# **Fighting COVID-19 and Other Illnesses Discussion Guide (for use during or after reading)**

1. What is the immune system’s main purpose? (The Immune System, p. 4-5)
   1. The immune system works to protect the body from harmful invaders. The white blood cells produce antibodies that attack invaders and work to keep the body healthy.
2. What are infections and how do people typically get them? (Infection, p. 8-9)
   1. Infections occur when germs enter the body. They can cause redness and swelling and even lead to disease. Infections happen when germs enter through an orifice, or an opening in your body like your nose, mouth, ears, or eyes. Your skin normally protects you from germs, but if germs can enter, infection can occur.
3. Why is COVID-19 a pandemic disease? (Pandemic!, p. 12-13)
   1. COVID-19 is considered a pandemic disease because many people were attacked by the virus in a short period of time. In addition, the disease quickly spread worldwide and killed thousands of people.
4. How does COVID-19 spread? What are two other ways disease can spread? (Spreading COVID-19, p. 14-17)
   1. COVID-19 spreads through the air. COVID-19 and other germs leave the mouth or nose and travel through the air toward another person. Coughing or even breathing releases droplets and tiny particles of mucus. This is enough to spread COVID-19 from one victim to the next.
   2. Disease can also spread when a vector, or carrier, bites a victim. Insects and animals such as rats can carry disease and infect others.
   3. Finally, disease can be caused by eating contaminated food or drinking contaminated water.
5. Describe how the illustrations show why bacteria that reproduce through doubling can be dangerous. (Bacteria, p. 18-19)
   1. The panels went from having one small bacteria cell to many quite quickly! Although doubling might not seem like much of a threat at first, it can quickly grow to become a big problem, especially as more and more bacteria fight against the body they have infected.
6. Why do scientists not consider viruses living things? (Viruses, p. 20-21)
   1. Scientists do not consider viruses living things because they do not function as other living things do. They are smaller than cells and are made of some genes wrapped in proteins. Viruses do not eat or divide. They cannot reproduce without entering a living cell. Viruses do not even move by themselves!
7. Explain the steps COVID-19 viruses take to hijack cells. (COVID-19 Hijacks a Cell, p. 24-25)
   1. First, the COVID-19 virus must enter the cell through the cell membrane. The virus is covered in protein spikes that can “trick” the cell membrane into letting it enter the cell. Next, the virus takes control of the nucleus and controls the cell into producing more of the virus. These new viruses enter your body and try to repeat the process.
8. How does the immune system respond when antibodies detect invaders in the body? (The Immune Response, p. 26-27)
   1. Antibodies patrol your entire body, constantly searching for intruders. Once they detect something that should not be there, they send a distress signal to alert the white blood cells. White blood cells then rush to the site and begin to produce specific antibodies that hunt down and kill the virus. White blood cells remember the intruders and how to kill them so your body is prepared to fight them off in the future. This is called immunity.
9. According to the text, how do messenger RNA (mRNA) vaccines help protect people from infectious diseases like COVID-19? (A New Vaccine, p. 30-31)
   1. Scientists have experimented with messenger RNA vaccines for years. These vaccines teach our cells how to recognize small pieces of a virus instead of a dead or weakened version of it. This triggers an immune response inside our bodies. Messenger RNA vaccines like the COVID-19 vaccine are highly effective because they teach our cells to recognize the virus effectively and fight it off.
10. According to the text, what can you do to help your immune system keep you healthy? (Preventing Infections, p. 32-33)
    1. According to the text, there are many ways you can help your immune system keep you healthy! Doctors suggest eating a healthy diet and getting daily exercise as major ways to help your body. In addition, you should wash your hands often and for at least 20 seconds, cover your sneezes and coughs, and wear a mask and socially distance to help prevent the spread of viruses.