

Grade 5 Science  
Week of November 2 – November 6

Respiratory System Part 1

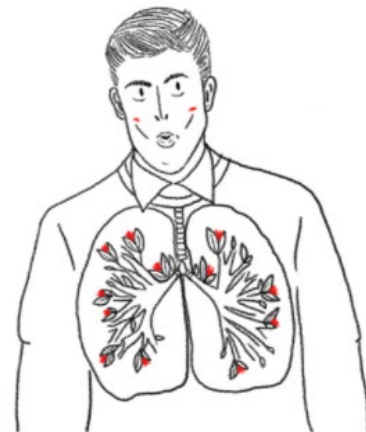
## Introduction

Take a deep breath, feel your chest get slightly bigger, and exhale. You've just experienced your body's **respiratory system** in action!

You've just learned about the digestive system, now you're going to learn a bit more about the **respiratory system**. The respiratory system actually plays a key role in digestion. Your respiratory systems bring oxygen into your body when you take a breath, and oxygen is actually needed to release energy from food molecules for cells to use.

By the end of this unit, you will be **able to identify and describe** the function of:

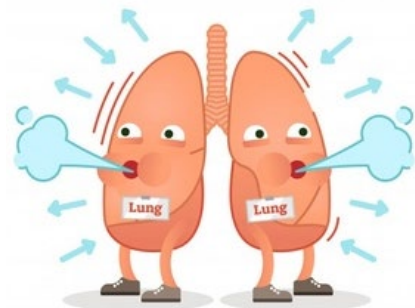
- The nose and mouth
- The trachea
- The bronchus and bronchioles
- The lungs
- The diaphragm



## All About Inhalation

When you're walking your dog, cleaning your room, or spiking a volleyball, you probably don't think about **inhaling** (breathing in) — you've got other things on your mind! But 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. "Move over, diaphragm, I'm filling up!" is what your lungs would say. 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** (also known as your 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**. The air finally ends up in the 600 million **alveoli**. As these millions of **alveoli** fill up with air, the lungs get bigger.

## How We Breathe



<https://youtu.be/JhYTsb4gFO>

### Did You Know...?

...that the average person breathes about sixteen kilograms of air every day? That's roughly six times the total mass of food and water you consume each day!

## Respiratory System



Watch the following video to be **introduced to the different parts of the respiratory system**. Make sure you pay close attention and fill out your Learning Guide as you go!

<https://youtu.be/OgiiDDBJVQU>

## Nose and Mouth

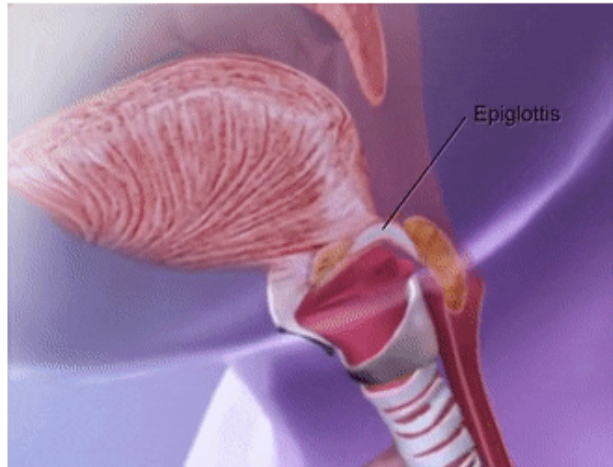
The respiratory system begins with the intake of air through your **nose** and **mouth**. Typically, people breathe through their nose when going about the day. Breathing through your mouth usually happens when you become more active because your mouth is able to intake more air much quicker than your nose.

Either way, the air that you breathe in through your nose or reaches your **trachea** next.

**Fun fact:** Did you know that it's impossible to breathe through your nose and swallow at the same time? It's true, try it! This is to make sure that your food and drinks don't go 'down the wrong pipe' aka down

the trachea into the lungs (ouch!) instead of down the esophagus into the stomach. There's actually a little flap that separates these tubes called the **epiglottis**.

Notice how the **epiglottis closes over the trachea** to ensure that the piece of food goes down the esophagus?

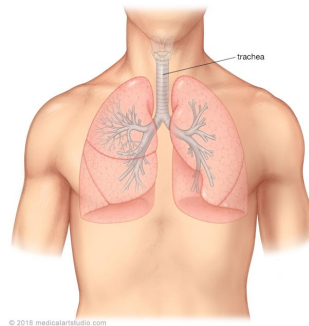


## Trachea

The **trachea** (also known as a windpipe) is a **bony tube that connects the nose and mouth to your left and right bronchus**.

It's about **12-15 cm long** and is similar to the esophagus in the digestive system since the trachea's main job is to **transport** the air you breathe in and out of your lungs. When you **breathe in**, your trachea is transporting **oxygen** (good) into your body and when you **breathe out**, it is transporting **carbon dioxide** (bad) out of your body.

Your trachea also helps **trap debris** and unwanted particles that could be harmful to your lungs by using a layer of **mucus** and things called **cilia**. Cilia are small hair-like structures that extend outwards from the cells found in your trachea.



Look up to the ceiling, locate the middle of your chin, then slowly and gently slide your fingers down the center of your throat. Can you feel the bumpy ridges? That's your trachea!



### 1.3 THE RESPIRATORY SYSTEM

1. How does the respiratory system work with the digestive system?

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2. What two muscles move so that your lungs have room to fill up with air?

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3. What is another word for trachea? \_\_\_\_\_

4. **How We Breathe Video:** Watch the “How We Breathe” video and answer the following questions:

1. As the rib cage is pulled upward and outward, the diaphragm is pulled

\_\_\_\_\_

2. As everything is pushing inwards, the volume inside the chest cavity \_\_\_\_\_ and the air pressure in the chest cavity

\_\_\_\_\_

3. Do we have muscles in our lungs?

\_\_\_\_\_

5. **How Your Lungs Work Video:** Watch the “How Your Lungs Work” video and answer the following questions:

1. At the end of the trachea are two large tubes called the:

\_\_\_\_\_

2. How many lungs do you have? \_\_\_\_\_

3. How many alveoli are in the lungs? \_\_\_\_\_

4. How is the air you breathe in different than the air you breathe out?

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6. When do you usually breathe through your mouth?

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7. Is it possible to breathe and swallow at the same time? \_\_\_\_\_

8. The trachea is a:

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9. What are cilia and what do they do?

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