Name Date Class

**Lesson OutlineCH. 13.1**

**Lesson Outline**

***Bacteria***

**A.** Characteristics of Bacteria

**1.** are unicellular organisms that do not have a nucleus  
or other membrane-bound organelles.

**2.** are microscopic prokaryotes.

**3.** There are two types of prokaryotes—bacteria and .

**4.** A typical bacterium consists of DNA and surrounded  
by a cell membrane and a cell wall.

**a.** Bacterial cytoplasm also contains .

**b.** Bacterial DNA occurs in one coiled, circular .

A bacterium might also have smaller, circular that  
are separate from its other DNA.

**5.** Many bacteria have capsules with hairlike structures called  
 that help the bacteria stick to surfaces.

**6.** Bacteria are much than plant or animal cells.

**7.** Bacteria generally have one of three basic shapes—sphere, rod,  
or .

**8.** Some bacteria take in food and break it down and  
obtain .

The food can come from dead organisms or hosts.

**9.** Other bacteria make their food using energy from or  
chemical reactions.

**10.** bacteria can survive without oxygen.  
 bacteria need oxygen, as humans do.

**11.** Many bacteria have long whiplike structures called that  
they use for movement.

**12.** Bacteria reproduce asexually by . This type of cell  
division forms two genetically cells.

**13.** During , two bacteria of the same species attach to each  
other and combine their genetic material.

**a.** is transferred between bacteria during conjugation.

**b.** Conjugation results in new combinations of genes and increases  
genetic .

**B.** Beneficial Bacteria

**1.** Many organisms, including humans, depend on to  
survive.

**2.** Bacteria living inside the of humans and other animals  
help digest food, make vitamin K, and prevent harmful bacteria from growing.

**3.** Bacteria in the rumen of cows break down a substance in grass called  
 into smaller molecules that the cow can use.

**4.**  , the breaking down of dead organisms and organic  
waste, is an important process in nature.

**5.** As bacteria and other break down dead organic matter,  
they release molecules such as carbon and phosphorus into the soil.

**6.**  is the conversion of atmospheric nitrogen into nitrogen  
compounds that living things can use.

**7.** Bacteria in the root of certain plants carry out nitrogen  
fixation.

**8.**  uses organisms, such as bacteria, to clean up  
environmental pollution. These organisms break down harmful substances,  
such as sewage, into less harmful materials that can be used as landfill  
or .

**9.**  are used to make foods such as pickles, yogurt, cheeses,  
buttermilk, vinegar, and soy sauce.

**C.** Harmful Bacteria

**1.** Some bacteria are called —agents that cause disease.

**a.** Some pathogens that normally live in the body cause illness only when the  
person’s system is weakened.

**b.** Some pathogens can enter the body through a cut, in air, or on  
 . After they are inside the body, they can  
 and cause disease.

**c.** Some bacteria make people sick by damaging .

**d.** Some bacteria cause illness by releasing

**2.**  are medicines that stop the growth and reproduction  
of bacteria.

**3.** Bacteria can become to antibiotics.

**a.** Random to a bacterium’s DNA enable it to survive a  
specific antibiotic.

**b.** Only the bacteria with the mutation survive; they   
and become more common.

**c.** When bacteria become to an antibiotic, a different  
antibiotic must be used to fight the disease.

**4.** Eating food contaminated by some bacteria can cause .

**5.**  heats food to a temperature that kills most  
harmful bacteria.