

# Bacteria and Viruses

## Section 19-1 Prokaryotes (pages 471-476)

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? They are single-celled organisms that lack a nucleus.
2. Is the following sentence true or false? Prokaryotes are much smaller than most eukaryotic cells. true

### Classifying Prokaryotes (pages 471-472)

3. What are the two different groups of prokaryotes?
  - a. Eubacteria
  - b. Archaeobacteria
4. Which is the larger of the two kingdoms of prokaryotes? Eubacteria
5. Where do eubacteria live? They live almost everywhere. Some live in the soil, whereas others infect large organisms.
6. What protects a prokaryotic cell from injury? The cell wall protects it.

7. Circle the letter of what is within the cell wall of a prokaryote.

- |                           |                    |
|---------------------------|--------------------|
| a. another cell wall      | c. archaeobacteria |
| <b>(b.) cell membrane</b> | d. pili            |

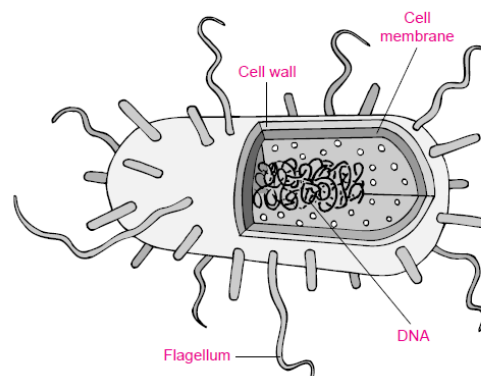
8. What is peptidoglycan? It is a carbohydrate in the cell walls of eubacteria.

9. Some eubacteria have a second, outer membrane.

10. Circle the letter of each sentence that is true about archaeobacteria.

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|---|
| <b>(a.)</b> Their membrane lipids are different from those of eubacteria. |
| b. They lack a cell wall.   |
| <b>(c.)</b> They lack peptidoglycan.                                      |
| <b>(d.)</b> They look very similar to eubacteria.                         |

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



### Identifying Prokaryotes (page 473)

15. What are four characteristics used to identify prokaryotes?
  - a. Their shapes
  - b. The chemical natures of their cell walls
  - c. The ways they move
  - d. The ways they obtain energy
16. What are each of the differently shaped prokaryotes called?
  - a. The rod-shaped are called bacilli.
  - b. The spherical-shaped are called cocci.
  - c. The corkscrew-shaped are called spirilla.
17. A method of telling two different types of eubacteria apart by using dyes is called Gram staining.
18. What colors are Gram-positive and Gram-negative bacteria under the microscope when treated with Gram stain? Gram-positive bacteria appear purple, and Gram-negative bacteria appear pink.
19. What are flagella? They are whiplike structures used for movement.

## Answers pg 477 #1,2,4,5,6

1. Archaeobacteria lack peptidoglycan, and their membrane lipids are quite different.

2. They are identified by their shapes(cocci, baccilli, spirilla etc), the chemical natures of their cells walls (gram positive or gram negative), the ways they move (flagella vs cilia), respire (obligate aerobes, obligate anaerobes, facultative aerobes), and obtain energy (heterotroph vs autotroph).

4. Cell wall, cell membrane, cytoplasm, DNA, ribosomes, pili, flagella.

5. Some consume organic molecules made by other organisms,, whereas others make their own food from inorganic molecules.

6. Gram-positive bacteria have only one cell membrane, whereas gram-negative bacteria have a second, outer layer of lipid and carbohydrates. Therefore, gram negative bacteria might be more difficult to kill.