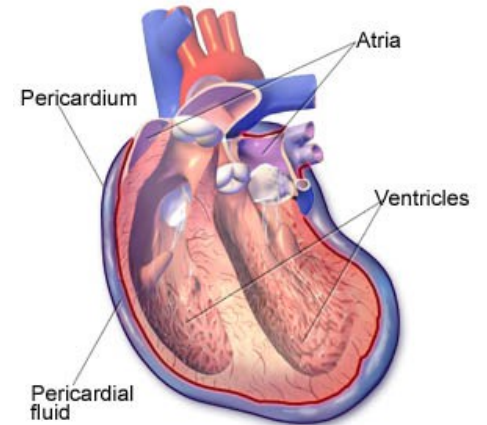


Heart and Blood Flow

Anatomy of the Heart

- Muscular organ about the size of a closed fist
- provides the force to pump blood through the arteries
- $\frac{2}{3}$ of the heart's mass is on the left side, $\frac{1}{3}$ is on the right side
- sits pericardial cavity, with membrane known as the pericardium
 - lubricates the heart to prevent friction between heart and organs
 - holds heart in position
 - maintains hollow space for heart to expand



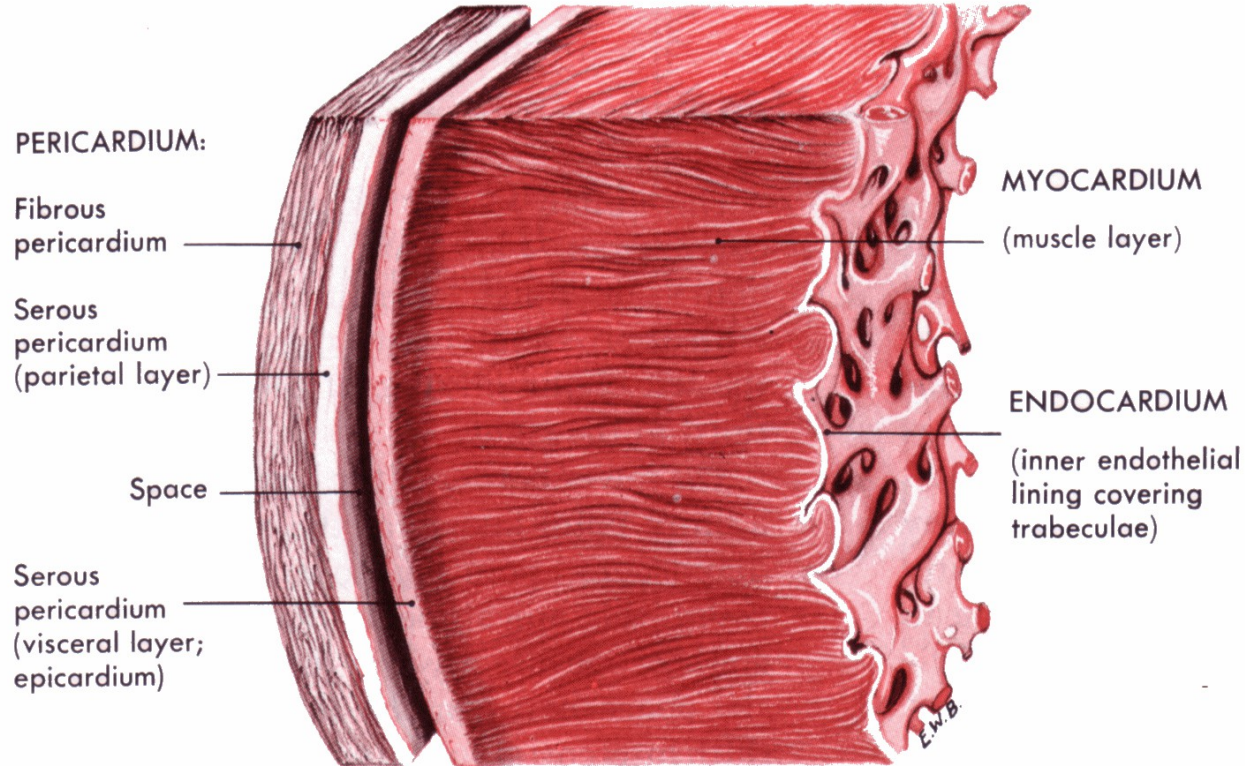
Inflammation of the Pericardium in the Heart

Structure of the Heart Wall

The heart wall is made of 3 layers:

- ***Epicardium***
 - thin outermost layer
 - lubricates and protects the heart
- ***Myocardium***
 - middle layer, contains cardiac muscle tissue
 - makes up the majority of the thickness and mass of the heart wall
 - part of the heart responsible for pumping
- ***Endocardium***
 - smooth lining of the inside of the heart
 - responsible for keeping blood from sticking to the inside of the heart and forming potentially deadly blood clots.

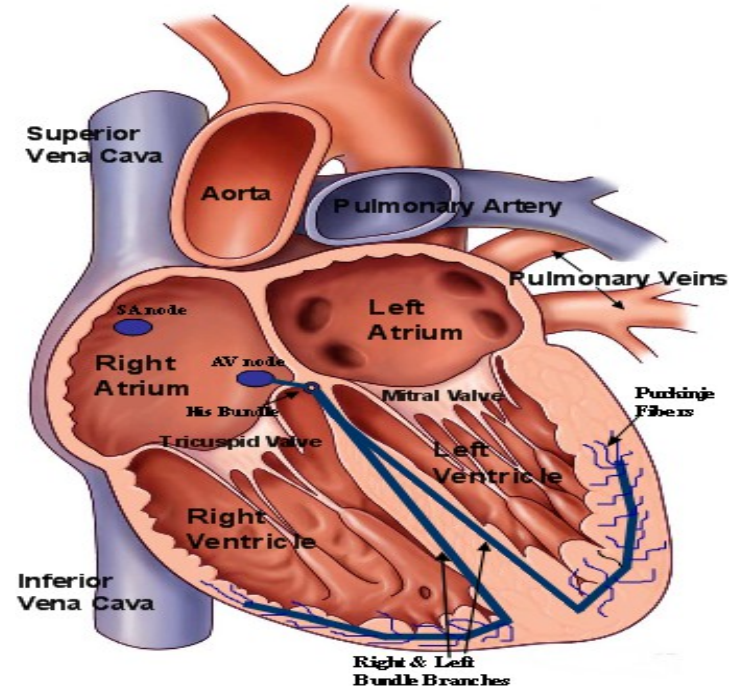
Structure of the Heart Wall

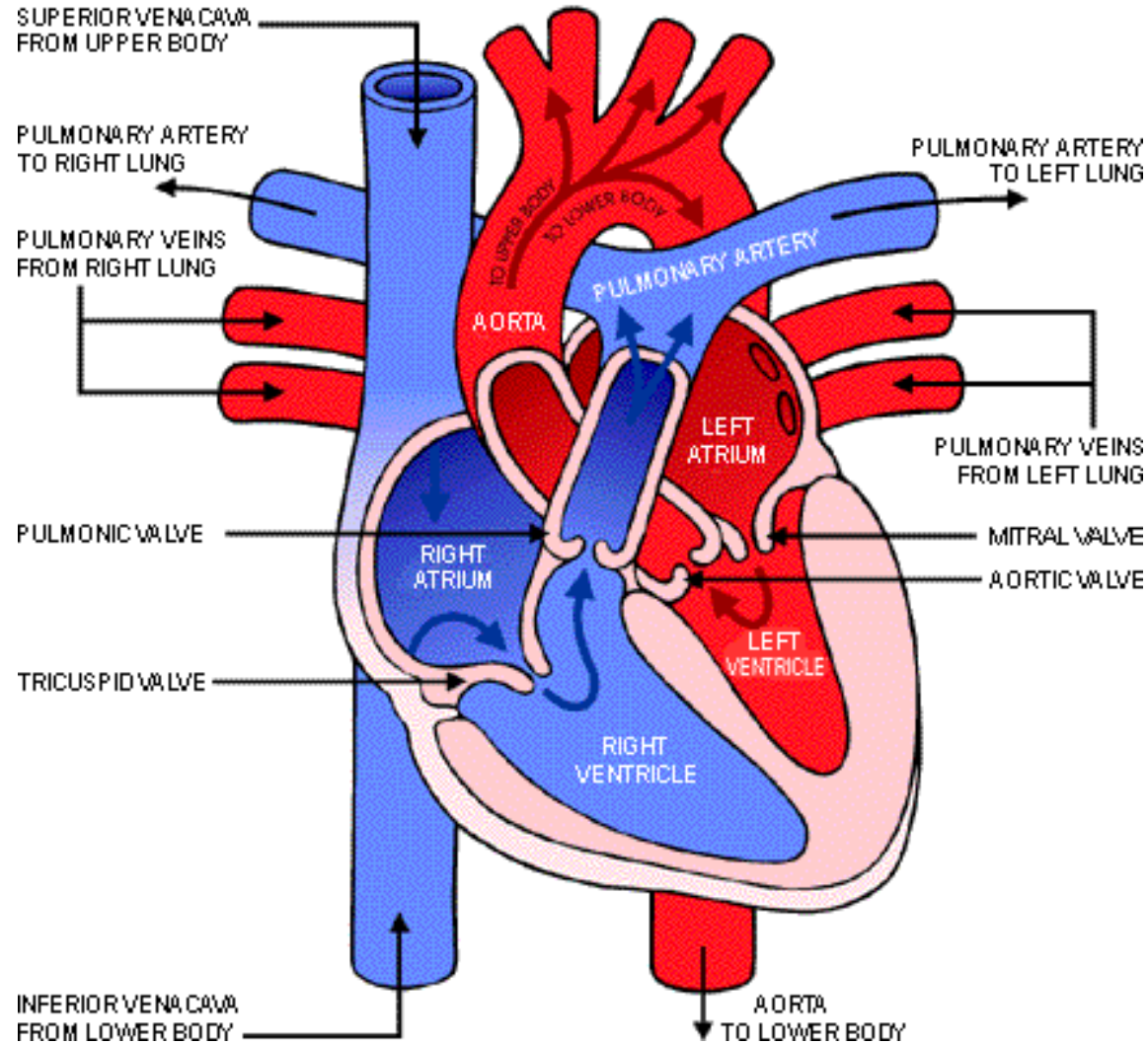


Section of the heart wall showing the components of the outer pericardium (heart sac), muscle layer (myocardium), and inner lining (endocardium).

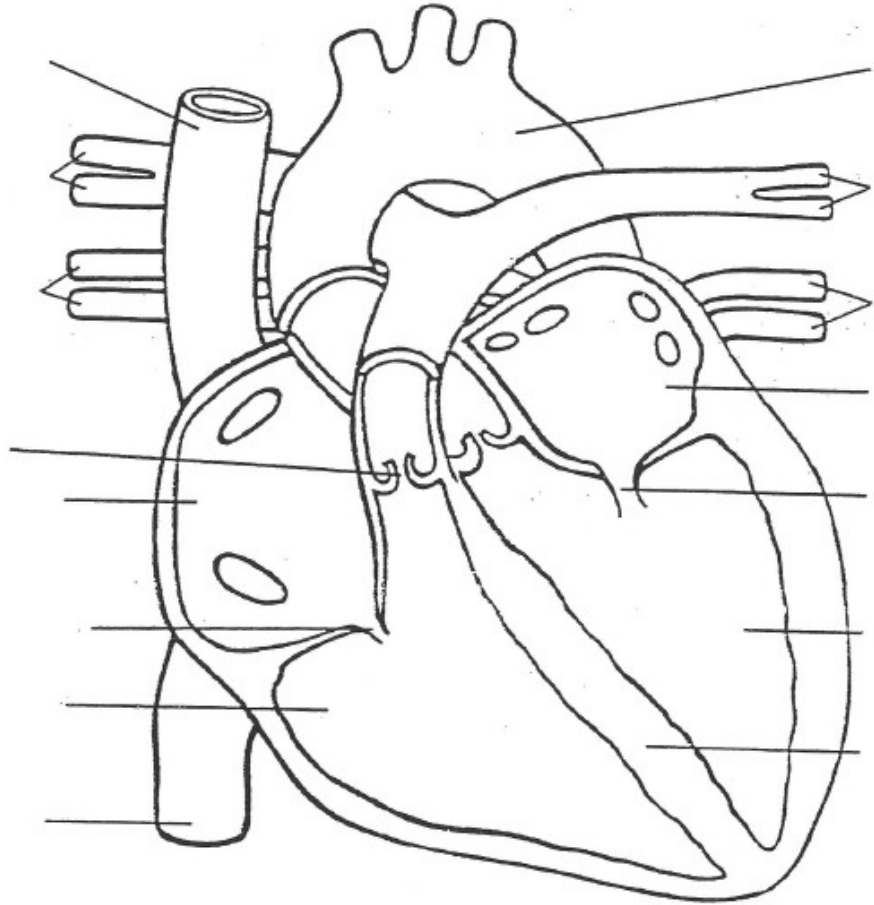
The Heart

- The Atria (or Atriaums)
 - Receives blood from the body or lungs
- The Ventricles
 - Pump blood out of the heart
- The Valves
 - Prevents backflow
- The Septum
 - Divides the Heart



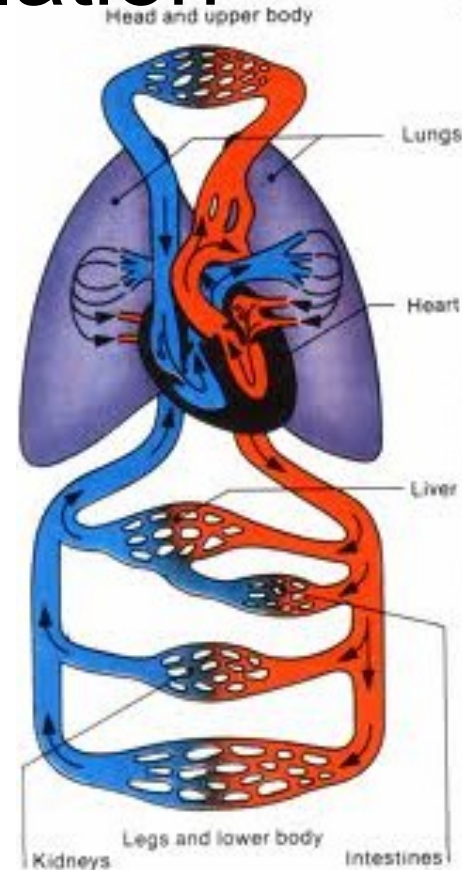


Use this diagram to help learn the parts of the heart.



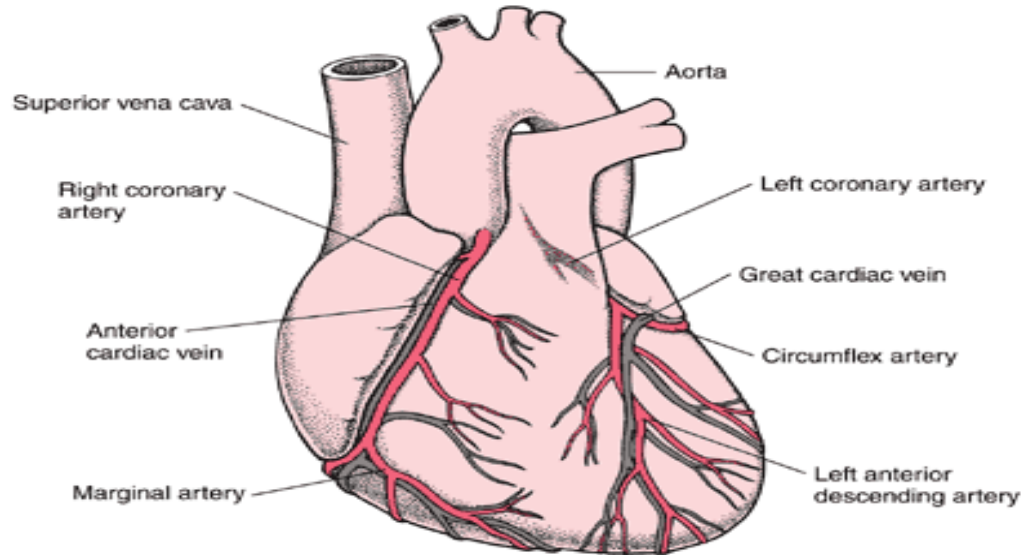
3 Types of Circulation

- 1. cardiac circulation** -circulation of blood within the heart
- 2. pulmonary circulation**—from heart to lungs back to heart
- 3. systemic circulation**—from heart to body back to heart



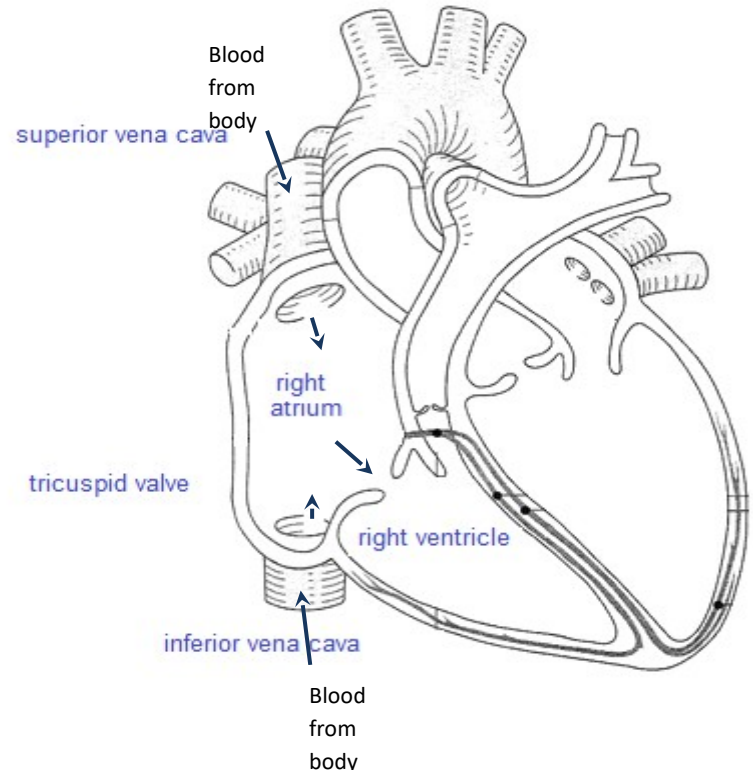
Cardiac Circulation

- Delivers oxygenated blood to the heart muscle.
- Consists of the **left & right coronary artery**.



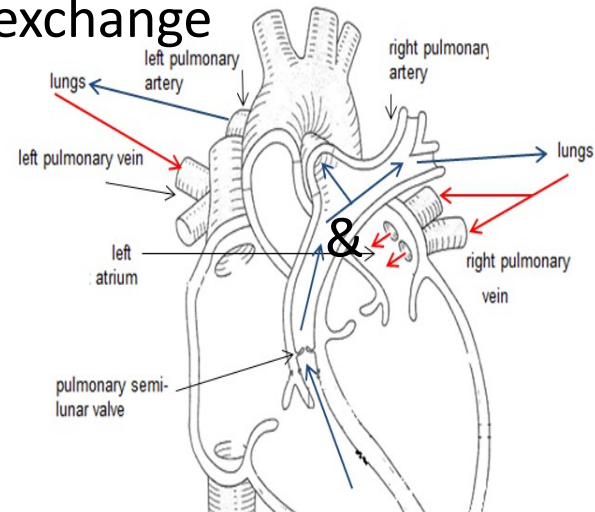
Pulmonary Circuit

- Right atrium receives oxygen-poor blood from:
 - Superior vena cava.
 - Inferior vena cava.
- Blood flows through the tricuspid valve or the right atrioventricular (AV) valve to the right ventricle.



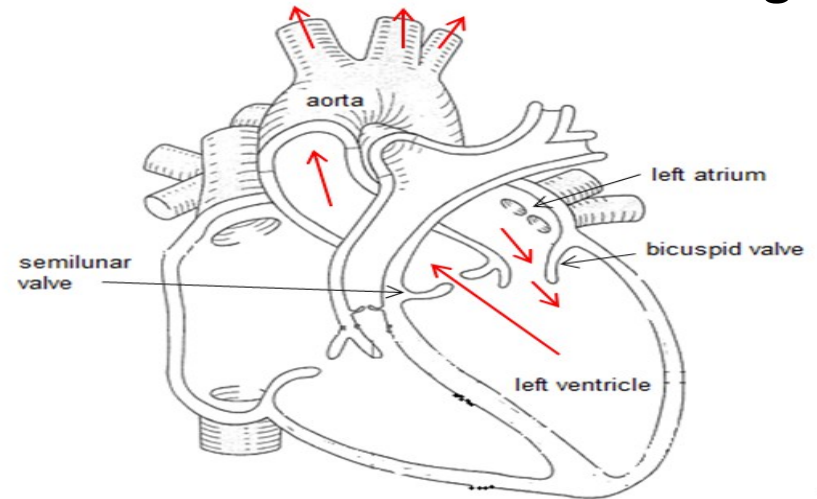
Pulmonary Circuit

- Blood flows through the pulmonary semi-lunar valve & enters the pulmonary trunk, which divides into the left & right pulmonary arteries.
 - Takes the deoxygenated blood to the lungs
 - Divides into capillaries where external gas exchange (respiration system) occurs.
- Oxygenated blood enters the left & right pulmonary veins, returning blood to the heart and into the left atrium.



Systemic Circuit

- Blood flows through the left AV-valve or bicuspid (mitral) valve to the left ventricle.
 - Left ventricular walls are two times thicker than in the right ventricle.
- Blood travels through the aortic semi-lunar valve to the aorta.



Systemic Circuit

- Aorta branches into smaller **systemic arteries**, which branch into **arterioles** & then **capillaries**.
 - Internal gas exchange occurs
- Capillaries rejoin as **venules** & then **veins**.
- Deoxygenated blood returns to the right atrium via the superior & inferior vena cava.

