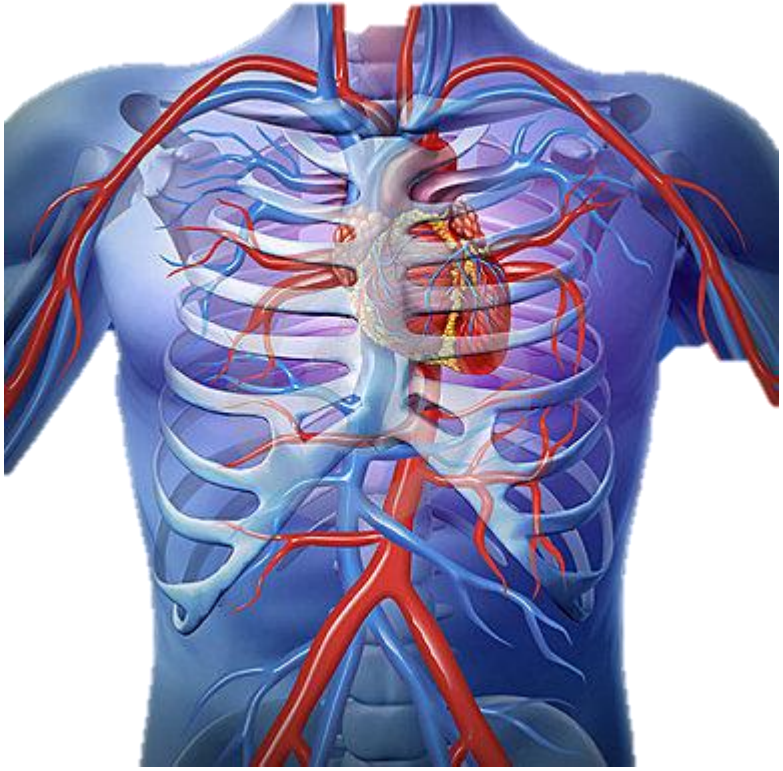
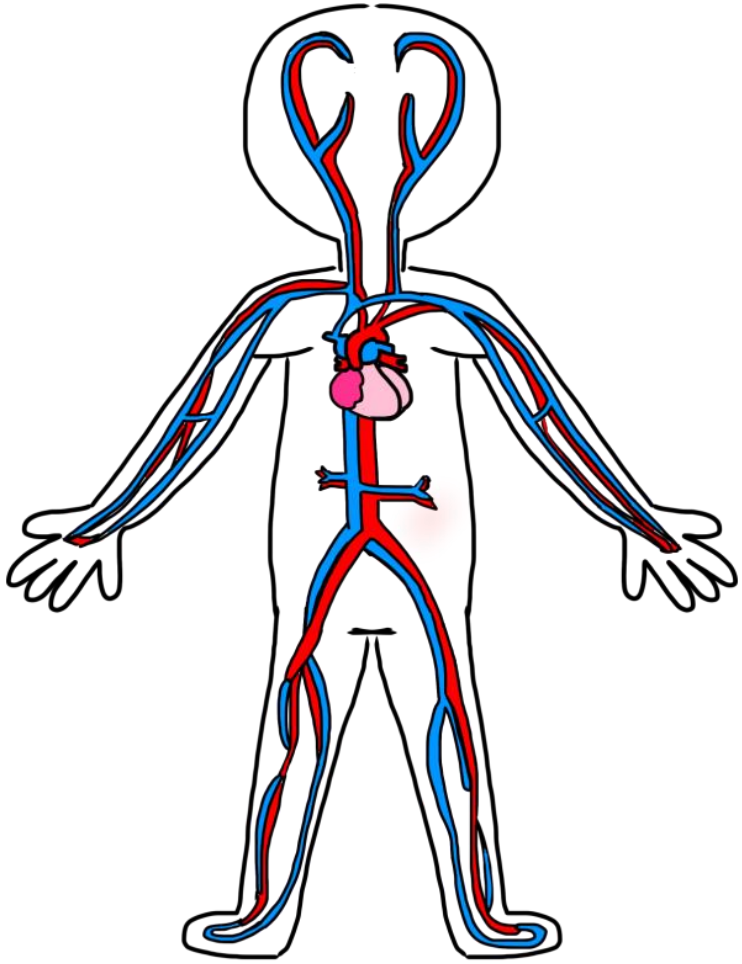
Science: Circulation

I am developing understanding of how gas exchange takes place in the lungs. and understanding the double circulation process.



The Circulatory System

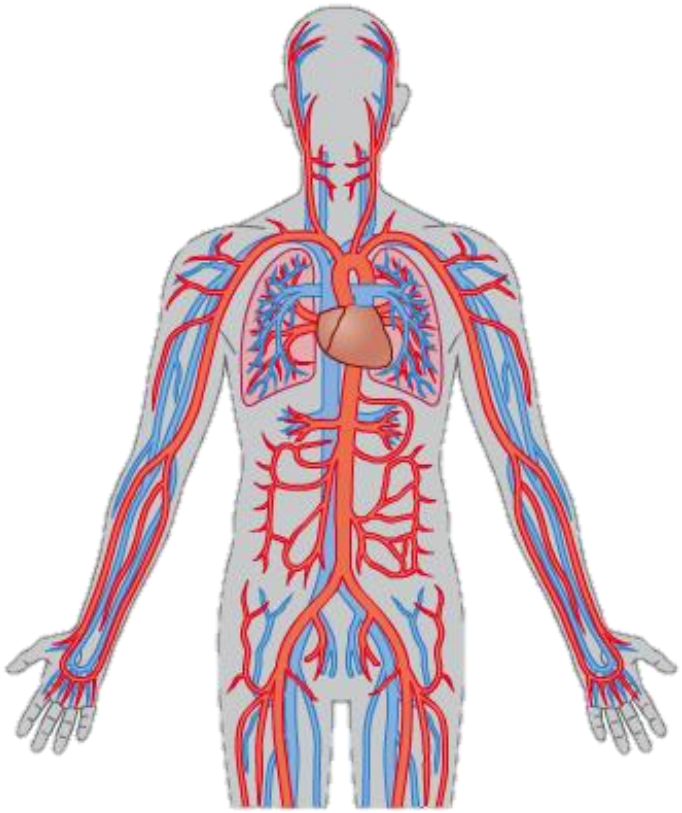
The system that circulates blood around the body of humans and most other animals.



The main function of the circulatory system in humans is to deliver oxygen and nutrients to all parts of the body and to remove waste.

The Circulatory System

The human circulatory system consists of the heart which acts as a pump, and the blood vessels in which the blood flows.

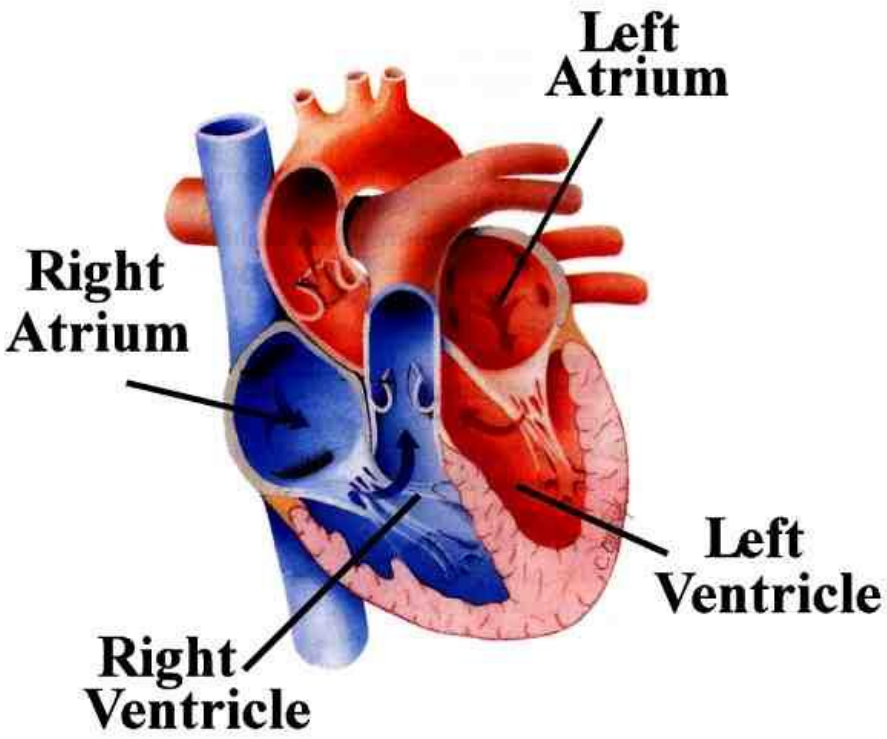


We distinguish between:

Arteries in which blood flows away from the heart;

Veins in which blood flows back to the heart.

The Heart



There are Four chambers in the heart.

There are two chambers on each side. One chamber is on the top and one chamber is on the bottom.

Why are there two separate sides?

The Heart

Your heart is like a pump, or two pumps in one:

The **Right** side of your heart
receives blood from the body
and pumps it to the lungs.

Deoxygenated blood -

"Oxygen-poor"
Mainly found in veins

The **Left** side of the heart does
Exactly the opposite: It receives blood
From the lungs and pumps
it out to the body.

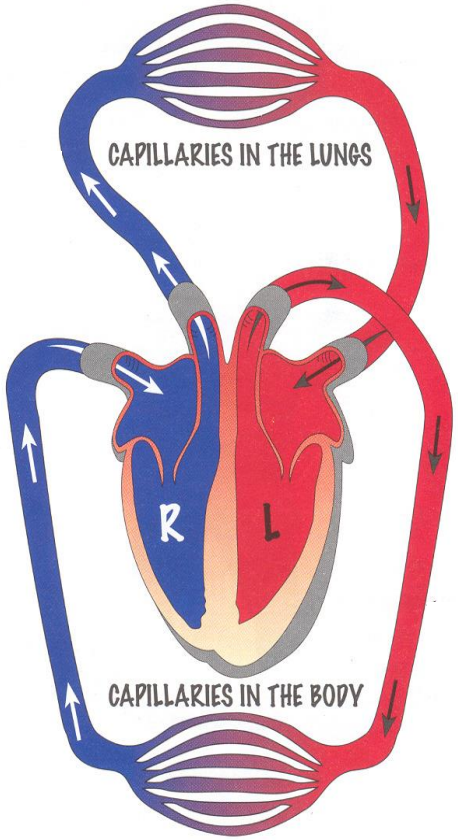
Oxygenated blood -

"Oxygen- rich"
Mainly found in arteries

The Heart is a DOUBLE PUMP

1 - blood is pumped to the lungs and returns to the heart,
2 - blood is pumped to respiring muscles & back to the heart again

1. Deoxygenated blood is pumped from the heart to the lungs.

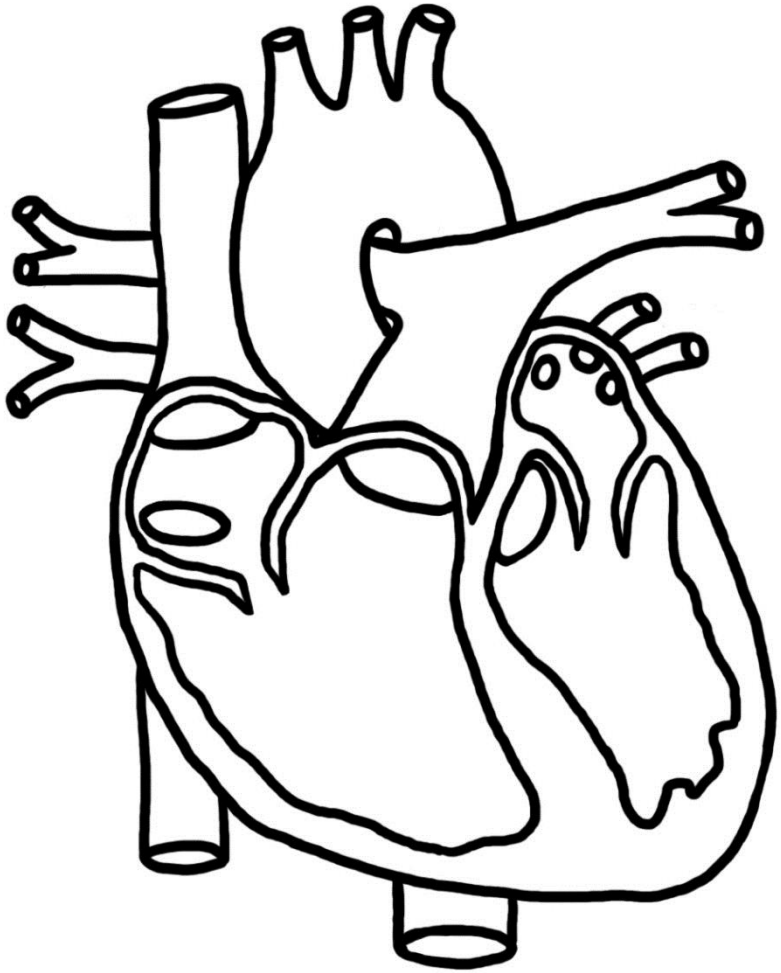


2. The blood receives oxygen and is pumped back to the heart

3. The oxygenated blood is then pumped to the rest of the body

4. The oxygen leaves the blood to be used for respiration in the body and the blood goes back to the heart.

What goes where?



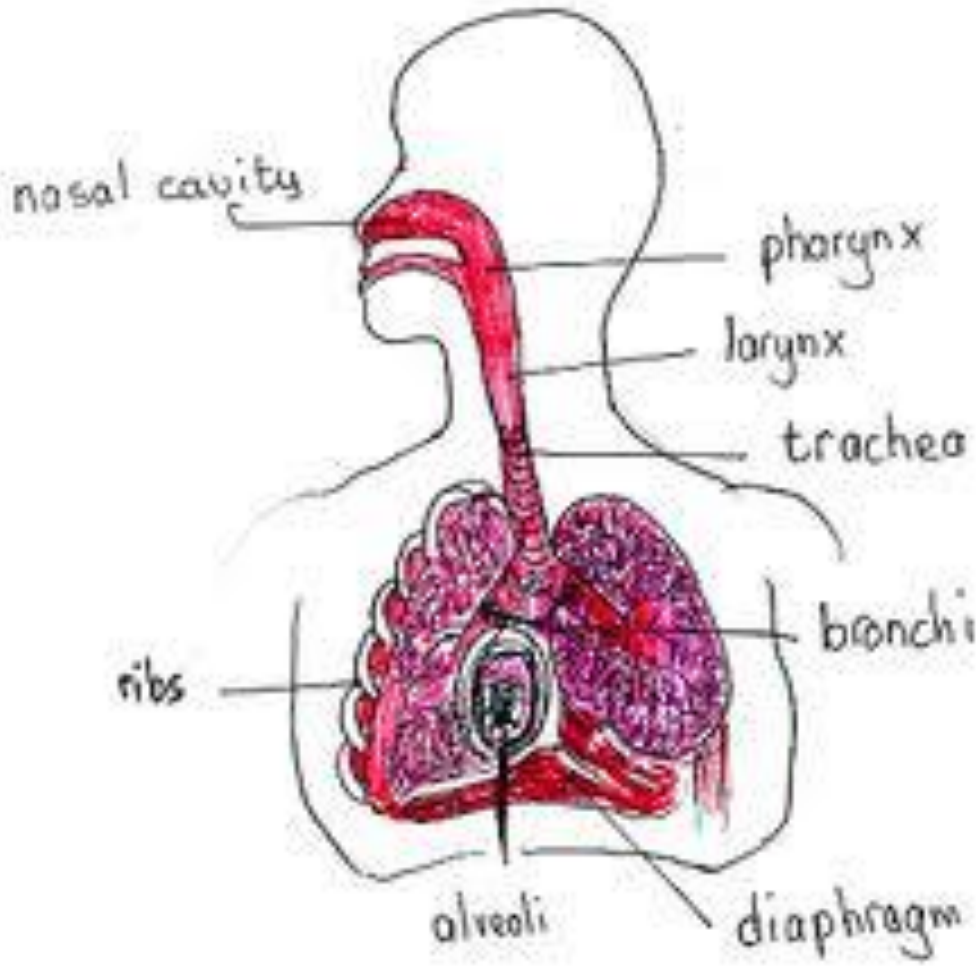
Can you put these statements in the correct order? Complete this on your sheet.

The circulation of blood in the body	
Deoxygenated blood from the body enters the right atrium of the heart	1
As the atrium contracts the blood is squeezed through the valve in to the left ventricle. The valve shuts to stop the backflow of blood	
The heart muscle contracts and forces the blood out of the right ventricle to the lungs to get rid of carbon dioxide and pick up oxygen	
As the atrium contracts the blood is squeezed into the right ventricle through valves. The valve shuts to stop the backflow of blood	
The oxygenated blood from the lungs enters the left atrium of the heart	
The body uses the oxygen in the blood causing it to become deoxygenated	
As the heart muscle contracts this forces the oxygenated blood out of the left ventricle to the rest of the body.	

Here's the correct order. How did you do?

The circulation of blood in the body	
Deoxygenated blood from the body enters the right atrium of the heart	1
As the atrium contracts the blood is squeezed through the valve in to the left ventricle. The valve shuts to stop the backflow of blood	5
The heart muscle contracts and forces the blood out of the right ventricle to the lungs to get rid of carbon dioxide and pick up oxygen	3
As the atrium contracts the blood is squeezed into the right ventricle through valves. The valve shuts to stop the backflow of blood	2
The oxygenated blood from the lungs enters the left atrium of the heart	4
The body uses the oxygen in the blood causing it to become deoxygenated	7
As the heart muscle contracts this forces the oxygenated blood out of the left ventricle to the rest of the body.	6

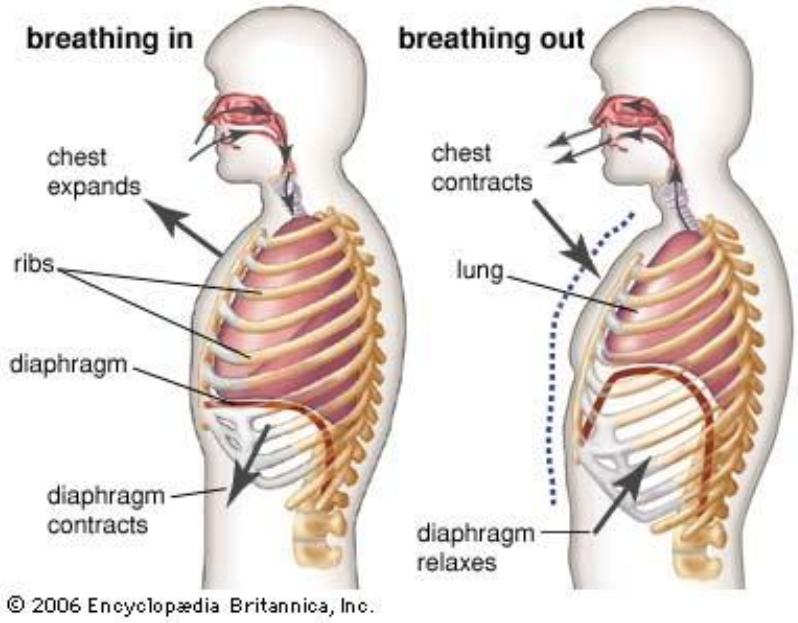
Science: The Lungs



Breathing

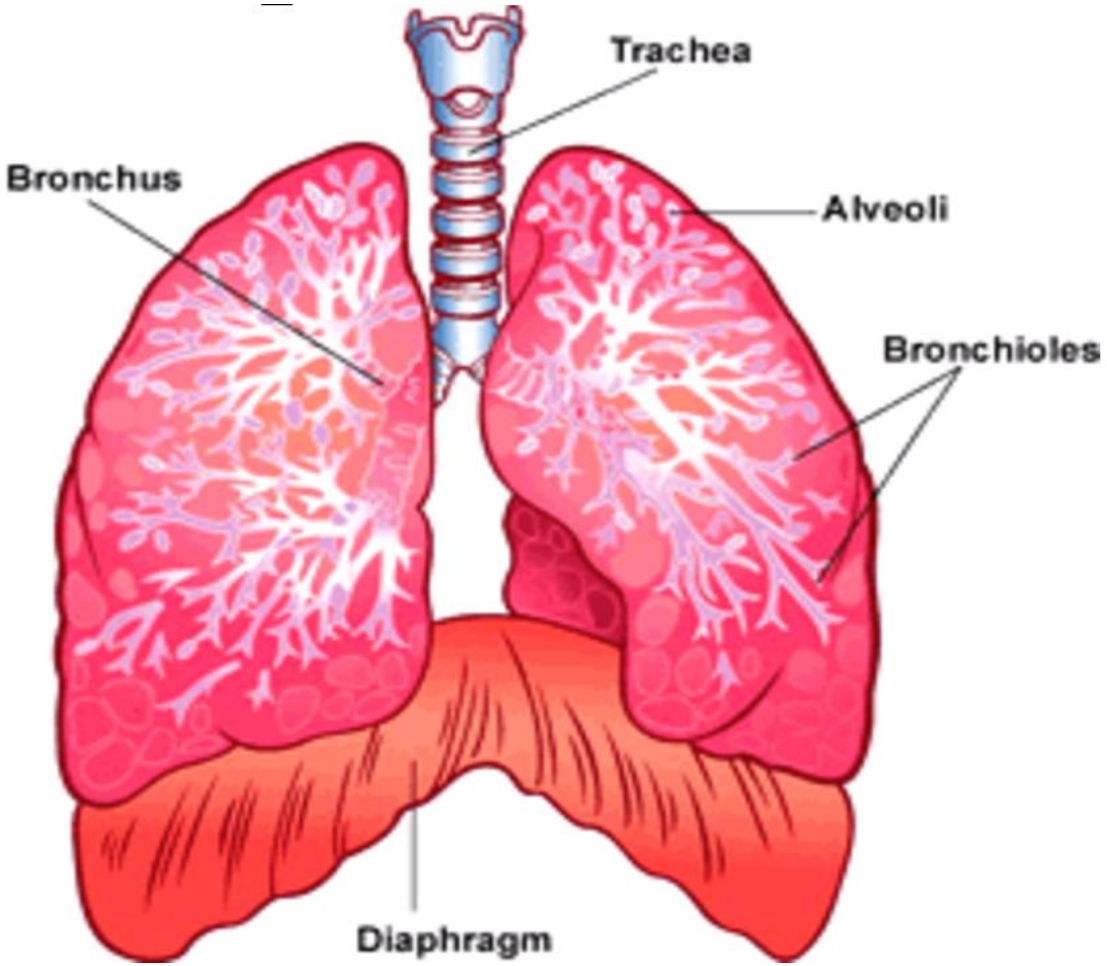
When we breathe in, a muscle under our lungs, called the diaphragm, pulls down which pulls air into our lungs.

Our chest rises pushing our ribs up and out. When the muscle relaxes, our chest falls - forcing air out of our lungs.



The amount of air that we breathe in when we take a deep breath is called our lung capacity.

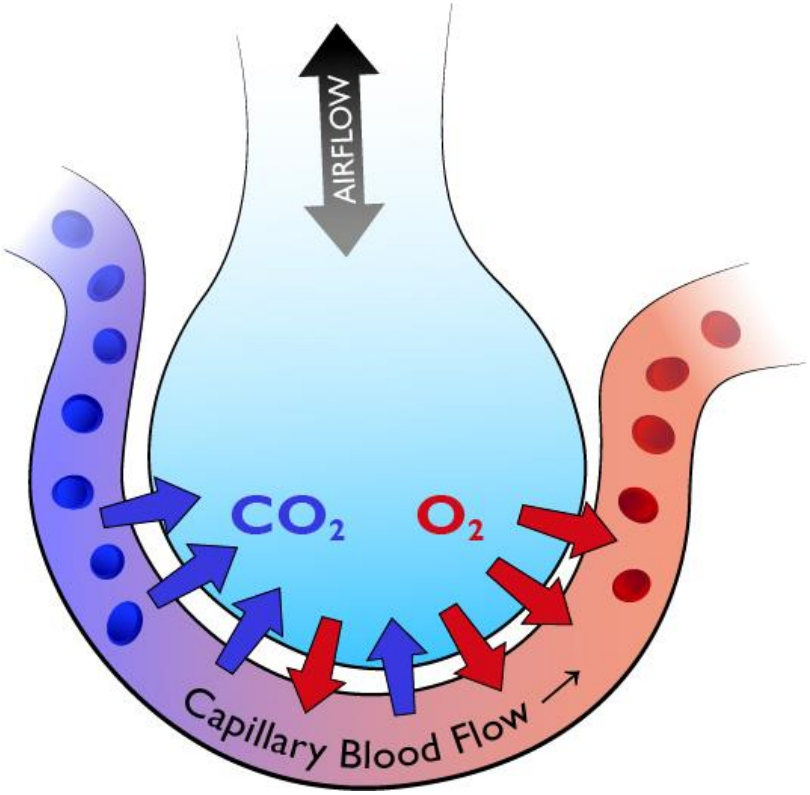
Structure of our Lungs



Gas Exchange

The lungs are made of lots of tubes, which get smaller and smaller and end in millions of tiny air sacs (alveoli) which are surrounded by capillaries.

The capillaries and air sacs have very thin walls through which the gases can easily pass.



Respiration

The exchange of gases that happens in the lungs and the act of breathing in and out to replenish the oxygen and remove the carbon dioxide is known as Respiration.

Look at the next slide and have a go at making a model lung.

Making a model lung

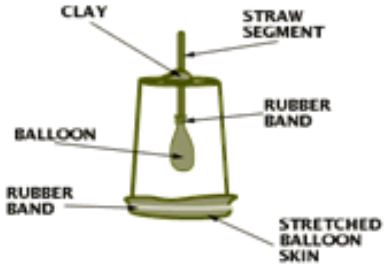
Apparatus

1 Clear plastic cup with a hole in the bottom

1 piece of drinking straw approximately 5cm long

2 Balloons

Sticky tape



Method

1. Attach one of the balloons to the end of the drinking straw, and secure it with sticky tape, making sure that the seal is airtight.
2. Pass the other end of the straw through the hole in the plastic cup, so that approximately half of the straw is inside the cup.
3. Fasten the straw into position using the sticky tape, making sure that the opening is sealed but the straw is not pinched closed
4. Cut a second balloon at the neck, throw away the neck and carefully stretch the rest of the balloon over the mouth of the cup to form a seal, and secure it with sticky tape.
5. Push up on the stretched balloon fabric. Now, pull it down. Notice how these actions affect the appearance of the balloon inside the cup.