CHAPTER **11** DNA and the Language of Life

Online Activity Worksheet 11.1

Genes are made of DNA.

Experiment with bacteriophages.

OBJECTIVE: to examine bacteriophage structure and life cycle and model the Hershey-Chase experiment

In 1952, scientists were still debating the chemical nature of the gene. Was genetic information carried in molecules of protein or DNA? Two scientists, Alfred Hershey and Martha Chase, devised a simple, yet brilliant, experiment to answer this question. In this activity, you will model their experiment.

- Examine the structure of the bacteriophage (also called a phage). Note that the phage is composed of only two types of molecules: protein and DNA. Click on the phage to begin.
- The genetic material injected by the phage directs the bacterium to make new copies of the phage. Hershey and Chase knew the genetic material had to be either protein or DNA. Which one was it? Click **next** to reproduce the experiment they used to answer this question.
- Hershey and Chase labeled two batches of phages with radioactive isotopes. Roll over each of the test tubes to see how the phages are labeled. Click **next** to continue.
- The phages are added to flasks containing bacteria. Roll over the lower part of each flask to see the contents. Then click **next** to continue.
- Click on a flask to begin. Then follow the instructions in the yellow notes.
- Click on a test tube to start. Then follow the instructions in the yellow notes.
- Click and drag the probe of the radiation detector over the test tubes to determine where the radioactivity is. Then, for each batch, click on the part of the test tube (either the pellet or the liquid) that is radioactive. Then click **next** to continue.
- Hershey and Chase's experiment provided convincing evidence that DNA is the hereditary material. Therefore, click on the part of the phage that must be injected into the bacterium. Once you have the correct answer, click **play**.

Name	Class Date
	Now answer the following questions in the spaces provided.
	1. Since scientists knew that genes were composed of either DNA or protein, why would they choose to study a bacteriophage?
	2. When the phage attaches to the host and injects its DNA, what part of the phage enters the bacterium?
	3. What conclusion can you make about the chemical nature of the gene—is it composed of protein or DNA? Explain.