

VIRGINIA ALIGNMENT FOR NIH SUPPLEMENT HUMAN GENETIC VARIATION

HUMAN GENETIC VARIATION		
Virginia Biology Standards of Learning		
Activity	Standard	Description
2, 3	BIO.1.b	Plan and conduct investigations in which hypotheses are formulated based on direct observations and information from scientific literature.
2, 3	BIO.1.c	Plan and conduct investigations in which variables are defined and investigations are designed to test hypotheses.
	BIO.1.d	Plan and conduct investigations in which graphing and arithmetic calculations are used as tools in data analysis.
2, 3	BIO.1.e	Plan and conduct investigations in which conclusions are formed based on recorded quantitative and qualitative data.
2, 3	BIO.1.j	Plan and conduct investigations in which research utilizes scientific literature.
2, 3	BIO.1.k	Plan and conduct investigations in which differentiation is made between a scientific hypothesis and theory.
2, 3	BIO.1.l	Plan and conduct investigations in which alternative scientific explanations and models are recognized and analyzed.
2, 3	BIO.1.m	Plan and conduct investigations in which a scientific viewpoint is constructed and defended (the nature of science).
2	BIO.2.b	Investigate and understand the history of scientific explanations of the development of organisms through time (biological evolution);
3	BIO.2.e	Investigate and understand the history of the collaborative efforts of scientists, past and present.
3	BIO.3.b	Investigate and understand the chemical and biochemical principles essential for life: the structure and function of macromolecules.
3	BIO.5.c	Investigate and understand life functions of archaebacteria, monerans (eubacteria), protists, fungi, plants, and animals including humans: analyses of their responses to the environment.
2, 3	BIO.5.e	Investigate and understand life functions of archaebacteria, monerans (eubacteria), protists, fungi, plants, and animals including humans: human health issues, human anatomy, body systems, and life functions.
1	BIO.6.b	Investigate and understand common mechanisms of inheritance and protein synthesis: gamete formation.
1, 2	BIO.6.d	Investigate and understand common mechanisms of inheritance and protein synthesis: prediction of inheritance of traits based on the Mendelian laws of heredity.
2	BIO.6.e	Investigate and understand common mechanisms of inheritance and protein synthesis: genetic variation (mutation, recombination, deletions, additions to DNA).
2, 3	BIO.6.h	Investigate and understand common mechanisms of inheritance and protein synthesis: use, limitations, and misuse of genetic information.

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2, 3, 4	BIO.6.i	Investigate and understand common mechanisms of inheritance and protein synthesis: exploration of the impact of DNA technologies.
1, 2	BIO.8.b	Investigate and understand how populations change through time: how genetic variation, reproductive strategies, and environmental pressures impact the survival of populations.
2, 3, 4	BIO.8.c	Investigate and understand how populations change through time: how natural selection leads to adaptations.
2	BIO.8.e	Investigate and understand how populations change through time: scientific explanations for biological evolution.
Virginia English Standards of Learning – Grades 9 & 10		
Activity	Standard	Description
2, 3, 4, 5	9.4.a	Identify a position/argument to be confirmed, disproved, or modified.
All activities	9.4.c	Synthesize information from sources and apply it in written and oral presentations.
All activities	9.4.d	Identify questions not answered by a selected text.
All activities	9.4.e	Extend general and specialized vocabulary through speaking, reading, and writing.
All activities	9.4.f	Read and follow instructions to complete an assigned project or task.
2, 3, 5	9.6.a	Generate, gather, and organize ideas for writing.
2, 3, 5	9.6.b	Plan and organize writing to address a specific audience and purpose.
2, 3, 5	9.6.c	Communicate clearly the purpose of the writing.
2, 3, 5	9.6.d	Write clear, varied sentences.
2, 3, 5	9.6.e	Use specific vocabulary and information.
2, 3, 5	9.6.f	Arrange paragraphs into a logical progression.
2, 3, 4, 5	10.1.a	Assume responsibility for specific group tasks.
2, 3, 4, 5	10.1.b	Participate in the preparation of an outline or summary of the group activity.
2, 3, 4, 5	10.1.c	Include all group members in oral presentation.
2, 3, 5	10.1.d	Use grammatically correct language, including vocabulary appropriate to the topic, audience, and purpose.
2, 3, 5	10.10.a	Use writing to interpret, analyze, and evaluate ideas: explain concepts contained in literature and other disciplines.
2, 3, 5	10.10.b	Use writing to interpret, analyze, and evaluate ideas: translate concepts into simpler or more easily understood terms.

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Virginia Mathematics Standards of Learning - Secondary		
Activity	Standard	Description
2, 3, 4	A.5	Create and use tabular, symbolic, graphical, verbal, and physical representations to analyze a given set of data for the existence of a pattern, determine the domain and range of relations, and identify the relations that are functions.
2, 3, 4	AII.2	Add, subtract, multiply, divide, and simplify rational expressions, including complex fractions.
3, 4	PS.8	Describe the methods of data collection in a census, sample survey, experiment, and observational study and identify an appropriate method of solution for a given problem setting.
3, 4	PS.12	The student will identify and describe two or more events as complementary, dependent, independent, and/or mutually exclusive.
Virginia Health Standards of Learning – Grades 9 & 10		
Activity	Standard	Description
4	9.1.b	Apply health knowledge and skills to the development and analysis of personal goals to achieve and maintain long-term health and well-being including the use of current research and scientific study to interpret dietary principles.
4, 5	9.1.d	Apply health knowledge and skills to the development and analysis of personal goals to achieve and maintain long-term health and well-being including maintenance of health habits that promote personal wellness.
4, 5	9.2	Analyze and evaluate the relationship among healthy behaviors, disease prevention and control, and comprehensive wellness.
2, 3, 4, 5	9.4.b	Use various sources of information to evaluate global health issues including the benefits of information provided by recognized sources such as state and local health departments, the Food and Drug Administration (FDA), the National Institutes of Health (NIH), the World Health Organization (WHO), and the Centers for Disease Control and Prevention (CDC).
4	10.1.a	Demonstrate an understanding of health concepts, behaviors, and skills that reduce health risks and enhance the health and well-being of self and others throughout life including the impact of poor dietary choices.
4, 5	10.2.f	Analyze, synthesize, and evaluate the protective factors related to achieving and maintaining a sound mind and healthy body throughout life including the effects of an individual’s environment.
4, 5	10.2.g	Analyze, synthesize, and evaluate the protective factors related to achieving and maintaining a sound mind and healthy body throughout life including family health habits and behaviors as they relate to health promotion.
3, 4	10.4.b	Synthesize and evaluate available health information, products, and services for the value and potential impact on his/her well-being throughout life including the use of current technological tools to analyze health products and

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		services.
3, 4	10.4.c	Synthesize and evaluate available health information, products, and services for the value and potential impact on his/her well-being throughout life including involvement of local, state, and federal agencies in health-related issues.
2, 3, 4	10.4.d	Synthesize and evaluate available health information, products, and services for the value and potential impact on his/her well-being throughout life including the impact of technology on the health status of individuals, families, communities, and the world.