

OHIO ALIGNMENT FOR NIH SUPPLEMENT USING TECHNOLOGY TO STUDY CELLULAR AND MOLECULAR BIOLOGY

USING TECHNOLOGY TO STUDY CELLULAR AND MOLECULAR BIOLOGY

Ohio Academic Content Standards for Science - Grade 10

Lesson	Standard	Description
1, 3	Life 1.b	Explain that living cells are the basic unit of structure and function of all living things.
1, 3	Life 1.d	Explain that living cells are different from viruses.
3, 4	Life 27	Describe advances in life sciences that have important long-lasting effects on science and society (e.g., biological evolution, germ theory, biotechnology and discovering germs).
3	Life 28	Analyze and investigate emerging scientific issues (e.g., genetically modified food, stem cell research, genetic research and cloning).
All lessons	Sci & Tech 1	Cite examples of ways that scientific inquiry is driven by the desire to understand the natural world and how technology is driven by the need to meet human needs and solve human problems.
All lessons	Sci & Tech 2	Describe examples of scientific advances and emerging technologies and how they may impact society.
All lessons	Inquiry 2	Present scientific findings using clear language, accurate data, appropriate graphs, tables, maps and available technology.
1, 2	Inquiry 3	Use mathematical models to predict and analyze natural phenomena.
All lessons	Inquiry 4	Draw conclusions from inquiries based on scientific knowledge and principles, the use of logic and evidence (data) from investigations.
All lessons	Inquiry 5	Explain how new scientific data can cause any existing scientific explanation to be supported, revised or rejected.
1, 4	Ways of Knowing 1	Discuss science as a dynamic body of knowledge that can lead to the development of entirely new disciplines.
3	Ways of Knowing 2	Describe that scientists may disagree about explanations of phenomena, about interpretation of data or about the value of rival theories, but they do agree that questioning, response to criticism and open communication are integral to the process of science.
2, 3	Ways of Knowing 3	Recognize that science is a systematic method of continuing investigation, based on observation, hypothesis testing, measurement, experimentation, and theory building, which leads to more adequate explanations of natural phenomena.
3	Ways of Knowing 4	Recognize that ethical considerations limit what scientists can do.

Ohio Academic Content Standards for English Language Arts – Grades 9 & 10

Lesson	Standard	Description
1, 3, 4	Vocabulary 1	Define unknown words through context clues and the author's use of comparison, contrast and cause and effect.

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1, 3, 4	Reading Process 1	Apply reading comprehension strategies, including making predictions, comparing and contrasting, recalling and summarizing and making inferences and drawing conclusions.
All lessons	Reading Process 2	Answer literal, inferential, evaluative and synthesizing questions to demonstrate comprehension of grade-appropriate print texts and electronic and visual media.
1, 2, 3	Reading Applications 3	Analyze (9) / Evaluate the effectiveness of (10) information found in maps, charts, tables, graphs, diagrams, cutaways and overlays.
3, 4	Writing Process 4	Determine a purpose and audience and plan strategies (e.g., adapting focus, content structure and point of view) to address purpose and audience.
3, 4	Writing Process 6	Organize writing to create a coherent whole with an effective and engaging introduction, body and conclusion, and a closing sentence that summarizes, extends or elaborates on points or ideas in the writing.
3, 4	Writing Process 7	Use a variety of sentence structures and lengths (e.g., simple, compound and complex sentences; parallel or repetitive sentence structure).
3	Writing Process 17	Prepare for publication (e.g., for display or for sharing with others) writing that follows a manuscript form appropriate for the purpose, which could include such techniques as electronic resources, principles of design (e.g., margins, tabs, spacing and columns) and graphics (e.g., drawings, charts and graphs) to enhance the final product.
3, 4	Writing Applications 4.b, 4.d	Write informational essays or reports, including research that: provide a clear and accurate perspective on the subject and support the main ideas with facts, details, examples and explanations from sources.
3, 4	Writing Applications 6	Produce informal writings (e.g., journals, notes and poems) for various purposes.
3, 4	Writing Conventions 1	Use correct spelling conventions.
3	Research 1	Compose open-ended questions for research, assigned or personal interest, and modify questions as necessary during inquiry and investigation to narrow the focus or extend the investigation.
2, 3, 4	Research 4	Compile (9) / Evaluate (10) and systematically organize important information, and select appropriate sources to support central ideas, concepts and themes.
3, 4	Research 7	Use a variety of communication techniques, including oral, visual, written or multimedia reports, to present information that supports a clear position about the topic or research question and to maintain an appropriate balance between researched information and original ideas.
All lessons	Communication 1	Apply active listening strategies (e.g., monitoring message for clarity, selecting and organizing essential information, noting cues such as changes in pace) in a variety of settings.
All lessons	Communication 8.a, 8.b, 8.c, 8.d	Deliver informational presentations (e.g., expository, research) that: demonstrate an understanding of the topic and present events or ideas in a logical sequence; support the controlling idea or thesis with well-chosen and relevant facts, details, examples, quotations, statistics, stories and anecdotes; include an effective introduction and conclusion and use a consistent organizational structure (e.g., cause-effect, compare-contrast, problem-solution); and use appropriate visual materials (e.g., diagrams, charts, illustrations) and available technology to enhance presentation.

Ohio Academic Content Standards for Mathematics – Grades 9 & 10		
Grade 9		
Lesson	Standard	Description
1	Number, Number Sense and Operations 4	Demonstrate fluency in computations using real numbers.
1	Patterns, Functions and Algebra 3	Describe problem situations (linear, quadratic and exponential) by using tabular, graphical and symbolic representations.
Grade 10		
Lesson	Standard	Description
1	Measurement 1	Explain how a small error in measurement may lead to a large error in calculated results.
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		
Lesson	Standard	Performance Indicator
3	3.12.1	Evaluate the validity of health information, products, and services.