Name KEY Class _____ Date _____

Section 19–1 Bacteria

Introduction (page 471)

1. What are prokaryotes? unicellular organisms that lack a nucleus

2. Is the following sentence true or false? Prokaryotes are much smaller than most eukaryotic cells. true

Classifying Prokaryotes

3. What are the two different groups of prokaryotes?
   a. Archaebacteria b. Eubacteria

4. Which is the larger of the two kingdoms of prokaryotes? Eubacteria

5. Where do eubacteria live? almost any & everywhere- water, land, on & within living organisms

7. Circle the letter of what is within the cell wall of a prokaryote.
   a. another cell wall c. archaebacteria
   (b.) cell membrane d. pili

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

9. Some eubacteria have a second membrane outside the cell membrane.

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

13. What are methanogens, and where do they live? they produce methane gas. They live in oxygen-free environments, such as thick mud

Identifying Prokaryotes

15. What are four characteristics used to identify prokaryotes?
    a. shape
    b. chemical nature of their cell walls
    c. & how they move
    d. how 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 + are violet, gram - are red/pink

Match the term with the correct definition.

d	21. heterotroph		a. Performs photosynthesis but also needs to take in carbon compounds
a	22. photoheterotroph		b. Performs chemosynthesis (makes organic compounds from inorganic chemical sources); does not require light
c	23. photoautotroph		c. Uses light energy to convert CO_2 and H_2O to carbon compounds
b	24. chemoautotroph		d. Obtains energy by taking in organic molecules then breaking them down

Growth and Reproduction

26. What occurs in the process of binary fission? It is a type of asexual reproduction in which a prokaryote grows to double its size, replicates DNA, & divides in half
27. What occurs during conjugation? A hollow sex pilus forms between two cells, and genes move from one cell to another
28. Is the following sentence true or false? Most prokaryotes reproduce by conjugation. false
29. What is an endospore? a spore formed when a bacterium produces a thick, internal wall that encloses its DNA and some of its cytoplasm

Importance of Bacteria*

30. How do decomposers help the ecosystem recycle nutrients when a tree dies? They digest the dead tree tissue, break the tissue down into simpler molecules. These are released into the soil.
31. What would happen to plants and animals if decomposers did not recycle nutrients? Plants would run out of minerals in the soil and die. Animals would then die too!

32. Why do plants and animals need nitrogen? To make amino acids to grow

33. How does nitrogen fixation help plants? It converts N_2 gas into a form they can use.

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

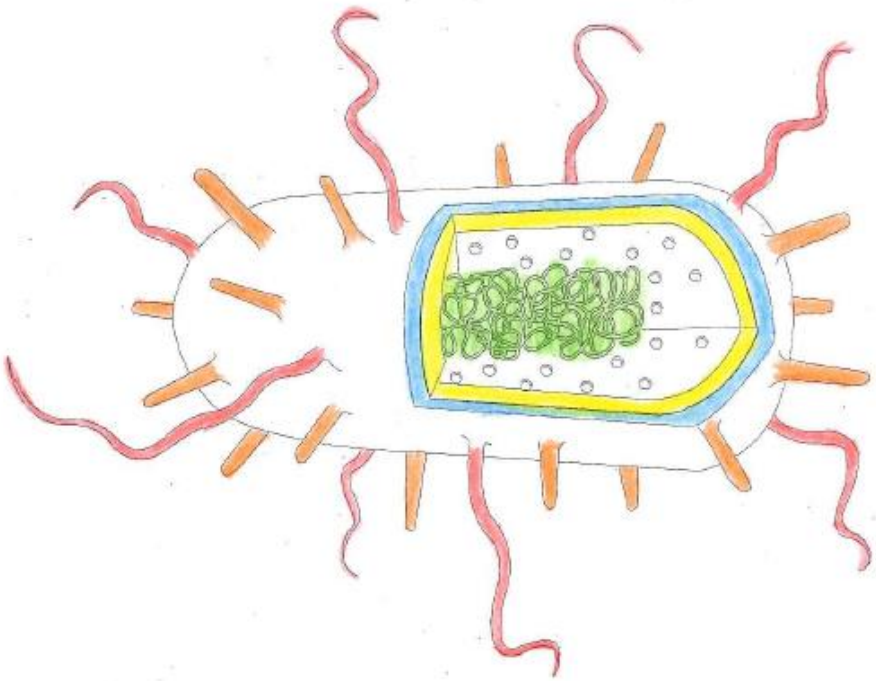
35. How can bacteria be used to clean up an oil spill? One type can digest petroleum!

Prokaryote Structure

A prokaryote is a unicellular organism that lacks a nucleus. Most prokaryotes have a cell wall, a cell membrane, and cytoplasm. The bacterium below is one example of a prokaryote.

Follow the prompts to locate structures in a typical bacterium.

- Color the cell membrane yellow.
- Color the cell wall blue.
- Color the flagella red.
- Color the pili orange.
- Color the DNA green.



Use the diagram to answer the questions. Circle the correct answer.

1. What does the bacterium use to move?

   pili (flagellum)

2. What is the bacterium's genetic material called?

   cell membrane (DNA)