



# Build a Lung

How do your lungs bring air into your body and push it out?

## Description

Most of the time, we don't need to think about breathing. You're breathing right now! How do you get air into your lungs (inhale) and out of your lungs (exhale)? Use a plastic bottle, a balloon, and a glove to model how your lungs work.

**Age Level: 10 and up**



How do your lungs bring air into your body and push it out?

## Materials

- Empty plastic soda or water bottle approximately 500 mL
- Scissors
- Balloon, 15-30 cm diameter if inflated
- Disposable glove
- Rubber band
- Clear tape
- Push pin, thumbtack, or safety pin



## Time

Preparation: 5 min  
Activity: 20 min  
Cleanup: 5 min

## Safety

If you or someone else has a latex allergy, use a nonlatex glove.

## Step 1

Cut the bottom fourth off the plastic bottle. You may need adult help. The plastic bottle represents the outside of your chest.



## Step 2

Push the larger end of the balloon through the mouth of the bottle and into the bottle. Stretch the mouth of the balloon over the mouth of the bottle. This balloon represents one of your lungs.



## Step 3

Stretch the glove over the bottom of the bottle, so the fingers are pointing down. Secure the glove to the bottle with a rubber band.



## Step 4

Group the fingers of the glove, twist them together, and secure with tape to make a “handle.” This glove represents your diaphragm, the large muscle that sits below your lungs.



## Step 5

Gently push and pull the handle of the diaphragm to move the “muscle” in and out of the bottle. What do you notice happening to the balloon lung?



## Step 6

Place a small piece of tape over the mouth of the bottle, completely covering the balloon hole. Use the pushpin to poke a hole in the tape. Be sure not to poke a hole in the balloon! This small hole in the tape represents asthma, a condition where some of the smaller airways in your lungs contract and get smaller.



## Step 7

Move the diaphragm in and out of the bottle. What do you notice about the balloon lung now? How is this different than without the tape?

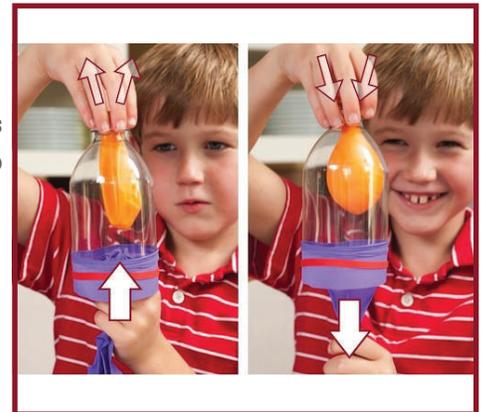


## What's Going on?

When you pulled the glove (diaphragm) outside the bottle you increased the space inside the plastic bottle. This lowered the density of air molecules and reduced the pressure inside the bottle. Air from the outside rushed into the balloon to keep the volume of air inside the bottle the same.

When you pushed the diaphragm inside the bottle, you decreased the space inside the bottle. This increased the density of air molecules and increased the pressure inside the bottle. Air inside the balloon rushed out of the balloon.

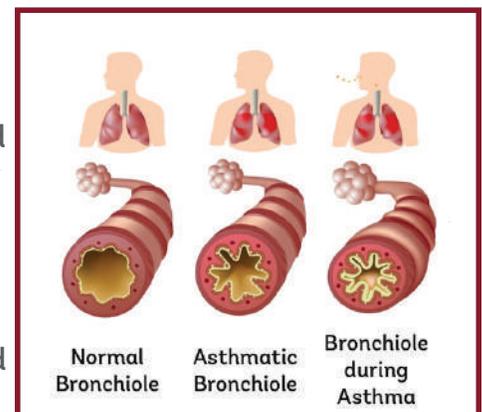
Our lungs function the same way, but our lungs are not empty sacs like the balloon. They are like a sponge, filled with tiny holes and tubes.



## What's asthma?

One lung condition many people have is asthma. With asthma, the small airways inside your lungs, called bronchioles, become constricted or tightened just like the hole you made in the tape. With only a tiny airway, the balloon became harder to inflate and deflate.

People who have asthma experience a similar situation—it's difficult for them to breathe in and out. Asthma can be triggered by things like pollution, cigarette smoke, mold, or pet dander. It can also be triggered by stress or physical exercise. Some people use an inhaler, which delivers a mist of medication to help open the airways in their lungs.



## Learn More



For more info and other activities, visit:

[LawrenceHalofScience.org/do\\_science\\_now/diy\\_human\\_body](http://LawrenceHalofScience.org/do_science_now/diy_human_body)

## Credits



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