



Name

Period

Date

SECTION

8.1

IDENTIFYING DNA AS THE GENETIC MATERIAL

Study Guide

KEY CONCEPT

DNA was identified as the genetic material through a series of experiments.

VOCABULARY

bacteriophage

MAIN IDEA: Griffith finds a “transforming principle.”

Write the results of Griffith’s experiments in the boxes below.

Experiments	Results
1. Injected mice with R bacteria	
2. Injected mice with S bacteria	
3. Killed S bacteria and injected them into mice	
4. Mixed killed S bacteria with R bacteria and injected them into mice	<div>Found live S bacteria in the mice’s blood</div>

5. Which type of bacteria caused disease, the S form or the R form?

6. What conclusions did Griffith make based on his experimental results?

MAIN IDEA: Avery identifies DNA as the transforming principle.

7. Avery and his team isolated Griffith's transforming principle and performed three tests to learn if it was DNA or protein. In the table below, summarize Avery's work by writing the question he was asking or the results of his experiment.

Avery's Question	Results
What type of molecule does the transforming principle contain?	
	The ratio of nitrogen to phosphorus in the transforming principle is similar to the ratio found in DNA.
Which type of enzyme destroys the ability of the transforming principle to function?	

MAIN IDEA: Hershey and Chase confirm that DNA is the genetic material.

8. Proteins contain _____ but very little ____.
9. DNA contains _____ but no _____.
10. Summarize the two experiments performed by Hershey and Chase by completing the table below. Identify what type of radioactive label was used in the bacteriophage and whether radioactivity was found in the bacteria.

Experiment	Bacteriophage	Bacteria
Experiment 1		
Experiment 2		

Vocabulary Check

11. Explain what a bacteriophage is and describe or sketch its structure.

KEY CONCEPT

DNA structure is the same in all organisms.

VOCABULARY

nucleotide

base pairing rules

double helix

MAIN IDEA: DNA is composed of four types of nucleotides.

In the space below, draw a nucleotide and label its three parts using words and arrows.



1. How many types of nucleotides are present in DNA?

2. Which parts are the same in all nucleotides? Which part is different?

MAIN IDEA: Watson and Crick developed an accurate model of DNA's three-dimensional structure.

3. What did Franklin's data reveal about the structure of DNA?

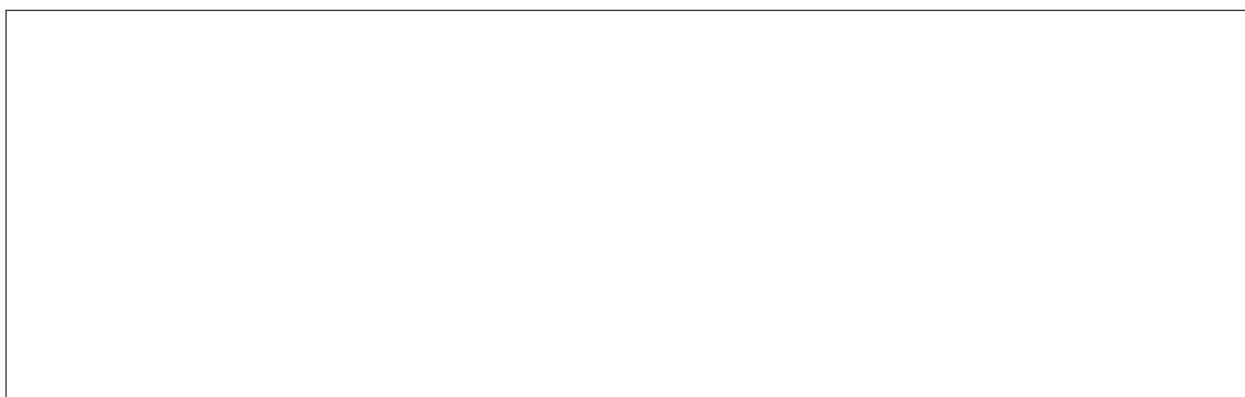
4. How did Watson and Crick determine the three-dimensional shape of DNA?

5. How does DNA base pairing result in a molecule that has a uniform width?

MAIN IDEA: Nucleotides always pair in the same way.

6. What nucleotide pairs with T? with C?

In the space below, draw a DNA double helix. Label the sugar-phosphate backbone, the nitrogen-containing bases, and the hydrogen bonds.



Vocabulary Check

7. Explain how the DNA double helix is similar to a spiral staircase.

8. How do the base pairing rules relate to Chargaff's rules?
