Cardiovascular System

- Transports:
  - Nutrients
  - Food monomers- needed for cellular respiration
  - Hormones
  - Oxygen- needed for cellular respiration
- Removes
  - Carbon Dioxide- byproduct of cellular respiration
  - Metabolic Wastes
  - Regulates Heat

Blood

- Plasma
  - Water
  - Nutrients and Wastes
  - Salts (Ions)
  - Proteins
- Blood Cells
  - Red Blood Cells (erythrocytes) - carry oxygen
    - Hemeglobin- protein that binds oxygen
  - White Blood Cells (leukocytes) – defends against infection
  - Platelets- acts in the clotting of blood

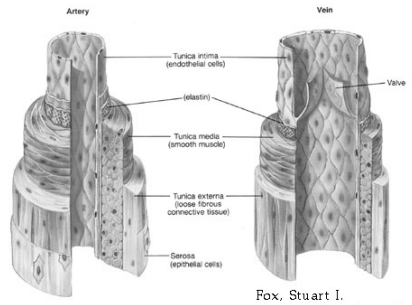
Blood is Red. Always.

Oxygenated Blood

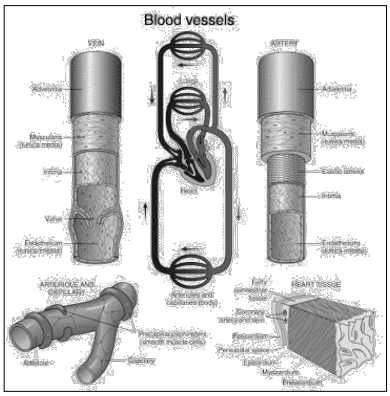
Deoxygenated Blood

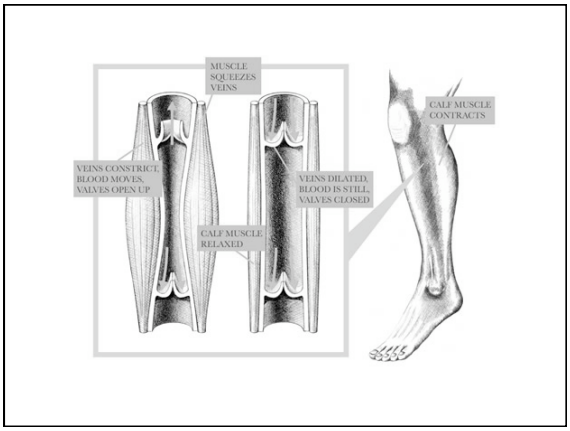
Blood Vessels

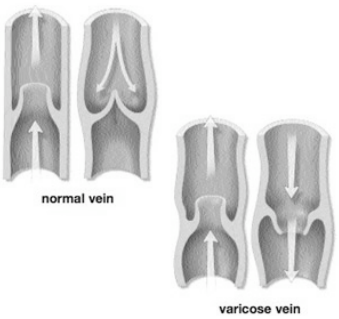
- Arteries- are vessels that carry oxygenated blood away from the heart
  - Receive greater pressure from the pumping heart.
  - Thicker than veins
- Veins-are vessels that carry deoxygenated blood to the heart
  - Valves- flaps of tissue to prevent backward flow of blood
- Capillaries are small vessels that connect arteries and veins as blood is diffused to cells.



Fox, Stuart I.
Human Physiology 4th
Brown Publishers

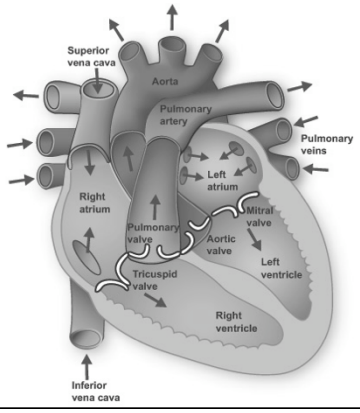


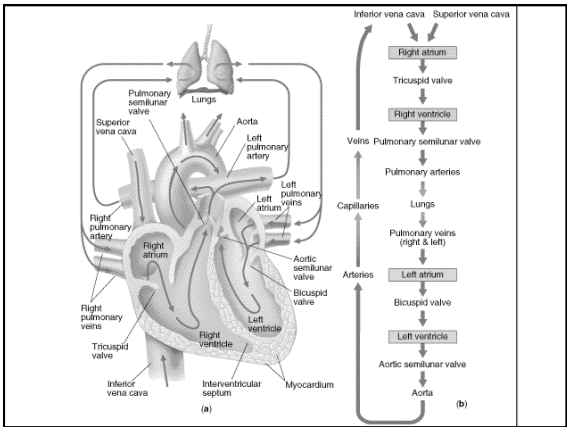




Heart

- Muscular pump for blood to circulate.
- 4 Chambered heart (mammals and birds)
  - 2 atria- chambers that receive blood
  - 2 ventricles- chambers that pump blood away
- Deoxygenated blood returned to the right side, oxygenated pumped from the left side.
- Sinoatrial node (pacemaker) located by the RA delivers electrical charge for heart to beat (72 bpm avg.)





Blood Pressure

- Blood Pressure is the force exerted by blood moving through blood vessels.
- Systolic- pressure exerted on the arteries when the heart pumps (ventricle contract)
- Diastolic- pressure exerted when heart relaxes (atrial filling)
  - Systolic/diastolic. Normal less than 120/80
- Hypertension- high blood pressure makes the heart work harder which can damage heart muscles and blood vessels. Can lead to atherosclerosis- hardening of the arteries or stroke.