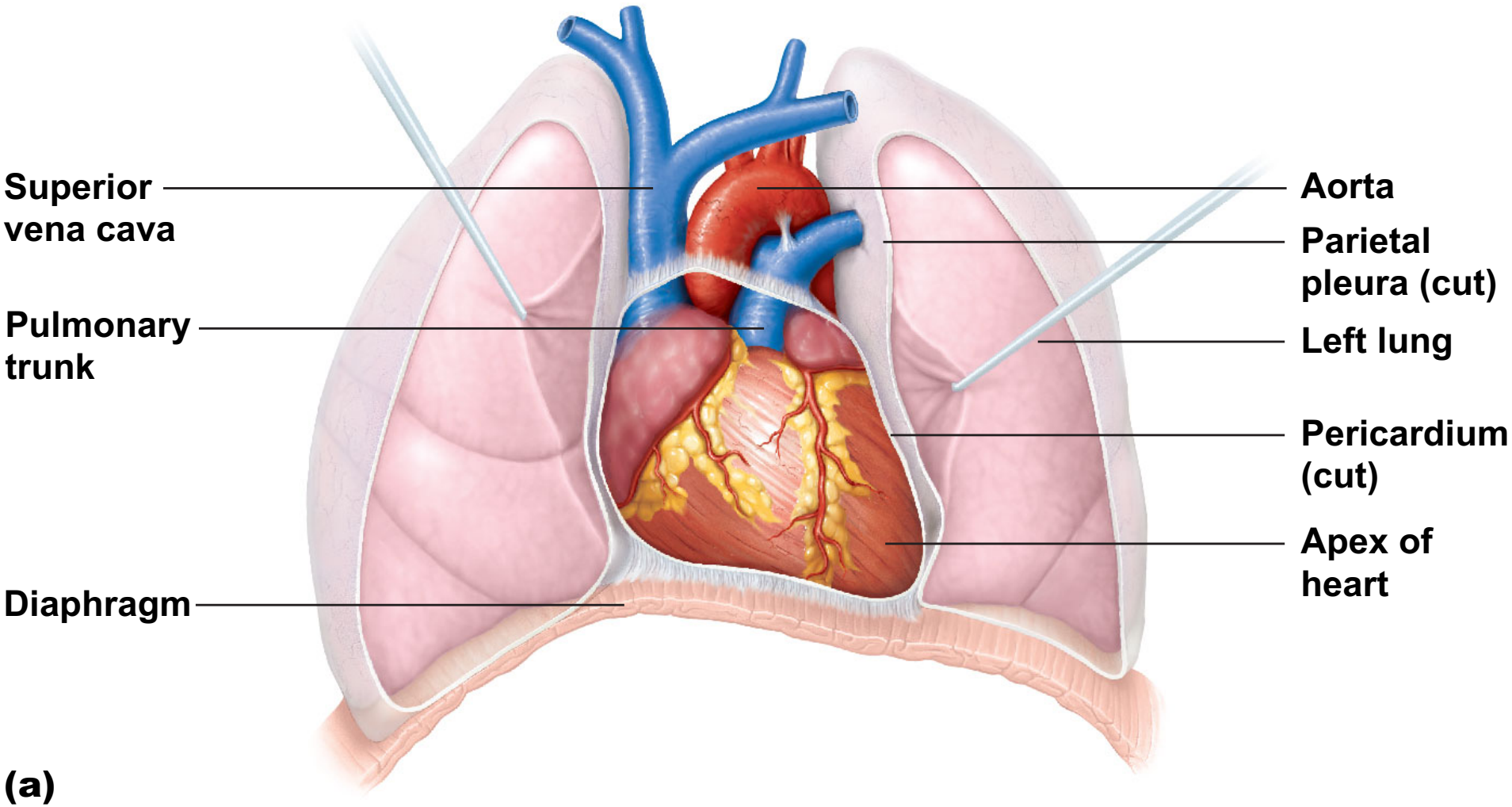
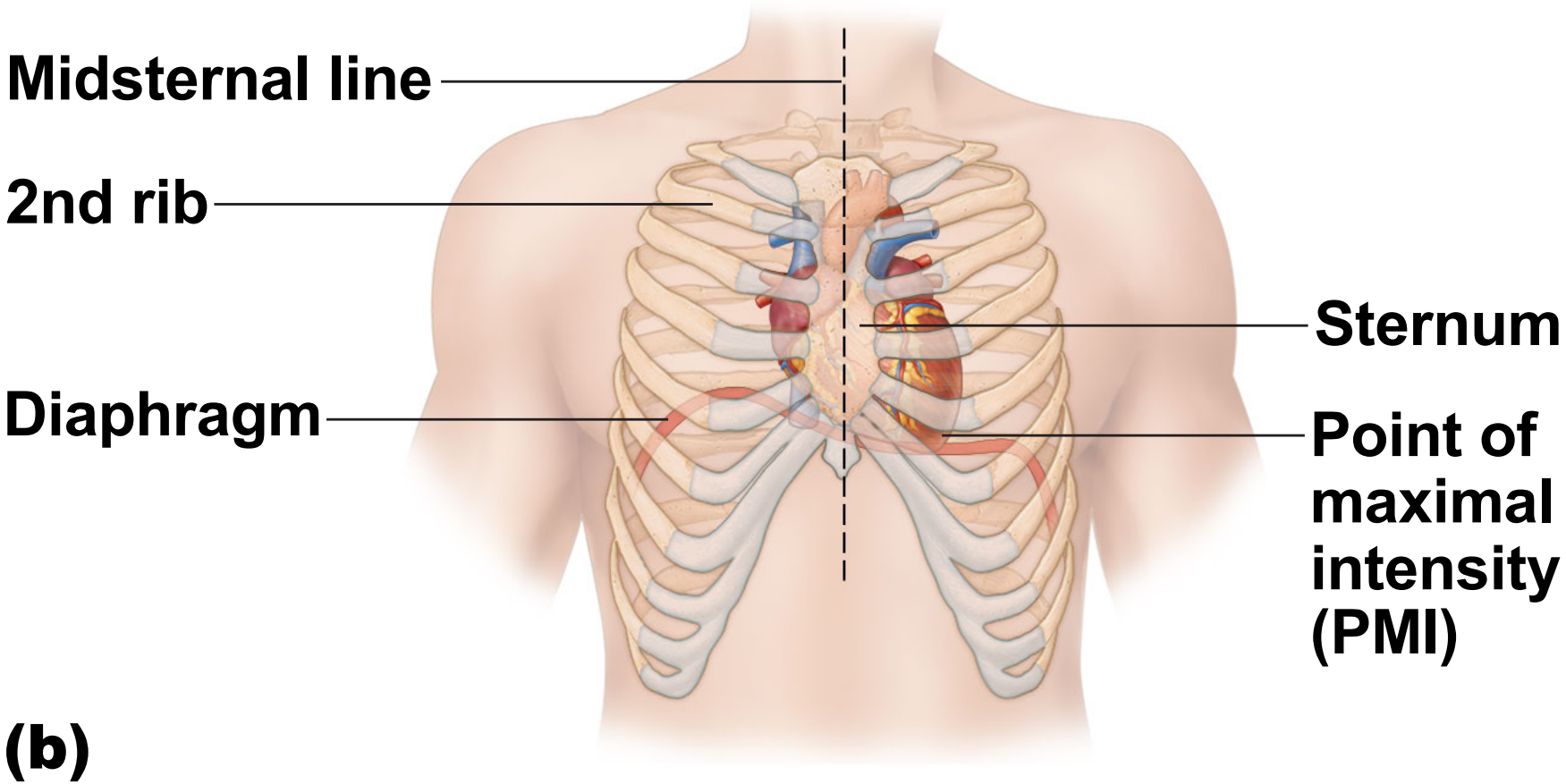
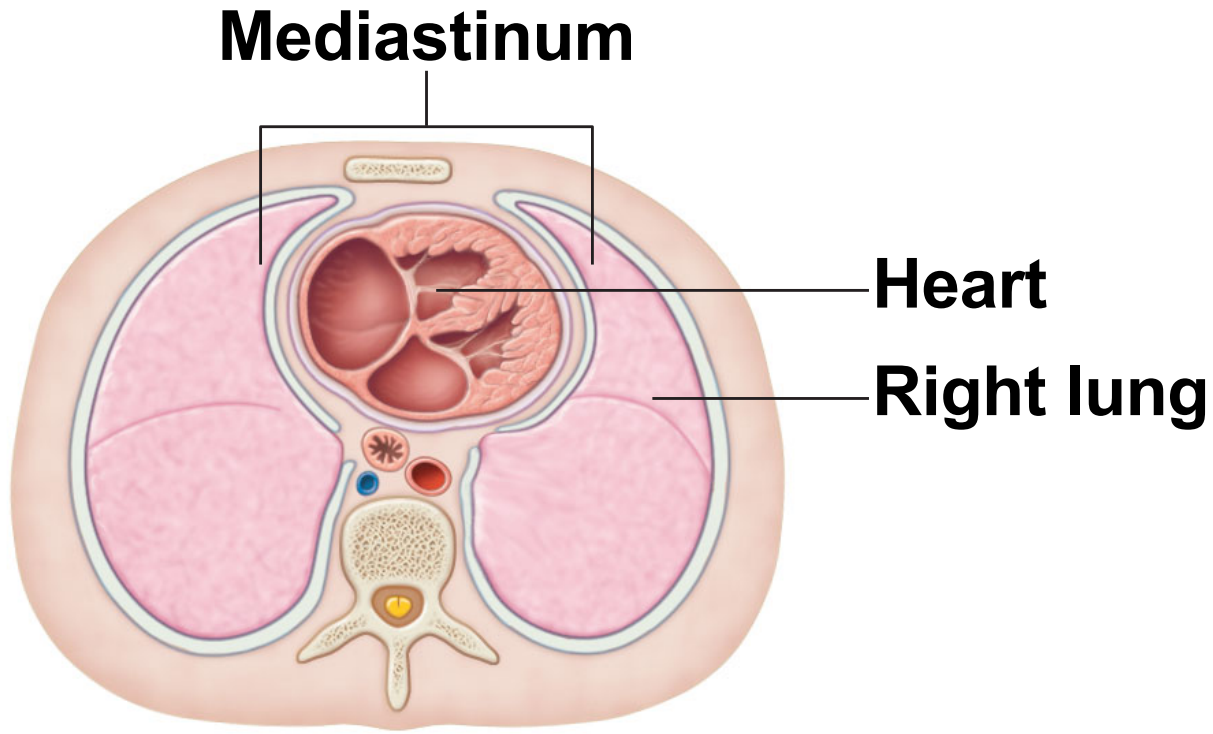
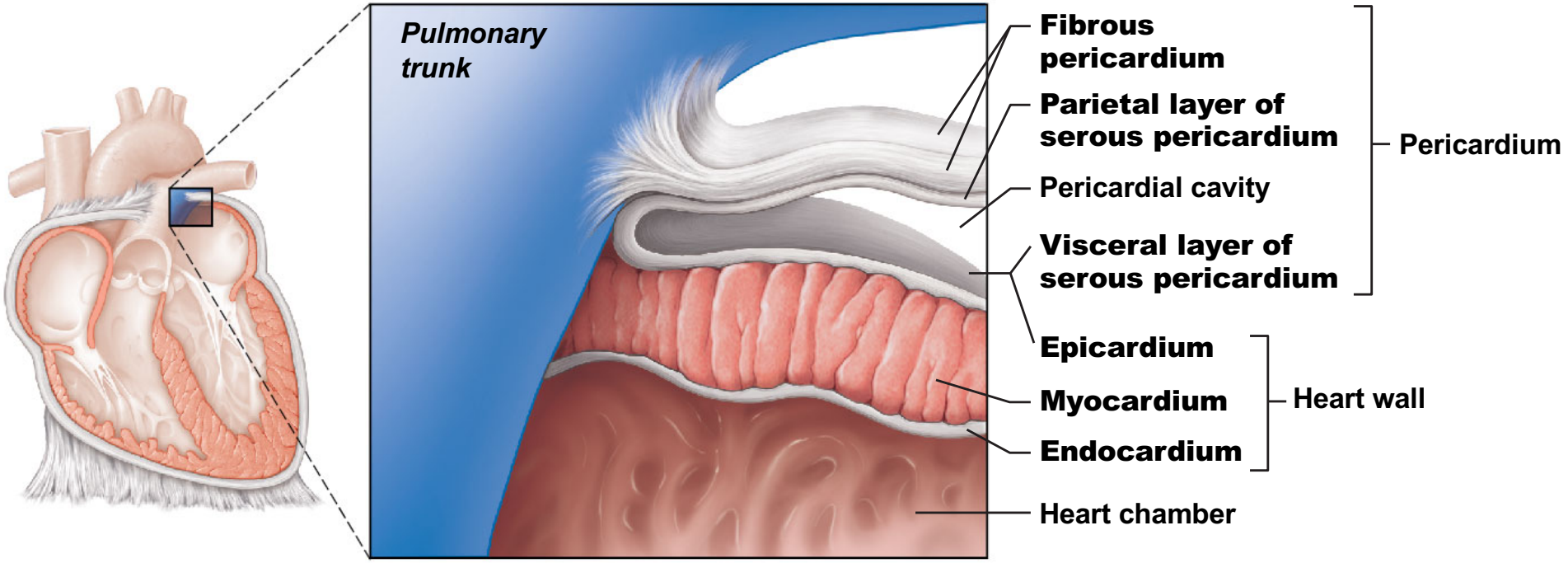
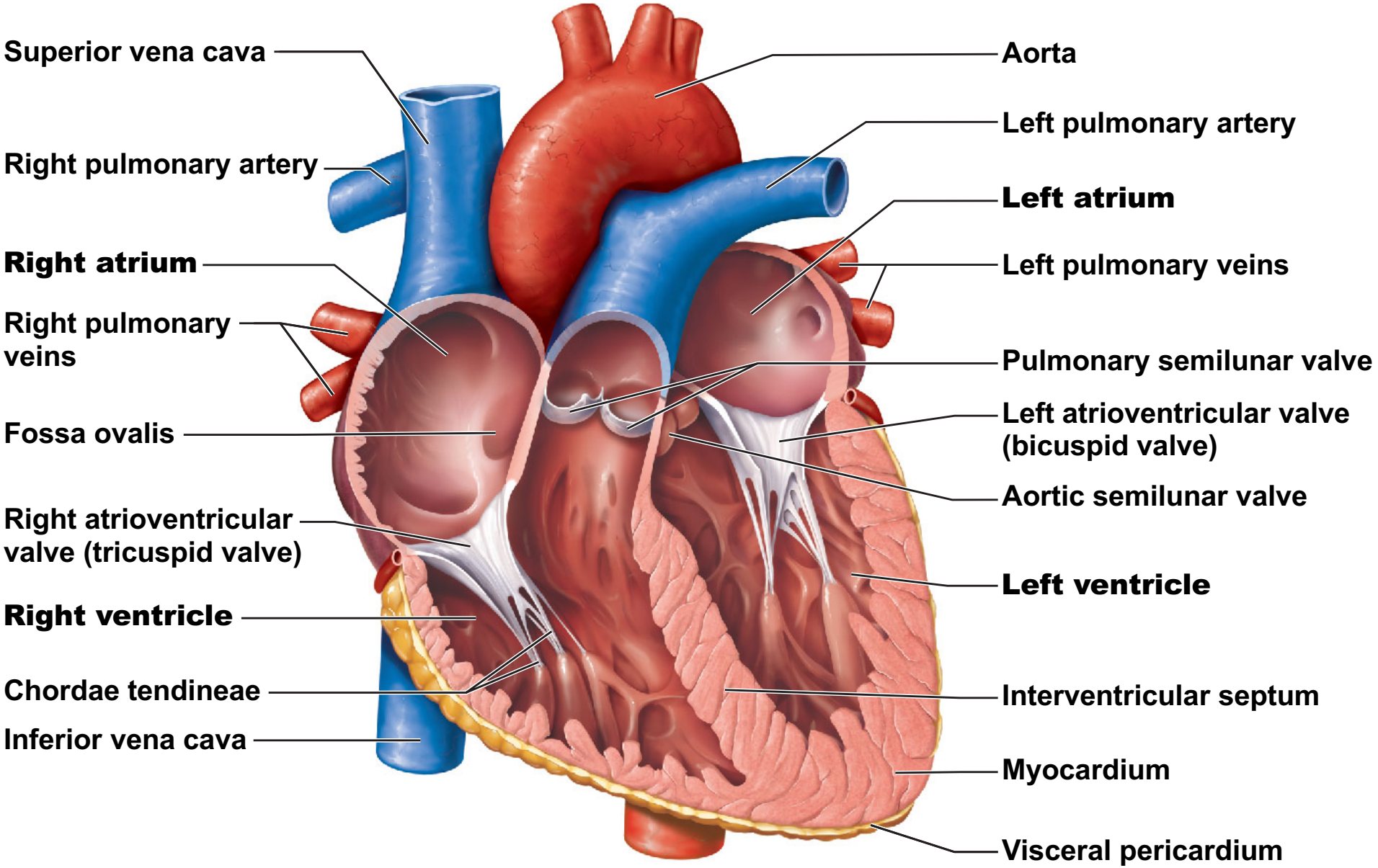




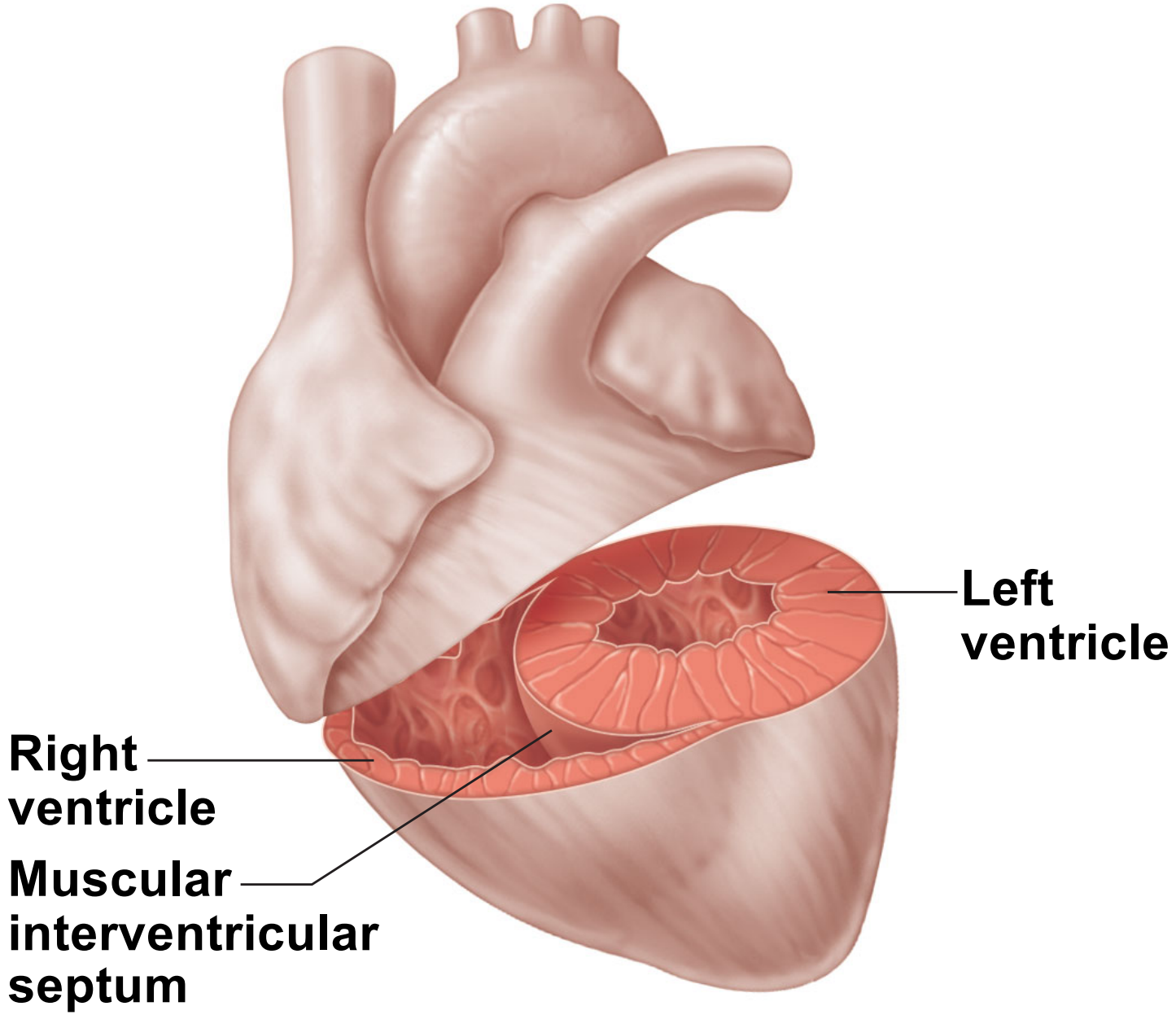


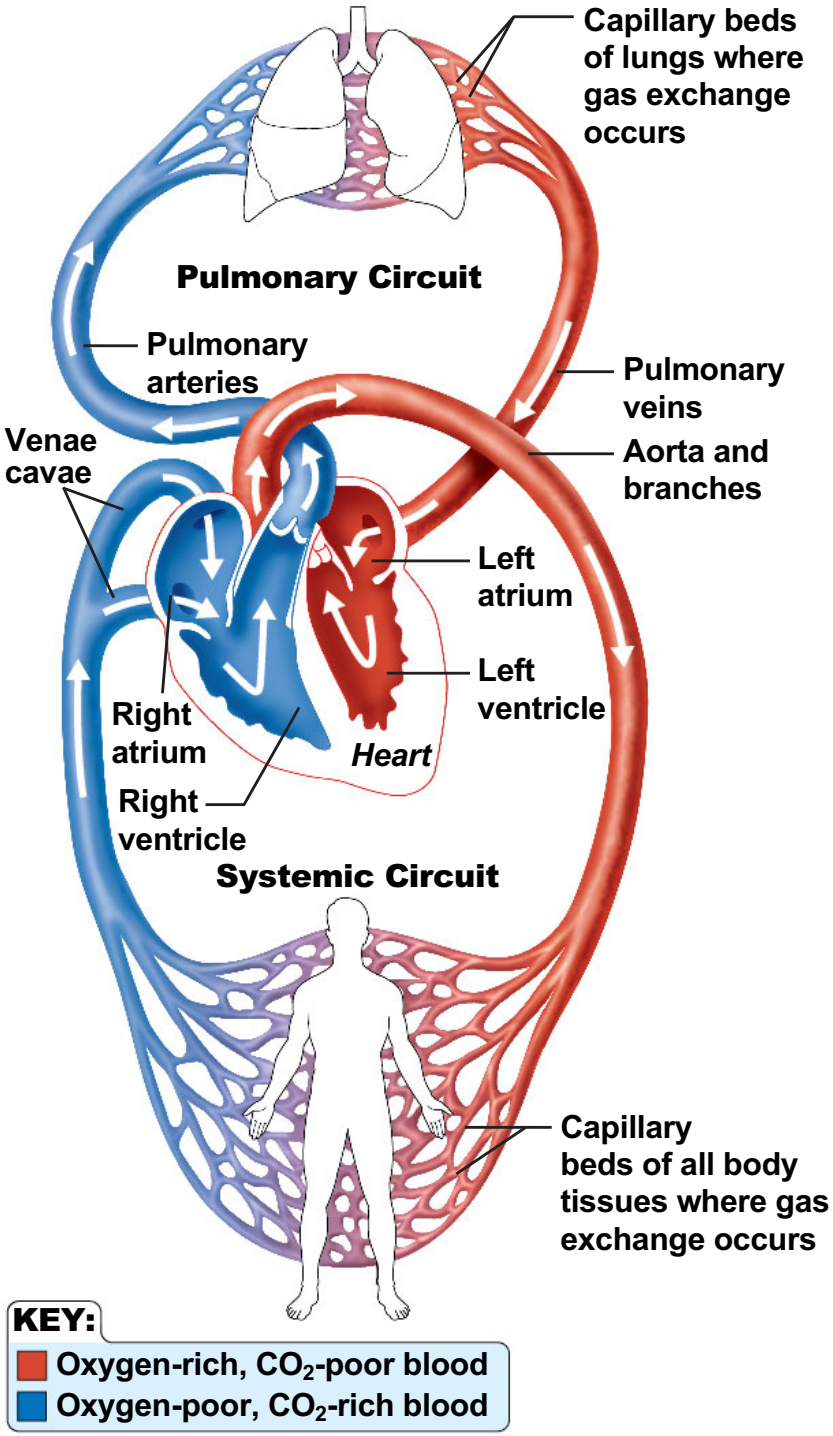
(c) *Posterior*





(b) Frontal section showing interior chambers and valves



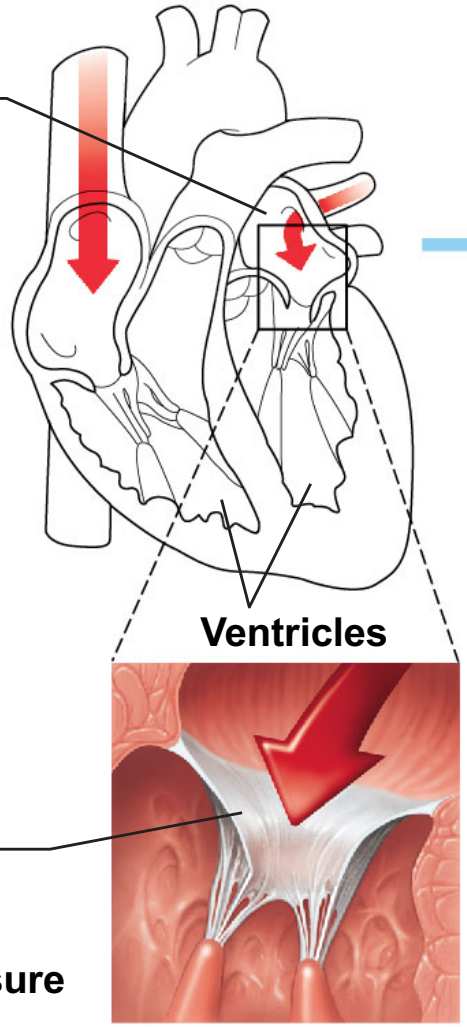


(a) Operation of the AV valves

1 Blood returning to the atria puts pressure against AV valves; the AV valves are forced open.

2 As the ventricles fill, AV valve cusps hang limply into ventricles.

3 Atria contract, forcing additional blood into ventricles.

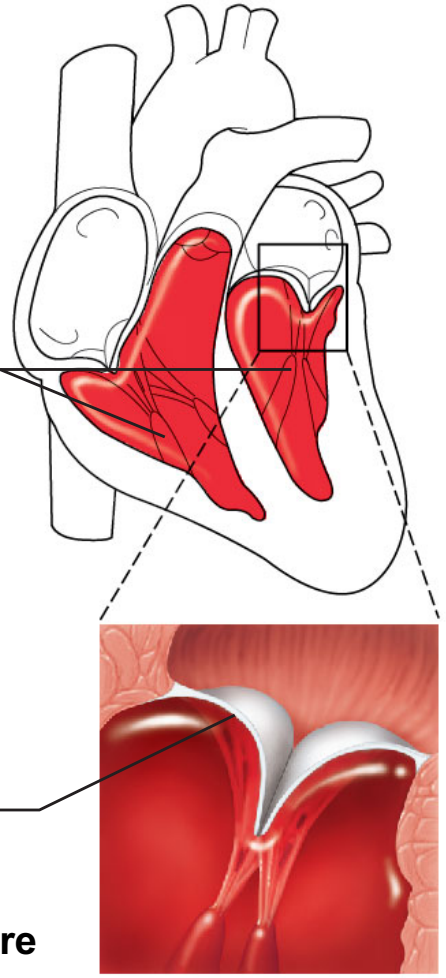


AV valves open; atrial pressure greater than ventricular pressure

4 Ventricles contract, forcing blood against AV valve cusps.

5 AV valves close.

6 Chordae tendineae tighten, preventing valve cusps from everting into atria.



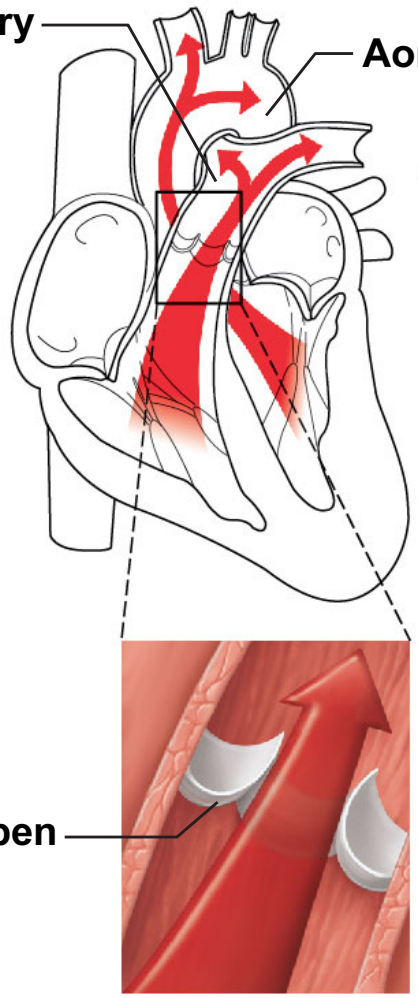
AV valves closed; atrial pressure less than ventricular pressure

(b) Operation of the semilunar valves

Pulmonary trunk

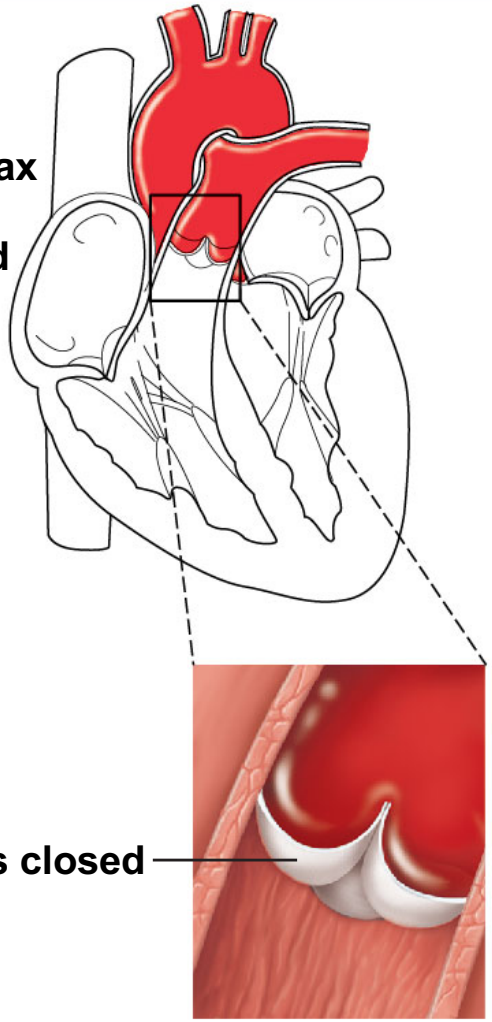
Aorta

(1) As ventricles contract and intraventricular pressure rises, blood is pushed up against semilunar valves, forcing them open.

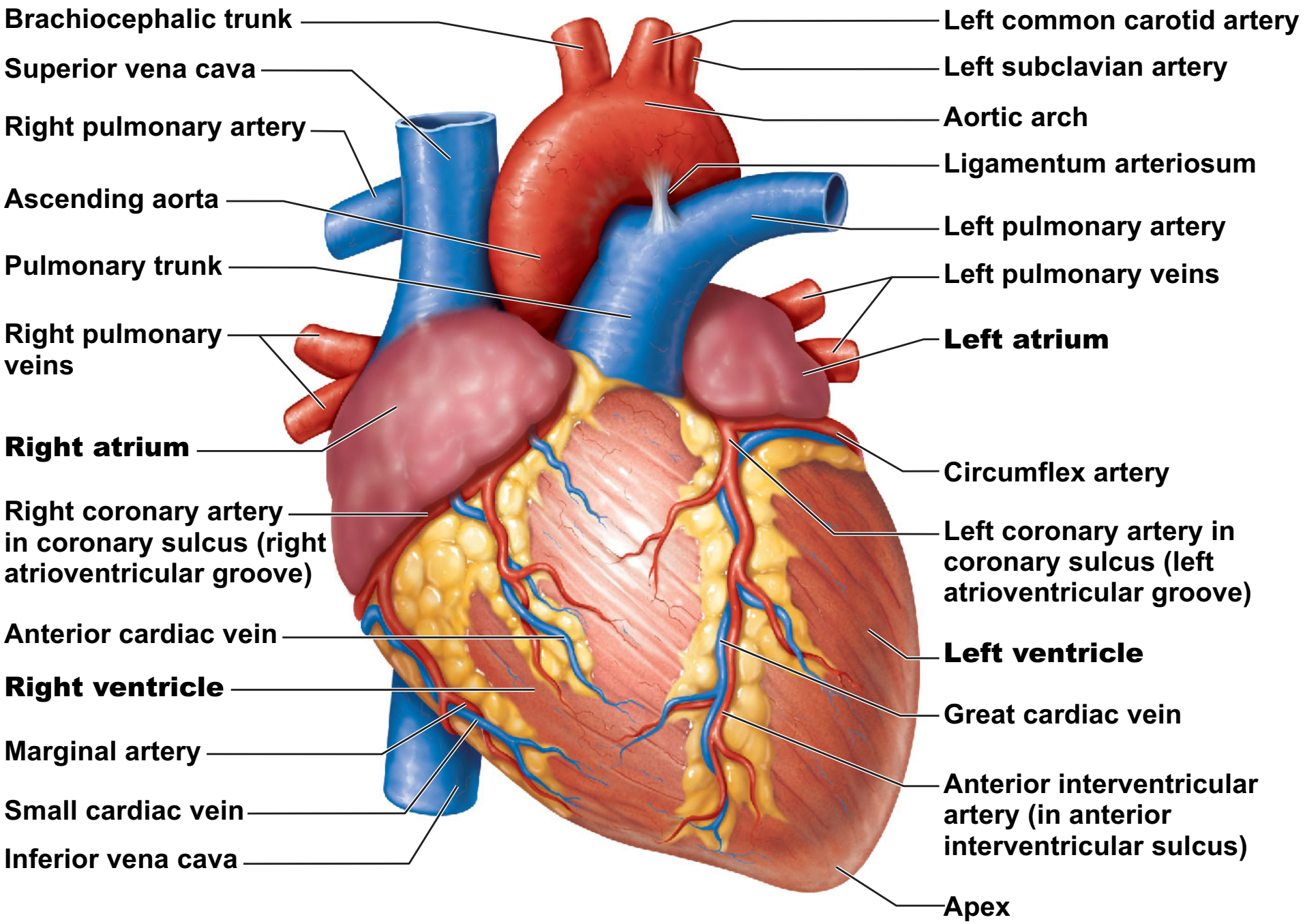


Semilunar valves open

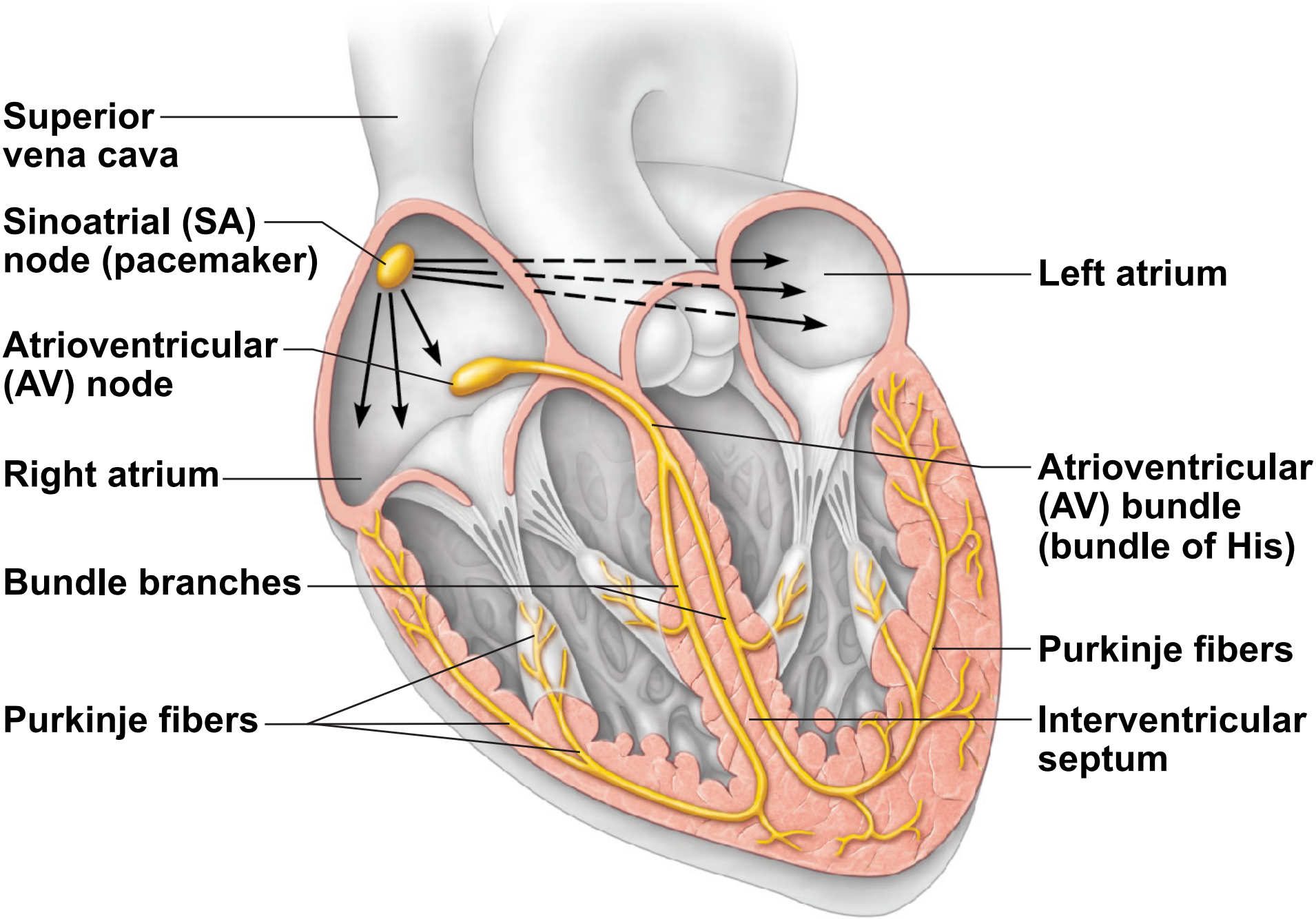
(2) As ventricles relax and intraventricular pressure falls, blood flows back from arteries, filling the cusps of semilunar valves and forcing them to close.

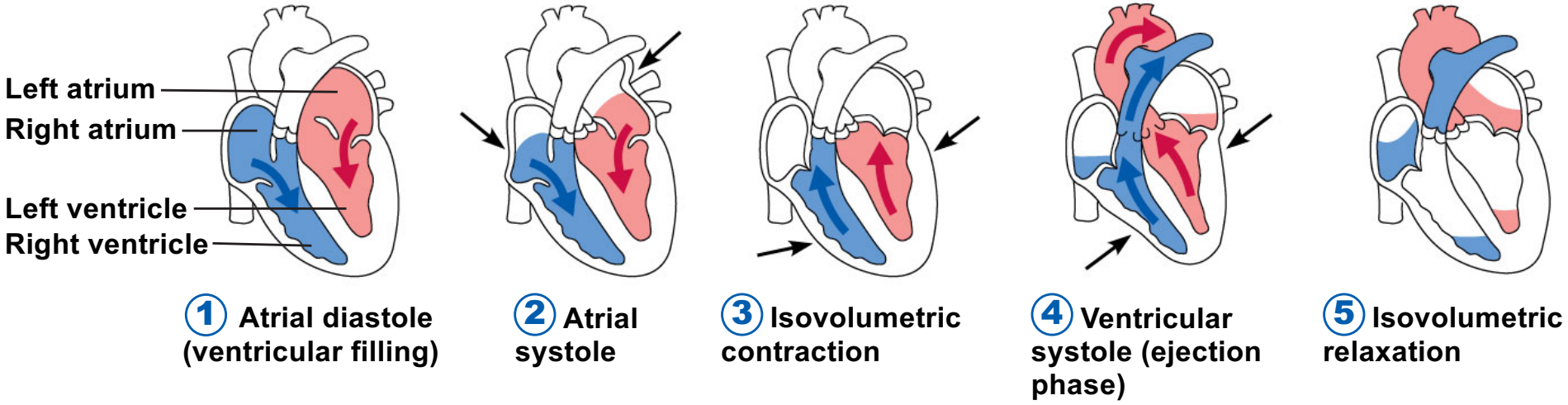


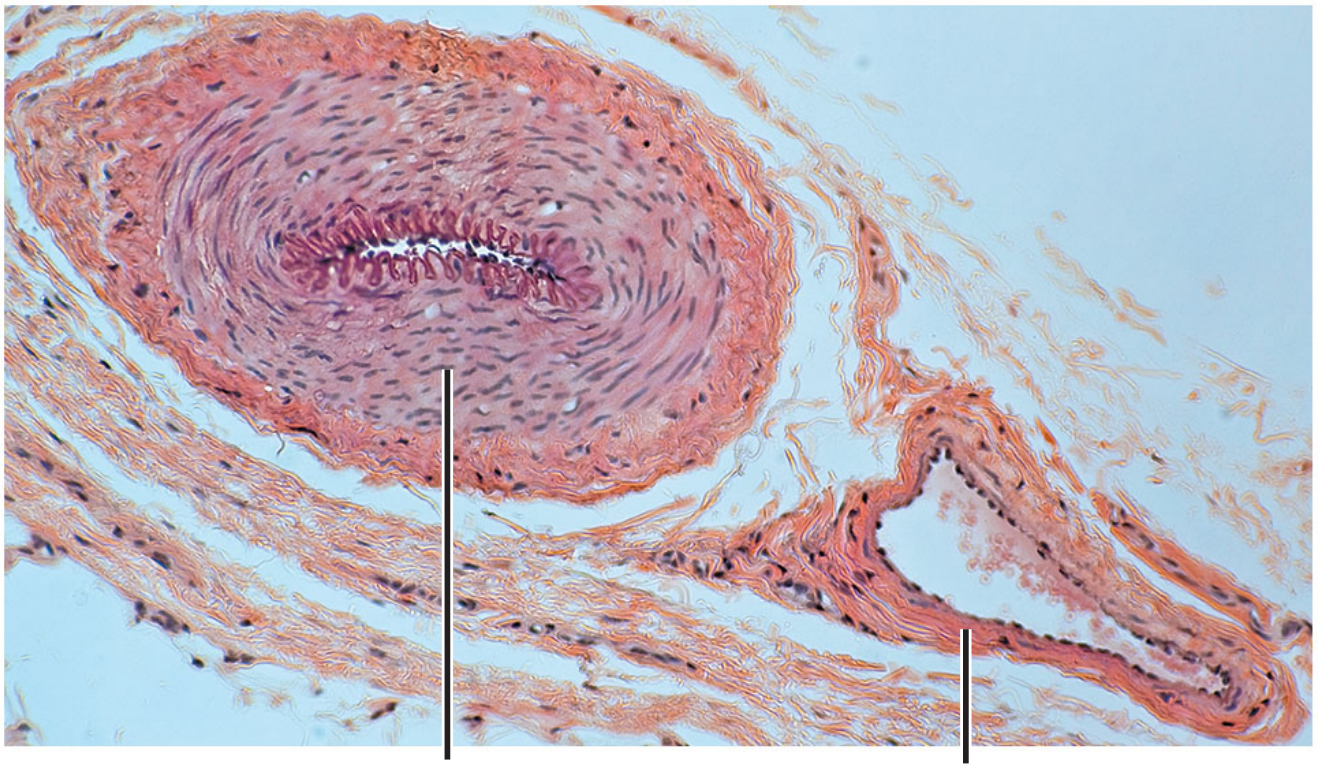
Semilunar valves closed

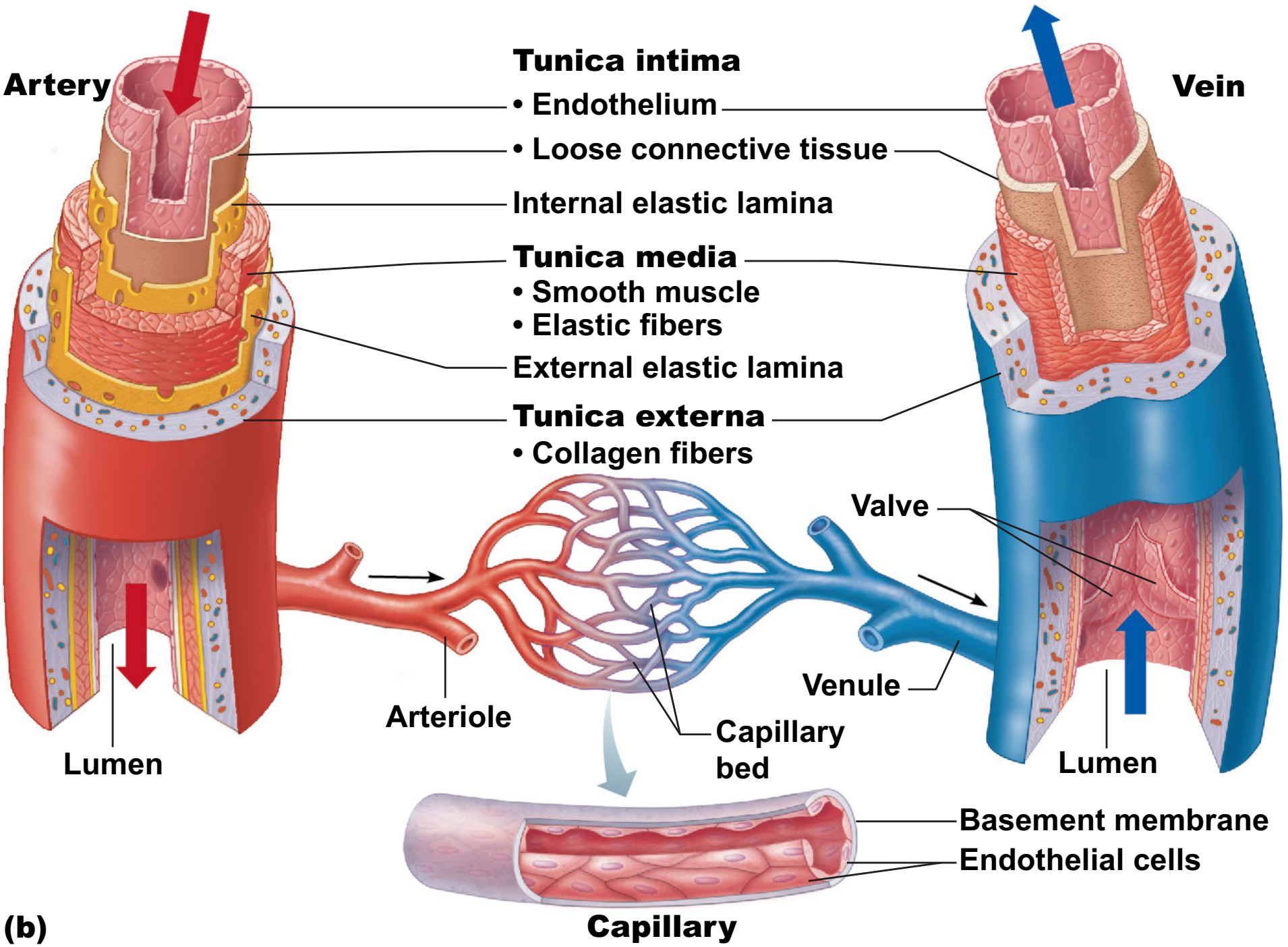


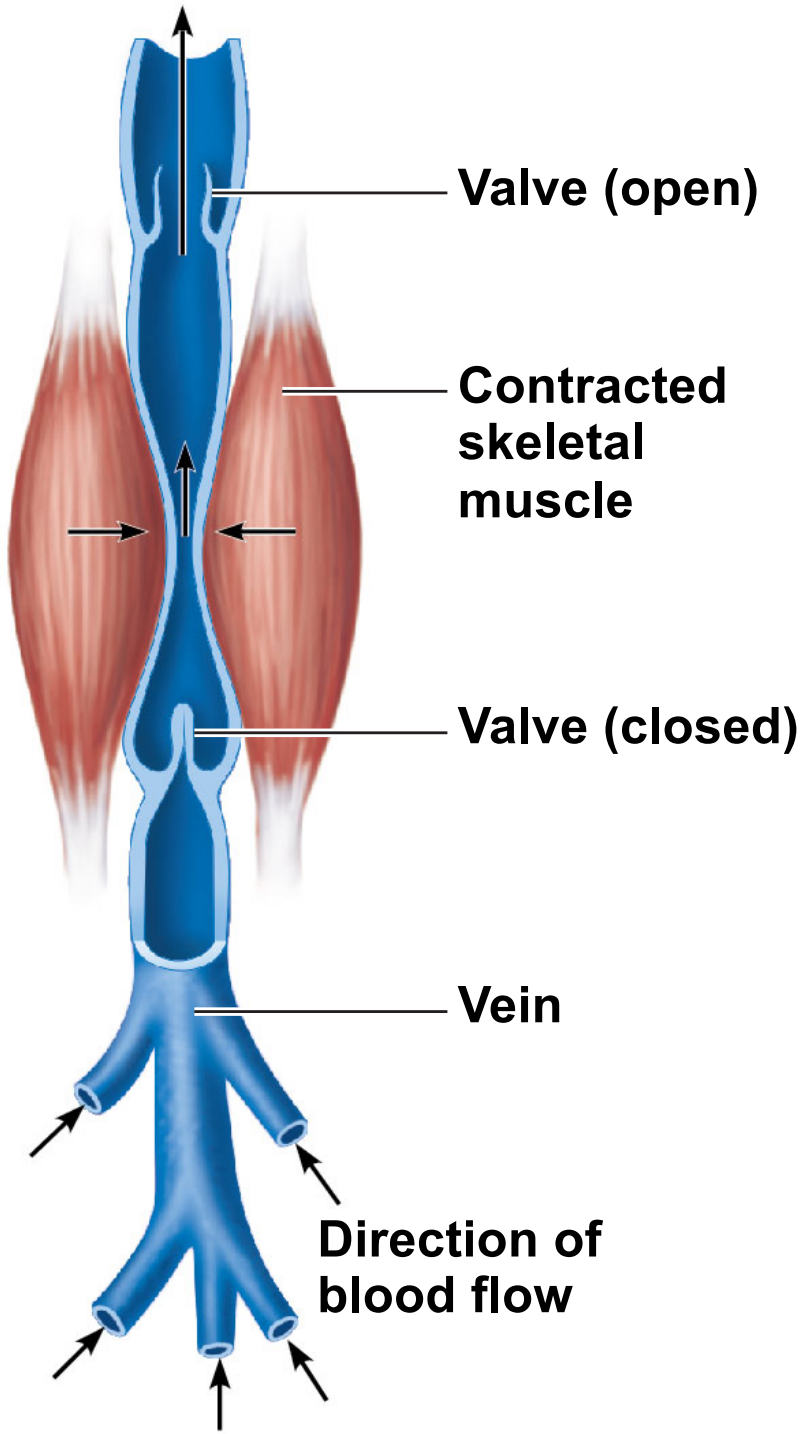
(a) Anterior view of heart showing major vessels

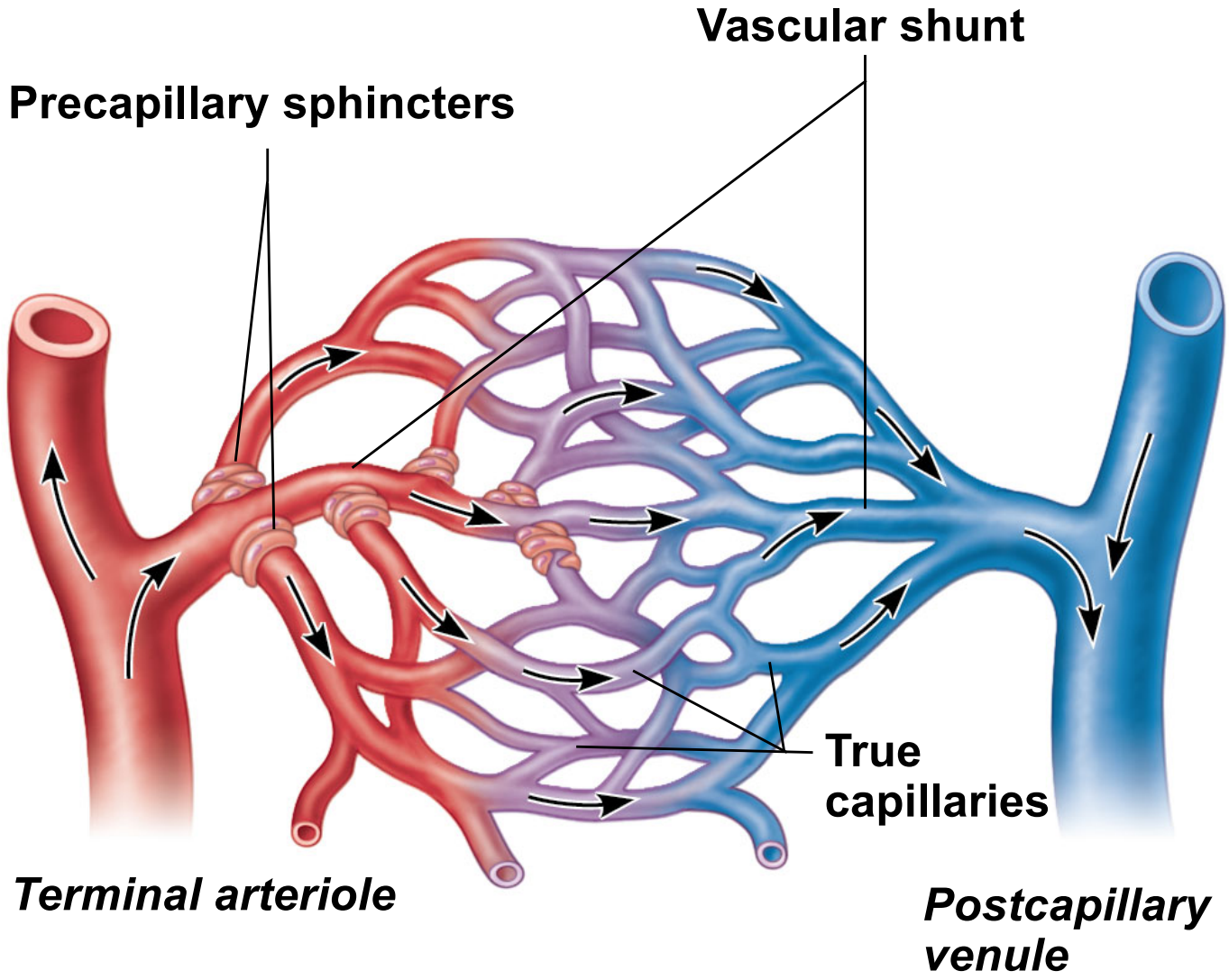




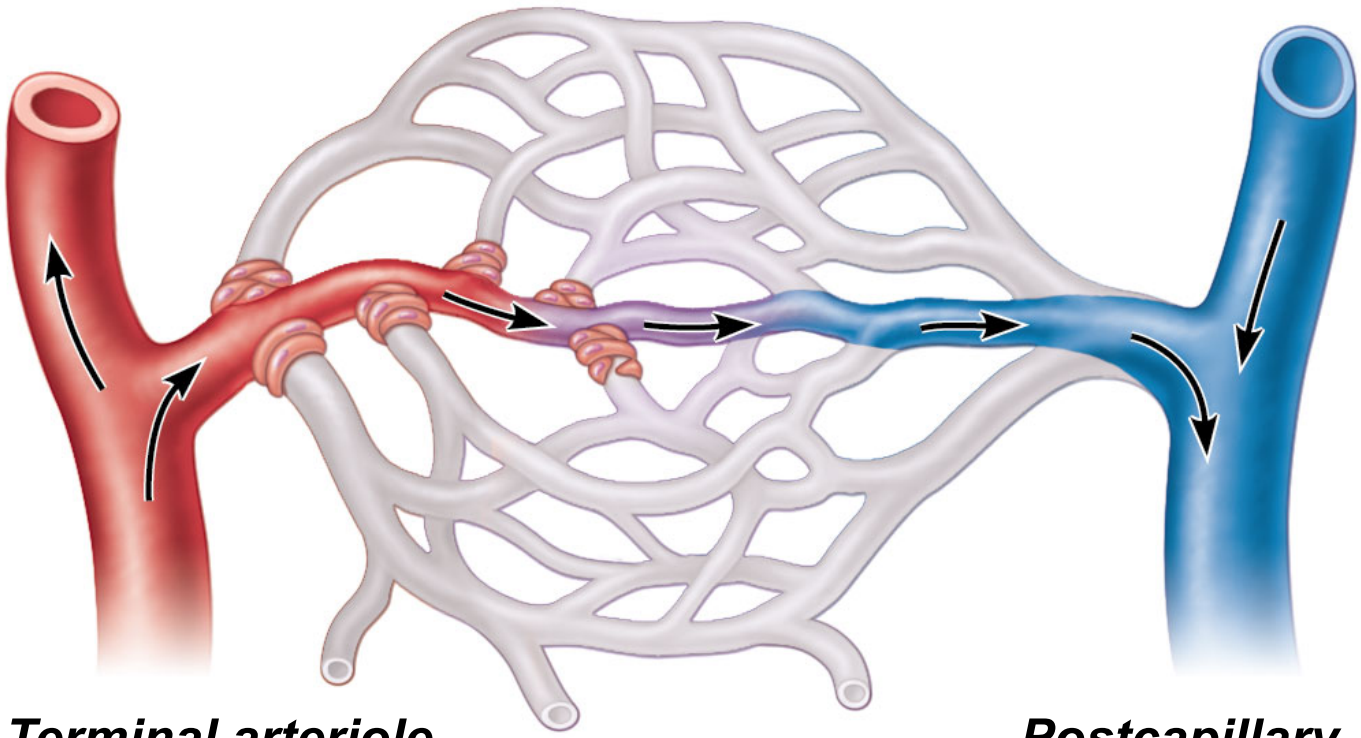








(a) Sphincters open; blood flows through true capillaries.



(b) Sphincters closed; blood flows through vascular shunt.