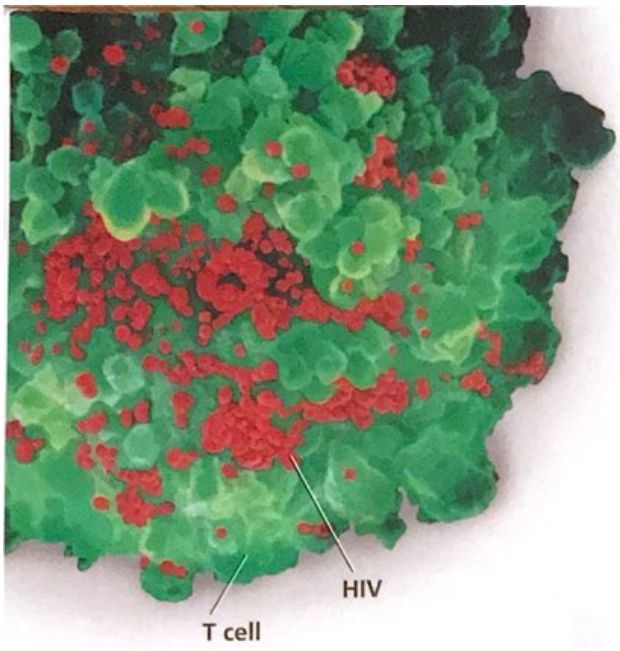

FIGURE 8
Human Immunodeficiency Virus (HIV)
The tiny red particles are HIV viruses emerging from a T cell. The viruses multiply inside the T cell and eventually cause the cell to die.
Relating Cause and Effect
Why does the destruction of T cells interfere with the body's ability to fight disease?

AIDS

Acquired immunodeficiency syndrome, or **AIDS**, is a disease caused by a virus that attacks the immune system. The virus that causes AIDS is called the human immunodeficiency virus, or **HIV**.

How HIV Affects the Body **HIV is the only kind of virus known to attack the human immune system directly and destroy T cells.** Once HIV invades the body, HIV enters T cells and reproduces inside them. People can be infected with HIV—that is, have the virus living in their T cells—for years before they become sick. More than 40 million people in the world, including more than 3 million children under 15, are infected with HIV.

Eventually, HIV begins to destroy the T cells it has infected. As the viruses destroy T cells, the body loses its ability to fight disease. Most persons infected with HIV eventually develop the symptoms of AIDS.

Because their immune systems no longer function properly, people with AIDS become sick with diseases not normally found in people with healthy immune systems. Many people survive attack after attack of such diseases. But eventually their immune systems fail, ending in death. At this time, there is no cure for AIDS. However, new drug treatments allow many people with AIDS to survive much longer than those in the past.

How HIV Is Spread Like all other viruses, HIV can only reproduce inside cells. However, the virus can survive for a short time outside the human body in body fluids, such as blood and the fluids produced by the male and female reproductive systems.

HIV can spread from one person to another only if body fluids from an infected person come in contact with those of an uninfected person. Sexual contact is one way in which this can happen. HIV may also pass from an infected woman to her baby during pregnancy or childbirth or through breast milk. In addition, infected blood can spread HIV. For example, if an infected drug user shares a needle, the next person who uses the needle may also become infected. Before 1985, HIV was sometimes transmitted through blood transfusions. Since 1985, however, all donated blood in the United States has been tested for signs of HIV. If blood is identified as infected, it is not used in transfusions.

FIGURE 9
How HIV Is Not Spread
You cannot get HIV, the virus that causes AIDS, by hugging someone infected with the virus.

How HIV Is Not Spread It is important to know the many ways in which HIV is *not* spread. HIV does not live on skin, so you cannot be infected by hugging or shaking hands with an infected person. You can't get infected by using a toilet seat after it has been used by someone with HIV. HIV is also not spread when you bump into someone while playing sports.

Reading Checkpoint **What disease is caused by HIV?**

Section 2 Assessment

Target Reading Skill **Building Vocabulary** Use your definitions to help you answer the questions below.

Reviewing Key Concepts

1. a. **Listing** Name four barriers that prevent pathogens from getting into the body.
   b. **Explaining** Briefly describe how each barrier prevents infections.
   c. **Predicting** What could happen if you got a cut that did not heal?
2. a. **Reviewing** What triggers the inflammatory response?
   b. **Describing** How does the inflammatory response defend against invading pathogens?
   c. **Relating Cause and Effect** Why is the presence of large numbers of white blood cells in a wound a sign of infection?
3. a. **Identifying** Identify the cells that are part of the immune system.
   b. **Sequencing** Outline the steps involved in the immune response.
4. a. **Reviewing** Where in the body does HIV reproduce?
   b. **Summarizing** What are three ways that HIV can be passed from one person to another?

Writing in Science

Explanation An antigen and antibody can be compared to a lock and key. Write a paragraph in which you explain how the lock-and-key model is a good way to describe the relationship between an antigen and antibody.