

Microbes and Fungi

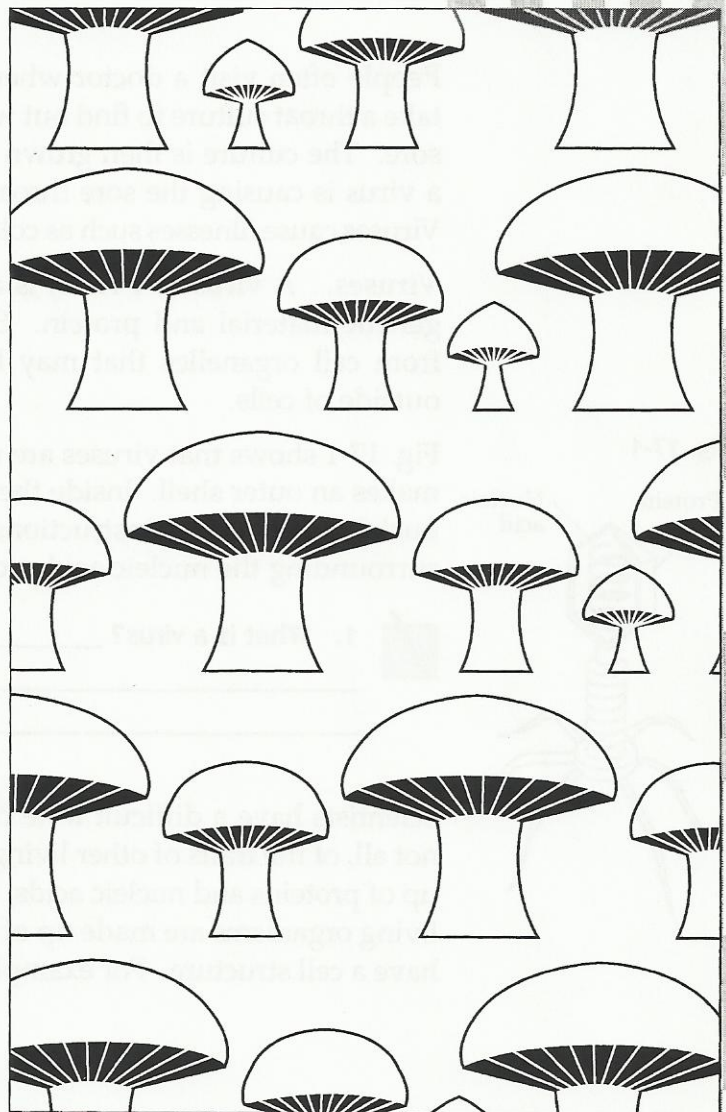
UNIT

4

Have you ever walked through a forest and noticed mushrooms growing on the forest floor? Have you ever found mushrooms growing in your yard after a big rainstorm? You might have even seen mushrooms growing in a flower pot at home. Have you ever asked yourself what a mushroom is? Why do they grow in such damp areas?

Mushrooms belong to a group of living things called fungi. Fungi grow almost everywhere: on plants and animals, in soil, and even in water.

Many kinds of fungi are helpful. For example, fungi are often eaten as food. You've probably eaten mushrooms on a pizza. Fungi are also used to make breads and some kinds of cheeses. Some fungi are used to make medicine. Fungi are very important to the environment. They are decomposers. They break down dead organisms into materials that can be reused by other living things.



Key Words

virus: noncellular organism made up of genetic material and protein
reproduction: process of making more of the same kind

KEY IDEAS

Viruses have some, but not all, of the traits of other living things. Unlike other living things, viruses are not made up of cells. Like living things, viruses can reproduce. However, viruses can only reproduce when inside the cells of other living things.

People often visit a doctor when they have a sore throat. The nurse may take a throat culture to find out what is causing the throat to become red and sore. The culture is then grown in a medical lab. If the culture shows that a virus is causing the sore throat, not much can be done to make it better. Viruses cause illnesses such as colds, flu, sore throat, mumps, and chicken pox.

Viruses. A virus (VY-ruhs) is a noncellular organism that is made up of genetic material and protein. Some scientists think that viruses evolved from cell organelles that may have found a way to live and reproduce outside of cells.

Fig. 17-1

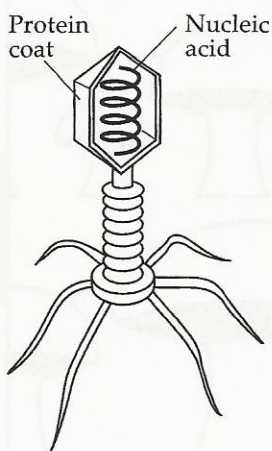


Fig. 17-1 shows that viruses are made up of two main parts. A protein coat makes an outer shell. Inside the shell is a nucleic acid, DNA, or RNA. The nucleic acid contains instructions for making more viruses. The protein coat surrounding the nucleic acid protects the virus.



1. What is a virus? _____

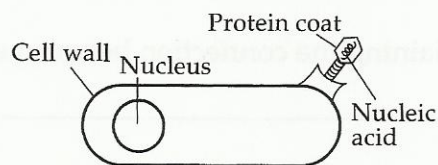
Scientists have a difficult time classifying viruses. Viruses have some, but not all, of the traits of other living organisms. For example, viruses are made up of proteins and nucleic acids, two substances found in all living cells. All living organisms are made up of one or more cells. Viruses, however, do not have a cell structure. For example, they lack a cell membrane and a nucleus.

Viral reproduction. Viruses can reproduce only when inside the cells of living organisms. **Reproduction** (ree-pruh-DUK-shun) is the process of making more of the same kind.

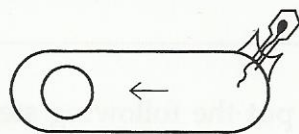
To reproduce, a virus must first contact a living cell. The virus attaches itself to the cell wall. The virus then produces a chemical that breaks down the cell wall. The nucleic acid of the virus invades the cell through the cell wall. The virus leaves behind its empty protein coat. Inside the cell, the viral nucleic acid directs the cell to make new viruses. The cell eventually bursts open and releases the new viruses. As many as 300 viruses may be produced inside one cell. Fig. 17-2 shows how a virus reproduces.

Fig. 17-2

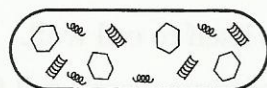
(1) Virus attaches itself to cell wall.



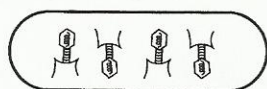
(2) Nucleic acid from the virus enters cell.



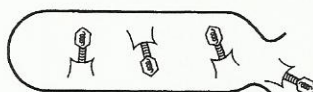
(3) Nucleic acid of virus directs cell to make new virus parts.



(4) Virus parts are put together, making copies of the virus.



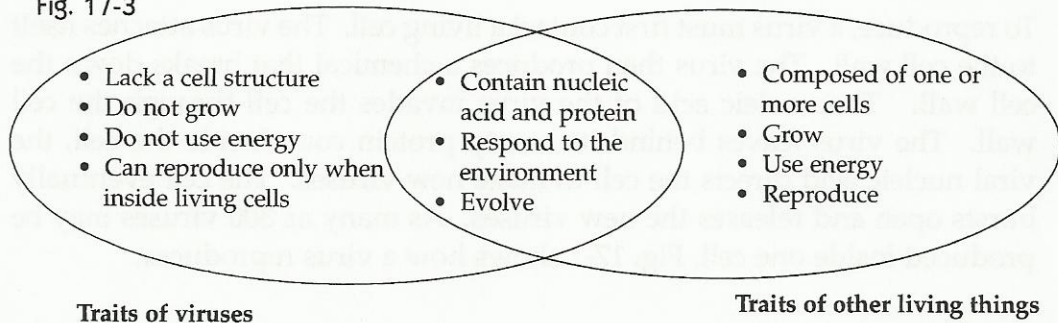
(5) Cell bursts open and viruses are released.



**TAKE
ANOTHER
LOOK**

Fig. 17-3 shows the traits of viruses and other living things. The portion of the circles that overlap show the traits viruses share with other living things.

Fig. 17-3



Check Your Understanding

Write a sentence explaining the connection between each pair of words.

2. virus, nucleus _____

3. viral reproduction, living cell _____

4. Use numbers 1-5 to put the following steps of viral reproduction in the correct order.

- _____ Nucleic acid from the virus enters the cell.
- _____ Cell bursts open and viruses are released.
- _____ Virus attaches itself to cell wall.
- _____ Nucleic acid of virus directs cell to make new virus parts.
- _____ Virus parts are put together, making many copies of the virus.

5. In the space below, draw the steps showing reproduction of a virus.

Fill in the blanks with the correct word.

6. A virus, unlike other living things, is not made up of one or more

_____.

7. The trait that a virus shares with other living things is the ability to

_____.

8. What are the two main parts of a virus? _____

9. Describe how viruses differ from other living things. _____

10. Describe how viruses are like other living things. _____

11. What is one way viruses are harmful to people? _____

12. Biology is the study of living things. Why do you think viruses are discussed in biology books? _____

