

ARKANSAS ALIGNMENT FOR NIH SUPPLEMENT CELL BIOLOGY AND CANCER

CELL BIOLOGY AND CANCER		
Arkansas Biology Standards		
Activity	Standard	Descriptor
2	MC.2.B.8	Describe the main events in the cell cycle, including the differences in plant and animal cell division: interphase, mitosis and cytokinesis.
2, 3, 4	HE.5.B.6	Identify effects of changes brought about by mutations: beneficial, harmful, and neutral.
4	HE.6.B.2	Recognize that evolution involves a change in allele frequencies in a population across successive generations.
3, 4	HE.6.B.3	Analyze the effects of mutations and the resulting variations within a population in terms of natural selection.
5	EBR.9.B.3	Assess current world issues applying scientific themes (e.g., global changes in climate, epidemics, pandemics, ozone depletion, UV radiation, natural resources, use of technology, and public policy).
2, 4	NS.10.B.4	Summarize the guidelines of science: explanations are based on observations, evidence, and testing, hypotheses must be testable, understandings and/or conclusions may change with additional empirical data, and scientific knowledge must have peer review and verification before acceptance.
3, 4	NS.11.B.1	Develop and explain the appropriate procedure, controls, and variables (dependent and independent) in scientific experimentation.
4	NS.11.B.2	Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting scientific investigations.
4	NS.11.B.3	Identify sources of bias that could affect experimental outcome.
1, 3, 4	NS.11.B.4	Gather and analyze data using appropriate summary statistics.
1, 2, 3, 4	NS.11.B.5	Formulate valid conclusions without bias.
3, 4	NS.11.B.6	Communicate experimental results using appropriate reports, figures, and tables.
2	NS.12.B.6	Relate the chromosome theory of heredity to recent findings in genetic research (e.g., Human Genome Project-HGP, chromosome therapy).
3, 4	NS.13.B.1	Collect and analyze scientific data using appropriate mathematical calculations, figures, and tables.
3, 4	NS.13.B.2	Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware).
2	NS.14.B.1	Compare and contrast biological concepts in pure science and applied science.
2	NS.14.B.2	Discuss why scientists should work within ethical parameters.

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Arkansas Anatomy and Physiology Standards		
Activity	Standard	Descriptor
2	OHB.1.AP.6	Investigate <i>homeostatic</i> control mechanisms and their importance to health and diseases.
2	OHB.1.AP.7	Predict the effect of positive and negative feedback mechanisms on <i>homeostasis</i> .
2	APC.3.AP.6	Differentiate between <i>mitosis</i> and <i>meiosis</i> .
2, 3	APC.3.AP.7	Explain the consequences of abnormal cell division.
1	NS.16.AP.1	Explain why science is limited to natural explanations of how the world works.
2, 4	NS.16.AP.4	Summarize the guidelines of science: explanations are based on observations, evidence, and testing, hypotheses must be testable, understandings and/or conclusions may change with additional empirical data, and scientific knowledge must have peer review and verification before acceptance.
3, 4	NS.17.AP.1	Develop and explain the appropriate procedure, controls, and variables (dependent and independent) in scientific experimentation.
4	NS.17.AP.2	Research and apply appropriate safety precautions (refer to ADE Guidelines) when designing and/or conducting scientific investigations.
4	NS.17.AP.3	Identify sources of bias that could affect experimental outcome.
1, 3, 4	NS.17.AP.4	Gather and analyze data using appropriate summary statistics.
1, 2, 3, 4	NS.17.AP.5	Formulate valid conclusions without bias.
3, 4	NS.17.AP.6	Communicate experimental results using appropriate reports, figures, and tables.
2	NS.18.AP.4	Relate the chromosome theory of heredity to recent findings in genetic research (e.g., Human Genome Project-HGP, chromosome therapy).
5	NS.18.AP.5	Research current events and topics in human biology.
3, 4	NS.19.AP.1	Collect and analyze scientific data using appropriate mathematical calculations, figures, and tables.
3, 4	NS.19.AP.2	Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware).
2	NS.20.AP.1	Compare and contrast human biology concepts in <i>pure science</i> and <i>applied science</i> .
Arkansas Algebra I Standards		
Activity	Standard	Descriptor
4	SEI.2.AI.5	Solve real world problems that involve a combination of rates, <i>proportions</i> and percents.
3, 4	SEI.2.AI.8	Communicate real world problems graphically, algebraically, numerically and verbally.
3, 4	LF.3.AI.4	Identify <i>independent variables</i> and <i>dependent variables</i> in various representational modes: words, symbols, and/or graphs.

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Arkansas English Language Arts Standards: Grades 9 & 10		
Activity	Standard	Descriptor
All activities	OV.1.9.1 OV.1.10.1	Adjust oral language to audience and appropriately apply the rules of standard English.
3, 4, 5	OV.1.9.2 OV.1.10.2	Prepare and participate in structured discussions, such as panel discussion.
2, 3, 4, 5	OV.2.9.4 OV.2.10.4	Demonstrate attentive, reflective, and critical listening skills to respond to and interpret speaker's message.
2, 3, 4, 5	W.4.9.4 W.4.10.3	Write clear and varied sentences.
2, 3, 4, 5	W.4.9.5 W.4.10.4	Elaborate ideas clearly and accurately through word choice, vivid description, and selected information.
2, 3, 4, 5	W.4.9.6 W.4.10.5	Adapt content vocabulary, <i>voice</i> , and <i>tone</i> to audience, purpose, and situation.
2, 3, 4, 5	W.4.9.8 W.4.10.7	Revise content of writing for central idea, elaboration, unity, and organization.
2, 3, 4, 5	W.4.9.9 W.4.10.8	Revise <i>style</i> of writing for selected vocabulary, selected information, sentence variety, <i>tone</i> and <i>voice</i> .
2, 3, 4, 5	W.4.9.12 W.4.10.11	Apply grammatical conventions for capitalization, punctuation, formatting, and spelling.
2, 3, 4, 5	W.5.9.1 W.5.10.1	Adjust levels of formality, <i>style</i> , and <i>tone</i> when composing for different audiences.
2, 3, 4, 5	W.5.9.9 W.5.10.9	Write across the curriculum.
2, 3, 4, 5	W.6.9.8 W.6.10.4	Apply conventional spelling to all pieces.
2, 3, 4, 5	R.9.9.5 R.9.10.5	Draw inferences from a sentence or a paragraph (including conclusions, generalizations, and predictions) and support them with text evidence.
2, 3, 4, 5	R.9.9.8 R.9.10.7	Summarize and paraphrase structures in informational and literary texts, including relationships among concepts and details.
2, 3, 4, 5	R.9.9.13 R.9.10.12	Identify and discuss a position using concepts gained from reading.
3, 4, 5	R.10.9.1 R.10.10.1	Read across the curriculum a variety of such <i>practical texts</i> as advertisements, warranties, manuals, handbooks, agendas, labels, warnings and directions.
2, 3, 4, 5	R.11.9.1	Expand vocabulary through reading, listening, and discussing.

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	R.11.10.1	
3, 4, 5	IR.12.9.2 IR.12.10.2	Establish a focus for research and design a research plan to answer a specific question (9) / set of questions (10).
3, 4, 5	IR.12.9.12 IR.12.10.12	Create research products such as: oral presentation, reports, and essays.
Arkansas Health and Safety Standards: Grades 9 – 12		
Activity	Standard	Descriptor
5	DP.2.HW.4	Examine practices of early disease prevention and detection measures: regular physical activity, proper diet, self exams, health screenings, and vaccinations.
1, 2, 3, 5	DP.2.HW.7	Examine the causes of chronic diseases (e.g., obesity, underweight/underweight, heredity, chemicals, drug use, life-style, sun exposure).
1, 2, 3, 5	DP.2.HW.8	Analyze the relationship between chronic diseases and a healthy lifestyle (e.g., heart disease, obesity, diabetes, cancer).
4	CHP.3.HW.4	Discuss the validity of advertisements surrounding health supplements, food products, and gimmicks.