

B.LS.1.1 Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins, which carry out the essential functions of life through systems of specialized cells

B.LS1.4 Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

B. LS3.1 Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parent to offspring

B. LS.3.2 Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replications, and/or (3) mutations caused by environmental factors.

■ **Text Resources**

<https://www.hudsonalpha.org/biotech-basics>

■ **Digital Resources**

<https://www.hudsonalpha.org/educatorhub>

■ **Classroom Kits** <https://www.hudsonalpha.org/kits>

■ **Biotech Basics:** Copy Number Variation, Identifying the Genetic Influence on Disease, Personal Genome Analysis, Genetics of Eye Color, Studying the Genome to Understand the Sequence



■ Definition of a Gene, Big Data, Big Science, Big Impact!, Biobeads: Modeling Cell Processes
■ **Genes and ConSEQUENCES**



■ Chromosock Mitosis, Cell Cycle Regulation video series, Modeling controlled and uncontrolled cell growth



■ **Modeling, Meiosis, Mendel**

■ Definition of a Gene, Big Data, Big Science, Big Impact!, Progress of Science Biotechnology Timeline



■ **HNPCC, Disorder Detectives, Genes & ConSEQUENCES, Collecting Cancer Causing Changes, Making Sense of Uncertainty**

<http://timeline.hudsonalpha.org>

■ **Aluminum Tolerant Corn, Touching Triton**

■ **Chromosocks, Modeling Mendel's Laws, Collecting Cancer Causing Changes, Making Sense of Uncertainty, Genes & ConSEQUENCES, Disorder Detectives, HNPCC**



Touching Triton

<http://triton.hudsonalpha.org>



B. LS. 4.1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.

B. LS. 4.2 Construct an explanation based on evidence that biological diversity is influenced by (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

B. LS. 4.3 Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

■ **Text Resources**

<https://www.hudsonalpha.org/biotech-basics>

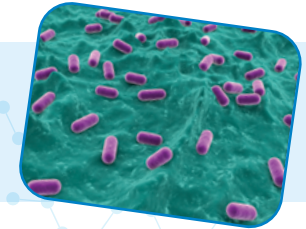
■ **Classroom Kits** <https://www.hudsonalpha.org/kits>

■ **Digital Resources**

<https://www.hudsonalpha.org/educatorhub>

■ **Technology & Tools: Viral Sequence Analysis**

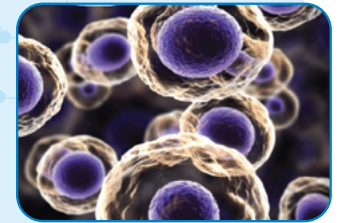
<https://www.hudsonalpha.org/technology-tools>



■ **Biotech Basics: Comparative Genomics, Studying the Genome to Understand the Sequence**

■ **Shareable Science: The Science of Skin Color, Human Genome Diversity Project**

<https://www.hudsonalpha.org/shareable-science/>



■ **Biotech Basics: Comparative Genomics, Studying the Genome to Understand the Sequence**

