

Study Guide: Answer Key

Chapter 7: DNA Structure and Replication

Biologically Unique: How DNA helped free an innocent man

Driving Question 1:

What is the function of DNA, and how is DNA organized in cells?

Why should you care?

DNA is the hereditary molecule—passed from parents to offspring—that serves as the instruction manual for “building” each individual. DNA is found in the nucleus of almost every cell in our body. Forensic scientists can, therefore, collect DNA evidence from many different types of crime scene evidence, such as semen, saliva, skin cells, blood, and hair. This DNA can then be used to positively identify a perpetrator or exonerate accused suspects of a crime.

Roy Brown was convicted by junk science, the only “evidence” linking him to the crime was his teeth, and bite mark analysis is notoriously unreliable. Other types of physical evidence, such as hair samples examined under a microscope, are also problematic because they are not distinct enough to positively identify the individual from which they come. DNA is valuable in forensics because it is unique to each individual. DNA’s structure is the key to its uniqueness in each individual.

What should you know?

To fully answer this Driving Question, you should be able to:

1. Describe the origin and function of DNA.
2. Describe the location of DNA in eukaryotic cells.
3. Describe the structure of chromosomes.
4. Describe the number and origin of the chromosomes in human cells.

Infographic Focus:

The infographics most pertinent to the Driving Question are 7.1 and 7.2.

Test Your Vocabulary:

Match these terms to their definitions:

[DEOXYRIBONUCLEIC ACID (DNA)] The molecule of heredity, common to all life forms, that is passed from parents to offspring.

[CHROMOSOME] A single, large DNA molecule wrapped around proteins.

Chromosomes are located in the nuclei of most eukaryotic cells.

[NUCLEOTIDES] The building blocks of DNA. Each nucleotide consists of a sugar, a phosphate, and a base. The sequence of nucleotides (As, Cs, Gs, Ts) along a DNA strand is unique to each person.

1. Describe the origin and function of DNA.

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Patrick Vollmar



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