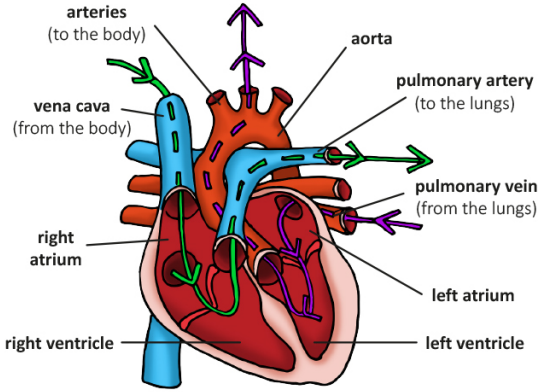
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Blood Heart

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 and regular exercise are vital for heart health. 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 that the heart must work harder to pump blood around the body.

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

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

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

Platelets

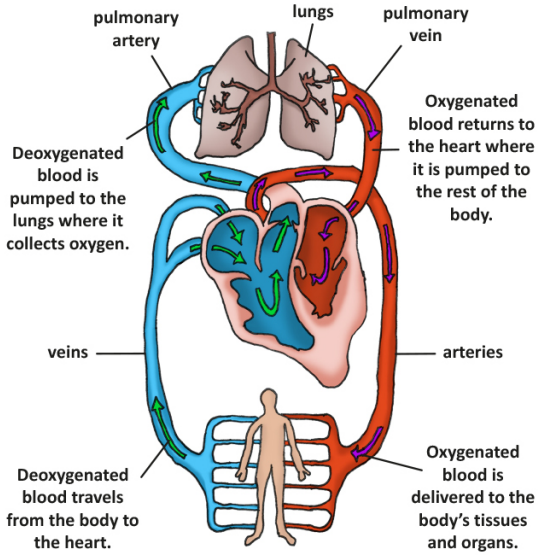
Platelets are small blood cells that help the body to stop bleeding after a cut or scrape.

Red blood cells

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.

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Smoking and circulation

More than 80,000 people die of smoking-related diseases in England each year. For every two people that smoke, one will die of a disease that results from smoking. More than 4000 chemicals are found in cigarettes. When smoke is breathed into the body, the poisonous chemicals enter the bloodstream and thicken the blood, make the heart beat faster and narrow the arteries. This can lead to a higher risk of heart disease, a heart attack, a stroke, damaged blood vessels, blood clots, lung disease, pneumonia, emphysema and cancer.

Karl Landsteiner timeline

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 graduates 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	Landsteiner discovers new blood groups, important for future research on diseases and ancestry
1930	Landsteiner wins the Nobel Prize for his work on blood groups
1943	Landsteiner dies of a heart attack on 26th June

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.



Blood groups and transfusions

A blood group describes the type of blood a person has. Humans have four main blood groups: A, B, AB and O. Each of these groups can also be described as Rhesus positive or Rhesus negative, depending on the presence or absence of a protein in the blood.

If a person has lost blood following surgery or injury, or if they have a disease, such as cancer, they might be given a blood transfusion. It is important that a patient is given donated blood that has been matched to their blood type. During a blood transfusion, a needle is inserted into a vein in the patient's arm or hand and attached to a bag of blood. It can take almost four hours for one bag of blood to go into the body.

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 to control major bodily functions, such as hunger or emotions.
immunity	The body's way of fighting disease or infection.
nutrient	An essential substance that the body needs for life and growth, including proteins, vitamins and minerals.
protein	An essential part of all living organisms, found in living tissue including muscle and skin. Also an important dietary requirement.
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.

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