

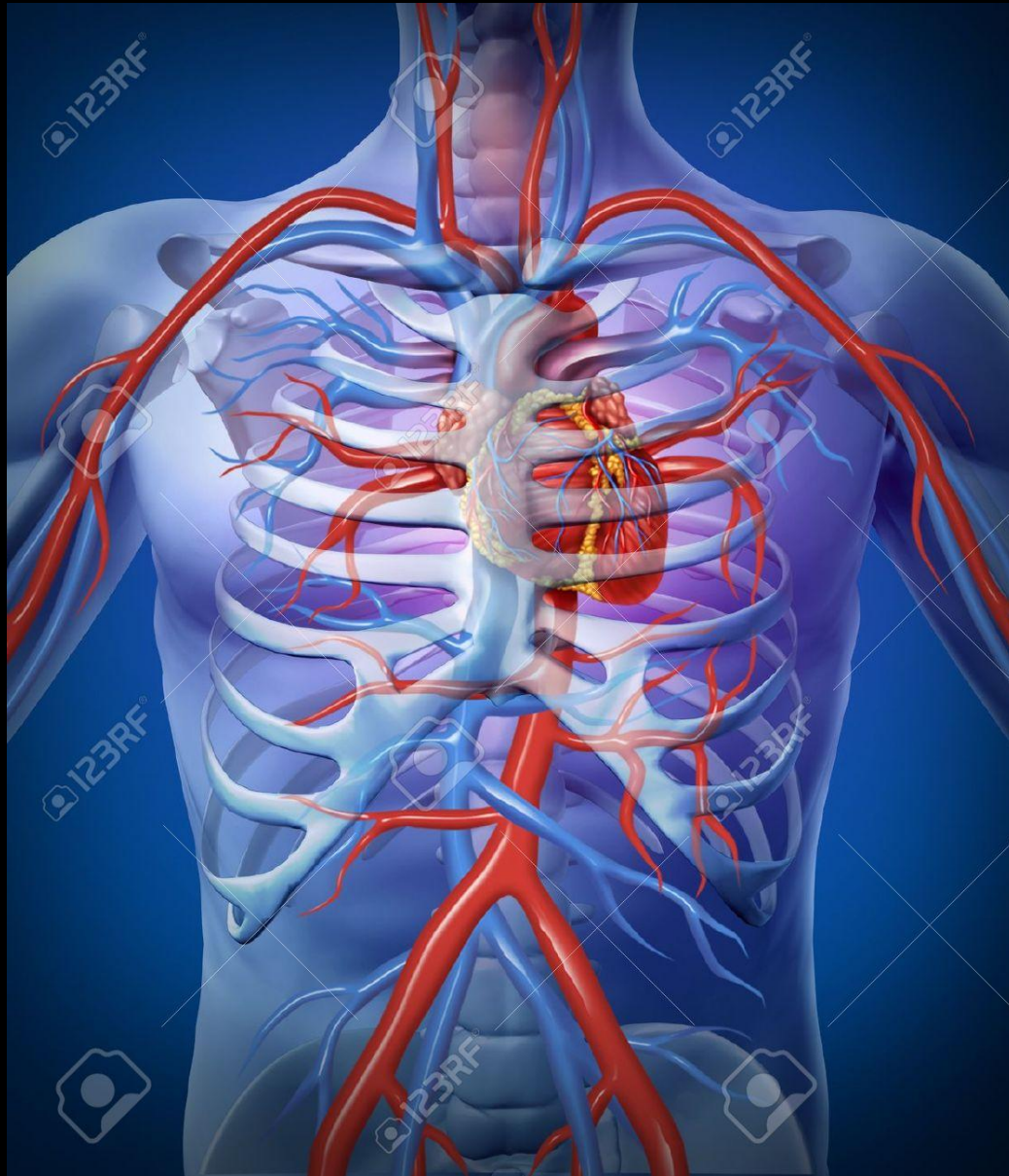
An anatomical illustration of the human heart and lungs. The heart is shown in a reddish-pink color, with its four chambers and major blood vessels (aorta, pulmonary artery, pulmonary veins, and vena cava) clearly visible. The lungs are shown in a light blue color, with their branching bronchial tree and vascular network. The entire system is set within a semi-transparent ribcage and spine, all against a dark background.

# HEART

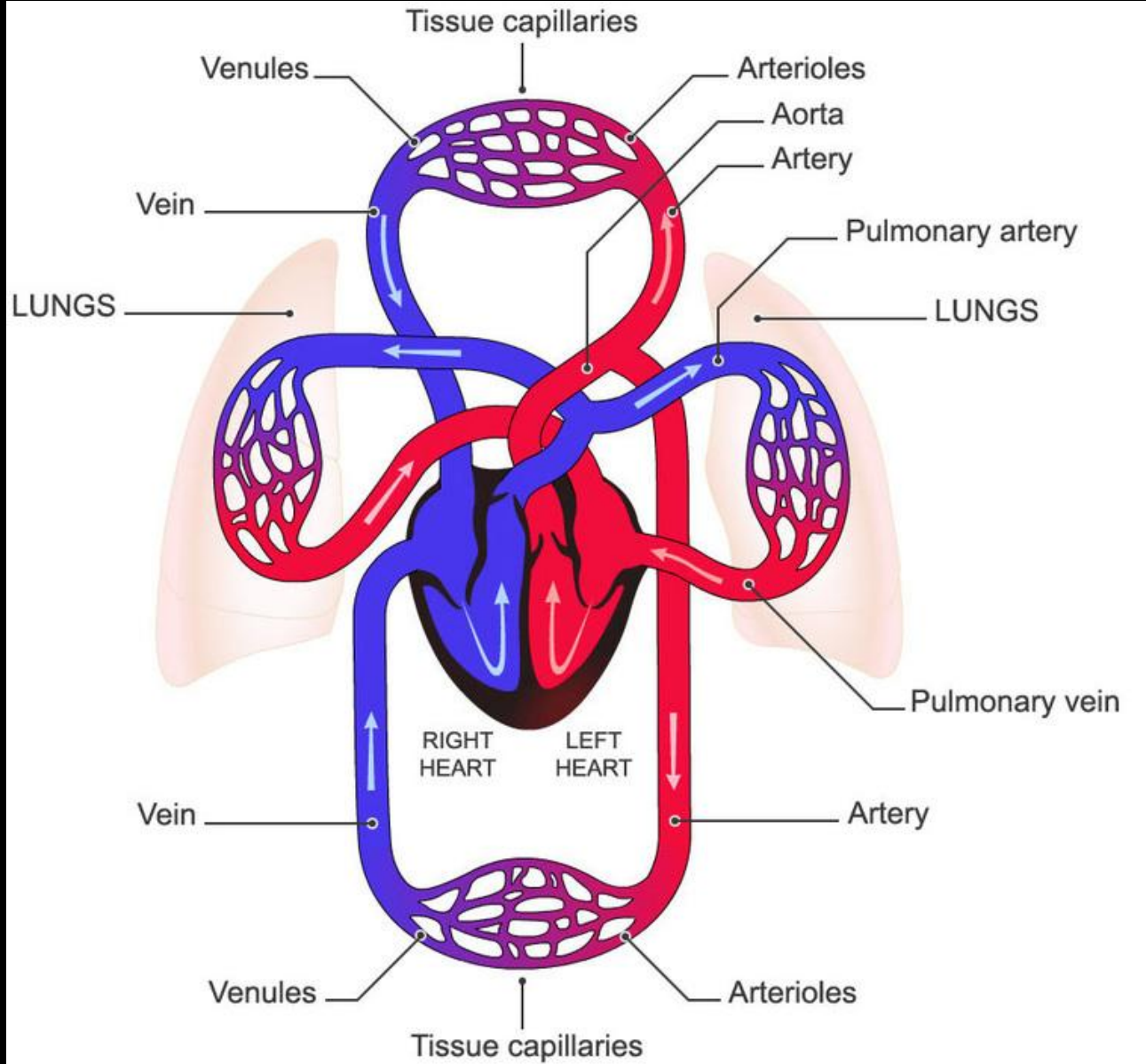
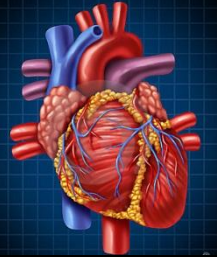
II semester

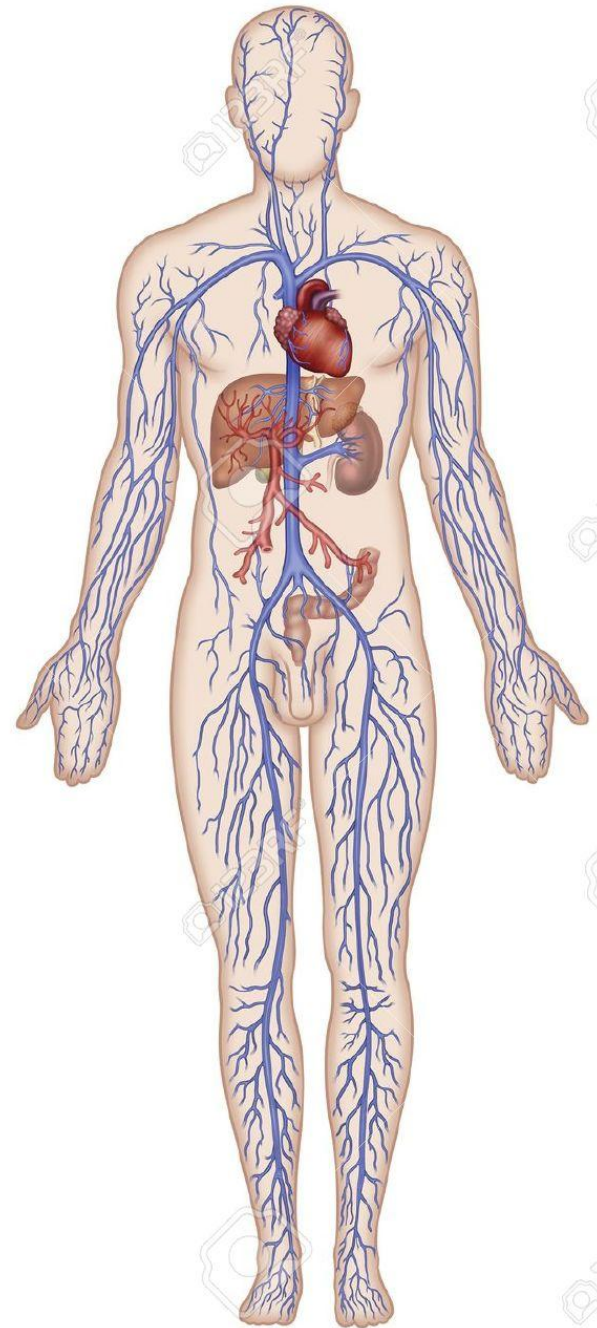
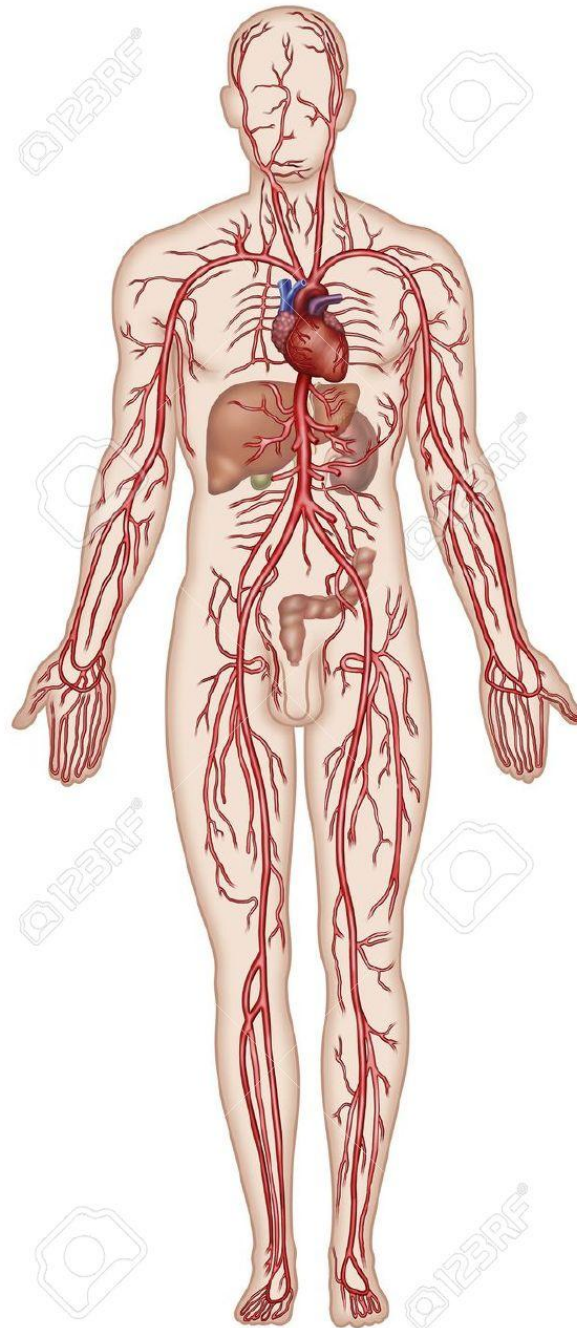
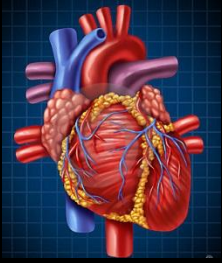
Associate Professor,

Lilia R. Shaymardanova, M.D., Ph.D.



# BLOOD CIRCLES

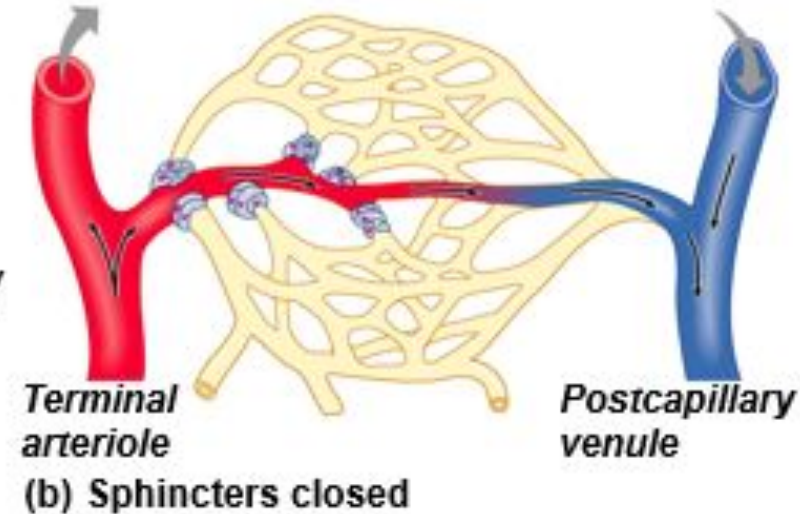
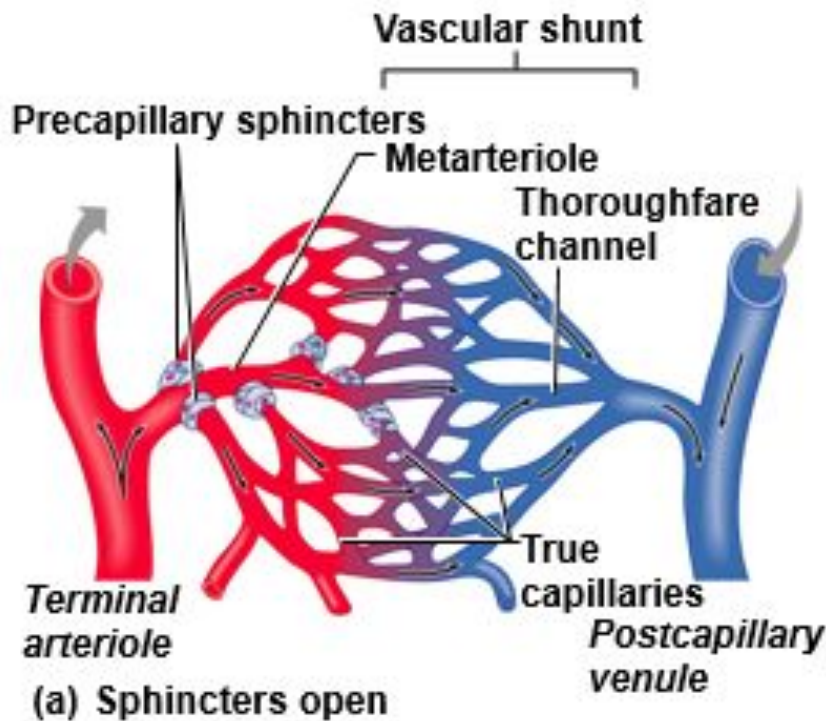




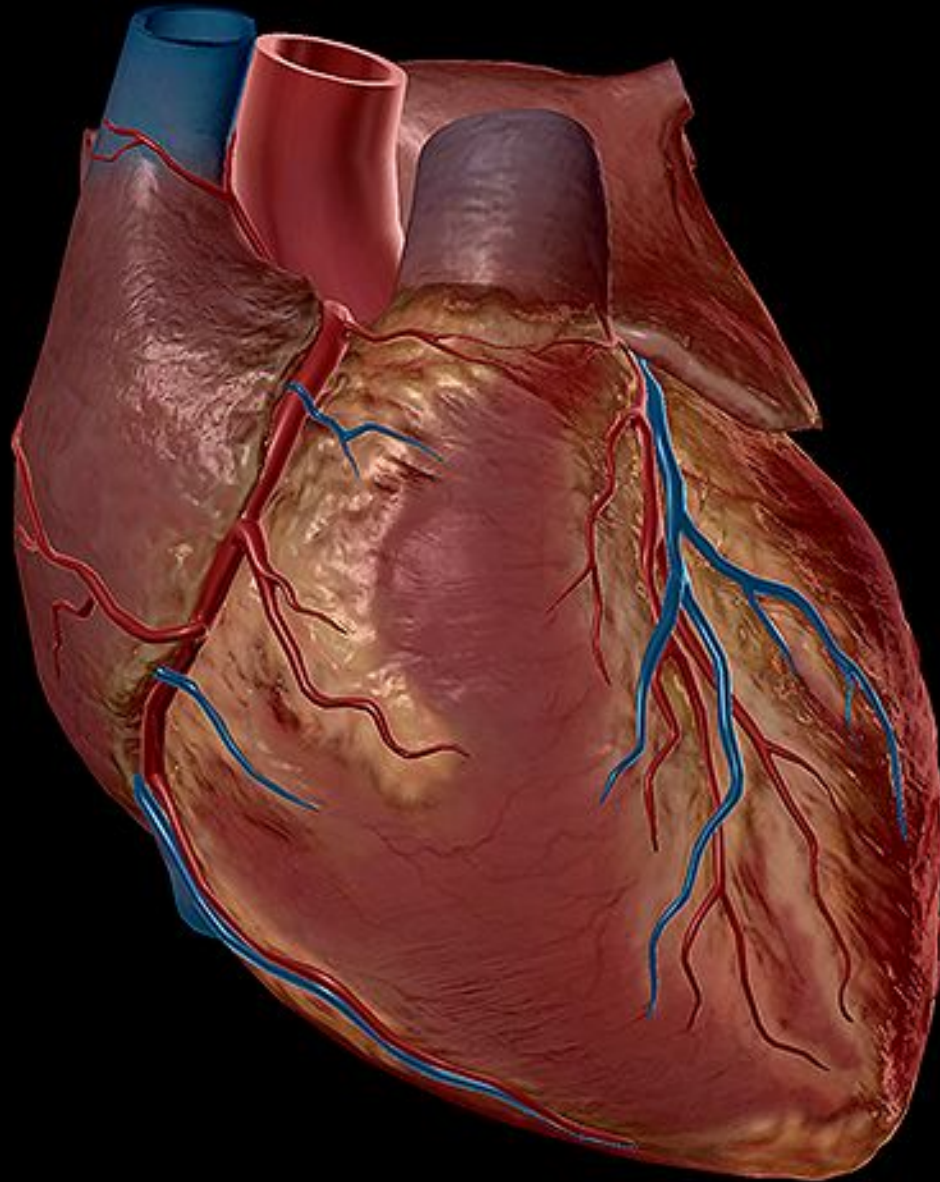
MICROCIRCULATORY BED COMPRISES SEVEN STRUCTURES

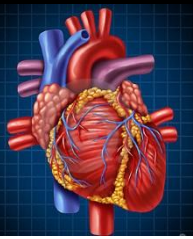
- ❖ ARTERIOLES
- ❖ PRECAPILLARY ARTERIOLES
- ❖ CAPILLARIES
- ❖ POSTCAPILLARY VENULES
- ❖ VENULES
- ❖ PRECAPILLARY SPHINCTERS
- ❖ AV SHUNT

# MICROCIRCULATORY BED



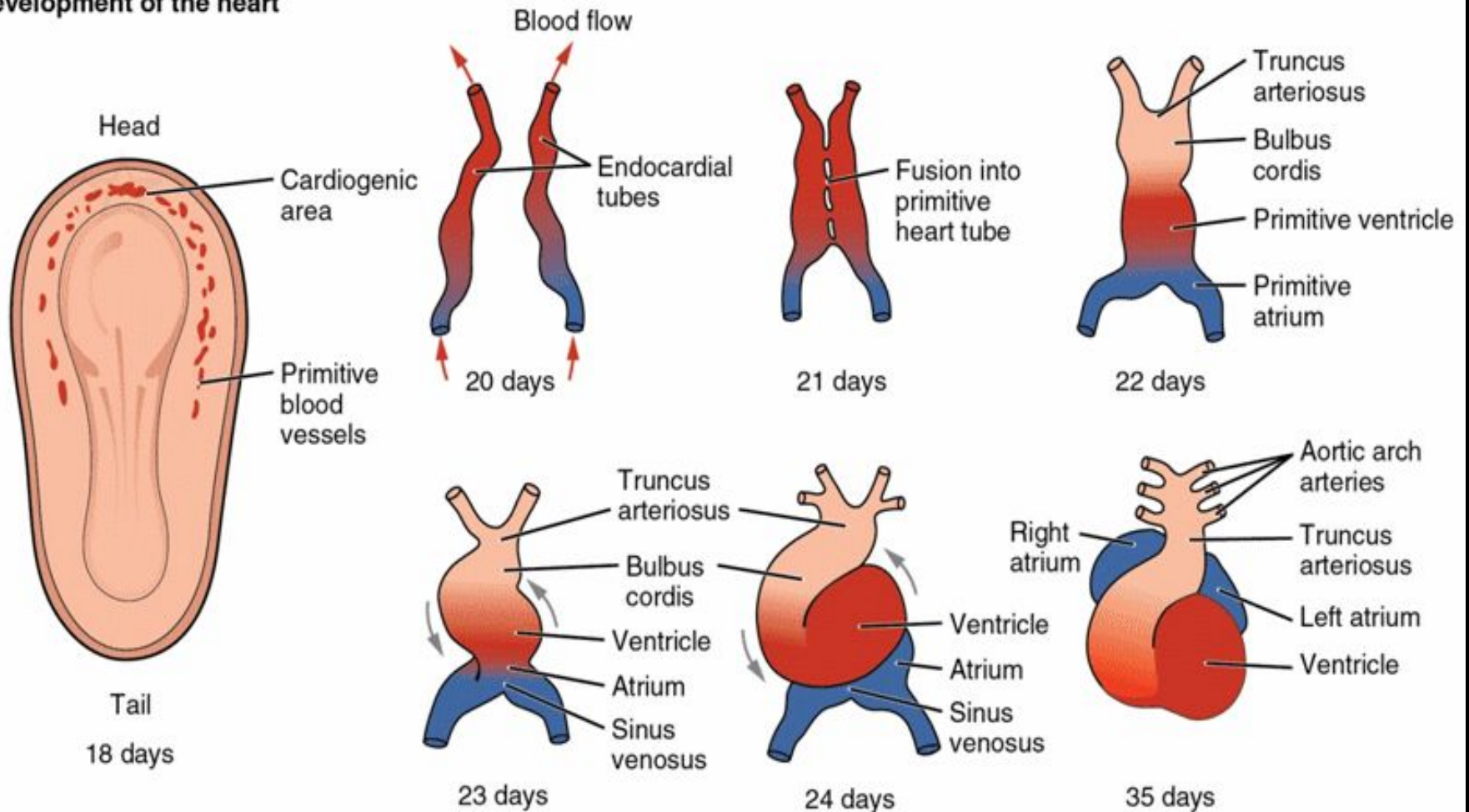
# ISSUES COVERED:



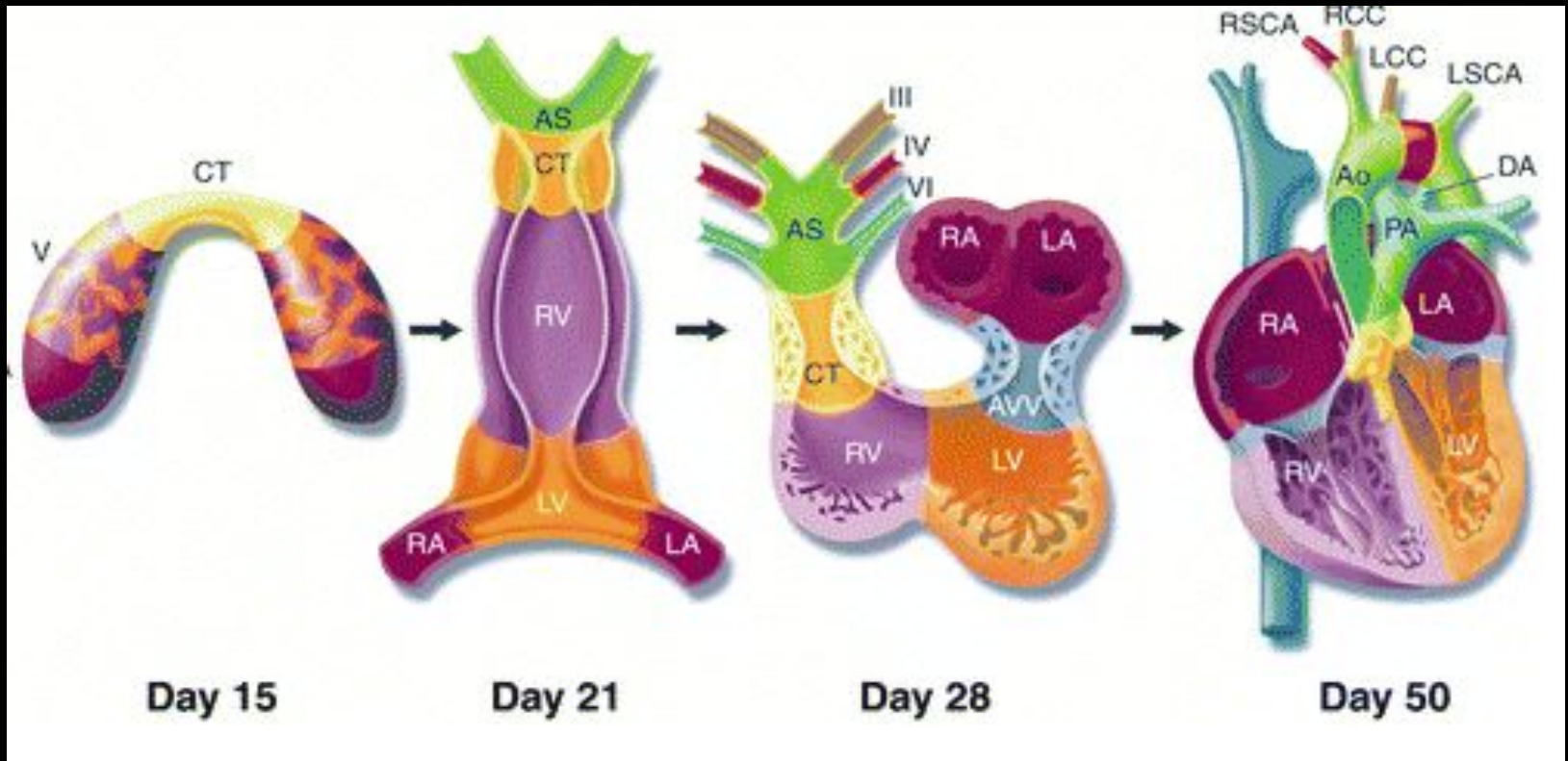
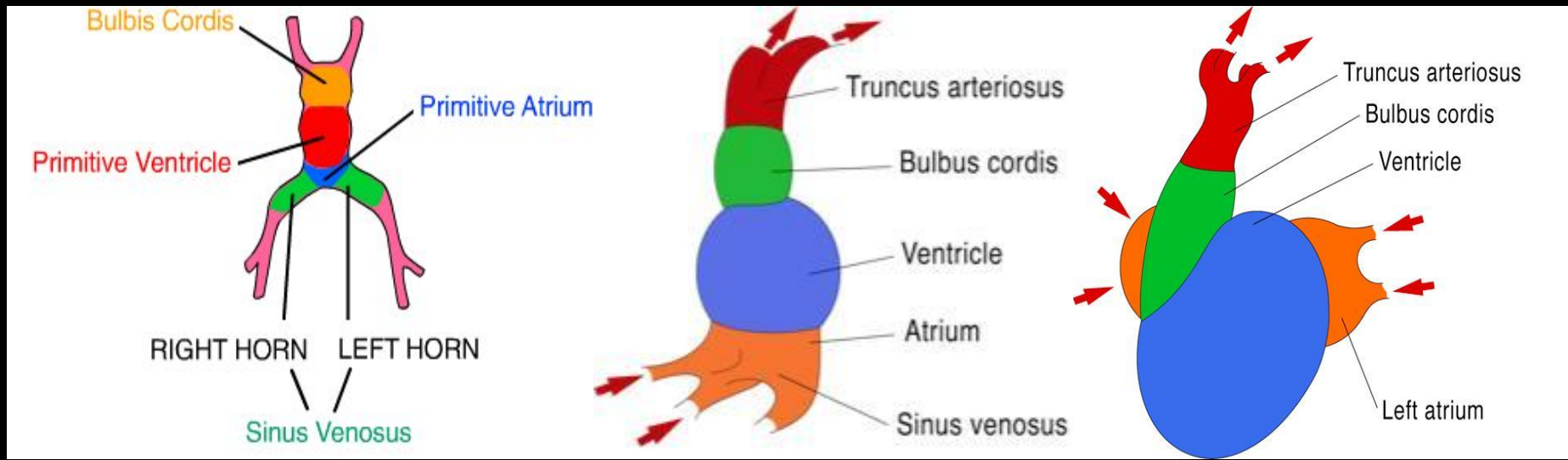


# EMBRYOLOGY

## Development of the heart

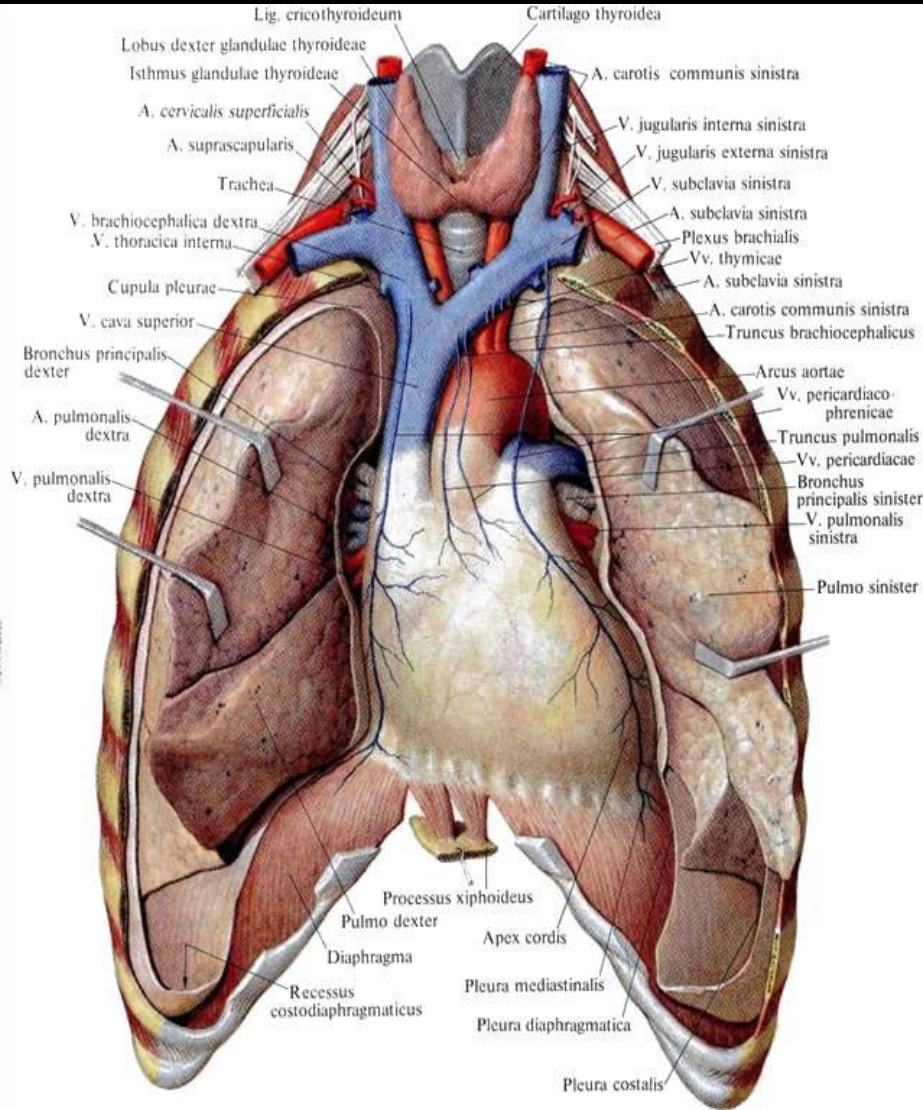
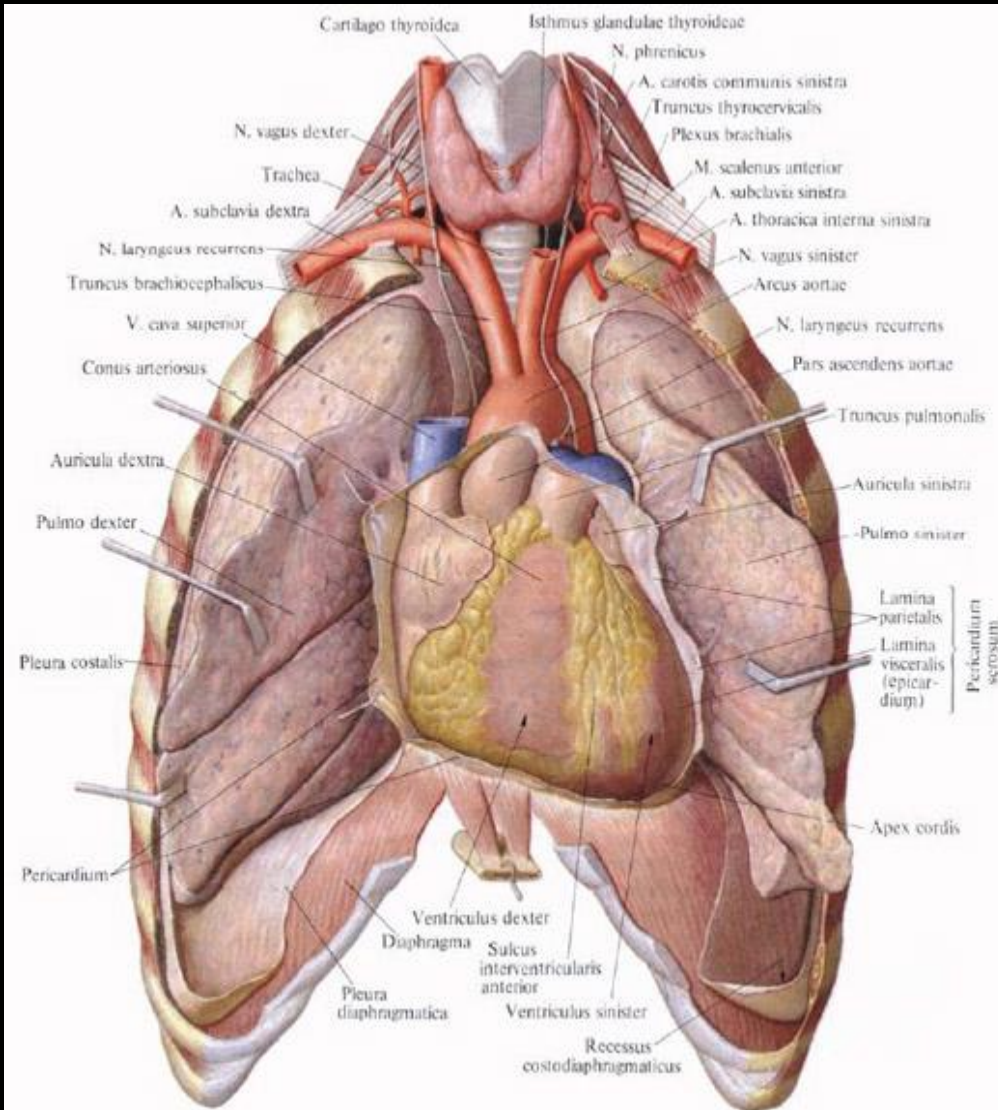


★ **Cardiogenic area begins right in the middle of head pole**

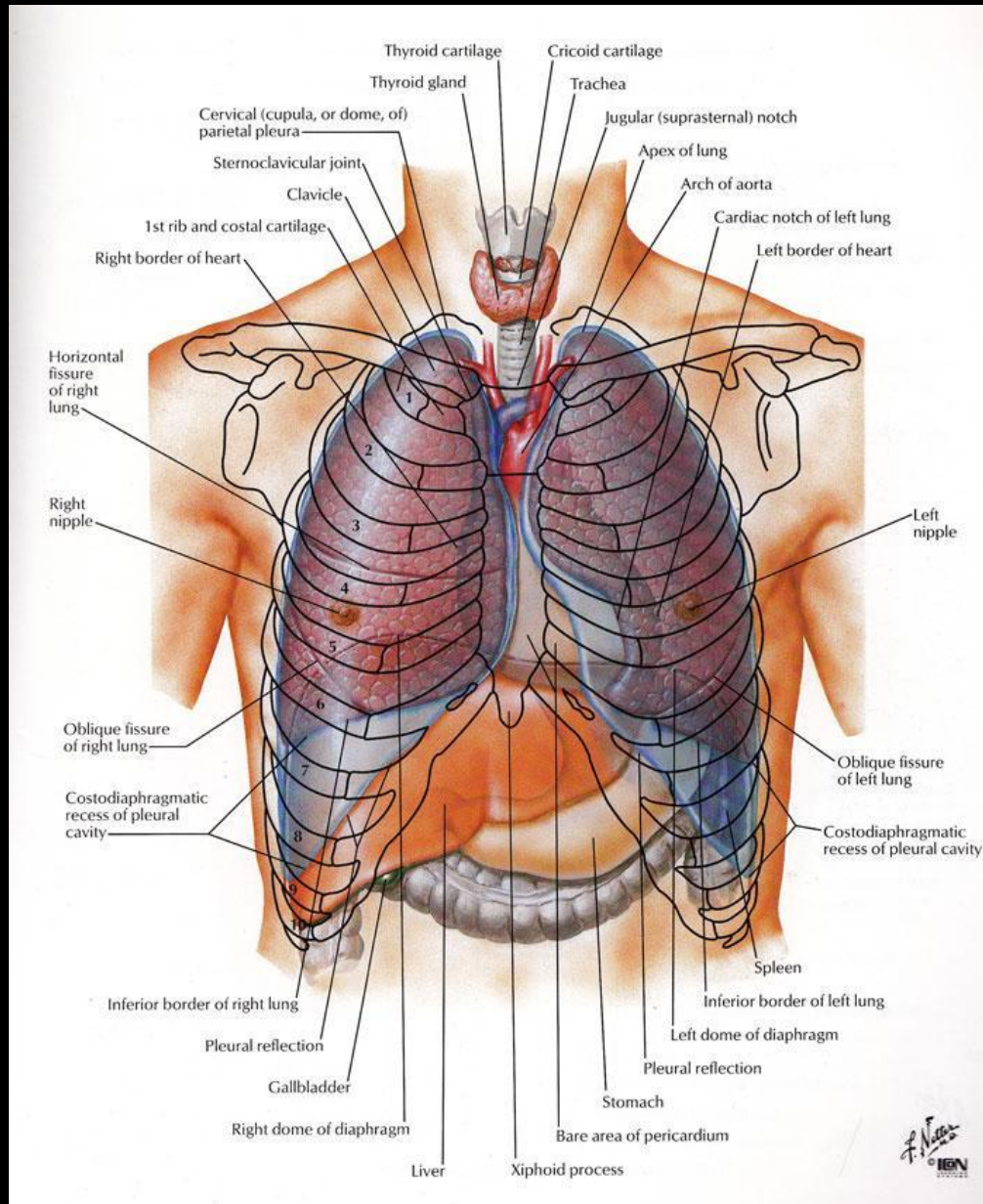


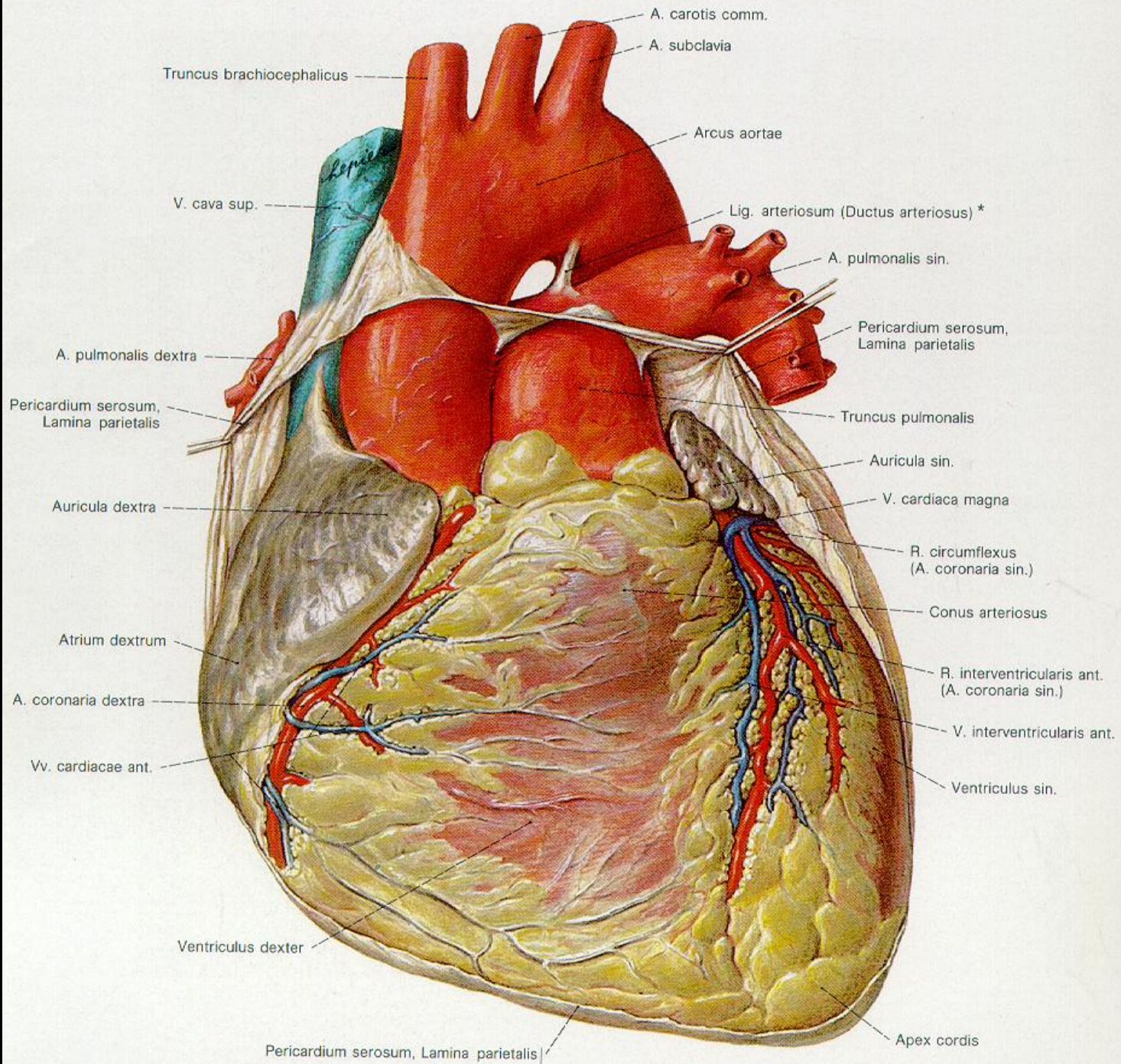


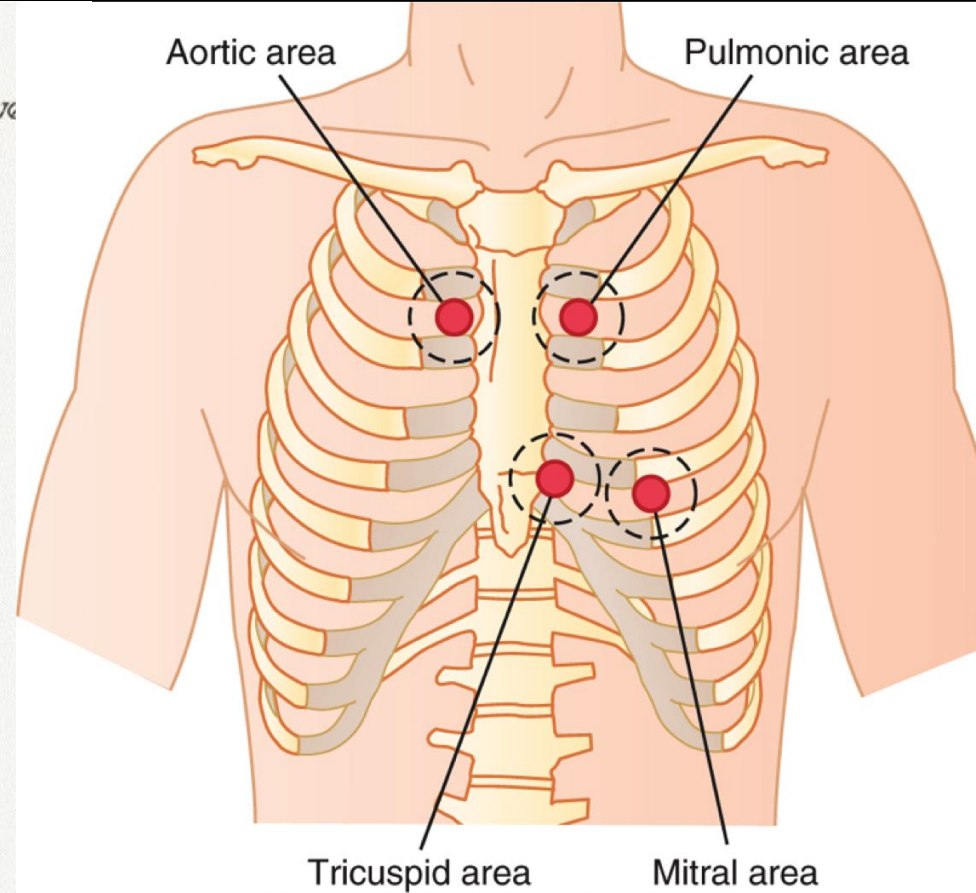
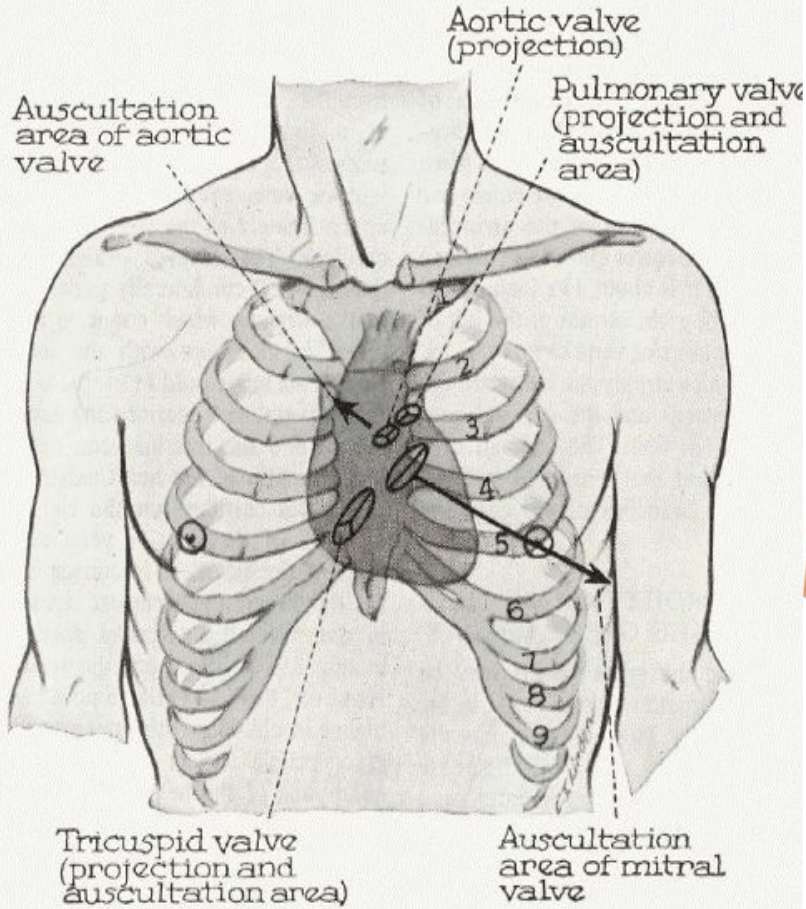
# TOPOGRAPHY



# TOPOGRAPHY



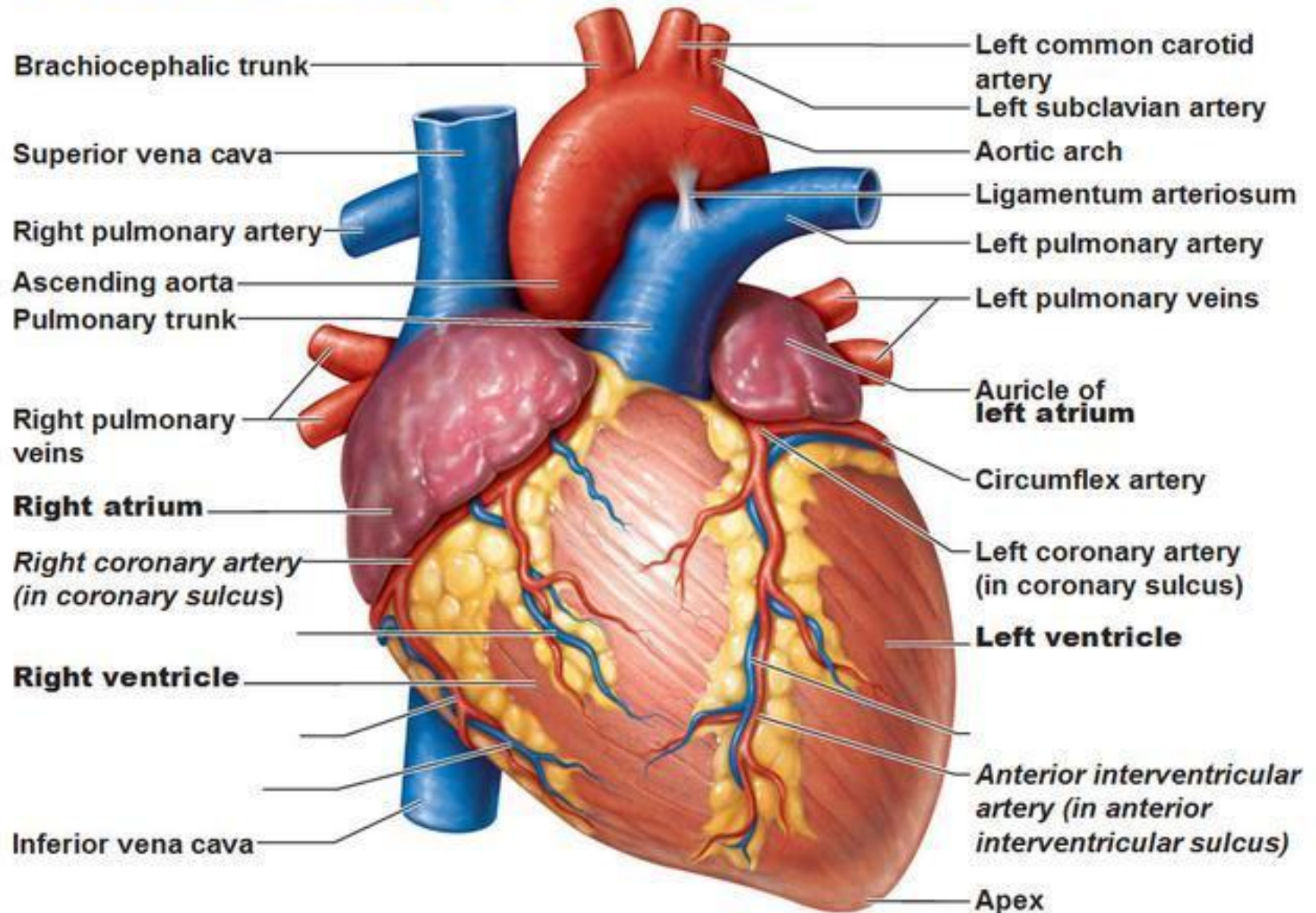




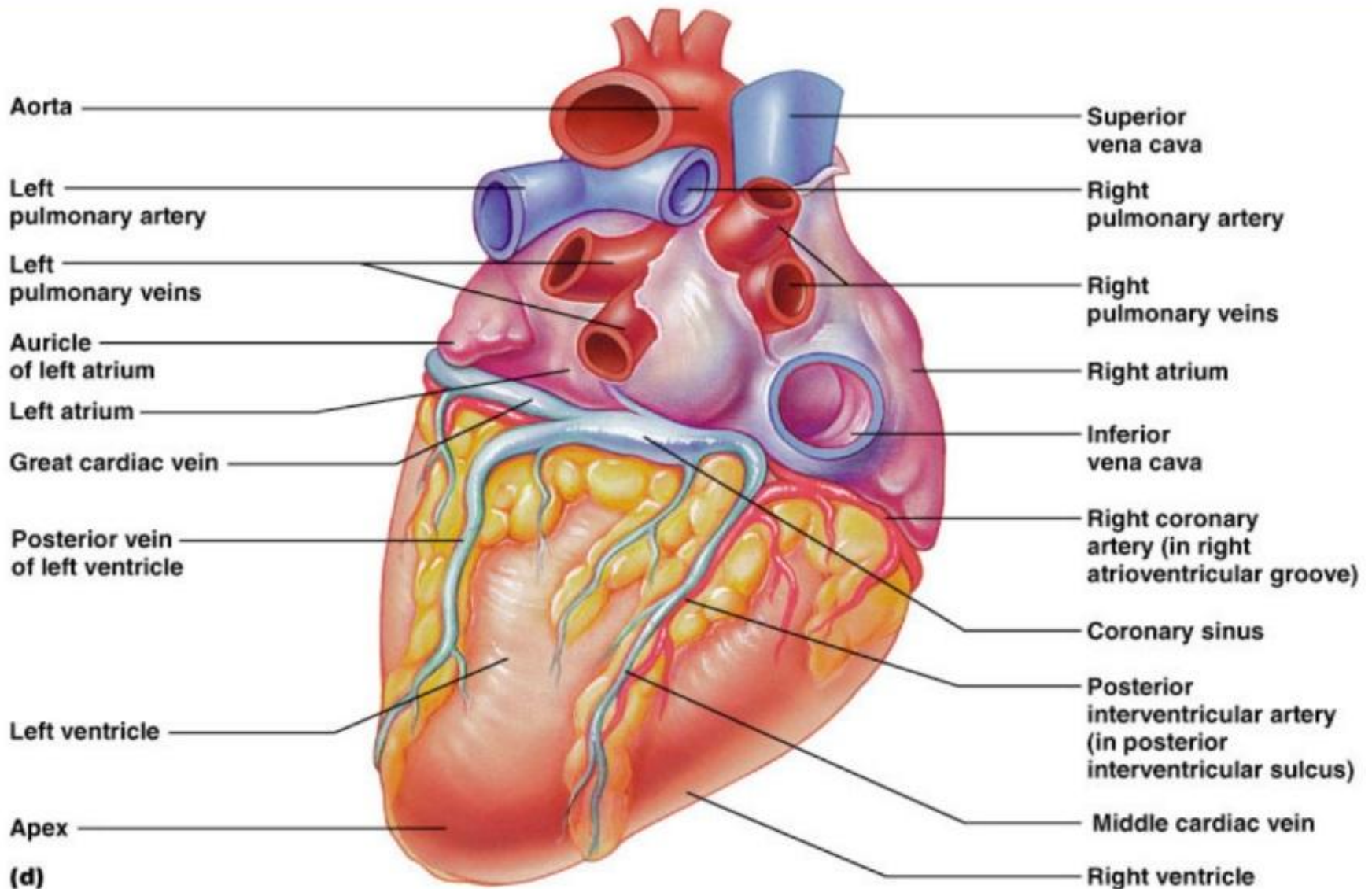
Hall: Guyton and Hall Textbook of Medical Physiology, 12th Edition  
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# Gross Anatomy of the Heart

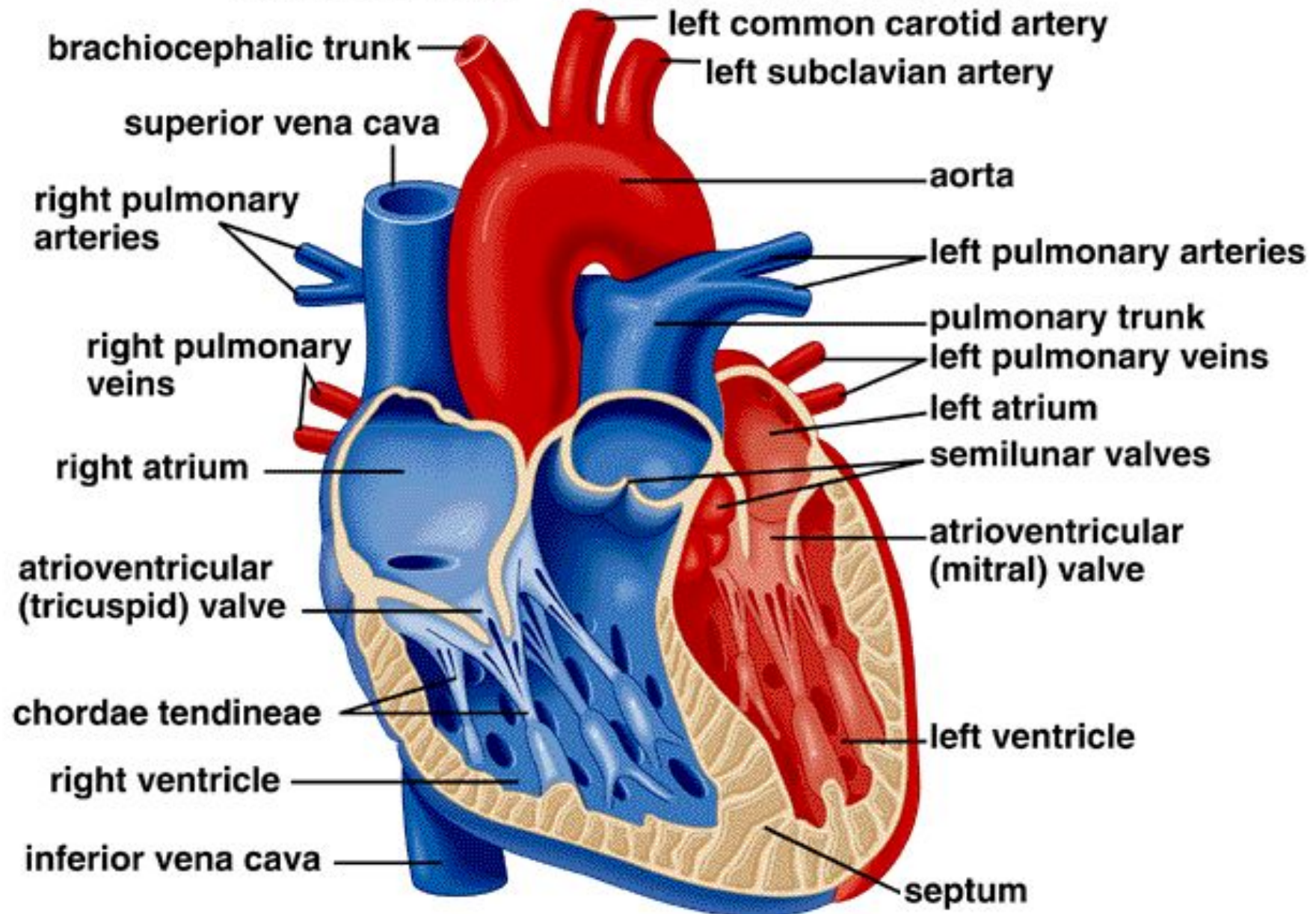
Anterior view



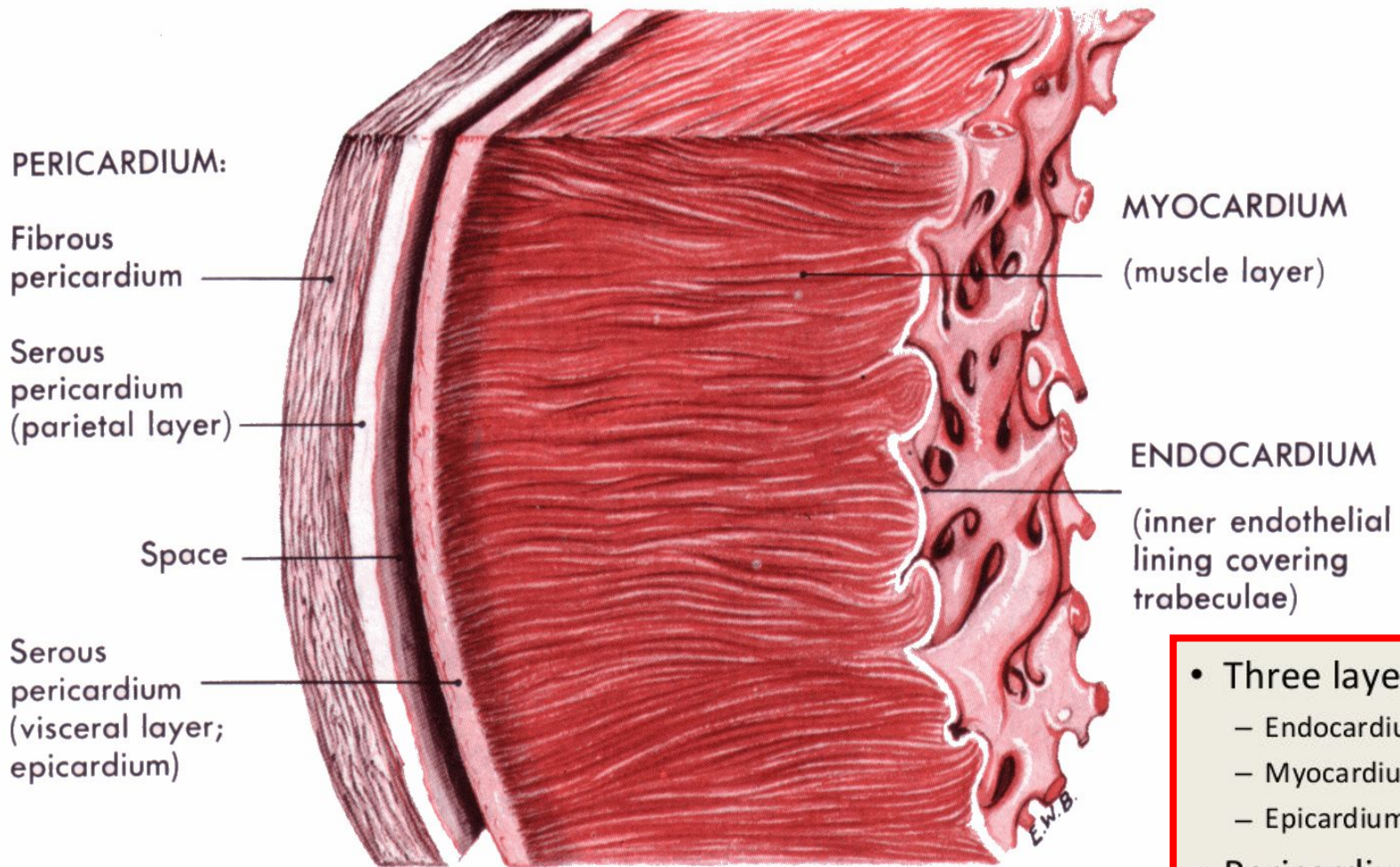
# External Heart: Posterior View



# Internal View of Heart



# LAYERS OF THE HEART WALL

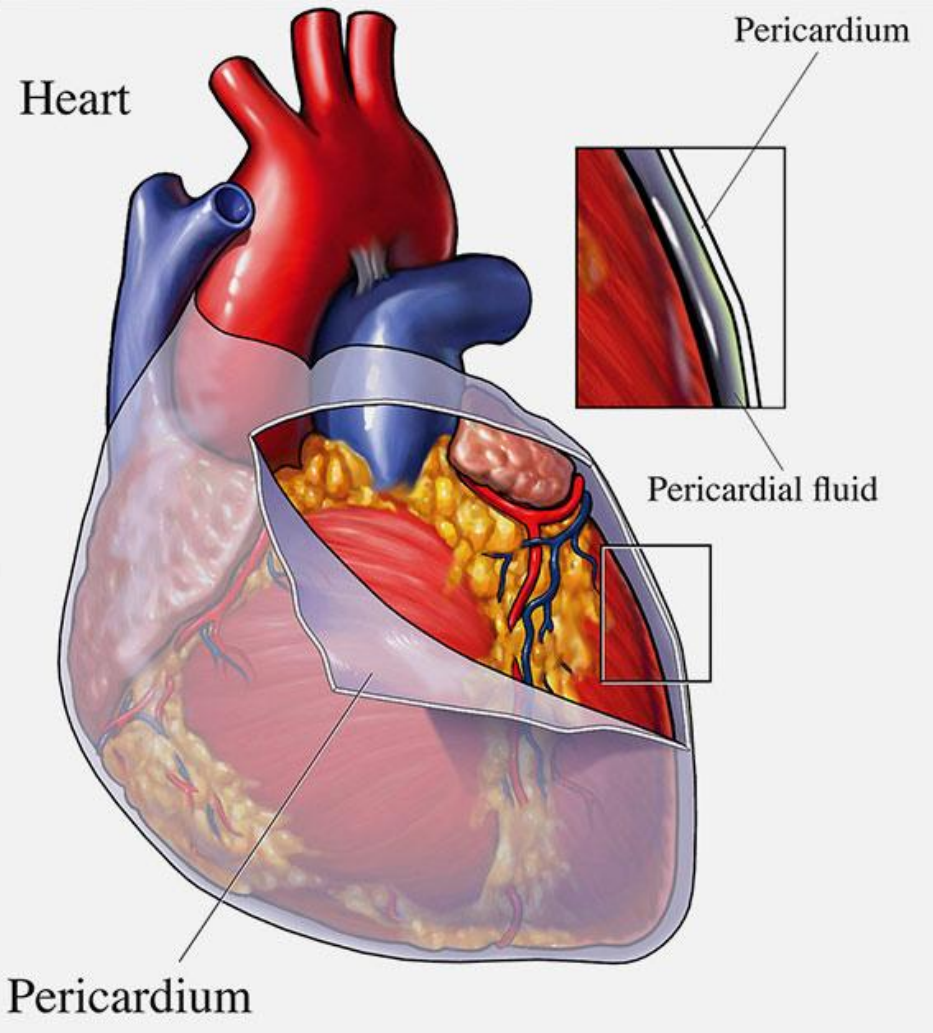


Section of the heart wall showing the components of the outer pericardium (heart sac), muscle layer (myocardium), and inner lining (endocardium).

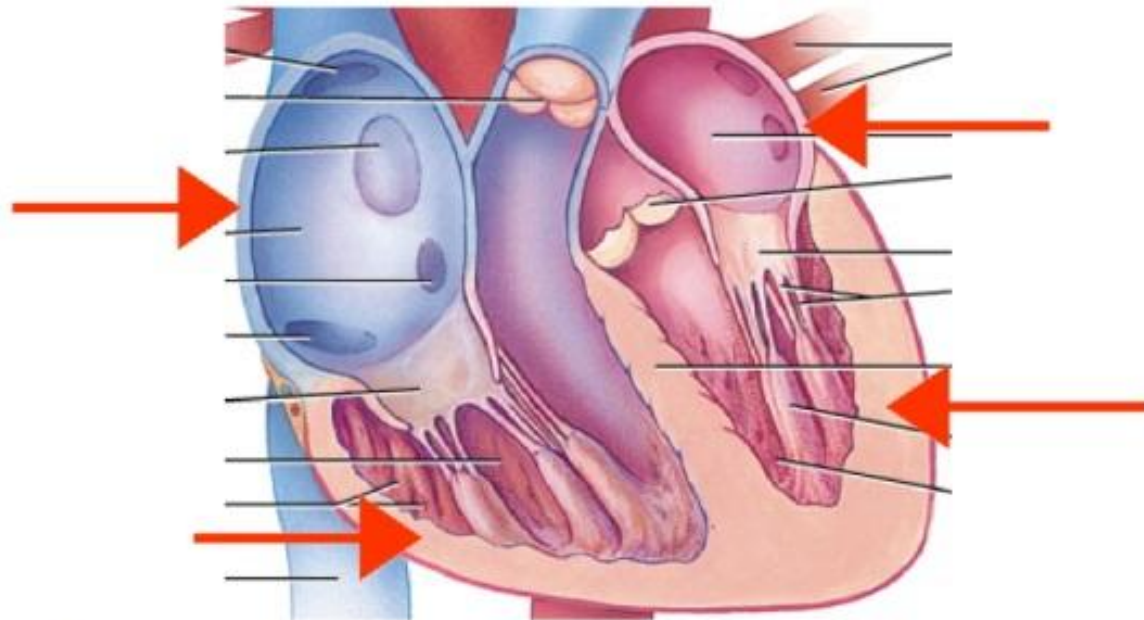
- Three layers of heart
  - Endocardium
  - Myocardium
  - Epicardium
- Pericardium
- Pericardial space, with 10 to 30 mL fluid



# PERICARDIUM



# Myocardial Thickness and Function



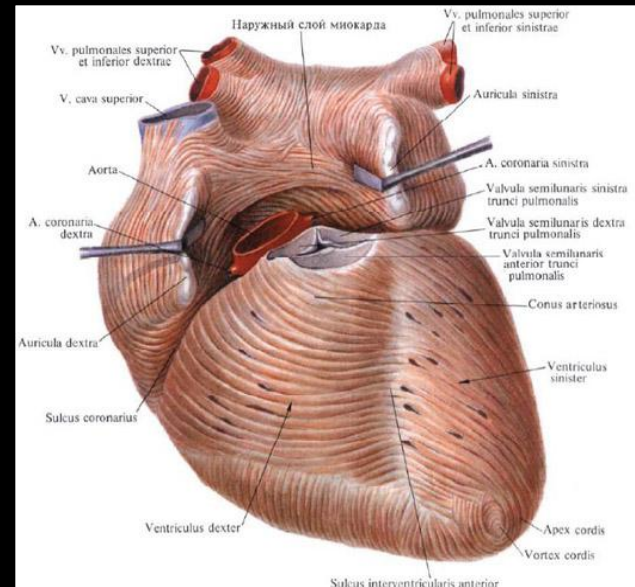
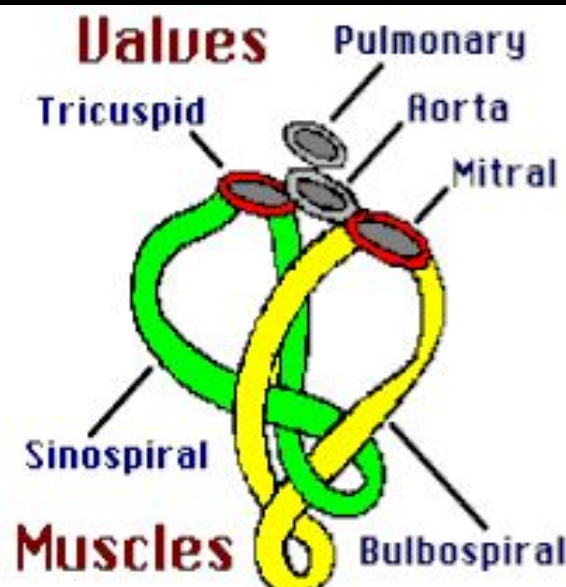
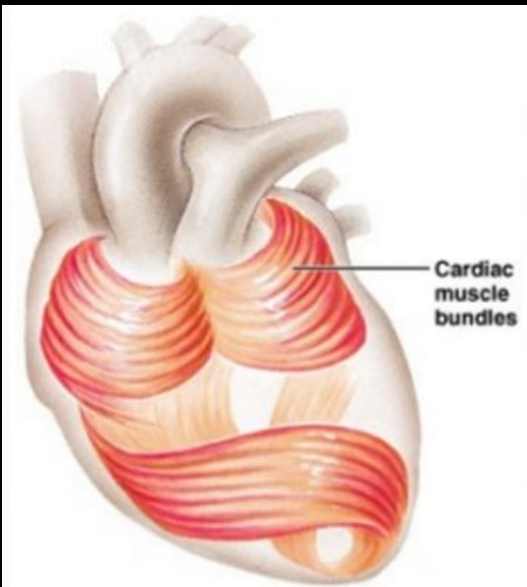
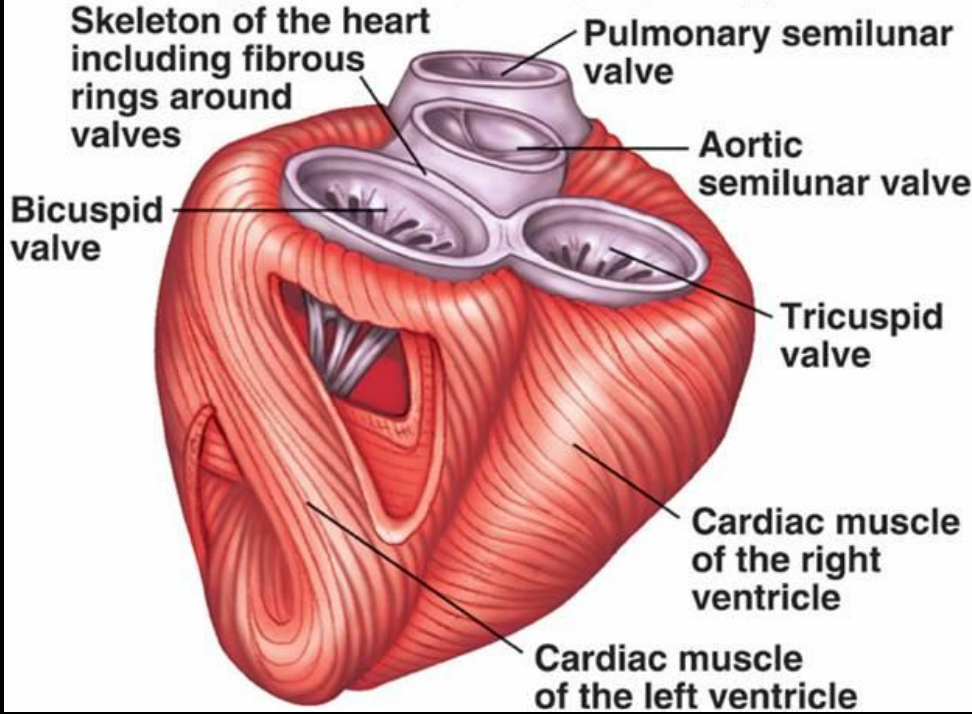
Thickness of myocardium varies according to the function of the chamber

Atria are thin walled, deliver blood to adjacent ventricles

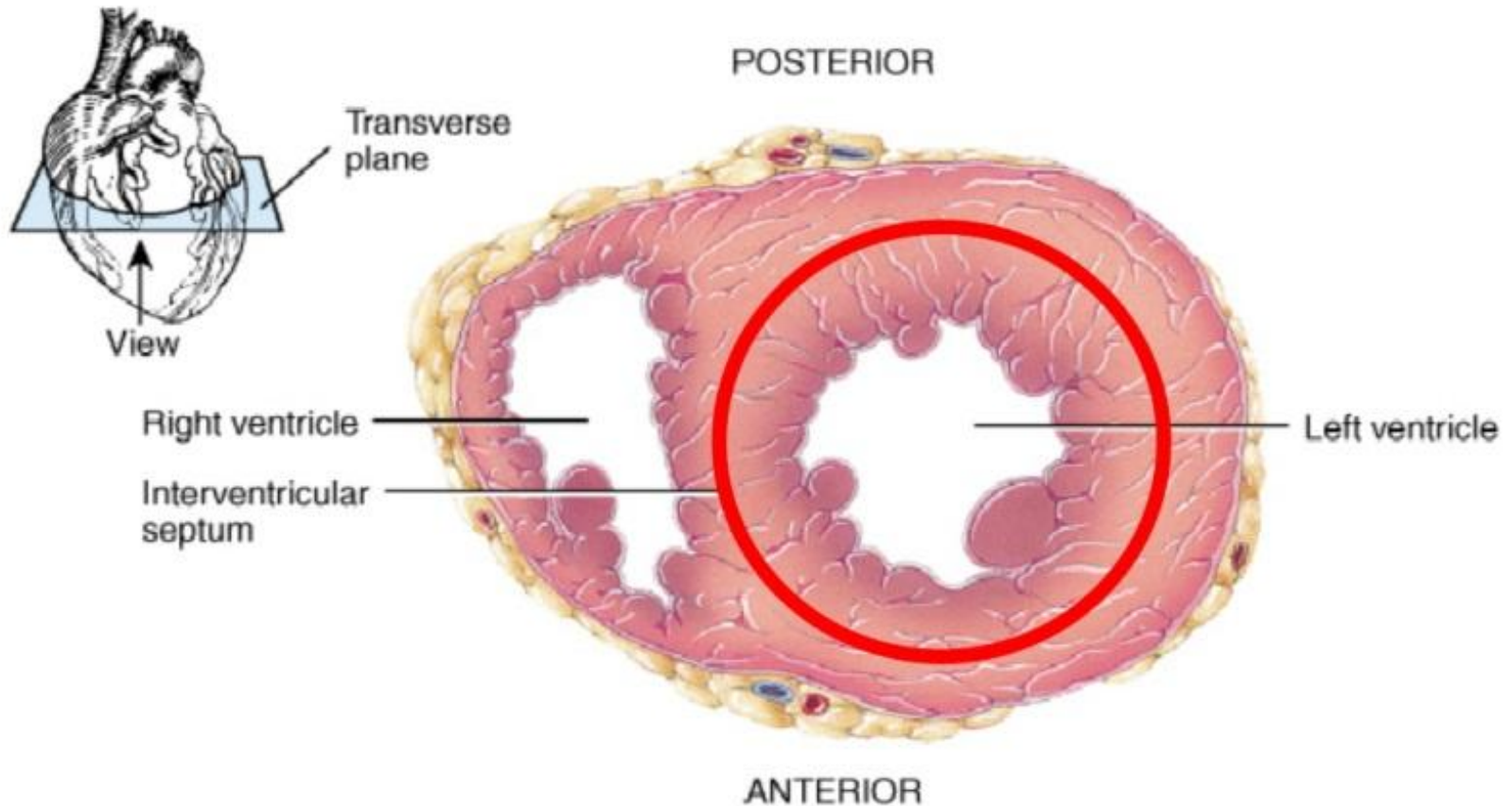
Ventricle walls are much thicker and stronger

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

# MYOCARDIUM

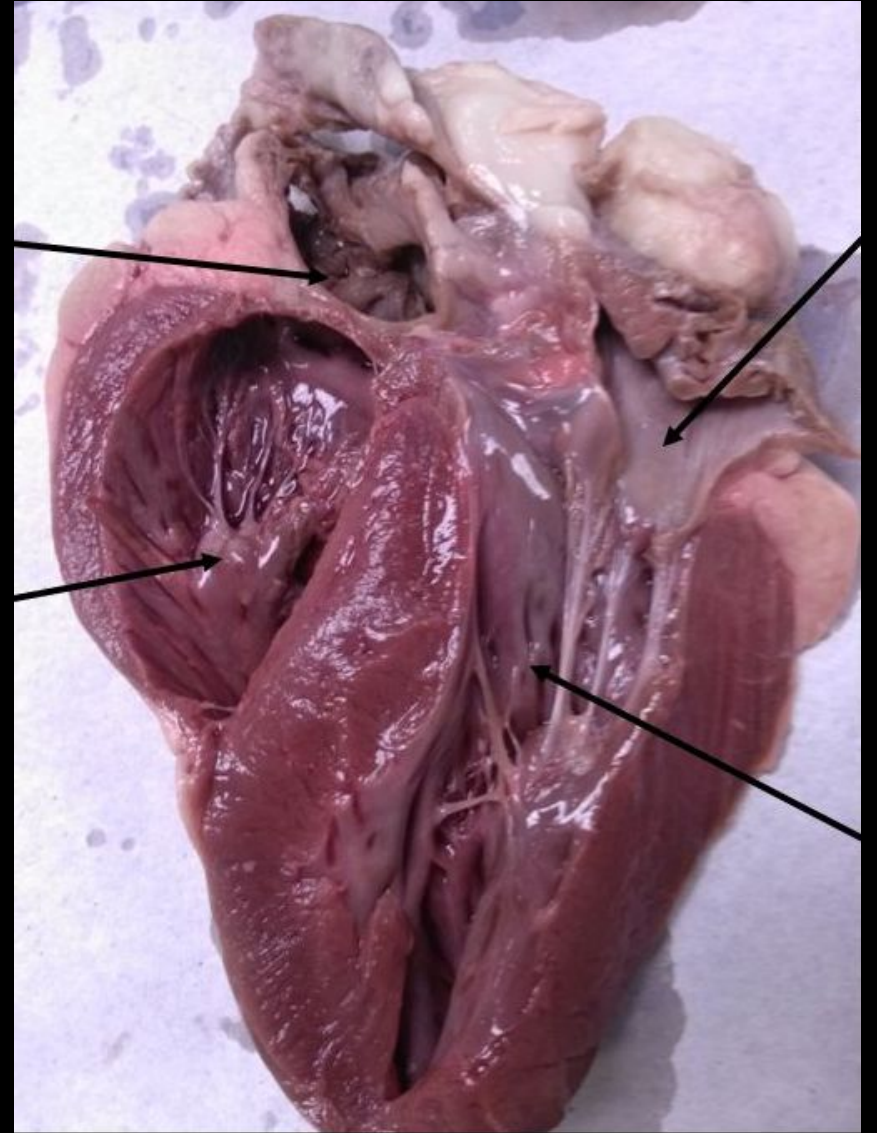
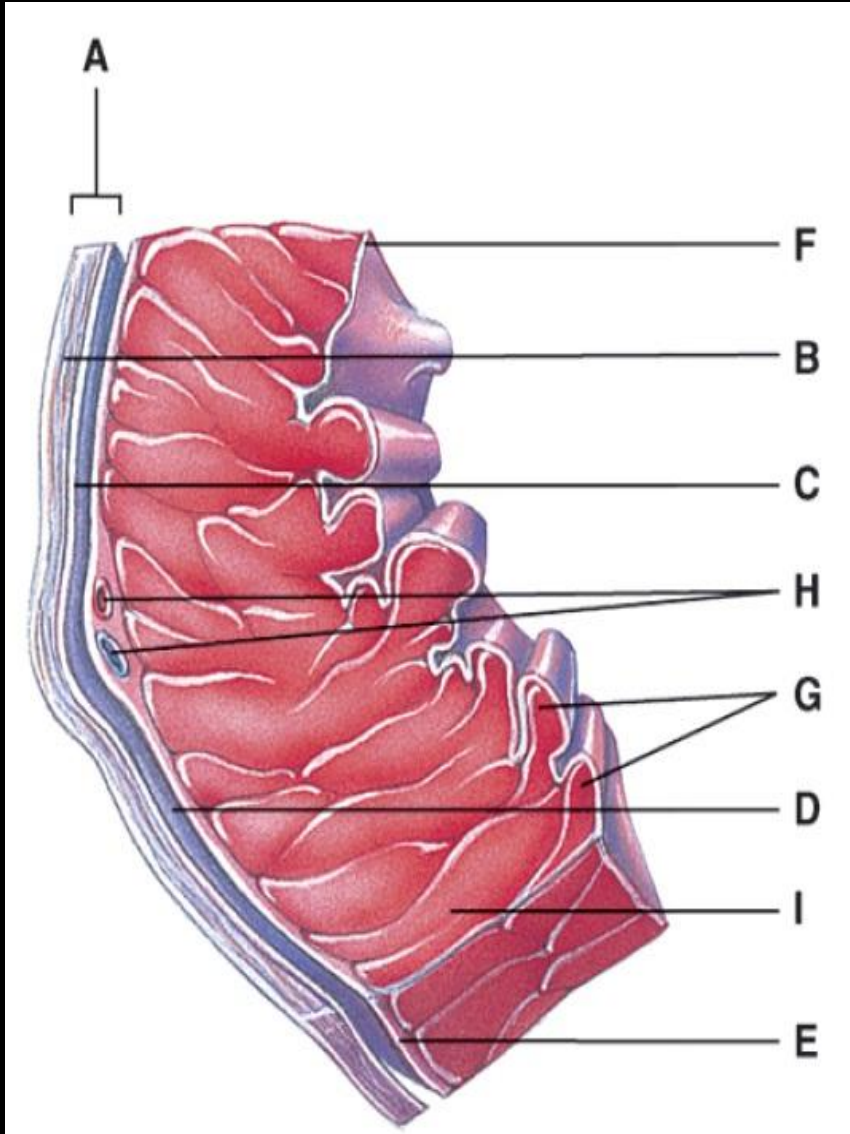


# Thickness of Cardiac Walls

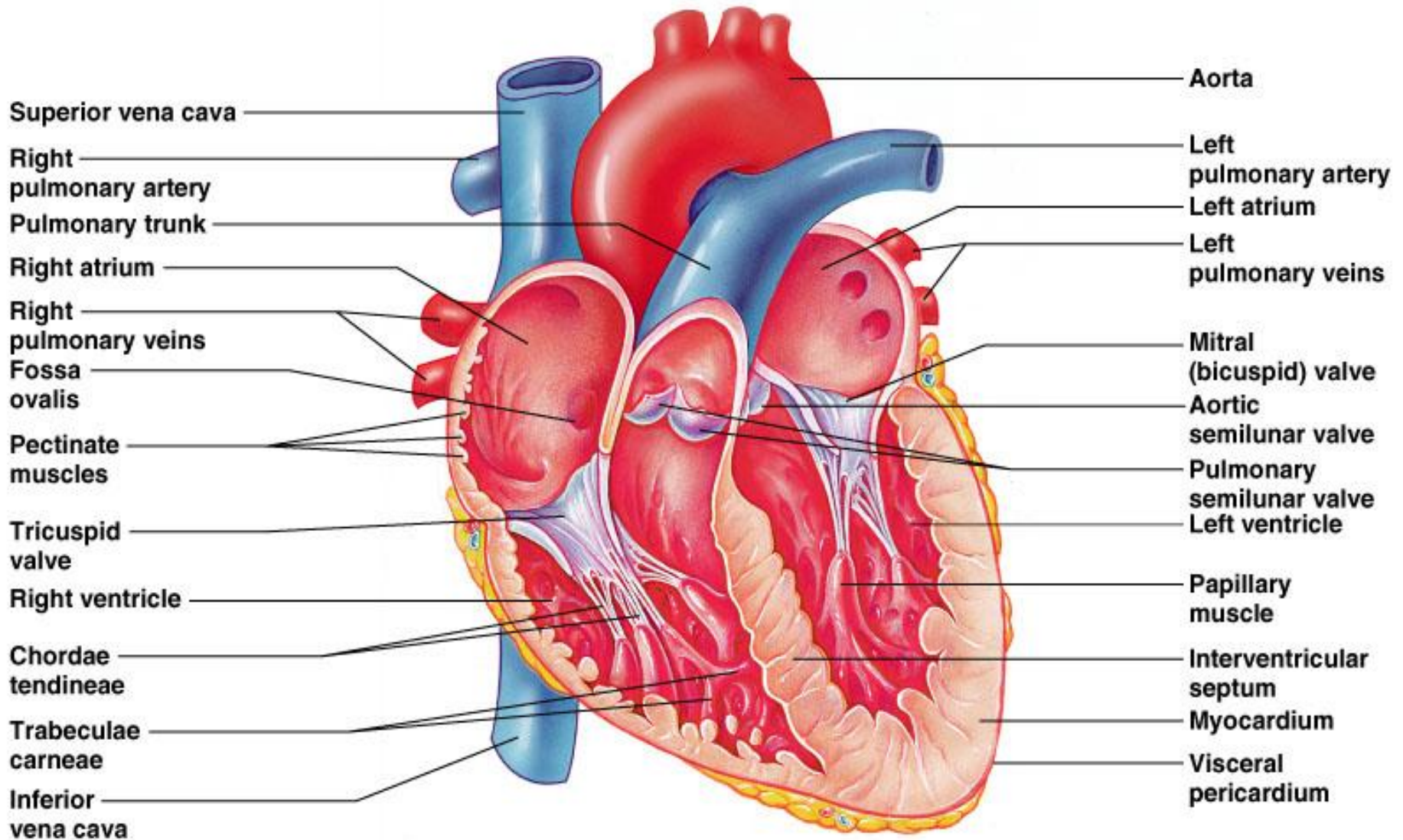


**Myocardium of left ventricle is much thicker than the right.**

# ENDOCARDIUM

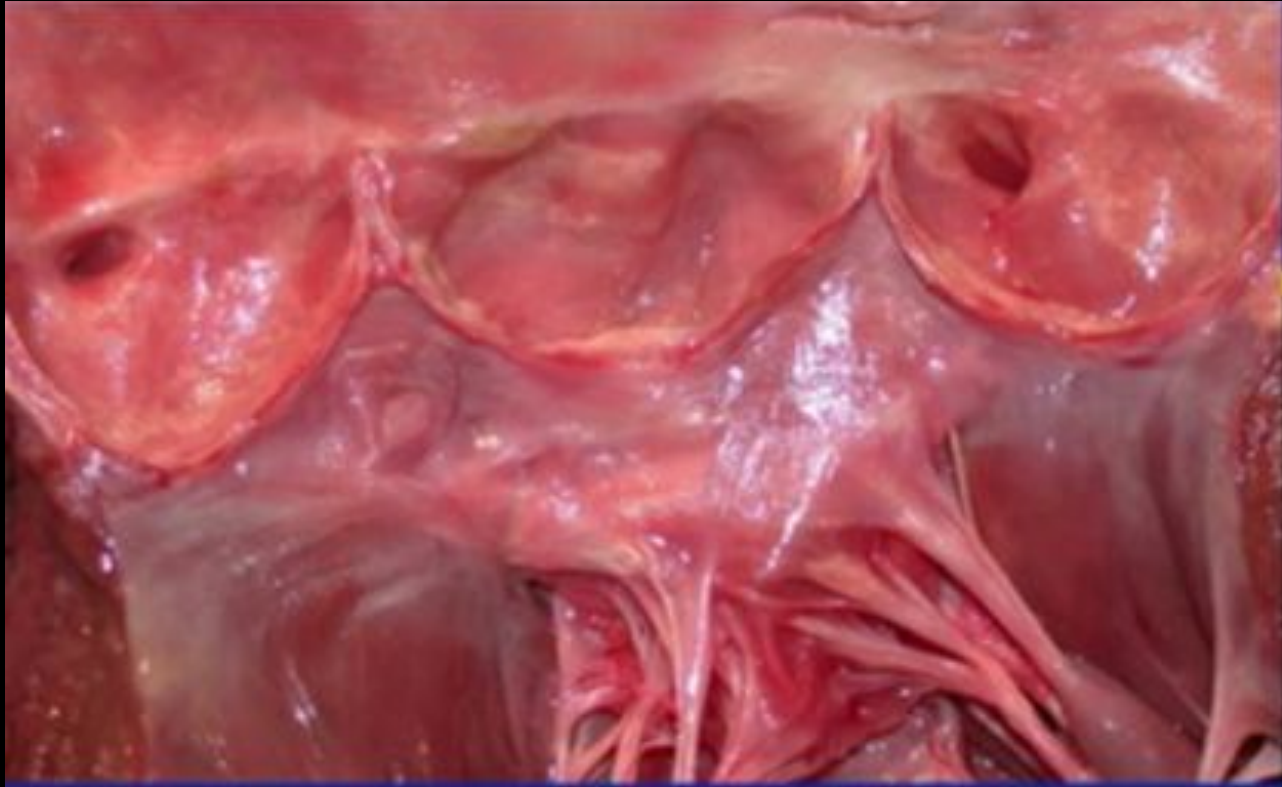


# VALVES



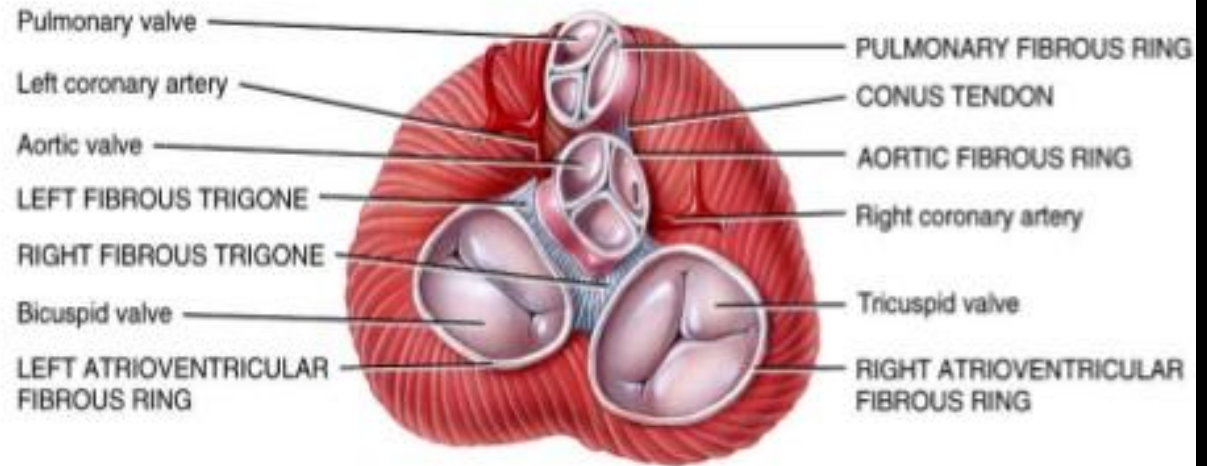
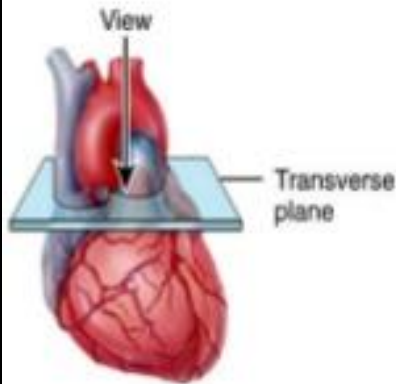
(e)

# VALVES



# STRUCTURE

## Fibrous Skeleton of Heart



Superior view (the atria have been removed)

Dense CT rings surround heart **valves**

- fuse together & merge with interventricular septum

### Functions of fibrous skeleton:

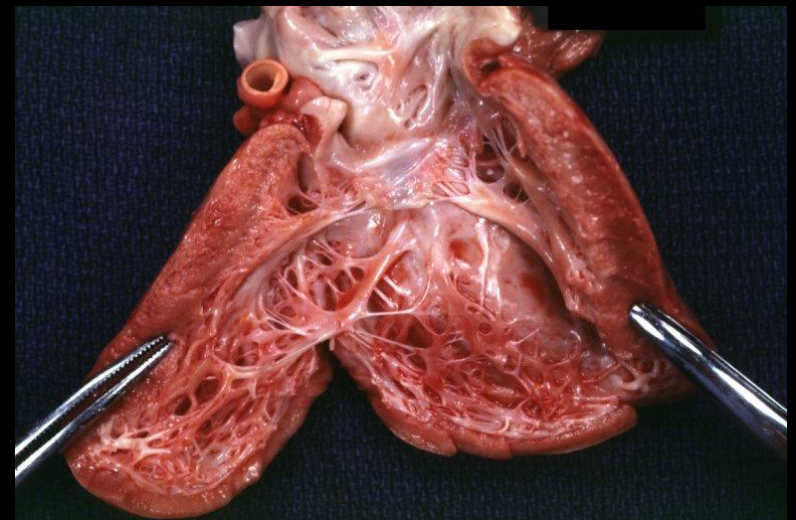
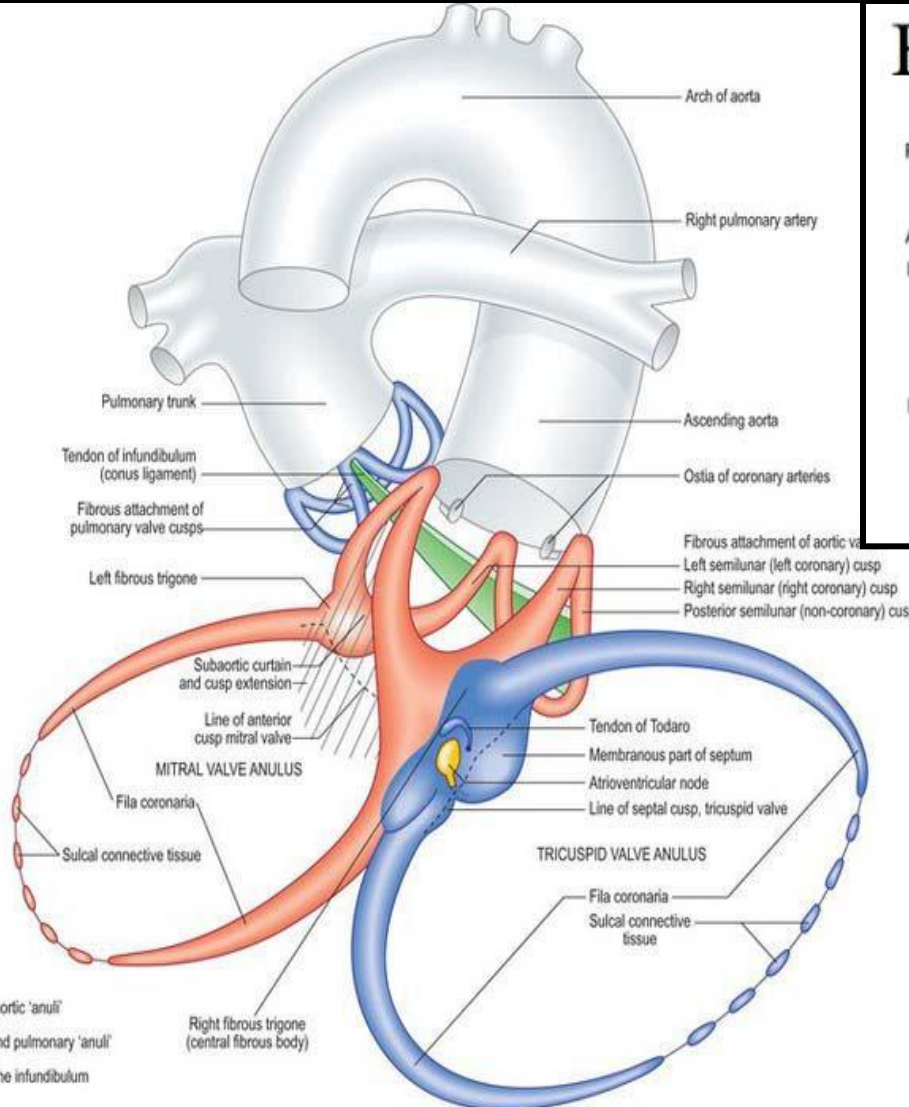
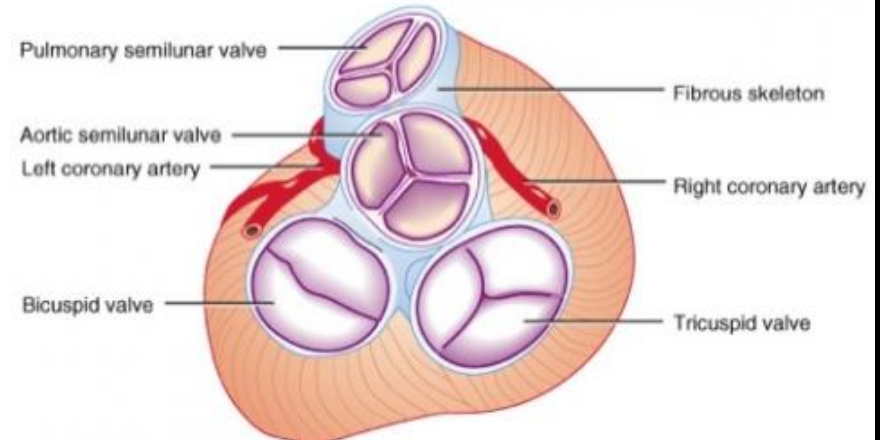
- valve support structure
- Prevents overstretching of the valves
- insertion point for cardiac muscle bundles
- electrical insulator b/w atria & ventricles



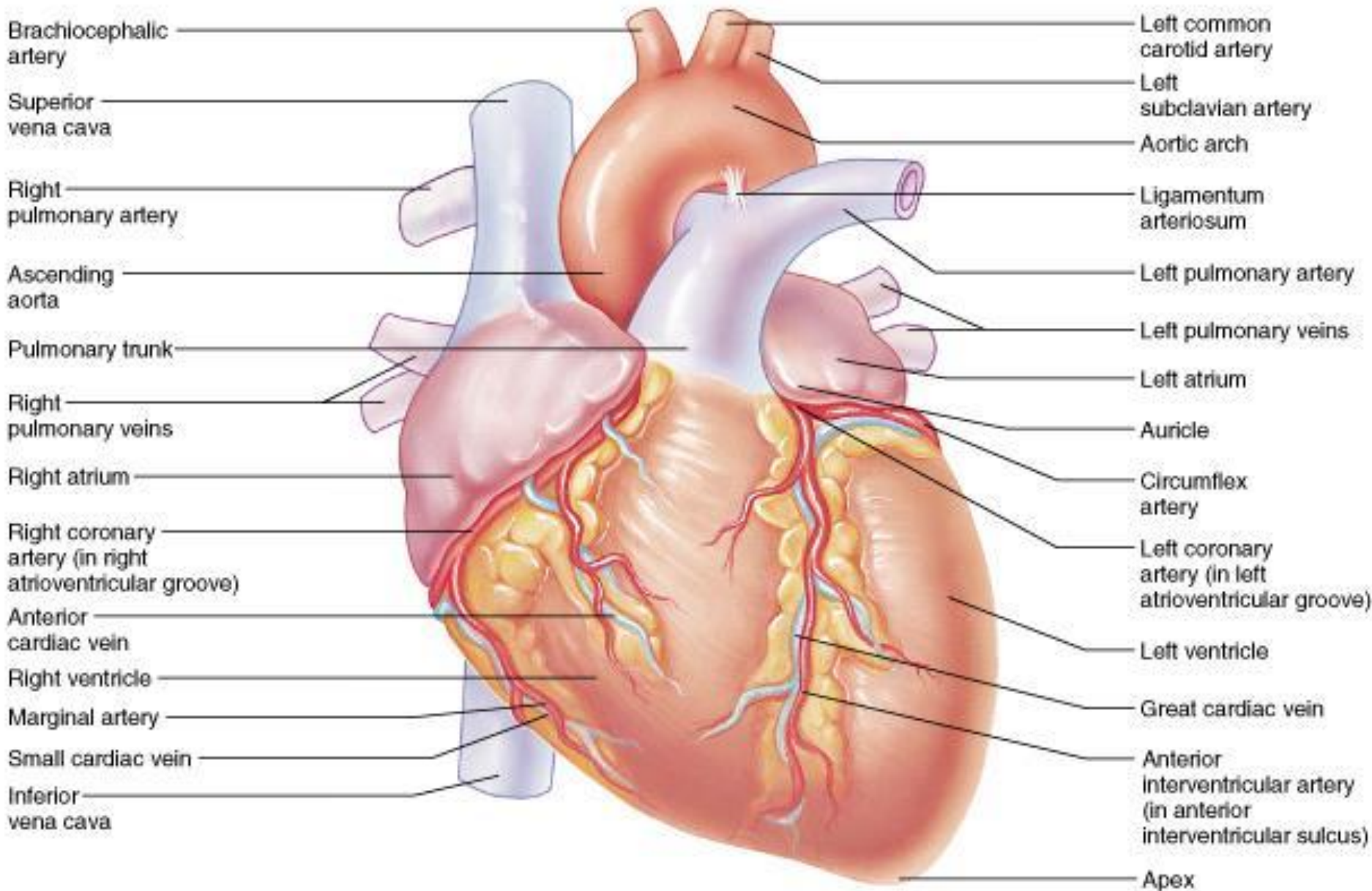


# STRUCTURE

## Fibrous Skeleton of Heart







**(b)**