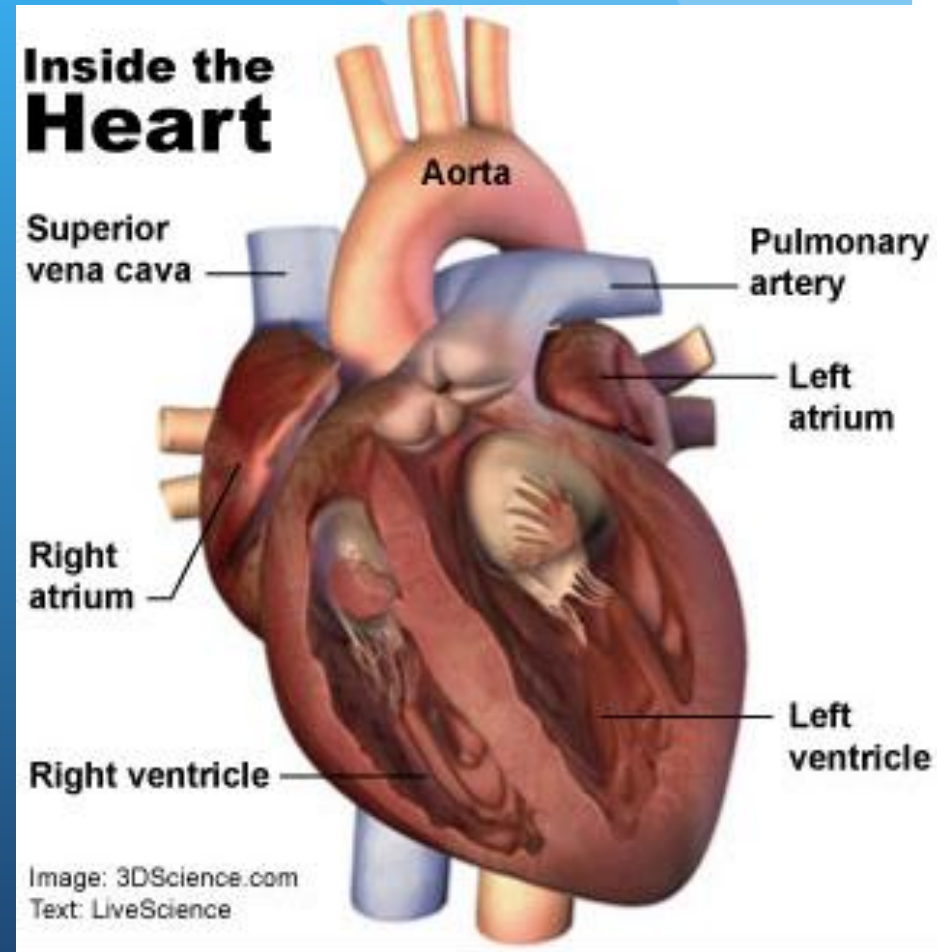
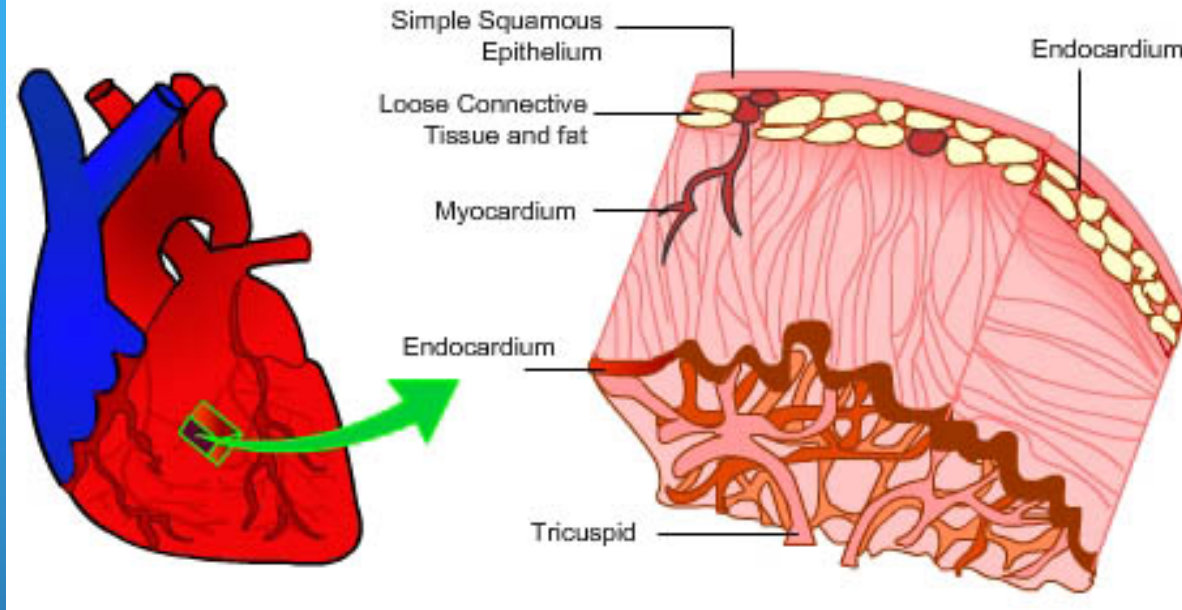


K1. Heart Anatomy

I. Function of the Heart Ted-Ed Heart

- A. The pump that circulates the **blood** throughout the body.
- B. A very muscular organ about the size of a **fist**.





A. Consists of **three** tissue layers:

1. Outer **PERICARDIUM** layer composed of **epithelial** and **fibrous** tissue.

a. Pericardium forms a **PERICARDIAL SAC** that contains the heart.

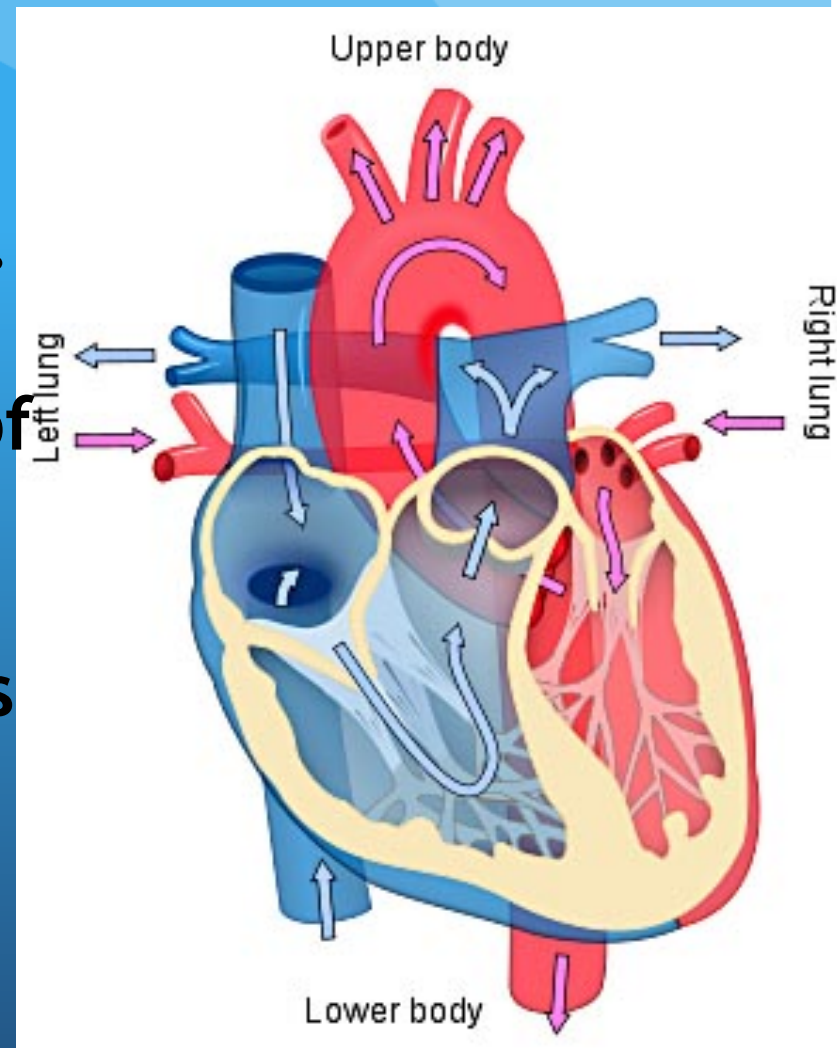
b. Has **lubricating** liquid within the sac.

2. Middle **MYOCARDIAL** layer composed of cardiac muscle.

3. Inner **smooth** endothelial layer

B. The **two** pumps

1. **Right** side pumps blood to the **lungs**.
2. **Left** side pumps blood to the rest of the **body**.
3. The left and right side of the heart is divided by the **SEPTUM**.



C. The 4 chambers

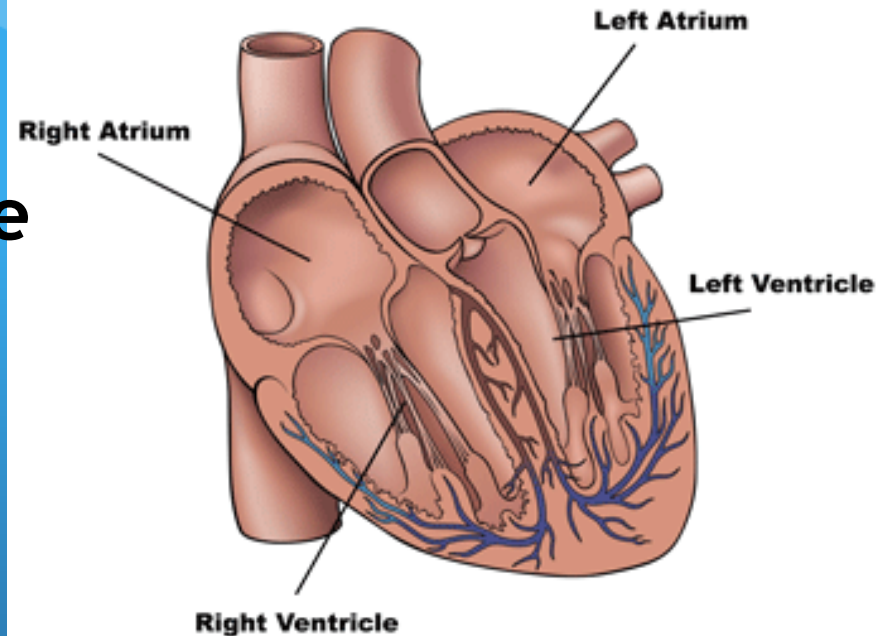
1. There are **two** chambers on each side of the septum.

2. **Smaller** chamber, located on the top, is called the **ATRIUM** (plural = **ATRIA**).

3. **Larger** chamber, located on the bottom, is called the **VENTRICLE**.

a. Right side is **thinner** because the lungs are **close** to the heart.

b. Left side is **thicker** because the body is **further** from the heart



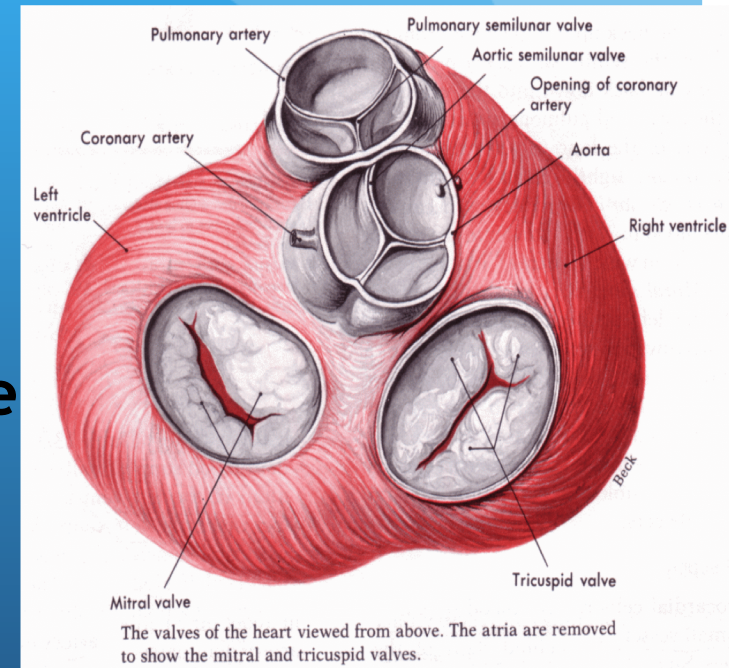
D. Valves

1. **ATRIOVENTRICULAR VALVES** are located between the **atria** and **ventricles**.

a. Control the flow of blood between the chambers, and **prevent** blood backflow.

b. **Atrioventricular (AV)** valve between the right atrium from the right ventricle is called the **TRICUSPID VALVE** (has 3 flaps or "cusps").

c. Atrioventricular valve between the left atrium and left ventricle is called the **BICUSPID VALVE** or **MITRAL VALVE** (has 2 cusps).

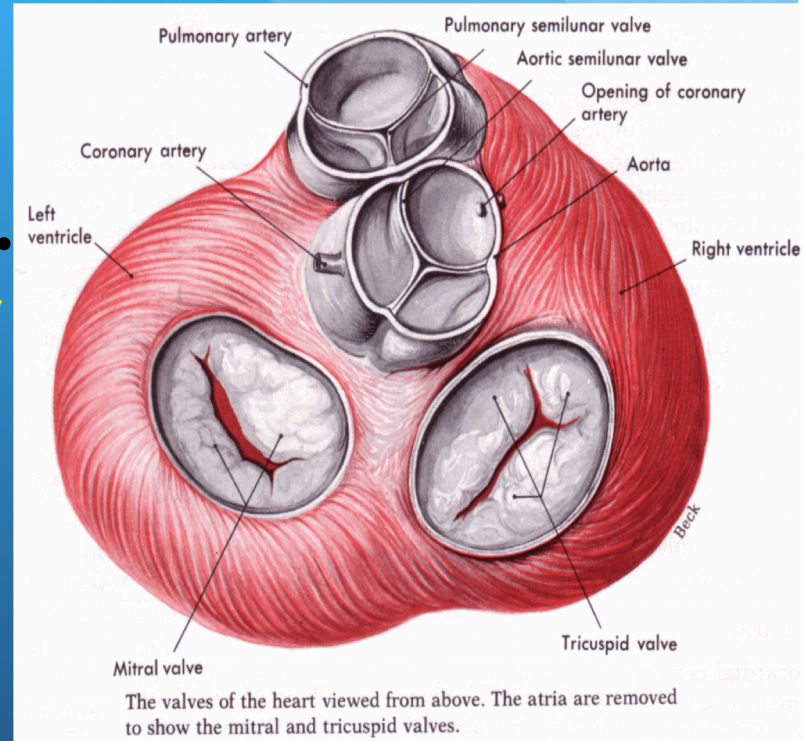


2. CHORDAE TENDINAE are very strong, fibrous strings that support the AV valves and prevent them from **inverting**.

3. **SEMILUNAR VALVE** are located between the heart and the artery.

a. Look like half-moons.

b. **Pulmonary semilunar valve** is located between the right ventricle and the pulmonary artery.

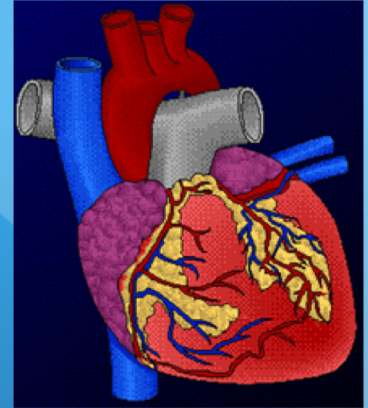


c. **Aortic semilunar valve** is located between the left ventricle and the aorta.

d. **No** chordae tendinae with semilunar valves.

E. Coronary arteries and veins

1. Vitally important blood vessels that supply blood to the **heart** muscle itself
2. Heart does not use the blood in its inner **chambers**.
3. Arteries branch off the **aorta** just above the aortic semilunar valve, and lie on the outside of the heart. [TED-Ed Heart Attack](#)
4. Coronary veins empty into the **right atrium**.

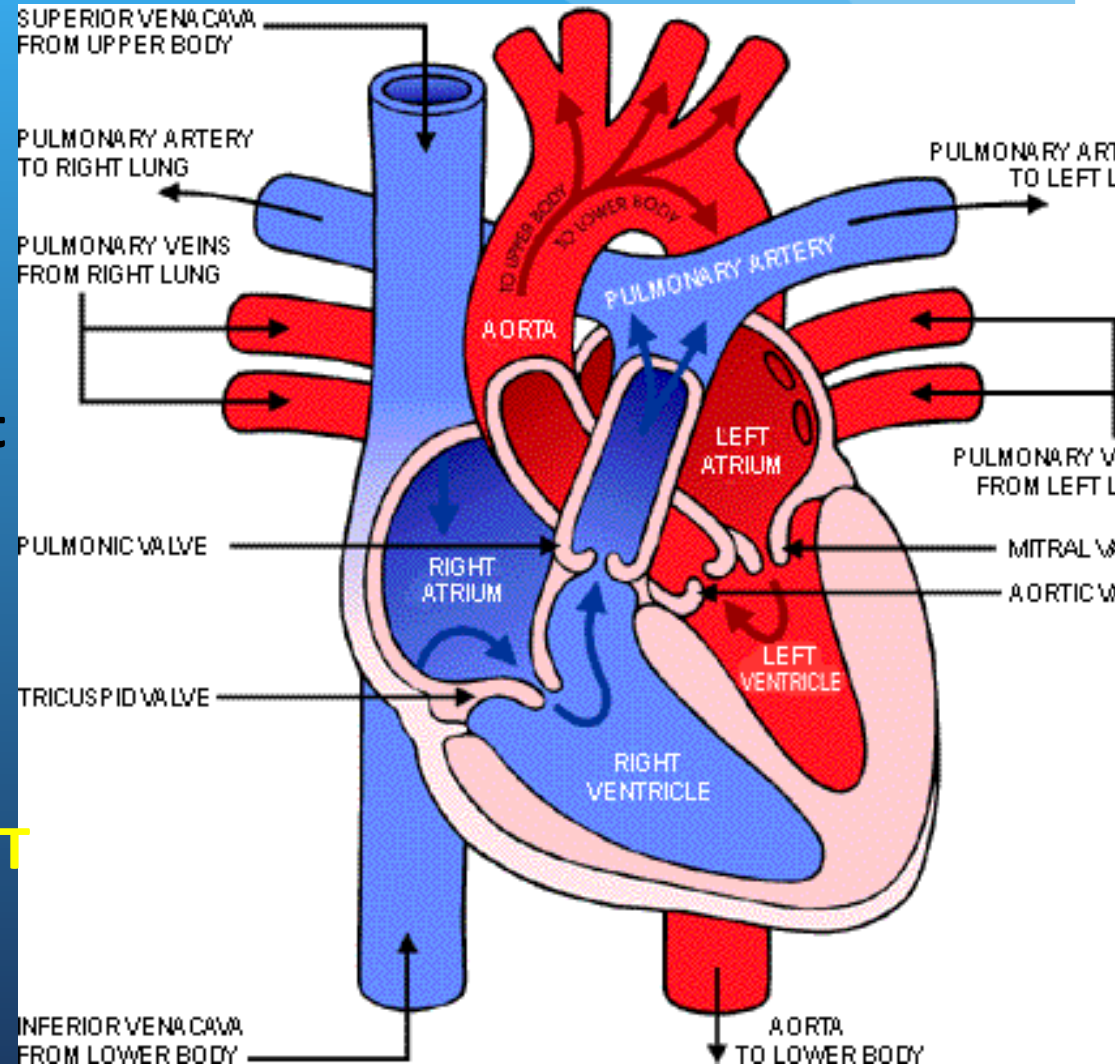


III. Path of Blood Through the Heart

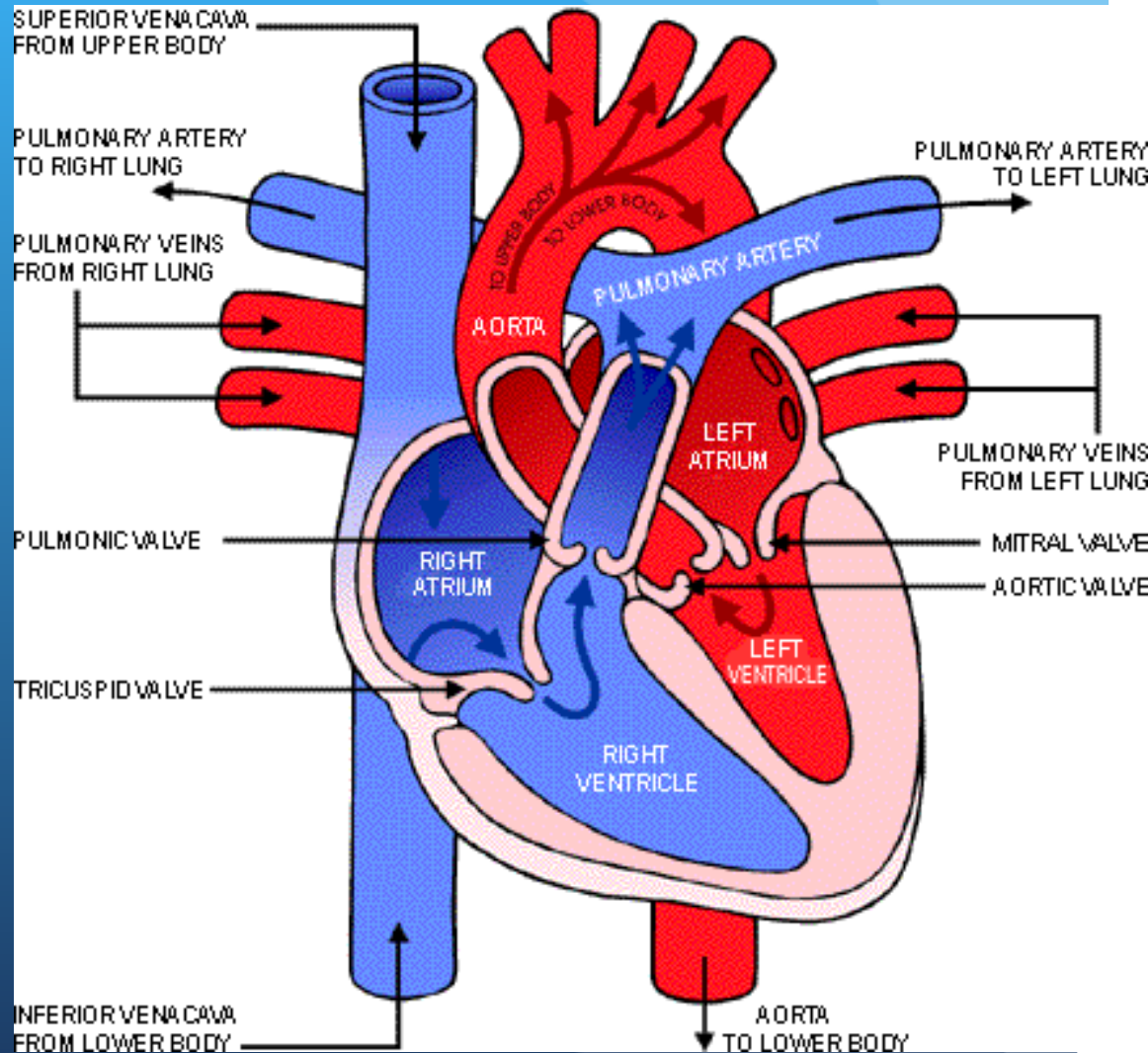
[Animation 1](#)
[Animation 2](#)

- A. Blood low in oxygen (“deoxygenated”) enters the right atrium through the **SUPERIOR** and **INFERIOR VENA CAVA**, the body's largest veins.
- B. The **RIGHT ATRIUM** contracts, forcing blood through the **TRICUSPID VALVE** and into the **RIGHT VENTRICLE**.

[Animation 4](#)



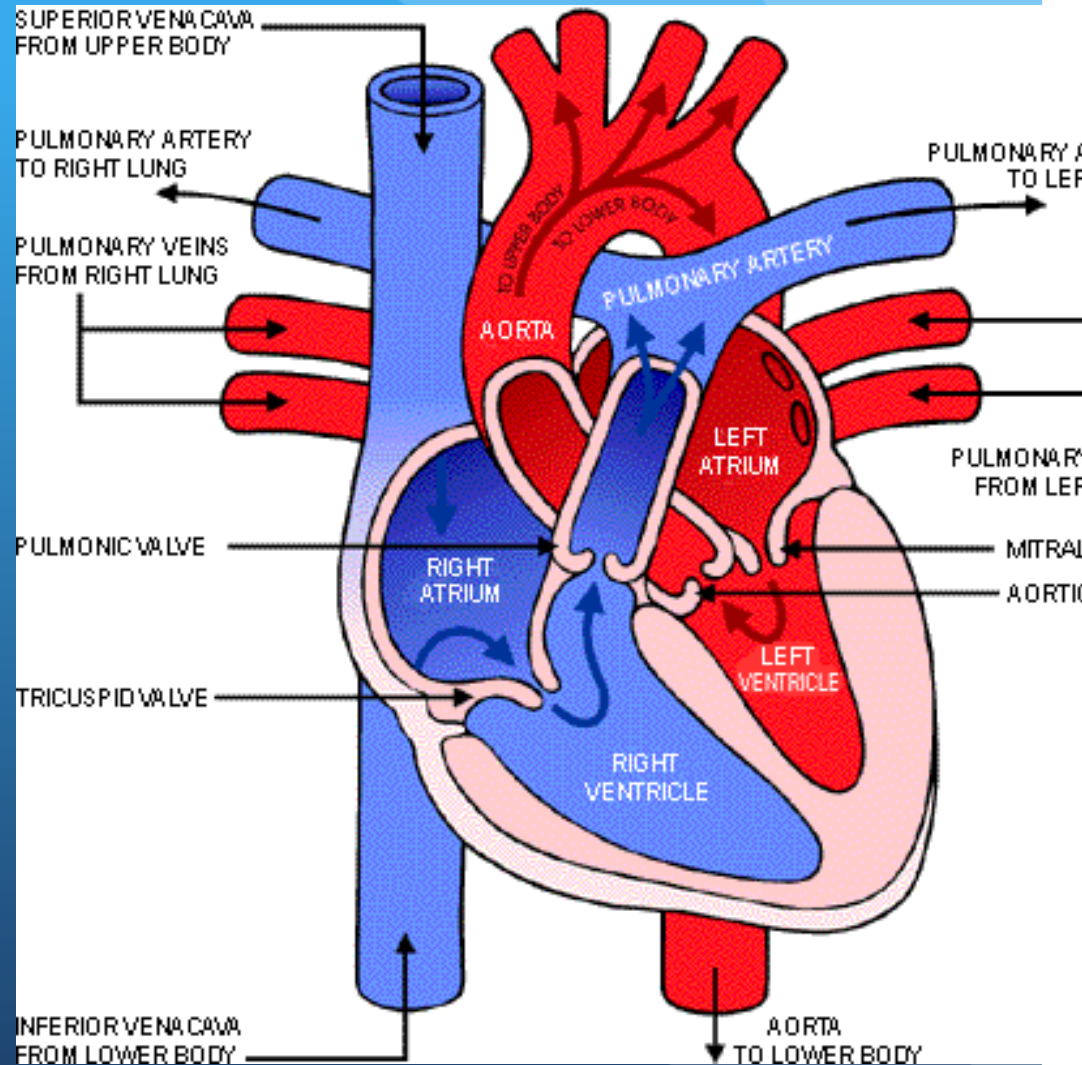
C. The right ventricle contracts, sending blood through the **PULMONARY SEMILUNAR VALVE** and into the **PULMONARY TRUNK**.



D. The pulmonary trunk divides into **PULMONARY ARTERIES**, which take the deoxygenated blood to the capillaries of the **LUNGS**.

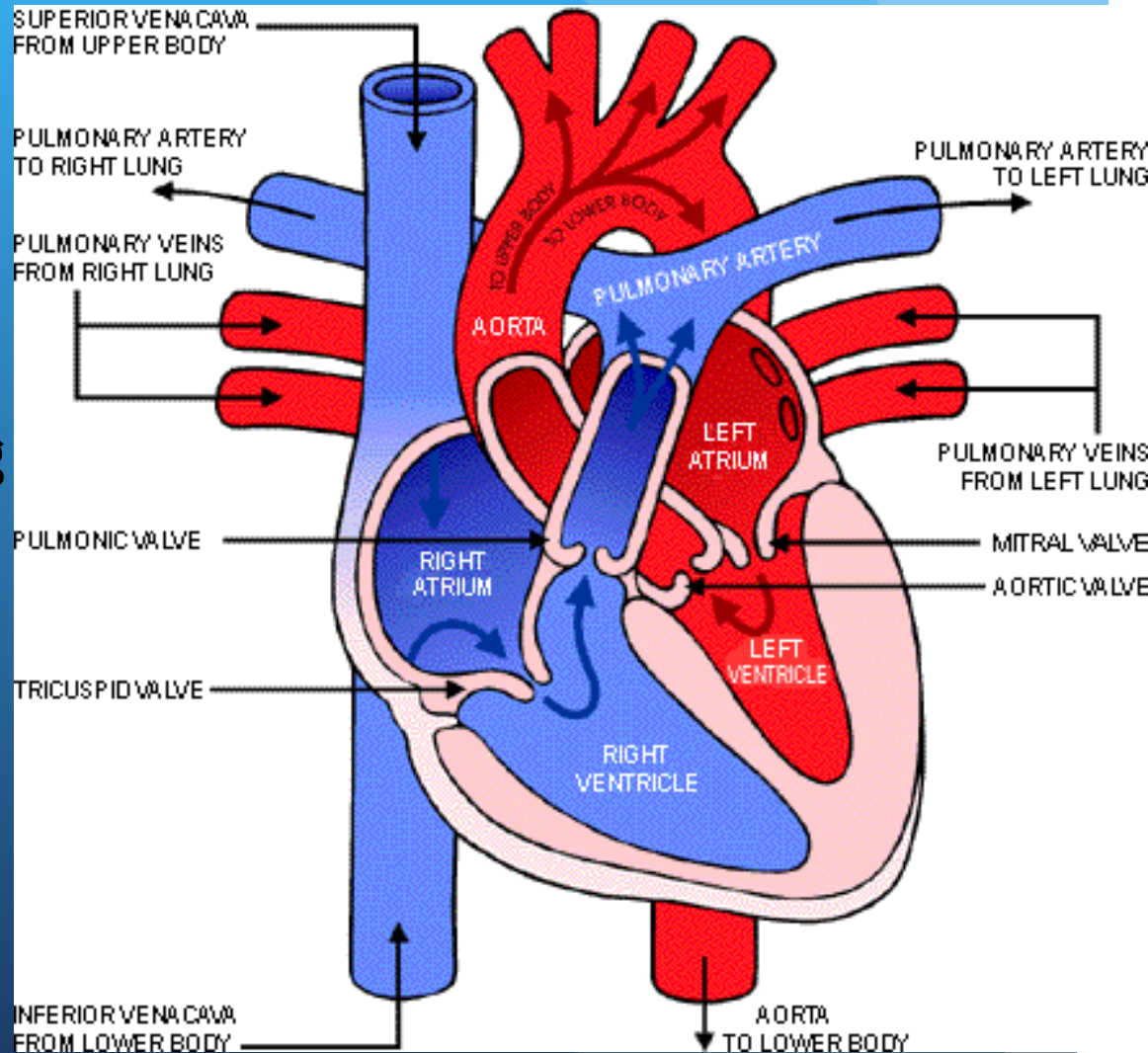
E. At the lungs, carbon dioxide diffuses out of the blood, and, oxygen diffuses into it. The blood is now **OXYGENATED**.

F. The oxygenated blood feeds into the **PULMONARY VEINS**, which take it from the lungs to the **LEFT ATRIUM**

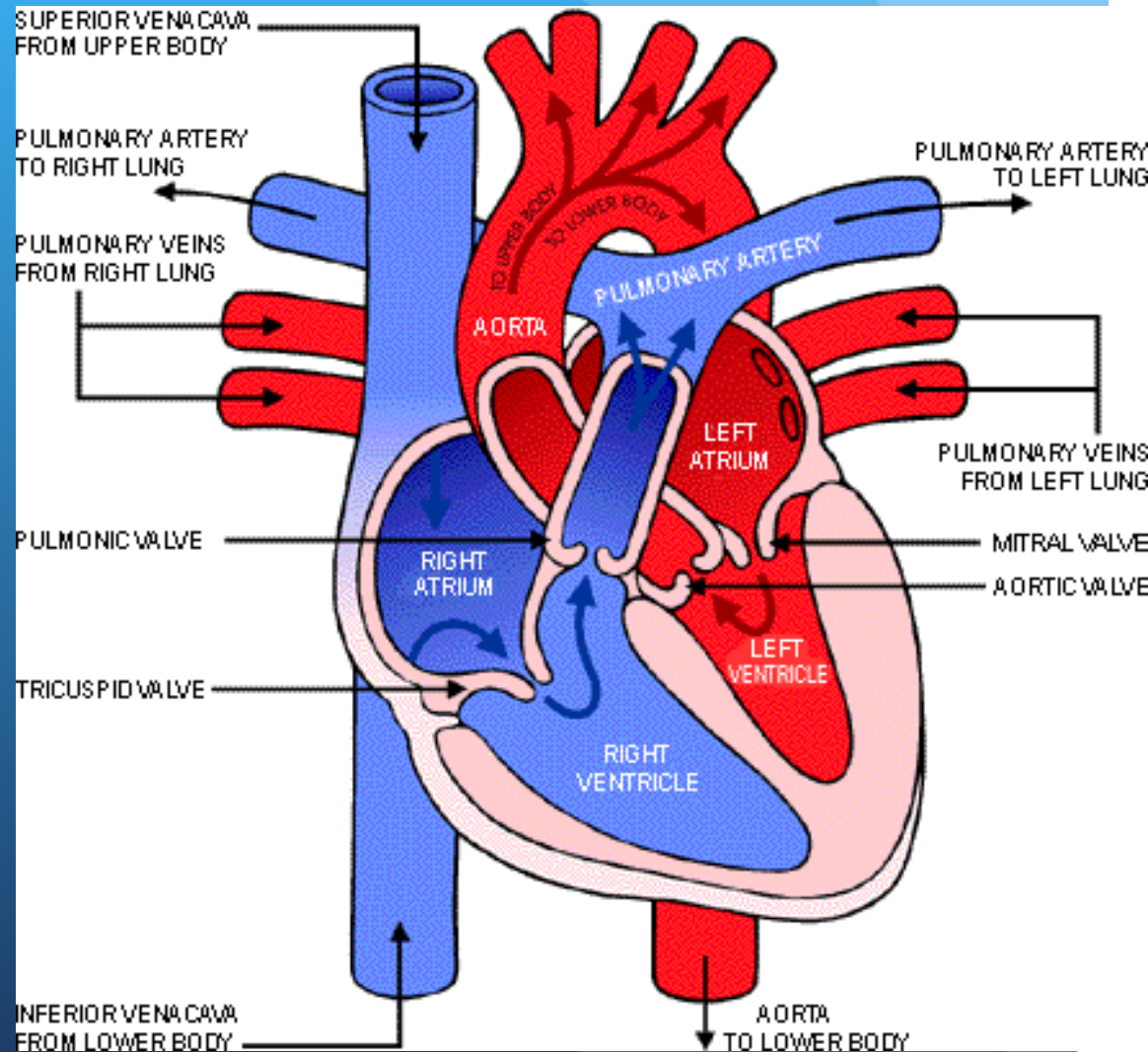


G. The left atrium **CONTRACTS**, forcing blood through the bicuspid valve into the **LEFT VENTRICLE**.

H. The left ventricle **CONTRACTS**, forcing blood through the **AORTIC SEMILUNAR VALVE** into the **AORTA**, the body's largest artery.



- I. The aorta divides into smaller arteries, which carry oxygenated blood to all body tissues.
- J. Deoxygenated blood **NEVER MIXES** with oxygenated blood.
- K. Two atria contract **simultaneously**, and the two ventricles also contract **simultaneously**.



IV. Heartbeat



A. The heartbeat that you can hear can be divided into **two** phases:

1. "**Lub**" is due to the closing of **atrioventricular** valves.
 - a. atria **contracting**
 - b. ventricles **relaxing**
2. "**Dupp**" sound is due to the closing of the **semi-lunar** valves.
 - a. atria **relaxing**
 - b. ventricles **contracting**

B. If there is a problem with a valve closing, this can cause **HEART MURMURS**.

1. **Rheumatic** fever caused by a **bacterial** infection can cause a faulty valve (usually the bicuspid valve).

2. **Surgery** or replacement with an artificial valve can often cure this.

