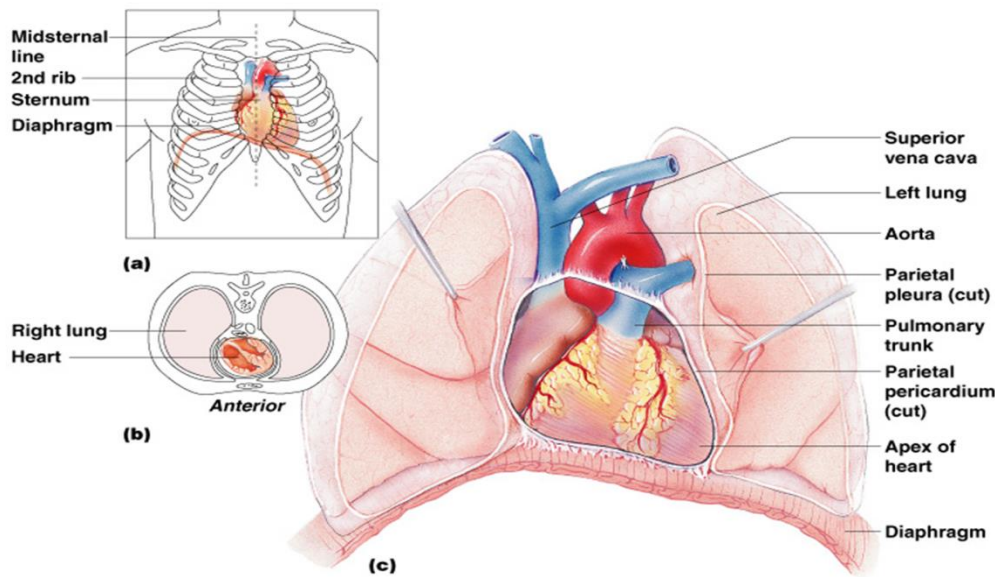


Cardiovascular System

The **cardiovascular** system consists of two components: **the heart** and **the blood vessels**.

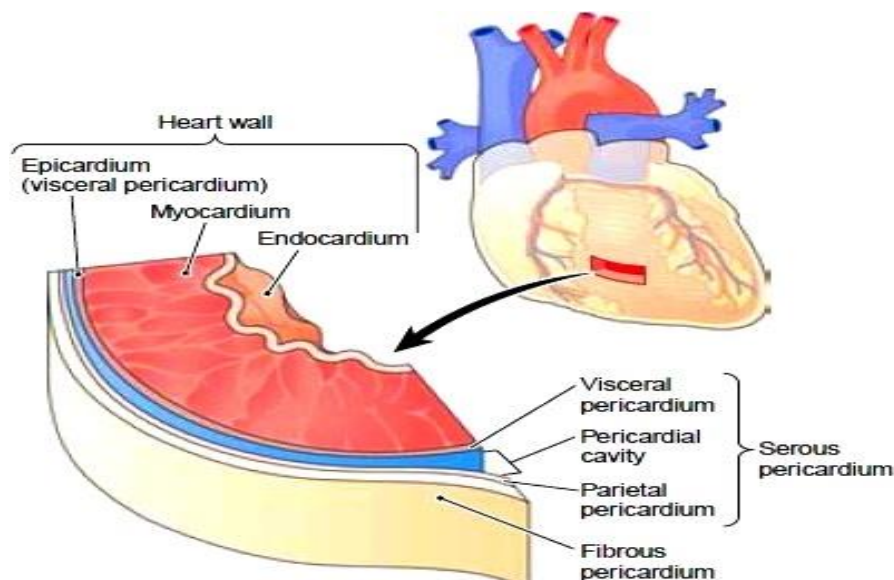
The function of the cardiovascular system is to **deliver oxygen** , **nutrients** and to **remove carbon dioxide** and other **waste products**.

Heart: it is a hollow, **cone-shaped**, muscular organ **lying in the mediastinum**, the center of the **thoracic cavity** between **the lungs**. The heart is responsible for **pumping blood**.



The Wall and Coverings of the Heart:

- The heart is **covered** by a **two-layered** serous membrane called the **pericardium**.
- The **heart wall** is consist from the following **three layers**:
 1. **Epicardium:** Thin layer Continuous with **the pericardium**.
 2. **Myocardium:** Composed of bands of involuntary **striated muscle fibers**.
 3. **Endocardium:** Thin layer of tissue lining the **inside of the heart**.



Four Chambers of the Heart:

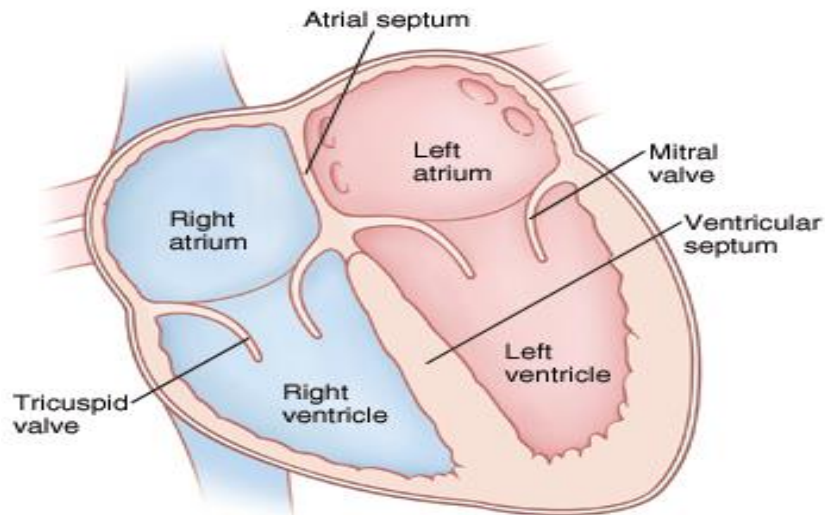
The heart has four hollow chambers: **two superior atria** (sing, atrium) and **two inferior ventricles**.

A- The **two upper** chambers: the (1) **right atrium** and (2) **left atrium**.

Thin-walled upper chambers, Separated by **atrial septum** Act as receiving chamber for blood returning from the body and lungs. (**Collect blood**).

B- The **two lower** chambers: the (3) **right ventricle** and (4) **left ventricle**.

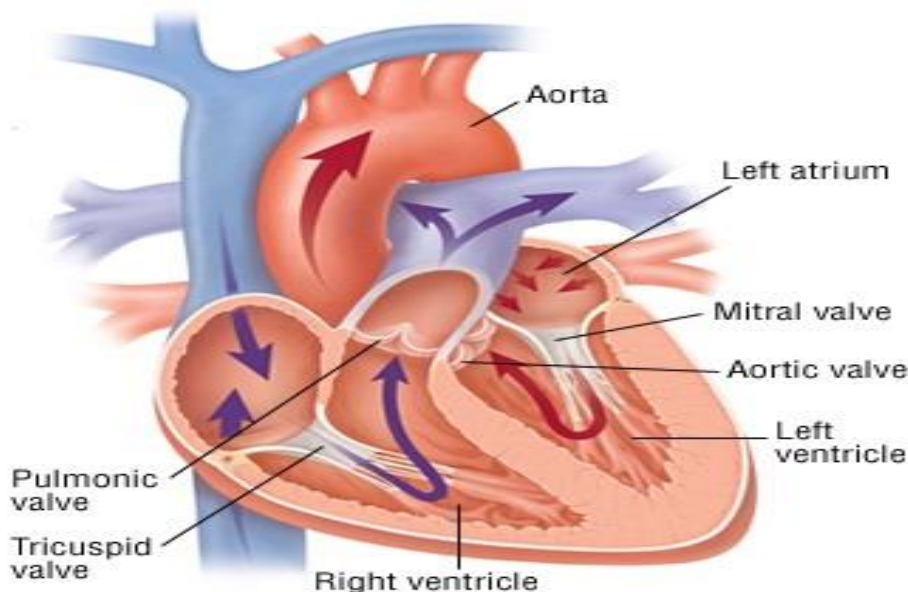
Lower chambers which make up the bulk of the muscle mass of the heart separated **interventricular septum**. (**Pump blood from the heart**).



Note: Left ventricle 2/3 larger than **right ventricle**

Valves of the Heart

- **Tricuspid valve (AV):** Separates **right atrium** from **right ventricle**.
- **Pulmonic semilunar valve:** Separates **right ventricle** from **pulmonary artery**.
- **Bicuspid (mitral) valve (AV):** Separates **left atrium** from **left ventricle**.
- **Aortic semilunar valve:** Separates **left ventricle** from **aorta**.

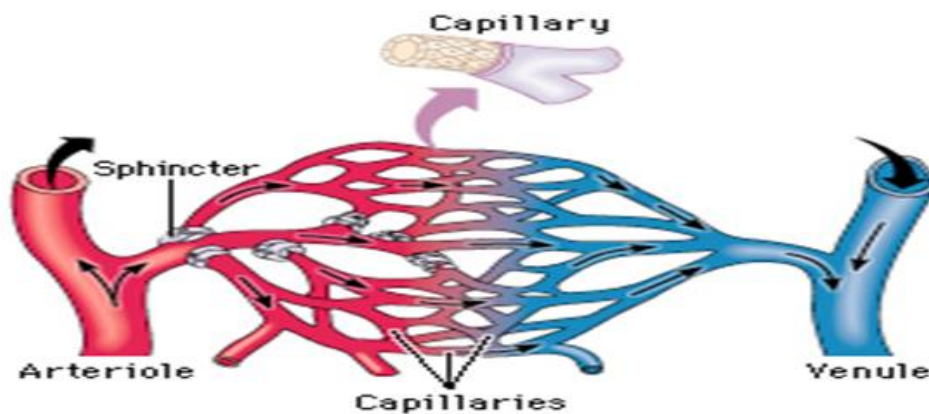


The Blood Vessels (Vascular System): Three major types of vessels

1) Arteries: carry blood from the heart to all cells of the body. **by the pumping action of the heart** through the arteries. blood travels to smaller arteries **called arterioles**

2) Capillaries: are microscopic vessels that join the **arterial system** with the **venous system**.

3) Veins: are return blood to the heart. They are formed from smaller vessels **called venules**. veins use **other methods** to return blood to **the heart**. Ex: Muscles contraction.



Differences between arteries and veins

Arteries:

- Carry **oxygenated blood**, away from the heart except **pulmonary artery**.
- Thick-walled, highly muscular , **Valves are absent**
- Blood in arteries moves with **pressure-pulsating**.

Veins:

- Carry **deoxygenated** blood towards the heart except **pulmonary veins**.
- Thin-walled, possess wide lumen , **Valves are present**
- Show sluggish movement of blood, **no pulsation**.

Note: Valves are **present in the veins** which provide **unidirectional flow of blood**.