

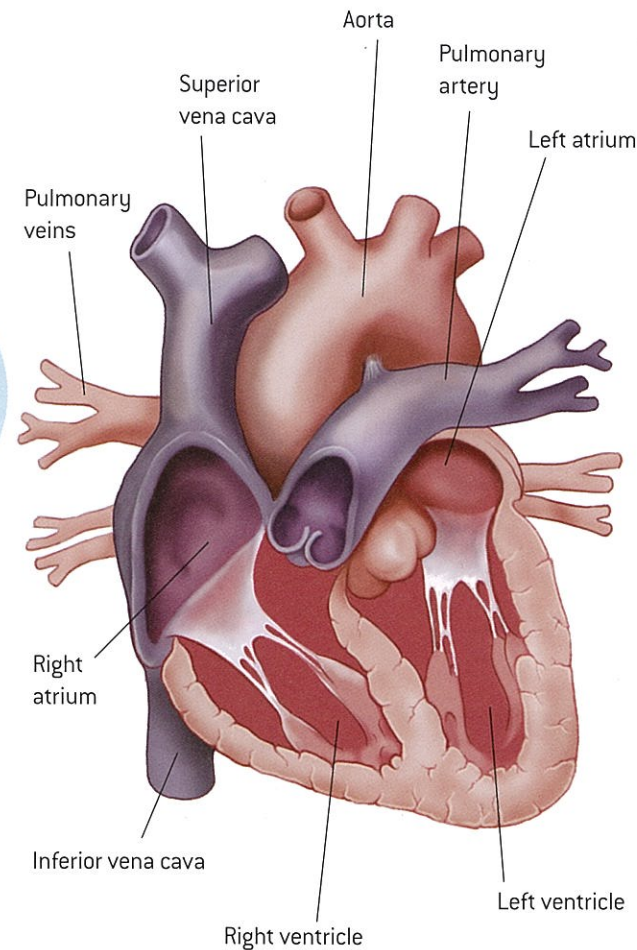
CIRCULATORY SYSTEM

The circulatory system is the body system that moves blood around your body. The blood transports substances such as nutrients and wastes.

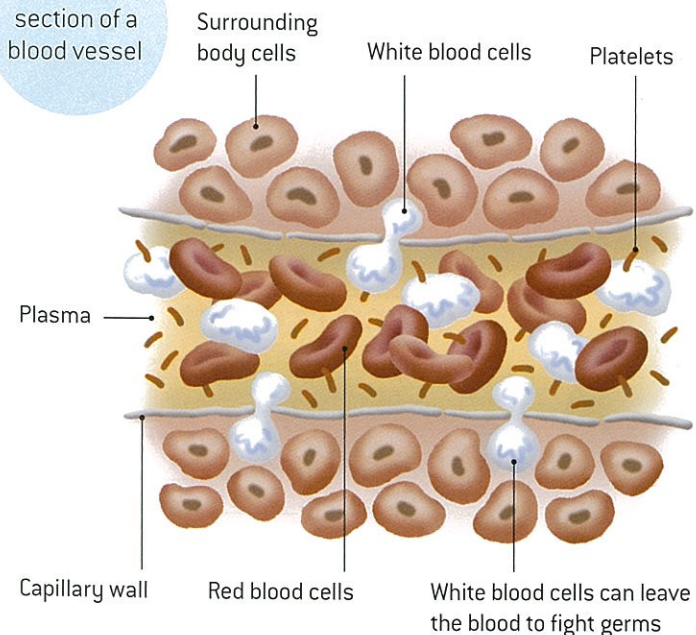
Heart

The **heart** is a large two-part pump about the size of your fist. It is made of four chambers: two **atria** (compartments) at the top and two **ventricles** (compartments) at the bottom. The right side pumps blood to the lungs to release carbon dioxide and absorb oxygen. The left side pumps blood around the body. Flaps of tissue called valves keep the blood moving in the correct direction. The largest blood vessel in the body, the **aorta**, starts at the top of the heart and extends downwards.

The heart and some of the major blood vessels travelling to and from the heart



Cross-section of a blood vessel



Blood

Blood delivers nutrients and oxygen to cells and transports waste away from them. The main components of blood are:

- » red blood cells – carry oxygen to the body's tissues and carbon dioxide away from them
- » haemoglobin – carries oxygen in red blood cells
- » plasma – component of the blood in which nutrients and wastes are dissolved for transport to and from cells
- » white blood cells – germ fighters that travel in the blood to places where an immune response is needed
- » platelets – cell fragments that travel in the blood to cuts to block the cuts and stop bleeding.

Blood vessels

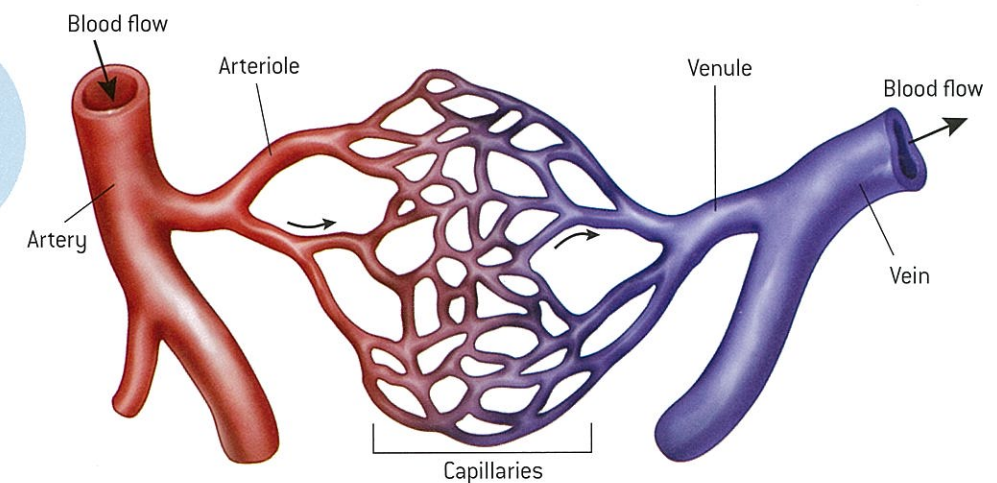
Blood travels through tubes called **blood vessels**. Blood vessels have different sizes and structures. Their size and shape depends on the amount of blood they need to carry, as well as the speed of the blood and whether it is picking up or dropping off substances.

Arteries are the largest blood vessels. Arteries have thick, muscular walls to cope with high pressure and to squeeze the blood along. Arteries travel away from the heart, and the blood is at a higher pressure here because it has just been pumped. Arteries branch into arterioles (smaller arteries).

Veins carry blood back to the heart. These vessels are similar in size to the arteries, but only have a small amount of muscle in their walls. Veins have one-way valves in them to avoid any blood going backwards due to a lack of pressure. Venules (smaller veins) are joined together to make larger veins.

Capillaries have walls that are only one cell thick to allow substances to easily pass in and out of the blood. Capillaries are the vessels connecting the arteries and veins – the arterial and venous systems.

Relationship between arteries, veins and capillaries



The heart and major blood vessels, with arteries coloured red and veins coloured blue.

LOOK IT UP

aorta the largest blood vessel in the body, which starts at the top of the heart and extends downwards

atrium each of the two upper cavities of the heart from which blood is passed to the ventricles [plural: atria]

blood vessels arteries, veins and capillaries that transport blood around the body

heart a muscular organ that pumps blood through blood vessels

ventricle a lower chamber of the heart

CHECK IT OUT

- 1 What are two main jobs of blood?
- 2 What role do white blood cells play?
- 3 Explain the roles of the three different types of blood vessels.
- 4 What is the difference between the functions of the right and left sides of the heart?
- 5 Why do some blood vessels have valves?