

The

Lungs

Let's take a look at the lungs and see what we can discover.

Click on the picture to watch a short film



Locate Those Lungs

Your lungs work with your respiratory system to allow you to take in fresh air, get rid of stale air, and even talk. Let's take a tour of the lungs!

Your lungs are in your chest, and are so big that they take up most of the space in there. You have two lungs, but they aren't the same size the way your eyes or nostrils are. Instead, the lung on the left side of your body is a bit smaller than the lung on the right. This extra space on the left leaves room for your [heart](#).

Your lungs are protected by your rib cage, which is made up of 12 sets of ribs. These ribs are connected to your spine in your back and go around your lungs to keep them safe. Beneath the lungs is the [diaphragm](#) (say: DY-uh-fram), a dome-shaped muscle that works with your lungs to allow you to inhale (breathe in) and exhale (breathe out) air.

You can't see your lungs, but it's easy to feel them in action: Put your hands on your chest and breathe in very deeply. You will feel your chest getting slightly bigger. Now breathe out the air, and feel your chest return to its regular size. You've just felt the power of your lungs!

A Look Inside the Lungs

From the outside, lungs are pink and a bit squishy, like a sponge. But the inside contains the real lowdown on the lungs! At the bottom of the **trachea** (say: TRAY-kee-uh), or windpipe, there are two large tubes. These tubes are called the main stem **bronchi** (say: BRONG-kye), and one heads left into the left lung, while the other heads right into the right lung.

Each main stem bronchus (say: BRONG-kuss) — the name for just one of the bronchi — then branches off into tubes, or bronchi, that get smaller and even smaller still, like branches on a big tree. The tiniest tubes are called **bronchioles** (say: BRONG-kee-oles), and there are about 30,000 of them in each lung. Each bronchiole is about the same thickness as a hair.

At the end of each bronchiole is a special area that leads into clumps of teeny tiny air sacs called **alveoli** (say: al-VEE-oh-lie). There are about 600 million alveoli in your lungs and if you stretched them out, they would cover an entire tennis court. Now that's a load of alveoli! Each **alveolus** (say: al-VEE-oh-luss) — what we call just one of the alveoli — has a mesh-like covering of very small blood vessels called **capillaries** (say: KAP-ill-er-ees). These capillaries are so tiny that the cells in your blood need to line up single file just to march through them.

Every time you inhale air, dozens of body parts work together to help get that air in there without you ever thinking about it.

As you breathe in, your diaphragm contracts and flattens out. This allows it to move down, so your lungs have more room to grow larger as they fill up with air. And the diaphragm isn't the only part that gives your lungs the room they need. Your rib muscles also lift the ribs up and outward to give the lungs more space.

At the same time, you inhale air through your mouth and nose, and the air heads down your trachea, or windpipe. On the way down the windpipe, tiny hairs called **cilia** (say: SILL-ee-uh) move gently to keep mucus and dirt out of the lungs. The air then goes through the series of branches in your lungs, through the bronchi and the bronchioles.

Thank You, Alveoli!

The air finally ends up in the 600 million alveoli. As these millions of alveoli fill up with air, the lungs get bigger.

It's the alveoli that allow oxygen from the air to pass into your blood. All the cells in the body need oxygen every minute of the day. Oxygen passes through the walls of each alveolus into the tiny capillaries that surround it. The oxygen enters the blood in the tiny capillaries, hitching a ride on red blood cells and traveling through layers of blood vessels to the heart. The heart then sends the oxygenated (filled with oxygen) blood out to all the cells in the body.

Waiting to Exhale

When it's time to exhale (breathe out), everything happens in reverse: Now it's the diaphragm's turn to say, "Move it!" Your diaphragm relaxes and moves up, pushing air out of the lungs. Your rib muscles become relaxed, and your ribs move in again, creating a smaller space in your chest.

By now your cells have used the oxygen they need, and your blood is carrying carbon dioxide and other wastes that must leave your body. The blood comes back through the capillaries and the wastes enter the alveoli. Then you breathe them out in the reverse order of how they came in — the air goes through the bronchioles, out the bronchi, out the trachea, and finally out through your mouth and nose.

The air that you breathe out not only contains wastes and carbon dioxide, but it's warm too! As air travels through your body, it picks up heat along the way. You can feel this heat by putting your hand in front of your mouth or nose as you breathe out. What is the temperature of the air that comes out of your mouth or nose?

With all this movement, you might be wondering why things don't get stuck as the lungs fill and empty! Luckily, your lungs are covered by two really slick special layers called **pleural** (say: PLOO-ral) **membranes**. These membranes are separated by a fluid that allows them to slide around easily while you inhale and exhale.

Time for Talk

Your lungs are important for breathing . . . and also for talking! Above the trachea (windpipe) is the **larynx** (say: LAIR-inks), which is sometimes called the voice box. Across the voice box are two tiny ridges called vocal cords, which open and close to make sounds. When you exhale air from the lungs, it comes through the trachea and larynx and reaches the vocal cords. If the vocal cords are closed and the air flows between them, the vocal cords vibrate and a sound is made.

The amount of air you blow out from your lungs determines how loud a sound will be and how long you can make the sound. Try inhaling very deeply and saying the names of all the kids in your class — how far can you get without taking the next breath? The next time you're outside, try shouting and see what happens — shouting requires lots of air, so you'll need to breathe in more frequently than you would if you were only saying the words.

Experiment with different sounds and the air it takes to make them — when you giggle, you let out your breath in short bits, but when you **burp**, you let swallowed air in your stomach out in one long one! When you hiccup, it's because the diaphragm moves in a funny way that causes you to breathe in air suddenly, and that air hits your vocal cords when you're not ready.

Love Your Lungs

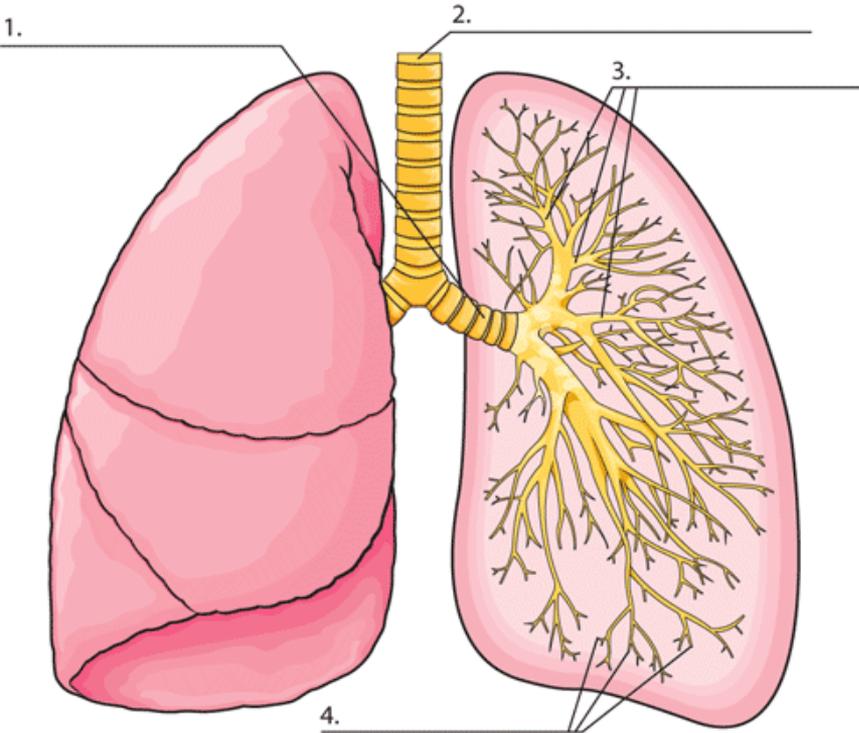
Your lungs are amazing. They allow you to breathe, talk to your friend, shout at a game, sing, laugh, cry, and more!

Keeping your lungs looking and feeling healthy is a smart idea, and the best way to keep your lungs pink and healthy is not to smoke. **Smoking** isn't good for any part of your body, and your lungs especially hate it.

You can also show your love for your lungs by exercising! Exercise is good for every part of your body, and especially for your lungs and heart.

HOW THE BODY WORKS

The Lungs



Match the words at the bottom to the number on the lungs. Click next to the number below to type your answer.

- 1. =
- 2. =
- 3. =
- 4. =

WORD BANK

alveoli
bronchioles

trachea
bronchus

How much do you know?

Take this short quiz to see what you know about the lungs. Make sure you check out the answers at the end to help you learn something new if you got a question wrong. Click on the lungs to take the quiz now!

