

The Circulatory System

- Transports oxygen, nutrients, waste products, immune system cells, and hormones
- Helps to maintain body temperature within the optimum range for metabolic functioning
 - o Homeostasis
 - Blood vessels dilate: vasoconstriction
- Closed circulatory system
 - o Fish: two chambered heart with a single circuit of flow
 - o Amphibians: three chambered heart with two circuits of flow
 - Pulmonary: blood is pumped to the lungs, where it picks up oxygen
 - Systemic: blood is pumped to the tissues of the body, where it delivers oxygen
 - o Mammals and birds: four chambered heart with two circuits of flow
- Heart is made up of cardiac muscle cells

Blood

- Blood is a connective tissue
- Red Blood Cells (erythrocytes)
 - o Transport oxygen from the lungs to the rest of the body
 - o Packed full of hemoglobin
 - o For production we need iron, folic acid, B-12
 - o Hormone called erythropoietin stimulates red blood cell production
- White blood cells (leukocytes)
 - o Destroy pathogens and foreign organisms in the bloodstream and interstitial fluid
- Platelets
 - o Slow blood loss by initiating the constriction of blood vessels and the formation of a clot

Blood Vessels

- Arteries go away from the heart
- Veins go to the heart
- Capillaries are thin walled resulting in fluid leaking into the tissues
- Deep vein thrombosis - blood clot stays in place
- Embolism - blood clot moves around

Ventricles

- The left ventricle pumps oxygenated blood around the body
- The right ventricle only has to pump deoxygenated blood to the lungs

Sound of Heartbeat

- "Lub" - atrioventricular valves slam shut, preventing blood from flowing back into the atria
- "Dub" - semilunar valves slam shut, preventing blood from flowing back into the ventricles

Cardiac cycle

- Atria contract (.1)

- Ventricles contract (.3) (systolic)
- Relax (.4) (diastolic)

Cardiac Conduction System (Nodes)

- SA node: specialized muscle cell, set pace of rhythm (pacemaker)
- AV node: stops SA node from spreading down, redirects impulse upwards

Lymphatic System

- Recycling
- Fighting illness
- Retrieving nutrients
 - o Absorbs lipids from the small intestine
- Excess interstitial fluid becomes lymph
- Lymphatic ducts return fluid to the circulatory system, just above the heart