DCPS: 7th Grade Science

Advisory 1, Units 1-2, Lesson 1
Cells and Body Systems

Summary

- In this lesson, students will read "A Small, Small World" (pp. 4-9), "Attack of the Germs!" (pp. 10-15), and "Invaders! (pp. 16-17) to learn what microbes are and how they impact the immune system.

Science Background

Every day, people come into contact with millions of germs. The two main types of germs are viruses and bacteria.

Viruses and bacteria are tiny microbes that are so small they can only be seen with a microscope. They can enter the body when we eat or breathe. They can also enter through an open cut.

The immune system is the body system that protects living organisms against disease and infection. It is composed of special cells, proteins, tissues, and organs that allow it to do its job.

When an invader enters the body, the immune system fights back with white blood cells. There are two types of white blood cells—phagocytes and lymphocytes.

Phagocytes, which are the first line of defense, surround germs and eat them. Then they die. Lymphocytes travel throughout the body via blood vessels and the lymphatic system. As they do, they continue to fight against disease.

There are two types of lymphocytes, B cells and T cells. These cells work together. B cells produce proteins called antibodies that target specific invaders. Once an antibody has locked onto an infected cell, the T cells move in to destroy the invader.

ENGAGE

Encourage students to flip through the articles and turn and talk with a partner to discuss what they see. Invite students to ask questions or share what they already know about microbes and the immune system.

EXPLORE

Instruct students to examine the photo on pages 4-5 of their Readers. **Ask:** *What does this photo show?* (bacteria) *What can this particular bacteria do?* (cause strep throat) Brainstorm ideas about how these bacteria get into someone's body and what people can do to prevent themselves from getting sick.

EXPLAIN

Remind students that the human body is host to different types of microbes, including fungi, bacteria, and virus. **Ask:** *Are all of these microbes harmful?* (no) *Why not?* (Some help your body perform functions necessary for you to live.) Have students turn and talk as they review the articles to find examples showing how microbes help people stay healthy. Then challenge students to explain, in detail, how the human body fights off germs that enter the bloodstream. (One type of blood cells surround the germs, punches holes in them, and eats them. Then two other types of blood cells go to work. B cells make antibodies that copy the germ. They alert T cells to fight and destroy the germs.) Encourage students to turn and talk as they discuss other facts they learned about microbes and the immune system.

ELABORATE

In 2009, epidemiologist Nathan Wolfe was named as a National Geographic Emerging Explorer for his efforts to fight pandemics with an early-warning system that would identify and control new plagues before they became widespread. Invite students to conduct research to learn more about his work.

EVALUATE

Have students complete the **Content Assessment** for this lesson. Encourage them to share and compare their results in small groups.

Name _____ Date _____

CONTENT ASSESSMENT: Cells and Body Systems, Lesson 1

Explain what a bacteria and viruses are. Tell how they can affect your body.

Bacteria	Viruses

Put these sentences in the correct order to tell how your body fights off germs.

_____ T cells hunt for and destroy germs.

_____ Germs get into your bloodstream and multiply.

_____ B cells make antibodies that copy germs.

_____ White blood cells find, surround, and eat germs in the bloodstream.

Identify four things you can do to help keep your immune system strong.

1. _____

2. _____

3. _____

4. _____