Make your very own model lung!

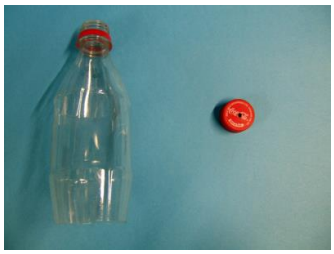
See it inflate and deflate as it "breathes" in this fun science activity from http://www.gsc.org.uk/sciencebiteslungs.aspx

What you'll need

- An empty 500ml drink bottle (clear, without sport cap)
- Drinking straw
- Balloon
- Water Balloon (or another normal size balloon)
- Scissors
- Tape
- Small piece of blu-tac or plasticine

Instructions

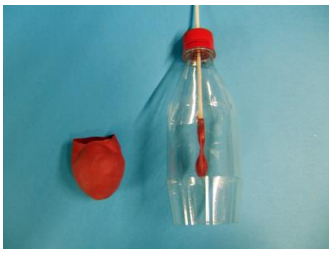
Step 1



Rinse out your bottle with clean water and remove the label. With help from an adult cut off the bottom 1/4 to 1/3 of your bottle.

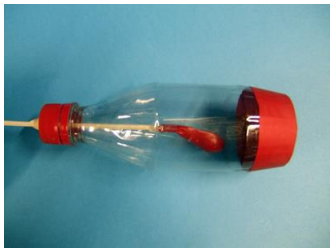
Ask your adult to make a hole in the centre of the lid.
This can be done in a couple of ways either by being very careful with a pair of sharp scissors, or by using a drill.

Step 2



Carefully tape the water balloon over one end of the straw and try to make sure that no air can escape between them. Feed the straw through the lid of the bottle and screw the lid on. It is also a good idea to put some blutac or plasticine around the hole where the straw goes in to make a seal.
Now cut off the top of your other balloon and discard the top part.

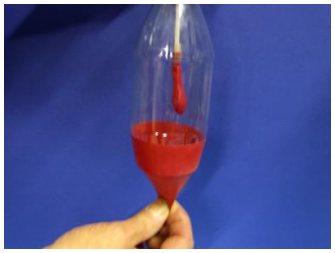
Step 3



Now you need to stretch your balloon over the bottom of your bottle tightly. For this you might need someone to help you by holding the bottle. Once the balloon is stretched tightly, tape it in place sealing the edge.

Your model lung is now complete!

Step 4



To see your model lung work you need to pull down on the balloon at the bottom and if you watch the water balloon you can see it inflate. If you let go of the balloon or push it back in you can see it deflate.

A slightly more advanced model involves taping two straws together and using two balloons inside your model to show the air flowing into both of your lungs.

How Does it Work?

This model shows how your lungs work with the balloon on the bottom of your model being a muscle called the diaphragm – as this muscle moves down, the volume of the cup (chest cavity) increases and so the fluid pressure inside decreases. As the fluid pressure inside the cup becomes less than that of atmospheric (air) pressure on the outside of the cup, air is pushed into the balloon (lungs) by gravity to fill that extra space. When the balloon is released or pushed into the cup (diaphragm relaxes), the volume in the cup (chest cavity) decreases causing the fluid pressure around the balloon (lungs) to increase thereby pushing air out.

Model Lung Activity

Name(s) _____ Date _____ Period ____

1. What does the coke bottle represent?

2. What does the balloon inside the coke bottle represent?

3. What does the balloon on the bottom of the coke bottle represent?

4. When you push the balloon upward what happens to the size of the balloon? What is this action simulating?

-Draw a picture to indicate what happens.

5. When you pull the balloon downward what happens to the size of the balloon? What is this action simulating?

-Draw a picture to indicate what happens.

6. What would happen if your diaphragm quit working? Explain.

7. In your words describe the purpose of this demonstration.