

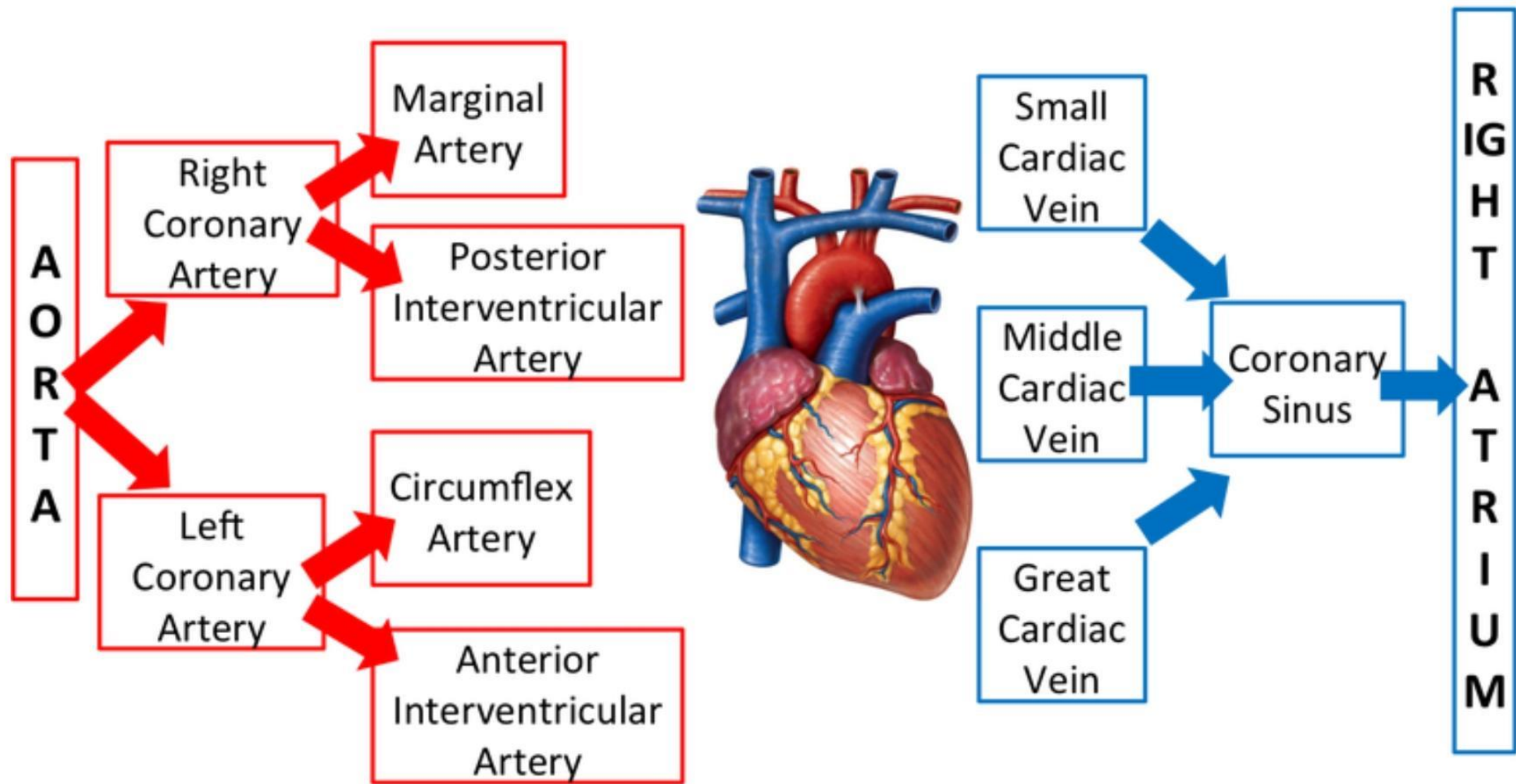
Coronary Circulation

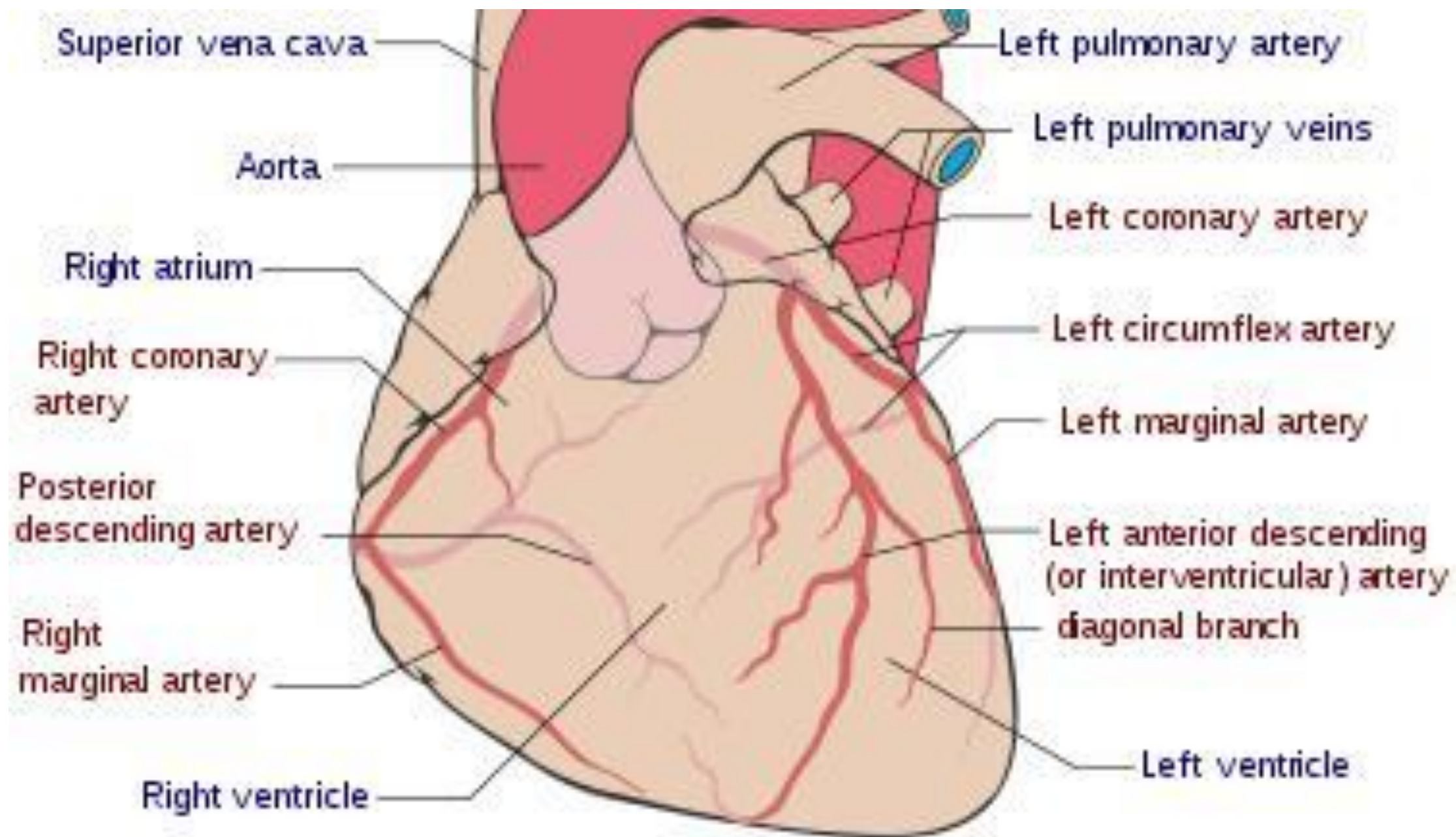
- Coronary circulation is the circulation of blood in the blood vessels of the heart muscle (myocardium)
- The vessels that deliver oxygen-rich blood to the myocardium are known as coronary arteries
- The vessels that remove the deoxygenated blood from the heart muscle are known as cardiac veins.
- These include great cardiac vein, the middle cardiac vein, the small cardiac vein and the anterior cardiac veins

- As the left and right coronary arteries run on the surface of the heart, they can be called epicardial coronary arteries
- These arteries, when healthy, are capable of autoregulation
- These relatively narrow vessels are commonly affected by atherosclerosis and can become blocked, causing angina or a heart attack
- The coronary arteries that run deep within the myocardium are referred to as subendocardial

- The coronary arteries are classified as "end circulation", since they represent the only source of blood supply to the myocardium, there is very redundant blood supply, which is why blockage of these vessels can be so critical

Coronary Circulation



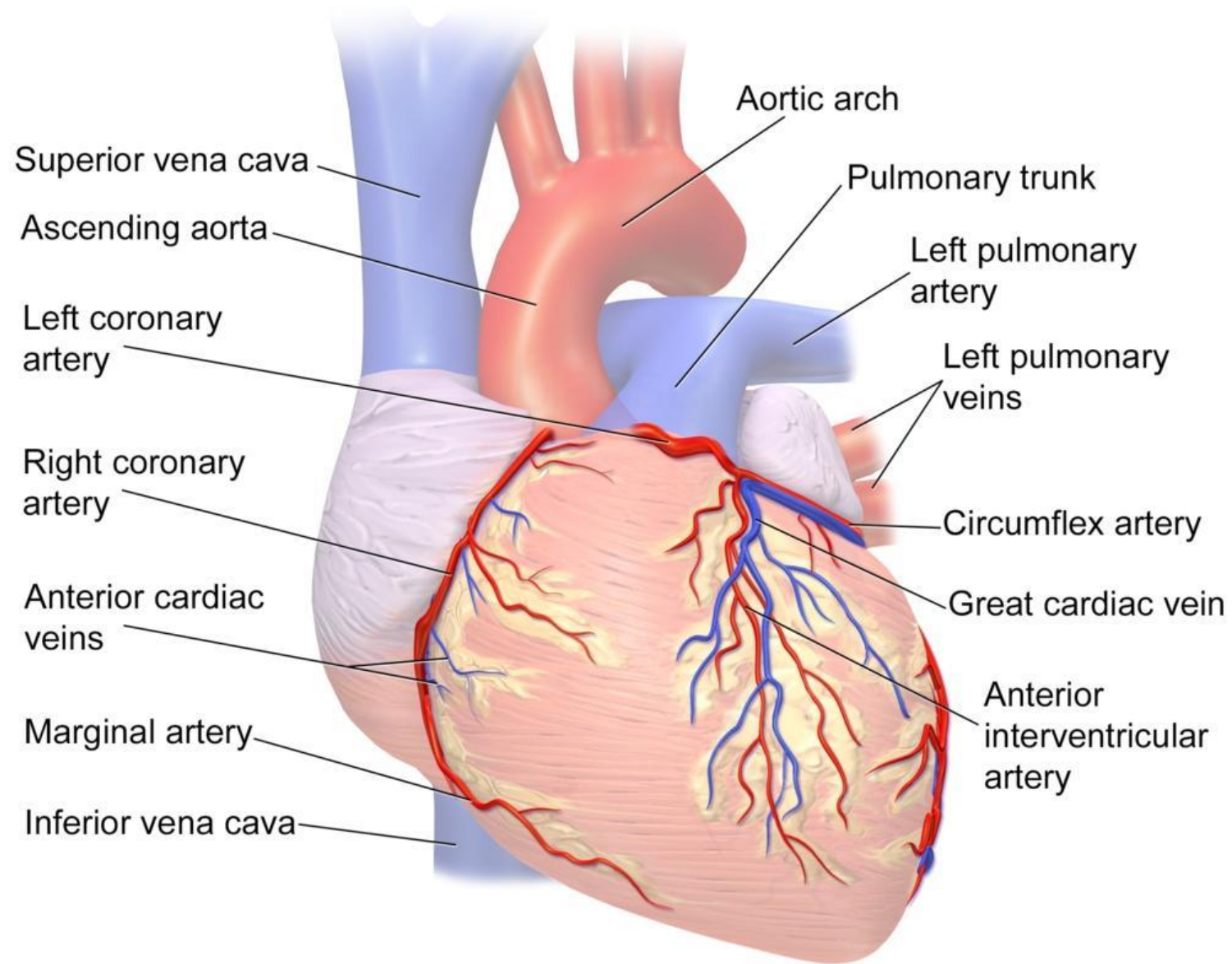


- The two coronary arteries originate from the left side of the heart at the beginning (root) of the aorta
- There are three dilations in the wall of the aorta just superior to the aortic semilunar valve. Two of these, the left posterior aortic sinus and anterior aortic sinus, give rise to the left and right coronary arteries, respectively
- The third sinus, the right posterior aortic sinus, typically does not give rise to a vessel

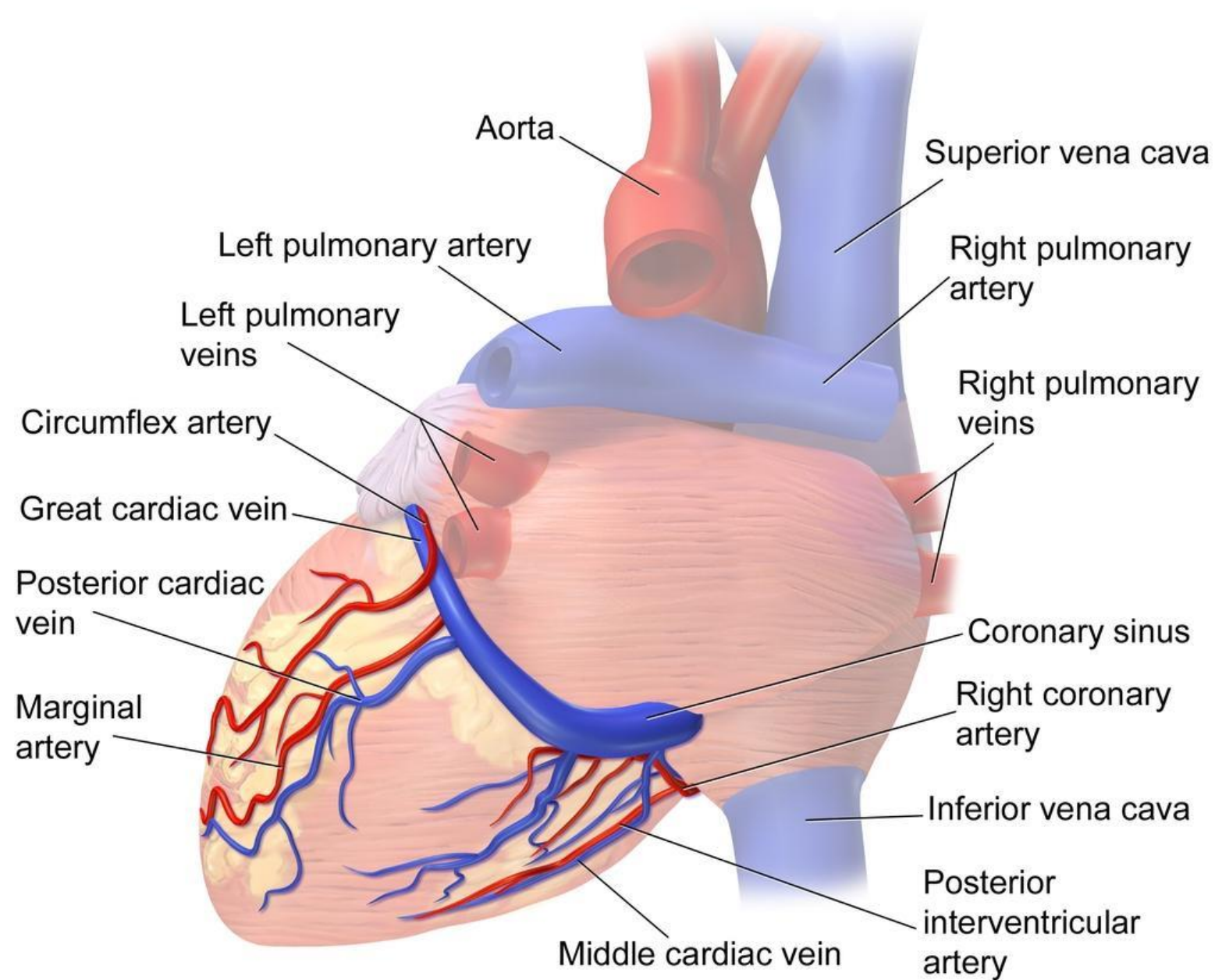
- The left coronary artery distributes blood to the Left side of the heart, the left atrium and ventricle, and the inter ventricular septum
- The circumflex artery arises from the left coronary artery and follows the coronary sulcus to the left. Eventually, it will fuse with the small branches of the right coronary artery
- The larger anterior inter ventricular artery, also known as the left coronary. It follows the anterior interventricular sulcus around the pulmonary trunk
- The right coronary artery proceeds along the coronary sulcus and distributes blood to the right atrium, portions of both ventricles, and the heart conduction system
- Normally, one or more marginal arteries arise from the right coronary artery inferior to the right atrium. The marginal arteries supply blood to the superficial portions of the right ventricle
- On the posterior surface of the heart, the right coronary artery gives rise to the posterior inter ventricular artery, also known as the posterior descending artery. It runs along the posterior portion of the interventricular sulcus toward the apex of the heart, giving rise to branches that supply the interventricular septum and portions of both ventricles

Coronary Dominance

- The artery that supply the posterior descending artery (PDA) determines the coronary dominance
- If the posterior descending artery is supplied by the right coronary artery (RCA), then the coronary circulation can be classified as "right-dominant"
- If the posterior descending artery is supplied by the circumflex (CX), a branch of the left artery, then the coronary circulation can be classified as "left dominant"
- If the posterior descending artery is supplied by both the right coronary artery and the circumflex artery, then the coronary circulation can be classified as "co-dominant"
- Approximately 70% of the general population are right dominant, 20% are co-dominant and 10% are left dominant
- A precise anatomic definition would be the artery which gives off supply to the AV node i.e. the AV nodal artery. Most of the time this is the Right coronary artery



Coronary Circulation (Anterior)



Coronary Circulation (Posterior)

