

Ch 19

# CHAPTER REVIEW

## CONTENT REVIEW

### Multiple Choice

Choose the letter of the answer that best completes each statement.

1. Viruses contain
  - a. cell walls.
  - b. cell membranes.
  - c. nuclei.
  - d. protein coats.
2. Viruses that invade cells and cause them to burst are said to be
  - a. parasitic.
  - b. lysogenic.
  - c. saprophytic.
  - d. lytic.
3. Methanogens are members of the phylum
  - a. Cyanobacteria.
  - b. Archaeobacteria.
  - c. Prochlorobacteria.
  - d. Eubacteria.
4. A rod-shaped bacterium is known as a
  - a. spirillum.
  - b. bacillus.
  - c. coccus.
  - d. virus.
5. Organisms that need a constant supply of oxygen in order to live are called
  - a. obligate anaerobes.
  - b. facultative anaerobes.
  - c. chemotrophic autotrophs.
  - d. obligate aerobes.
6. A structure that forms when a bacterium produces a thick internal wall that encloses its DNA and part of its cytoplasm is called a (an)
  - a. endospore.
  - b. capsid.
  - c. prophage.
  - d. spirillum.
7. Organisms that use the complex molecules of once-living organisms for energy and nutrition are called
  - a. parasites.
  - b. viruses.
  - c. saprophytes.
  - d. eukaryotes.
8. An example of a disease caused by a bacterium is
  - a. influenza.
  - b. measles.
  - c. AIDS.
  - d. syphilis.

### True or False

Determine whether each statement is true or false. If it is true, write "true." If it is false, change the underlined word or words to make the statement true.

1. In a lysogenic infection, the virus does not reproduce and lyse its host cell immediately.
2. A virus is composed of a nucleus surrounded by a protein coat.
3. Bacteria are eukaryotes.
4. Spirilla are spherical bacteria.
5. Bacteria that can live with or without oxygen are known as obligate anaerobes.
6. Monerans that trap the energy of sunlight in a manner similar to green plants are called chemotrophic autotrophs.
7. In bacteria, spore formation involves the transferring of genetic material from one cell to another cell.
8. Methanogens are disease-causing agents.

### Word Relationships

A. In each of the following sets of terms, three of the terms are related. One term does not belong. Determine the characteristic common to three of the terms and then identify the term that does not belong.

1. obligate anaerobe, facultative anaerobe, phototrophic autotroph, obligate aerobe
2. *E. coli*, T4, *Rhizobium*, *Salmonella*
3. prophage, bacillus, spirillum, coccus
4. measles, polio, rabies, tetanus

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**B.** An analogy is a relationship between two pairs of words or phrases generally written in the following manner:  $a:b::c:d$ . The symbol  $:$  is read "is to," and the symbol  $::$  is read "as." For example,  $cat:animal::rose:plant$  is read "cat is to animal as rose is to plant."

In the analogies that follow, a word or phrase is missing. Complete each analogy by providing the missing word or phrase.

5. eukaryote:human::prokaryote:\_\_\_\_\_
6. rod-shaped:bacillus::spherical:\_\_\_\_\_
7. oxygen:obligate aerobe::no oxygen:\_\_\_\_\_
8. eubacteria:true bacteria::cyanobacteria:\_\_\_\_\_

## CONCEPT MASTERY

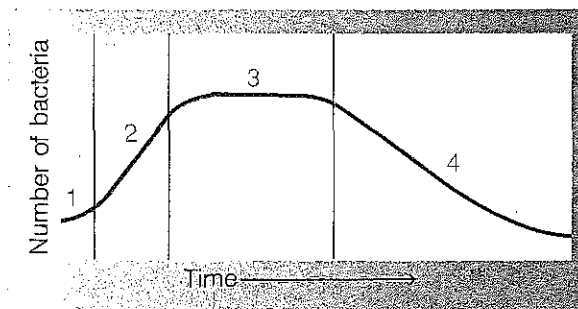
Use your understanding of the concepts developed in the chapter to answer each of the following in a brief paragraph.

1. Why are viruses considered parasites?
2. What is the relationship between cell wall structure and whether a bacterium is Gram positive or Gram negative?
3. What is the difference between bacterial autotrophs and heterotrophs?
4. Describe a symbiotic relationship between bacteria and another organism.
5. What are some ways in which bacteria are important to the environment?
6. Compare the different methods of bacterial reproduction.

## CRITICAL AND CREATIVE THINKING

Discuss each of the following in a brief paragraph.

1. **Interpreting graphs** Describe the growth of the bacteria shown in the graph. Explain why growth levels off in stage 3.



2. **Relating concepts** Bacteria can be grown in the laboratory on synthetic media. Can viruses be grown in this way? Can viruses be grown on cultures of bacteria?

3. **Using the writing process** As you know, many diseases are caused by microorganisms. Imagine that you have the ability to develop a chemical capable of wiping out all viruses and monerans on Earth. Write an advertising campaign for your new chemical in which you describe its benefits and dangers.
4. **Using the writing process** In *The War of the Worlds*, a wonderful book written by H. G. Wells, Earth is invaded by aliens. No weapons can kill the invaders, and the Earth seems doomed. The Earth is saved, however, when the invaders die from diseases they contract here. Using a similar premise, write a story about people from Earth voyaging to another planet some time in the future.