Breathing and Respiration

Organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.

Your breathing happens even when you don’t think about it.

- When you breathe, you take in oxygen gas from the air and exhale carbon dioxide gas and water vapor.
- Your cells use the oxygen for cellular respiration and produce carbon dioxide and water.

Respiration is the entire process by which the body exchanges and uses gases.

Respiration is made possible by the respiratory system.

The respiratory system consists of the lungs and passageways that lead to the lungs.

When you breathe, air is inhaled through your nose and mouth.

- From there, it flows through the throat to the larynx, or voice box.
- The larynx leads to your lungs.
- Next, air flows into the trachea, or windpipe.
- The trachea splits into two tubes called bronchi.
One bronchus (singular) goes to each lung.

- Each bronchus branches into thousands of tiny tubes called bronchioles.
- Bronchioles end in tiny sacs called alveoli.
- Each of your lungs contains thousands of alveoli.

Alveoli are sac-like structures surrounded by capillaries where the exchange of gases takes place.

The diaphragm is a sheet of muscle that helps draw air into the lungs.

Inhalation

Exhalation

Your circulatory and respiratory systems work together (cardiopulmonary system) to ensure that every cell in your body has the oxygen it needs to perform cellular respiration.

The failure of any part can affect the entire system.

- Smoking, for example, may lead to inefficient gas exchange in the lungs and cause cardiovascular disease.