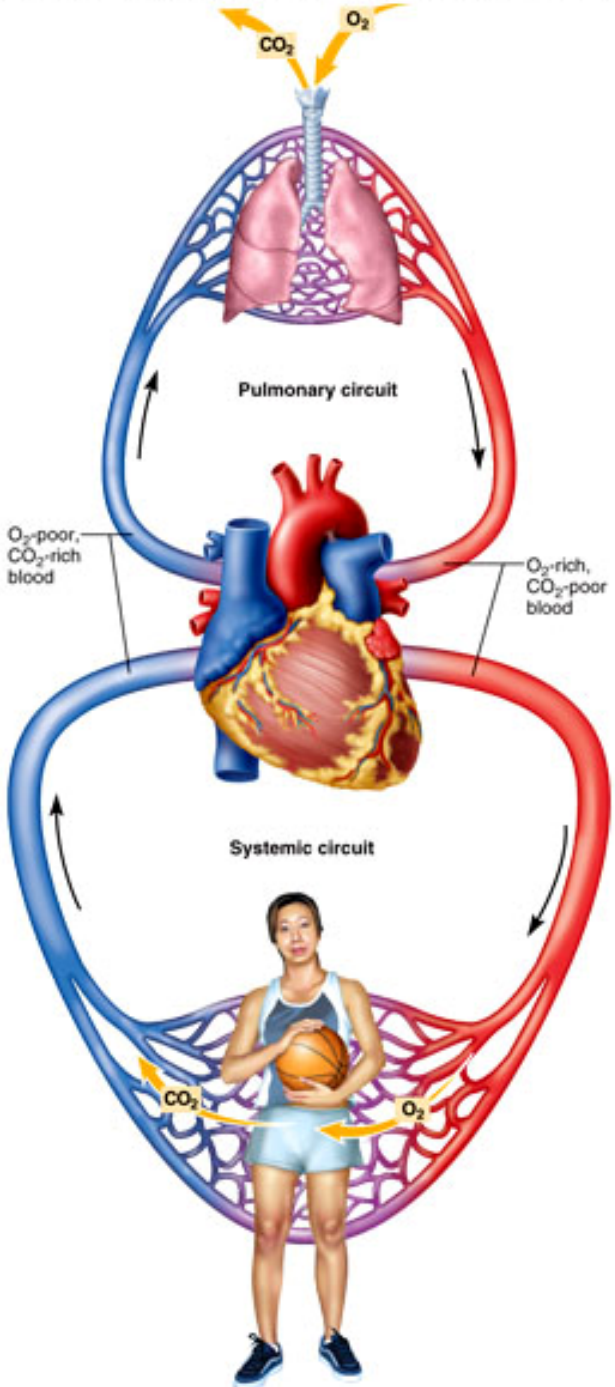
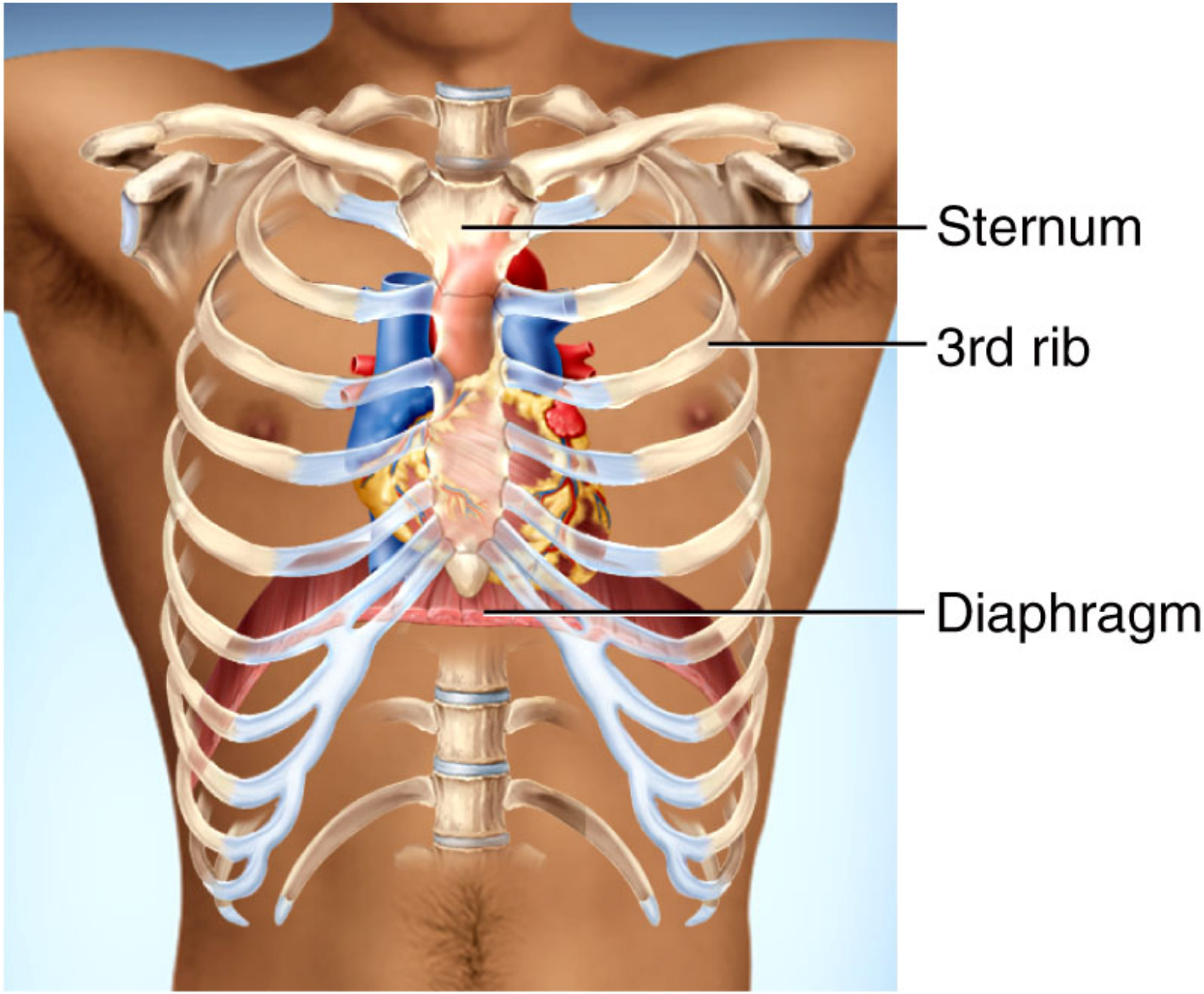
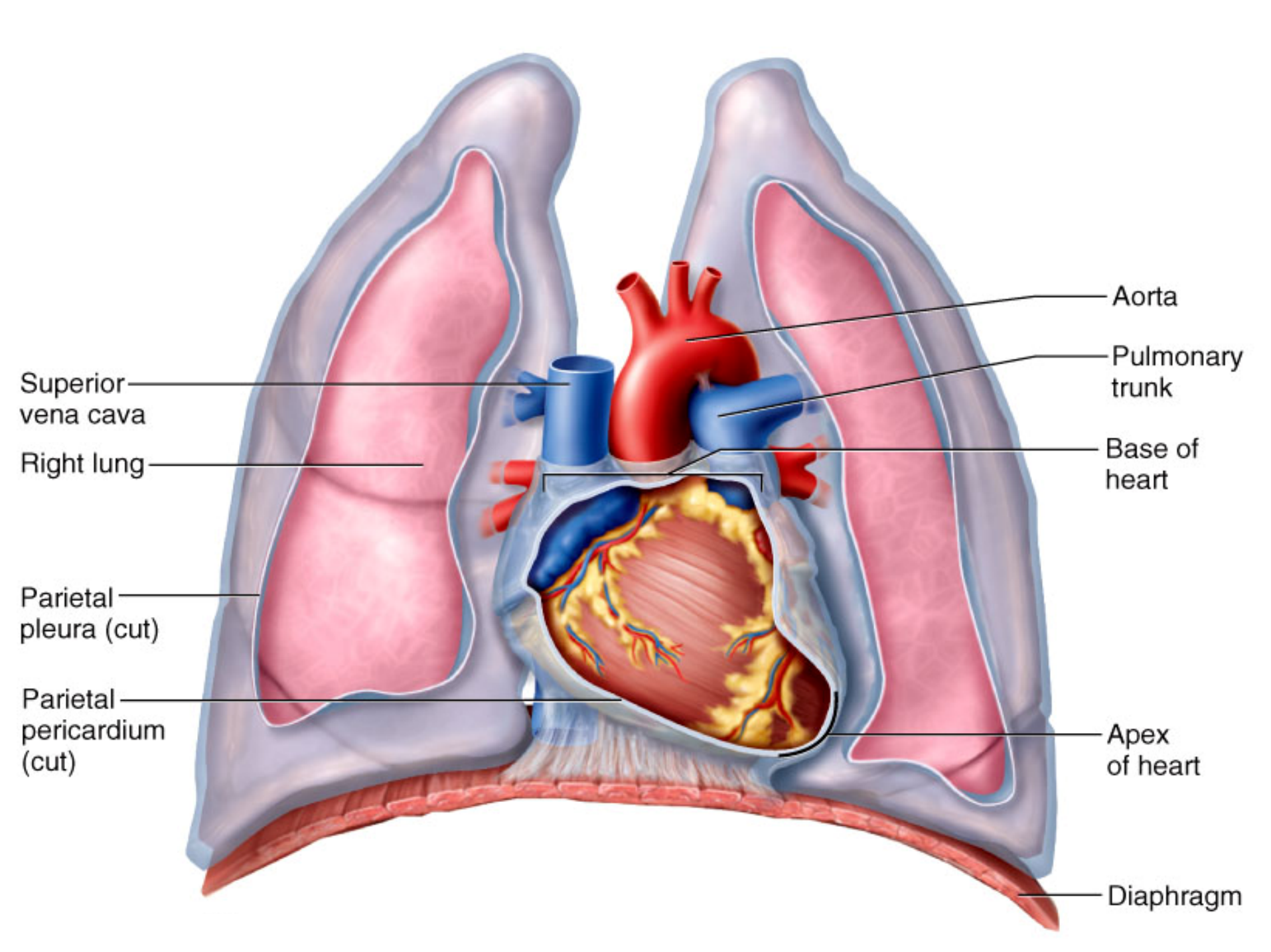
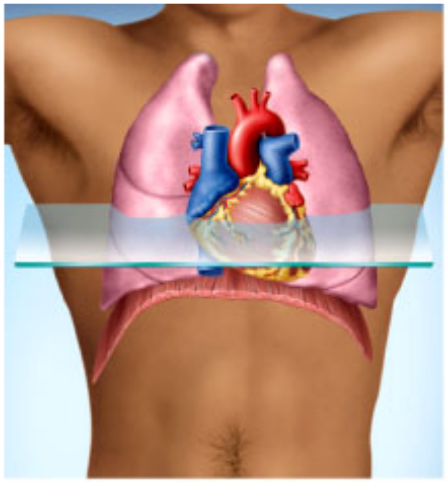
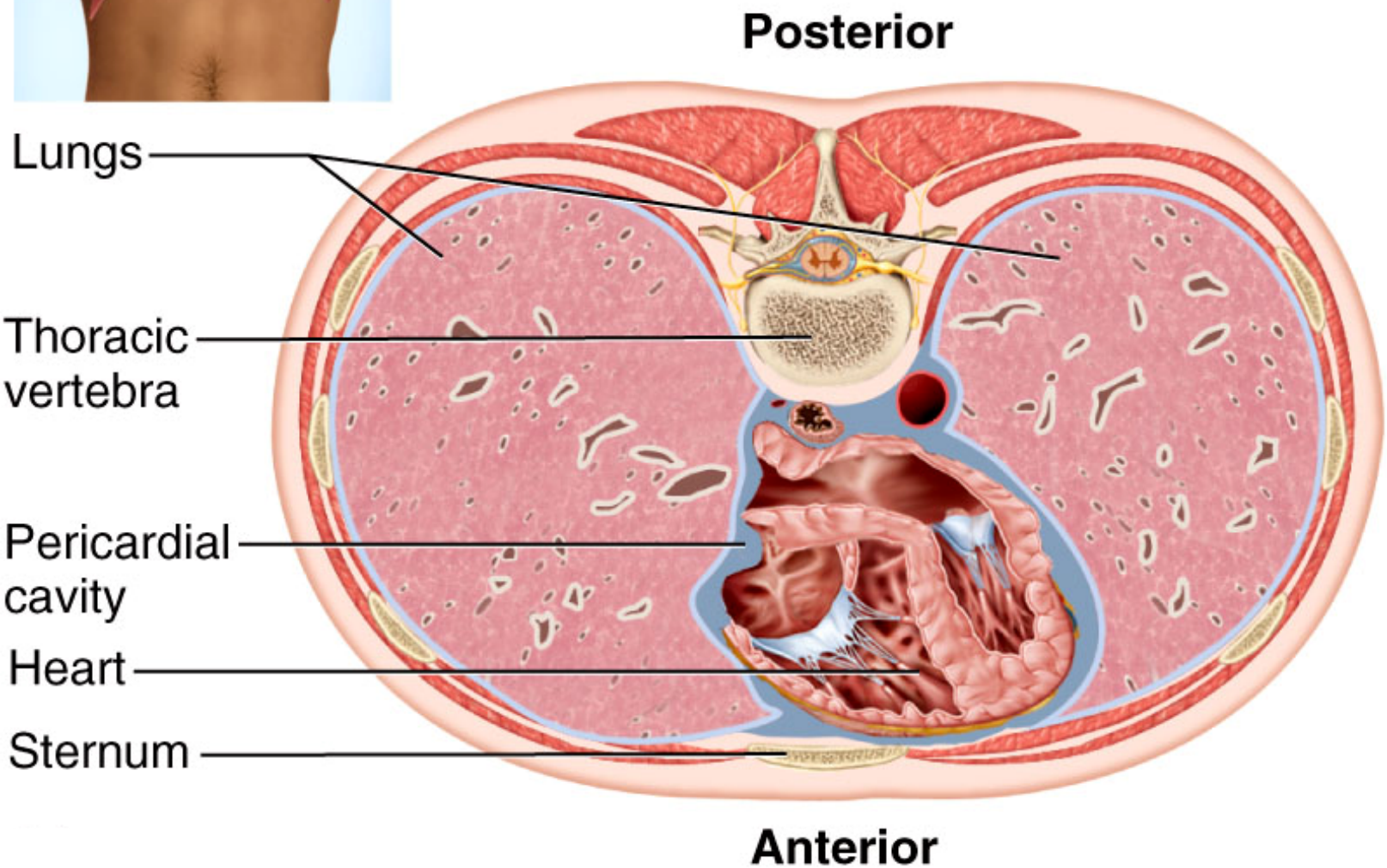
Anatomy of the Heart

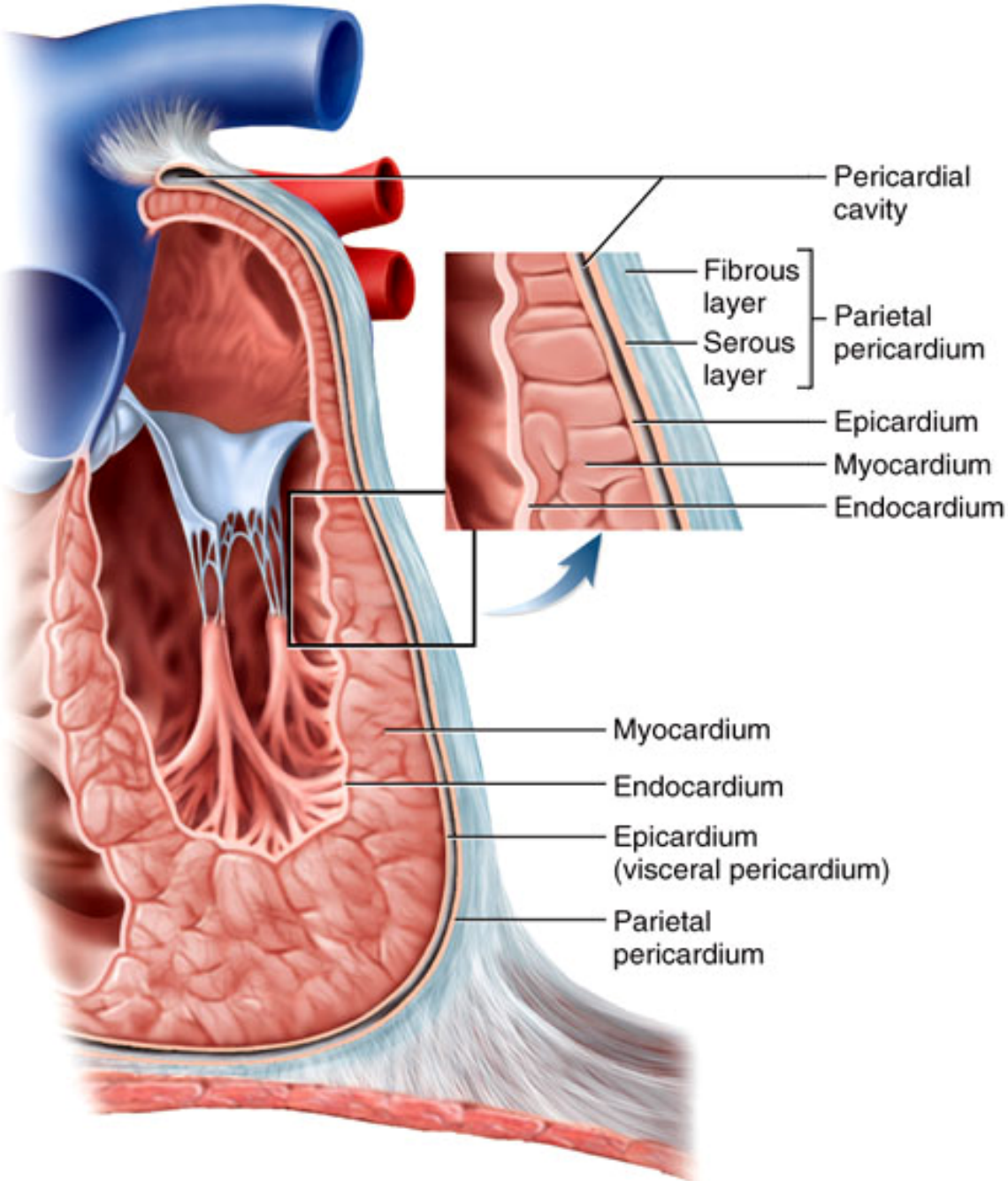

CO_2
O_2
Pulmonary circuit
O_2-poor, CO_2-rich blood
O_2-rich, CO_2-poor blood
Systemic circuit
CO_2
O_2

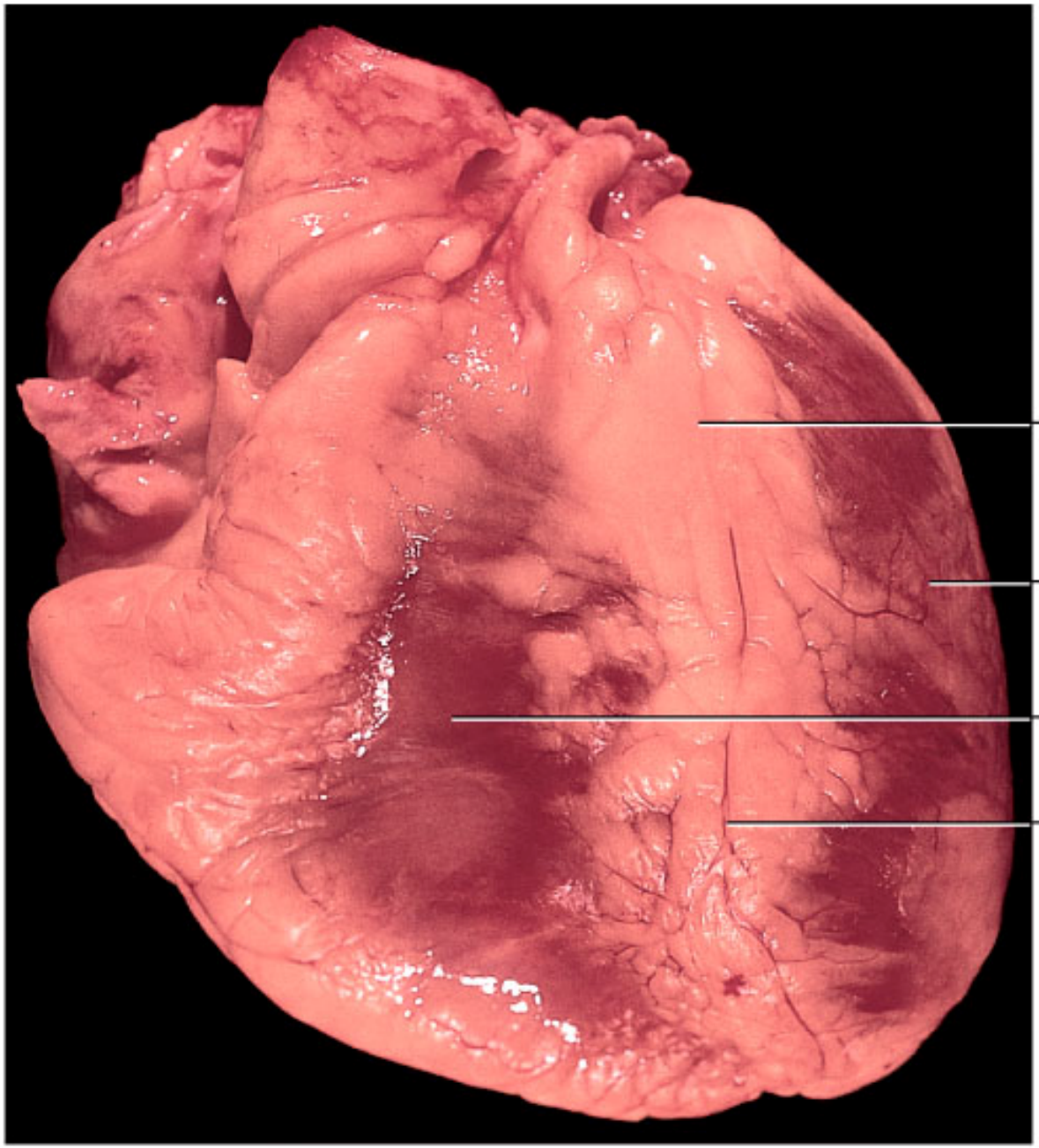

Sternum
3rd rib
Diaphragm


Aorta
Pulmonary trunk
Superior vena cava
Base of heart
Right lung
Parietal pleura (cut)
Parietal pericardium (cut)
Apex of heart
Diaphragm

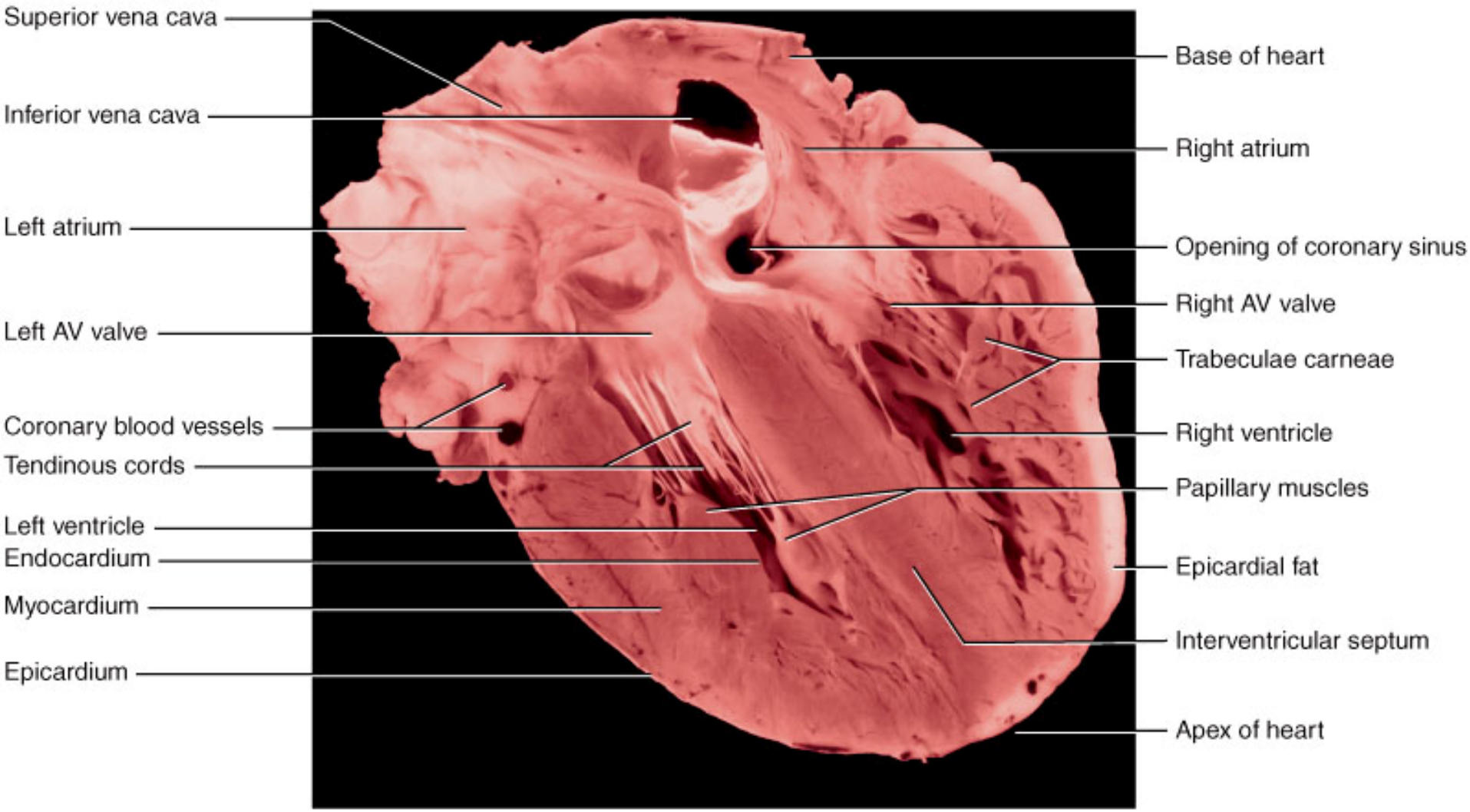



Posterior
Lungs
Thoracic vertebra
Pericardial cavity
Heart
Sternum
Anterior

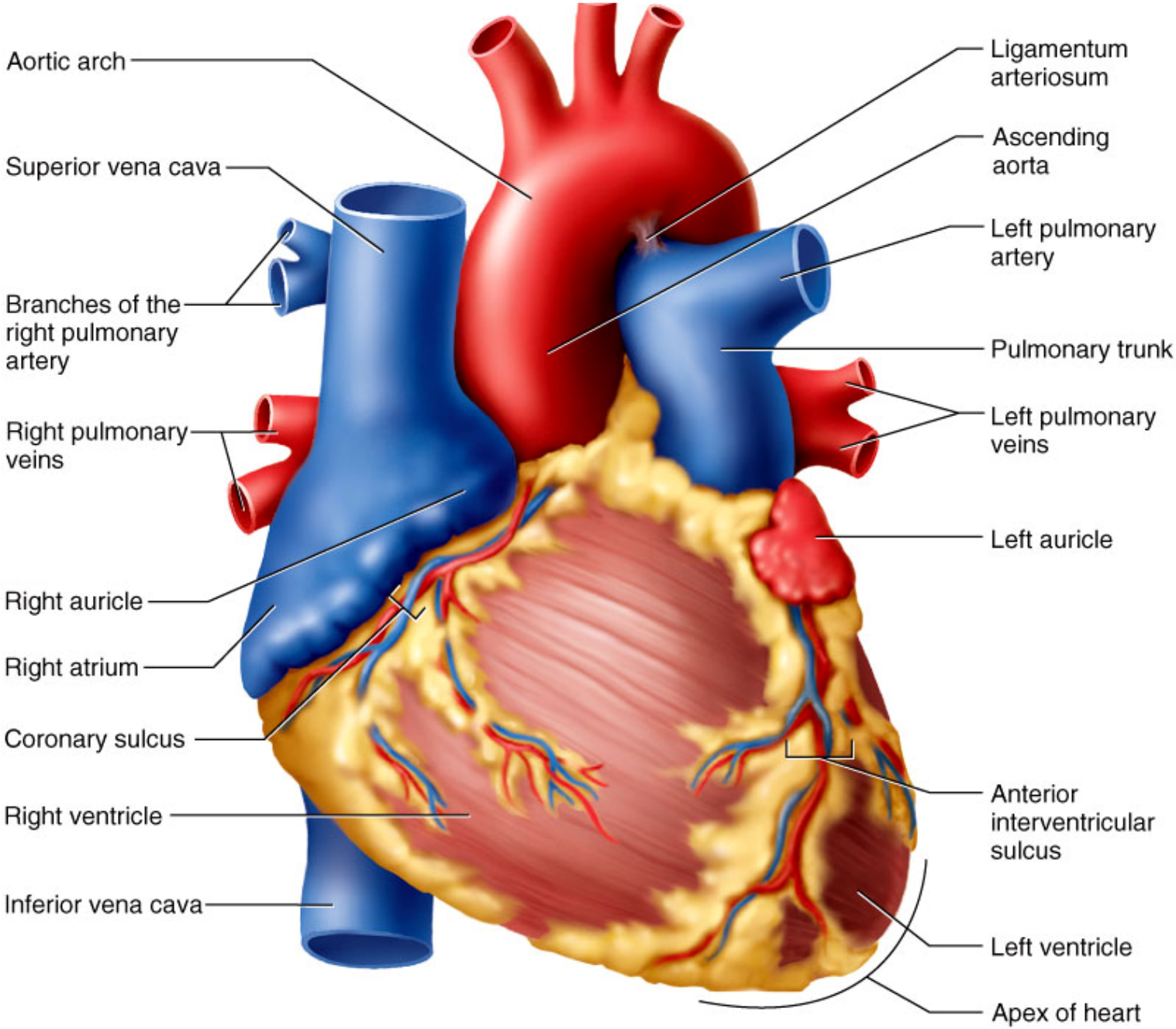

Pericardial cavity
Fibrous layer
Serous layer
Parietal pericardium
Epicardium
Myocardium
Endocardium
Myocardium
Endocardium
Epicardium (visceral pericardium)
Parietal pericardium



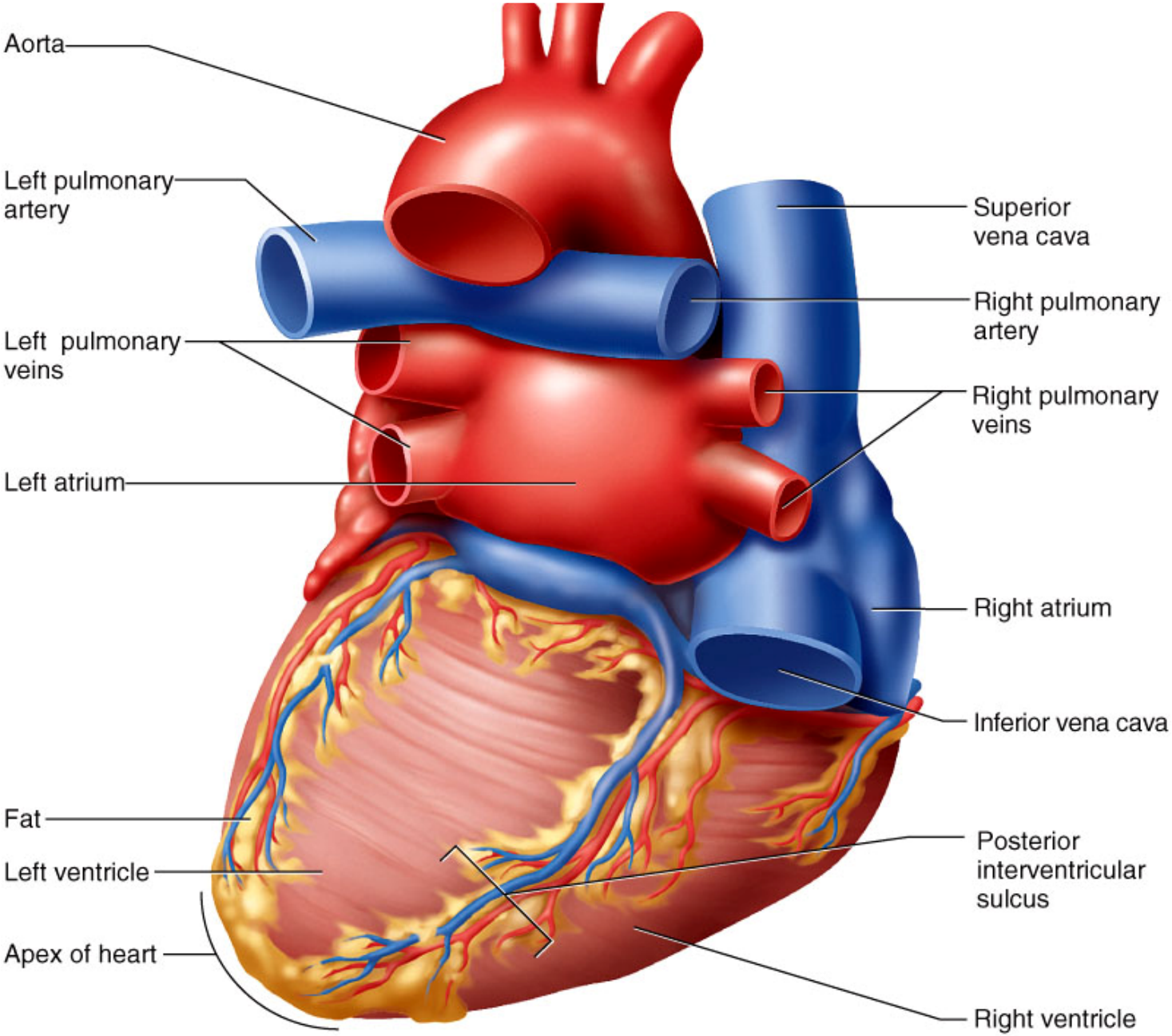
Anterior view, external anatomy



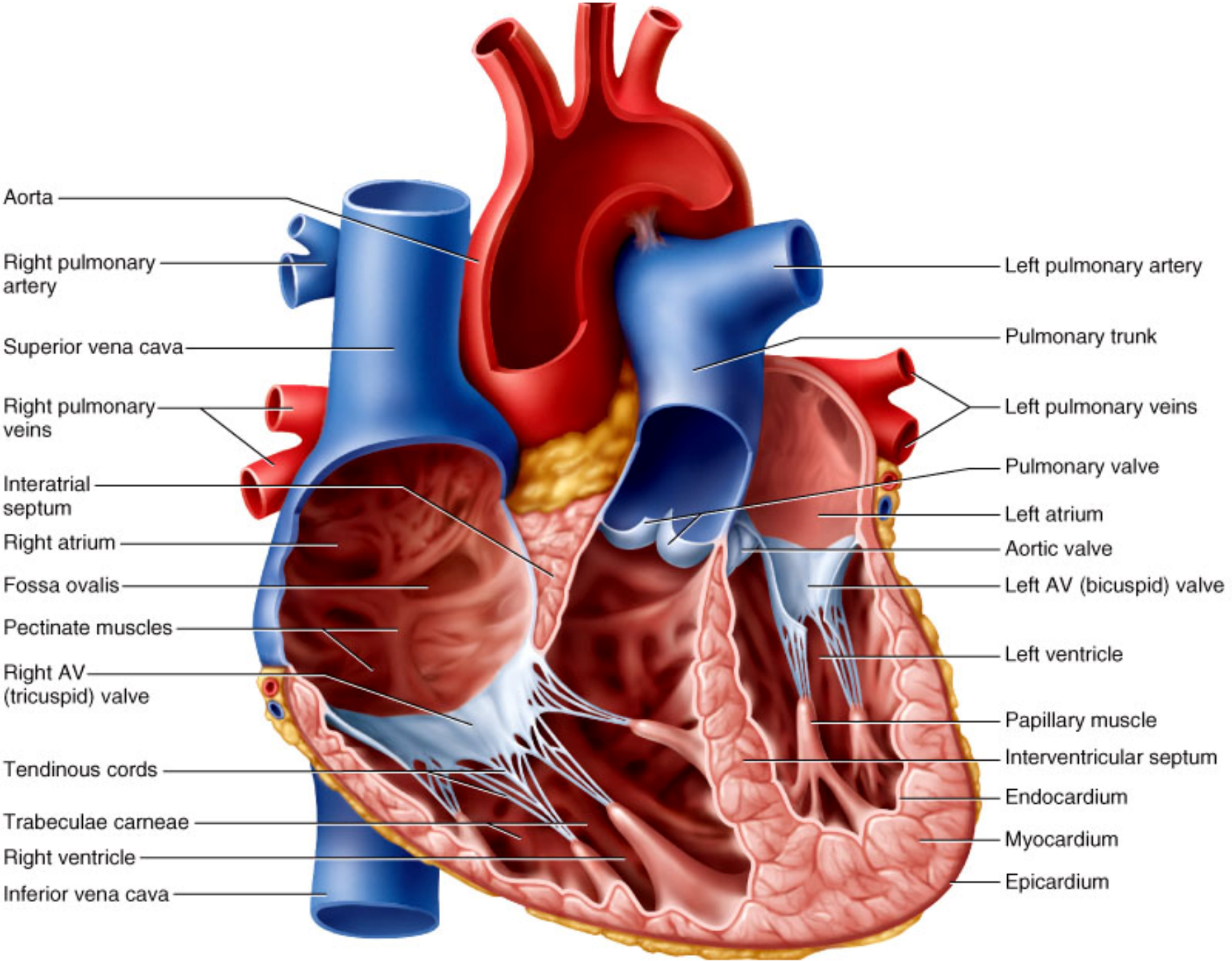
Posterior view, internal anatomy

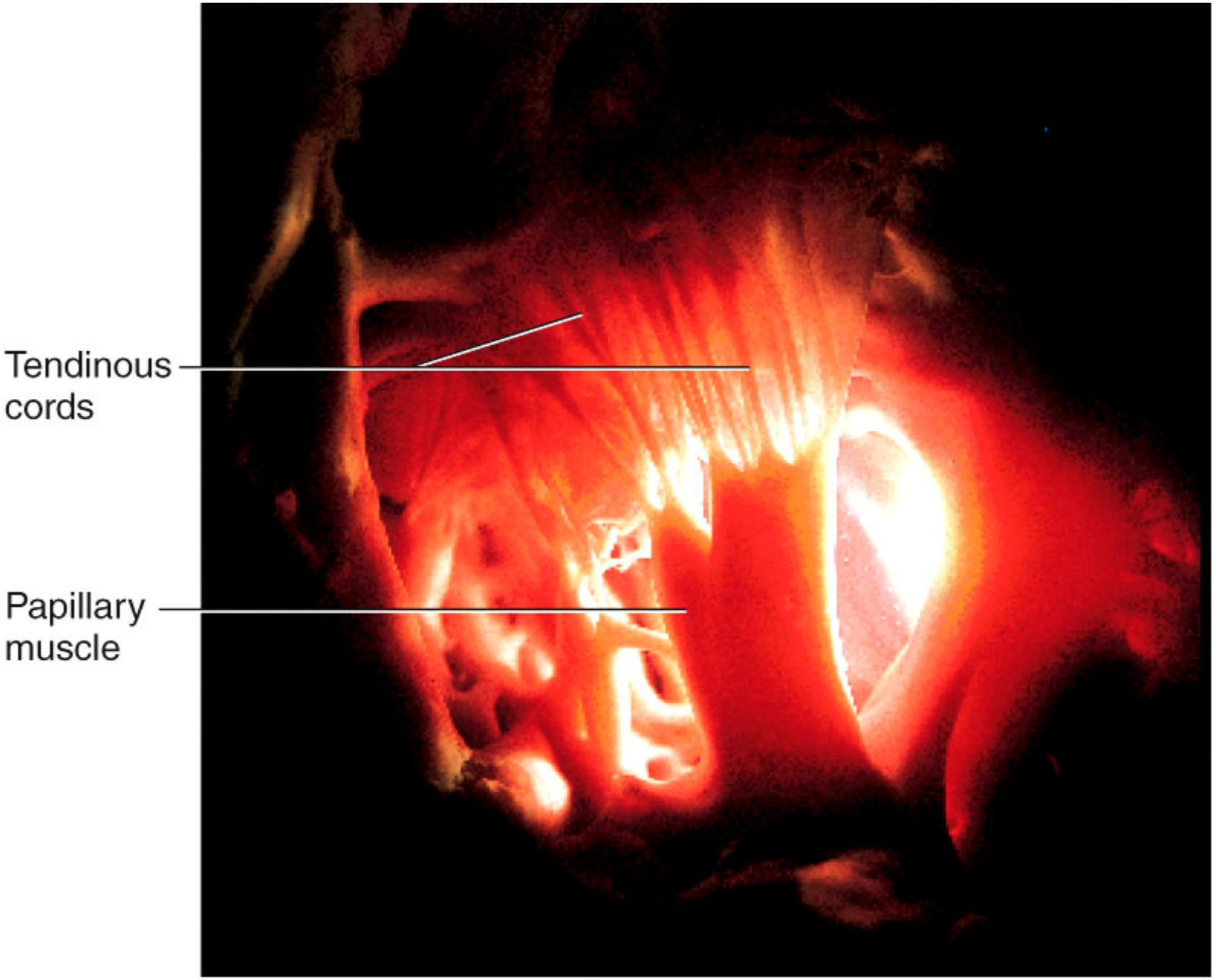


(a) Anterior View

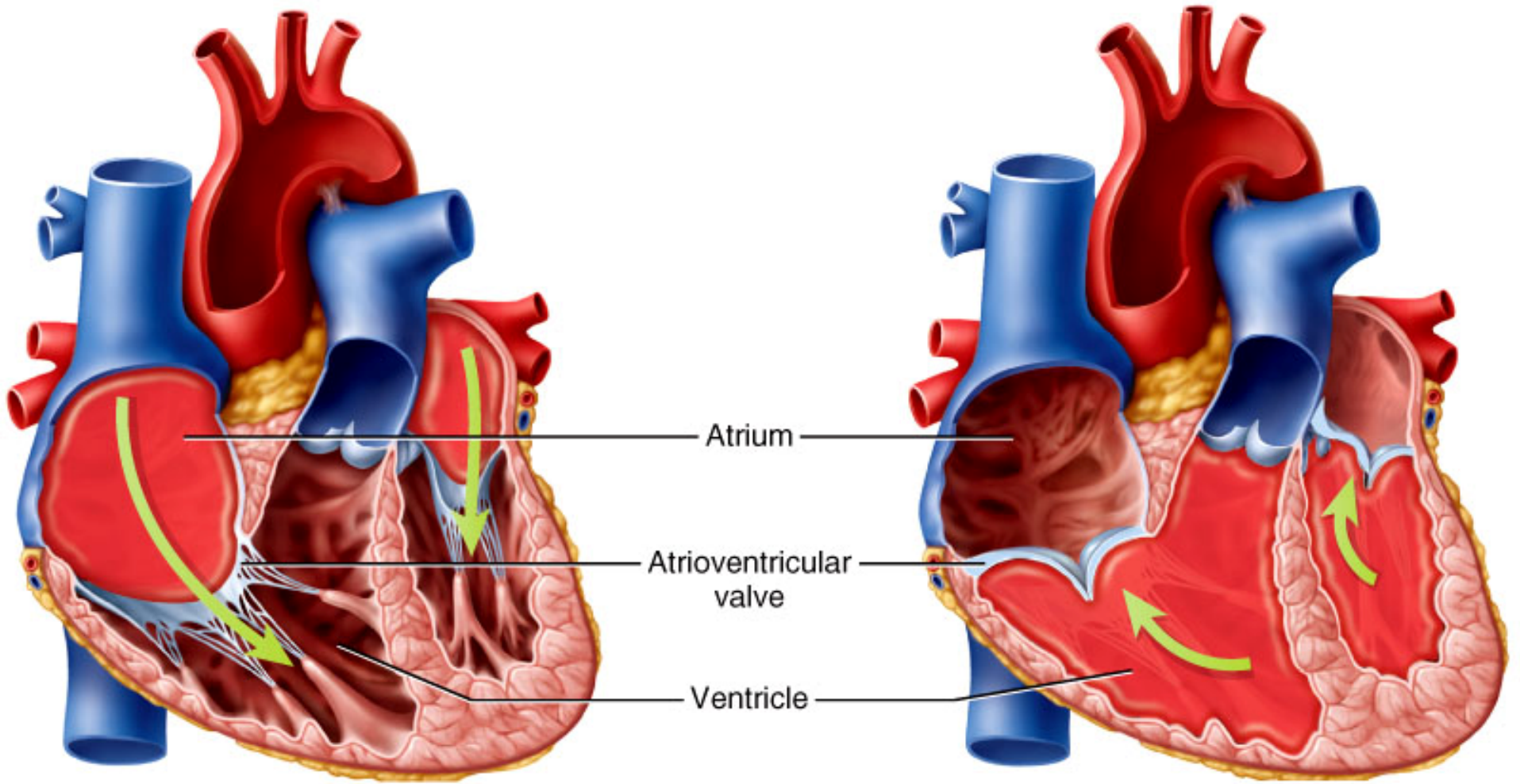


(b) Posterior view


Aorta
Right pulmonary artery
Superior vena cava
Right pulmonary veins
Interatrial septum
Right atrium
Fossa ovalis
Pectinate muscles
Right AV (tricuspid) valve
Tendinous cords
Trabeculae carneae
Right ventricle
Inferior vena cava
Left pulmonary artery
Pulmonary trunk
Left pulmonary veins
Pulmonary valve
Left atrium
Aortic valve
Left AV (bicuspid) valve
Left ventricle
Papillary muscle
Interventricular septum
Endocardium
Myocardium
Epicardium

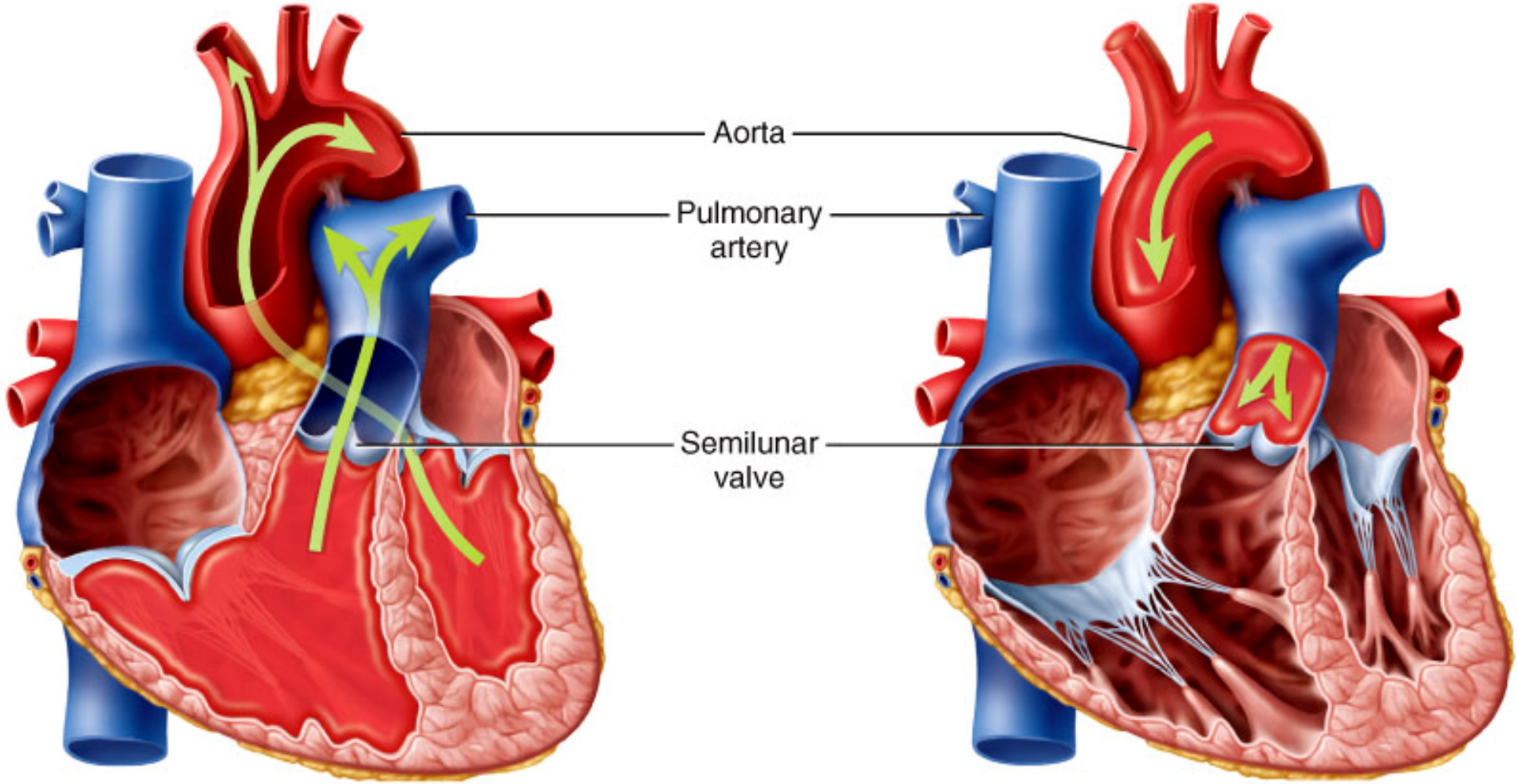


(b)



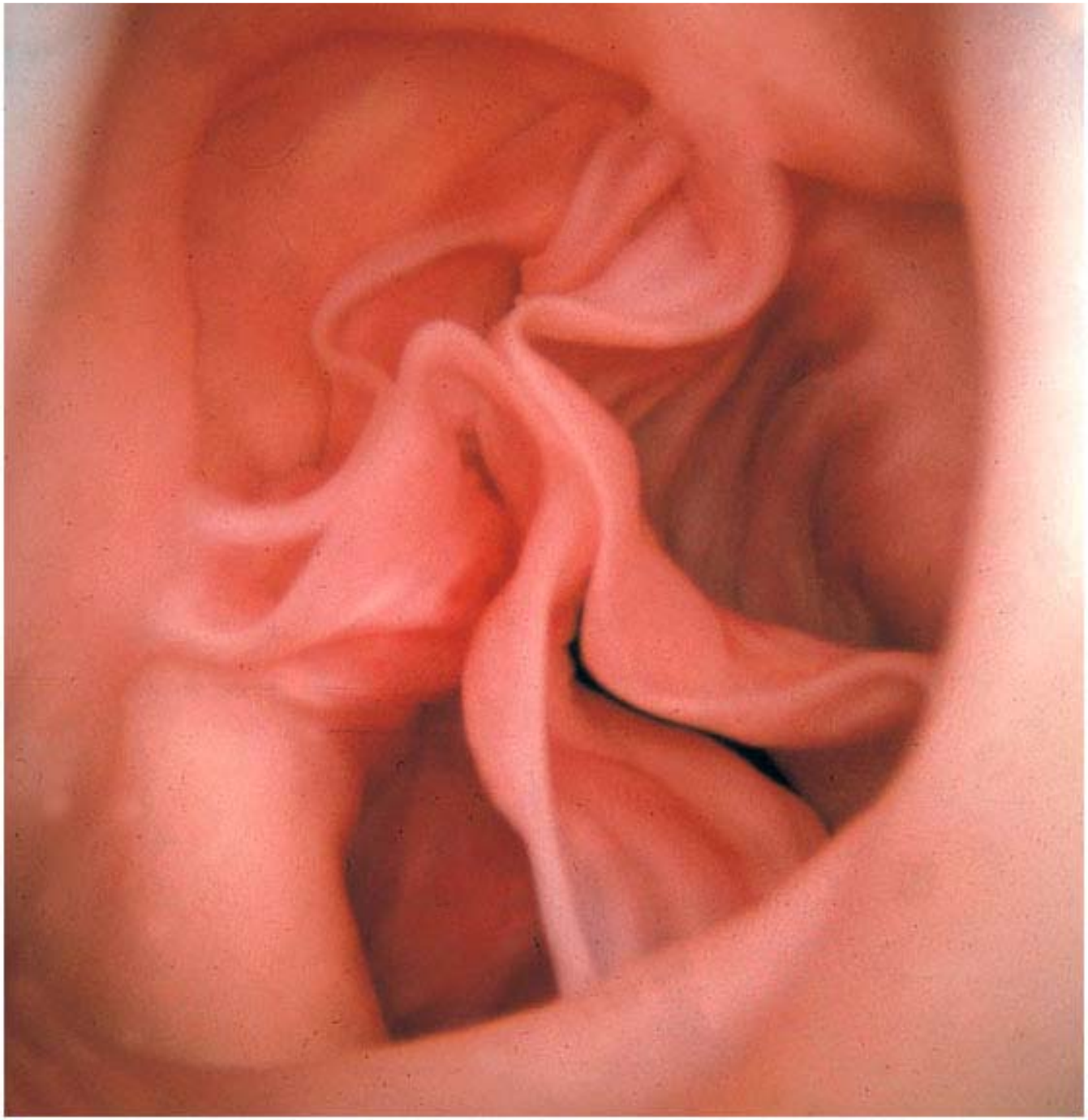
(a) Atrioventricular valves open

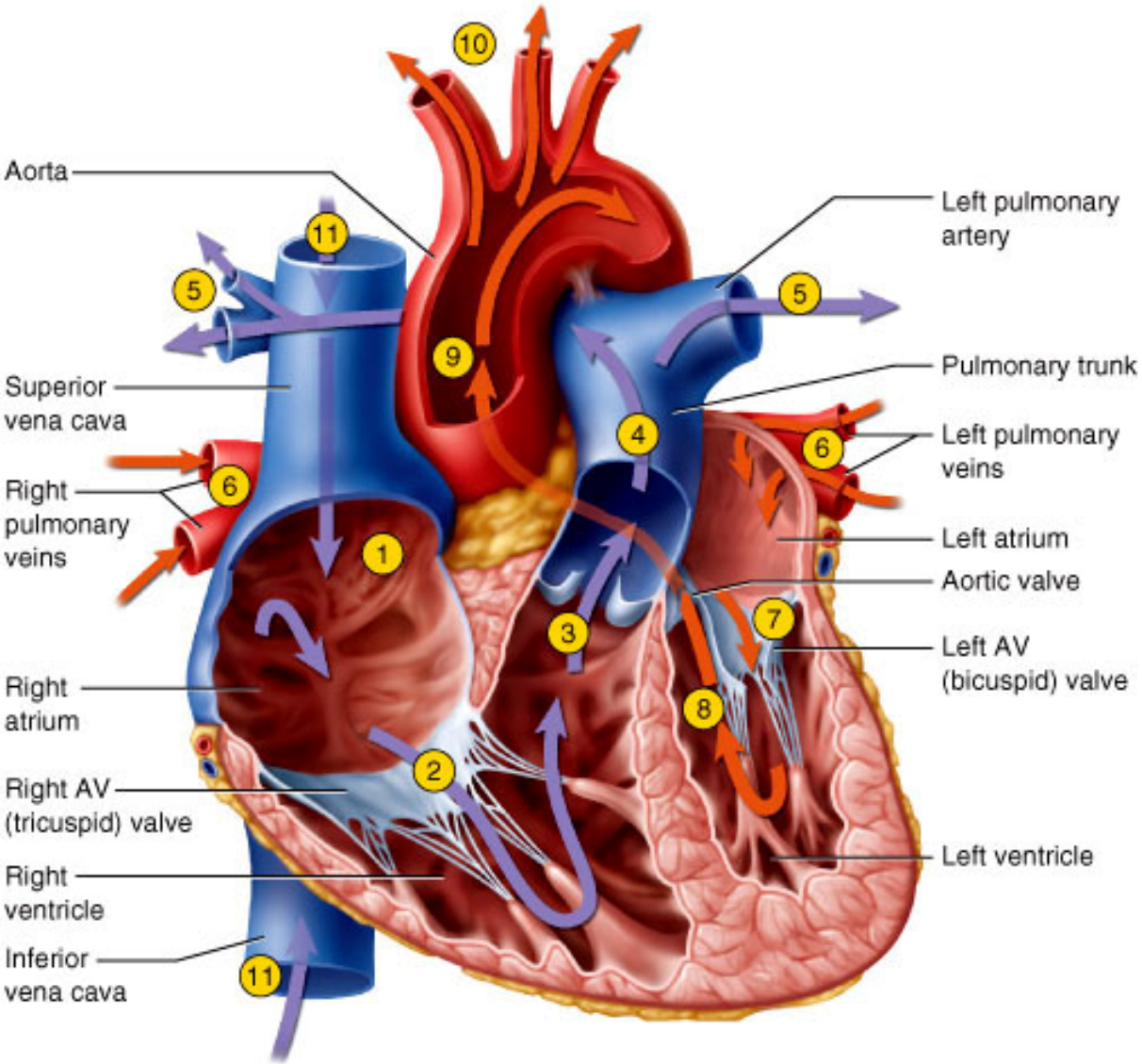
Atrioventricular valves closed



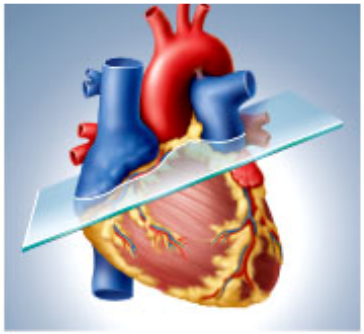
(b) Semilunar valves open

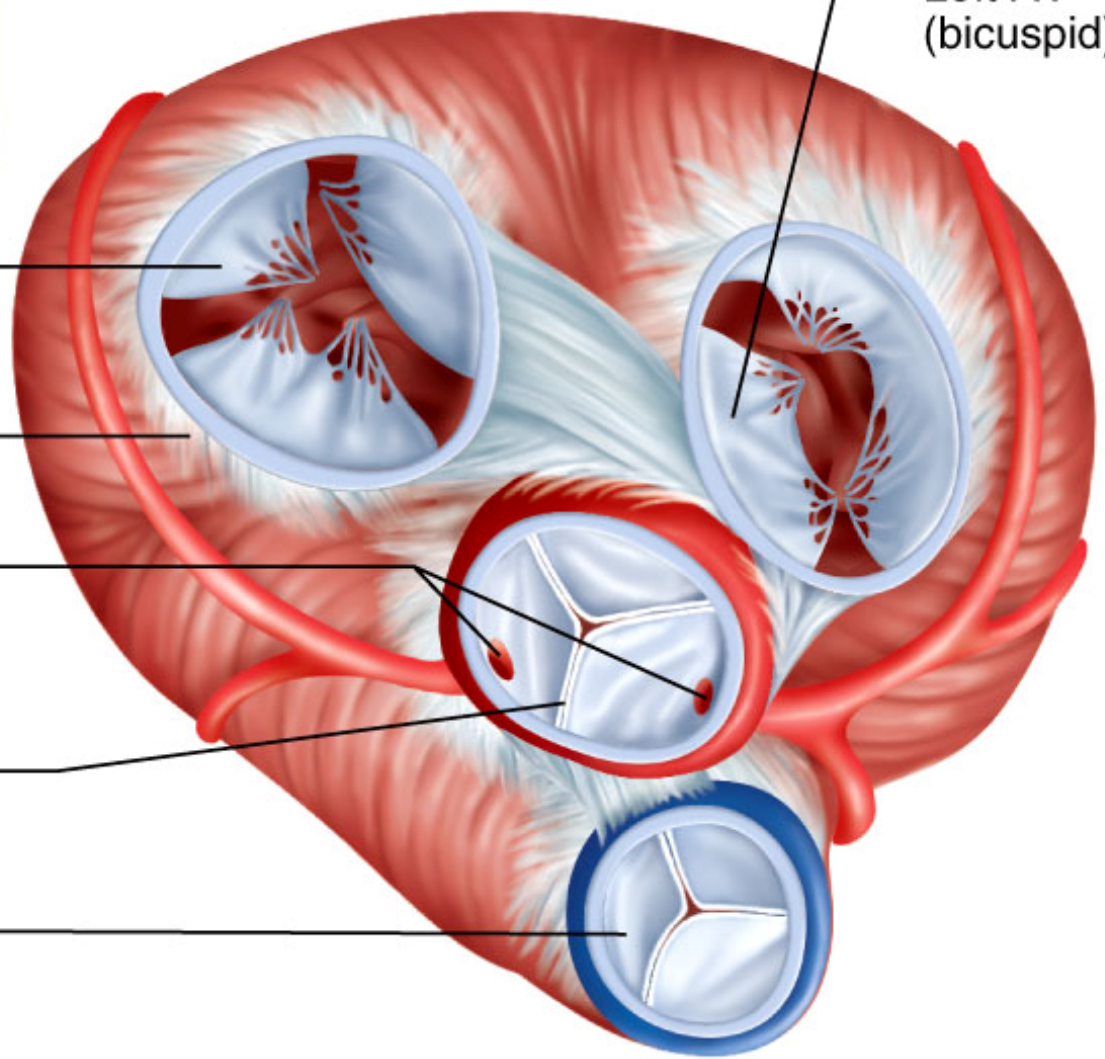
Semilunar valves closed

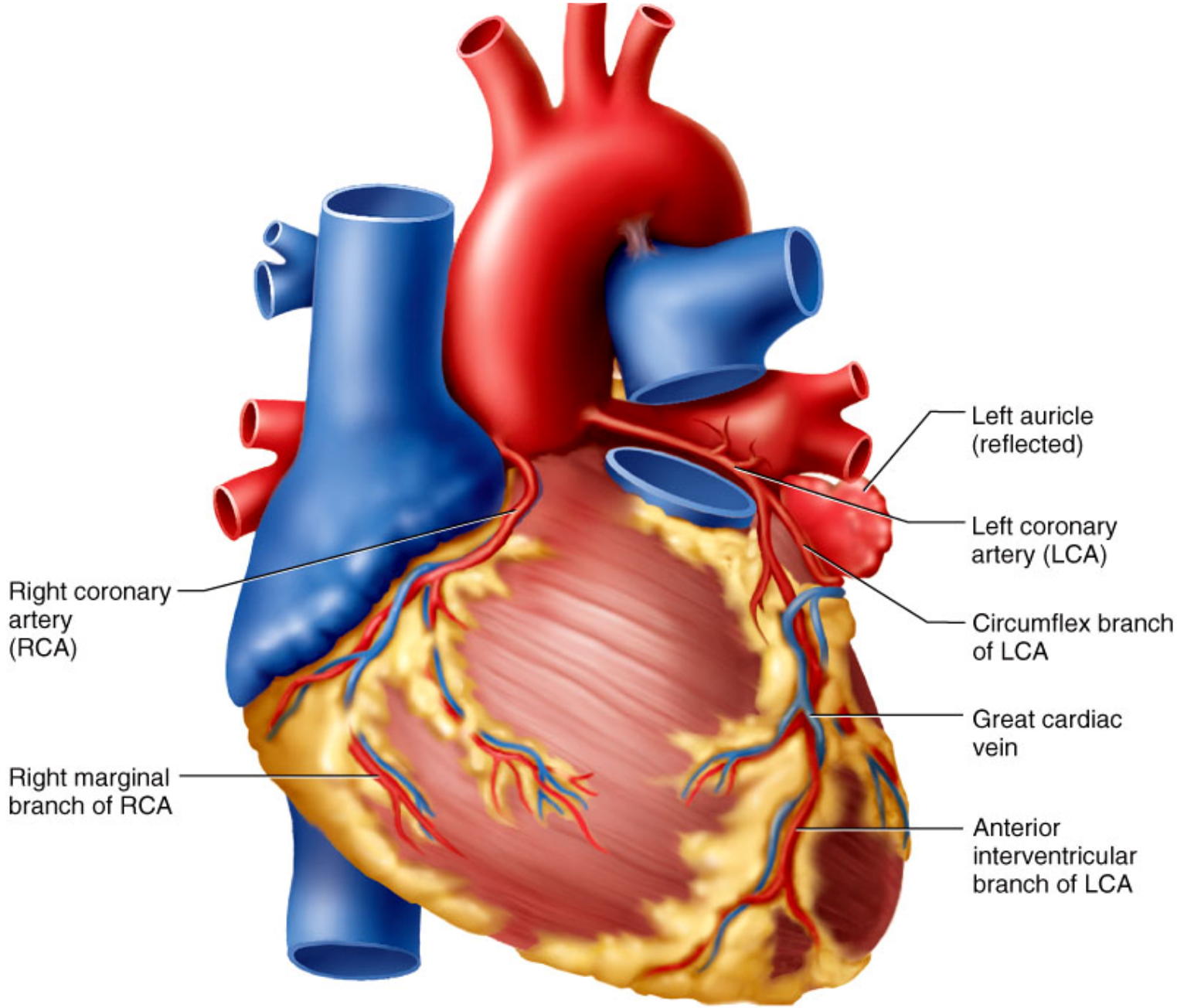




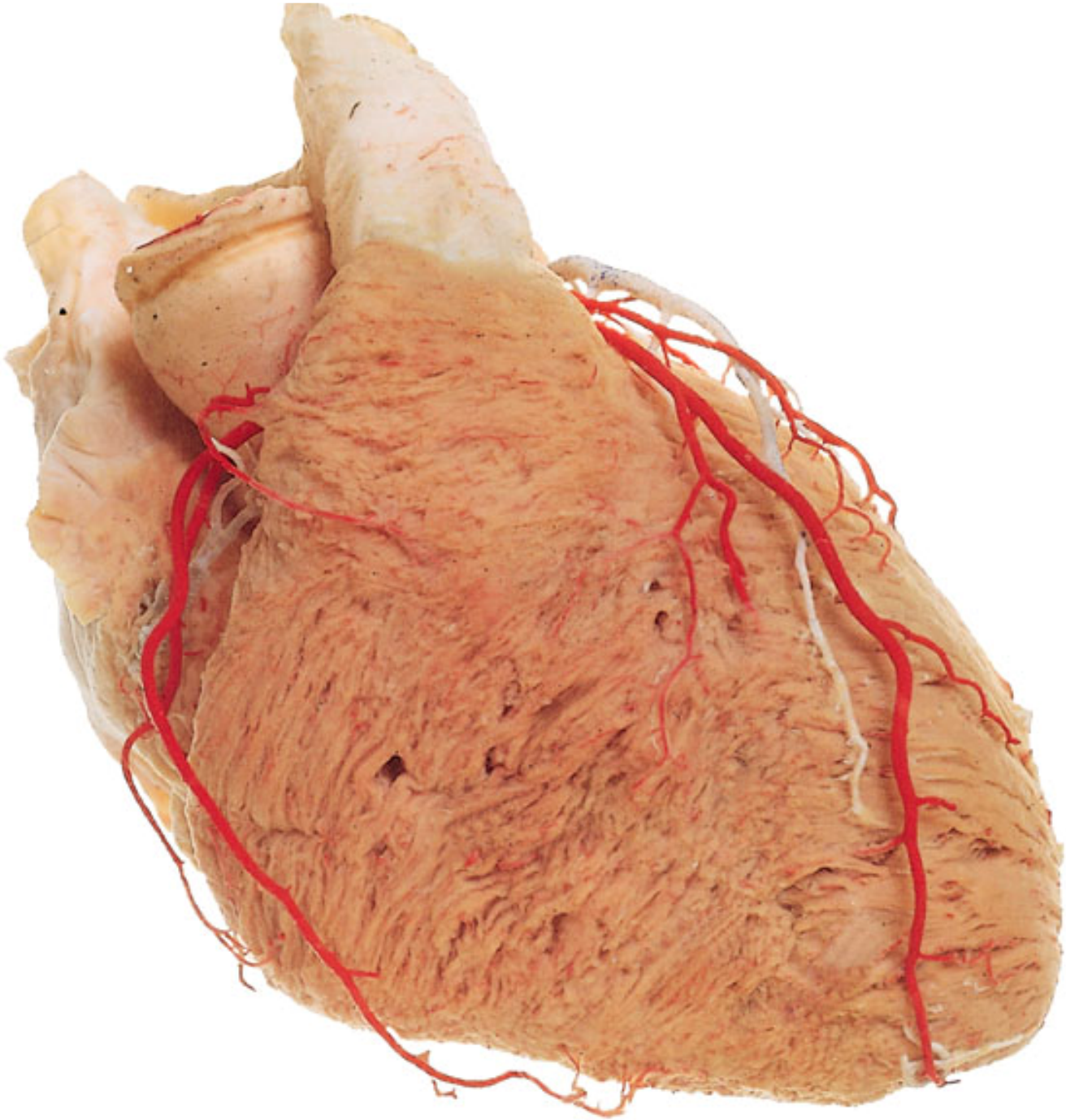
1. Blood enters right atrium from superior and inferior venae cavae.
2. Blood in right atrium flows through right AV valve into right ventricle.
3. Contraction of right ventricle forces pulmonary valve open.
4. Blood flows through pulmonary valve into pulmonary trunk.
5. Blood is distributed by right and left pulmonary arteries to the lungs, where it unloads CO_2 and loads O_2.
6. Blood returns from lungs via pulmonary arteries to left atrium.
7. Blood in left atrium flows through left AV valve into left ventricle.
8. Contraction of left ventricle (simultaneous with step 3) forces aortic valve open.
9. Blood flows through aortic valve into ascending aorta.
10. Blood in aorta is distributed to every organ in the body, where it unloads O_2 and loads CO_2.
11. Blood returns to heart via venae cavae.

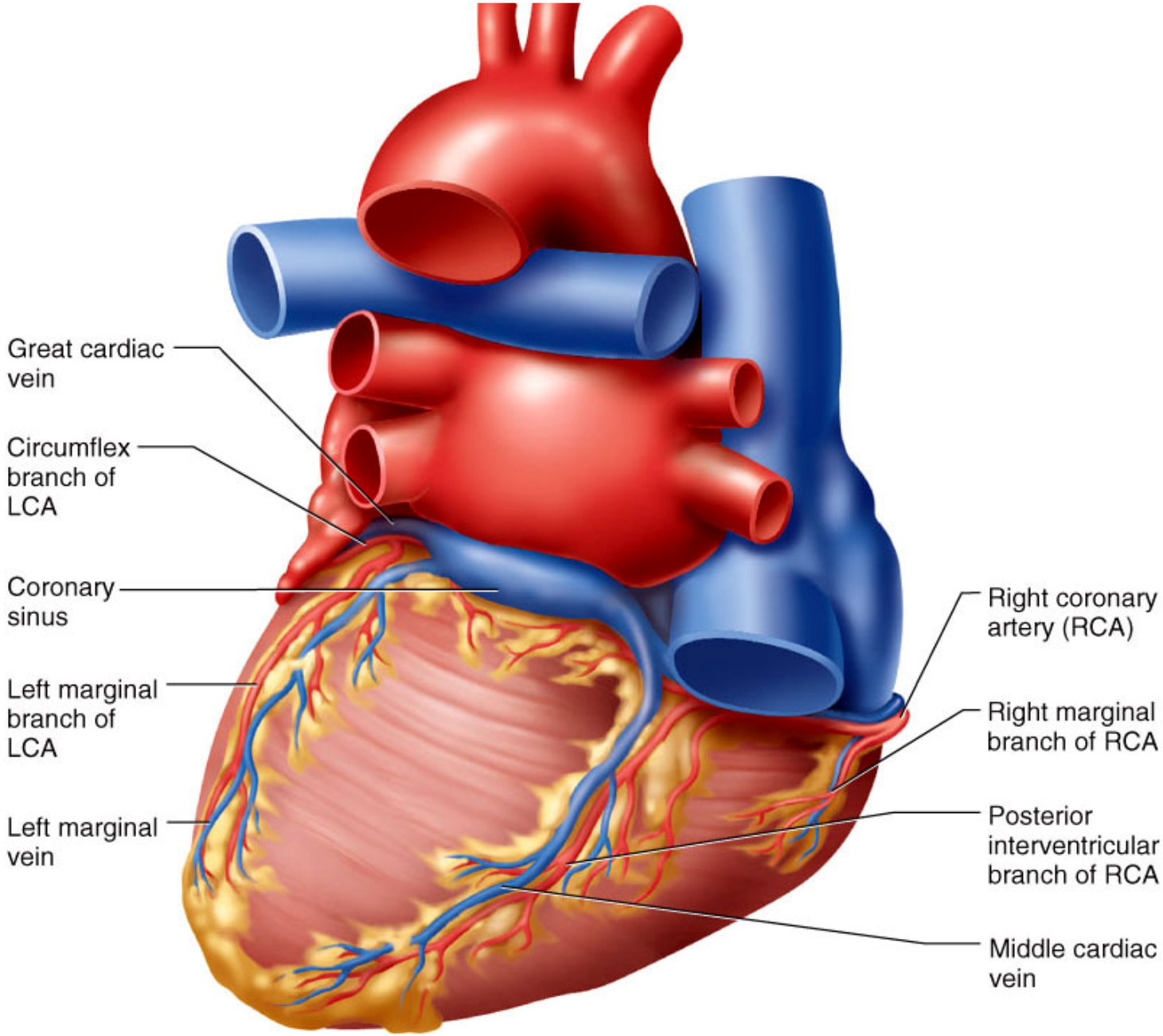



Left AV
(bicuspid) valve
Right AV
(tricuspid) valve
Fibrous
skeleton
Openings to
coronary arteries
Aortic
valve
Pulmonary
valve

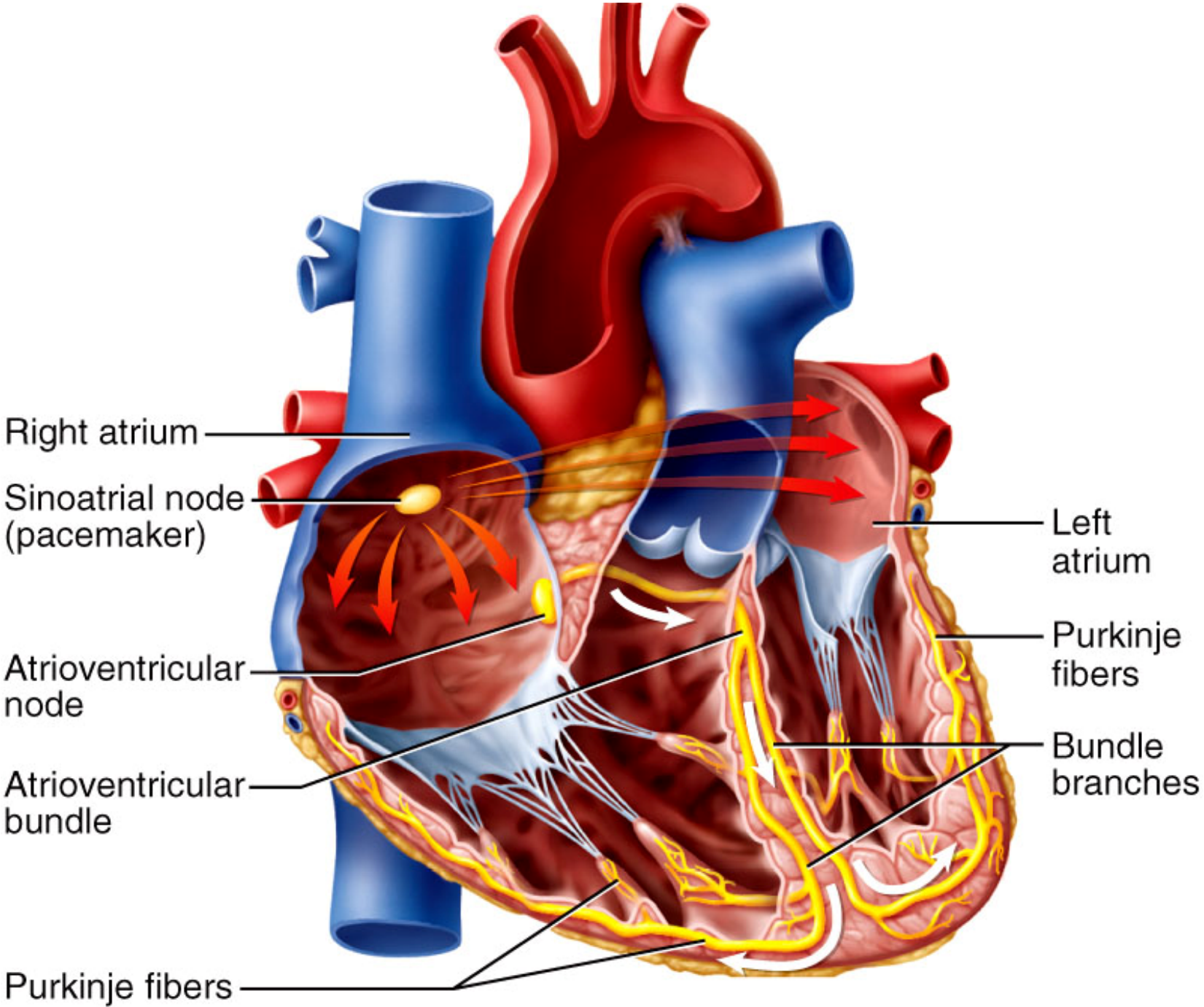


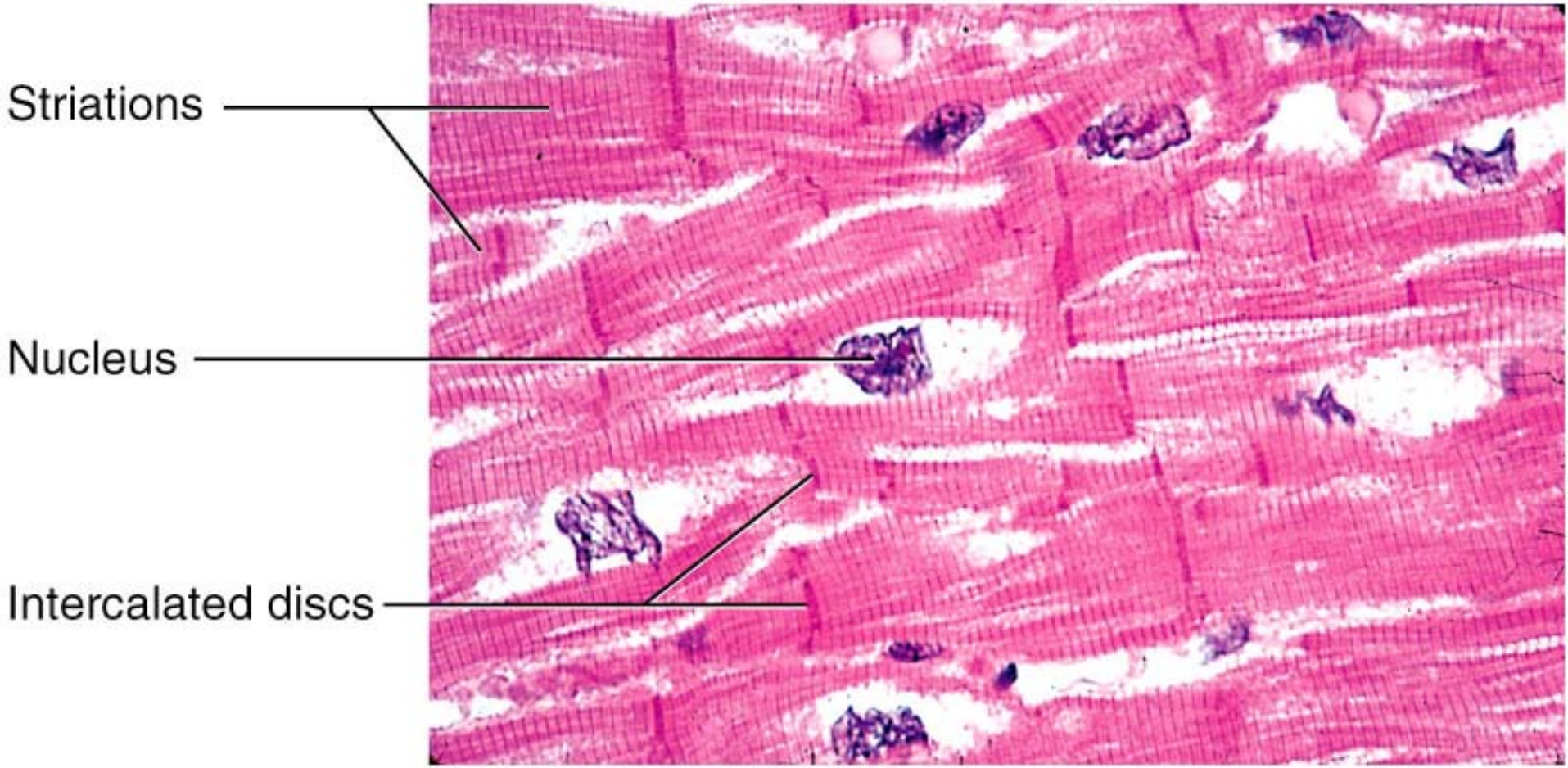
(a) Anterior view





(b) Posterior view


Right atrium
Sinoatrial node (pacemaker)
Atrioventricular node
Atrioventricular bundle
Purkinje fibers
Left atrium
Purkinje fibers
Bundle branches


Striations
Nucleus
Intercalated discs