

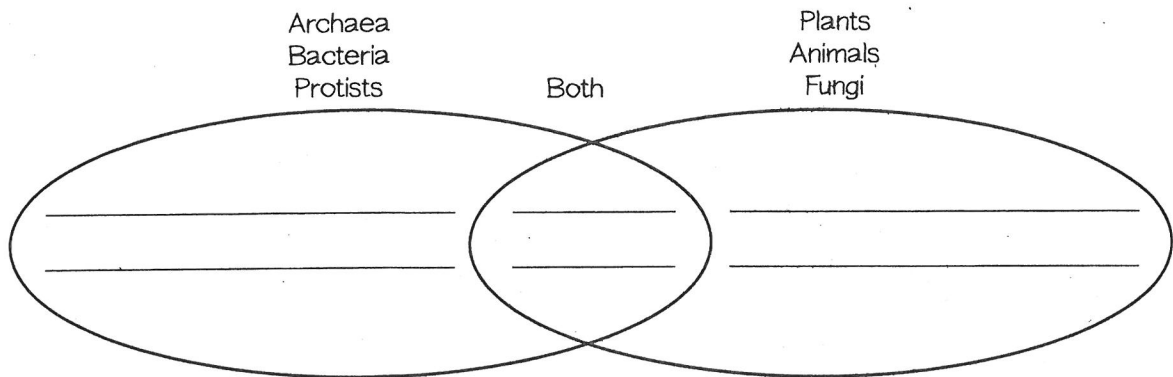
SECTION SINGLE-CELLED ORGANISMS HAVE ALL THE CHARACTERISTICS OF LIVING THINGS.

1.1 Reinforcing Key Concepts

BIG IDEA Bacteria and protists have the characteristics of living things, while viruses are not alive.

KEY CONCEPT Single-celled organisms have all the characteristics of living things.

- 1. Living things come in many shapes and sizes.** Humans are organisms. Tiny bacteria living inside humans are organisms. Any living thing can be called an organism. When you think of organisms, you probably think of plants and animals. However, most living things are too small to see without a microscope. The diagram shows the six kingdoms of life. Complete the diagram by filling in the differences and similarities.



- 2. Living things share common characteristics.** One characteristic shared by all living things is the ability to reproduce. One form of reproduction is binary fission. Complete the chart about binary fission by filling in the information.

Type of Reproduction	What Kind of Organisms?	What Happens?	What Is the Result?
Binary fission	a.	b.	c.

- 3. Living things need energy, materials, and living space. Viruses are not alive.**

A virus is a small collection of genetic material enclosed in a protein shell. Viruses that cause disease reproduce rapidly and destroy cells in the process. The ability to reproduce and get energy from the environment are two characteristics of living things. Why are viruses not considered living things?



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SECTION

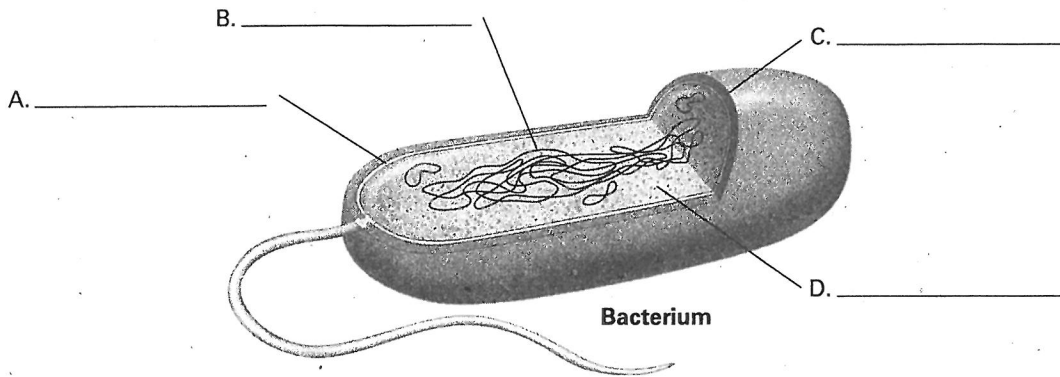
BACTERIA ARE SINGLE-CELLED ORGANISMS WITHOUT NUCLEI.

1.2 Reinforcing Key Concepts

BIG IDEA Bacteria and protists have the characteristics of living things, while viruses are not alive.

KEY CONCEPT Bacteria are single-celled organisms without nuclei.

- 1. Bacteria and archaea are the smallest living things.** The cells of bacteria are different from the cells of other organisms. A bacterial cell is about 1/10 to 1/20 the size of a typical cell from another organism. In the diagram below, label each part of a typical bacterial cell.



- 2. Bacteria and archaea are found in many environments.** Two kinds of single-celled organisms do not have nuclei: bacteria and archaea. Complete the chart by filling in missing information about different types of archaea and bacteria.

Archaea			Bacteria		
a.	Halophiles	c.	Producers	e.	Parasites
produce methane; live in mud swamps and in cow or termite stomachs	b.	live in extreme heat or cold such as deep-sea heat vents, hot springs, or deep in the ice	d.	break down chemicals in dead or decaying organisms	f.

- 3. Bacteria may help or harm other organisms.** Some species of bacteria are helpful to other organisms, but not all bacteria are helpful. Give one example of a way that bacteria are helpful. Give one example of a way that bacteria can be harmful.

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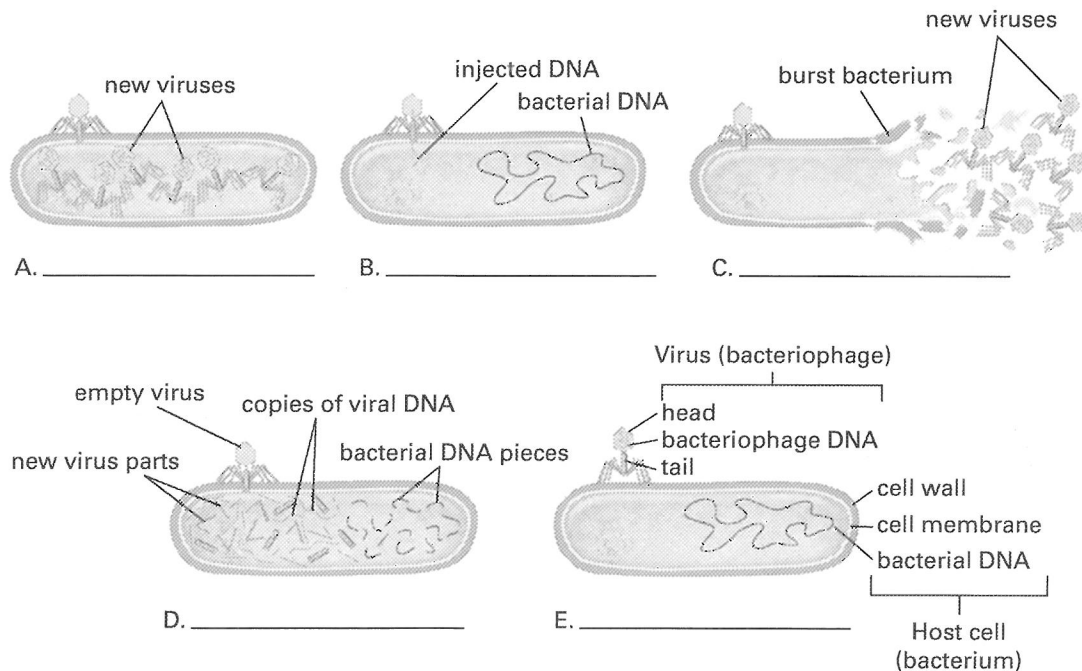
CHAPTER 1

SECTION VIRUSES ARE NOT ALIVE BUT AFFECT LIVING THINGS.

1.3 Reinforcing Key Concepts**BIG IDEA** Bacteria and protists have the characteristics of living things, while viruses are not alive.**KEY CONCEPT** Viruses are not alive but affect living things.

- 1. Viruses share some characteristics with living things.** Viruses come in many shapes and sizes, but all viruses consist of a capsid and genetic material. What is the function of the capsid? What structure in living organisms is similar to a capsid? How is a virus different from living things?

- 2. Viruses multiply inside living cells.** One of the best understood viruses is the bacteriophage. When this virus infects a bacterial cell, it goes through certain steps. These steps are shown below in a random order. Label each step. Then write its correct order below the label.



- 3. Viruses may harm host cells.** A vaccine is one way that infection from viruses can be controlled. Why can't a vaccine help people already infected with a virus?



Name _____

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SECTION 1.4 | PROTISTS ARE A DIVERSE GROUP OF ORGANISMS.
1.4 Reinforcing Key Concepts

CHAPTER 1
Single-Celled Organisms and Viruses

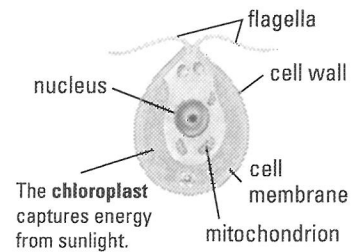
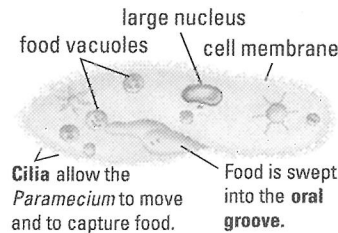
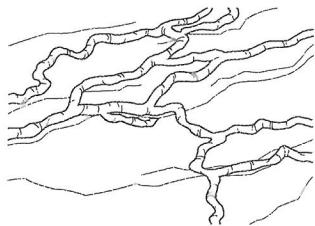
BIG IDEA Bacteria and protists have the characteristics of living things, while viruses are not alive.

KEY CONCEPT Protists are a diverse group of organisms.

1. Most protists are single-celled. Protists are all organisms whose cells have nuclei that are not considered part of the plant, animal, or fungi kingdoms. Protists may be considered a collection of leftover organisms. As a result, protists are the most diverse of all the kingdoms. Complete the chart with the name of the protist described.

Examples of Protists		
a.	b.	c.
single-celled algae that float in water and have a hard shell	multicellular protist that gets energy from the Sun and can grow up to 100 meters long	single-celled protists that move like animals but get energy from the Sun

2. Protists obtain their energy in three ways. Protists can be classified by their way of getting energy. Each of the three protists shown below obtains its energy in a different way. Identify each protist and describe how it obtains its energy.



A. _____

B. _____

C. _____

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