

How Your Lungs Work

Your Lungs

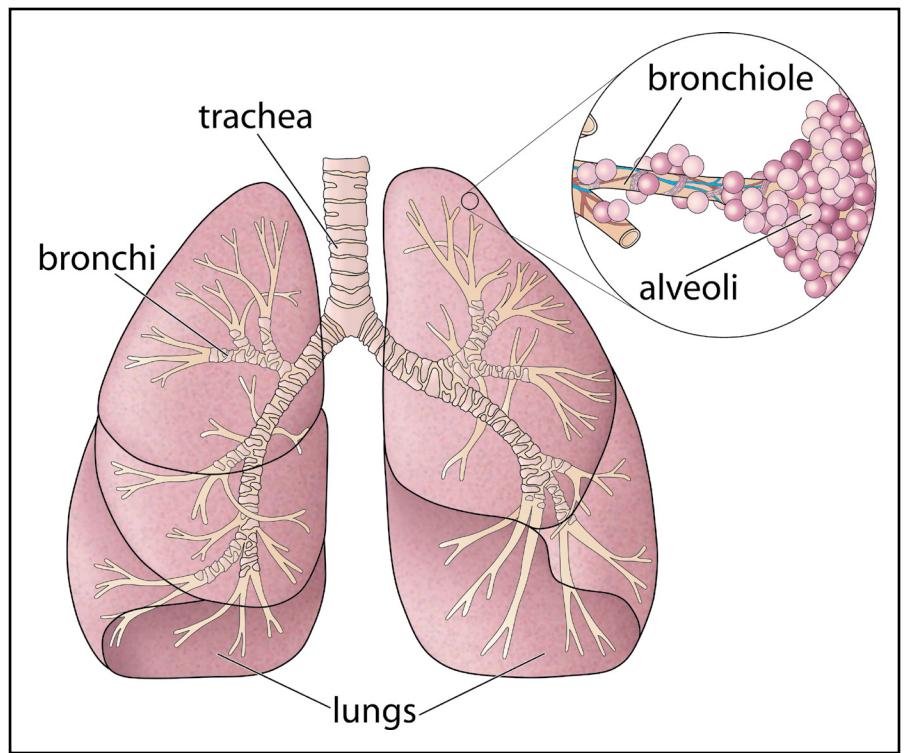
Your lungs exchange oxygen and carbon dioxide (waste) between the air and your bloodstream. When you breathe in (inhale), oxygen enters your lungs. Your bloodstream carries the oxygen throughout your body.

When you breathe out (exhale), your bloodstream carries the carbon dioxide from your cells to your lung. When you exhale, the carbon dioxide is removed.

How Oxygen Flows Into Your Lungs

Here's how oxygen travels deep into your lungs and bloodstream:

- Oxygen (air) enters your body through your nose or mouth. Your nose is designed to filter, warm and moisten the air as it flows through your nasal passages.
- The air from your nose and mouth comes together in the back of your throat. This area is called the pharynx.
- From the pharynx, the air passes your epiglottis into your larynx. The larynx is your voice box and the epiglottis is a flap that covers the larynx to keep food and water from going into your larynx when you swallow.



© Allina Health System

The trachea divides into your right and left bronchus. The the lower ends of each bronchi divide and branch, looking like an upside-down tree, in each lung.

- Oxygen continues down a tube called your trachea. The trachea divides into your right and left bronchus. The the lower ends of each bronchi divide and branch, looking like an upside-down tree, in each lung.

(over)

How Oxygen Travels Throughout Your Body

- At the end of the smallest bronchi are air sacs called alveoli. The moves from the bronchi through the air sacs into blood vessels.
- Red blood cells carry the air into the bloodstream. The oxygen-rich blood gets pumped throughout your body.
- Carbon dioxide returns to your lungs through your bloodstream. Once the carbon dioxide goes from the bloodstream to the alveoli, the alveoli deflate and you breathe out the carbon dioxide.

Muscles You Use When You Breathe

You use four different sets of muscles when you breathe.

- diaphragm. When you breathe in, your diaphragm flattens and increases the size of your chest cavity. This lets your lungs inflate and oxygen comes into the alveoli.
- intercoastal muscles and accessory muscles. These muscles are in your neck and shoulders. They let your lungs expand during heavy activity. These muscles contract and pull your ribs up and out to increase the size of your chest cavity and expand your lungs.
- abdominal muscles. These stomach muscles are used when you cough, sneeze and breathe out. They push your diaphragm up, causing the alveoli to be squeezed into a small space. This forces the carbon dioxide out of your lungs.

Other Parts Of Your Lungs

- Cilia, small hair-like particles, make a beating action that pushes up an uneven blanket of mucus toward the back of your throat. This mucus traps foreign particles or germs. The cilia force it up to your throat where it can be coughed out or swallowed. This helps keep your lungs free of particles that could cause damage or infection.
- There are special cells in the alveoli called macrophages which capture and digest bacteria, viruses and foreign bodies that get past the cilia.
- Together, the cilia, mucus and macrophages are known as defense mechanisms.

What To Remember

- Oxygen (air) and carbon dioxide (wastes) exchange, muscle activity and defense mechanisms all help to keep your lungs healthy.
- The main purpose of your lungs is to exchange oxygen and carbon dioxide between the air and your bloodstream. Your blood moves oxygen throughout your body. The carbon dioxide is brought to the lungs and removed from your body as you breathe out.
- The diaphragm is the most important breathing muscle. The intercostal and accessory muscles work during exercise and during some lung diseases. Abdominal (stomach) muscles are used when you cough and sneeze.
- Your lungs have defense mechanisms to keep out germs and particles that don't belong in your lungs: nose and mouth, mucus and cilia, and the macrophages.