

Model Lung

Grade Level:	3 rd -5 th
Duration:	30-60 mins
Classification:	Classroom, STEM fair (demo)
Subject(s):	Biology, Anatomy
Categories (STEM):	Science
Keywords:	Lungs, Organ function

Introduction:

Summary:	Learn about how lungs function
Description:	Students will create a model of a lung to visualize how lungs function.

Online Resources: <https://www.science-sparks.com/breathing-making-a-fake-lung/>

Materials:

Material	Quantity	Reusable?
plastic bottle top	1 per group of 3-4 students	Yes
Straws	1 per group of 3-4 students	No
Elastic bands	2 per group of 3-4 students	Yes
Scissors	1 per group of 3-4 students	Yes
Balloons	1 per group of 3-4 students	No
Play-Doh	1 container per group of 3-4 students	Yes

*Based off a class of 25

Directions:

1. Cut the water bottle in half, if not cut already. For this experiment, we will use the top half.
2. Tie a knot in one of the balloons, then cut off the opposite end of the balloon.
3. Stretch the balloon around the bottom of the plastic bottle.
4. Place a straw into the opening of the other balloon and use the elastic band to tie the balloon around the straw. Secure the balloon around the straw using the Play-Doh to make sure no air can escape the balloon.
5. Put the balloon with a straw in it into the plastic bottle. Secure the balloon around the straw using the Play-Doh to seal the bottle. Make sure not to crush the straw.



6. Hold the bottle and pull the balloon at the bottom. What happens?

Discussion Questions:

1. What happens when you pull the balloon at the bottom? Why does this happen?
 - a. When the balloon is pulled, the balloon inside the bottle inflates with air. This is like us breathing in!
2. What does each piece of this model represent?
 - a. The balloon at the bottom represents the diaphragm, the balloon in the bottle represents the lungs. The diaphragm is a muscle that sits under the lungs and moves up and down to increase space in the chest for breathing, similar to the balloon in the model.

What is happening?

1. What processes happen in the lungs?
 - a. Ventilation is the movement of air into and out of the lungs through a tube called the trachea.
 - b. Gas exchange is the process of gas being exchanged in the lungs. In the lungs, there are tiny sacs called alveoli. The lungs take in oxygen, and exchange oxygen with carbon dioxide to oxygenate the blood in the body through the alveoli.

Activity Extensions:

- Label a diagram of the diaphragm and the lungs to connect the model lung to actual lungs – could do this before making the model lungs to better understand how the lungs function.

Applications:

- Majors
 - Biology
 - Physiology
 - Kinesiology
 - Anatomy
- Jobs
 - Doctor
 - Exercise Physiologist

- Hobbies
- Real World Applications
 - Lung function