

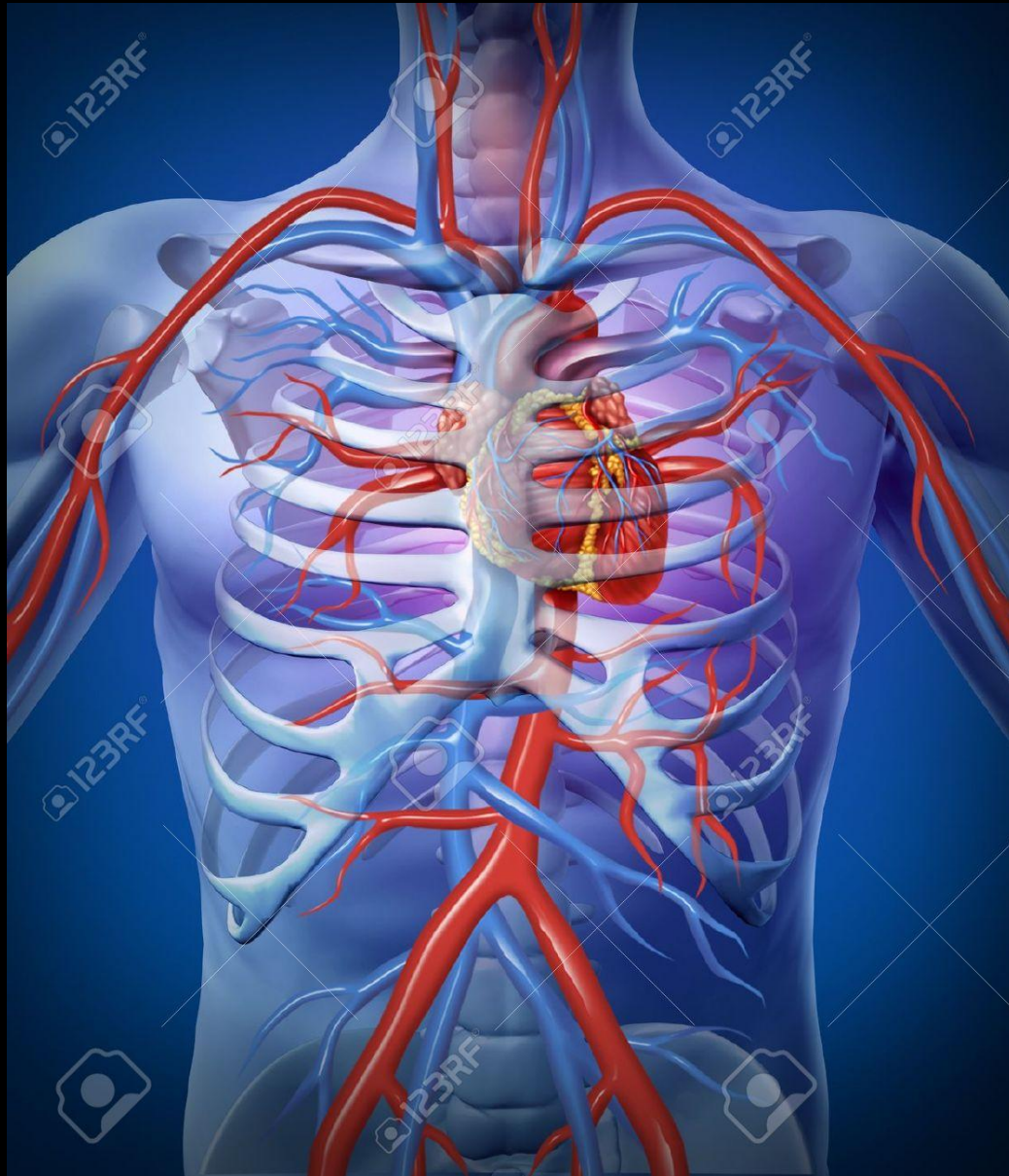
An anatomical illustration of the human heart and lungs, viewed from the front. The heart is centrally located, showing its four chambers and the network of red and blue blood vessels. The lungs are visible on either side, and the ribcage is shown in a semi-transparent blue color. The word "HEART" is written in large, bold, yellow capital letters on the right side of the image.

HEART

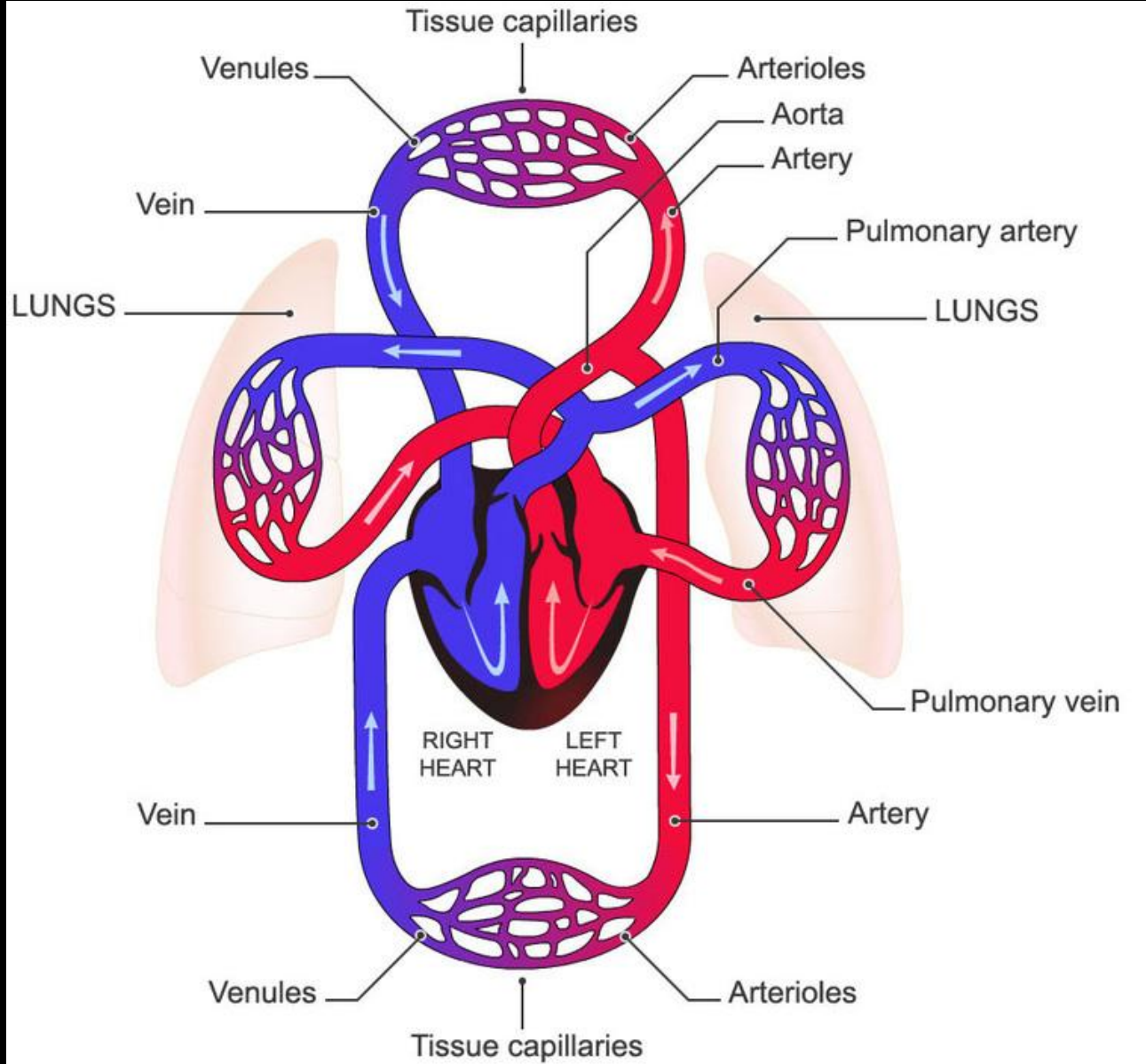
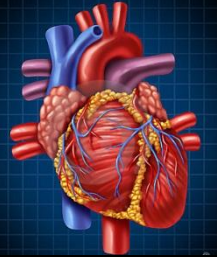
II semester

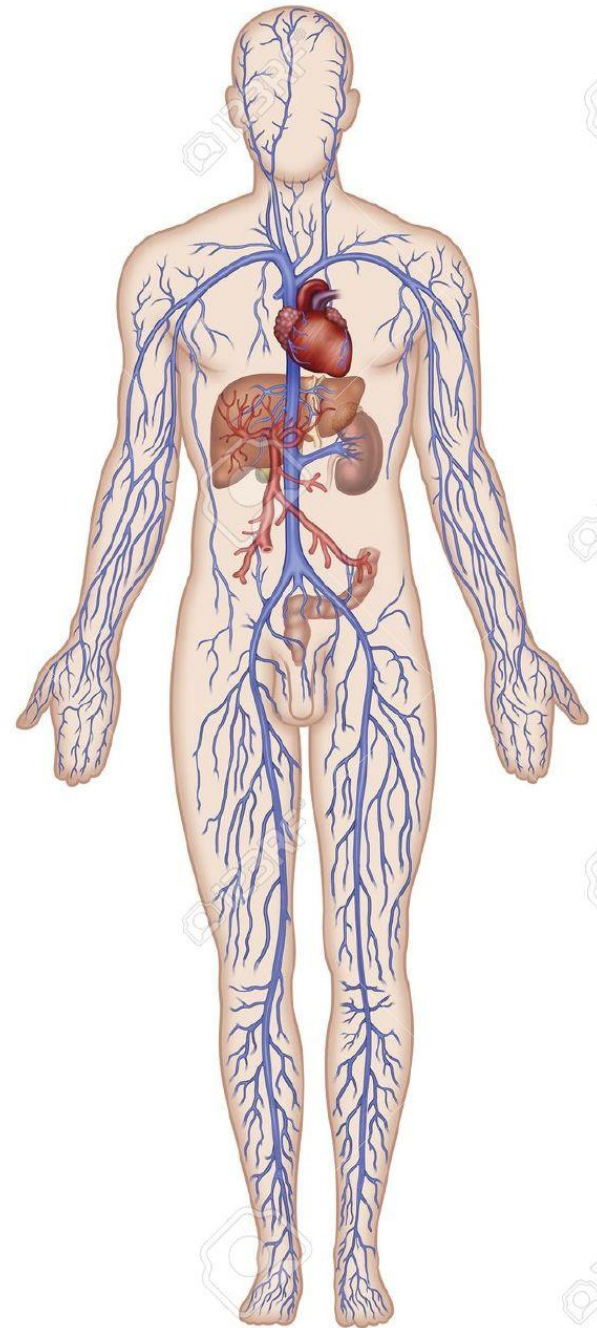
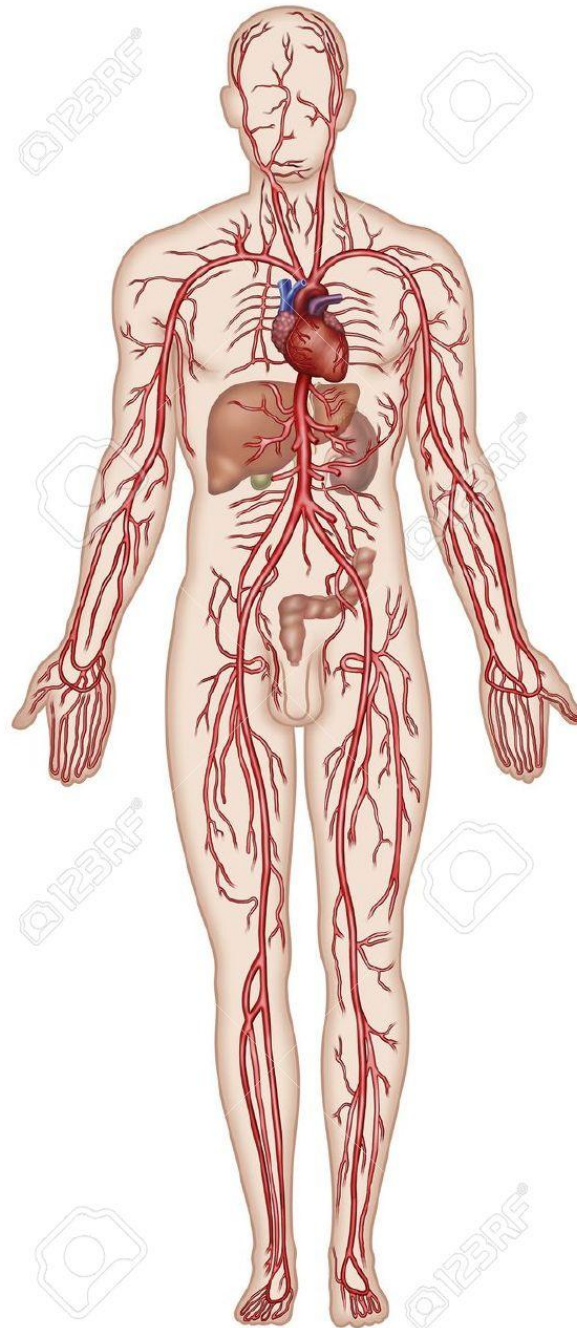
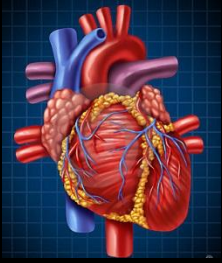
Associate Professor,

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



BLOOD CIRCLES

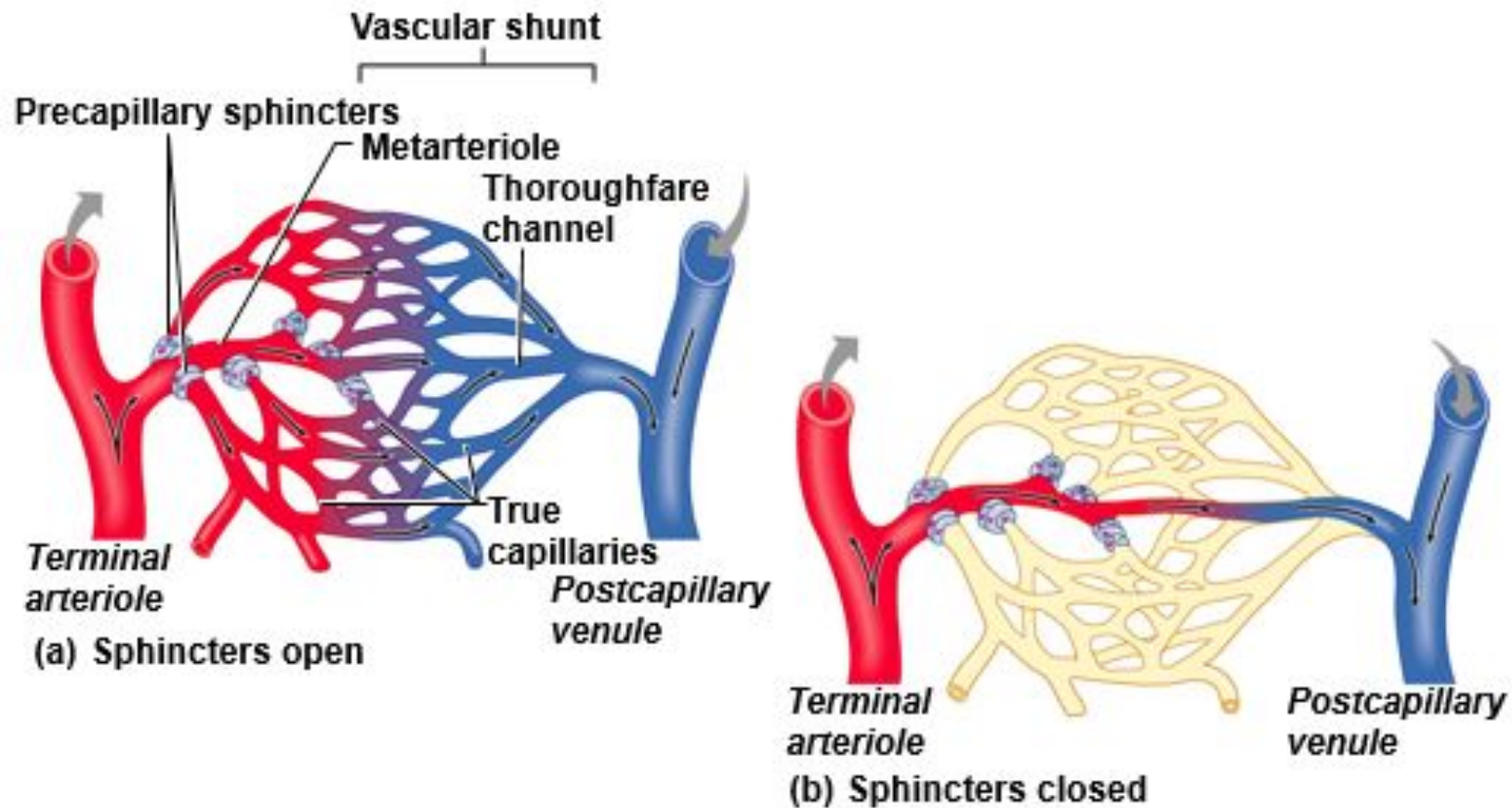




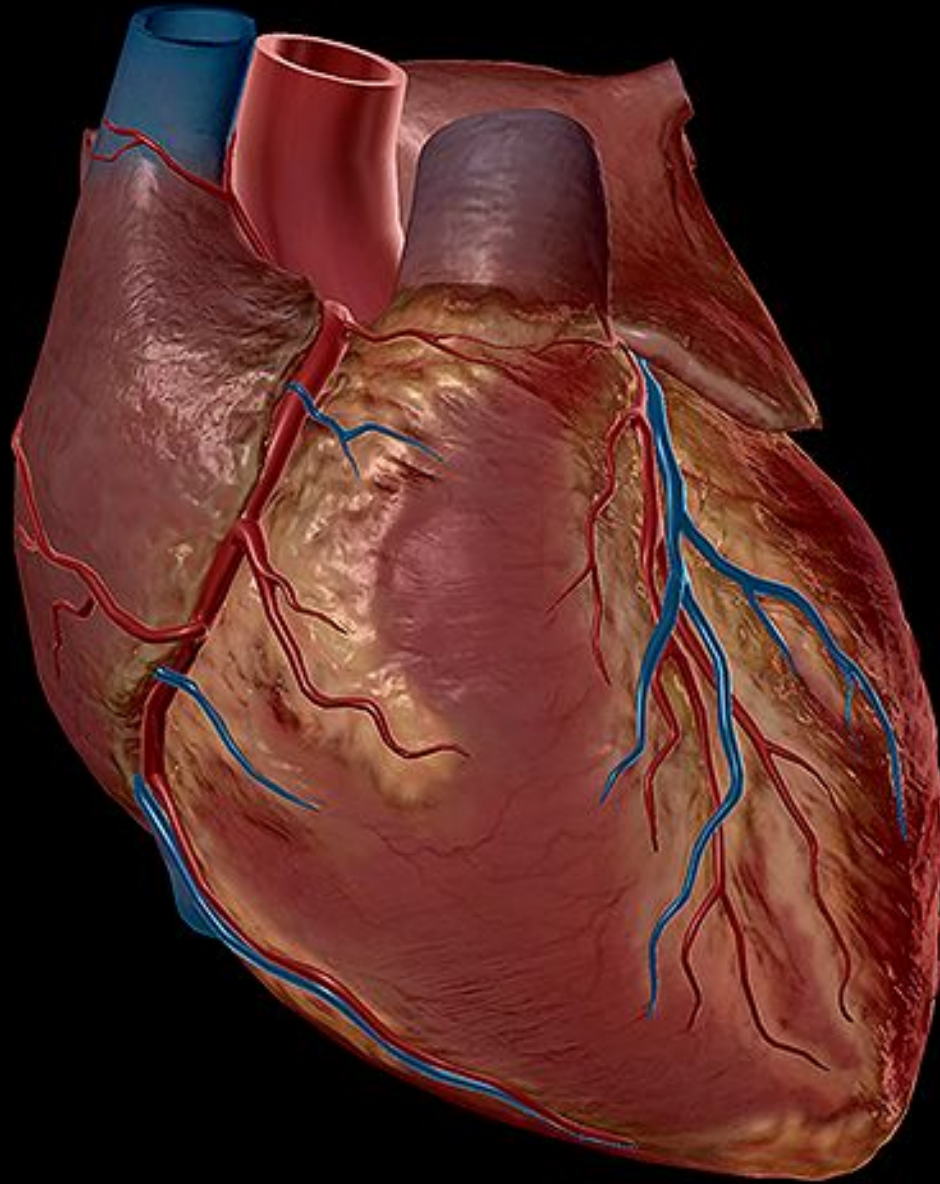
MICROCIRCULATORY BED COMPRISES SEVEN STRUCTURES

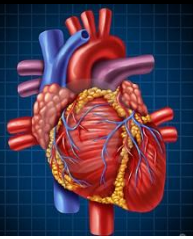
- ❖ ARTERIOLES
- ❖ PRECAPILLARY ARTERIOLES
- ❖ CAPILLARIES
- ❖ POSTCAPILLARY VENULES
- ❖ VENULES
- ❖ PRECAPILLARY SPHINCTERS
- ❖ AV SHUNT

MICROCIRCULATORY BED



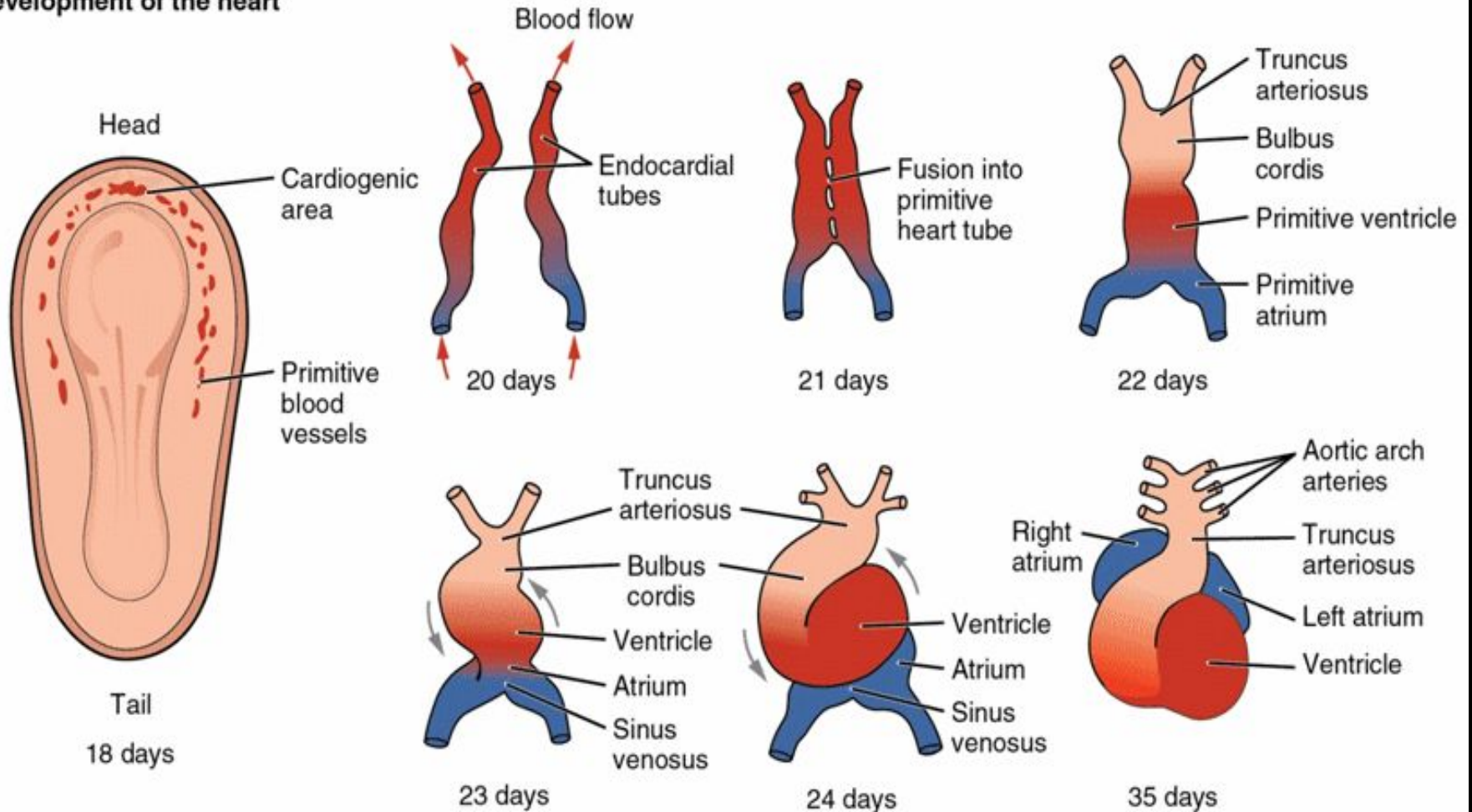
ISSUES COVERED:



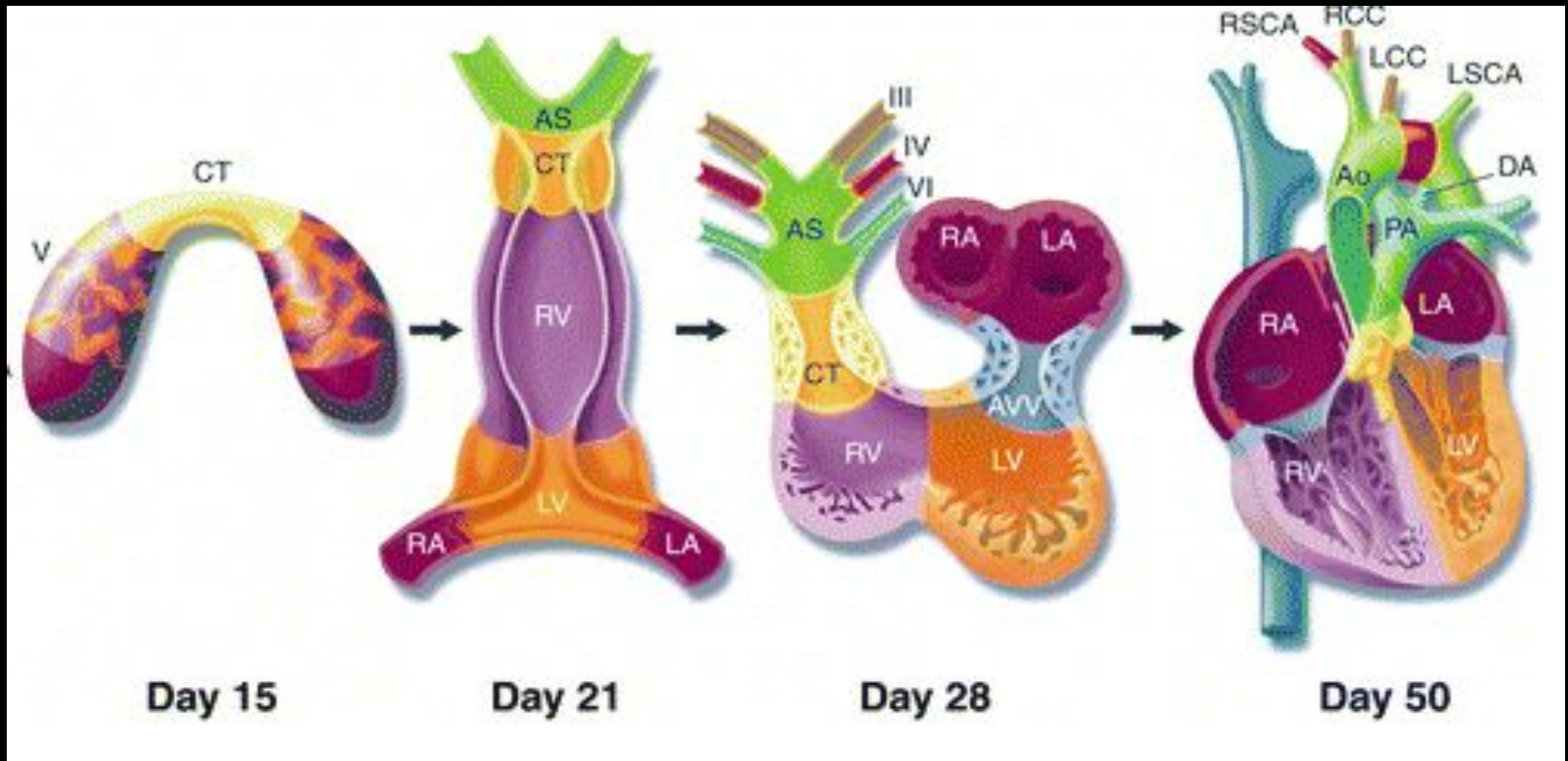
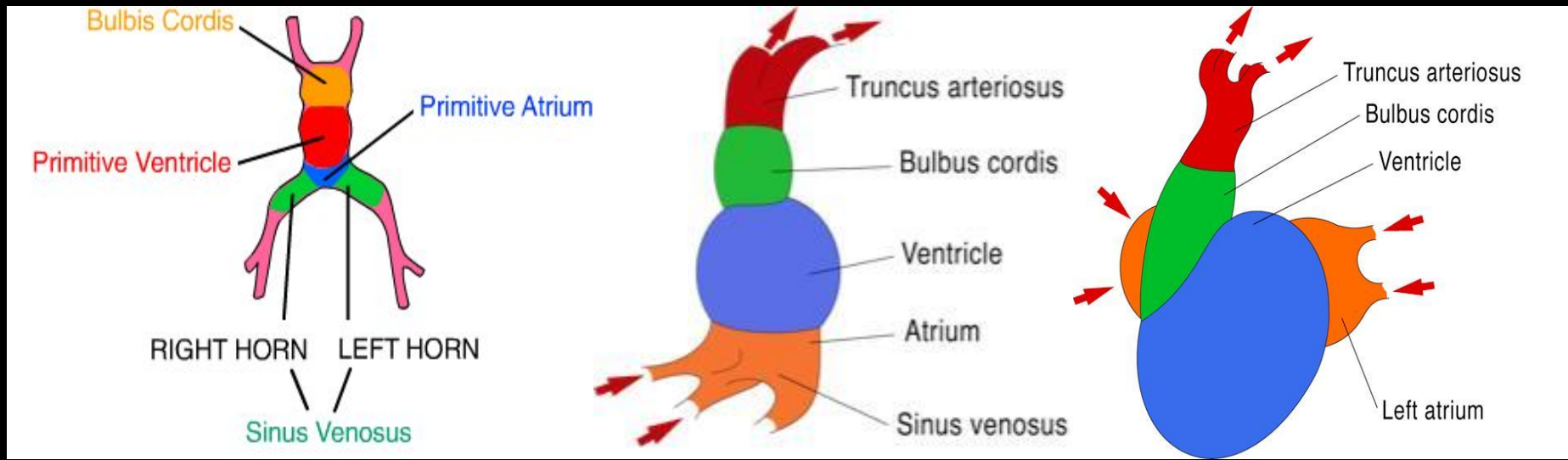


EMBRYOLOGY

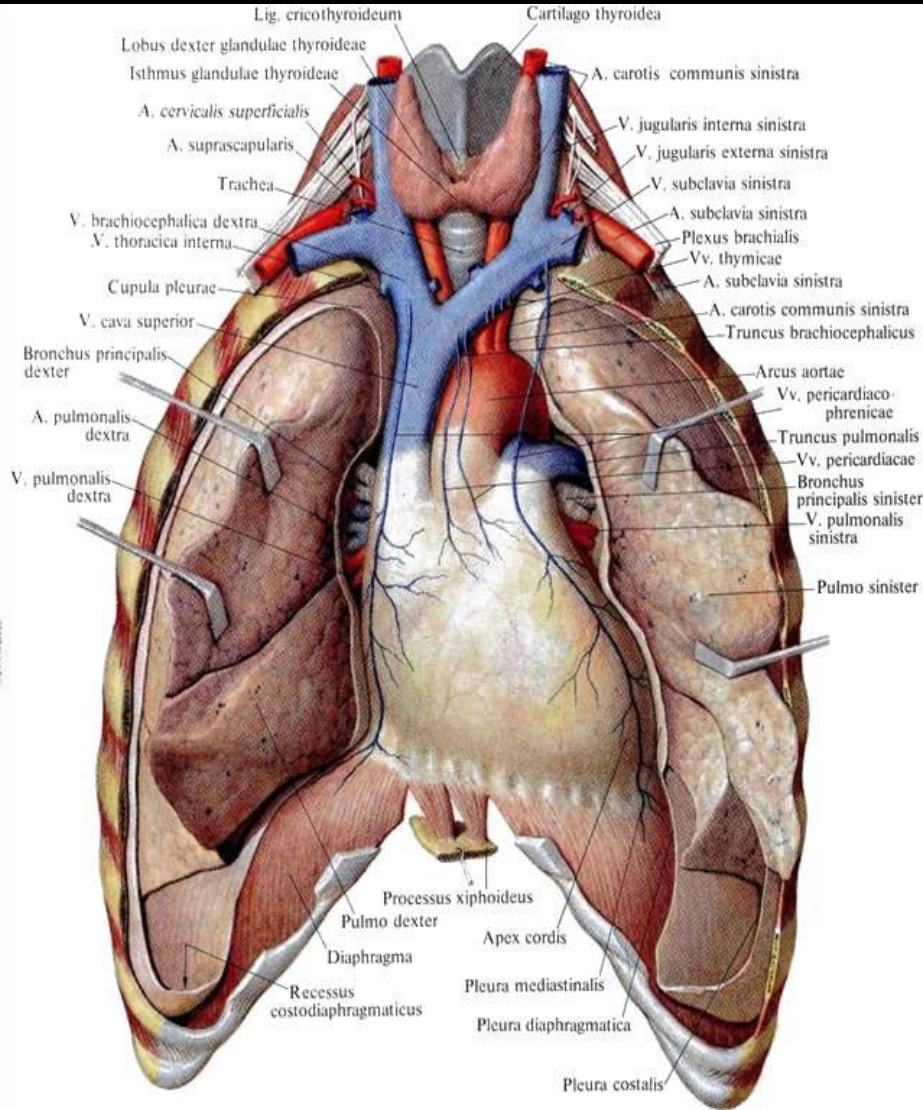
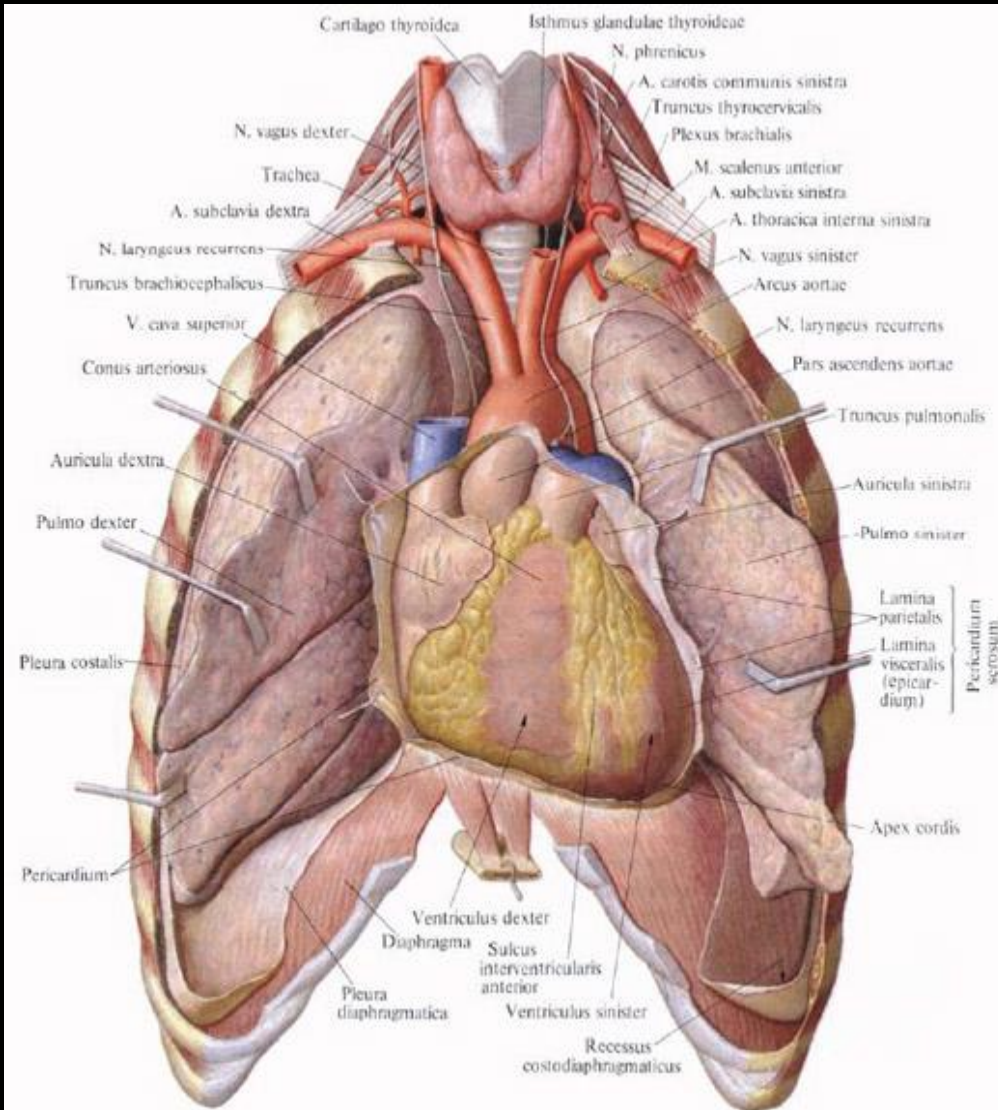
Development of the heart



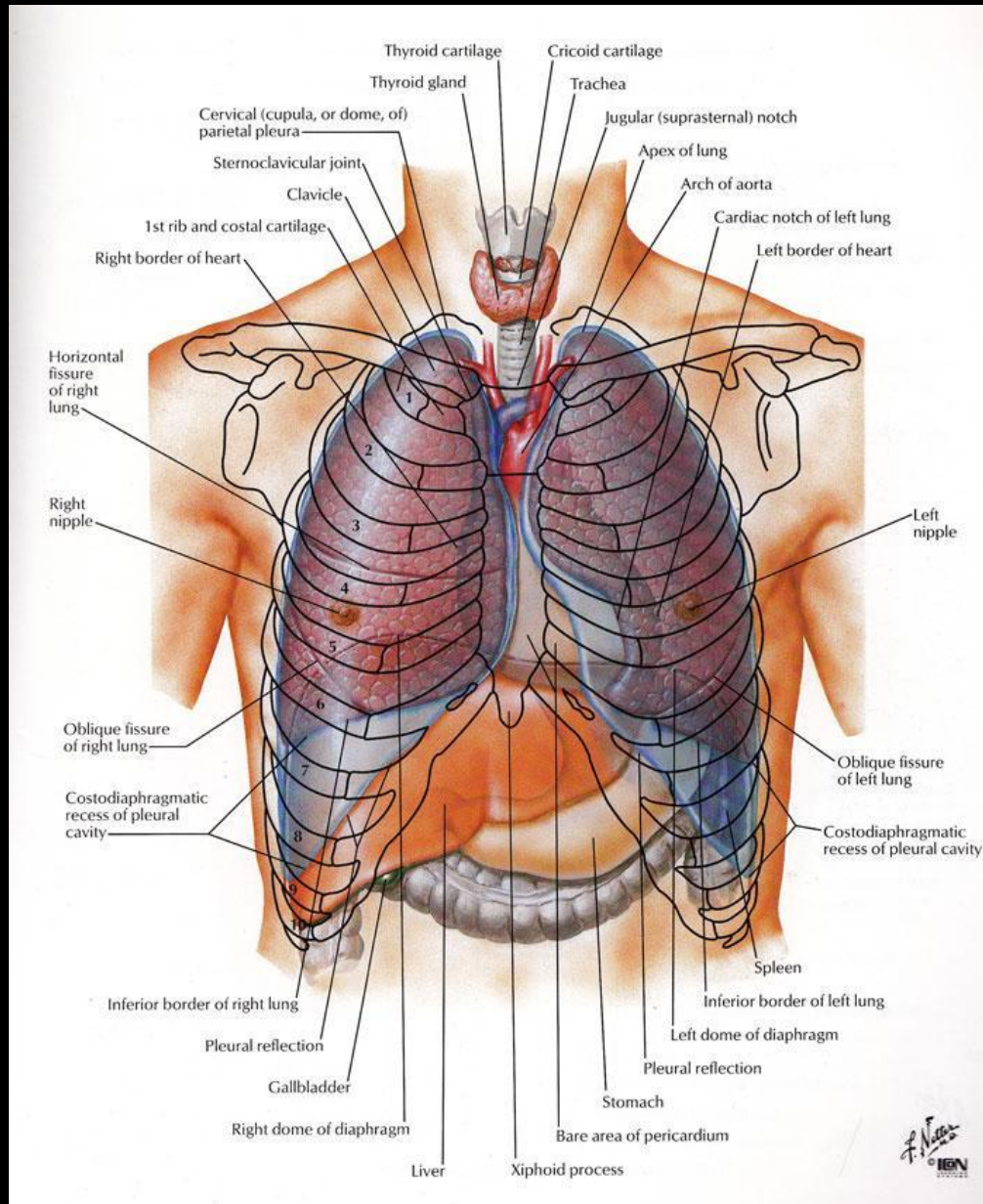
★ **Cardiogenic area begins right in the middle of head pole**

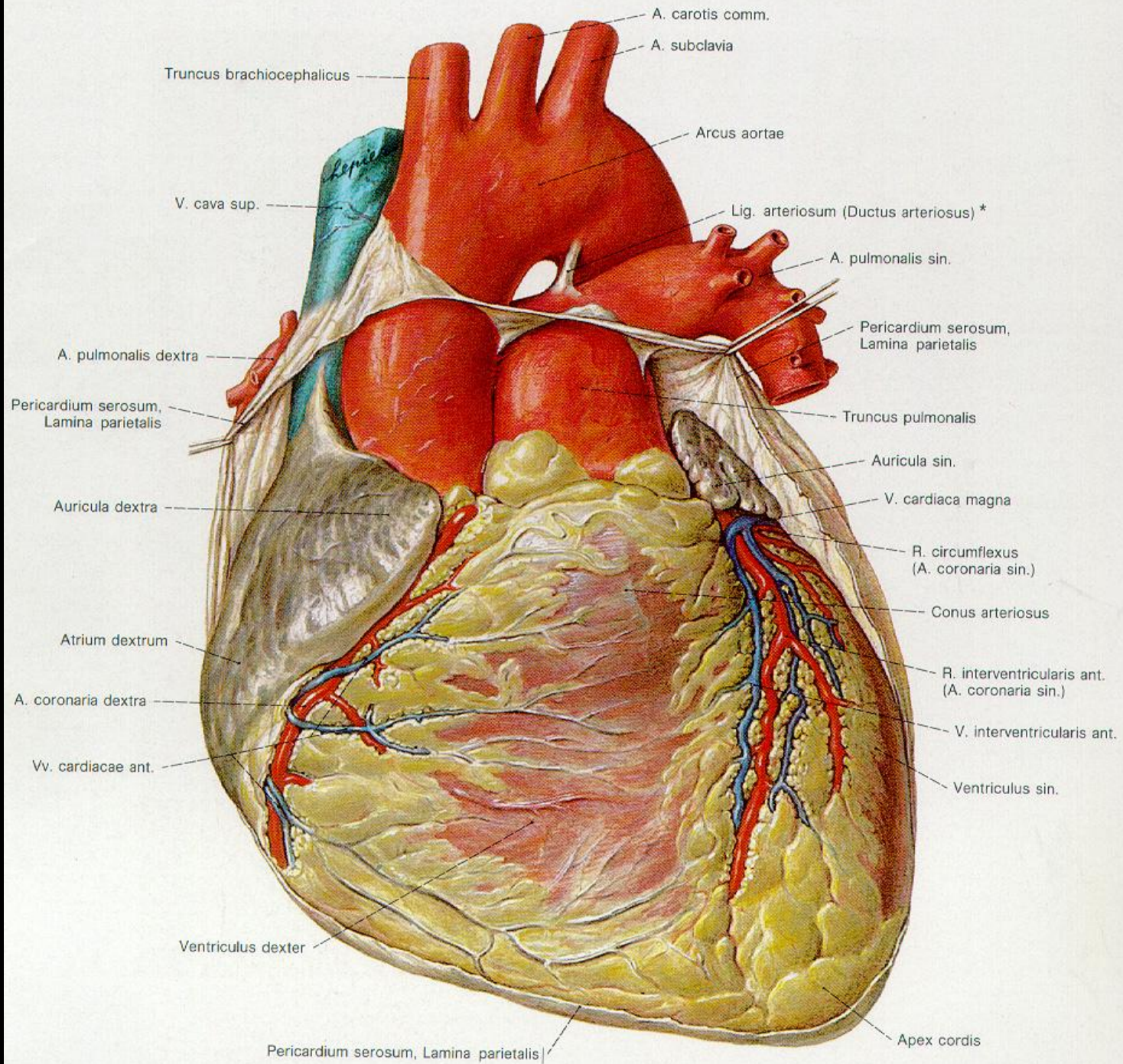


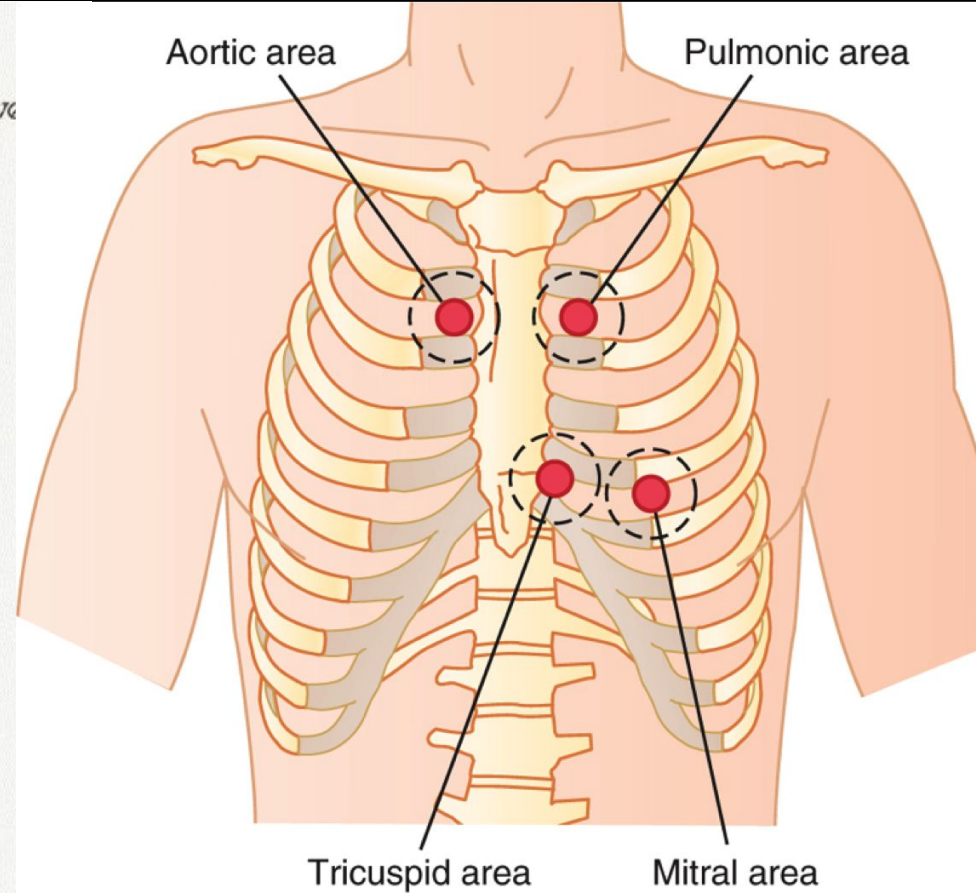
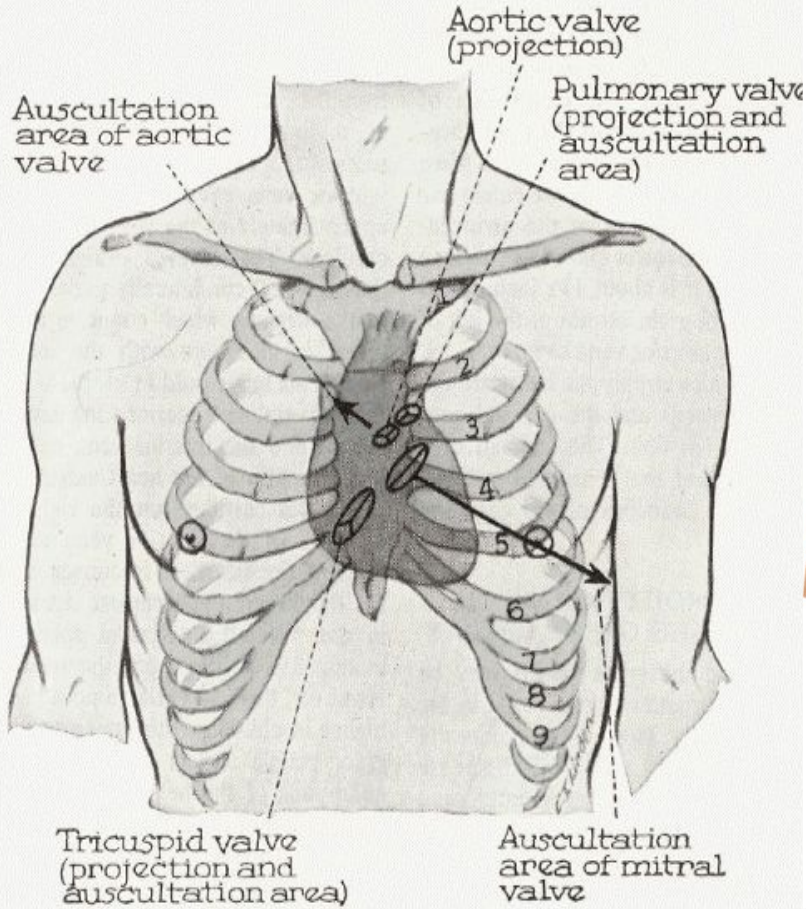
TOPOGRAPHY



TOPOGRAPHY



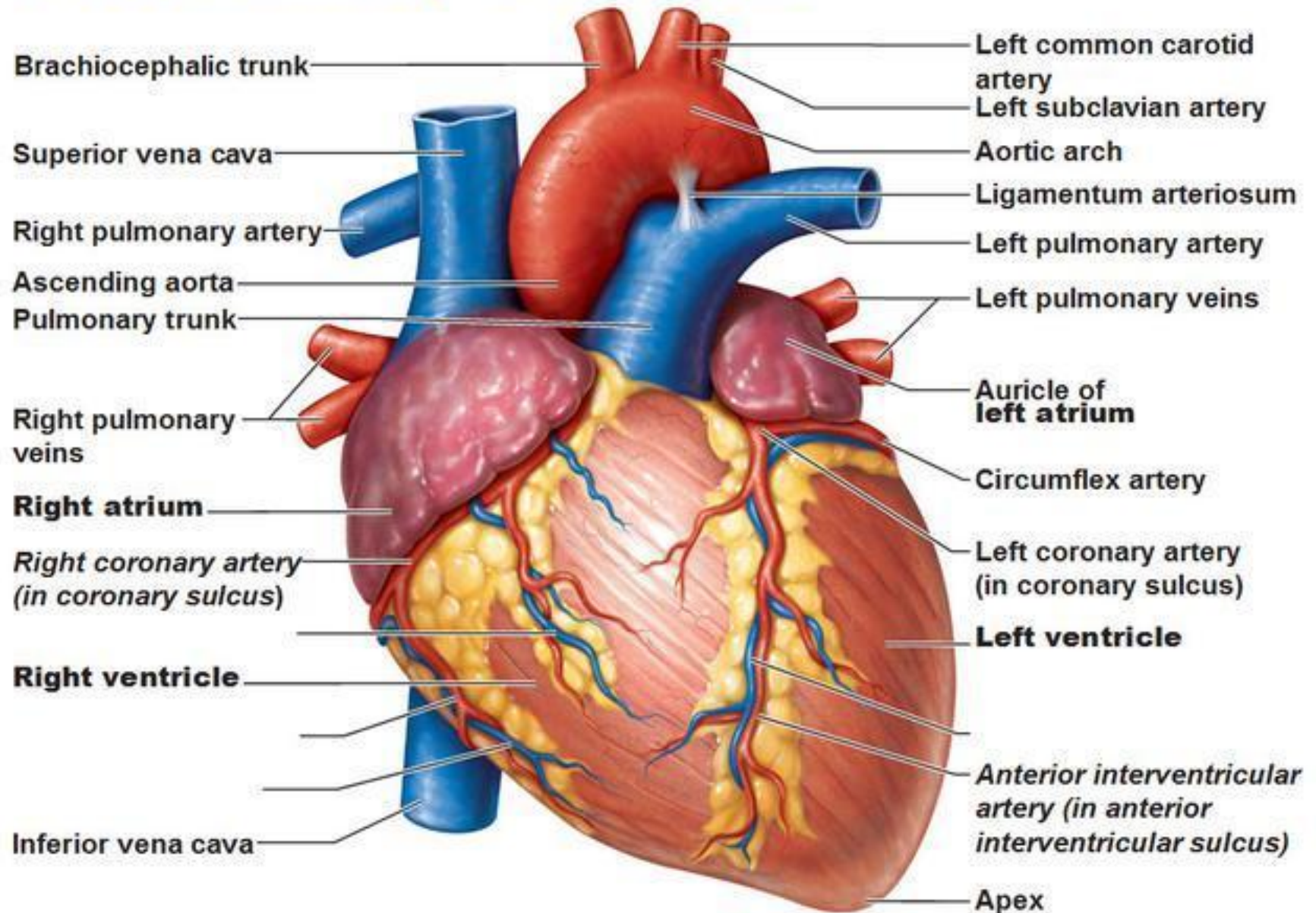




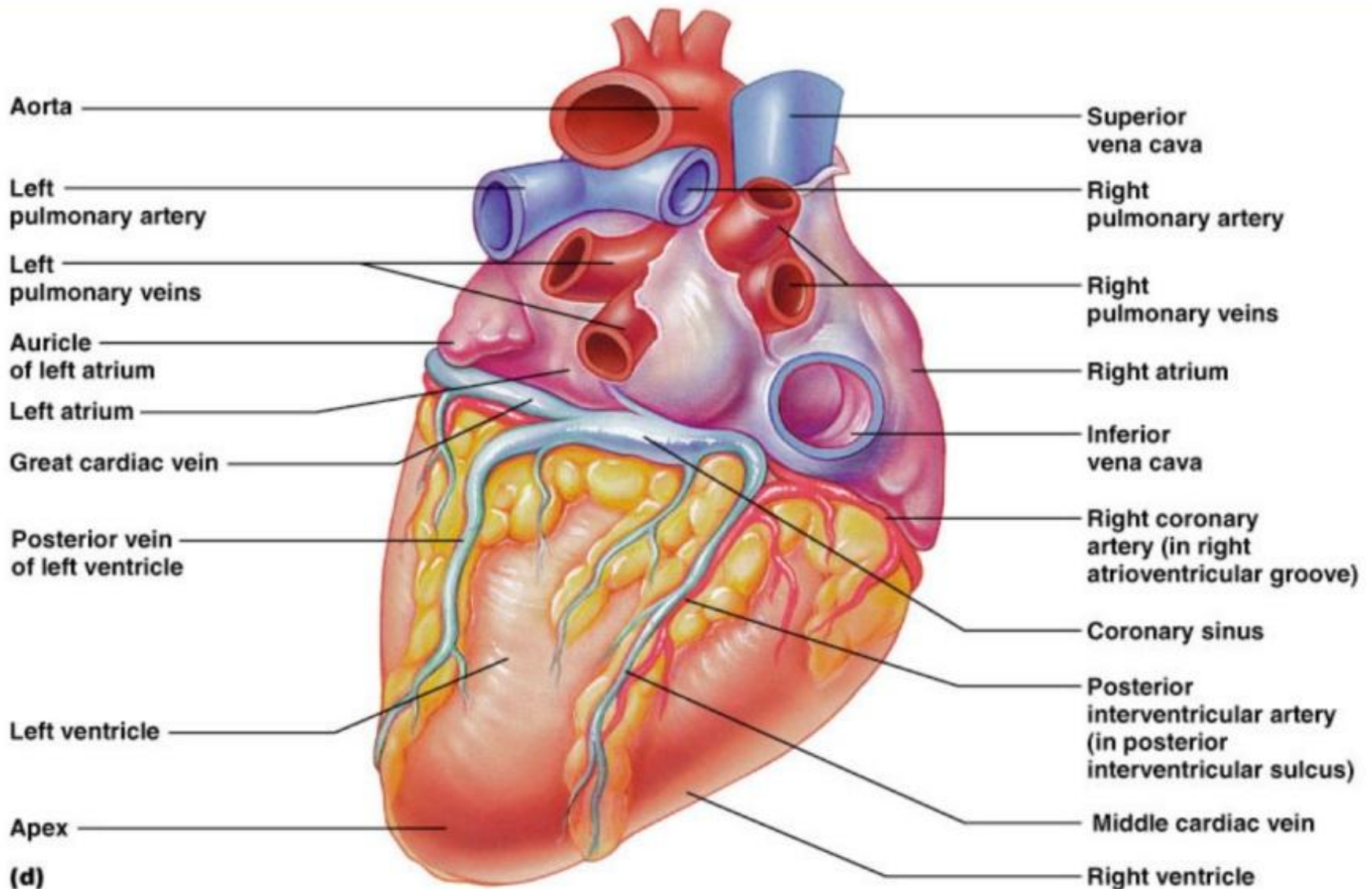
Hall: Guyton and Hall Textbook of Medical Physiology, 12th Edition
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Gross Anatomy of the Heart

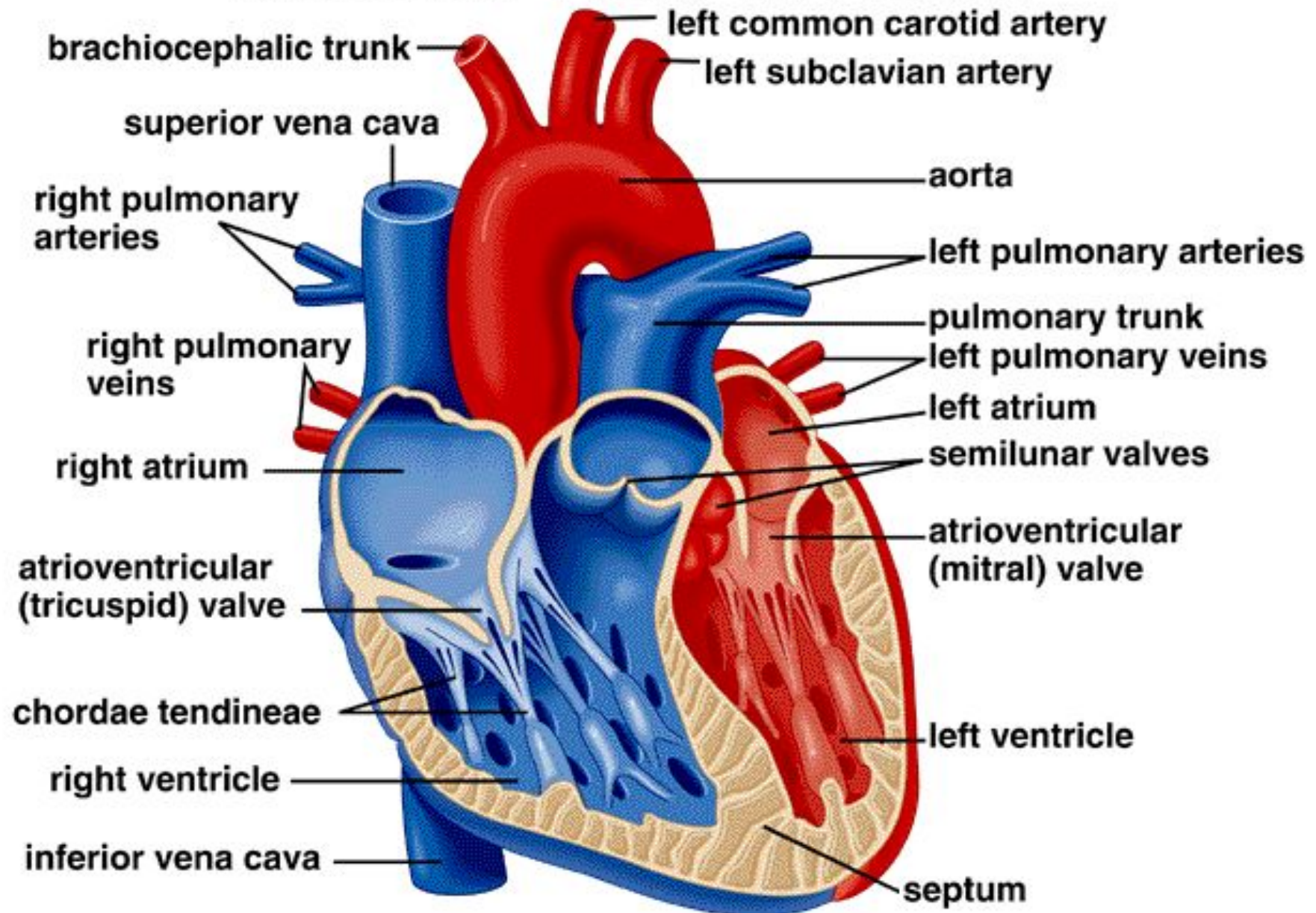
Anterior view



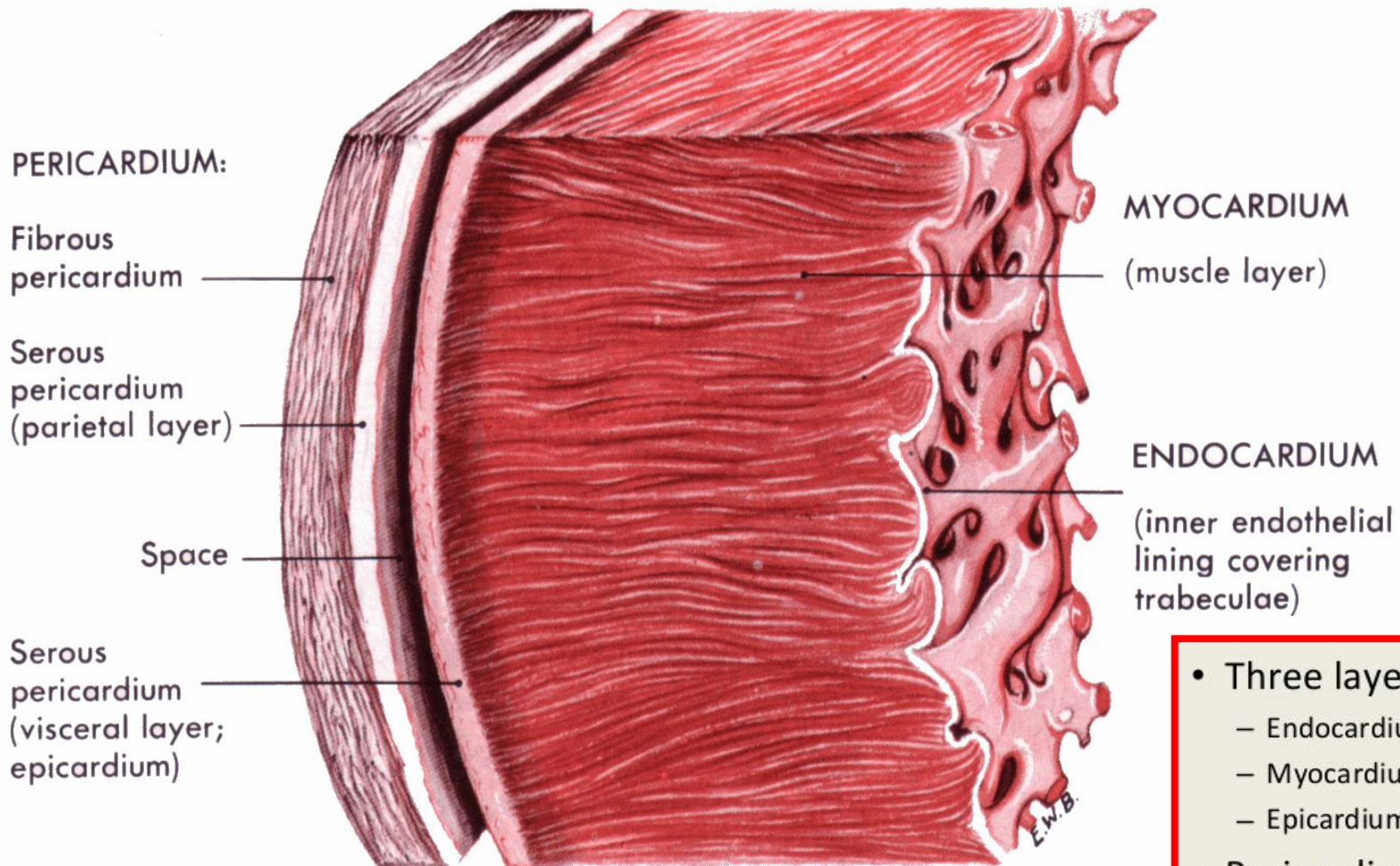
External Heart: Posterior View



Internal View of Heart



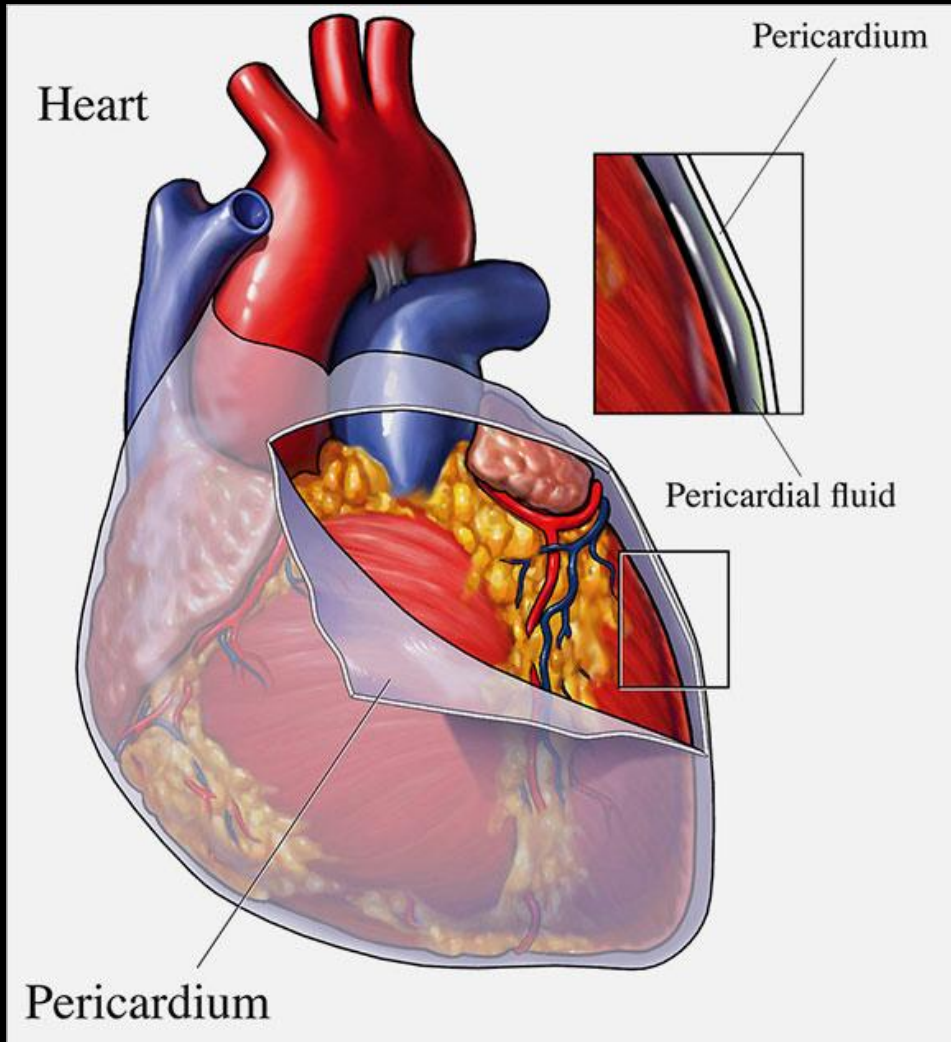
LAYERS OF THE HEART WALL



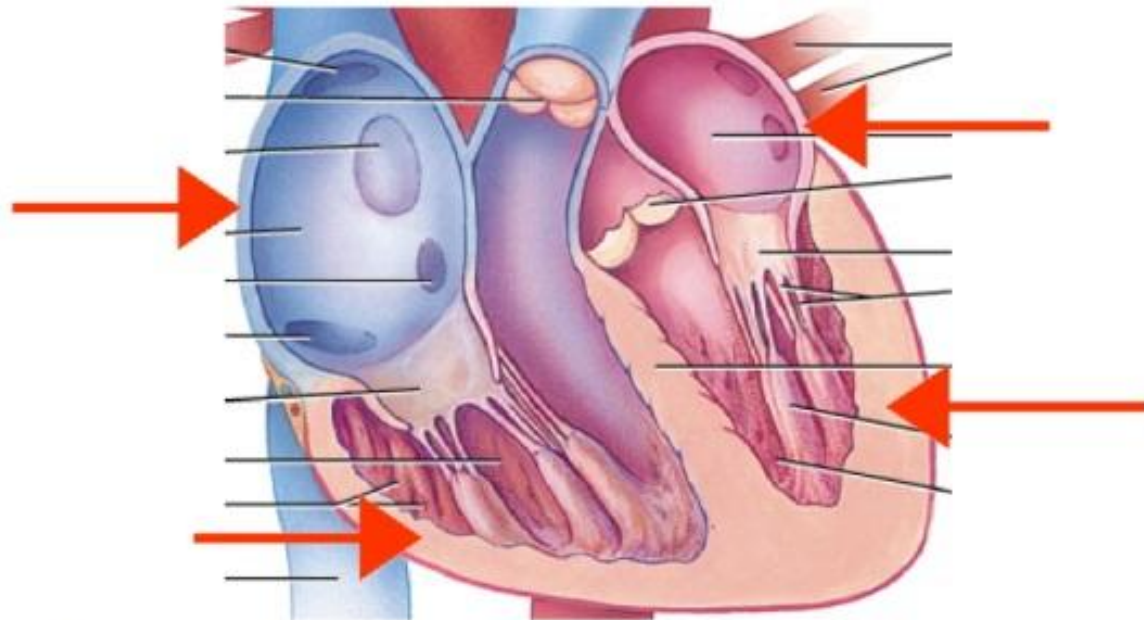
Section of the heart wall showing the components of the outer pericardium (heart sac), muscle layer (myocardium), and inner lining (endocardium).

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

PERICARDIUM



Myocardial Thickness and Function



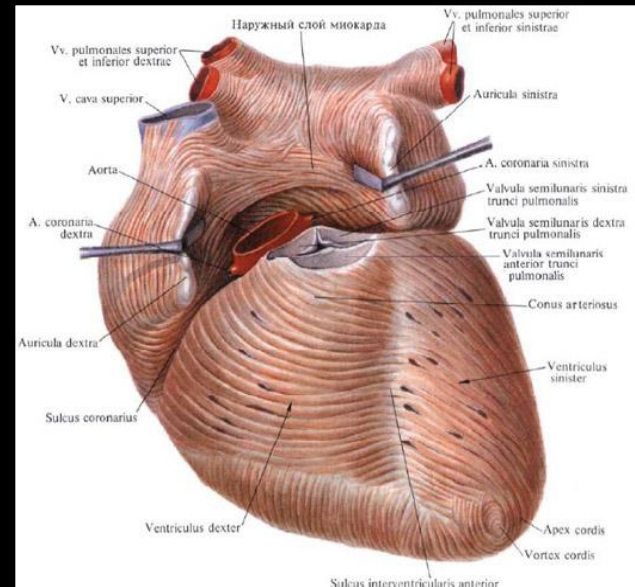
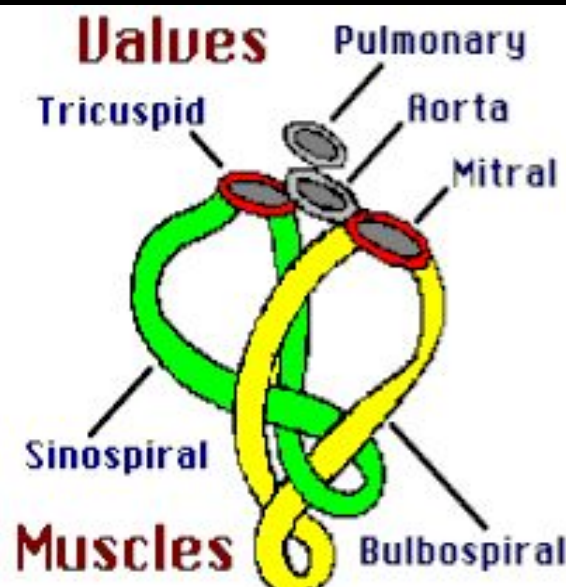
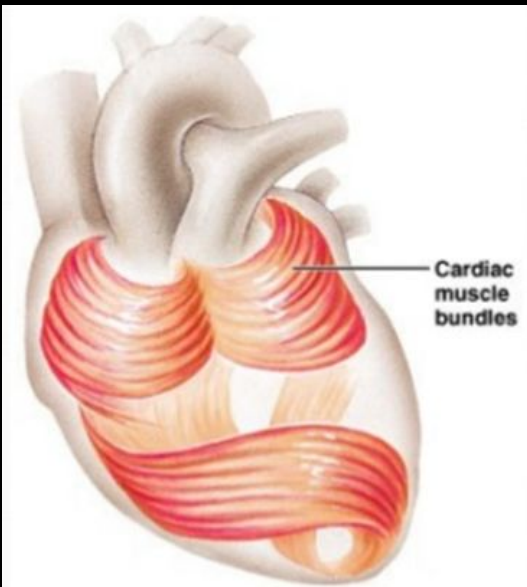
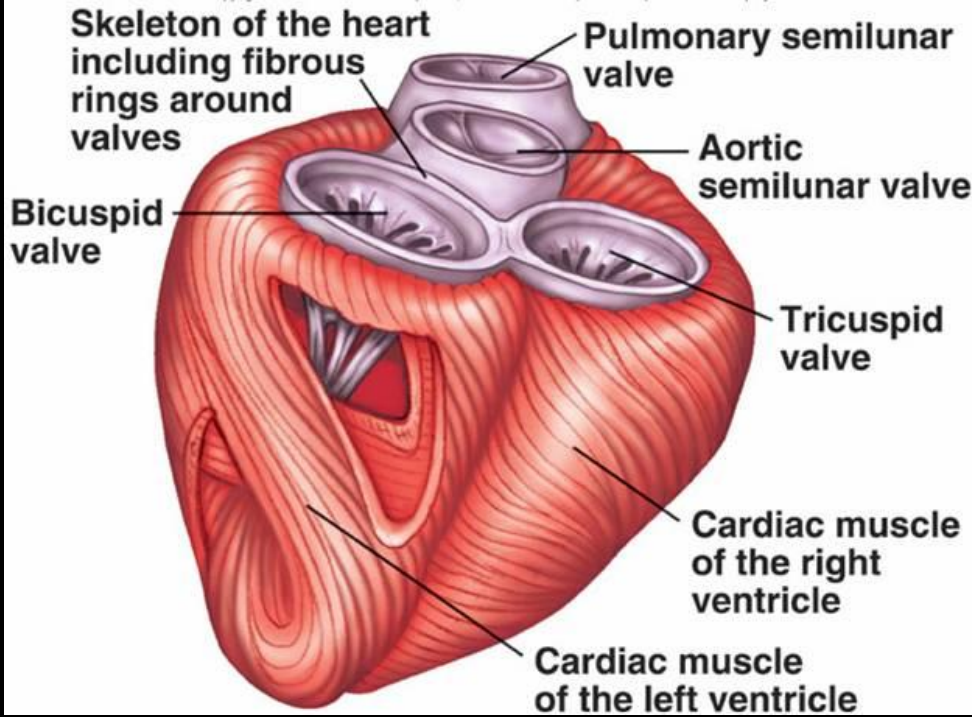
Thickness of myocardium varies according to the function of the chamber

Atria are thin walled, deliver blood to adjacent ventricles

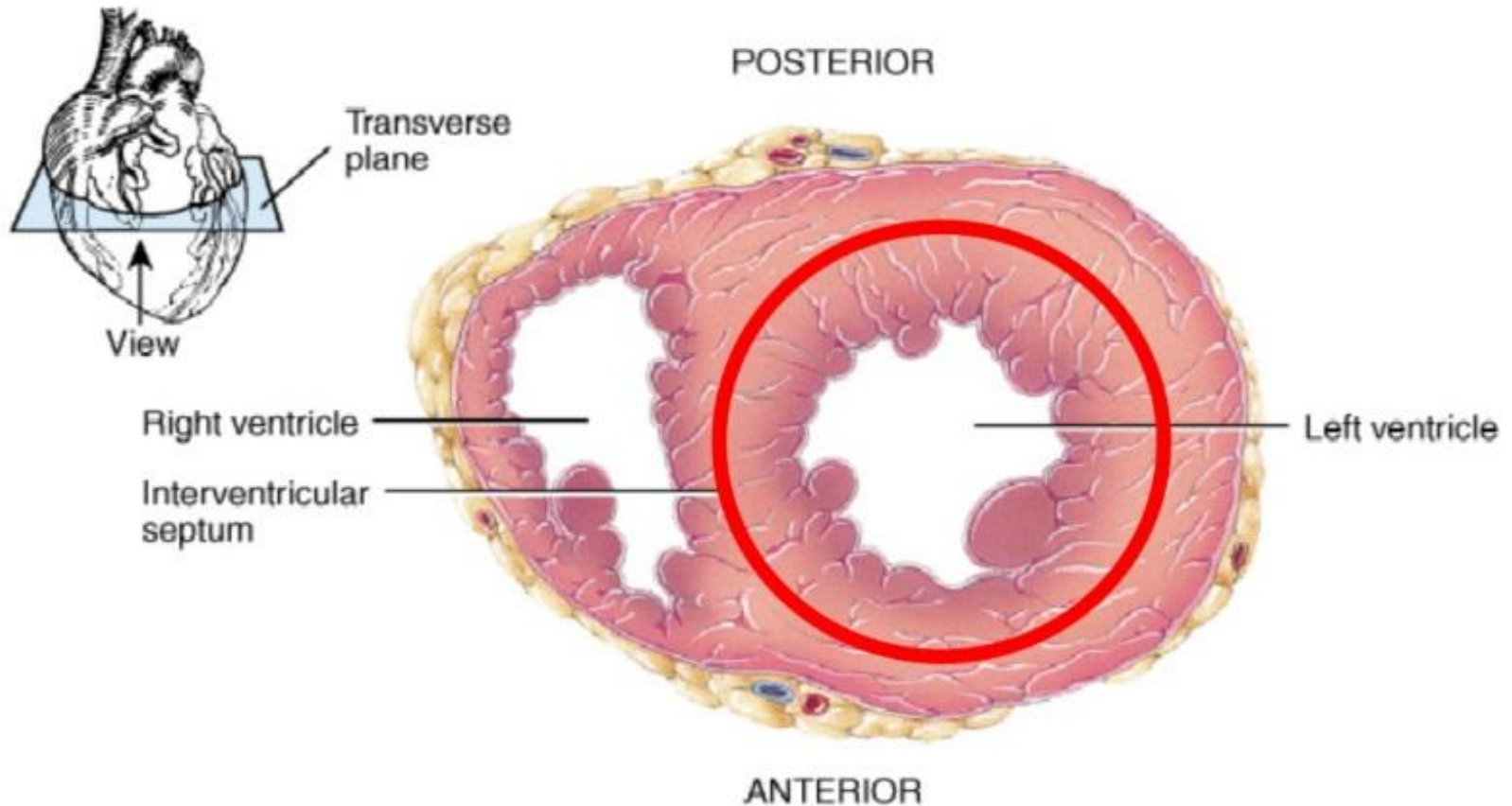
Ventricle walls are much thicker and stronger

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

MYOCARDIUM

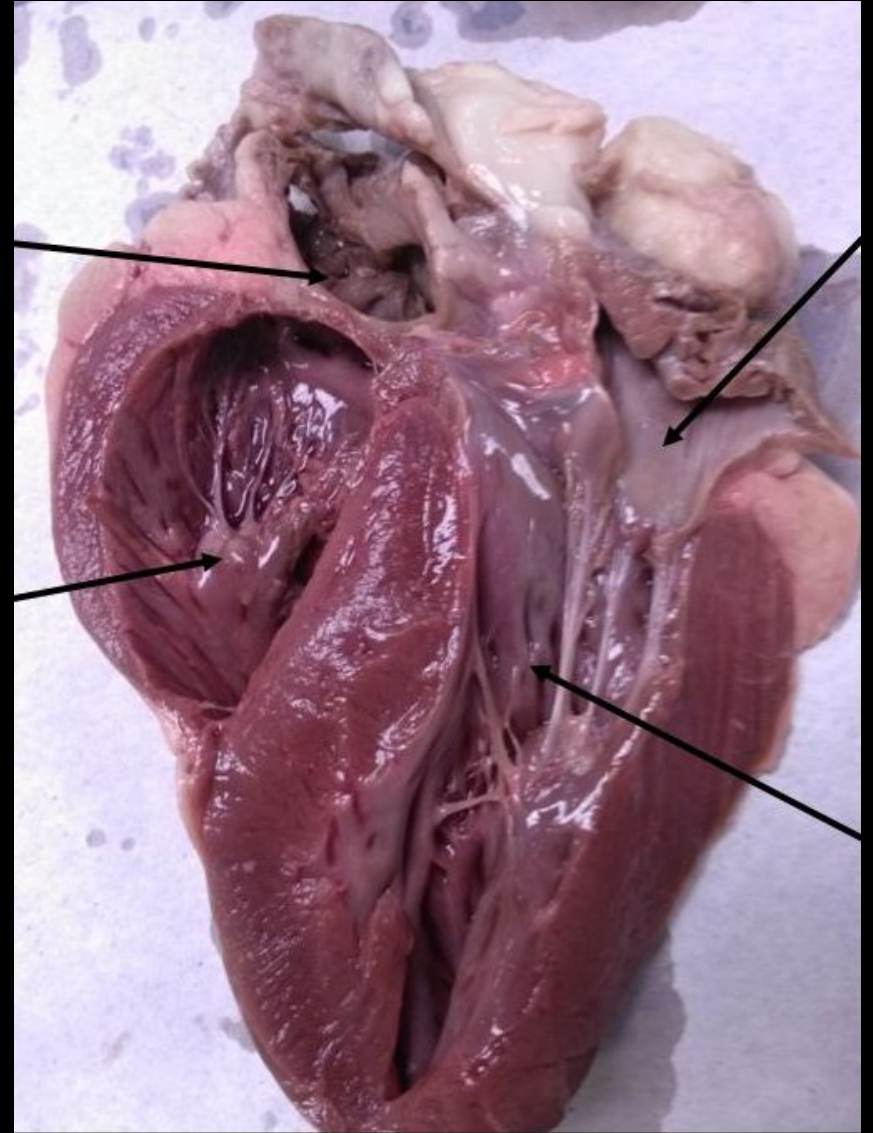
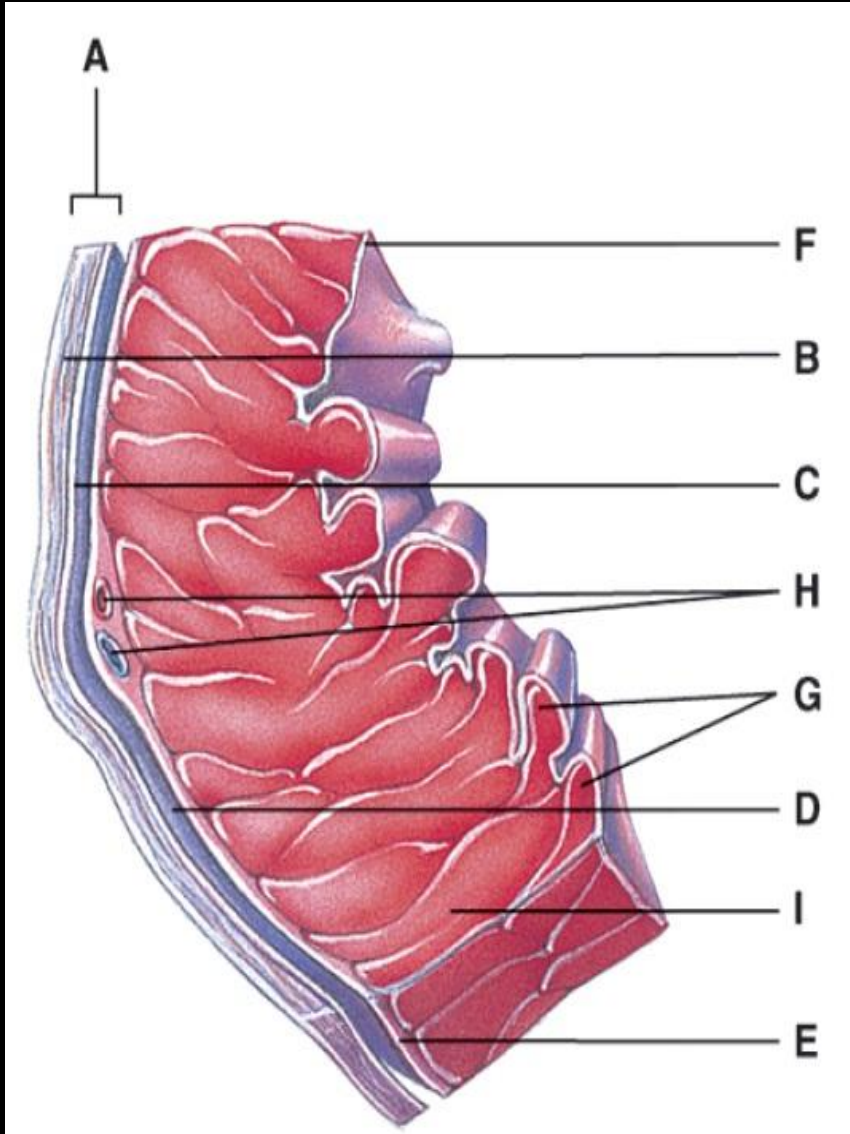


Thickness of Cardiac Walls

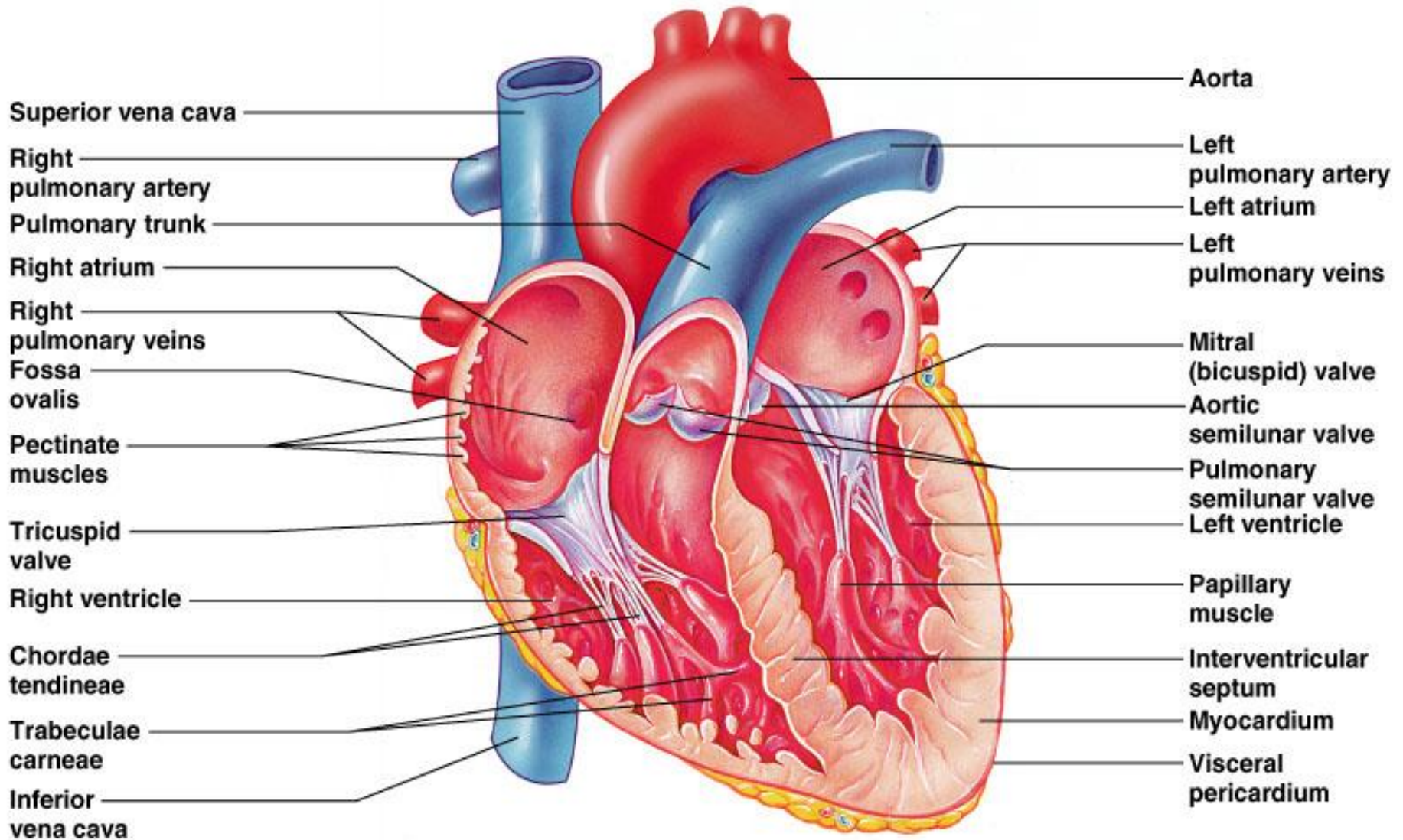


Myocardium of left ventricle is much thicker than the right.

ENDOCARDIUM

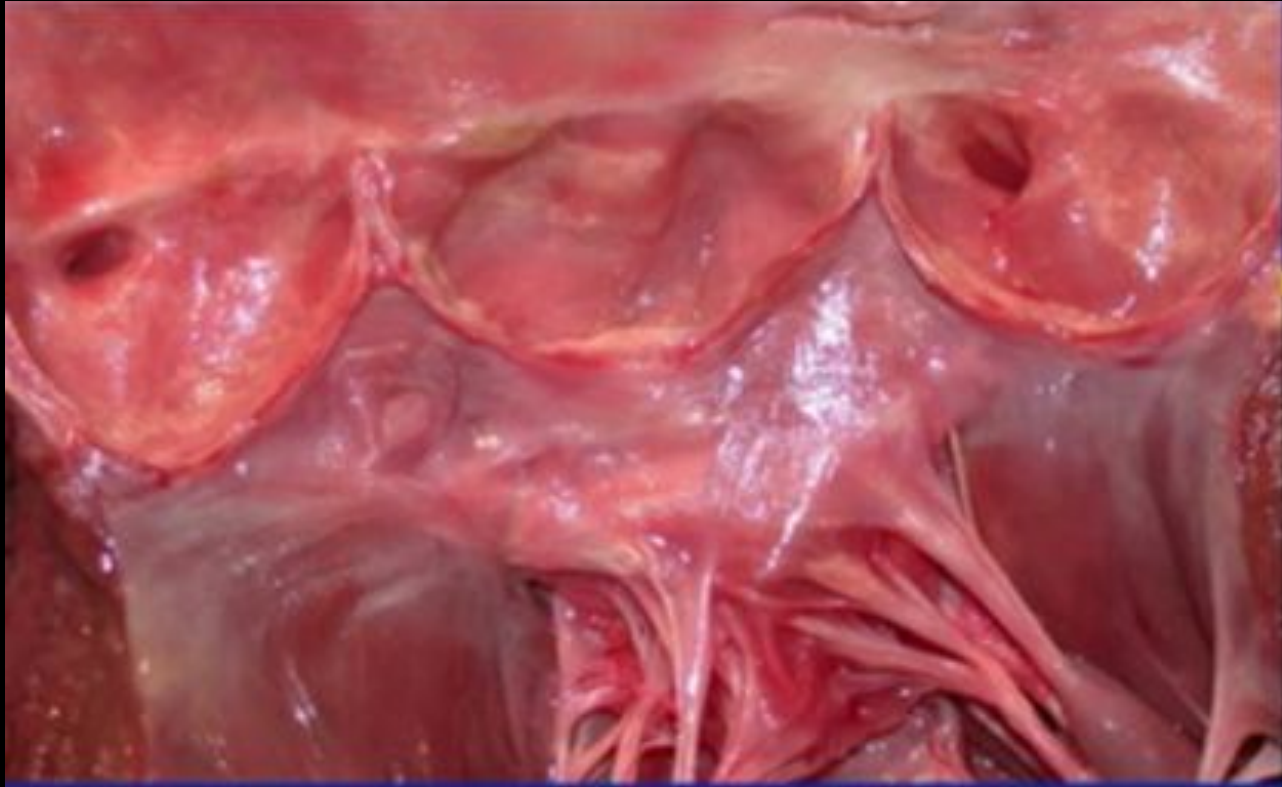


VALVES



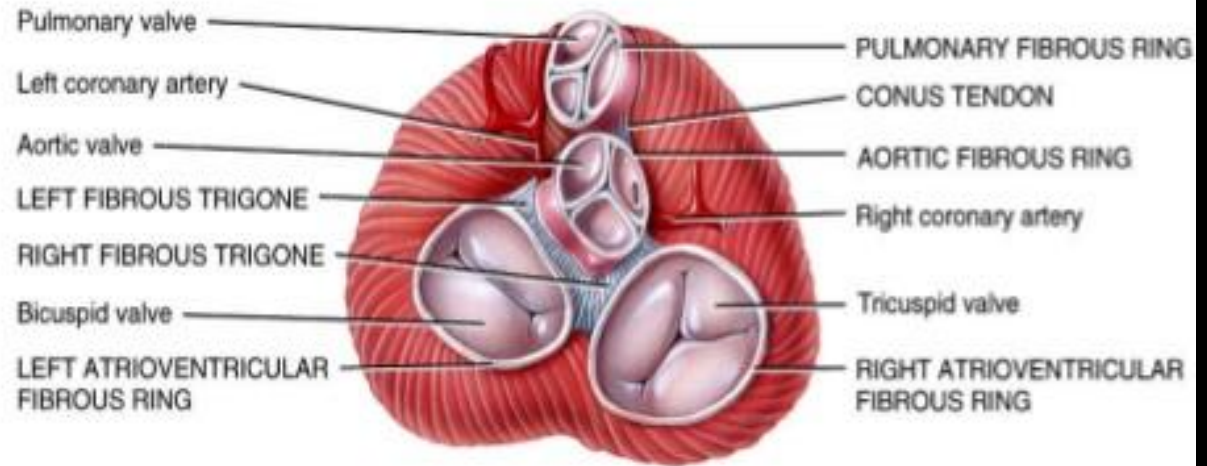
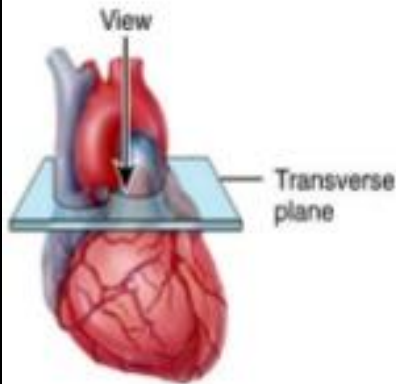
(e)

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

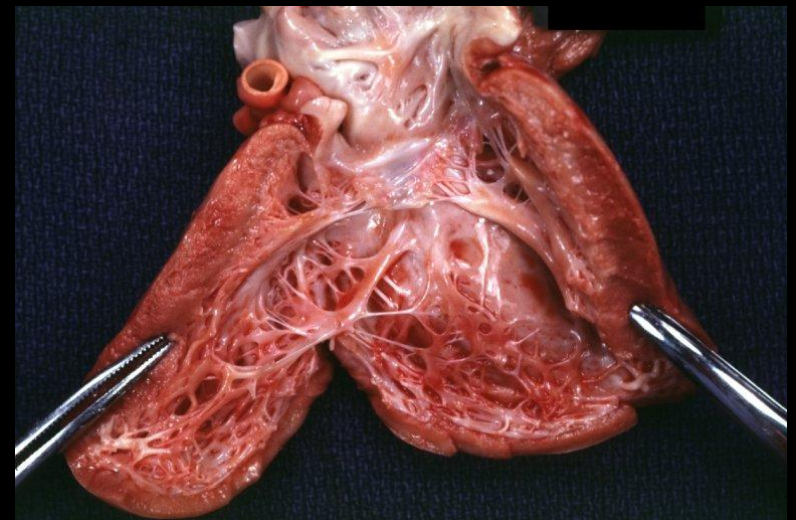
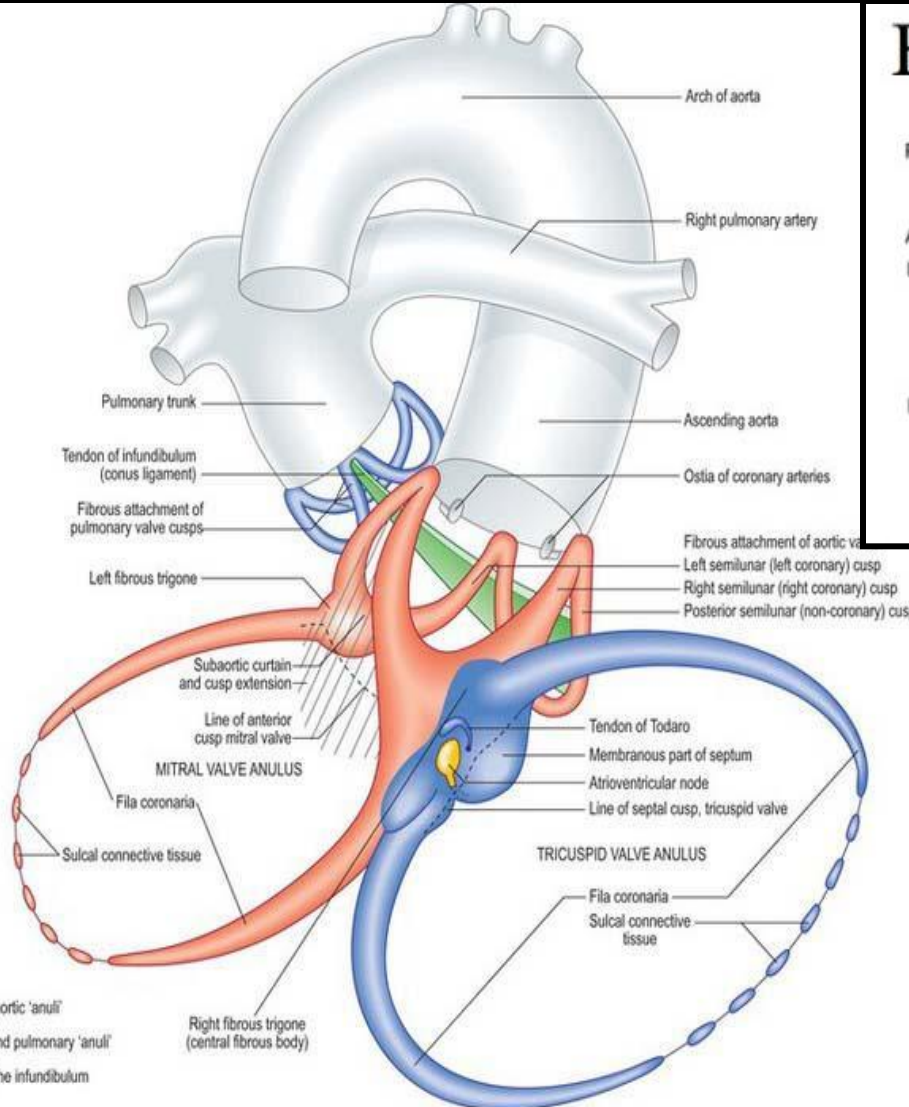
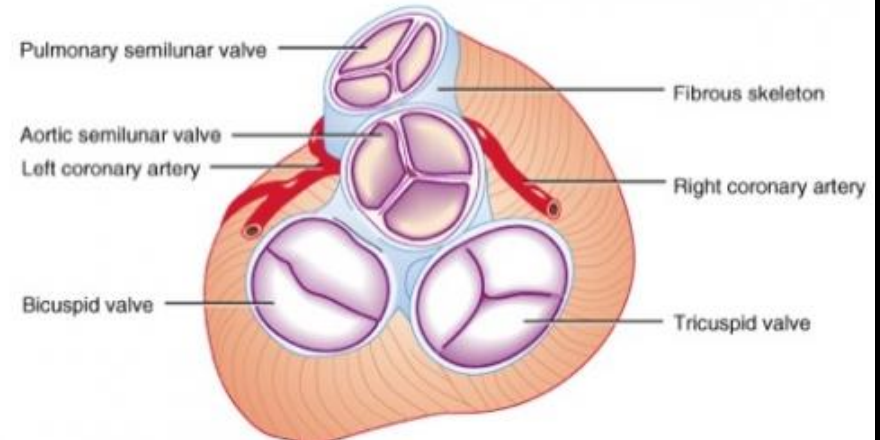
Functions of fibrous skeleton:

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

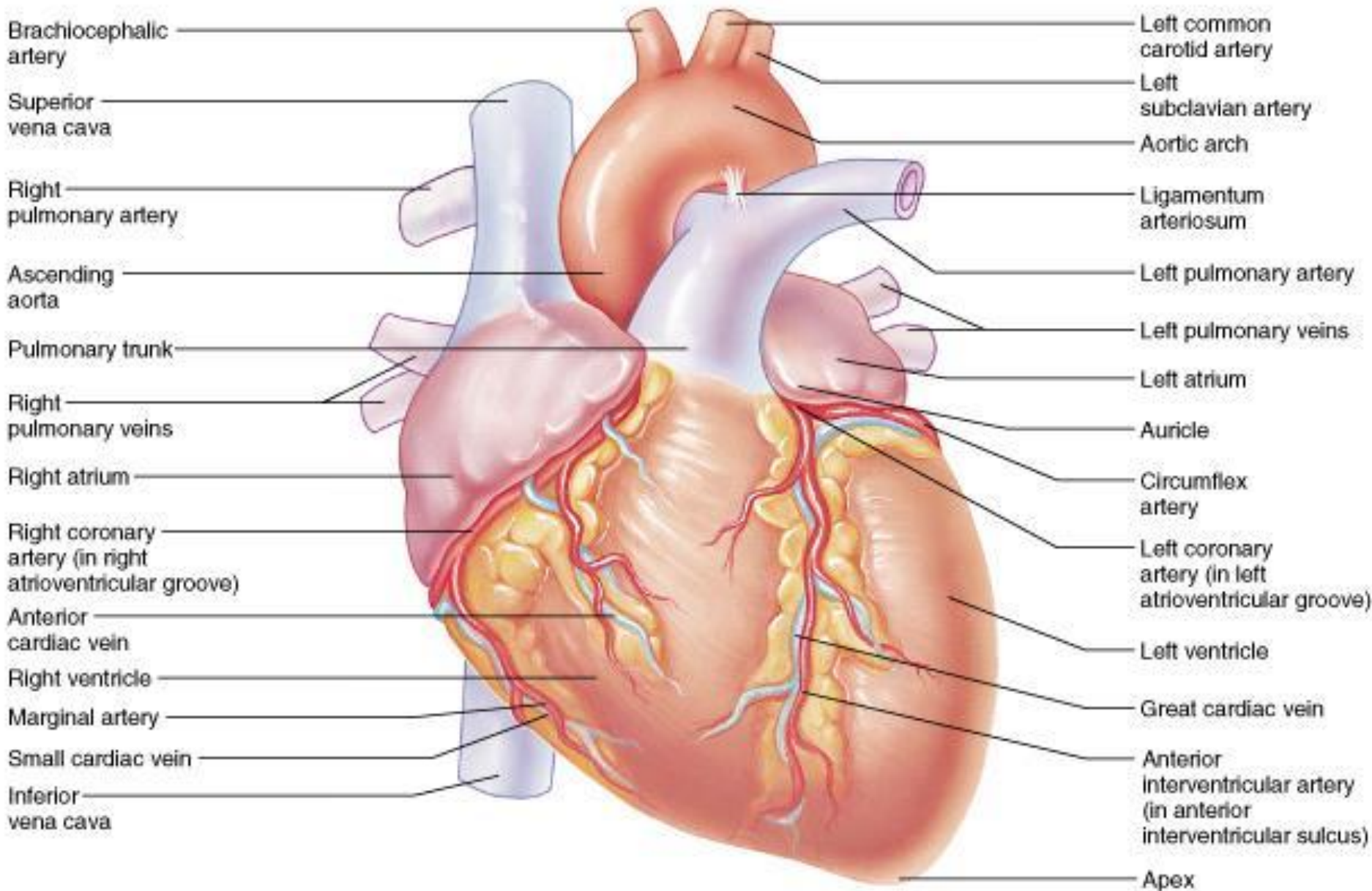


STRUCTURE

Fibrous Skeleton of Heart







(b)