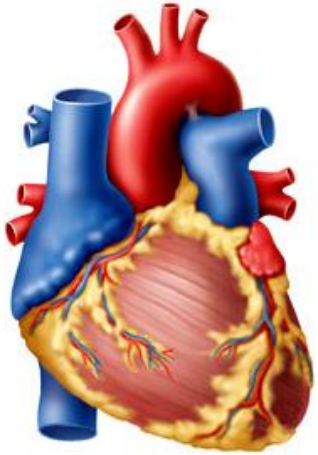

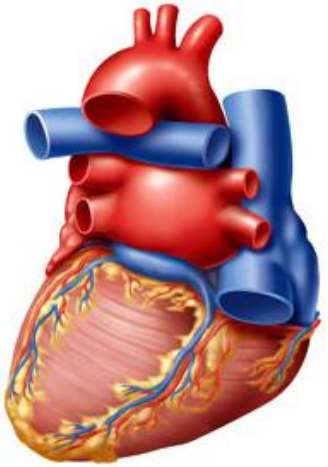

The Cardiovascular System
Part -1-

Ms. Mais Abdelhaq

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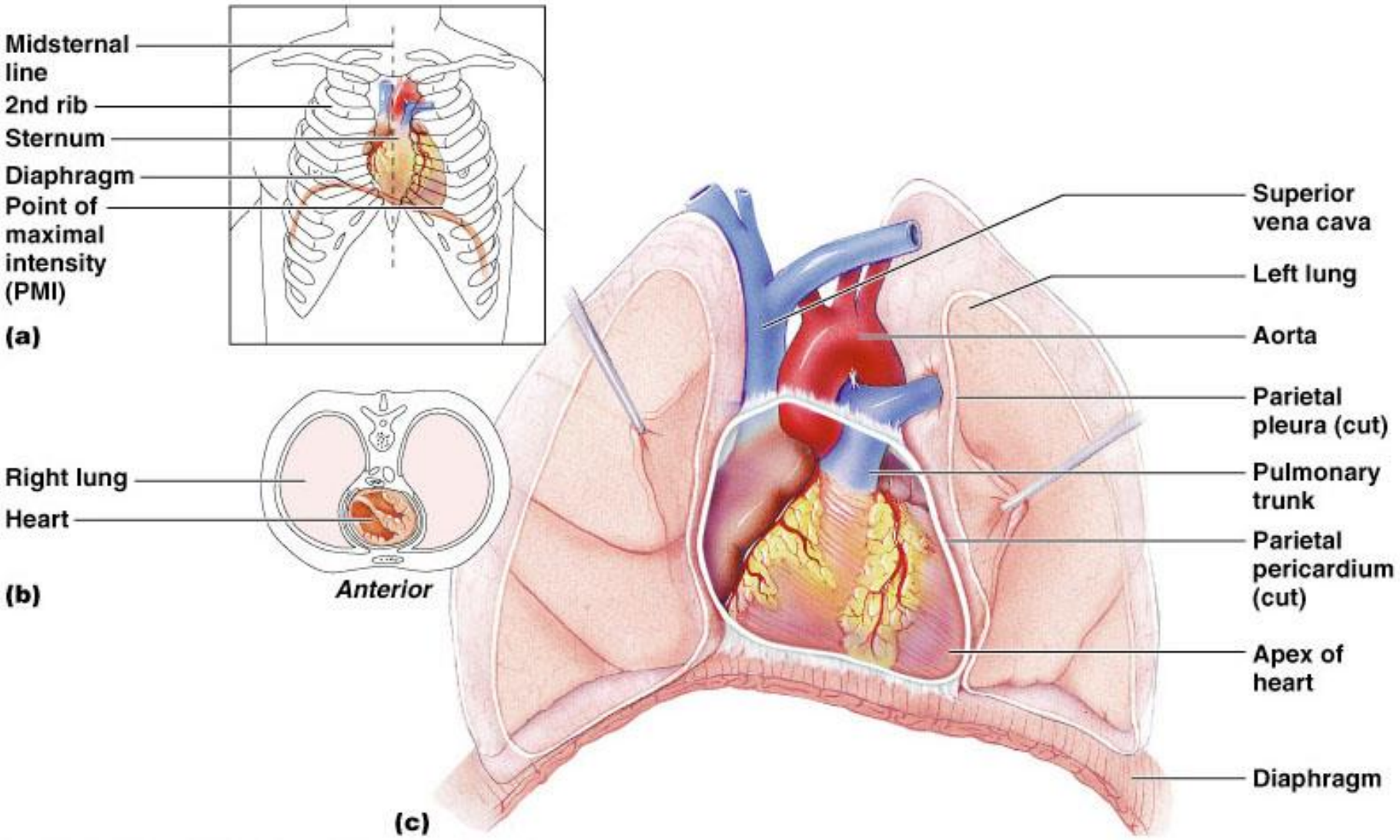
Heart Anatomy



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Heart Anatomy

Approximately the size of your fist

Location

- Superior
- Left
- Anterior
- Posterior

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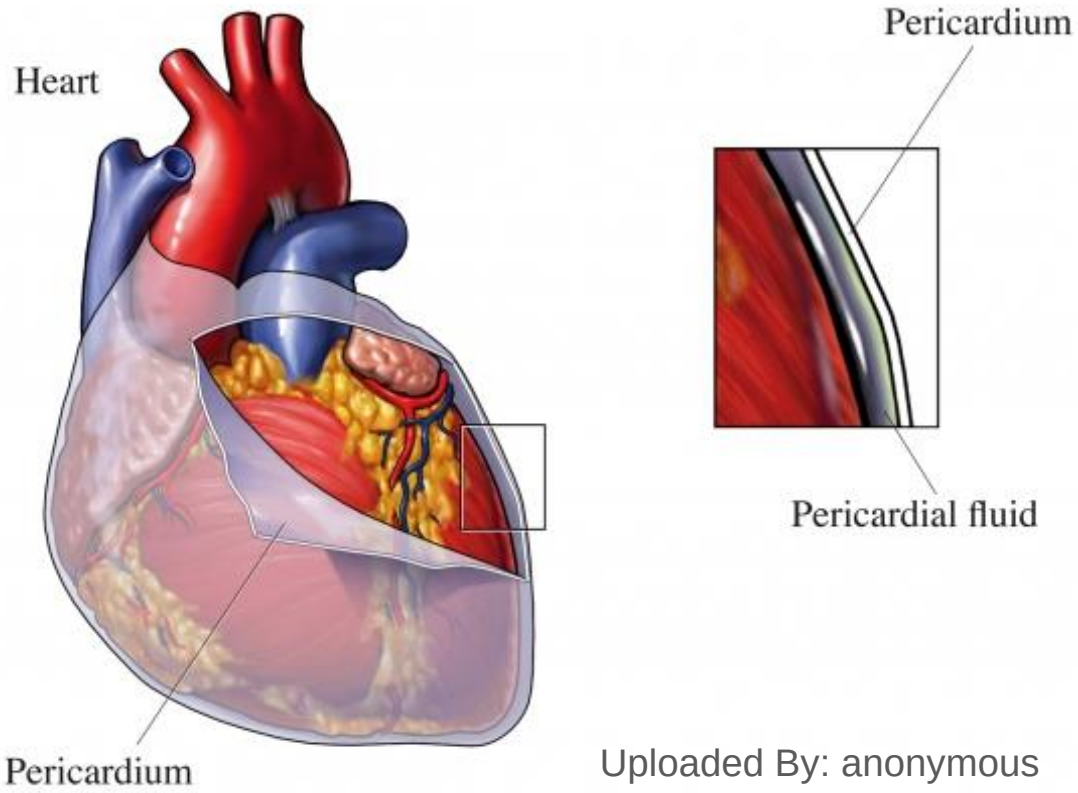
The Heart

The heart is surrounded by a membrane called **Pericardium**



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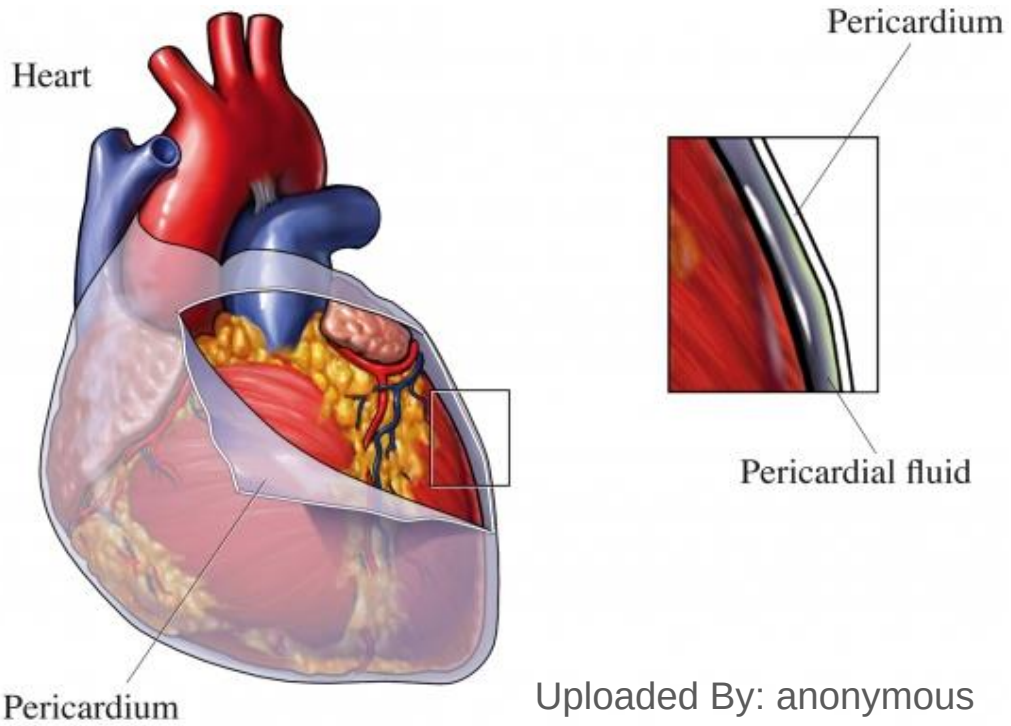
The Pericardium

- Encloses the heart and the roots of the great vessels
- Lies within the middle mediastinum



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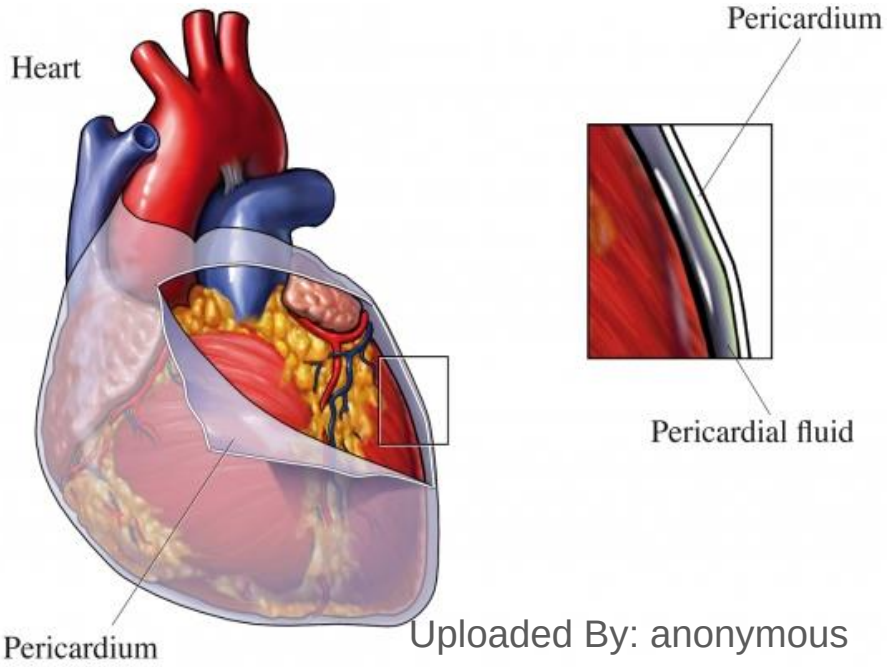
The Pericardium

- Protects and anchors the heart
- Allows the heart to work in a relatively friction-free environment



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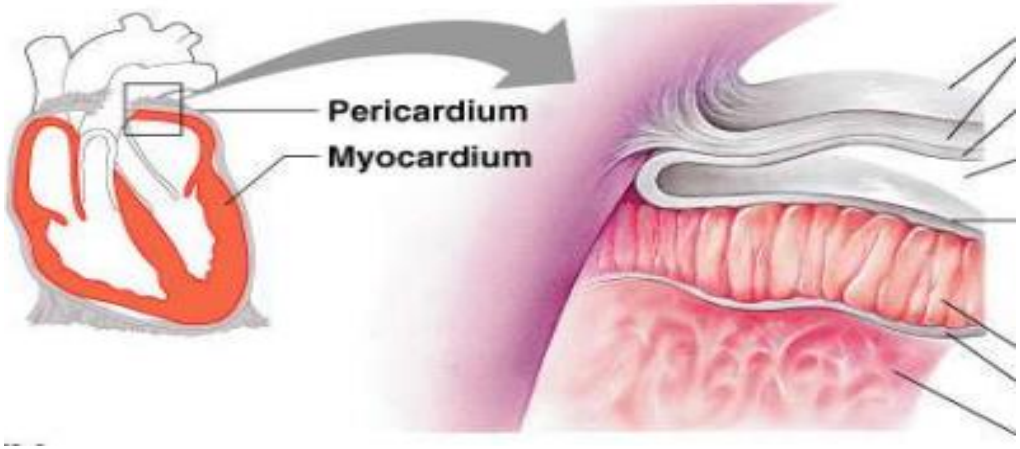
Coverings of the Heart: Anatomy

Pericardium – a double-walled sac around the heart composed of:

1. A superficial fibrous pericardium
2. A deep two-layer serous pericardium



a. The parietal layer lines the internal surface of the fibrous pericardium

b. The visceral layer or epicardium lines the surface of the heart

- They are separated by the fluid-filled pericardial cavity

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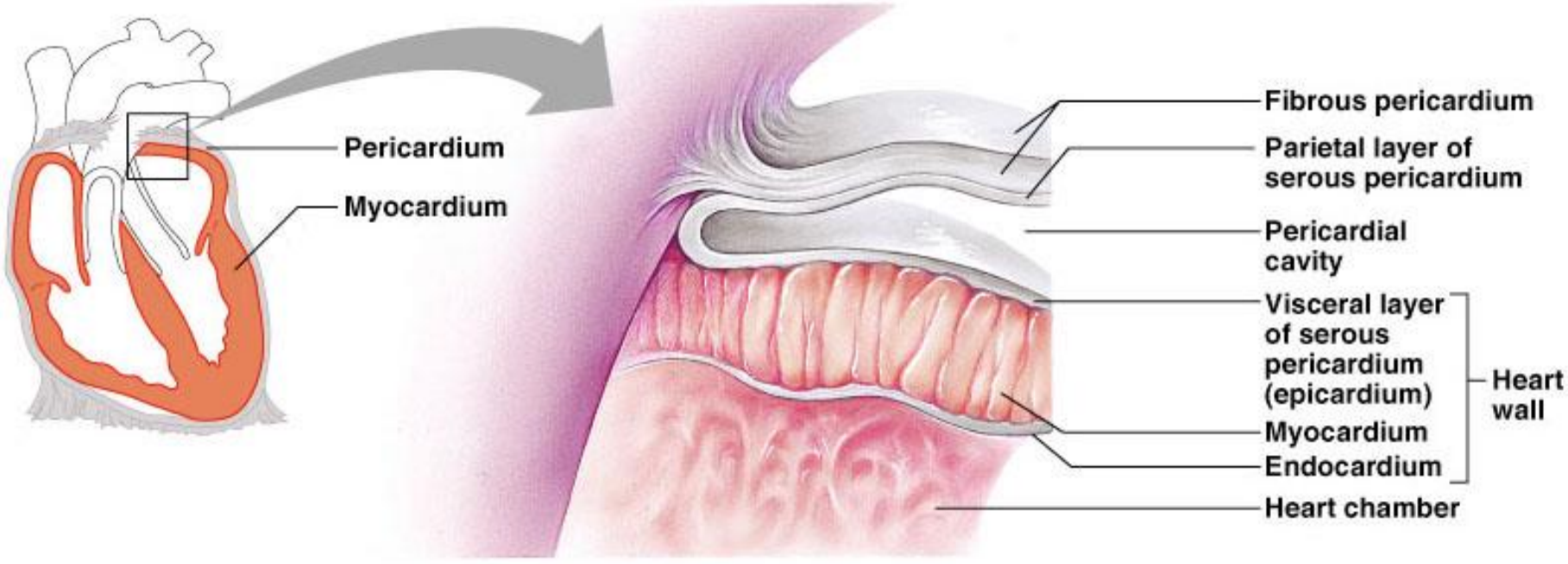
Pericardial Layers of the Heart



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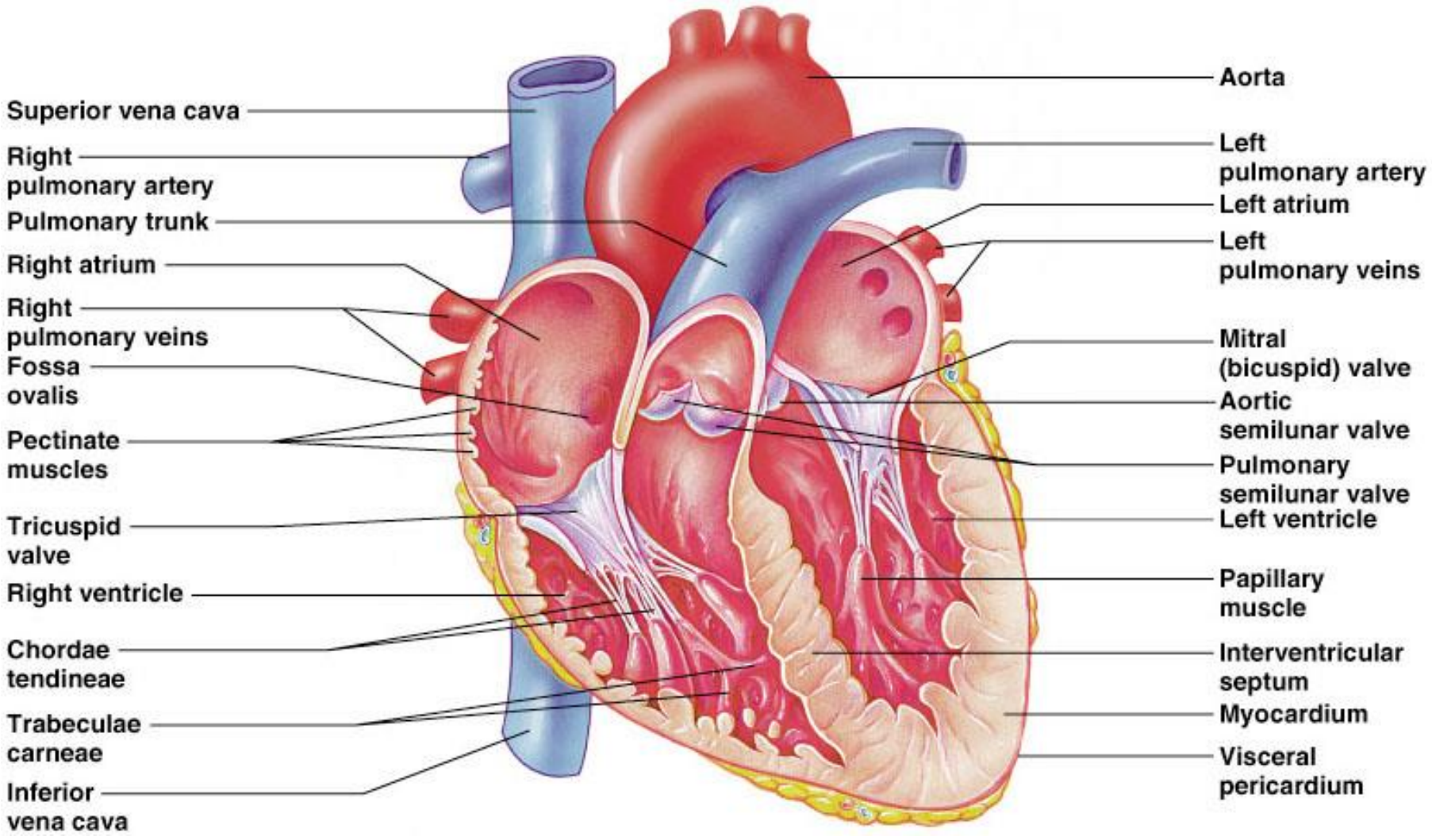
Heart Wall

Epicardium – visceral layer of the serous pericardium

Myocardium – cardiac muscle layer forming the bulk of the heart

Endocardium – endothelial layer of the inner myocardial surface

Gross Anatomy of Heart: Frontal Section



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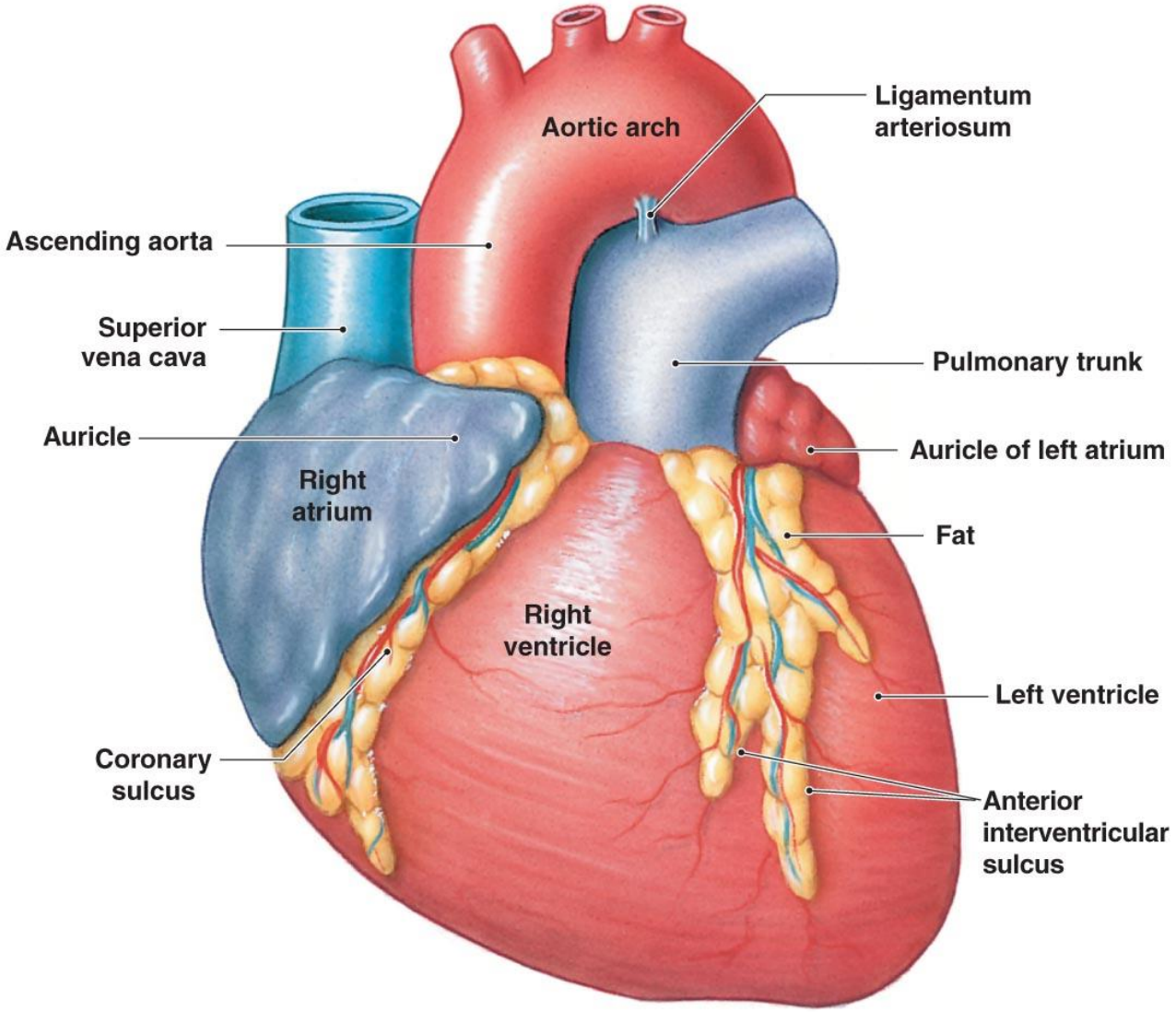
Atria of the Heart

Atria are the receiving chambers of the heart

- Blood enters right atrium from
- Blood enters left atrium from

A diagrammatic view of the anterior surface of the heart



Anterior surface

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Ventricles of the Heart

Ventricles are the discharging chambers of the heart

- **Right ventricle** pumps blood into the
- **Left ventricle** pumps blood into the

Valves of the Heart

- Atrioventricular (AV) valves lie between the atria and the ventricles
- AV valves prevent backflow into the atria when ventricles contract
- Chordae tendineae anchor AV valves to papillary muscles

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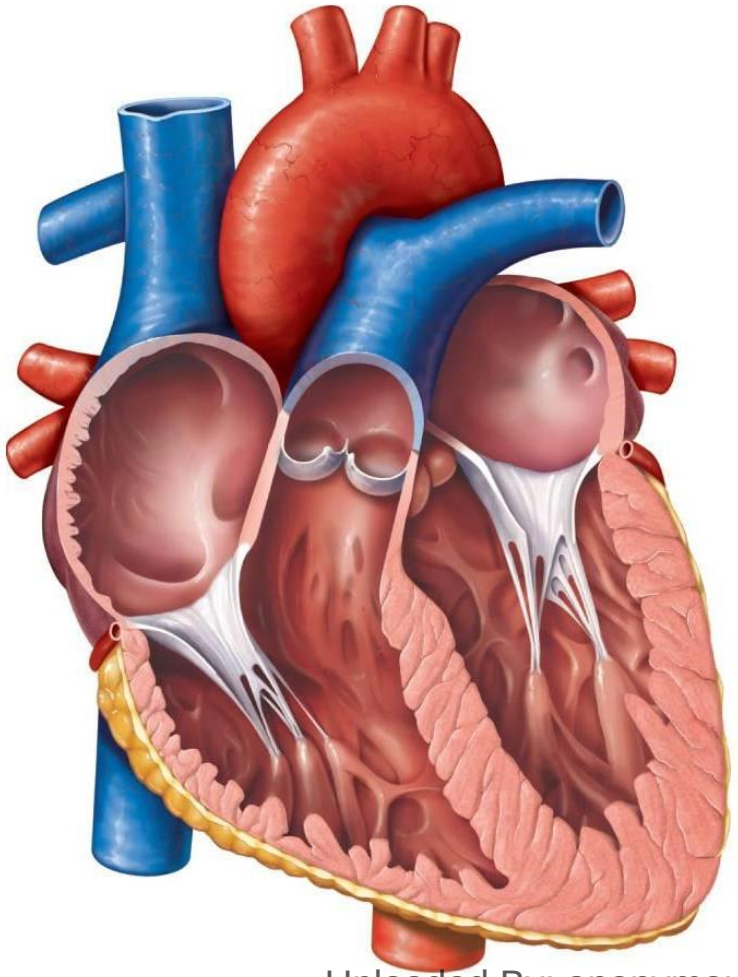
AV Valves

- Tricuspid
- Bicuspid (mitral)



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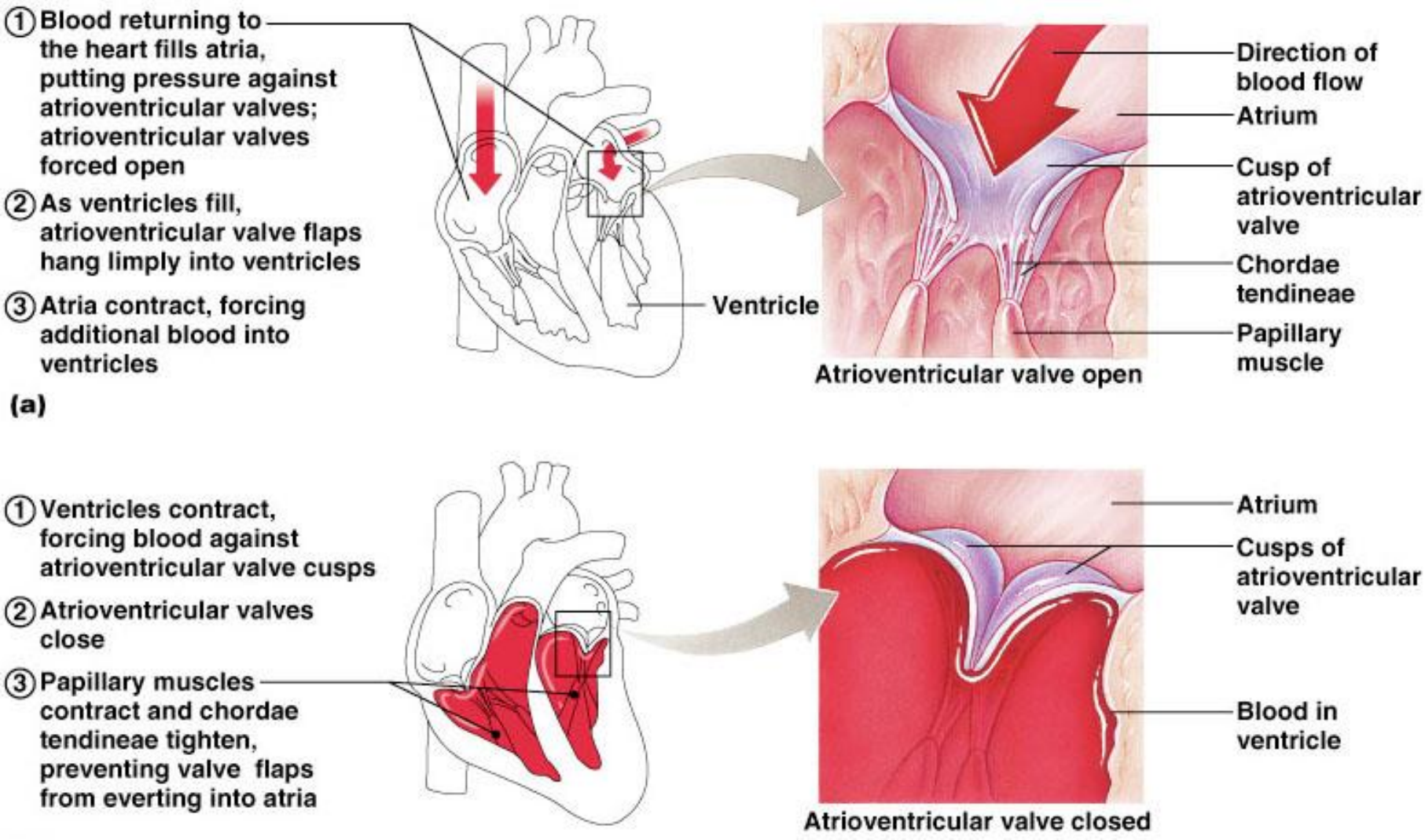
Atrioventricular Valve Function



Semilunar Valves

- Aortic semilunar valve lies between the left ventricle and the aorta
- Pulmonary semilunar valve lies between the right ventricle and pulmonary trunk
- Semilunar valves prevent backflow of blood into the ventricles

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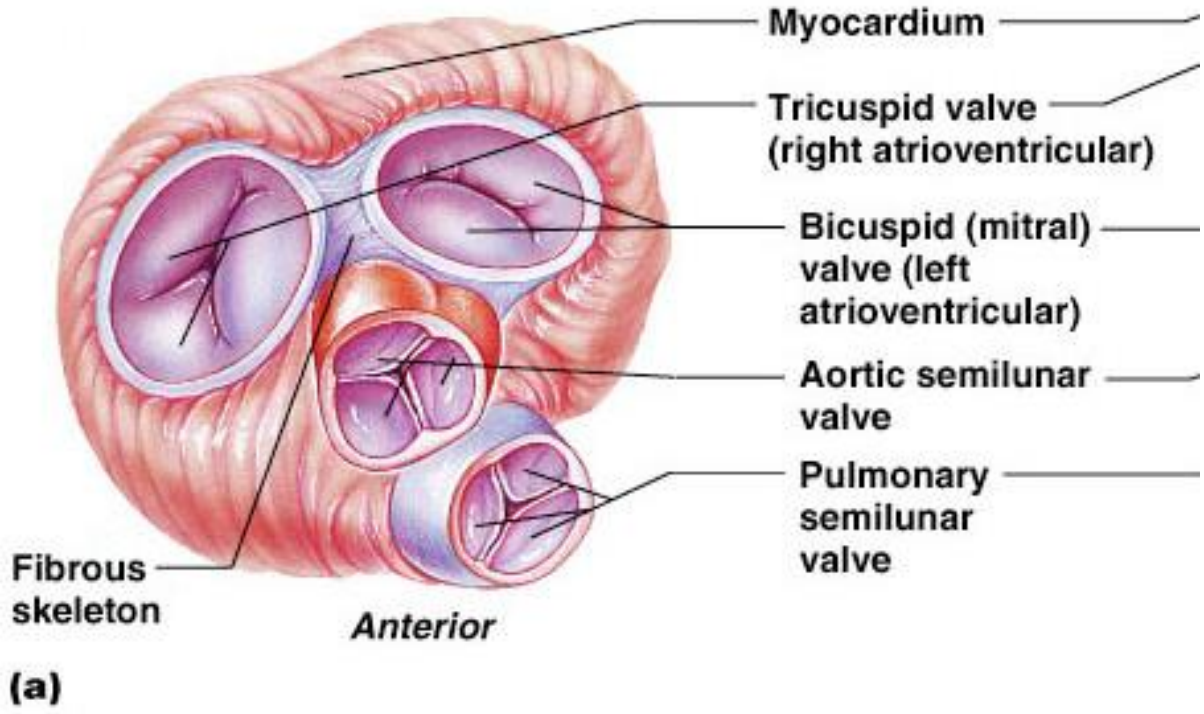
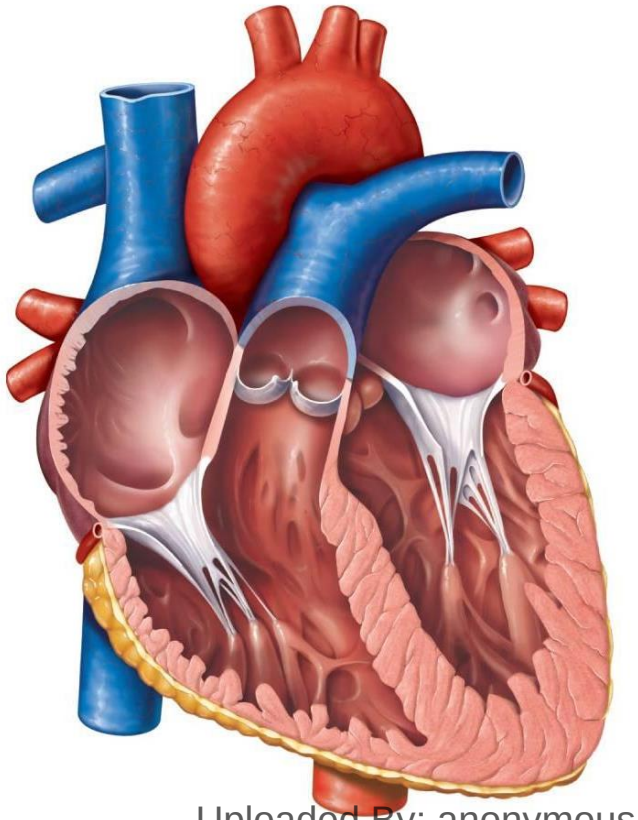
Semilunar Valves





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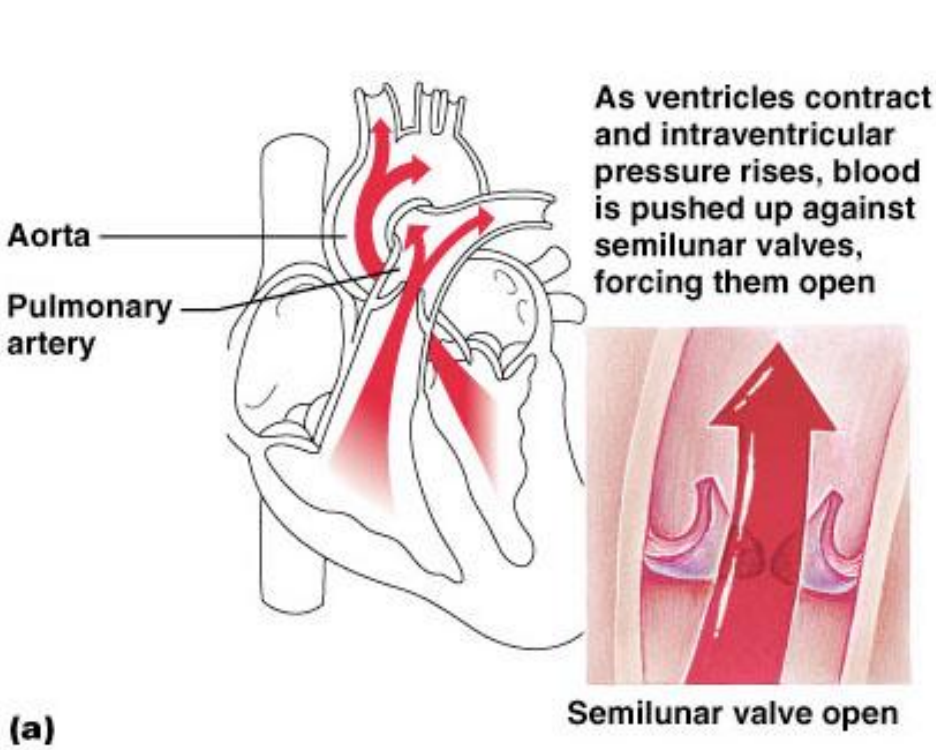
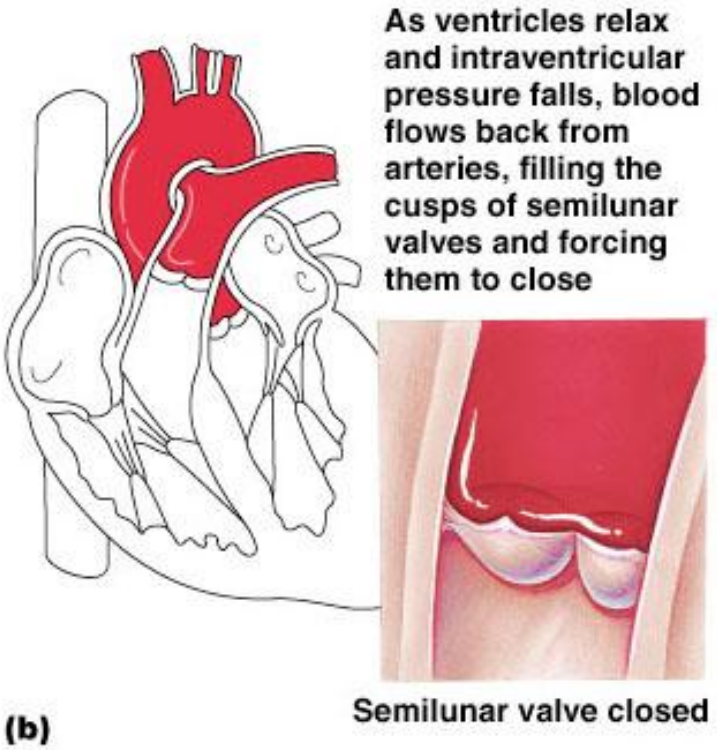
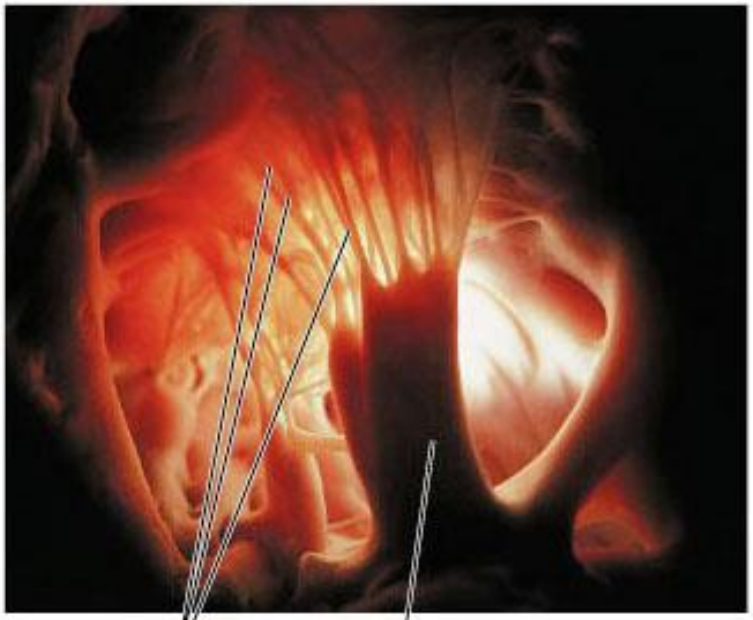
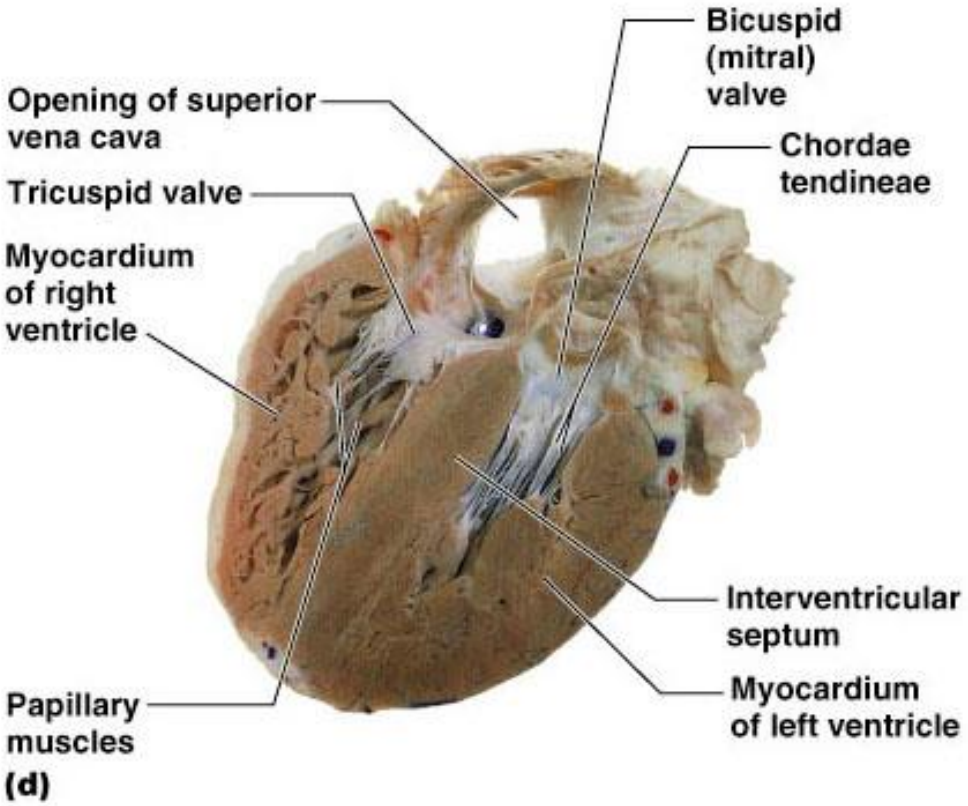
Semilunar Valve Function





Heart Valves





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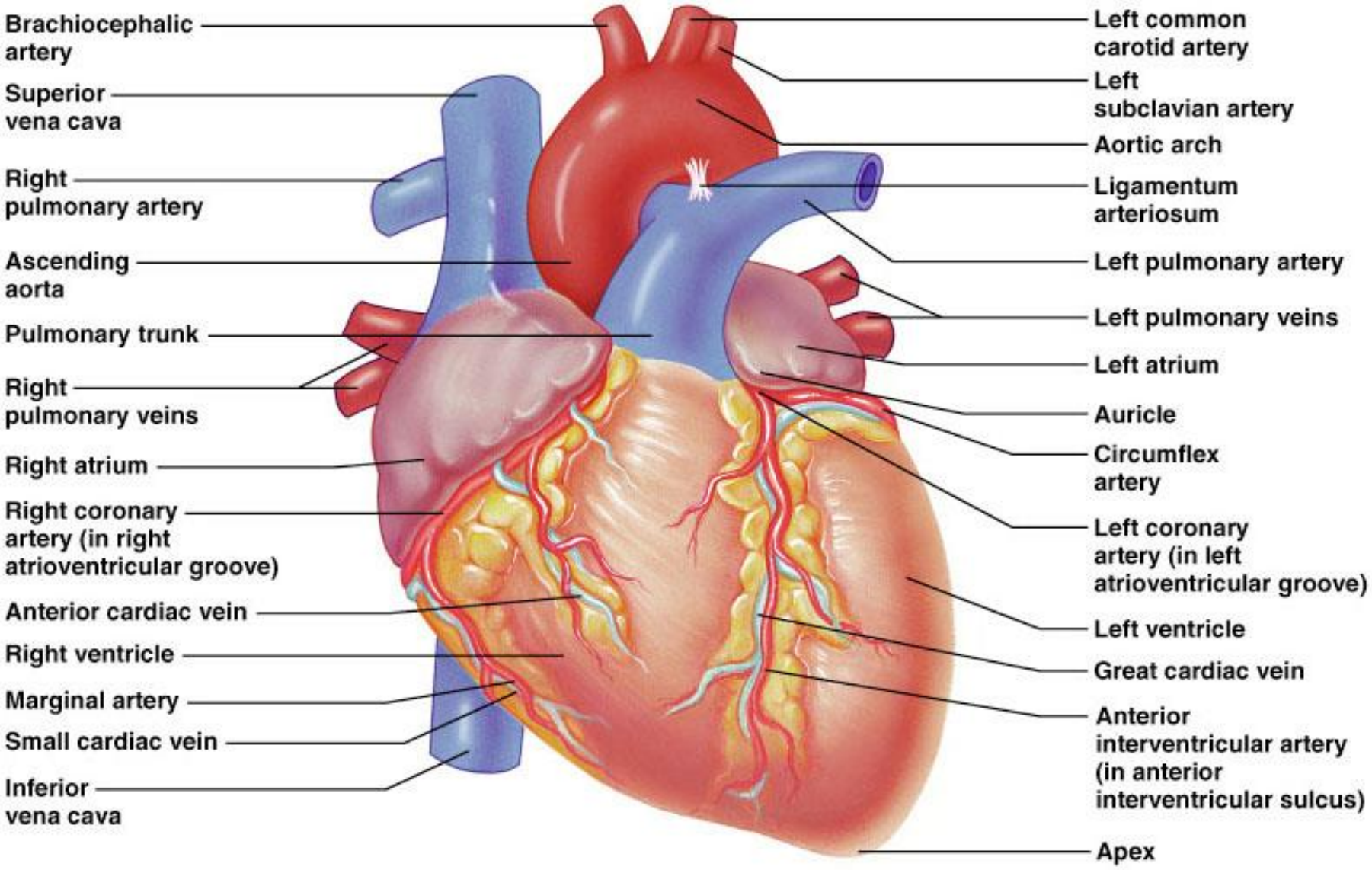
External Heart: Anterior View



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External Heart: Major Vessels (Anterior View)

Vessels **returning blood to the heart** include:

1. Superior and inferior venae cavae
2. Right and left pulmonary veins

Vessels conveying **blood away from the heart** include:

1. Pulmonary trunk, which splits into right and left pulmonary arteries
2. Ascending aorta (three branches from aortic arch) –
   a. B
   b. L
   c. LS

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Vessels that Supply/Drain the Heart (Anterior View)

Arteries –

- right and left coronary (in atrioventricular groove)
- marginal
- Circumflex
- anterior interventricular

Veins –

- small cardiac
- middle cardiac
- great cardiac

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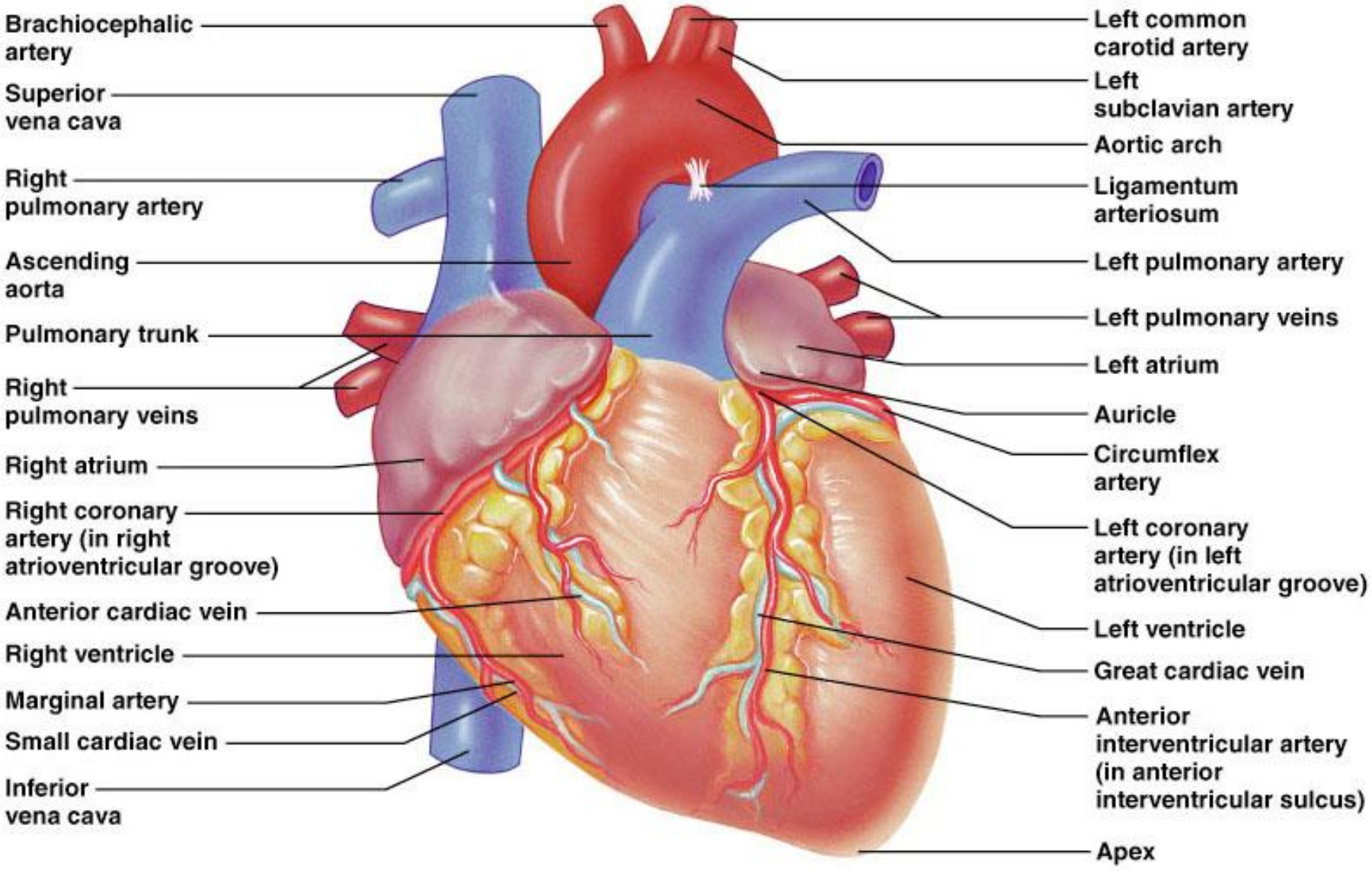
External Heart: Anterior View



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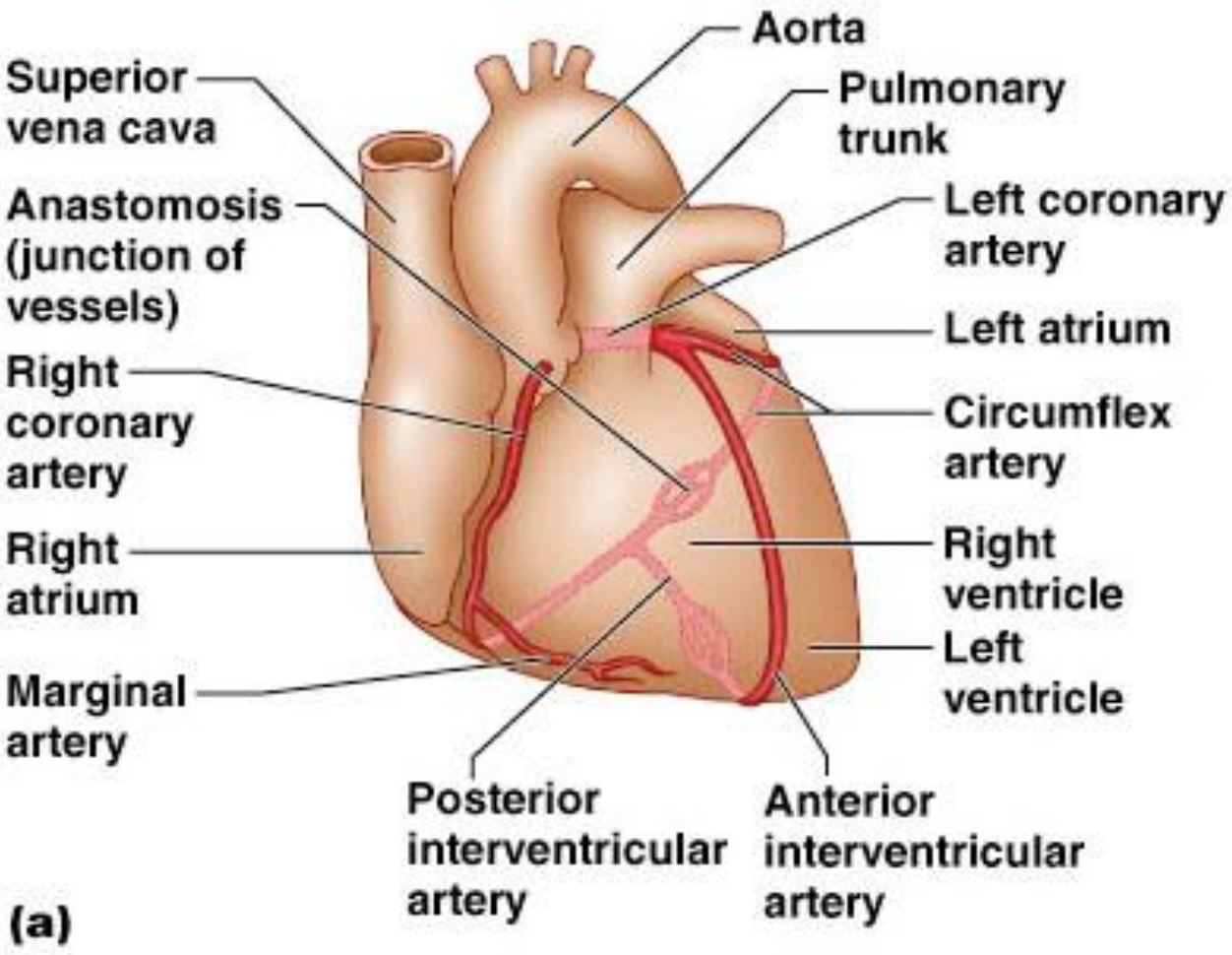
Coronary Circulation: Arterial Supply



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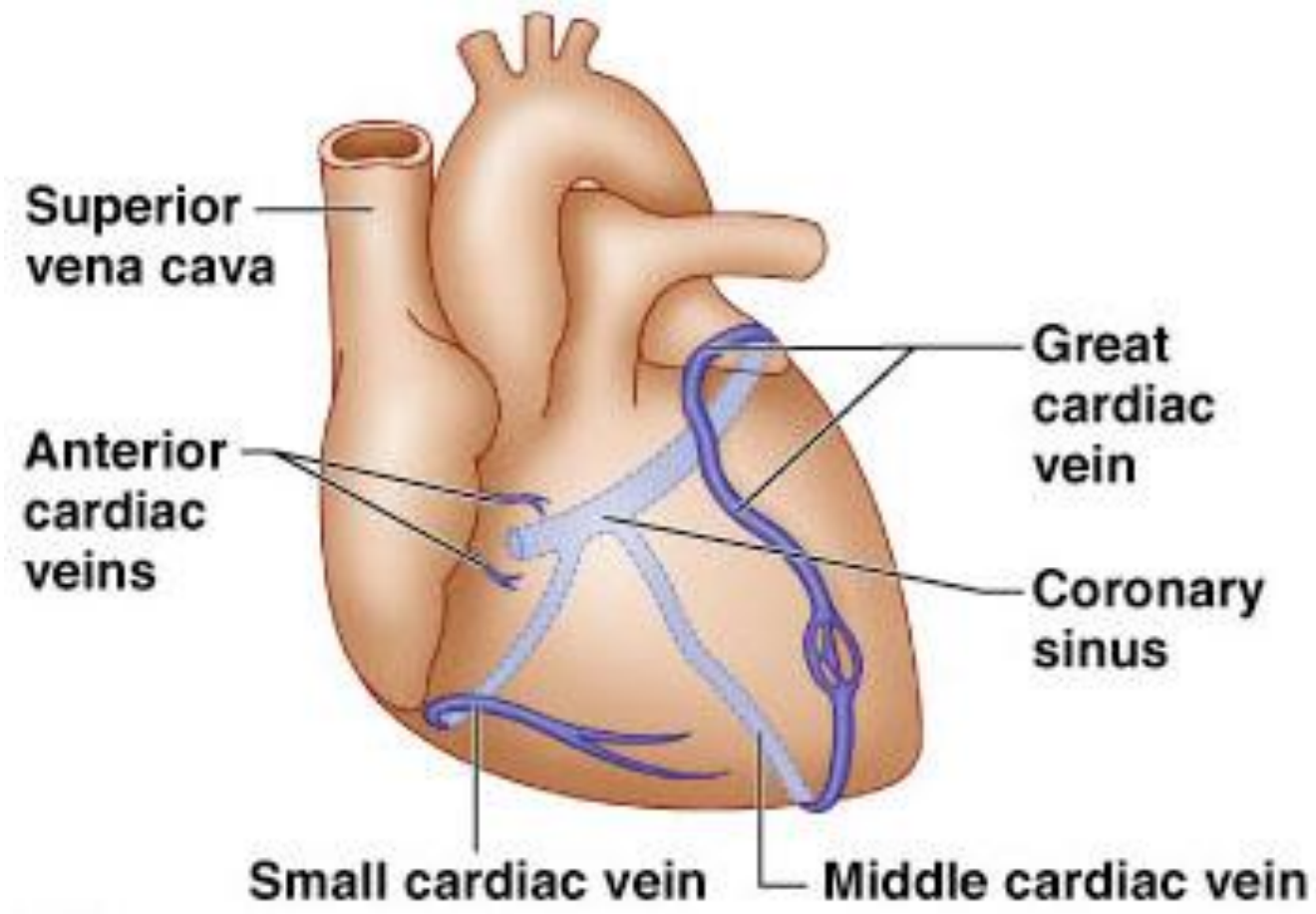
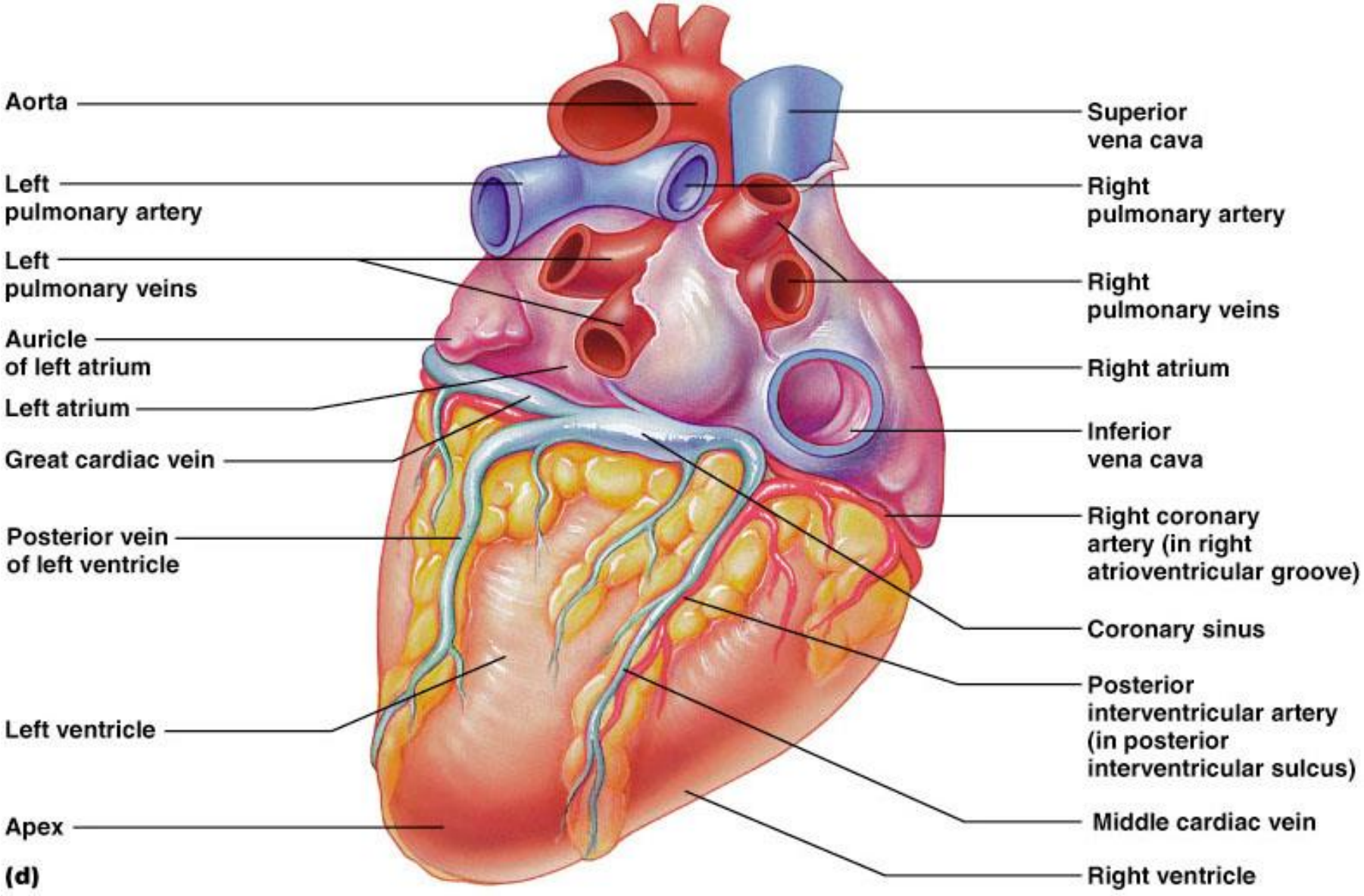
Coronary Circulation: Venous Supply



External Heart: Posterior View



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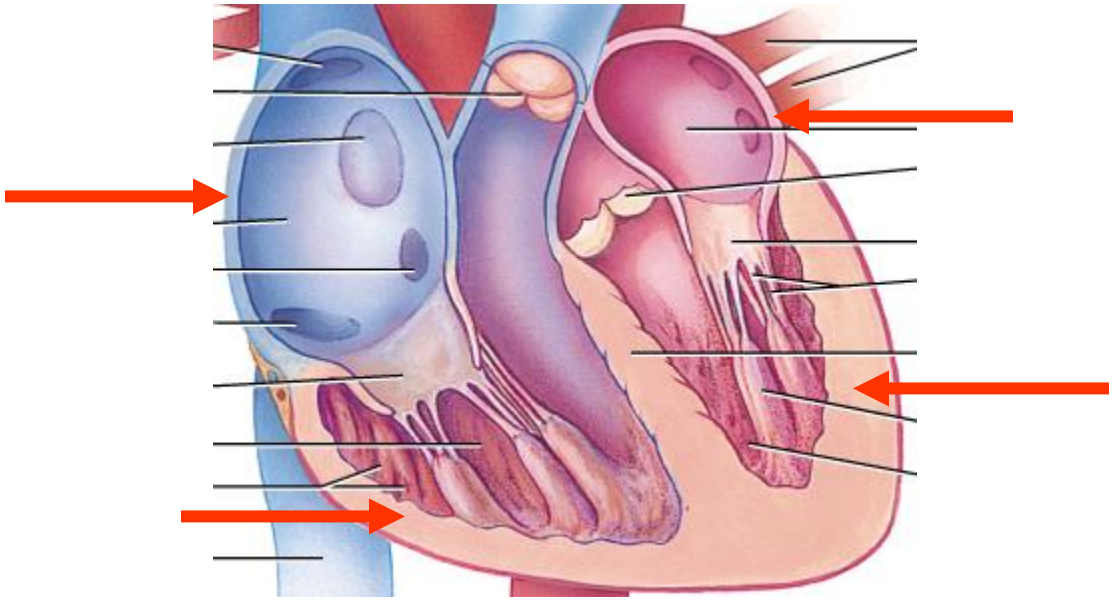
Myocardial Thickness and Function

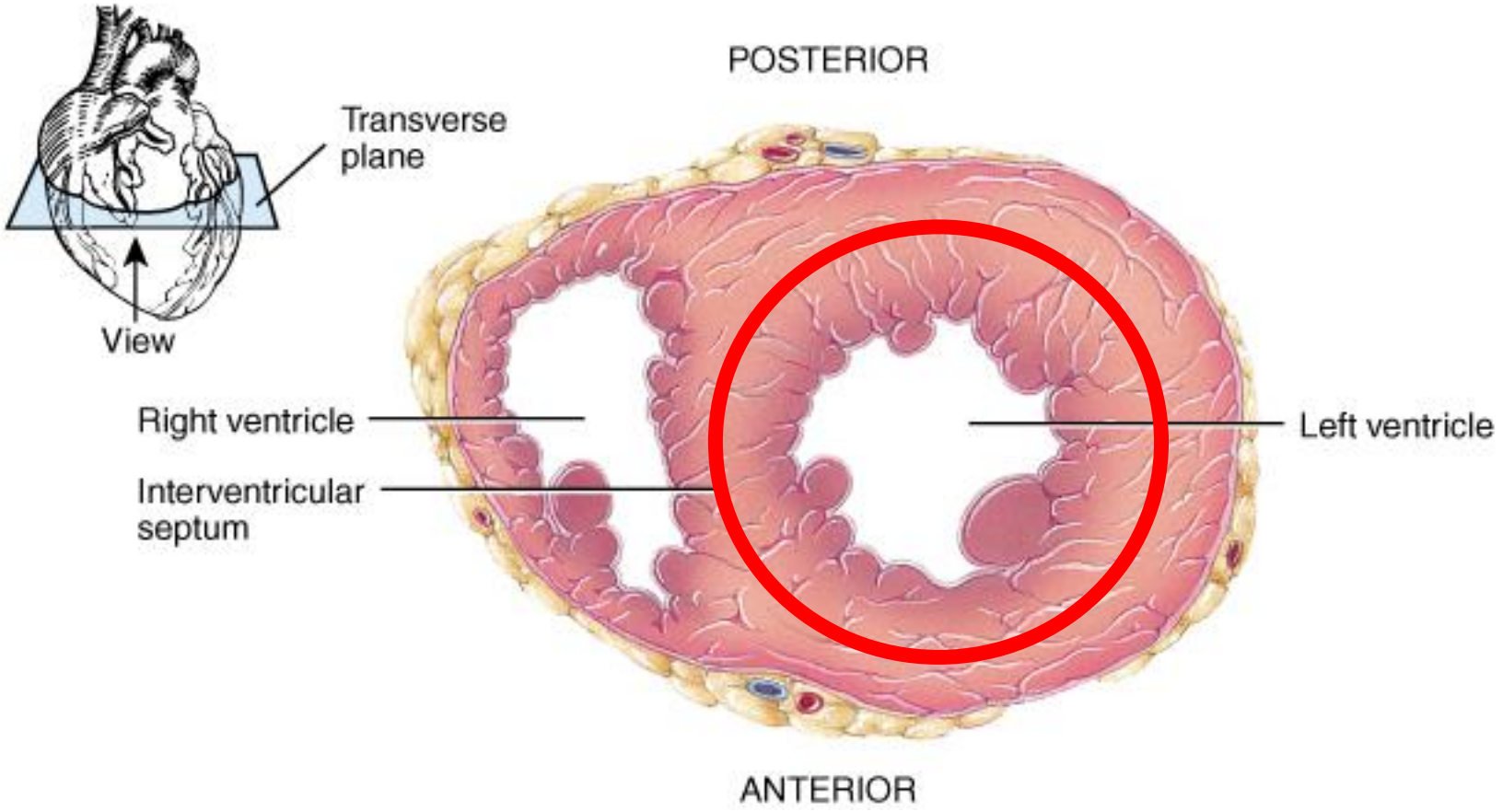


•Thickness of myocardium varies according to……..

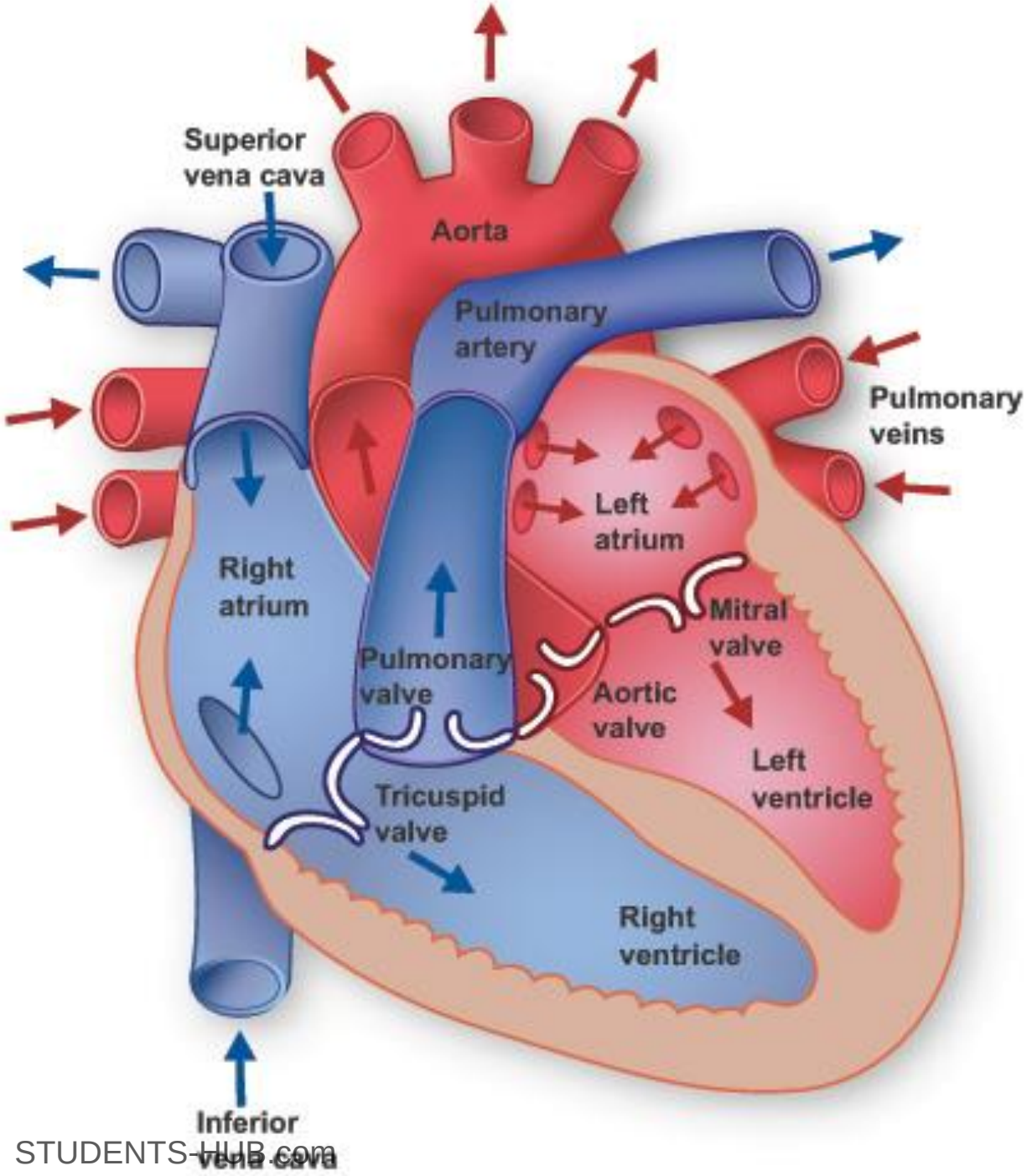
- Atria are thin walled, deliver blood to adjacent ventricles
- Ventricle walls are much thicker and stronger

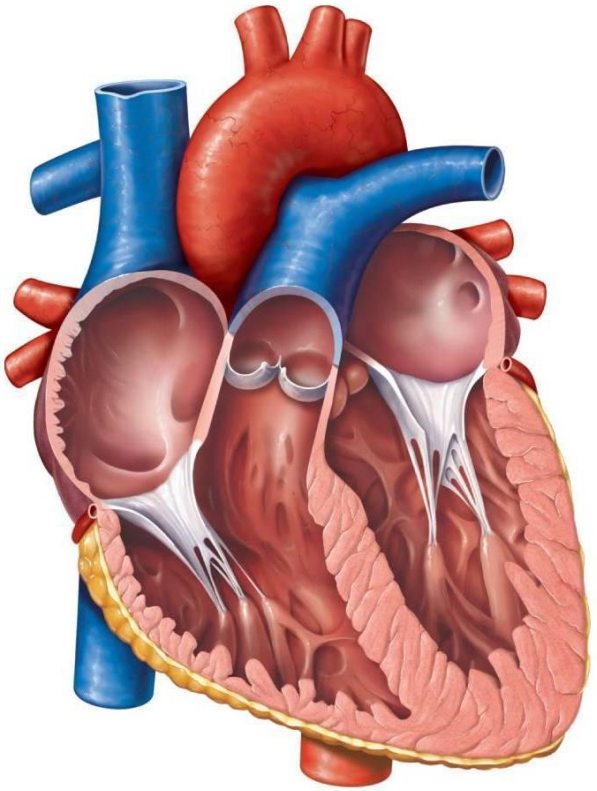
- right ventricle supplies blood to the lungs (little flow resistance)
- left ventricle wall is the thickest to supply systemic circulation

Thickness of Cardiac Walls



Myocardium of left ventricle is much thicker than the right.





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Pathway of Blood Through the Heart and Lungs

Right atrium → ..... → right ventricle

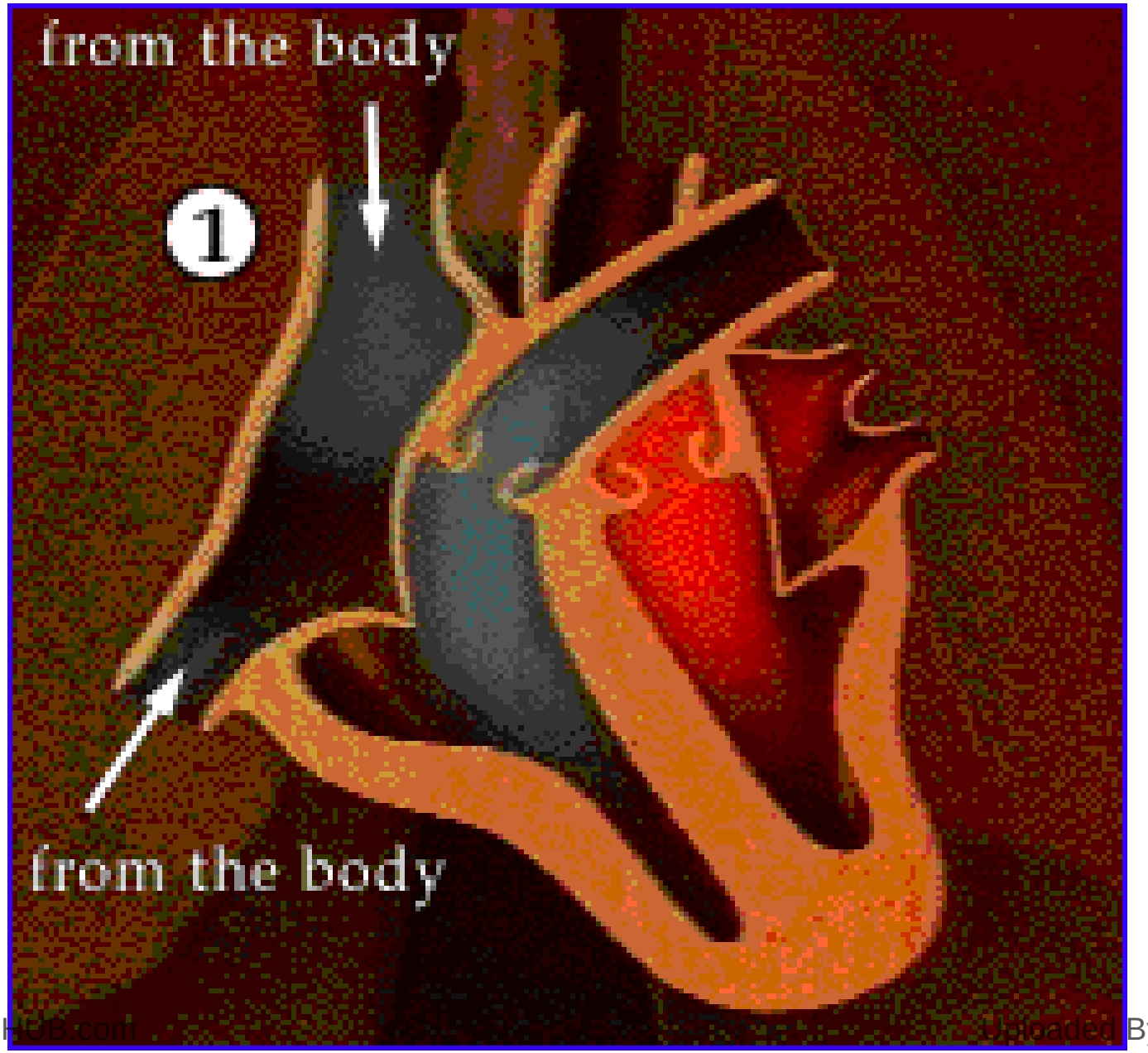
Right ventricle →..... → pulmonary arteries → lungs

Lungs → pulmonary veins → left atrium

Left atrium →..... → left ventricle

Left ventricle → ..... → aorta

Aorta → systemic circulation



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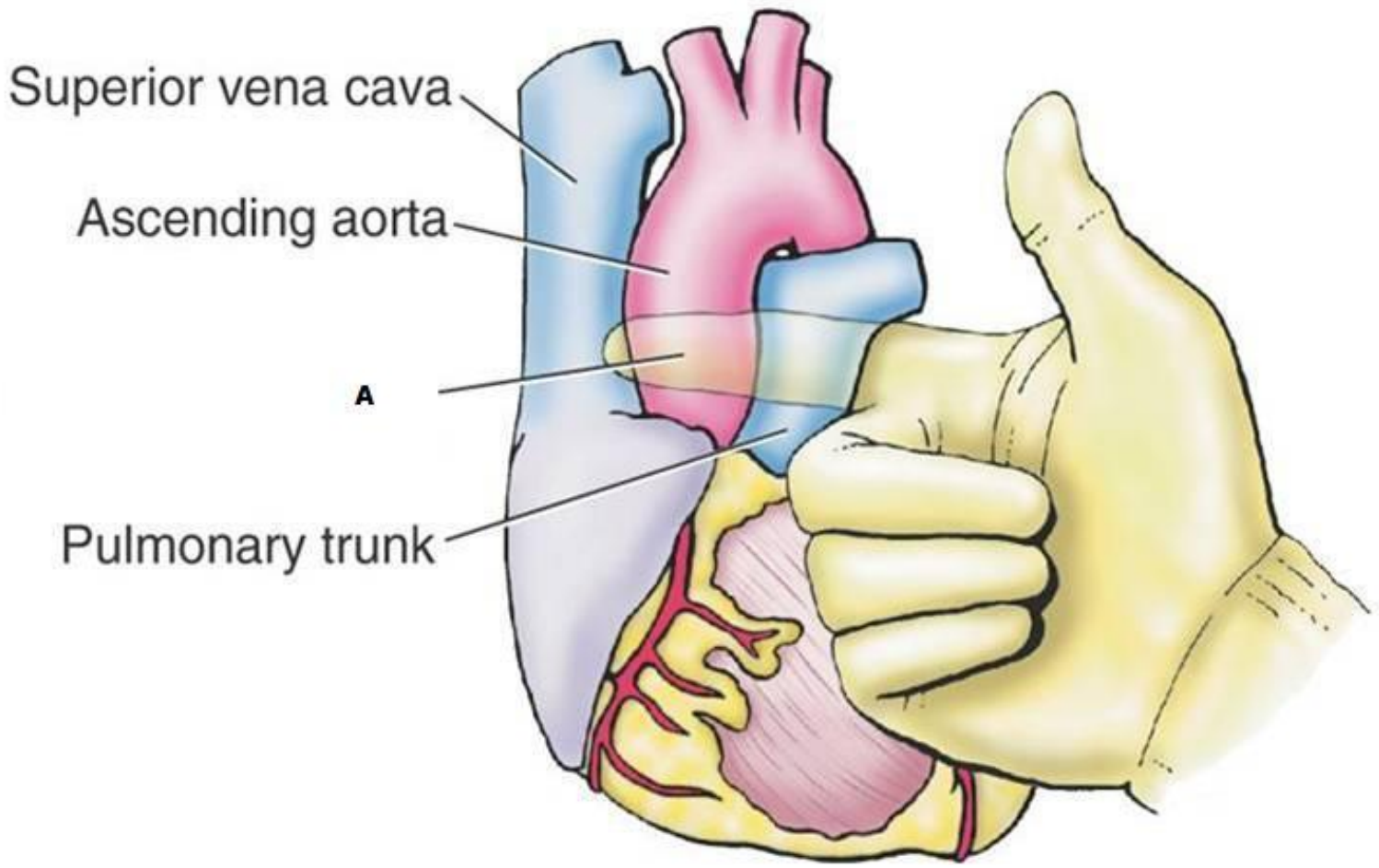
Pericardial Sinuses



Transverse Sinus

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Oblique Sinus

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Pericardial Sinuses

Transverse sinuous

Oblique sinuous

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Thank You

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