

**SECTION 25-1 REVIEW**

# STRUCTURE

**VOCABULARY REVIEW** Define the following terms.

1. virus \_\_\_\_\_  
\_\_\_\_\_
2. capsid \_\_\_\_\_  
\_\_\_\_\_
3. retrovirus \_\_\_\_\_  
\_\_\_\_\_
4. viroid \_\_\_\_\_  
\_\_\_\_\_
5. prion \_\_\_\_\_  
\_\_\_\_\_

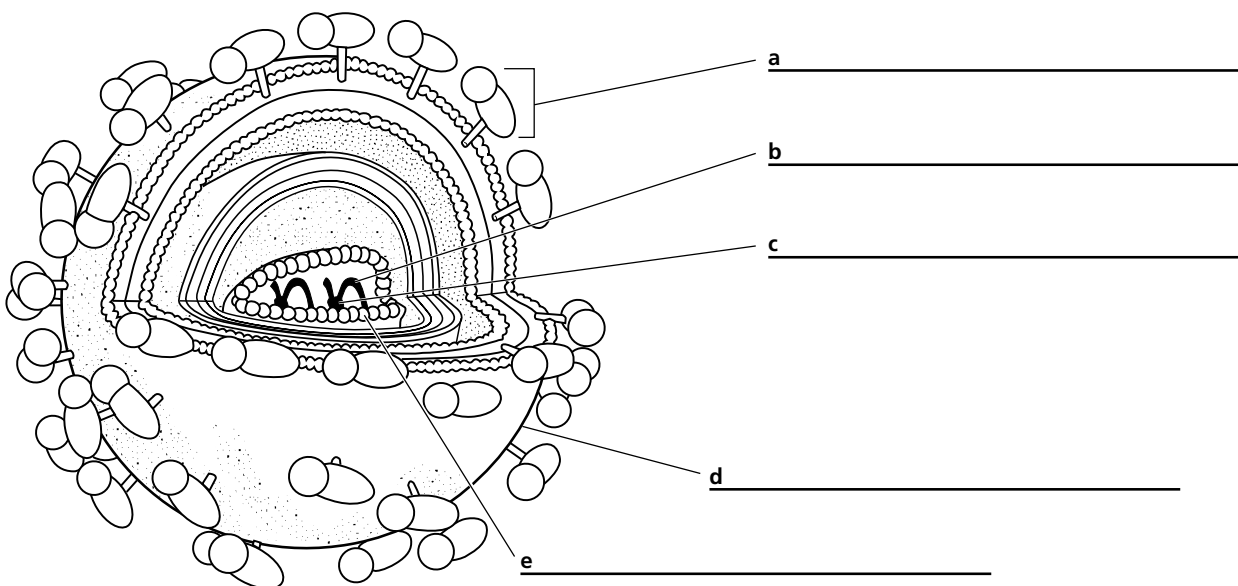
**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. The diameter of viruses ranges from about  
a. 1 to 2 nm.            b. 20 to 250 nm.            c. 1 to 2  $\mu\text{m}$ .            d. 20 to 250  $\mu\text{m}$ .
- \_\_\_\_\_ 2. Viruses can reproduce  
a. independently of host cells.  
b. independently of host cells if they first take up organelles from the host cells.  
c. only within host cells.  
d. only with the assistance of other viruses.
- \_\_\_\_\_ 3. The enzyme reverse transcriptase uses  
a. DNA as a template to make more DNA.            c. RNA as a template to make more RNA.  
b. DNA as a template to make RNA.            d. RNA as a template to make DNA.
- \_\_\_\_\_ 4. The grouping of viruses is based partly on the  
a. presence or absence of an envelope.            c. type of organism they infect.  
b. presence or absence of nucleic acid.            d. structure of their organelles.
- \_\_\_\_\_ 5. A disease-causing particle made of RNA without a capsid is called  
a. an envelope.            b. a retrovirus.            c. a viroid.            d. a prion.

**SHORT ANSWER** Answer the questions in the space provided.

1. What did Wendell Stanley's work suggest about the nature of viruses? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Identify two structures and two activities that are characteristic of cells but not of viruses.  
\_\_\_\_\_  
\_\_\_\_\_
3. What is the function of the glycoprotein on the surface of enveloped viruses? \_\_\_\_\_  
\_\_\_\_\_
4. What type of virus contains reverse transcriptase, and what type of nucleic acid does this virus type also contain? \_\_\_\_\_
5. **Critical Thinking** It is often said that the only function of a virus is to make new viruses. What evidence supports this statement? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**STRUCTURES AND FUNCTIONS** Identify the structures labeled *a–e* in the diagram of the human immunodeficiency virus shown below.



HRW material copyrighted under notice appearing earlier in this work.

**SECTION 25-2 REVIEW**

# VIRAL REPLICATION

**VOCABULARY REVIEW** Distinguish between the terms in each of the following pairs of terms.

1. obligate intracellular parasite, bacteriophage \_\_\_\_\_  
\_\_\_\_\_
  
2. lytic cycle, lysogenic cycle \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. The tail of a bacteriophage is specialized for
  - a. enclosing the viral nucleic acid.
  - b. propelling the bacteriophage through a watery environment.
  - c. injecting the viral nucleic acid into a host cell.
  - d. inserting the viral nucleic acid into the host cell's genome.
  
- \_\_\_\_\_ 2. Many viruses infect only a certain type of cell because they recognize
  - a. receptor sites on the cell's surface.
  - b. a particular sequence of nucleotides in the cell's genome.
  - c. the shape of the cell.
  - d. other viruses of the same kind inside the cell.
  
- \_\_\_\_\_ 3. During the lytic cycle,
  - a. a virus replicates within the host cell for an extended time without killing the cell.
  - b. the host cell's genome is incorporated into the viral capsid.
  - c. the viral DNA is integrated into the host cell's genome.
  - d. one of the enzymes coded for by the viral genome causes the host cell to disintegrate.
  
- \_\_\_\_\_ 4. During the lysogenic cycle,
  - a. a virus causes immediate lysis of the host cell.
  - b. a prophage or provirus replicates whenever the host cell reproduces.
  - c. viral DNA remains within the capsid on the surface of the host cell.
  - d. radiation causes the host cell to become virulent.
  
- \_\_\_\_\_ 5. Some viruses that invade the human body avoid destruction by the immune system by
 

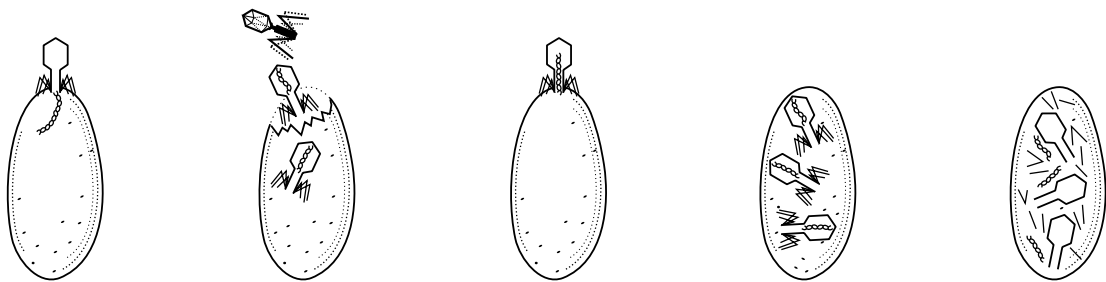
<ol style="list-style-type: none"> <li>a. producing antibiotics.</li> <li>b. developing very thick capsids.</li> </ol>	<ol style="list-style-type: none"> <li>c. mutating quickly.</li> <li>d. becoming very large.</li> </ol>
--	---

**SHORT ANSWER** Answer the questions in the space provided.

1. What kinds of factors can cause a prophage to become virulent? \_\_\_\_\_  
\_\_\_\_\_
2. How does an RNA virus get viral DNA into a host cell's genome? \_\_\_\_\_  
\_\_\_\_\_
3. Why must a person receive a different flu vaccine each year to be protected against the flu?  
\_\_\_\_\_  
\_\_\_\_\_
4. **Critical Thinking** How does the structure and function of bacteriophages make these viruses useful tools for genetic engineering? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**STRUCTURES AND FUNCTIONS** The diagrams below represent the five steps in the lytic cycle of a bacteriophage. The order of the steps has been scrambled. Arrange the steps in their correct order by writing the letter of each step, and briefly describe what is happening in each step.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**a** \_\_\_\_\_ **b** \_\_\_\_\_ **c** \_\_\_\_\_ **d** \_\_\_\_\_ **e** \_\_\_\_\_

**SECTION 25-3 REVIEW**

# VIRUSES AND HUMAN DISEASE

**VOCABULARY REVIEW** Define the following terms.

1. inactivated virus \_\_\_\_\_  
\_\_\_\_\_
2. attenuated virus \_\_\_\_\_  
\_\_\_\_\_
3. acyclovir \_\_\_\_\_  
\_\_\_\_\_
4. azidothymidine \_\_\_\_\_  
\_\_\_\_\_
5. protease inhibitor \_\_\_\_\_  
\_\_\_\_\_

**MULTIPLE CHOICE** Write the correct letter in the blank.

- \_\_\_\_\_ 1. One viral disease that can occur in childhood and then reappear in adulthood in a more serious form is  
 a. chickenpox.      b. smallpox.      c. rabies.      d. hepatitis.
- \_\_\_\_\_ 2. The most successful approach to controlling viral diseases has been the use of  
 a. antibiotics.      c. inactivated-virus vaccines.  
 b. antiviral drugs.      d. attenuated-virus vaccines.
- \_\_\_\_\_ 3. Which of the following viral diseases is now considered to be eradicated?  
 a. chickenpox      b. smallpox      c. rabies      d. hepatitis
- \_\_\_\_\_ 4. An emerging virus is one that arises  
 a. from a host cell when the cell undergoes lysis.  
 b. from a lysogenic cycle and enters a lytic cycle.  
 c. when isolated habitats are developed.  
 d. on the skin after hiding inside nerve cells.
- \_\_\_\_\_ 5. The hepatitis B virus has been linked to  
 a. liver cancer.      c. cervical cancer.  
 b. Burkitt's lymphoma.      d. leukemia.

**SHORT ANSWER** Answer the questions in the space provided.

1. Name four viruses that can cause diseases that are often fatal. \_\_\_\_\_  
\_\_\_\_\_
2. Explain the relationship between shingles and chickenpox. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
3. Name two methods, other than vaccination, for controlling viral diseases. \_\_\_\_\_  
\_\_\_\_\_
4. How are some viruses thought to cause cancer? \_\_\_\_\_  
\_\_\_\_\_
5. Explain how an emerging virus might suddenly appear in a human population. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. **Critical Thinking** Why would a drug that blocks DNA transcription not be a desirable method for treating a viral disease? \_\_\_\_\_  
\_\_\_\_\_

**STRUCTURES AND FUNCTIONS** Answer the following questions.

1. The figure below depicts the transmission of a pathogenic virus. What virus is most likely to be transmitted in this manner?  
\_\_\_\_\_  
\_\_\_\_\_
2. How can transmission of the virus you listed above be prevented?  
\_\_\_\_\_  
\_\_\_\_\_

