

Bacteria/Viruses

Standard Biology/Life Science

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response, students know:

Concept

d. that there are important differences between bacteria and viruses, with respect to their requirements for growth and replication, the primary defense of the body against them, and effective treatment of infections they cause.

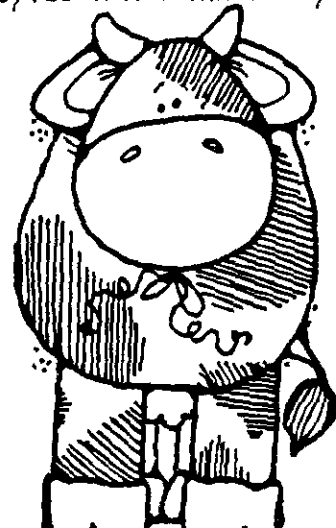
Immune System

Standard Biology/Life Science

10. Organisms have a variety of mechanisms to combat disease. As a basis for understanding the human immune response, students know:

Concepts

- a. the role of the skin in providing nonspecific defenses against infection.
- b. the role of antibodies in the body's response to infection.
- c. how vaccination protects and individual from infectious diseases.
- e. why and individual with a compromised immune system (for example, a person with AIDS), may be unable to fight off and survive infections of microorganisms that are usually benign.
- f. *the roles of phagocytes, B-lymphocytes, and T-lymphocytes in the immune system.



Vocabulary: Microbiology

Word Part	Meaning	Vocabulary Word
sep_sepsis_septic	rot, putrefy, decay	antiseptic
path	disease	pathogen
derm	skin	dermatitis
-itis	inflammation	dermatitis
mal	bad	malignant
benign	Good natured	benign
aer	oxygen	aerobic
an	without	anaerobic
staph	cluster	staphylococcus
anti	against	antibiotic
tox	toxin	toxin
lyse	break apart	lytic

Format

Word	Part of speech	Word parts/meanings
antiseptic		
pathogen		
dermatitis		

malignant		
benign		
aerobic		
anaerobic		
staphylococcus		
antibiotic		
toxin		
lytic		

THE SKIN

I. STRUCTURE (SEE OTHER SIDE)

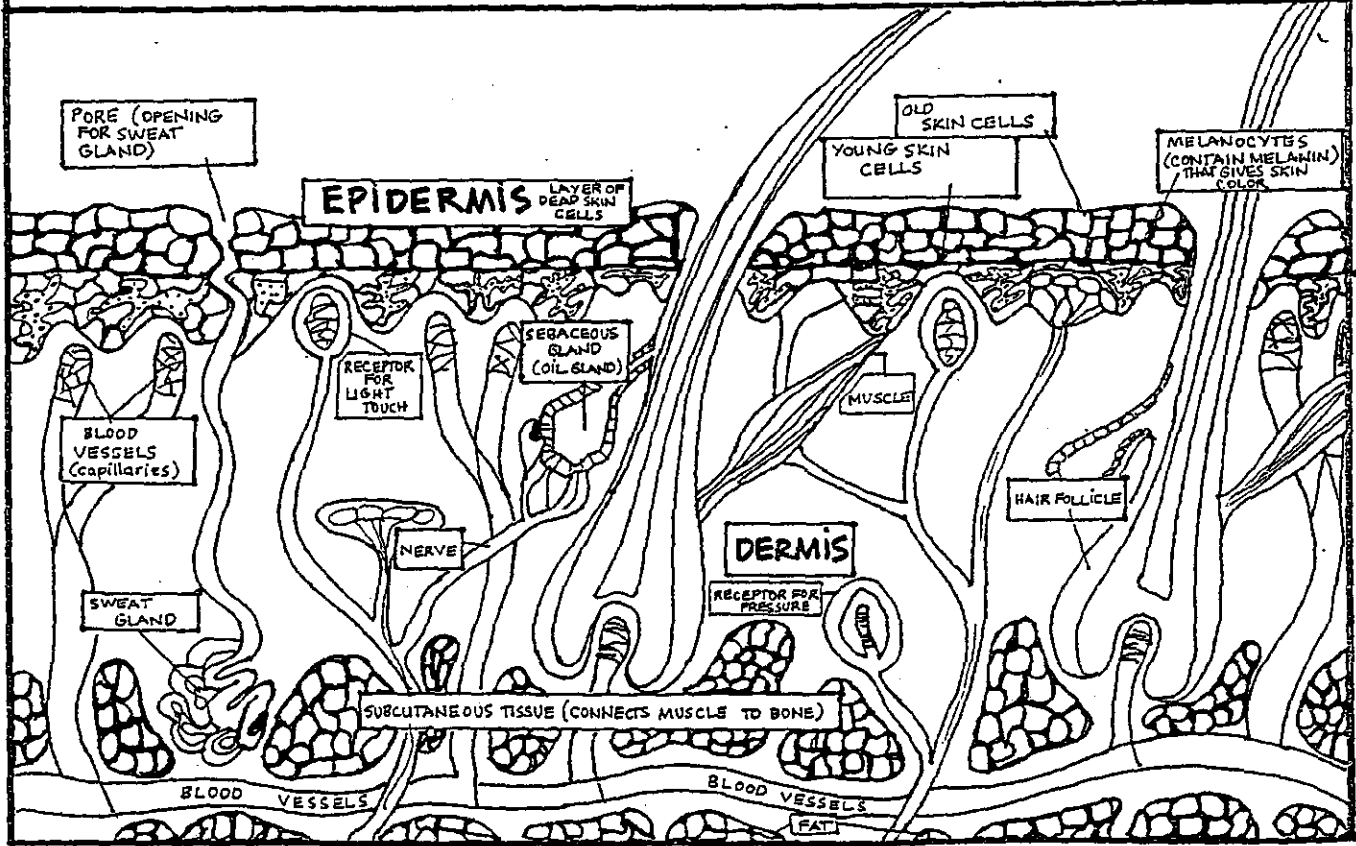
II. FUNCTIONS - (5 Functions)

- A. _____ HELPS PREVENT _____ AND _____
- B. HELPS MAINTAIN NORMAL _____ (98.6 °F).
 - GOOSE BUMPS ARE A RESULT OF THE _____ AND PULLING THE _____ UP.
 - HELPS BODY KEEP _____
 - _____ COOLS THE BODY.
 - _____ HELP HOLD OR RELEASE _____
- C. GETS RID OF _____ SWEAT RELEASES _____
- D. _____ ORGAN HELPS DETECT _____
- E. _____ NEEDS _____ HELPS ABSORB _____

DIRECTIONS:

COLOR THE LABEL BOX AND ALL CORRESPONDING STRUCTURES THE SAME COLOR.

PARTS OF THE SKIN



FAT CELLS HELP KEEP HEAT IN THE BODY

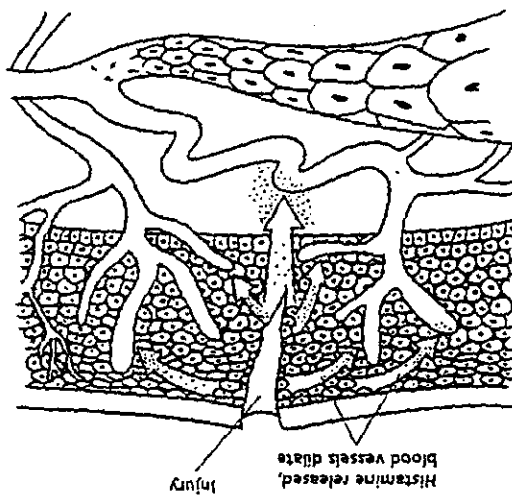
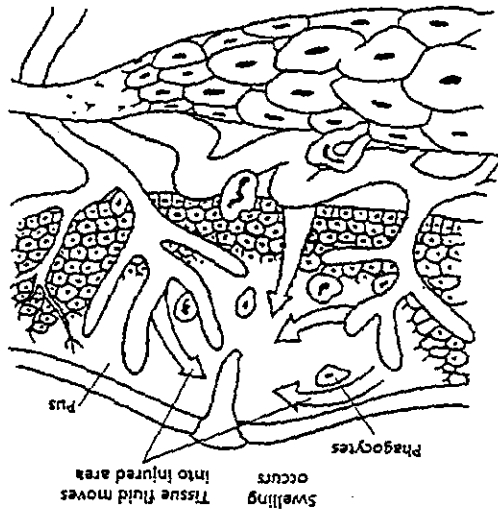
Name _____

Date _____

Class _____

77 Response to Injury

Use with Chapter 39, Section 39.2



Name _____

Date _____

Class _____

77 Response to Injury

Use with Chapter 39, Section 39.2

1. What are five possible causes of inflammation?

2. What are four signs of inflammation?

3. Which event shown in the transparency represents the initial response to tissue damage?

4. How does the dilation of blood vessels help the body recover from injury?

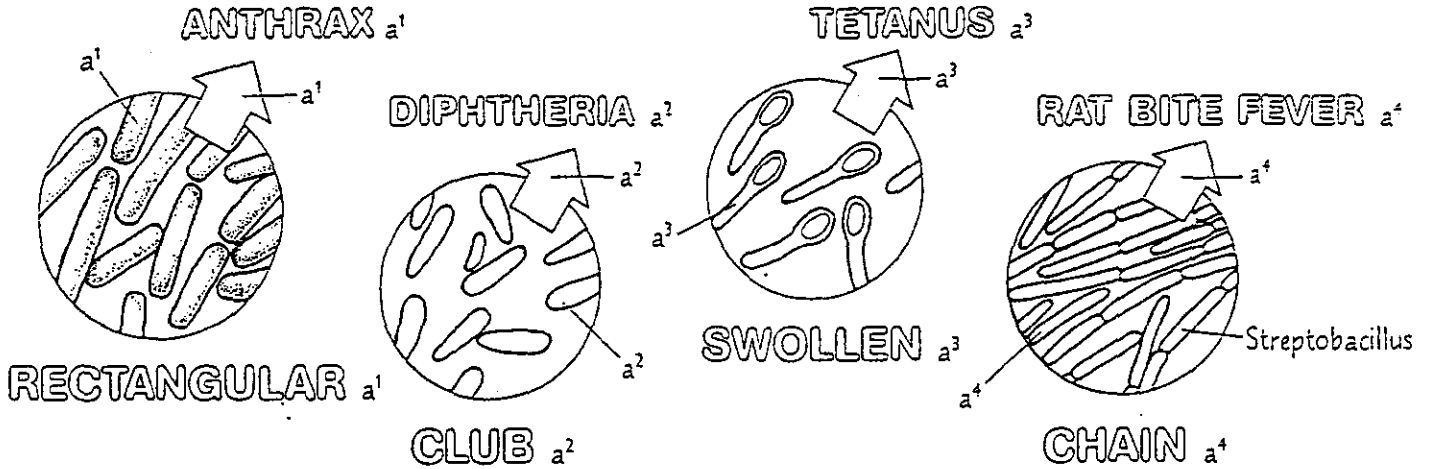
5. What causes the redness and swelling of an inflammation?

6. What is the role of the phagocytes shown in the transparency and where do they come from?

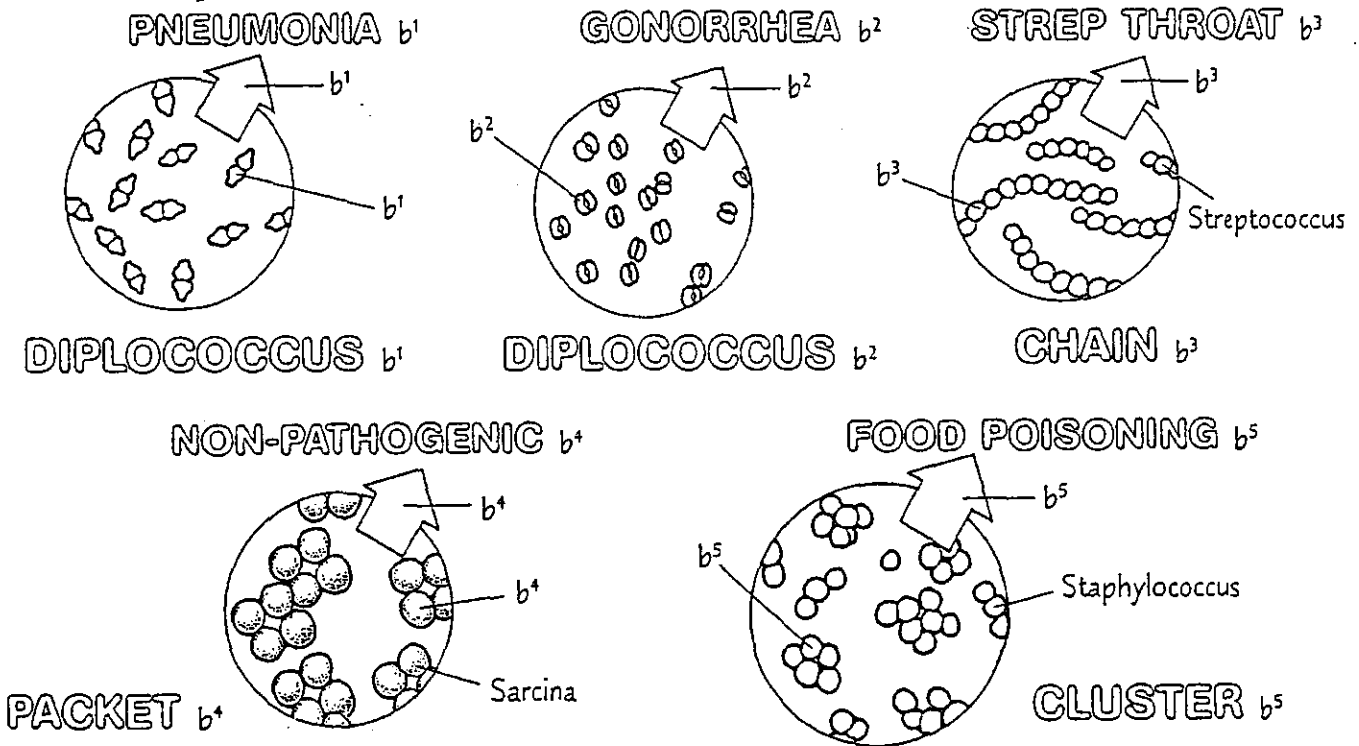
7. What is pus?

FORMS OF BACTERIA

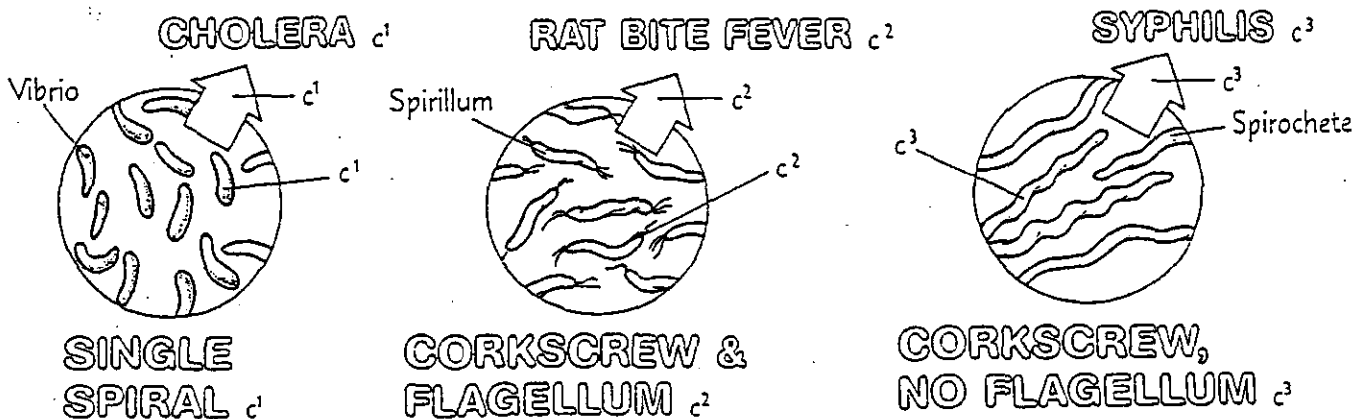
BACILLUS (a)



COCCUS (b)



SPIRAL (c)



Forms of Bacteria

The word "bacterium" may have been used for the first time in the 1850's when the French investigator Casimir Davaine used the term to mean "rod" or "staff". As the years unfolded it became apparent that many bacteria are not rodlike, but the name remained and soon it was applied to all microscopic organisms of that general size and with properties similar to the rods. In the coloring page, three basic forms of bacteria and their arrangements are examined and related to their role as disease agents. Define the following word parts.

1. Bacter-: _____ staph: _____
Cocc: _____ strept: _____

The rod form of a bacterium is called a bacillus. Bacilli vary in size and may be as long as 20 um or as short as 0.5um. Certain bacilli (*Bacillus anthracis*) are rectangular with sharply rounded ends, these bacilli cause anthrax, a disease of such animals as cows, goats, sheep and deer. The disease is communicable (transferable) to humans by air, contaminated meat, and contact with animals. Certain rod-shaped bacilli are wide at one end and tapered at the other end (*Corynebacterium diphtheriae*). They are known to cause diphtheria. In this disease of the respiratory tract, bacterial toxins damage the nerves and the heart. One type of bacillus (*Clostridium tetani*) is rod-like but swollen at one end. These swollen ends contain endospores, a very resistant form of the bacterium. Tetanus, a disease caused by these bacteria, is characterized by muscle spasms, seizures, and paralysis of respiratory muscles. There are several species of bacilli that occur in chains. A streptobacillus is known and refers to bacteria linked end-to-end in chains. Certain streptobacilli cause rat bite fever, a disease characterized by chills, vomiting and fever.

2. Contrast diphtheria and tetanus.

3. Define endospores:

The spherical form of a bacterium is known as a coccus. Some cocci called diplococci are paired (diplo-: double). One species of diplococcus (*Streptococcus pneumoniae*) has tapered sides and causes pneumonia, an inflammation of the air spaces of the lungs accompanied by fluid formation. Another type of diplococcus (*Neisseria gonorrhoeae*) resembles two tiny beans lying flat to face. *N. gonorrhoeae* causes gonorrhea, a disease transmitted by sexual contact. The streptococcus is a well-known group of cocci characterized by individuals in a chain. "Strept throat", a serious infection of the pharynx, is caused by a species of streptococcus. In contrast, a harmless species of streptococcus is one of the "active cultures" in a cup of yogurt. A cube-like packet of four or eight cocci is called a sarcina. One sarcina called *Micrococcus luteus* is a common nonpathogenic inhabitant of the human skin. Another type of coccus, called staphylococcus, occurs in clusters and

produces toxins in food resulting in staphylococcal food poisoning. Other staphylococci enter hair follicles and inflame the skin causing boils or "staph infections".

4. Describe two diseases that bacteria of spherical form cause.
5. List two ways, from the passage above, bacteria are helpful.

A third form of a bacterium is spiral. In the spiral form called vibrio, the bacterium has only a single turn, appearing curved, like a comma. One vibrio causes cholera, a serious disorder characterized by vomiting, diarrhea, and cramps. Severe dehydration caused by *Vibrio cholerae* is induced by toxins that interfere with sodium absorption in the intestines. Another form of spiral bacteria is the spirillum. The spirillum resembles a corkscrew, with the spiral making several turns. The spirillum possesses a rigid cell wall with flagella for movement. This bacterium causes rat bite fever, which is similar in symptoms to the rat bite fever caused by streptobacilli. The spirochete is a spiral bacterium that has the corkscrew form but a flexible cell wall and no flagella. It uses axial filaments to move in a snake-like manner. A spirochete (*Treponema pallidum*) is responsible for syphilis, a disease in which the bacteria enter the tissues through breaks in the skin, such as the skin of the genital organs.

6. Contrast vibrio, spirillum, and spirochete.

7. Briefly explain the disease cholera.

The anatomical pattern of a bacterium can be of great practical value. In the diagnostic laboratory, for example, the technician may note the characteristic diplococci of gonorrhea in a patient's urine sample and report this observation to the physician. The diagnosis of syphilis is aided considerably by locating the characteristic spirochetes in material from a skin lesion. And strep throat may be pinpointed by observing streptococci in bacterial colonies isolated from the throat.

8. List the three shapes of bacteria: _____, _____, & _____
9. Name the two sexually transmitted diseases from the passage.

Name _____

per _____

Body Series "Food Poisoning"

1. What is the effect of *Salmonella* on chickens?

2. After the chicken is cooked, why is the *Salmonella* in the leg still alive?

3. What happens to most of the living *Salmonella* digested by humans?

4. Where does the surviving *Salmonella* find a safe haven?

5. What two things does the *Salmonella* do there?

6. After the infected cell dies what happens?

7. How many bacteria are there after 8 hours? 1 hour later?

8. What are macrophages? What do they do?

9. What is the secret weapon of *Salmonella*? What does this enable them to do?

10. With macrophages out of action what 2 things does the body do to deal with the infection?

11. What happens as the toxin from *Salmonella* invades the bloodstream?

12. As the salmonella spreads it triggers a release of what type of cell?

13. What kind of cells do the helper cells target? What do they do to these?

14. What finally rids the body of the *Salmonella* infection?

Bacteria

National Geographic Society

1. How many species of bacteria have been identified?
2. What are the three basic shape of bacteria?
3. What are the configurations that they are found in?
4. Where have square bacteria been found?
5. Describe the unique structures and their functions found in these prokaryotes

6. What are ways that bacteria help and harm humans?

Good	Bad
	Cause disease

7. What is the role of bacteria in genetic engineering

8. Name three key people and what they did.


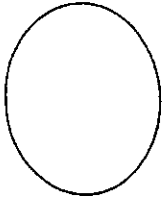
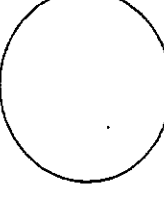
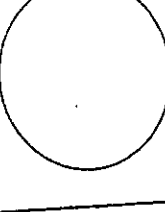

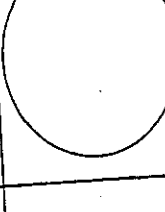
Van Leewenhooke	
Louis Pasteur	
Robert Coch	

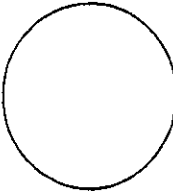
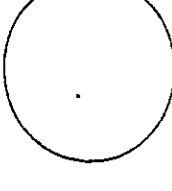
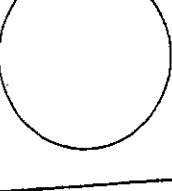
Terms: photoautotrophs

Chemotrophs

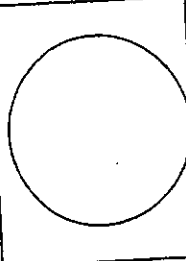
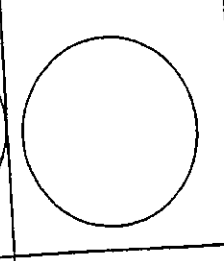
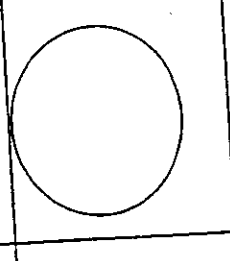
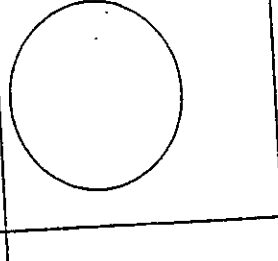
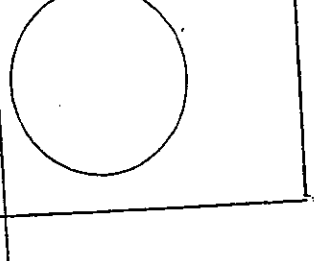
Heterotrophs - use more complex organic molecules

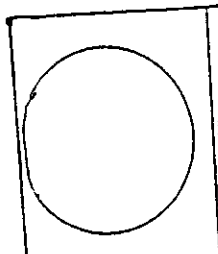
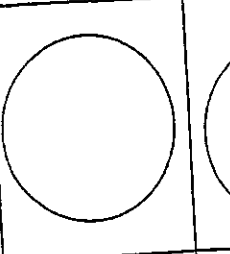
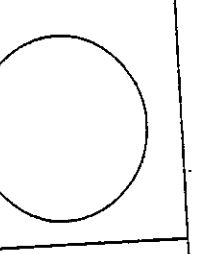
Monera

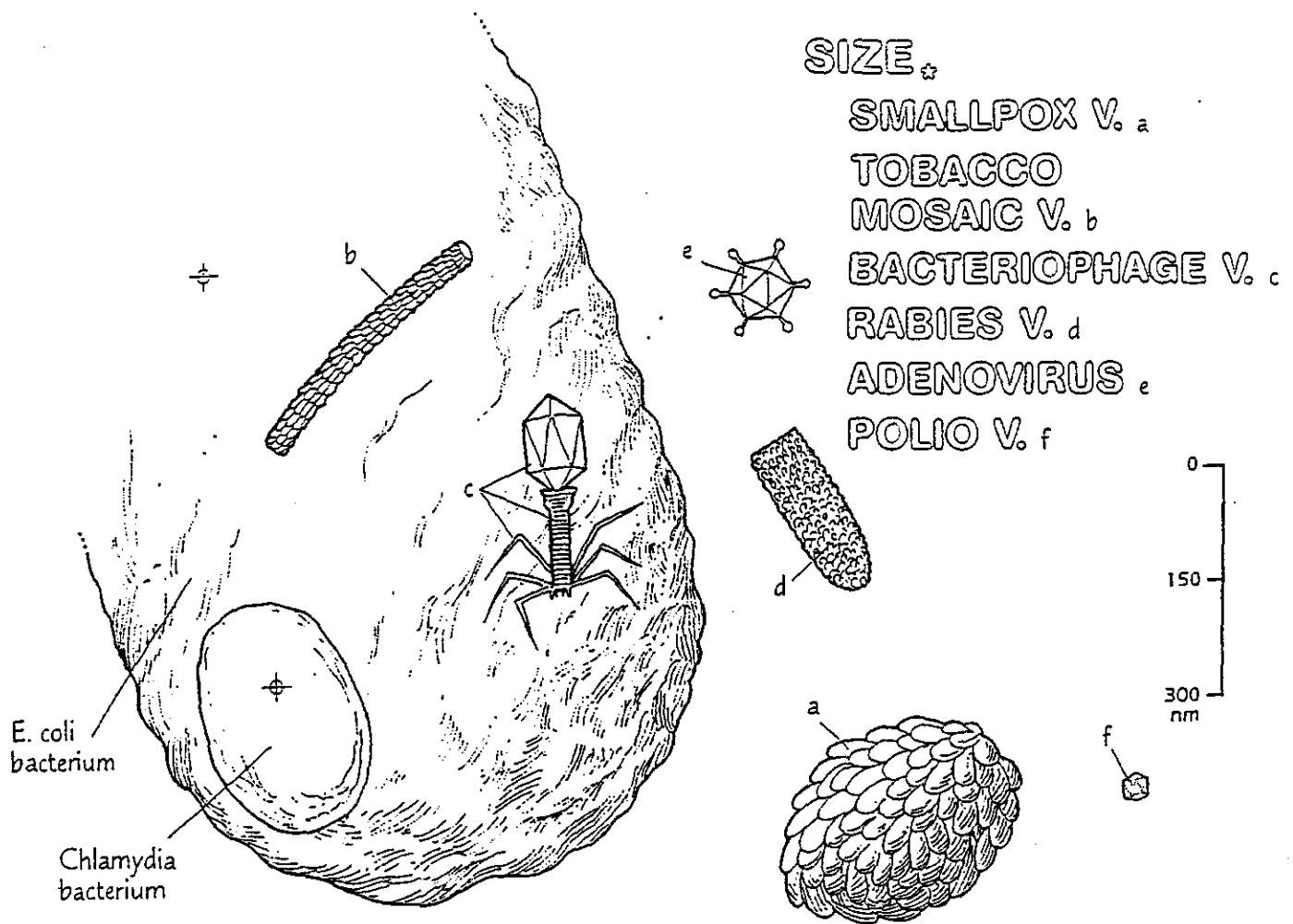
	Drawing
<p>Kingdom Monera</p> <p>What type of organisms are included in this group and how are they different from plants.</p>	
<p>1. What does staph mean and where would you find <i>Staphylococcus aureus</i>? What can they do?</p>	
<p>2. What does bacillus mean? Where is it found and what diseases have been linked to bacillus bacteria</p>	
<p>3. How are spiral bacteria different from the other types. How do they move?</p>	
<p>4. Why are the <i>Mycoplasmas</i> thought to be the link between the viruses and bacteria? <i>Be specific</i></p>	
<p>5. How do <i>Rickettsias</i> reproduce? How do they enter a human body and what do they do?</p>	

<p>6. What type of organism are blue-green algae? How does the species <i>Gleocapsa</i> they keep from drying out?</p>	
<p>7. How does this species of Blue-Green algae, <i>Oscillatoria</i>, differ from <i>Gleocapsa</i>? Where does the name come from?</p>	
<p>8. Where does this type of blue-green algae grow?</p> <p>What does diplo mean?</p>	

Staphlo -
Strepto -

<p>The Virus</p> <p>1. The E.coli bacterium is surrounded by many tiny viruses. Each virus has a</p>	
<p>2. In what way does the head of the virus differ from the rest?</p>	
<p>3. Why don't the antibodies against last year's flu not work on this year's flu?</p>	
<p>4. Why don't you see the virus attacking the human cells?</p>	
<p>5. Viruses cause many animal diseases including cowpox, listerina and rabies. Why were the milkmaids immune to the smallpox virus?</p>	

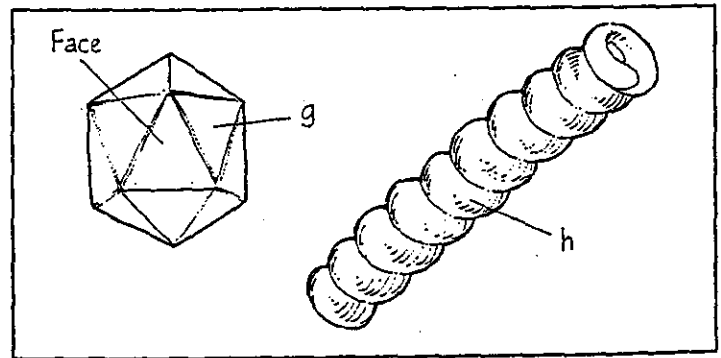
<p>6. Viruses are always produced inside living cells. Before they can reproduce they need to break out of the cell. How can you tell that three viruses are ready to break out of the cell?</p>	
<p>7. Does the fact that viruses can form crystals imply that crystals may be alive?</p>	
<p>8. Who was the first person to identify a cancer virus, when, and what type of virus was first link to cancer? Name and describe two viruses that can cause cancer.</p>	



SHAPE ☆

ICOSAHEDRON g

HELIX h



STRUCTURE ☆

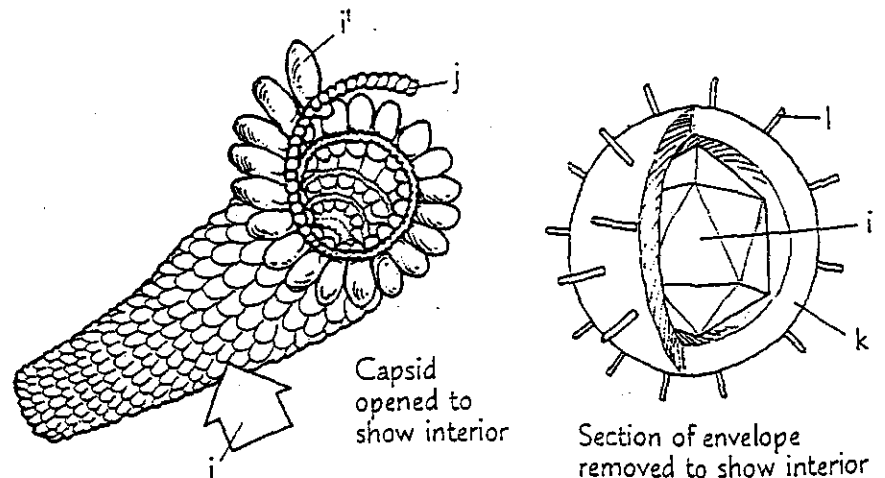
CAPSID i

CAPSOMERE i

GENOME j

ENVELOPE k

SPIKE l



31 INTRODUCTION TO VIRUSES

Coloring Page Summaries

Introduction to Viruses

Paragraph	One sentence Summary
1	
2	
3	
4	
5	
6	
7	
8	
4 Overall Summary Sentences	

is the polio virus (f) with an average diameter of 25 nm. Polio viruses affect the central nervous system of humans, destroying the motor neurons that supply the skeletal muscles of the body.

Color the subheading Shape, titles (g) and (h), and the related shapes in the boxed area. Then color the subheading Structure, and the related titles and structures (i) through (l) at the lower part of the plate.

Electron microscopy has revealed that viruses generally have one of two shapes. One is the icosahedron (g), a geometric figure characterized by 20 triangular "faces." Icosahedral-shaped viruses include bacteriophages, chicken pox, genital herpes, mononucleosis, and polio. The second shape is that of a helix or tightly wound coil (h), somewhat resembling a corkscrew. Helical viruses include those that cause rabies and tobacco mosaic disease.

Viruses consist of two main components: the outer capsid (i) and the inner genome (j). The capsid is the outer coat, and gives shape to the virus, either icosahedral or helical. In most viruses the capsid is composed of multiple protein subunits called capsomeres (k), the number of which varies among viruses. The genome is found in the core of the virus. It consists of a single or double strand of nucleic acid which is either DNA or RNA, but not both. In some viruses the strand is unbroken; in others it is divided into segments. In icosahedral viruses, the genome is commonly a closed loop folded over itself (not shown); in helical viruses, the genome is coiled in the shape of a helix.

The outermost membrane of some viruses is the flexible lipoprotein envelope (l) around the capsid. It is usually derived from the host cell during replication. Many envelopes have an array of spikes (l) that contain enzymes that assist in cell penetration. The influenza and human immunodeficiency virus are notable for the presence of spikes coded for by viral genes.

No cytoplasm or organelle has been identified in viruses. The virus is dependent upon a host for metabolic machinery and for reproduction. An apparent inert particle in isolation, it swiftly replicates in the appropriate host, even to the extent of killing the very living entity upon which it depends.

The virus is among the smallest and simplest agents of disease. Viruses are so tiny that they cannot be seen with a light microscope and researchers must use the electron microscope to view them. Viruses have a unique chemical structure and a parasitic dependence on other organisms associated with an unusual method of reproduction. Viruses cause such well-known diseases as chicken pox, influenza, hepatitis, and infectious mononucleosis.

During the early 1900s, medical scientists observed that carefully filtered fluids of diseased tissues (disrupted, devitalized tissue caused by the growth and toxins of microorganisms) were capable of inducing disease. They reasoned that tiny microorganisms (viruses) in the diseased fluid passed through the smallest filters, and when this filtered fluid was injected into a living, healthy host, the viruses present induced disease processes to occur.

Color the subheading Size and the titles and viruses (a) through (f) in the upper half of the plate. Note the 300 nm ruler at right. Use light colors for the larger structures; beware of colors that obscure the detail of the illustration.

Viral dimensions are measured and viral structural characteristics are observed with the aid of the electron microscope. Most viruses are substantially smaller than bacteria, but some viruses approximate the sizes of very small bacteria. The average *Escherichia coli* bacterium, used here as a reference bacterium, is about 3000 nm (2000 - 6000 nm) in length (Plate 8). The bacterium *Chilamythia* is about 250 nm long and is tiny in comparison with *E. coli*, but it is about the same size as the smallpox virus (a); about 300 nm long.

Most viruses are about the same size or smaller than the smallpox virus. The tobacco mosaic virus (b), a parasite of tobacco plants, is a mid-size virus with a length of about 300 nm. Note the bacteriophage (c) is only about 300 nm in length, considerably smaller than the *E. coli* bacterium. The rabies virus (d), well known for its catastrophic effect in humans after bites from infected animals, is about 200 nm long. The smaller adenovirus, agent of a number of human maladies, including pneumonia and conjunctivitis, measure about 75 nm in length. One of the smallest of this group of microorganisms

Name _____ Per _____

Body Series "The Flu"

- 1) What is the body's first line of defense against air borne pathogens?
- 2) What helps destroy pathogens in the nose?
- 3) Where are the target/host cells that Influenza B is looking for?
- 4) Explain how the virus fools the target cell.
- 5) What does the virus do to the target cell?
- 6) How many virus particles does the target cell release?
- 7) What is the function of macrophages?
- 8) What is the function of interleukins?
- 9) What are the results of a fever on the virus? Your body?
- 10) What are two types of cell that help destroy Influenza B?
- 11) What is the function of T cells?
- 12) What does B cells produce? How do these help combat the virus?
- 13) What is the function of the memory cells produced by T cells?
- 14) How come memory cells don't always recognize Influenza B?

Body Story- "Allergies"

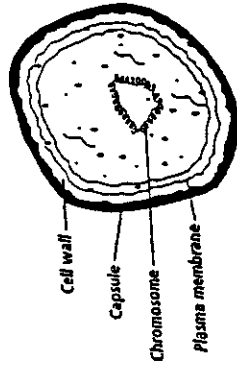
Name _____
per _____

1. What is the effect of the wasp venom injected into Phoebe?
2. What is released by mast cells?
3. What does this substance do?
4. What are the side effects of histamine?
5. What does it mean when we say antibodies are specific? Give an example.
6. Where do antibodies come from?
7. Why is there no antibody for wasp venom?
8. What is the function of the dendritic cells?
9. When Phoebe is exposed to dog hair, why do her blood cells leak mucus?
10. What is the result of Phoebe being overprotected from germs as a child?
11. What does the B cell in Phoebe's swollen gland do in response to the wasp venom?
12. When she is stung the second time, why is Phoebe allergic to wasp venom?
13. Briefly explain the reason for the following signs of anaphylactic shock:
itching-
low blood pressure/high heart rate-
difficulty breathing-
14. What is the antidote to histamine? What does it do?
15. Describe what the doctor does to save Phoebe's life.
16. Using what you learned from the video describe what an allergy is.

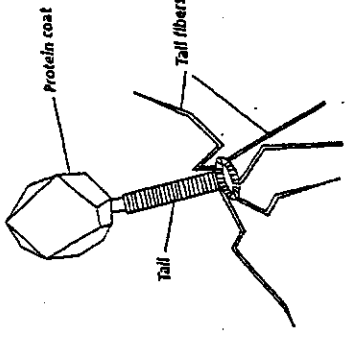
18 Viruses and Bacteria

Get the Big Picture

Study the pictures. Then write **B** after each sentence below that describes bacteria. Write **V** after each sentence that describes viruses.



Bacteria are the oldest form of life on Earth. Bacteria grow, reproduce, and carry out respiration. They are used to make yogurt, cheese, and some other foods. Bacteria can cause diseases, such as tuberculosis and strep throat.



Viruses are much smaller than bacteria. Most biologists agree that viruses are not alive. Viruses do not move, grow, or carry out respiration. Viruses need living host cells to reproduce. Viruses can cause diseases, such as the flu or chicken pox.

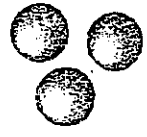
1. They cause chicken pox. _____
2. They can grow, reproduce, and carry out respiration. _____
3. They are the oldest life form on Earth. _____
4. Most biologists agree they are not alive. _____
5. They cause strep throat. _____
6. They do not move, grow, or carry out respiration. _____
7. They need a living host to reproduce. _____
8. They are used to make some foods. _____

18 Viruses and Bacteria, continued

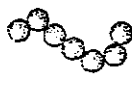
Section 18.2 Archaeobacteria and Eubacteria

Study the Shapes

Bacteria are the smallest and simplest living things. They come in three basic shapes: spheres, rods, and spirals. The figures below show the three shapes. Write the name of the shape below each figure.



Bacteria usually live in groups. The names of bacteria often tell how the bacteria are grouped. If the name starts with *Diplo-*, the bacteria live in pairs. If the name starts with *Staphylo-*, they live in clusters like grapes. If the name starts with *Strepto-*, they live in chains. The figures below show these three groups. Write the prefix of the name of the bacteria below each figure.



Name _____

Class _____

Date _____

Class _____

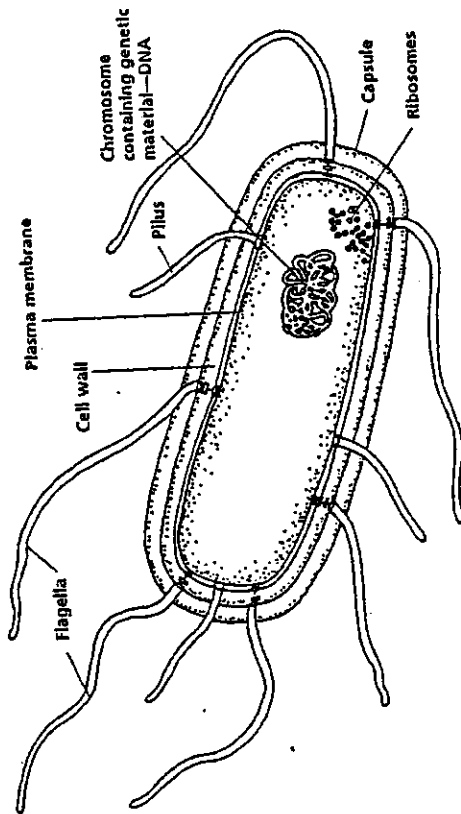
Date _____

28 Viruses and Bacteria

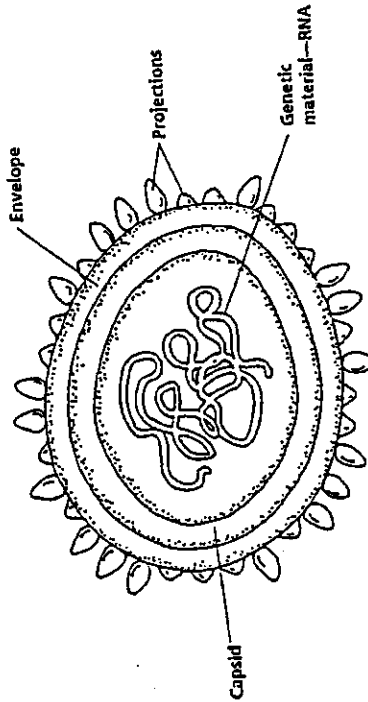
Use with Chapter 18, Section 18.2

28 Viruses and Bacteria

Use with Chapter 18, Section 18.2



Bacterium



Influenza virus

RETEACHING SKILLS

TRANSPARENCY MASTER 28 BIOLOGY: The Dynamics of Life

61

Name _____

Class _____

Date _____

Class _____

Date _____

28 Viruses and Bacteria

Use with Chapter 18, Section 18.2

1. Define these terms:

a. host cell

b. bacteriophage

c. lytic cycle

d. lysogenic cycle

e. provirus

2. Compare the genetic material of a virus and of a bacterium.

3. Compare the structures that enclose a virus and a bacterium.

4. How does penicillin kill bacteria? Why is penicillin ineffective against viruses?

5. Describe the two ways that bacteria reproduce.

6. Describe two of the positive roles bacteria can play.

TRANSPARENCY WORKSHEET 28 BIOLOGY: The Dynamics of Life

RETEACHING SKILLS

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18 Viruses and Bacteria, continued

Section 18.2 Archaeobacteria and Eubacteria

In your textbook, read about the diversity of prokaryotes and about the characteristics of bacteria.

Answer the following questions.

1. What are three types of environments in which archaeobacteria are found? _____
 2. In what three ways do eubacteria obtain nutrients? _____
 3. How does a bacterium's cell wall protect it? _____
 4. Where is the genetic material of a bacterium found? _____
 5. What structure do some bacteria use to move? _____
 6. What is the difference between gram-positive bacteria and gram-negative bacteria? _____
 7. What are three different shapes of bacteria? _____
 8. Describe the three growth patterns of bacteria and state the prefix used to identify each growth pattern. _____
- Identify the type of bacterial reproduction described. Use these choices: binary fission, conjugation.
9. Bacterium with a new genetic makeup is produced. _____
 10. Circular chromosome is copied. _____
 11. Genetic material is transferred through a pilus. _____
 12. Two identical cells are produced. _____
 13. Sexual reproduction occurs. _____

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18 Viruses and Bacteria, continued

Section 18.2 Archaeobacteria and Eubacteria, continued

In your textbook, read about adaptations in bacteria and the importance of bacteria.

Circle the letter of the choice that best completes the statement.

14. Scientists think the first bacteria on Earth were
 - a. aerobic.
 - b. anaerobic.
 - c. fatal.
 - d. oxygen-dependent.
15. Bacteria that are obligate anaerobes release energy from food by
 - a. cellular respiration.
 - b. using oxygen.
 - c. using nitrogen.
 - d. fermentation.
16. As an endospore, a bacterium
 - a. produces toxins.
 - b. dries out.
 - c. causes diseases.
 - d. is protected.
17. Botulism is caused by endospores of *C. botulinum* that have
 - a. been killed.
 - b. produced toxins.
 - c. germinated.
 - d. reproduced.
18. Nitrogen is important because all organisms need it to make
 - a. proteins.
 - b. ATP.
 - c. DNA.
 - d. all of these.
19. The process by which bacteria use enzymes to convert nitrogen gas into ammonia is called
 - a. nitrogenation.
 - b. atmospheric separation.
 - c. nitrogen fixation.
 - d. eutrophication.
20. Bacteria return nutrients to the environment by breaking down
 - a. dead organic matter.
 - b. inorganic materials.
 - c. enzymes and sugar.
 - d. nitrogen in legumes.
21. Bacteria are *not* used to make
 - a. vinegar.
 - b. jams.
 - c. cheese.
 - d. yogurt.
22. Bacteria are responsible for the following diseases:
 - a. strep throat and tetanus.
 - b. gonorrhea and syphilis.
 - c. tuberculosis and diphtheria.
 - d. all of these.
23. Due to reduced death rates from bacterial diseases and improved sanitation and living conditions, the average person born in the United States today will live to be about
 - a. 25 years old.
 - b. 50 years old.
 - c. 75 years old.
 - d. 90 years old.



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76 **Identifying a Pathogen**

Use with Chapter 39, Section 39.1

1. Study the experimental steps shown in the transparency. They summarize one of the main procedures used to establish the cause of a disease. What must take place in the first step of this procedure?

2. Assuming one or more potential pathogens are found in Step 1, what is the purpose of Step 2?

3. What is being done in Step 3 and for what purpose?

4. What is being done in Step 4 and for what purpose?

5. Why would it not be possible to establish the cause of viral disease, using the experimental steps shown in the transparency?

6. Step 1 shows a single diseased organism. Explain why this represents a simplification of the process used in establishing the cause of a disease.

7. Why isn't it possible to use Koch's postulates if a suspected pathogen causes a disease only in humans?

BASIC CONCEPTS

Name _____

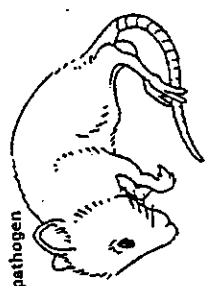
Date _____

Class _____

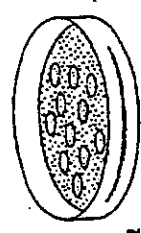
76 **Identifying a Pathogen**

Use with Chapter 39, Section 39.1

Step 1
Infectious pathogen identified



Step 2
Pathogen grown in pure culture



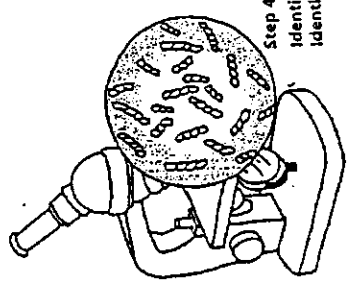
Step 3
Pathogen injected into healthy animal



Healthy animal becomes sick



Step 4
Identical pathogen identified



BASIC CONCEPTS

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18 Viruses and Bacteria, continued

Thinking Critically

Study the table showing the percentages of deaths in developed and developing countries due to various causes. Then answer the questions.

Cause of death	Developed countries			Developing countries		
	Americas	Europe	Americas	Southeast Asia	Africa	Eastern Mediterranean
Infectious diseases	5.8	8.8	31.1	43.0	40.8	44.8
Cancer	21.8	18.1	9.0	4.4	2.0	4.2
Circulatory diseases	84.8	83.8	24.8	19.0	11.7	14.1
Accidents	8.4	8.8	6.3	4.3	3.8	4.1

1. What is the chief cause of death in developing countries? In developed countries? How does the table reflect the fact that the availability of antibiotics affects the number of deaths due to infectious diseases?

2. What conditions in developed countries may check the spread of bacteria that cause disease?

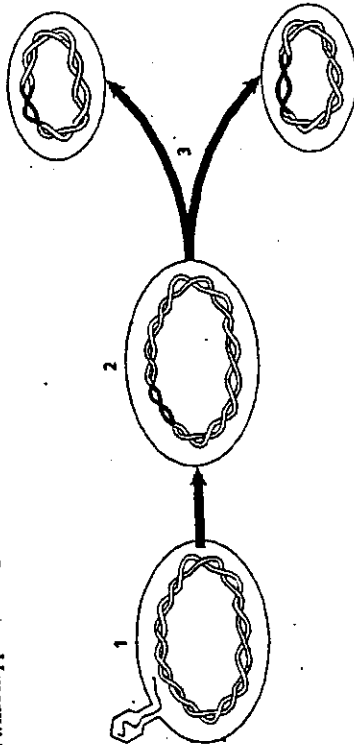
3. Why do doctors sometimes advise patients who are taking antibiotics to eat yogurt?

4. At one time, bacteria were classified as plants. Why do you think bacteria were classified this way? Give at least two reasons why bacteria should not be classified as plants.

18 Viruses and Bacteria, continued

Understanding Main Ideas (Part B)

Explain what happens in stages 1, 2, and 3 of the lysogenic cycle shown in the diagram.



1. _____

2. _____

3. _____

Answer the following questions.

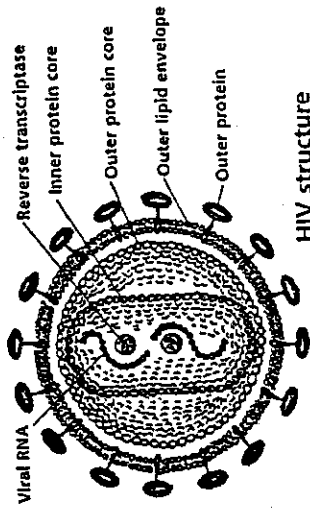
4. Why are viruses not considered to be living things?

5. How does a virus recognize its host?

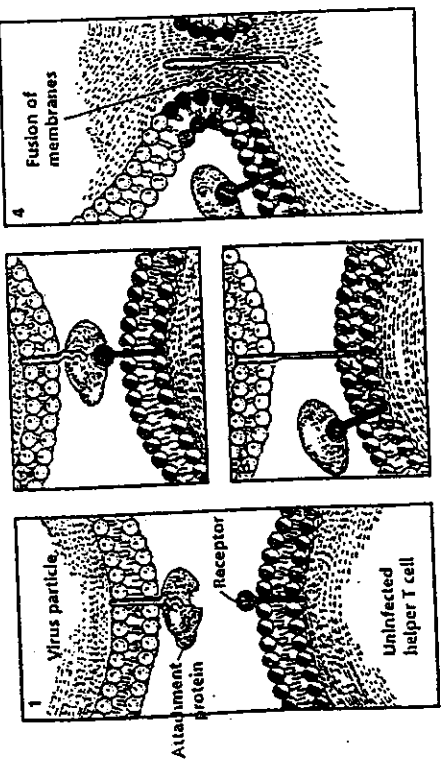
6. Why is penicillin ineffective in destroying viruses or animal cells?

79 The AIDS Epidemic

Use with Chapter 39, Section 39.2



HIV structure



79 The AIDS Epidemic

Use with Chapter 39, Section 39.2

1. What is the full name of the pathogen that causes AIDS?

2. If a person tests positive for the presence of HIV, does that person have AIDS? Can that person transmit the virus to another person?

3. Why might the knoblike proteins on the outer surface of HIV hold a key to the production of a vaccine against AIDS?

4. What type of virus is HIV and what does it consist of?

5. What is happening in frames 2-4 of the transparency?
