# **The Respiratory System Discussion Guide (for use during or after reading)**

1. Describe the process of respiration. (What Is Respiration?, p. 4-5)
   1. Respiration is the process organisms like humans use to get and use oxygen. When you breathe in, you take in oxygen. Your cells use this oxygen to break down food and use energy. While this happens, your cells also produce wastes like carbon dioxide gas. When you breathe out, you get rid of that carbon dioxide.
2. Describe what happens to the organs in your respiratory system as you inhale and exhale. (Inhalation and Exhalation, p. 8-9)
   1. As you inhale, your diaphragm and muscles in your chest cavity expand, lifting the ribs so the lungs can expand and fill with air. As you exhale, your muscles relax. The shrinking in your lungs pushes air out of your body to prepare your respiratory system to repeat the process.
3. What role does your nose play in defending your body from harmful invaders? (The Nose, p. 10-11)
   1. The nose plays an important role in defending your body from invaders. Your nose produces mucus that not only traps bacteria and other microbes but also work to destroy them so you do not get sick. It also contains cilia, which are very fine hairs in the nose. Cilia act like a duster to collect any dust, bacteria, and mucus.
4. Explain how air travels through a series of tubes within your lungs. (Down the Lungs, p. 12-13)
   1. Air travels through the trachea and down one of two bronchi, tubes that lead into separate lungs. From there, the bronchi divide into smaller tubes called bronchioles. The bronchioles divide again and again to form millions of tiny air passages. The ends of the bronchioles have microscopic air sacs called alveoli that fill with air as you breathe.
5. Explain how oxygen travels from the lungs and into the bloodstream as well as how carbon dioxide travels from the body’s cells back to the lungs. (And Into the Blood, p. 14-15)
   1. Alveoli in the lungs have very thin walls that allow a network of tiny blood vessels called capillaries to transfer oxygen from the alveoli to the blood stream. From here, the circulatory system transfers the oxygen-rich blood to the cells throughout your body and transports carbon dioxide back to the lungs. Finally, the carbon dioxide travels from the capillaries to the alveoli to be exhaled.
6. How does altitude affect the respiratory system? (Exercise and Altitude, p. 16-19)
   1. Altitude is a measure of height above sea level. Oxygen makes up about 21 percent of the air at sea level. As altitude increases, however, the air becomes thinner. Higher altitudes have less oxygen than lower ones, making it more difficult to breathe. At high altitudes, the body breathes more deeply and quickly, even when it is resting.
7. Describe two ways the respiratory system works to protect and defend your body from harmful intruders. (Lung Defenses, p. 20-23)
   1. Your body produces mucus to try to trap and kill germs before they enter your system and make you sick. In addition, your respiratory system causes you to cough and sneeze.
   2. Your lungs contain cilia like those found within your nose. They perform a similar function, pushing unwanted particles into mucus to be swallowed and destroyed in the stomach.
8. According to the text, what can you do to keep your respiratory system and body healthy? (Tough Lungs, p. 28-29)
   1. According to the text, people can eat well, exercise, and avoid smoking to keep their respiratory system healthy.
9. Who was Luther Terry and why was he important? (Who’s Who, p. 32-33)
   1. Luther Terry was a U.S. Surgeon General. He studied how smoking cigarettes can negatively affect people’s health. In 1964, he issued a report that explained how cigarette smoking causes lung cancer and other lung diseases. His work helped lead to laws and rules that regulate the sale of cigarettes and ban smoking them in certain circumstances.
10. Which fun fact stood out to you the most? Why? (Can You Believe It?!, p. 34-35)
    1. Students’ answers will vary.