

THE HEART

The heart is relatively small, cone shaped, hollow muscular organ, roughly the size is one's own closed fist.

Average mass

Male = 300g

Female = 250g

The scientific study of the normal heart and its associated diseases is known as "CARDIOLOGY".

Location:

The heart rests on the diaphragm (at the level of 8th thoracic vertebrae), lies in the mediastinum (space/mass between the lungs extends from sternum to vertebrae).

Broad base of the heart – posteriorly (towards vertebrae)

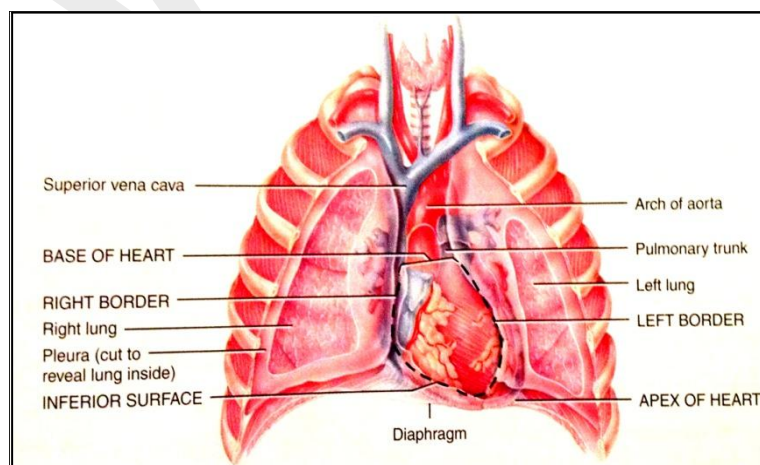
Superiorly (towards head)

Towards right.

Pointed apex of the heart – anteriorly (towards sternum)

Inferiorly (towards diaphragm)

Towards left. (9cm from the midline)



Structure of the heart:

The heart is made up of

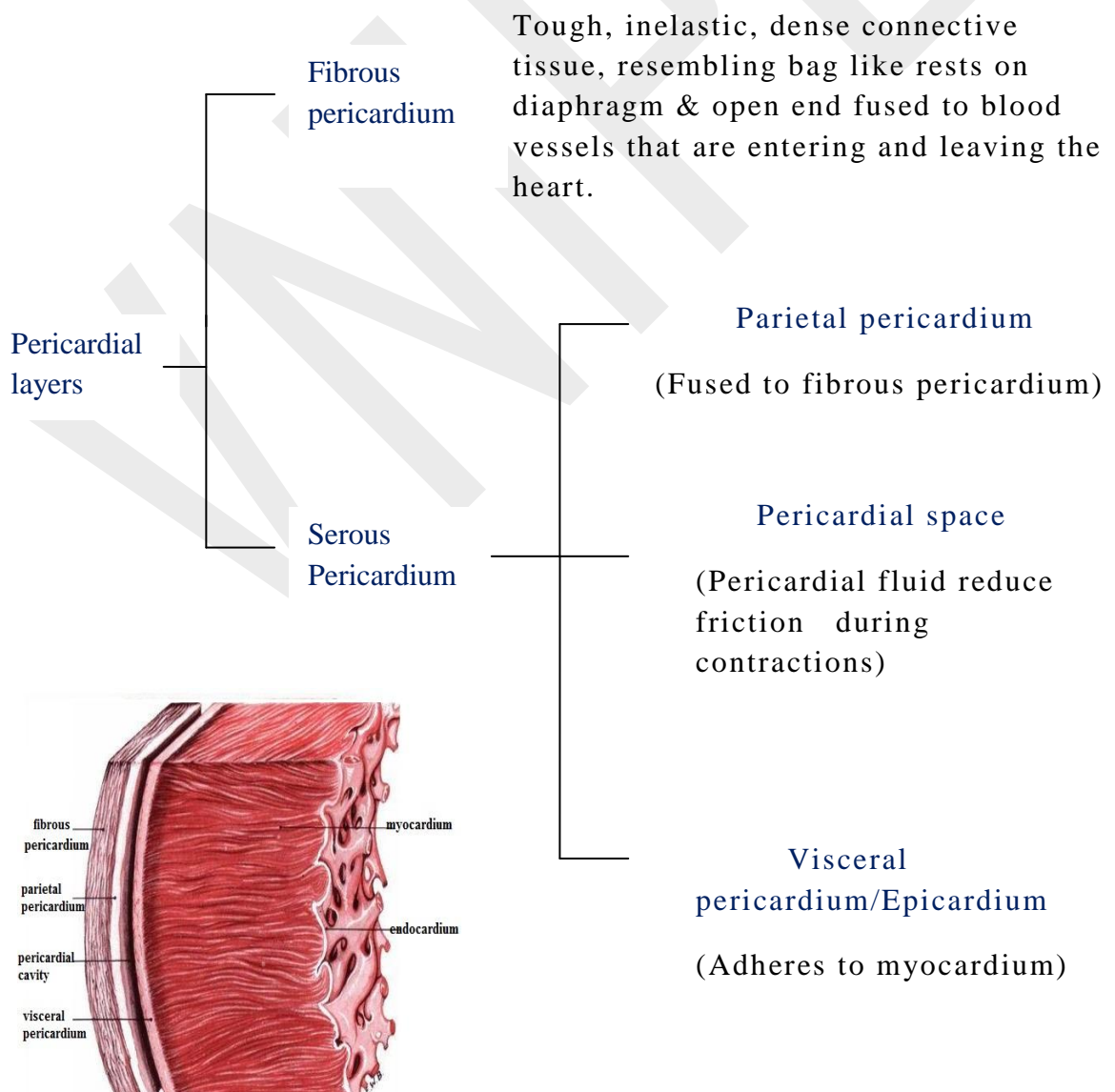
- 3 layers of tissue,
- 4 chambers,
- A fibrous skeleton.

1. Layers of the heart:

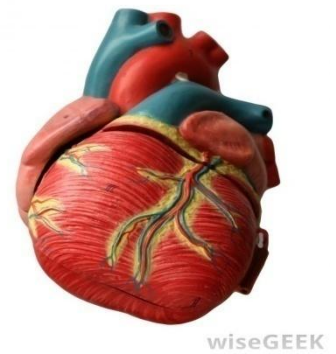
The heart is composed of three layers of tissue

- Pericardium
- Myocardium
- Endocardium

- a) **Pericardium**: It is the outer most layer which confines the heart to its position in the mediastinum which allows sufficient freedom of movement for contractions.



b) Myocardium: Myo = muscle

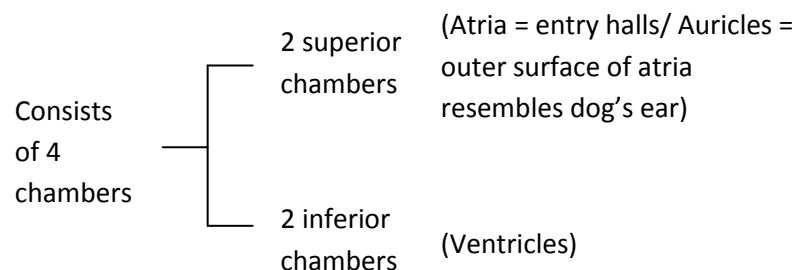


- Made up of involuntary striated cardiac muscle responsible for pumping action.
- Each muscle fiber consists of a nucleus and one/more branches in **end-to-end** contact (end/branch of one fiber contact with end/branch of adjacent fiber). So no need of separate nerve to each fiber.
- Thick at apex (inferior) and thin at base (superior).
- These myocardial fibers swirl diagonally around the heart in bundles.

c) Endocardium: endo = with in

- A thin layer of endothelium covering a thin layer of connective tissue.
- It provides a smooth lining for the chambers and valves of the heart.
- Endocardium continues with endothelial lining of blood vessel attached to the heart.

2. Chambers of the heart:

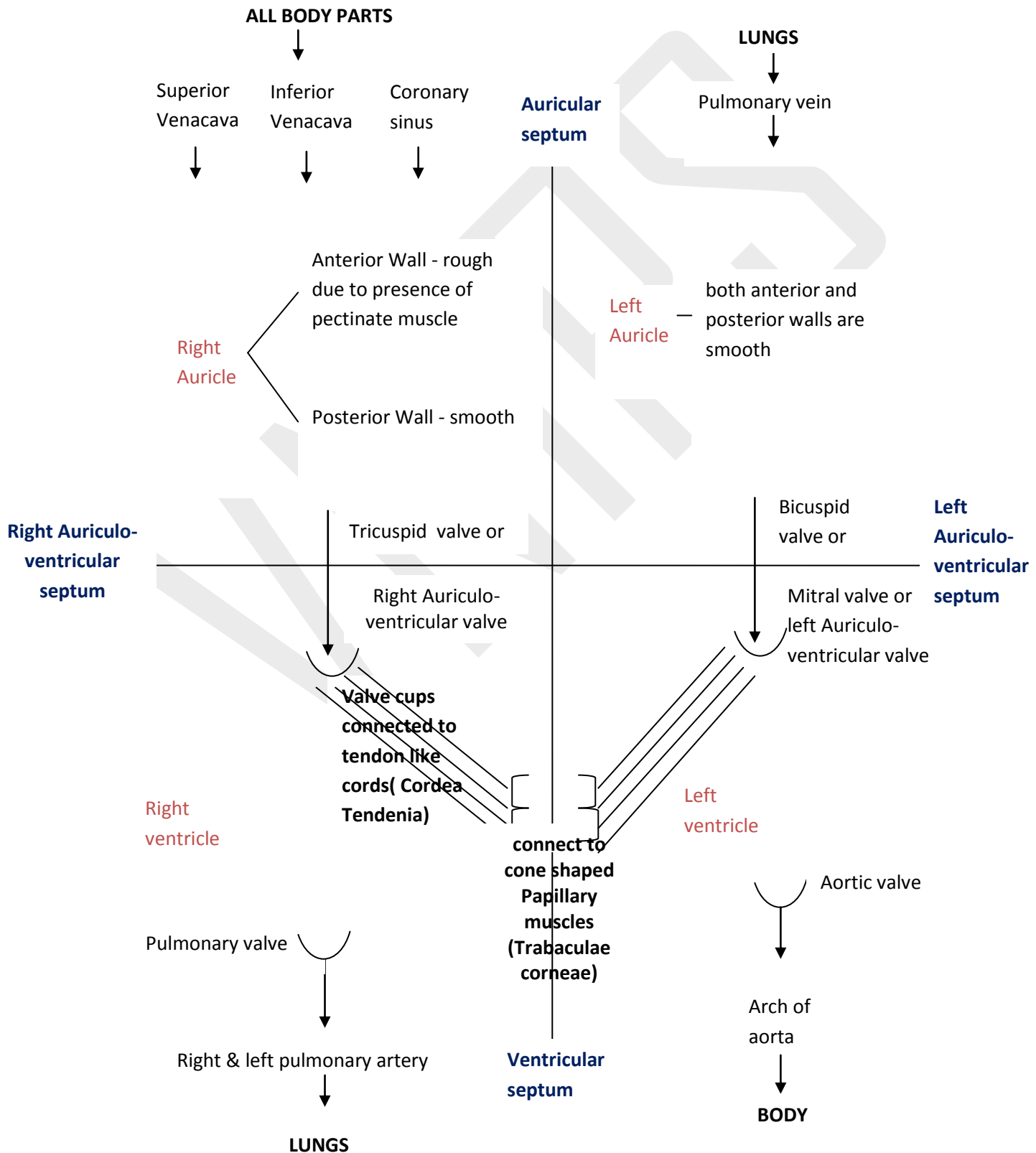


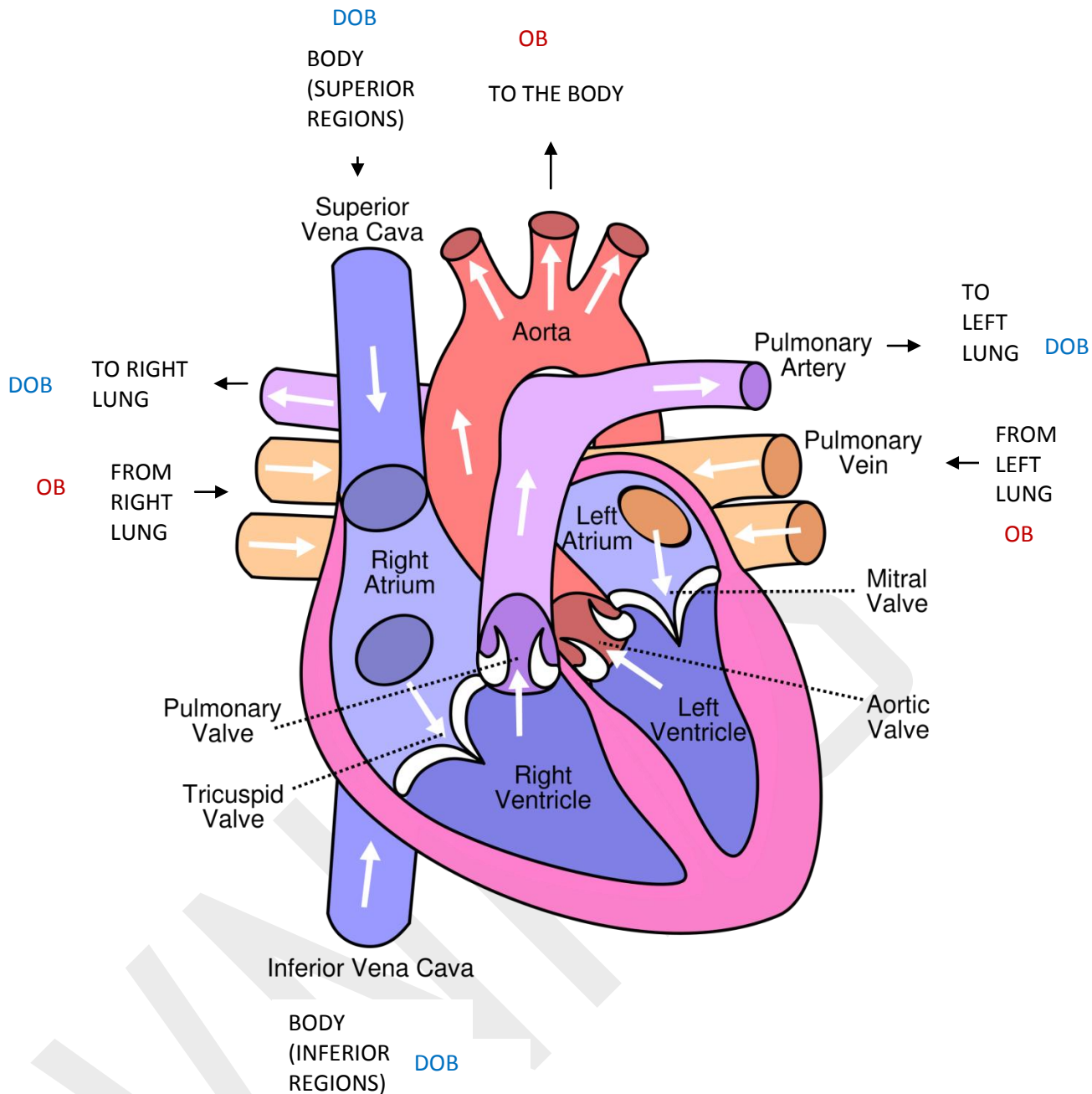
Sulci: A series of grooves present on the surface of the heart that contains coronary blood vessels, fat and mark the boundaries between the various chambers.

Coronary Sulci: Marks boundaries between Atria and Ventricles.

Inter-ventricular Sulci:

- Anterior - Marks boundaries between Ventricles anteriorly.
- Posterior - Marks boundaries between Ventricles posteriorly.





- Auricles are thin because they pump blood only to ventricles (shorter distance), whereas ventricles walls are thick they pump blood to lungs and whole body.
- Left ventricle is thicker than right ventricle because right ventricle pumps blood to lungs only whereas left ventricle pumps blood to whole body.

3. Fibrous Skeleton of Heart:

Heart also contains dense connective tissue which forms fibrous skeleton of the heart. This prevents over stretching of the valves as blood passes through them.