

Circulatory System

Function:

- transports oxygen and nutrients throughout the body
- carries away carbon dioxide (CO₂) and wastes
- Maintains body temperature
- Circulation of hormones

1. Transport Vessels - A network of tubes that carry blood

The Arteries

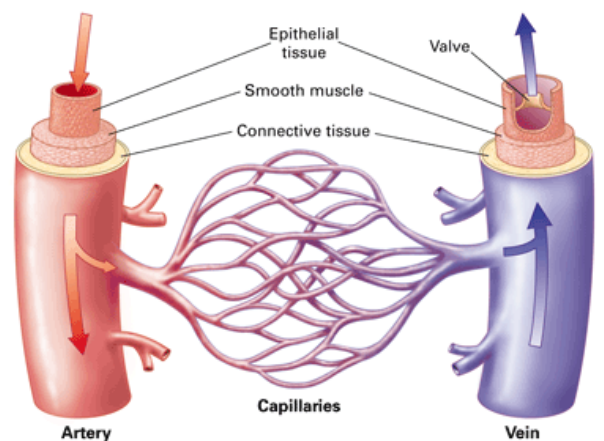
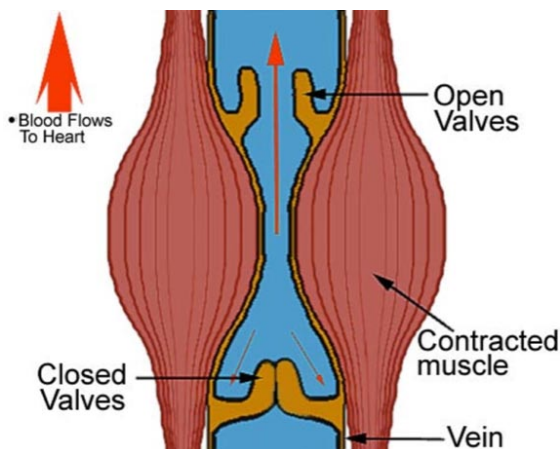
- carry blood away from the heart
- Carry oxygen rich blood
- Thick, muscular walls which expand due to tremendous pressure.

The Capillaries

- Connect arteries to veins
- Only one cell thick to allow maximum gas and nutrient exchange through passive and active transport.
- A collection of capillaries is known as a capillary bed.

The Veins

- Carry blood back to the heart
- Carry deoxygenated blood
- Have thin walls but a larger inner circumference so they can hold more blood than an artery
- Movement of blood is caused by contraction of nearby muscles in the body
- Valves prevent backward flow of blood



2. Transport Medium – “Blood”

- A connective tissue circulating through the body “connecting all parts.

Red Blood Cells

- contain hemoglobin, which transports O₂ to organs and CO₂ away from organs
- Human RBC’s have no nucleus to allow more room for hemoglobin (about 280 million/cell!!)

White Blood Cells

- Make up 1% of blood
 - fight infection from foreign microorganisms
- 2 Main types of WBC
- Some engulf microorganisms and use enzymes to digest them
 - Some produce antibodies that are specialized to attack and kill a specific type of invader

Platelets

- Are not cells but fragments of cells created by the bone marrow
- No nucleus
- Play an important role in clotting blood

Plasma

- Liquid which carries blood components (water, oxygen, carbon dioxide, vitamins, minerals, sugar, proteins, waste)
- 92% is water
- Critical in helping to maintain homeostasis of water levels

3. Pumping Mechanism - “The Heart”

- The heart is the pumping mechanism for the circulatory system
- Pushes blood through the system with each contraction
- Heart beat is controlled by a pacemaker
- Heart rate is affected by exercise, emotions, chemicals
- – depends on oxygen/carbon dioxide levels

Pathway of Blood Around the Body

The body is made up of 2 circulation loops

1. Pulmonary system (lungs)
2. Systemic system (body)

