

Pre-Lab, Skills, and Standards Alignments

DNA MODELS

Understanding the structure of DNA helps to explain its function. This lab is an introduction to the composition of DNA building blocks called nucleotides, and how they fit together to form the double helix. It concludes with the construction of 3-D models that show the famous structure.

Lab Length: 1 hour

Suggested Pre-Lab Teaching

- DNA function
- Cell anatomy

Lab Skills

- Construct a 3-D model of the double helix.

Conceptual Knowledge/Skills

- Describe the molecular components of DNA.
- Illustrate how a four-letter code can carry hereditary information for all organisms.
- Explain how although the structure is always the same, DNA differs among all living things.

New York State Science Learning Standards/NGSS

Science and Engineering Practices	Disciplinary Core Ideas	Cross Cutting Concepts
<p><u>Developing and Using Models</u> Develop and use a model to describe phenomena.</p>	<p><u>LS3.A: Inheritance of Traits</u> Genes are located in the chromosomes of cells, with each chromosome pair containing two variants of each of many distinct genes. Each distinct gene chiefly controls the production of specific proteins, which in turn affects the traits of the individual. Changes (mutations) to genes can result in changes to proteins, which can affect the structures and functions of the organism and thereby change traits. (MS-LS3-1) Variations of inherited traits between parent and offspring arise from genetic differences that result from the subset of chromosomes (and therefore genes) inherited. (MS-LS3-2)</p>	<p><u>Structure and Function</u> Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on shapes, composition, and relationships among its parts, therefore complex natural structures/systems can be analyzed to determine how they function.</p>