

The Circulatory System

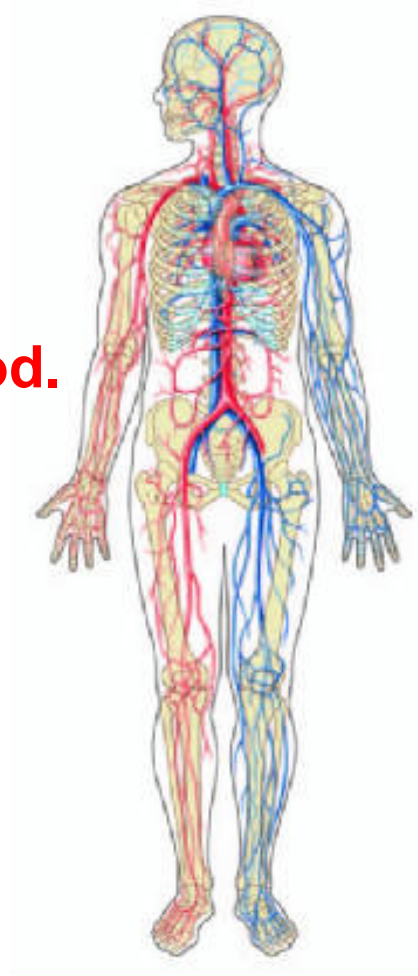
Living things need to be able to move food, gases, and wastes around their bodies.

To do this we use our circulatory system.

It's made of the heart, blood vessels and blood.

The functions of blood are,

1. Transport - Glucose, Oxygen
2. Defence against disease
3. Temperature regulation (37°C)



The Functions of Blood

1. **Transport -**

Blood carries water, wastes, sugar, Oxygen and Carbon Dioxide

2. **Defence against disease -**

Cells in blood can attack and engulf (eat) bacteria and fungi
Other cells can form clots to stop bleeding and prevent entry of harmful organisms.

3. **Temperature regulation -**

The liver and other organs produce a lot of heat. The blood can carry this heat around the body and help keep the average temperature at 36.9°C

Composition of Blood

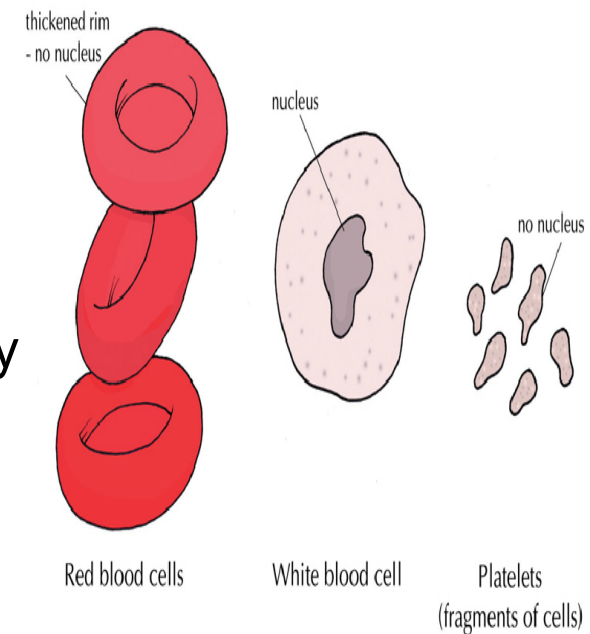
Blood is a **tissue** as it is made of different types of cells.

Blood is made up of a liquid called **plasma**.

Plasma is mostly water so it can **transport** substances and heat.

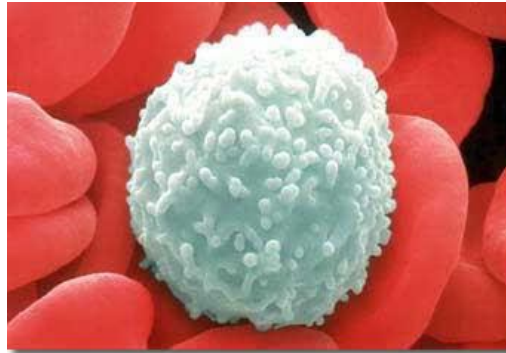
There are **3 other types of blood cell** in the plasma,

1. Red Blood Cells - contain iron and a chemical called haemoglobin which can carry Oxygen. Red blood cells have no nucleus. Blood without Oxygen is purple coloured.



2. White Blood Cells -

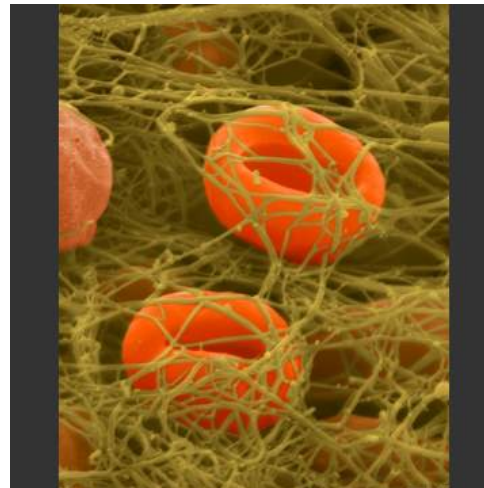
These can engulf (eat) bacteria/fungi or produce antibodies to kill them.



A White Blood Cell or Leukocyte

3. Platelets -

Small bits of cells form a net that causes blood to clot and heal wounds.

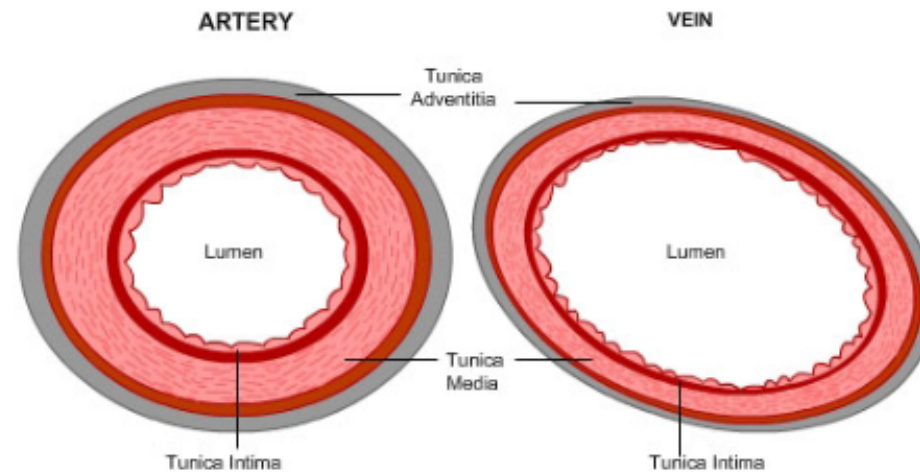


Blood Vessels

The blood has to travel in tubes called vessels.

There are **3 main types of blood vessel**

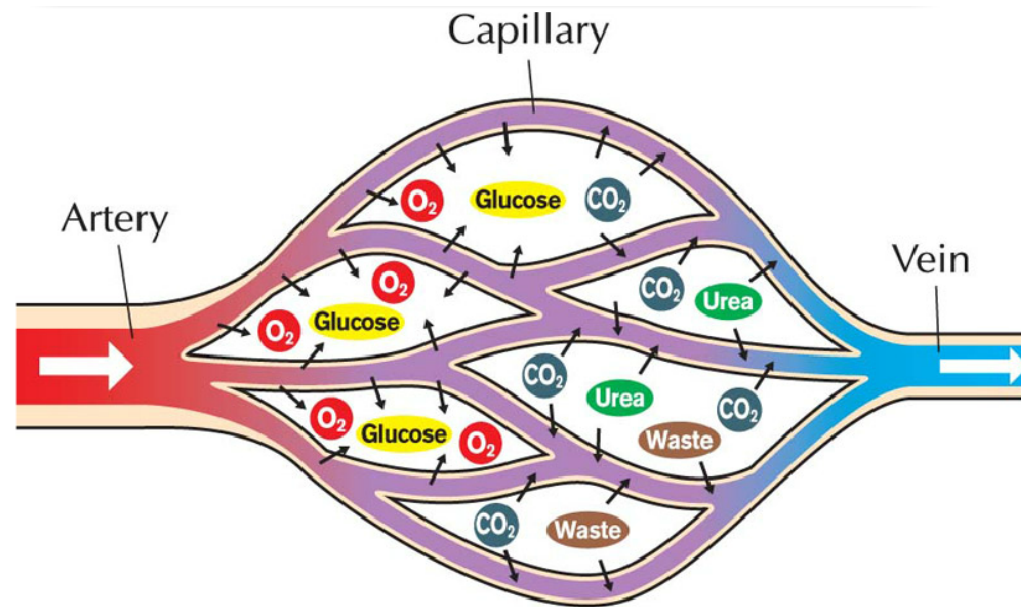
1. Arteries - these are strong walled vessels that carry blood under great pressure from the heart to the rest of the body. The blood moves very quickly.



2. Veins - these vessels are weaker and carry blood from the body back to the heart. Blood moves more slowly as there is no pump to move the blood back. These vessels have valves to stop the blood flowing the wrong way, called 'backflow'.

3. Capillaries

These are only one cell thick and carry blood and materials between the arteries and the veins.

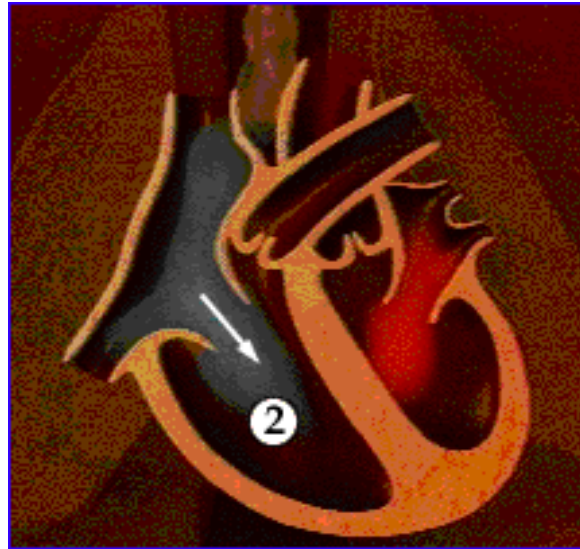


Arteries carry blood **A**way from the heart.
Veins carry towards the heart.
Capillaries join arteries to veins.

The Heart

The function of the heart is to pump blood around the body.

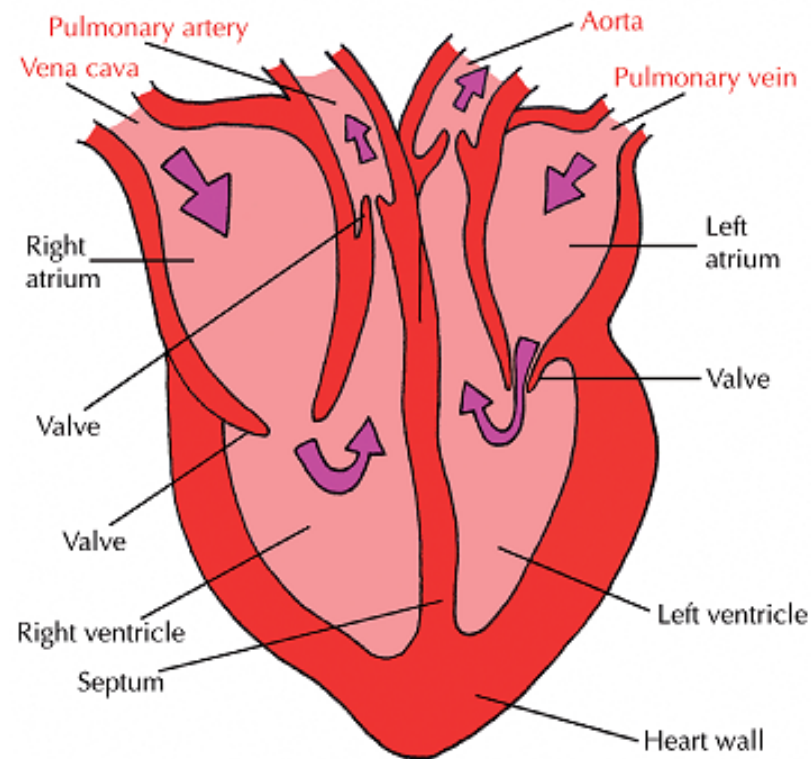
The heart is a double pump. One pump moves the blood to the **lungs** to pick up **Oxygen** and the second pump carries the oxygen-rich blood to the rest of the **body**.



The heart is made up of four chambers, the left and right atriums and the left and right ventricles.

How the heart works

Blood flows into the atriums and out of the ventricles.
The left ventricle is thicker as it pumps blood all around the body.



Blood enters through the **vena cava** and the **pulmonary vein**.
It leaves by the **Aorta** and the **Pulmonary Artery**.

Pulse and Exercise

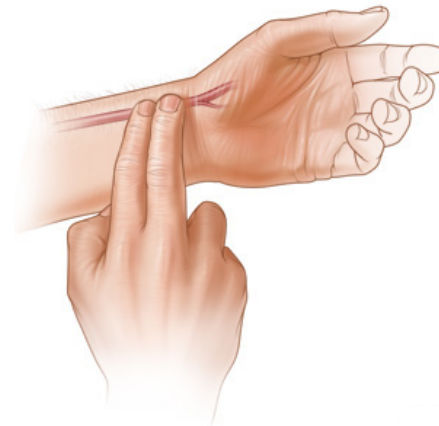
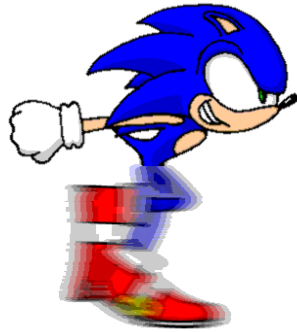
The average human resting pulse rate is **72** beats per minute.

When we exercise our hearts speed up.

It speeds up so that more **Oxygen** can get to our muscles.

We also breath faster to take in more Oxygen and exhale **CO₂**.

Pulse rate is affected by age, diet, exercise and stress.



Heart Dissection

