	Providing convincing and relevant arguments and/or reasons.
5	WHS:16:5	Addressing the reader's potential concerns or counterarguments.
5	WHS:16:6	Writing an effective conclusion.

Vermont Health Education G.E.s: High School

Activity	G.E.	Statement
1, 3	ATOD:HE2:b	Evaluating the short and long-term effects of alcohol, tobacco, and other drugs on health.
1, 3	ATOD:HE2:c	Analyzing the impact of personal health behaviors on body systems (e.g., alcohol and drug affects on brain function; alcohol, tobacco and other drug use during pregnancy).
5	ATOD:HE2:d	Analyzing how public health policies and laws influence health promotion, injury and disease prevention. (e.g., DUI laws, alcohol and tobacco-free environments, media, funding, taxation).
3	ATOD:HE7:b	Evaluating the internal and social pressures that influence decisions to use, including the data relevant to youth alcohol and other drug use.
2, 3, 4, 5	FSSH:HE4:c	Demonstrating the ability to evaluate resources from home, school, and/or community that provide valid health information.
2, 4, 5	FSSH:HE5:c	Demonstrating the ability to advocate for health promoting opportunities for self and others.

VERMONT ALIGNMENT FOR NIH SUPPLEMENT CELL BIOLOGY AND CANCER

1, 4, 5	PHW:HE2:a	Analyzing how behavior can impact health maintenance and disease prevention, including the short and long-term consequences of safe, risky, and harmful behaviors.
1, 2, 3, 5	PHW:HE2:b	Analyzing the impact of personal health behaviors on body systems, (e.g., regular health examinations and screenings, importance of rest and sleep, sun safety, self-examinations, early treatment of diseases).
4, 5	PHW:HE2:c	Analyzing how the environment affects personal health, (e.g., UV light, lead, asbestos, pesticides, unclean air and water).
5	PHW:HE2:d	Analyzing how public health policies and laws influence health promotion and disease prevention.
5	PHW:HE3:a	Analyzing the impacts of internal (e.g., experiences, perceptions, self-respect) and external (e.g., technology, media, peer, community factors on personal health behavior).
4, 5	PHW:HE4:c	Demonstrating the ability to evaluate resources from home, school, and/or community that provide valid health information.
5	PHW:HE5:a	Demonstrating the ability to advocate for health promoting opportunities for self and others, (e.g., assisting in the development of public health policies and laws, or becoming actively engaged in issues that affect health).
5	PHW:HE7:b	Analyzing the immediate and long-term impact of health decisions on the individual, family, and community, including environmental issues, public health policies, and government regulations.