

A Comprehensive guide to the Evolutionary Origins of Blood Circulatory System

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ABOUT THE STUDY

The circulatory system is the system of the heart, blood vessels, and organs that contain blood that circulates throughout the human or other vertebrate body. It consists of the cardiovascular system or vascular system, which contains the heart and blood vessels. The circulatory system has two components, a systemic circulation or circuit, and a pulmonary circulation or circuit. Some sources interchange the terms cardiovascular system with circulatory system.

The vascular network is the great vessels of the heart, including the large elastic arteries and large veins; Capillaries that connect with other arteries, small arteries, venules (small veins) and other veins. In vertebrates the circulatory system is closed, meaning that the blood never leaves the vascular network. Some invertebrates, such as arthropods, have an open circulatory system. Diploblasts, such as sponges and comb jellies, do not have a circulatory system.

Blood is a fluid made up of plasma, red blood cells, white blood cells, and platelets that carry oxygen and nutrients around the body to the tissues and waste products. Circulating nutrients include proteins and minerals, other components that are transported are gases such as oxygen and carbon dioxide, hormones and hemoglobin; Providing nutrition, helping the immune system to fight disease and maintaining homeostasis by stabilizing temperature and natural pH.

In vertebrates, the lymphatic system is attached to the circulatory system. This system carries the extra plasma filtered from the capillaries into the interstitial fluid between the cells, away from the body tissues in an accessory way to return the excess fluid to the lymphatic circulation. The lymphatic system takes much longer than blood. The lymphatic system is a subsystem necessary for the functioning of the circulatory system; without it the fluid in the blood will decrease. The lymphatic system works in conjunction with the immune system. Unlike the closed circulatory system, the lymphatic system is an open system. Many cardiovascular illnesses impact the circulatory system. Cardiologists are cardiologists, while cardiothoracic surgeons are cardiothoracic surgeons who specialize in heart and

lung surgery. Other elements of the circulatory system are the attention of vascular surgeons.

The human circulatory system is closed, meaning that blood is in the vascular network. Nutrients reach the organs through the small blood vessels of microcirculation. The lymphatic system is an important subsystem of the circulatory system consisting of lymphatic vessels, lymph nodes, organs, tissues, and circulating lymphatic network. This subsystem is an open system. A major function is to drain the lymph into the lymphatic vessels and return the returning interstitial fluid to the heart to return to the circulatory system. Another major function is to work with the immune system to provide protection against pathogens

The circulatory system (cardiovascular system) provides nutrients and oxygen to all the cells in the body. It consists of the heart and blood vessels that flow through the entire body. Arteries carry blood from the heart; The veins carry it back to the heart. The vascular system resembles a tree: the "trunk"- the main artery (aorta)-branches into large arteries, which lead to smaller and smaller vessels. The small arteries terminate in a network of small vessels called the capillary network.

In the human body there is not only one circulatory system, but two connected ones: the systemic circulation supplies organs, tissues and cells with blood so that they receive oxygen and other vital substances. Pulmonary circulation means that the fresh oxygen we breathe enters the blood. At the same time, carbon dioxide is released from the blood. Blood circulation begins when the heart relaxes between two heartbeats: Blood flows from the two atria (upper two chambers of the heart) into the ventricles (lower two chambers) as it expands. The following step is called the ejection period, in which the two ventricles pump blood into the large arteries.

In systemic circulation, the left ventricle sends oxygen-rich blood to the main artery (aorta). Blood travels from the main artery to the large and small arteries and into the capillary network. There the blood leaves oxygen, nutrients and other important substances and takes in carbon dioxide and waste products. Blood, which is now deficient in oxygen, collects in the veins and travels to the right atrium and right ventricle.

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This is where pulmonary circulation begins: The right ventricle sends low-oxygen blood into the pulmonary artery, where it splits into smaller and smaller arteries and capillaries. Capillaries form a fine network around the pulmonary vesicles. This is where carbon dioxide is released from the blood into the

air inside the pulmonary vessels and fresh oxygen enters the bloodstream. When we breathe in, carbon dioxide leaves our body. Oxygen-rich blood travels through the pulmonary veins and the left atrium into the left ventricle. The next heartbeat initiates a new cycle of systemic circulation.