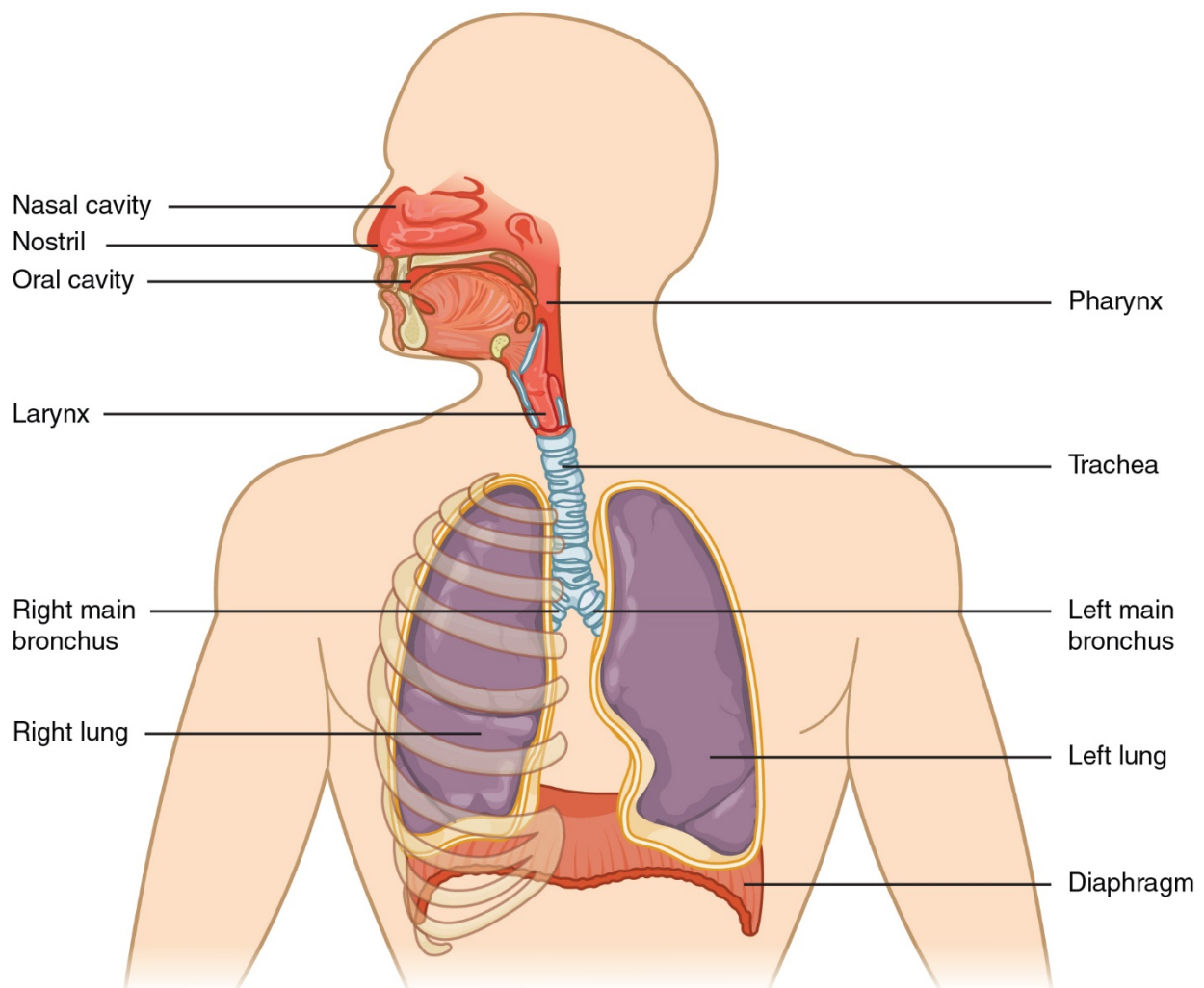


# How Does The Respiratory System Work?

## How does breathing work?

The purpose of the respiratory system is to bring oxygen into the body and to remove carbon dioxide. Oxygen enters the body as we inhale air into the lungs. Carbon dioxide is the waste product that leaves the body when we exhale.



**Figure 1** OpenStax College, CC BY 3.0 via Wikimedia Commons

## What body parts do we use to breathe?

There are many parts we use to breathe. See figure 1. Air enters the body through the nose and mouth then travels down to the larynx (voice box). The larynx contains the vocal cords. Below the larynx is the trachea (windpipe). The trachea is held open by rings of soft bone called cartilage. About halfway down the breastbone the trachea splits off into 2 smaller windpipes called the right and left main stem bronchi.

Each main stem bronchus attaches to a lung. There are 2 lungs one on the right and one on the left. The right lung is divided into 3 lobes upper, middle and lower. The left lung is divided into 2 lobes, upper and lower.

The inside of the lungs looks like an upside down tree. See figure 2. Picture the trunk of the tree branching into large branches, which branch into medium branches, which then branch into tiny twigs.

In the lungs, at the end of each tiny twig, there are sacs called alveoli. The sacs have many blood vessels around them. See figure 3. Oxygen in the sacs seeps into the blood. This is how the lungs deliver oxygen to the body. The reverse occurs when the body is removing carbon dioxide. The carbon

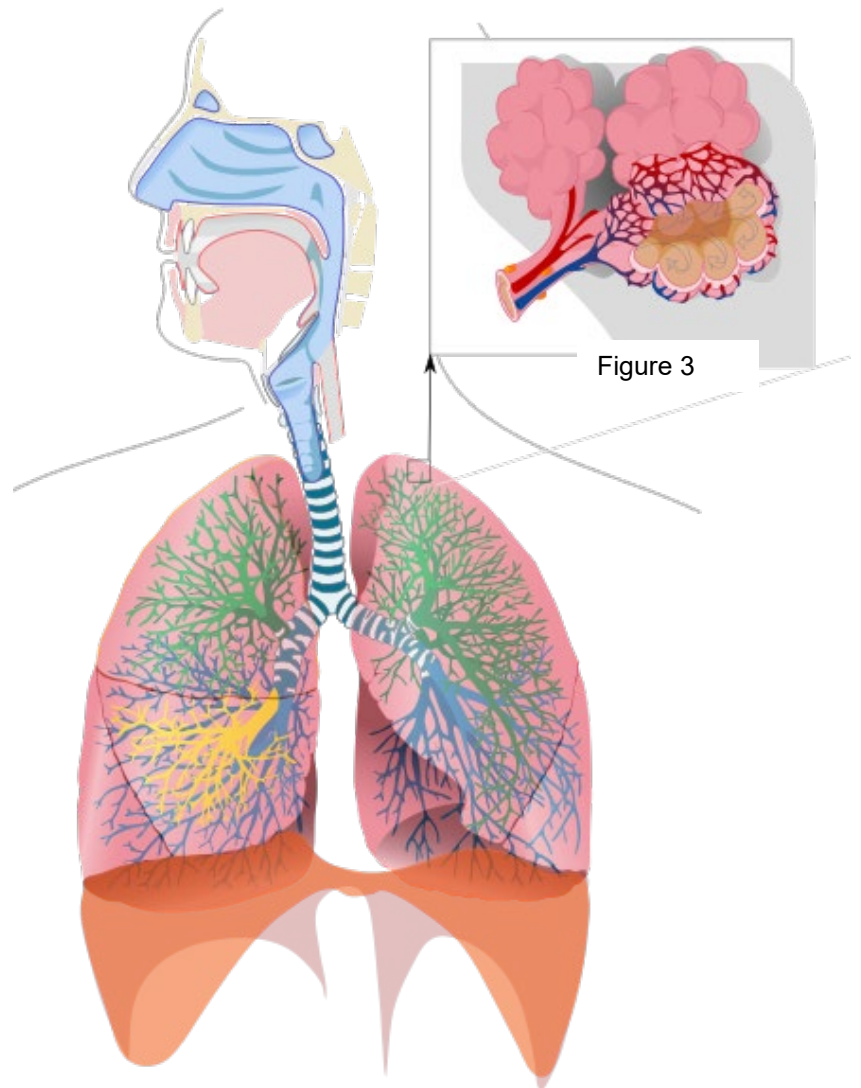


Figure 2. Bibi Saint-Pol, Jmarchn, CC BY-SA 3.0 via Wikimedia Commons

dioxide in the blood seeps into the sacs and back through the branches and out through the nose mouth. The whole process of oxygen going into the blood and carbon dioxide coming out of the blood is called **gas exchange**.

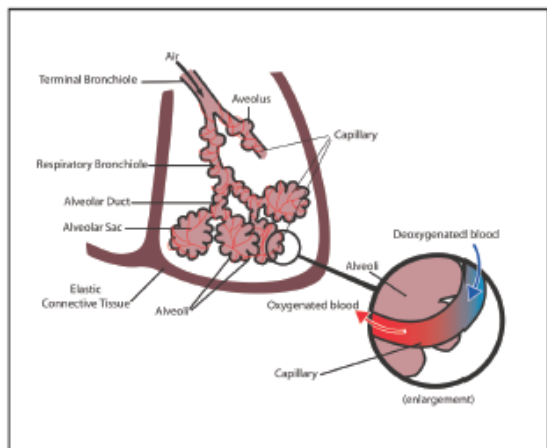


Figure 3

If you were to hold a lung in your hand you would notice it feels smooth and rubbery. Lungs are made to stretch like a balloon. The rib cage forms a box like structure around the lungs. When you inhale, the muscles around the ribs called intercostals, and the muscle between the chest and abdomen called the diaphragm work to make the rib cage bigger. When this happens air draws into the lungs. Take a deep breath now. Notice how you pick up your chest and shoulders making the rib cage bigger. We exhale by relaxing these muscles allowing the air to easily escape.

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