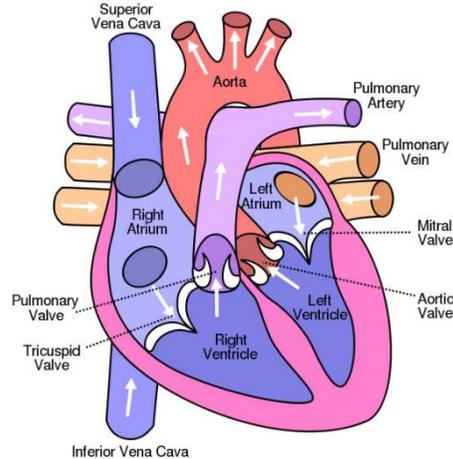


Science

The heart

The heart is a muscle that is found in the chest cavity between the lungs. It is responsible for pumping blood around the body, through the circulatory system. The heart is made up of four chambers known as the left atrium, right atrium, left ventricle and right ventricle.



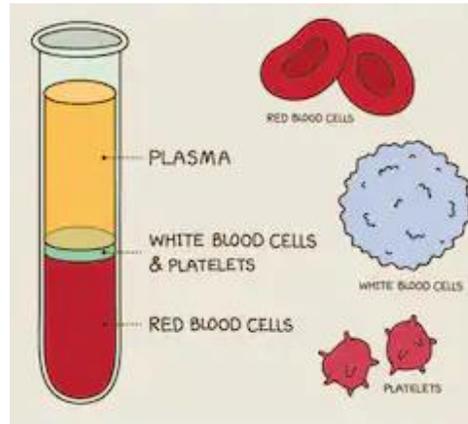
Healthy heart

The heart is a hardworking organ and it is important to keep it healthy. A balanced diet should include plenty of fruits and vegetables, whole grains, low-fat dairy products, lean meat and fish, nuts and pulses and good fats. Eating foods that are high in salt, sugar and fat can be bad for the heart and lead to blockages in the arteries. This means the heart must work harder to pump blood around the body.

Blood Heart

Blood

Blood is made up of red blood cells, white blood cells, platelets and plasma. Each part is made in a different area of the body and has a special role.



Plasma is the main component of blood. It is the liquid that carries the red blood cells, white blood cells and platelets around the body. It also carries nutrients, hormones and proteins to where they are needed and takes away waste products.

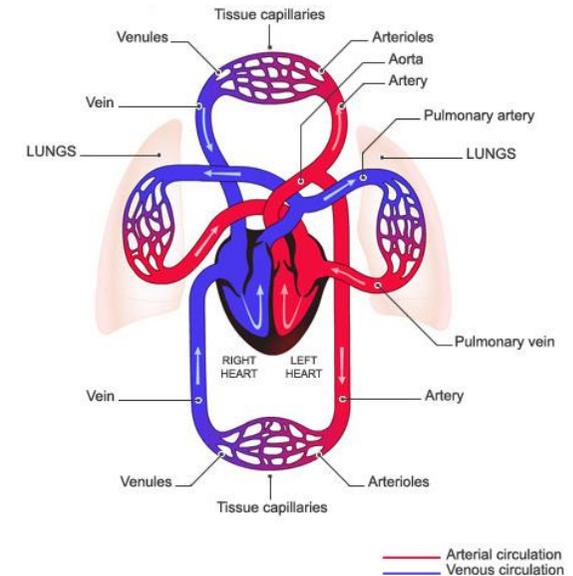
White blood cells protect against illness and disease. They produce antibodies that kill bacteria, viruses, fungi and parasites.

Platelets are small bloody cells that help the body to stop bleeding after a cut or scrape.

Red blood cells contain a protein called haemoglobin that carries oxygen from the lungs to different parts of the body. They also take waste carbon dioxide to the lungs to be breathed out.

The circulatory system

The circulatory system is made up of the heart, blood vessels and blood. It is responsible for transporting nutrients, oxygen, water and waste products around the body.



Circulation

In the 1600s, an English doctor called William Harvey discovered how blood travels around the body. He was the first to establish that the body has a fixed amount of blood flowing through the arteries, which travels through the veins and back to the heart in a cycle. The heart pumps between four and six litres of blood around the body every day. The heart rate, also known as the pulse, is the number of times the heart beats in a minute. The heart pumps faster during exercise to deliver more oxygen around the body.

Blood donation

The blood used during blood transfusions comes from volunteer blood donors. Most healthy people can give blood if they are over the age of 17 and fit the criteria. Blood can be donated every 12-16 weeks. Blood donors visit donation centres where blood is taken from a vein in the arm and collected into a bag. Around 4% of people in the UK give blood and nearly 200,000 new donors are needed every year.

History

Karl Landsteiner

An Austrian scientist, Karl Landsteiner, found that humans had different blood groups. It was an important discovery because if the wrong blood type is given to a person during a blood transfusion, they can become extremely unwell.

1868 Karl Landsteiner is born on 14th June in Vienna, Austria.

1891 Landsteiner graduated with a degree in medicine and publishes his first scientific work.

1896 Landsteiner studies immunity and antibodies.

1901 Landsteiner discovers that humans have different blood types.

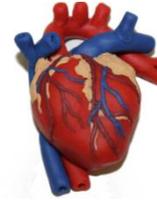
1927 Discovers new blood groups, important for future research on diseases and ancestry.

1930 Wins the Nobel Prize for his work on blood groups.

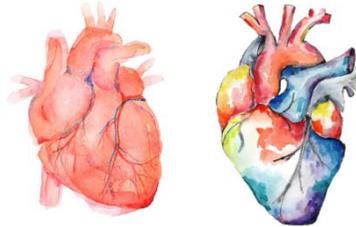
1943 Landsteiner dies of a heart attack.

Art & Design

Medical students often create model hearts made from clay or plasticine, using photographs to help them to sculpt them. They use these sculptures in order to help them understand and explain the structure and functioning of the heart.



We can use ready-mix paint, Brusho and ink in different shades of red to create abstract paintings. A range of tools can be employed to blow, smudge, paint, mark and print the liquids.



Music

Heart raps

The rhythm and pulse are the foundations to any song. The pulse is a steady beat that can be compared to a ticking clock or a heartbeat. It can be measured in time by counting the number of beats per minute (BPM). The rhythm is the pattern of long and short sounds as you move through a song.

Rap music uses pulse and rhythm to great effect. Rapping essentially involves the speaking or chanting of rhyming lyrics, often set to a beat. The rhyming created by rappers is considered by many to be one of the most sophisticated styles of poetry.

Glossary

Antibody: a protein produced by the body's immune system that fights disease and infection.

Blood vessel: a tube that transports blood around the body. Arteries, veins and capillaries are all types of blood vessel.

Haemoglobin: a red protein that is responsible for carrying oxygen around the body.

Hormone: a chemical that carries messages around the body e.g. hunger or emotions.

Immunity: the body's way of fighting disease or infection.

Nutrient: a substance needed for life and growth (included proteins, vitamins and minerals).

Protein: an essential part of all living organisms, found in living tissue including muscle and skin.

Pulmonary artery: the blood vessel that carries blood from the heart to the lungs to collect oxygen.

Pulmonary vein: the blood vessel that carries oxygenated blood from the lungs to the heart.

Virus: a microorganism that invades living cells and causes disease and illness.

Computing

Scratch- flowcharts - circulatory system

An algorithm is a sequence of instructions or a set of rules that are followed to complete a task. This task can be anything, so long as you can give clear instructions for it.

Computers won't understand your algorithm as they use a different language. It will need to be translated into code which the computer will then follow to complete a task. This code is written in a programming language. There are many different types of programming languages e.g. Scratch.