

## Chapter 19 Bacteria and Viruses

### Section 19–1 Bacteria (pages 471–477)

*This section describes two groups of prokaryotes and explains how they differ. It also explains what factors are used to identify prokaryotes.*

#### Introduction (page 471)

1. What are prokaryotes? \_\_\_\_\_  
\_\_\_\_\_
2. Is the following sentence true or false? Prokaryotes are much smaller than most eukaryotic cells. \_\_\_\_\_

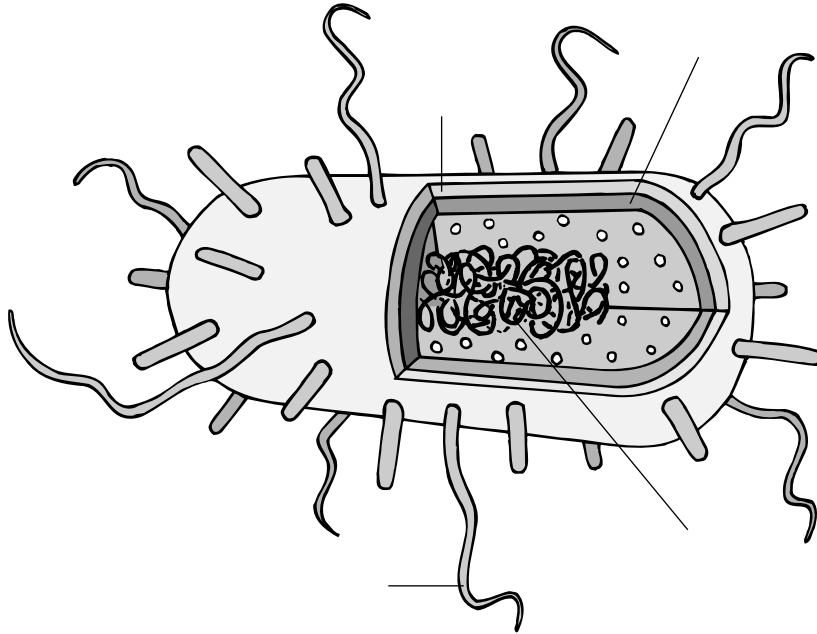
#### Classifying Prokaryotes (pages 471–472)

3. What are the two different groups of prokaryotes?  
a. \_\_\_\_\_ b. \_\_\_\_\_
4. Which is the larger of the two kingdoms of prokaryotes? \_\_\_\_\_
5. Where do eubacteria live? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
6. What protects a prokaryotic cell from injury? \_\_\_\_\_  
\_\_\_\_\_
7. Circle the letter of what is within the cell wall of a prokaryote.  
a. another cell wall                      c. archaeobacteria  
b. cell membrane                         d. pili
8. What is peptidoglycan? \_\_\_\_\_  
\_\_\_\_\_
9. Some eubacteria have a second \_\_\_\_\_ outside the cell membrane.
10. Circle the letter of each sentence that is true about archaeobacteria.  
a. Their membrane lipids are different from those of eubacteria.  
b. They lack a cell wall.  
c. They lack peptidoglycan.  
d. They look very similar to eubacteria.
11. What is significant about the DNA sequences of key archaeobacterial genes?  
\_\_\_\_\_  
\_\_\_\_\_
12. How are archaeobacteria related to eukaryotes? \_\_\_\_\_  
\_\_\_\_\_

13. What are methanogens, and where do they live? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Identifying Prokaryotes (page 473)

14. Complete the illustration of a typical prokaryote by labeling the parts.



15. What are four characteristics used to identify prokaryotes?  
a. \_\_\_\_\_  
b. \_\_\_\_\_  
c. \_\_\_\_\_  
d. \_\_\_\_\_
16. What are each of the differently shaped prokaryotes called?  
a. The rod-shaped are called \_\_\_\_\_.  
b. The spherical-shaped are called \_\_\_\_\_.  
c. The corkscrew shaped are called \_\_\_\_\_.
17. A method of telling two different types of eubacteria apart by using dyes is called \_\_\_\_\_.
18. What colors are Gram-positive and Gram-negative bacteria under the microscope when treated with Gram stain? \_\_\_\_\_  
\_\_\_\_\_
19. What are flagella? \_\_\_\_\_
20. Is the following sentence true or false? Some prokaryotes do not move at all.  
\_\_\_\_\_

**Metabolic Diversity** (pages 473–474)

21. Complete the table about prokaryotes classified by the way they obtain energy.

**GROUPS OF PROKARYOTES**

Group	Description
	Organism that carries out photosynthesis in a manner similar to plants
Chemoautotroph	
	Organism that takes in organic molecules and then breaks them down
Photoheterotroph	

22. Members of which group of photoautotrophs contain a bluish pigment and chlorophyll *a*? \_\_\_\_\_

23. How do the chemoautotrophs that live near hydrothermal vents on the ocean floor obtain energy? \_\_\_\_\_  
\_\_\_\_\_

24. Complete the table about prokaryotes classified by the way they release energy.

**GROUPS OF PROKARYOTES**

Group	Description
	Organisms that require a constant supply of oxygen
Obligate anaerobes	
Facultative anaerobes	

25. Facultative anaerobes can switch between cellular respiration and \_\_\_\_\_.

**Growth and Reproduction** (page 475)

26. What occurs in the process of binary fission? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

27. What occurs during conjugation? \_\_\_\_\_  
\_\_\_\_\_

28. Is the following sentence true or false? Most prokaryotes reproduce by conjugation.  
\_\_\_\_\_

29. What is an endospore? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Importance of Bacteria** (pages 476–477)

30. How do decomposers help the ecosystem recycle nutrients when a tree dies?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

31. What would happen to plants and animals if decomposers did not recycle nutrients?  
\_\_\_\_\_  
\_\_\_\_\_

32. Why do plants and animals need nitrogen? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

33. How does nitrogen fixation help plants? \_\_\_\_\_

34. What kind of relationship do many plants have with nitrogen-fixing bacteria?  
\_\_\_\_\_

35. How can bacteria be used to clean up an oil spill? \_\_\_\_\_  
\_\_\_\_\_

36. What have biotechnology companies begun to realize about bacteria adapted to extreme environments? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Reading Skill Practice**

Writing a summary can help you remember the information you have read. When you write a summary, write only the most important points. Write a summary of the information under the green heading *Decomposers*. Your summary should be shorter than the text on which it is based. Do your work on a separate sheet of paper.