

Aim: SWBAT determine the use and composition of blood in our circulatory system.

Do Now: Hand in Essay → Study for assessment

Circulatory System/Cardiovascular System

- An organ **system** that permits blood to **circulate** and transport nutrients (such as amino acids and electrolytes), oxygen, carbon dioxide, hormones, and blood cells to and from the cells in the body.
- Consists of heart, blood vessels, and the approximately 5 liters of blood that the blood vessels transport

Transport systems

- *Arteries and Arterioles:* Arteries are blood vessels that carry blood away from the heart. Blood carried by arteries is usually highly oxygenated, having just left the lungs on its way to the body's tissues. The pulmonary trunk and arteries provide an exception to this rule – these arteries carry deoxygenated blood from the heart to the lungs to be oxygenated.
- Arteries face high levels of blood pressure as they carry blood being pushed from the heart under great force. To withstand this pressure, the walls of the arteries are thicker, more elastic, and more muscular than those of other vessels.

Veins and Capillaries

Veins and Venules: Veins are the large return vessels of the body and act as the blood return counterparts of arteries. Veins and venules are subjected to very low blood pressures. This lack of pressure allows the walls of veins to be much thinner, less elastic, and less muscular than the walls of arteries.

Veins rely on gravity, inertia, and the force of skeletal muscle contractions to help push blood back to the heart. To facilitate the movement of blood, some veins contain many one-way valves that prevent blood from flowing away from the heart.

Capillaries

Capillaries: Capillaries are the smallest and thinnest of the blood vessels in the body and also the most common. They can be found running throughout almost every tissue of the body and border the edges of the body's avascular tissues. Capillaries connect to arteries on one end and veins on the other.

Capillaries carry blood very close to the cells of the tissues of the body in order to exchange gases, nutrients, and waste products. The walls of capillaries consist of only a thin layer of endothelium so that there is the minimum amount of structure possible between the blood and the tissues. The endothelium acts as a filter to keep blood cells inside of the vessels while allowing liquids, dissolved gases, and other chemicals to diffuse along their concentration gradients into or out of tissues.

Blood

- Connective tissue
- Made up of Red Blood Cells (RBC`s), White blood cells (WBC,s) and Platelets.
- Plasma carries these cells.
- Primary function is to bring oxygen and nutrients and remove waste from cells.
- Other functions: defense, maintain homeostasis (heat)
- Maintain homeostasis-
 - Increase blood flow when working out.
 - Move blood further from skin when cold.

Composition of Blood

- Plasma
 - Mainly water
 - Hundreds of other substances including proteins
 - Albumin-Transports fatty acids and steroids
 - Globulins-Carry minerals and antibodies to cells
 - Fibrinogen-Blood clotting
- WBC`s
 - Protect body against disease
 - Higher WBC or leukocytes means body has a disease
- RBC`s
 - Deliver Oxygen to the body
- Platelets
 - Helps blood Clot

https://www.youtube.com/watch?v=_yQD0U3ZtCs

Circulatory System

<https://www.youtube.com/watch?v=uBvpE5ia2LE>

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