

Chapter 40

The Immune System and Disease

Section 40–1 Infectious Disease (pages 1029–1033)

This section describes the causes of disease and explains how infectious diseases are transmitted.

Introduction (page 1029)

1. Any change, other than an injury, that disrupts the normal functions of the body, is a(an) _____.
2. What are three ways diseases can come about? _____

3. Disease-causing organisms are called _____.

The Germ Theory of Disease (pages 1029–1030)

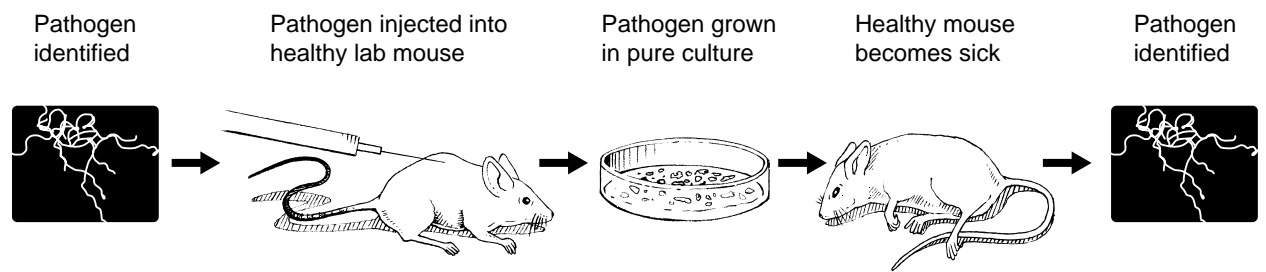
4. State the germ theory of disease. _____

5. Circle the letter of each scientist whose work led to the germ theory of disease.
 a. Koch b. Steere c. Pasteur d. Burgdorfer
6. Is the following sentence true or false? Lyme disease is caused by bacteria. _____
7. Circle the letter of the type of organism that spreads Lyme disease.
 a. mosquito b. deer tick c. deer fly d. horse fly

Koch’s Postulates (page 1030)

8. What are scientists trying to identify when they use Koch’s postulates? _____

9. Number the steps in the flowchart below so they show how to apply Koch’s postulates.



Chapter 40, The Immune System and Disease (continued)

Agents of Disease (page 1031)

10. Is the following sentence true or false? Most of the bacteria and yeast that are found in the body are harmful and cause disease.

11. List two ways that bacteria can produce illness.
a. _____ b. _____
12. Poisons that produce illness by disrupting body functions are called _____.
13. How does a virus reproduce inside a host cell? _____

14. Pathogens that live and feed inside infected organisms are called _____.

Match each type of pathogen with a disease caused by that type.

Type of Pathogen	Disease
_____ 15. Virus	a. Athlete's foot
_____ 16. Bacterium	b. Tetanus
_____ 17. Protist	c. Tapeworm
_____ 18. Worm	d. Influenza
_____ 19. Fungus	e. Malaria

How Diseases Are Spread (page 1032)

20. List three ways that infectious diseases are spread.
a. _____
b. _____
c. _____
21. Animals that carry disease-causing organisms from person to person are called _____.
22. Is the following sentence true or false? Thorough handwashing does not help prevent the spread of many pathogens.

23. Is the following sentence true or false? Some of the most dangerous disease-causing organisms are spread from one person to another by sexual contact. _____
24. Circle the letter of each choice that is a sexually transmitted disease.
a. syphilis b. gonorrhea c. AIDS d. malaria

Fighting Infectious Diseases (page 1033)

25. Compounds that kill bacteria without harming the cells of humans or animals are called _____.
26. Circle the letter of each sentence that is true about antibiotics.
 - a. They work by interfering with the cellular processes of microorganisms.
 - b. Many of them are produced by living organisms.
 - c. They were first discovered in the 1940s.
 - d. They are effective against viruses.
27. How do antiviral drugs fight viral diseases? _____

Section 40–2 The Immune System (pages 1034–1040)

This section describes the body's defenses against disease-causing organisms and explains what immunity is.

Nonspecific Defenses (pages 1034–1035)

1. The body's primary defense against pathogens is the _____.

Match the type of defense with its role in the body.

	Defense	Role
_____	2. Nonspecific	a. Destroying harmful pathogens that enter the body
_____	3. Specific	b. Preventing pathogens from entering the body

4. What is the job of the body's first line of defense? _____

5. List the four components of the body's first line of defense.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
6. Is the following sentence true or false? The body's most important nonspecific defense is the skin. _____
7. How does mucus help protect the body from disease? _____

8. Body secretions contain an enzyme, called _____, that kills bacteria.
9. When does the body's second line of defense come into play? _____

10. Is the following sentence true or false? The inflammatory response is a nonspecific reaction to tissue damage caused by injury or infection. _____

Chapter 40, The Immune System and Disease (continued)

11. White blood cells called _____ engulf and destroy bacteria.
12. Why does an increase in the number of white blood cells indicate that the body is dealing with a serious infection? _____

13. An elevated body temperature is called a(an) _____.
14. Circle the letter of each sentence that is true about elevated body temperature.
 - a. It kills many pathogens.
 - b. It speeds up the action of white blood cells.
 - c. It decreases heart rate.
 - d. It slows down chemical reactions.
15. Is the following sentence true or false? Interferon is a protein that helps fight bacterial infections. _____

Specific Defenses (pages 1036–1039)

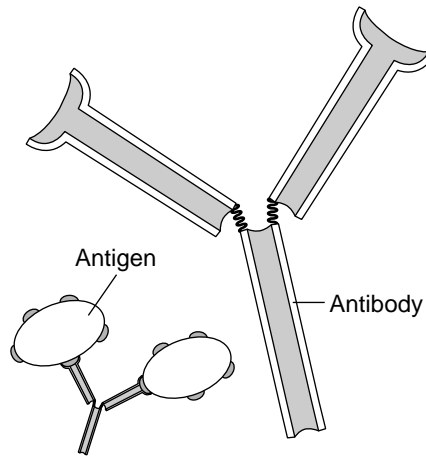
16. What is the immune response? _____

17. A substance that triggers the immune response is known as a(an) _____.
18. What are some examples of antigens? _____

19. List the two different immune responses.
 - a. _____
 - b. _____
20. Circle the letter of each sentence that is true about humoral immunity.
 - a. It is a response to pathogens in body fluids.
 - b. It depends on lymphocytes.
 - c. It involves antibodies.
 - d. It involves plasma cells.
21. A protein that helps destroy pathogens is called a(an) _____.
22. What happens to a clump of viruses and antibodies? _____

23. Is the following sentence true or false? Antibodies can fight viruses but not bacteria. _____

24. Label the antigen-binding sites in the drawing below.



Match the type of cell with its role in humoral immunity.

Type of Cell	Role
_____ 25. B cell	a. Assisting plasma cells
_____ 26. T cell	b. Producing antibodies

27. Is the following sentence true or false? Plasma cells are specialized B cells. _____

28. How does permanent immunity develop? _____

29. Circle the letter of each sentence that is true about cell-mediated immunity.

- | | |
|--------------------------------|-------------------------------------------------|
| a. It relies on lymphocytes. | c. It involves antibodies. |
| b. It involves killer T cells. | d. It causes pathogen cells to rupture and die. |

30. Is the following sentence true or false? Cell-mediated immunity is particularly important for diseases caused by prokaryotic pathogens. _____

Active Immunity (pages 1039–1040)

31. The first smallpox vaccine was produced by _____
 _____.

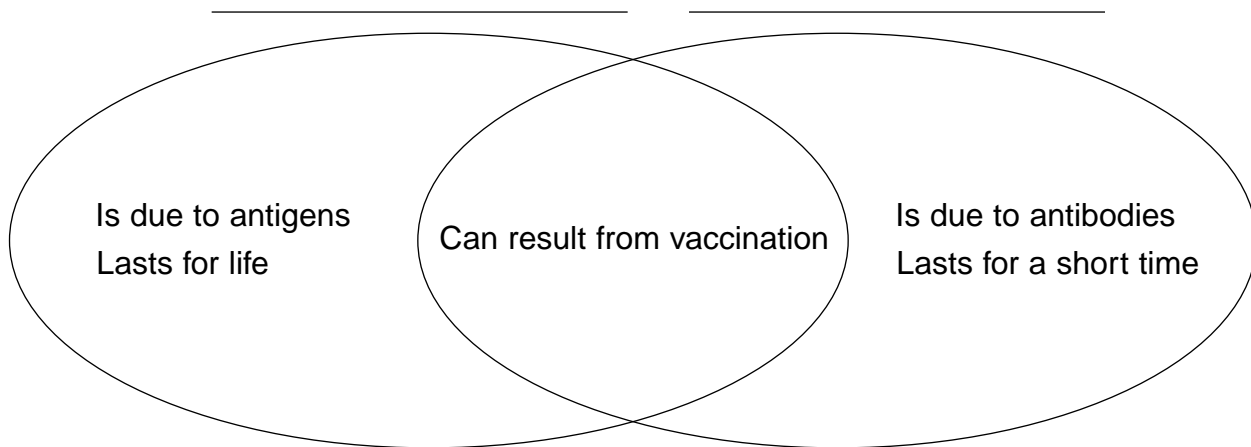
32. What is vaccination? _____

33. How do vaccines work? _____

Chapter 40, The Immune System and Disease (continued)

Passive Immunity (page 1040)

34. Complete the Venn diagram comparing types of immunity.



Section 40–3 Immune System Disorders (pages 1041–1044)

This section describes diseases that affect the immune system.

Allergies (pages 1041–1042)

1. An overreaction of the immune system caused by antigens is called a(an) _____.
2. Circle the letter of each choice that is a result of allergens binding to mast cells.
 - a. The mast cells release chemicals known as histamines.
 - b. There is increased flow of blood and fluids to the surrounding area.
 - c. Sneezing, runny eyes, and other symptoms occur.
 - d. Antihistamines are released by the mast cells.
3. A condition in which smooth muscle contractions reduce the size of air passageways in the lungs and make breathing very difficult is called _____.
4. Circle the letter of the choice that is the usual trigger of an asthma attack.
 - a. A combination of many different antigens
 - b. A particular antigen
 - c. A drug that is inhaled
 - d. Relaxation of the smooth muscles
5. Is the following sentence true or false? The best way to avoid an asthma attack is to avoid the antigen that produces the attack.

Autoimmune Disease (page 1042)

6. What produces an autoimmune disease? _____

7. Complete the compare-and-contrast table.

AUTOIMMUNE DISEASES

Autoimmune Disease	Organ or Tissue That Is Attacked
Rheumatic fever	
Juvenile-onset diabetes	
Myasthenia gravis	
Multiple sclerosis	

AIDS (pages 1042–1044)

8. Is the following sentence true or false? AIDS is a type of disease in which the immune system is weakened by infection.

9. What do the letters *A*, *I*, *D*, and *S* stand for? _____

10. List some of the diseases that may be symptoms of AIDS.

- a. _____
- b. _____
- c. _____

11. What made scientists suspect that AIDS was caused by a virus? _____

12. Circle the letter of the choice that refers to the cells that are attacked by HIV.

- a. Helper T cells
- b. Killer T cells
- c. Red blood cells
- d. Helper B cells

13. Is the following sentence true or false? The body does not produce antibodies against HIV. _____

14. Circle the letter of each choice that is true about the spread of HIV.

- a. It is usually spread by casual contact.
- b. It is spread only by sexual contact.
- c. It can be spread by sharing intravenous drug needles.
- d. It is spread only by contact with infected blood or other body fluids.

Chapter 40, The Immune System and Disease *(continued)*

15. Is the following sentence true or false? Any sexual contact carries some risk of contracting HIV. _____

Reading Skill Practice

When you read about new or difficult concepts, making a concept map can help you better understand and remember the ideas. Make a concept map that shows how immune system disorders are classified, based on the material in Section 40–3. For more information about concept maps, see Appendix A of your text. Do your work on a separate sheet of paper.

Section 40–4 Cancer (pages 1046–1048)

This section explains what cancer is, identifies its causes, and describes how it is treated.

Introduction (page 1046)

1. Circle the letter of each sentence that is true about cancer.
 - a. It is generally a life-threatening disease.
 - b. It is characterized by cells multiplying uncontrollably and destroying healthy tissue.
 - c. It is caused by foreign cells invading the body.
 - d. Its is easy to treat and to understand.

A Cellular Disease (page 1046)

2. When do cancers begin? _____

3. A mass of growing tissue is known as a(an) _____.
4. Is the following sentence true or false? All tumors are cancerous.

Match the type of tumor with its description.

Tumor Type	Description
_____ 5. Benign	a. Does not spread to surrounding healthy tissue or to other parts of the body
_____ 6. Malignant	b. Can invade and destroy surrounding healthy tissue or spread to other parts of the body

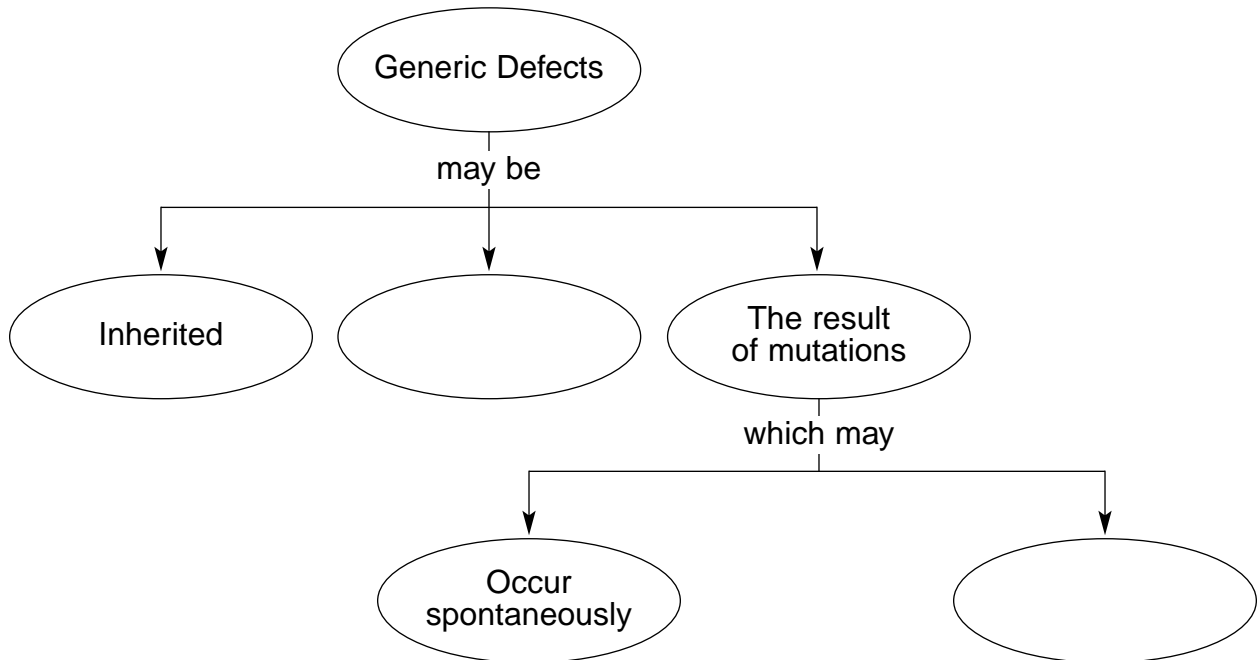
7. The spread of cancerous tumors beyond their original site is called _____.

8. List three ways that cancer cells cause illness as they spread.

- a. _____
- b. _____
- c. _____

Causes of Cancer (pages 1046–1047)

9. Complete the concept map.



10. What is an example of a virus that causes cancer in humans? _____

11. Chemical compounds that are known to cause cancer are called _____.

Fighting Cancer (pages 1047–1048)

12. Why is it important to detect cancer early? _____

13. List the three general categories of treatments for cancer.

- a. _____
- b. _____
- c. _____

14. Which types of tumors are often removed by surgery? _____

15. Another name for drug therapy is _____.

16. Is the following sentence true or false? Radiation destroys fast-growing cancer cells more slowly than normal cells.

Chapter 40, The Immune System and Disease *(continued)*

Progress Against Cancer (page 1048)

17. Circle the letter of each sentence that is true about cancer in the United States since 1990.
- a. There has been little progress in fighting cancer.
 - b. The incidence of cancer has increased.
 - c. The rate of cancer deaths has declined steadily.
 - d. Researchers have developed antibiotics that destroy cancer cells.

WordWise

Answer the questions by writing the correct vocabulary terms from Chapter 40 in the blanks. Use the circled letter from each term to find the hidden word. Then, write a definition for the hidden word.

1. What type of treatment uses a combination of chemicals to destroy cancer cells?
 _____ _____
2. What is a compound that blocks the growth and reproduction of bacteria?

3. What is a mass of rapidly growing cells?

4. What is a chemical that is released by activated mast cells?

5. What is a specialized protein produced by the immune system that helps destroy disease-causing organisms?
 _____ _____
6. What is a tumor called if it can invade and destroy surrounding healthy tissue?
 _____ _____
7. What is the spread of a cancerous tumor beyond its original site?
 _____ _____
8. What is a substance that triggers an immune response?
 _____ _____

Hidden Word: _____

Definition: _____