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Building DNA

Answer Key

Vocabulary: double helix, DNA, enzyme, mutation, nitrogenous base, nucleoside, nucleotide, replication

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)
(Note: The purpose of these questions is to activate prior knowledge and get students thinking. Students are not expected to know the answers to the Prior Knowledge Questions.)

DNA is an incredible molecule that forms the basis of life on Earth. DNA molecules contain instructions for building every living organism on Earth, from the tiniest bacterium to a massive blue whale. DNA also has the ability to **replicate**, or make copies of itself. This allows living things to grow and reproduce.

1. Look at the DNA molecule shown at right. What does it look like?

Answers will vary, but may include a **twisted ladder** or a **double spiral**.

This shape is called a **double helix**.



2. Based on this picture, how do you think a DNA molecule makes a copy of itself? (Hint: Look at the bottom two "rungs" of the ladder.)

Answers will vary. (The hint refers to the fact that the nitrogenous bases at the bottom of the molecule are **splitting apart**, which will eventually divide the molecule into two strands. Each strand will be used as a template for the formation of a new strand.)

Gizmo Warm-up

The Building DNA Gizmo™ allows you to construct a DNA molecule and go through the process of DNA replication. Examine the components that make up a DNA molecule.

1. What are the two DNA components shown in the Gizmo?

Nucleosides and phosphates are shown.



2. A **nucleoside** has two parts: a pentagonal sugar (deoxyribose) and a **nitrogenous base** (to code). When a nucleoside is joined to a phosphate, it is called a **nucleotide**.

How many different nitrogenous bases do you see? **Four** (A, C, G, and T).

Note: The names of these nitrogenous bases are adenine (red), cytosine (yellow), guanine (black), and thymine (green).

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[**Student Exploration Building Dna Answer**](#)