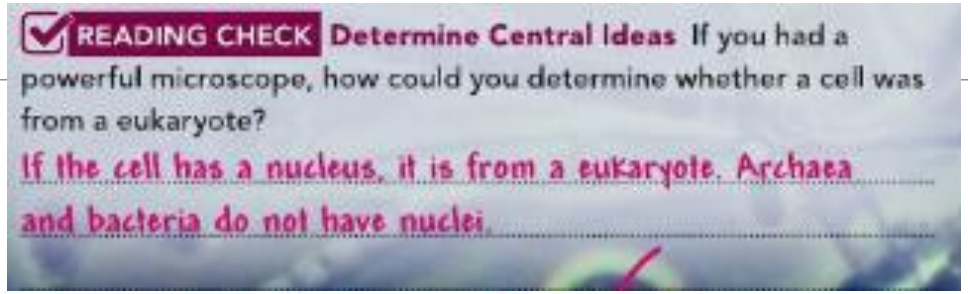
Lesson 3

ANSWER KEYS

Reading Checks



READING CHECK **Determine Central Ideas** If you had a powerful microscope, how could you determine whether a cell was from a eukaryote?

If the cell has a nucleus, it is from a eukaryote. Archaea and bacteria do not have nuclei.

READING CHECK **Distinguish Facts** What makes viruses so dangerous and vaccines so important?

Viruses spread quickly, make people very sick, and can be deadly. Vaccines can prevent viruses.

READING CHECK **Cite Textural Evidence** According to what you have read, how do bacteria protect their genetic material and cytoplasm during harsh conditions?

Bacteria form endospores, which are tough outer coatings, that let them shelter in place, protecting their contents until conditions improve.

READING CHECK **Cite Textual Evidence** Tasha and Marco examine a cell through a microscope. Tasha suggests that the cell is a protist. Marco thinks it might be a bacterium. What evidence would prove Tasha right?

Sample: The cell has a nucleus, is part of a larger organism, or has no cell wall.

Figures 2-4

Viral Variety

Figure 2 Viruses come in many shapes. These images have been magnified and colorized to show details.

SEP Determine Similarities Circle the virus that most closely resembles a cell. Explain your choice.

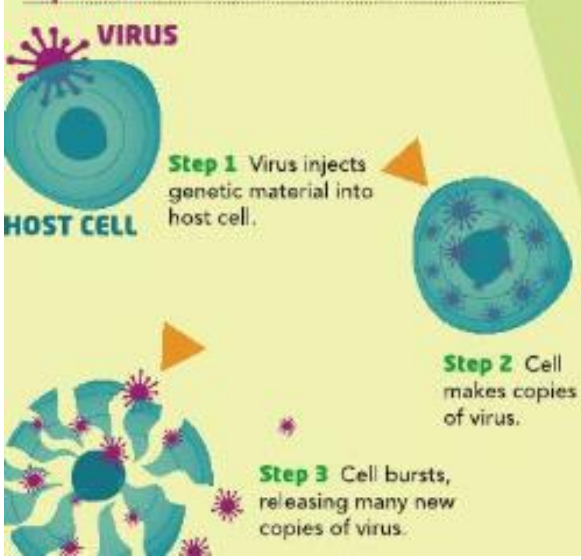
Sample: Influenza virus—it's round like a cell.

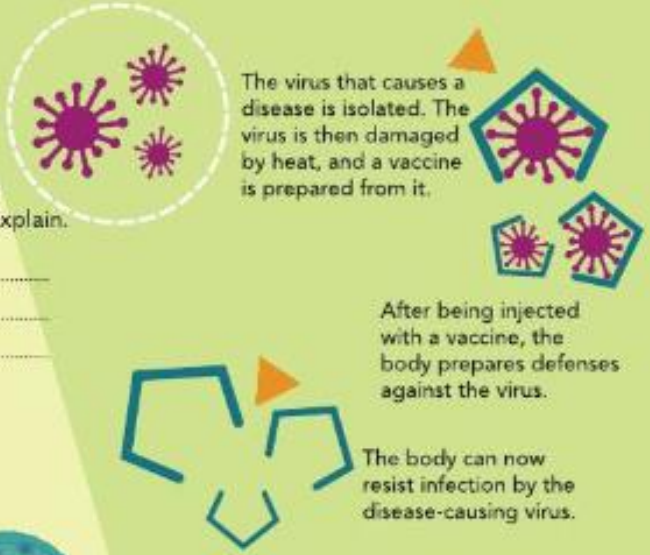
Virus Invasion!

Figure 3 A cell invaded by a virus becomes a kind of zombie. All the cell's energy goes into making more and more new viruses.

SEP Apply Scientific Reasoning Which evolved first: viruses or living organisms? Explain.

Living things must have come first, because viruses need living cells to reproduce.





Vaccine Protection

Figure 4 Vaccinations can prevent measles and other viral diseases.

SEP Construct Explanations Why is it important to use a weakened virus in a vaccine?

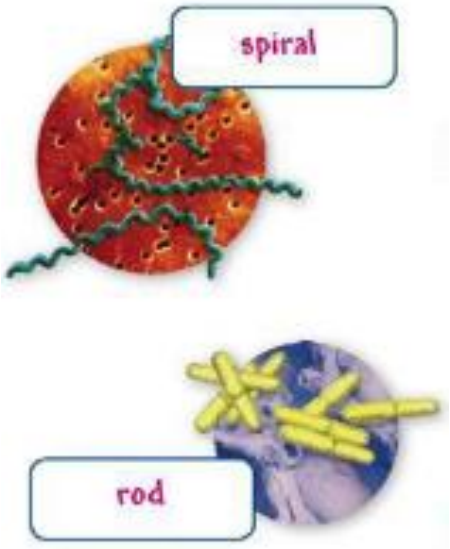
An undamaged virus could infect the patient with a serious disease.

Figures 5 & 7

Bacteria Shapes

Figure 5 The shape of a bacteria helps a scientist to identify it.

CCC Structure and Function Label the shape of each bacteria.



Undersea Mystery

Figure 7 These "rocks" are layers of bacteria that have grown up around the mouth of the seafloor volcano.

Academic Vocabulary

Resistant means able to work against or hold off an opposing force. When have you been resistant?

when refusing to do something when asked

Figures 6 & 8

bacteria toward their food.

Model It

Bacterial Cell Structures

Figure 6 Structures in a bacterial cell help them function and survive.

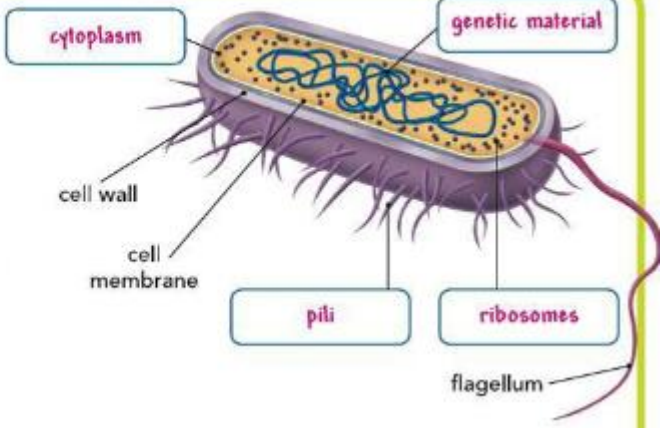
SEP Develop Models Use the descriptions below to label the structures.

cytoplasm everything inside the cell membrane

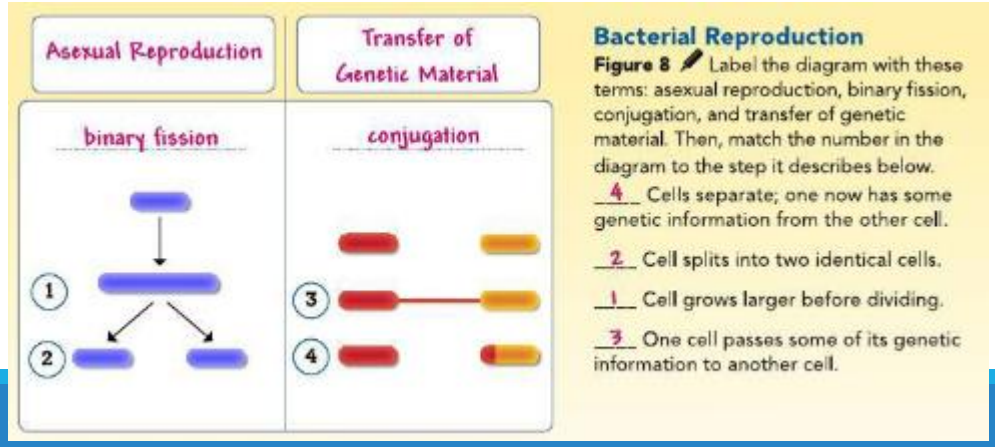
genetic material string-like chemical instructions for cell

pili tiny hairs that help cell move and reproduce

ribosomes round structures where proteins are made



464 Living Things in the Biosphere



Bacterial Reproduction

Figure 8 Label the diagram with these terms: asexual reproduction, binary fission, conjugation, and transfer of genetic material. Then, match the number in the diagram to the step it describes below.

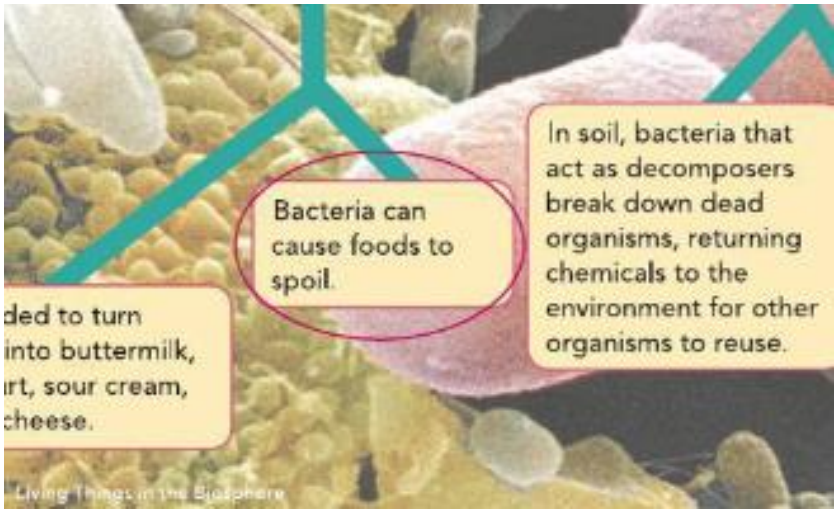
__4__ Cells separate; one now has some genetic information from the other cell.

__2__ Cell splits into two identical cells.

__1__ Cell grows larger before dividing.

__3__ One cell passes some of its genetic information to another cell.

Figures 9 & 10




amoeba


red algae


slime mold

Figures 11 & 12

Structure of a Honey Mushroom

Figure 11 The part of a mushroom you can see above ground is tiny compared to the network of hyphae underground.

Hypothesize What is a possible relationship between the fungus and the tree root?

Sample: The fungus could be a parasite and the tree is its host.

READING CHECK Determine Central Ideas What is the purpose of fungal spores?

Spores travel by wind and water to a place where they can grow into a new fungus.

1. **CCC Energy and Matter** Why would a fungus growing on a rock need a partner to provide it food?

Fungi are heterotrophs; they cannot make their own food.

2. **SEP Construct Explanations** Why would fungi be better than seeds at absorbing water?

Hyphae form a network that could absorb more water than a hard seed.

Mycorrhiza

Grows around plant seeds and roots.

Brings water to plant and eats plant sugars.

Helps plants grow.

Penicillium Mold

Grows on food products.

Spoils food.

Produces chemicals used in antibiotics.

Some produce poisons or cause allergic reactions.

Shiitake Mushroom

Grows on and consumes dead logs.

Provides nutritious food.

Breaks down dead wood and makes nutrients available for living things.

Lichen

Forms partnership with autotrophic algae or bacteria.

Provides water, shelter, and minerals, while partner provides food.

Produces chemicals used in dyes, perfumes, and deodorant.

Yeast

Eats carbohydrates, turning them into alcohols and carbon dioxide.

Helps to bake bread and make beverages.

Causes diaper rash and yeast infections.

Destroys stored foods.