

Microbiology Basics

chapter

5

Answer Key: Textbook page references are provided as a guide for answering these questions. A complete answer key was provided for your instructor.

OBJECTIVES

1. Define *disease* and *infection*.
2. List the characteristics of the different types of pathogens, including the types of bacteria by shape.
3. Describe the types of bacteria by staining characteristics.
4. Define portals of exit and portals of entry.
5. List common ways by which infections are spread.
6. Identify the microbiological principles described in Five Germ-Laden Stories.

Part I: Mastering the Basics

MATCHING

Germ, Worms, and Terms

Directions: Match the following terms to the most appropriate definition by writing the correct letter in the space provided. See text, pp. 64-70.

- | | |
|-----------------|---------------------|
| A. parasites | G. disease |
| B. vector | H. portals of entry |
| C. normal flora | I. pathogen |
| D. Gram stain | J. infection |
| E. zoonosis | K. portals of exit |
| F. nosocomial | |
1. _____ Failure of the body to function normally
 2. _____ Disease-causing organism
 3. _____ Disease caused by a pathogen or its toxin
 4. _____ An object (living or nonliving) that transfers a pathogen from one organism to another
 5. _____ Organisms that normally and harmoniously live in or on the human body

6. _____ Organisms that require a living host in which to survive
7. _____ Routes whereby pathogens enter the body
8. _____ Hospital-acquired infection
9. _____ Dye used to identify different types of bacteria
10. _____ An animal disease transmissible to humans
11. _____ Routes whereby pathogens leave the body

MATCHING

Pathogens

Directions: Match the following terms to the most appropriate definition by writing the correct letter in the space provided. Some terms may be used more than once. See text, pp. 64-70.

- | | |
|-------------|---------------|
| A. bacteria | D. protozoa |
| B. virus | E. worms |
| C. fungi | F. arthropods |
1. _____ Coccus, bacillus, curved rod
 2. _____ Acts as a parasite to the infected cell
 3. _____ Mycotic infections
 4. _____ Plantlike organisms such as mushrooms
 5. _____ Single-cell, animal-like microbes
 6. _____ *Chlamydia* and *Rickettsia*
 7. _____ From the Latin meaning *poison*
 8. _____ Amebas, ciliates, flagellates, sporozoa
 9. _____ *Diplococcus*, *Streptococcus*, *Staphylococcus*
 10. _____ Consists of RNA or DNA surrounded by a protein shell

11. _____ Yeasts and molds
12. _____ Arrangement: pairs, chains, bunches of grapes
13. _____ *Vibrio*, *Spirillum*, spirochete
14. _____ Helminths
15. _____ Ectoparasites
16. _____ *Ascaris*, *Trichina*, flukes
17. _____ Animals with jointed legs, including insects and ticks
18. _____ Gram-positive (+) and gram-negative (-)
9. _____ Describes an insect as a "reservoir of infection"
10. _____ Describes the overgrowth of *Candida albicans* (yeast), causing itching and discharge
11. _____ Vesicular skin lesions
12. _____ Describes the alteration of the normal flora by antibiotics
13. _____ This streptococcal infection began in the uterus and progressed to peritonitis, generalized septicemia, and death.
14. _____ Illustrates disease transmission by an arthropod vector

MATCHING**Five Germ-Laden Stories**

Directions: Match the following stories to the most appropriate description by writing the correct letter in the space provided. The stories may be used more than once. See text, pp. 70-73.

- A. Dr. Semmelweis Screams "Wash Those Mitts"
 - B. Flora and Her Vaginal Itch
 - C. Rick, Nick, and the Sick Tick
 - D. Why Typhoid Mary Needed to Lose Her Gallbladder
 - E. Pox News Alert
1. _____ Focuses on handwashing, dirty hands, and nosocomial infection
 2. _____ Great example of the carrier state and disease transmission by the fecal-oral route
 3. _____ Focuses on microorganisms and superinfection
 4. _____ Varicella-zoster
 5. _____ *Salmonella* hides in bile.
 6. _____ The injected saliva was teeming with rickettsiae.
 7. _____ The conclusion of this tormented scientist: "Puerperal fever is caused by conveyance to the pregnant woman of 'putrid particles' derived from living organisms, through the agency of the examining finger."
 8. _____ Great example of zoonosis

15. _____ Childhood illness and shingles
16. _____ Differentiates between a communicable and contagious disease
17. _____ *Salmonella*-laced dinner

SIMILARS AND DISSIMILARS

Directions: Circle the word in each group that is least similar to the others. Indicate the similarity of the three words on the line below each question.

1. curved rods viruses cocci bacilli

2. fungus coccus athlete's foot mycotic infection

3. *Vibrio* *Spirillum* fungi spirochetes

4. amebas ciliates spirochetes flagellates

5. ticks fleas mosquitoes bacilli

6. gram-positive (+) culture gram-negative (-) acid-fast

7. myco-	diplo-	staphylo-	strepto-
8. yeast	virus	mold	fungus
9. <i>Clostridium</i>	anaerobic	typhoid fever	tetanus
10. nosocomial	hospital-acquired	infection	vaccine
11. animal vector	mosquito	arthropod vector	streptococcus
12. luetic	syphilitic	malaria	spirochete
13. fomite	nonliving vector	contaminated syringe	mosquito
14. herpes zoster	food poisoning	shingles	varicella-zoster
15. tetanus	Typhoid Mary	fecal-oral route	carrier
16. <i>Salmonella</i>	anaerobic	fecal-oral route	typhoid fever

Part II: Putting It All Together

MULTIPLE CHOICE

Directions: Choose the correct answer.

- Ringworm
 - refers to a helminthic infection.
 - is a mycotic infection.
 - is also called impetigo.
 - is caused by a strain of staphylococcus.
- Person-to-person, environment-to-person, and tiny animal-to-person refer to the
 - staining characteristics of pathogens.
 - size of the pathogens.
 - spread or transmission of the pathogens.
 - sensitivity to chemotherapy.
- Which of the following is a true statement about bacteria?
 - All bacteria are pathogenic.
 - The spread of bacterial infections requires arthropod vectors.
 - Pathogenic bacteria cause mycotic infections.
 - Most bacteria perform useful functions; fewer are pathogenic.
- Mycotic infections are
 - caused by gram-negative (-) bacilli.
 - viral infections.
 - fungal infections.
 - always zoonotic.
- Infection by *Candida albicans*
 - is viral and therefore unresponsive to antibiotics.
 - only occurs in the vagina.
 - often appears as a superinfection after antibiotic therapy.
 - requires a biological vector such as a tick.
- Viruses
 - are surrounded by a rigid cell wall.
 - are sensitive to penicillin.
 - are the smallest of the infectious agents and are fragments of either RNA or DNA surrounded by a protein shell.
 - are classified as gram-positive (+) and gram-negative (-).
- Amebas, flagellates, ciliates, and sporozoa are
 - anaerobic, spore-forming bacteria.
 - protozoa.
 - fungi.
 - rickettsiae.
- An anthelmintic exerts its therapeutic effects against
 - gram-negative (-) bacteria.
 - all spore-forming microorganisms.
 - viruses.
 - worms.
- A young child has pinworms. Which observation will usually be made by the parent?
 - malaise, fever, and generalized wasting
 - abdominal swelling and severe diarrhea
 - nausea, vomiting, and weight loss
 - perianal pruritus (itching)

10. These arthropods live on the surface of the body and cause itching and discomfort but are not life-threatening.
 - a. ectoparasites
 - b. normal flora
 - c. viruses
 - d. protozoa
11. With regard to the spread of malaria, the mosquito is the
 - a. causative organism of malaria.
 - b. arthropod vector.
 - c. fomite.
 - d. pathogen.
12. Which of the following is least related to staphylococcus?
 - a. gram-positive (+) bacterium
 - b. impetigo, food poisoning, and scalded skin syndrome
 - c. chickenpox and shingles
 - d. usual cause of most skin infections
13. *Clostridium tetani*
 - a. is an ectoparasite.
 - b. grows best in a puncture wound under anaerobic conditions.
 - c. is gram-positive (+) and aerobic.
 - d. grows best on the skin surface.
14. Which of the following is not characteristic of *Candida albicans*?
 - a. mycotic infection
 - b. member of the normal flora of the mouth, digestive tract, and vagina
 - c. spore-forming anaerobe like the *Clostridium* microbes
 - d. can cause a superinfection
15. A pox is
 - a. usually responsive to an antibiotic cream.
 - b. a mycotic infection.
 - c. a vesicular skin lesion.
 - d. a luetic lesion.

16. The Great Pox, chancre, and luetic lesions are associated with
 - a. gonorrhea.
 - b. giardiasis.
 - c. impetigo.
 - d. syphilis.

Part III: Challenge Yourself!

GROUPS AND PUZZLE

1. Which group is incorrect?
 - a. arrangement of cocci: diplococcus, streptococcus, staphylococcus
 - b. bacteria: coccus, bacillus, curved rod
 - c. curved rods: *Vibrio*, *Spirillum*, fungus
 - d. arthropod vectors: fleas, ticks, lice, mosquitoes
2. Which group is incorrect?
 - a. bacteria: coccus, bacillus, curved rod
 - b. arthropod vectors: fleas, ticks, lice, mosquitoes
 - c. protozoa: amebas, ciliates, flagellates, sporozoa
 - d. contagious diseases: measles, chickenpox, urinary bladder infection
3. Which group is incorrect?
 - a. arrangement of cocci: diplococcus, streptococcus, bacillus
 - b. arthropod vectors: fleas, ticks, lice, mosquitoes
 - c. protozoa: amebas, ciliates, flagellates, sporozoa
 - d. contagious diseases: measles, chickenpox, mumps

Student Name _____

PUZZLE

Hint: Fun Guy or Fungi

Directions: Perform the following functions on the Sequence of Words that follows. When all the functions have been performed, you are left with a word or words related to the hint. Record your answer in the space provided.

Functions: Remove the following:

1. Types of bacteria
2. Hospital-acquired infection
3. Disease-causing microorganism
4. Organisms that normally and harmoniously live in or on the human body without causing disease
5. Two types of cocci
6. Organism that requires a living host

7. A parasitic worm
8. A tiny parasite that is composed primarily of strands of DNA or RNA
9. Refers to mites, lice, and ticks
10. An animal disease that is transmissible to humans
11. Main types (four) of protozoa

Sequence of Words

AMEBASCOCCLUSPARASITENOSOC
OMIALCILIASTAPHECTOPARAS
ITESFLAGELLATESZOONOSISNOR
MALFLORAVIRUSSPOROZOABACIL
LUSHELMINTHMOLDCURVEDROD
SSTREPPATHOGEN

Answer: _____