



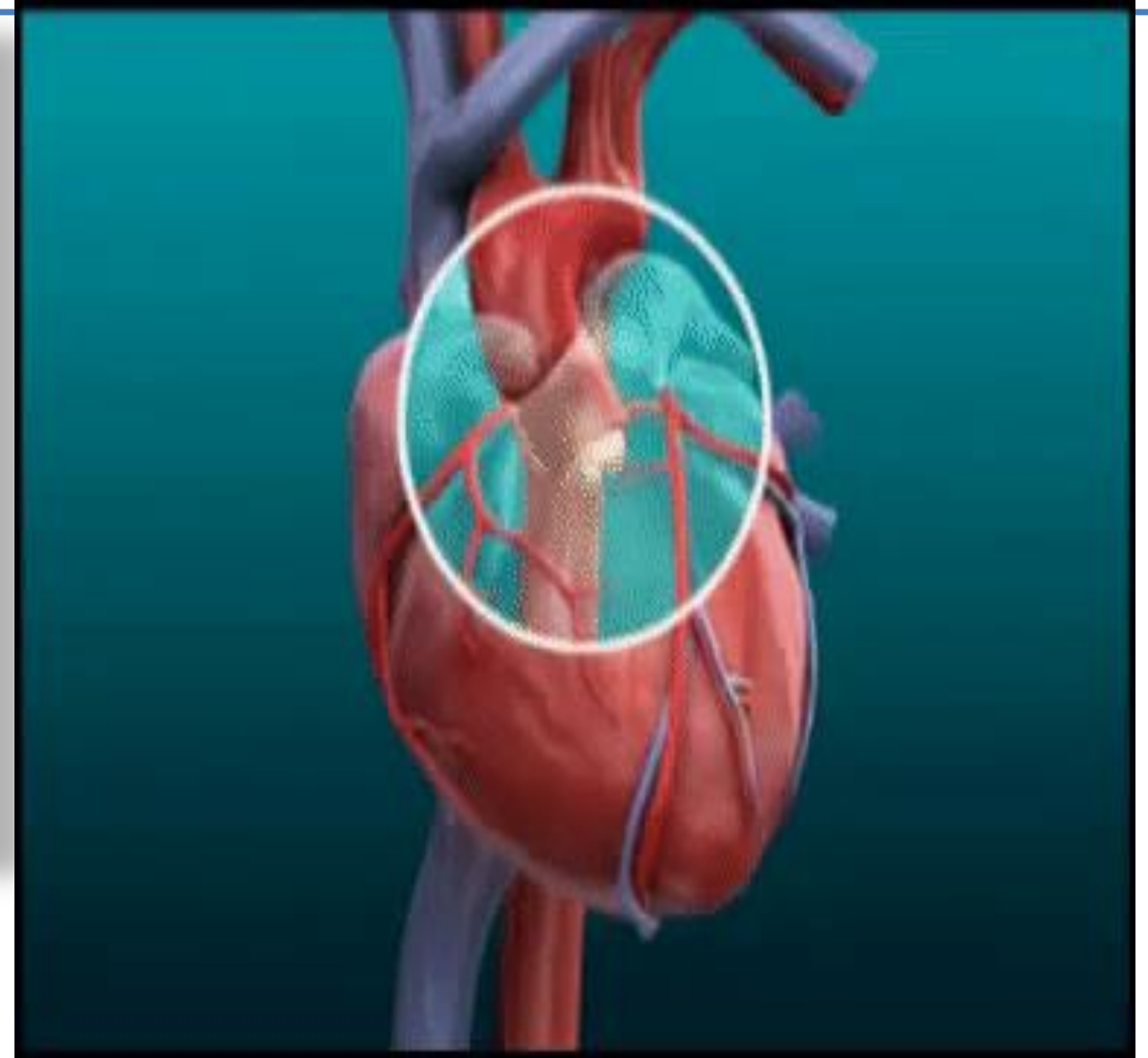
Human Anatomy - 1st year 2020-2021



Blood Supply Of The Heart

Lecture (6)

By Dr: Hassna Bader Jawad
Department of human
anatomy
College of medicine
University of Basrah

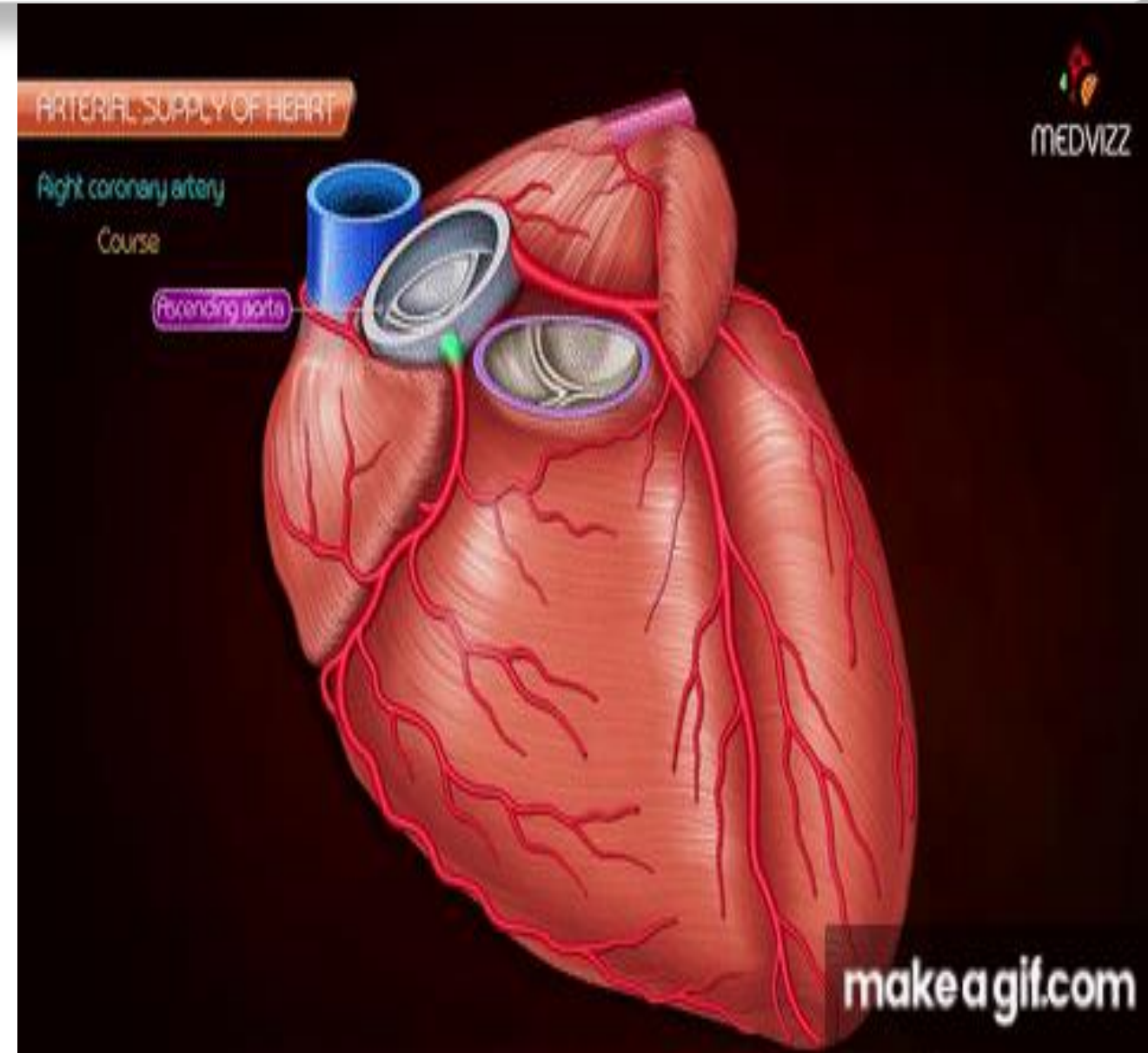


Blood Supply Of The Heart

To describe :

1.Right coronary artery (RCA)

2.Left coronary artery (LCA)



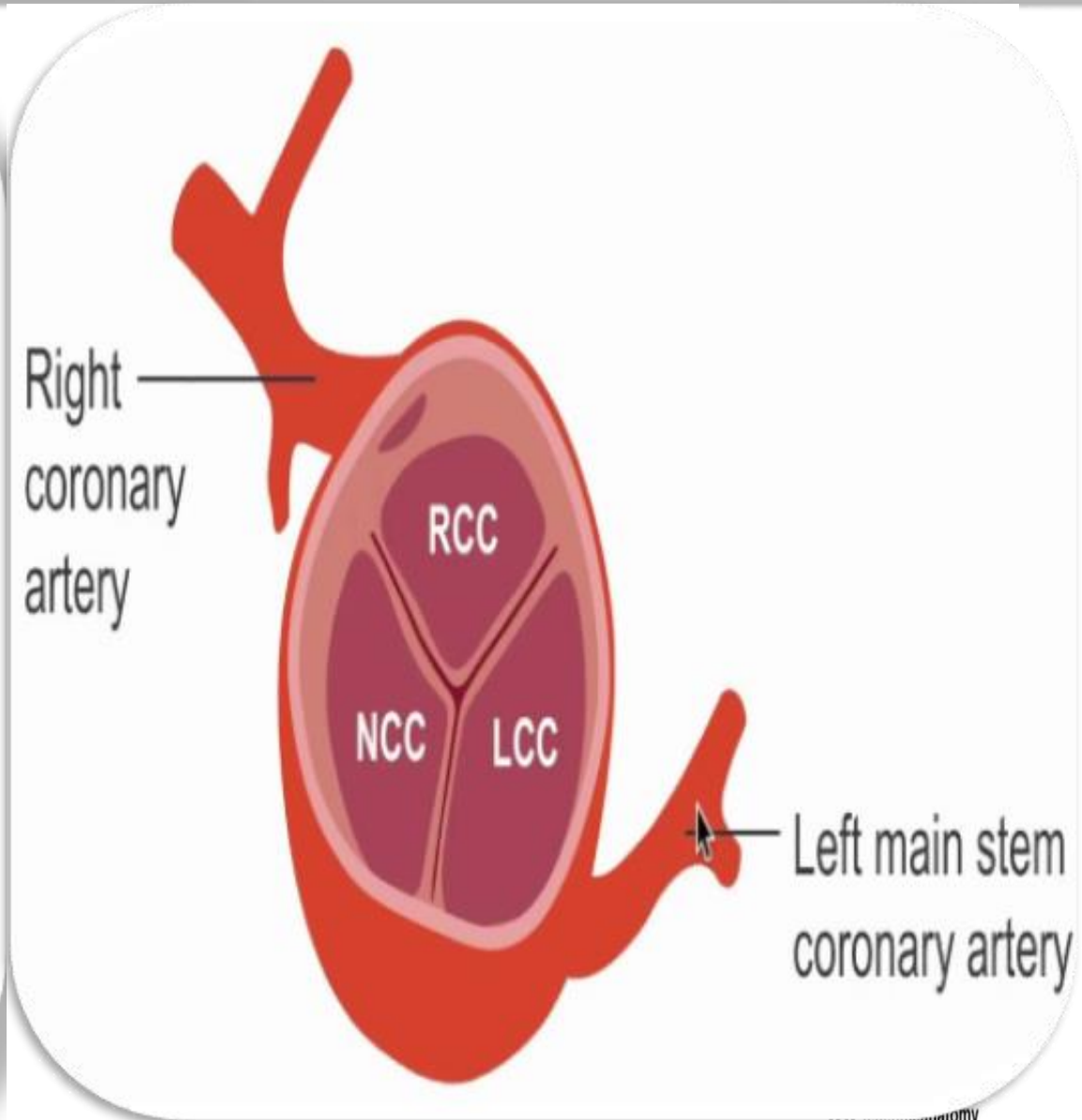
Coronary Circulation

The arterial supply of the heart is provided by :

- 1.Right coronary artery (RCA)
- 2.Left coronary artery (LCA)

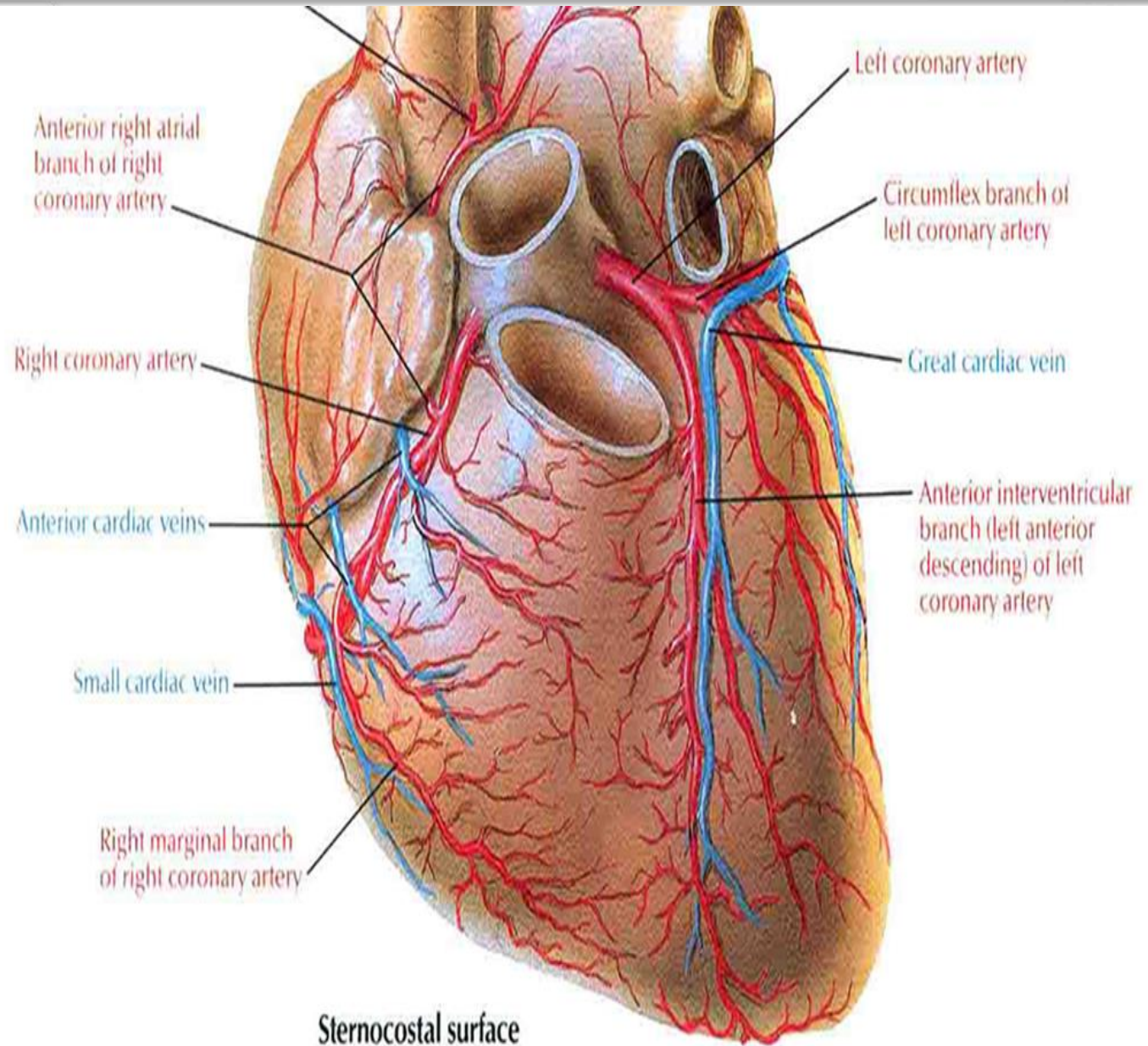
*Both deliver the oxygenated blood to the myocardium.

*Both arteries arise from the ascending aorta immediately above the aortic valve.



Right coronary artery

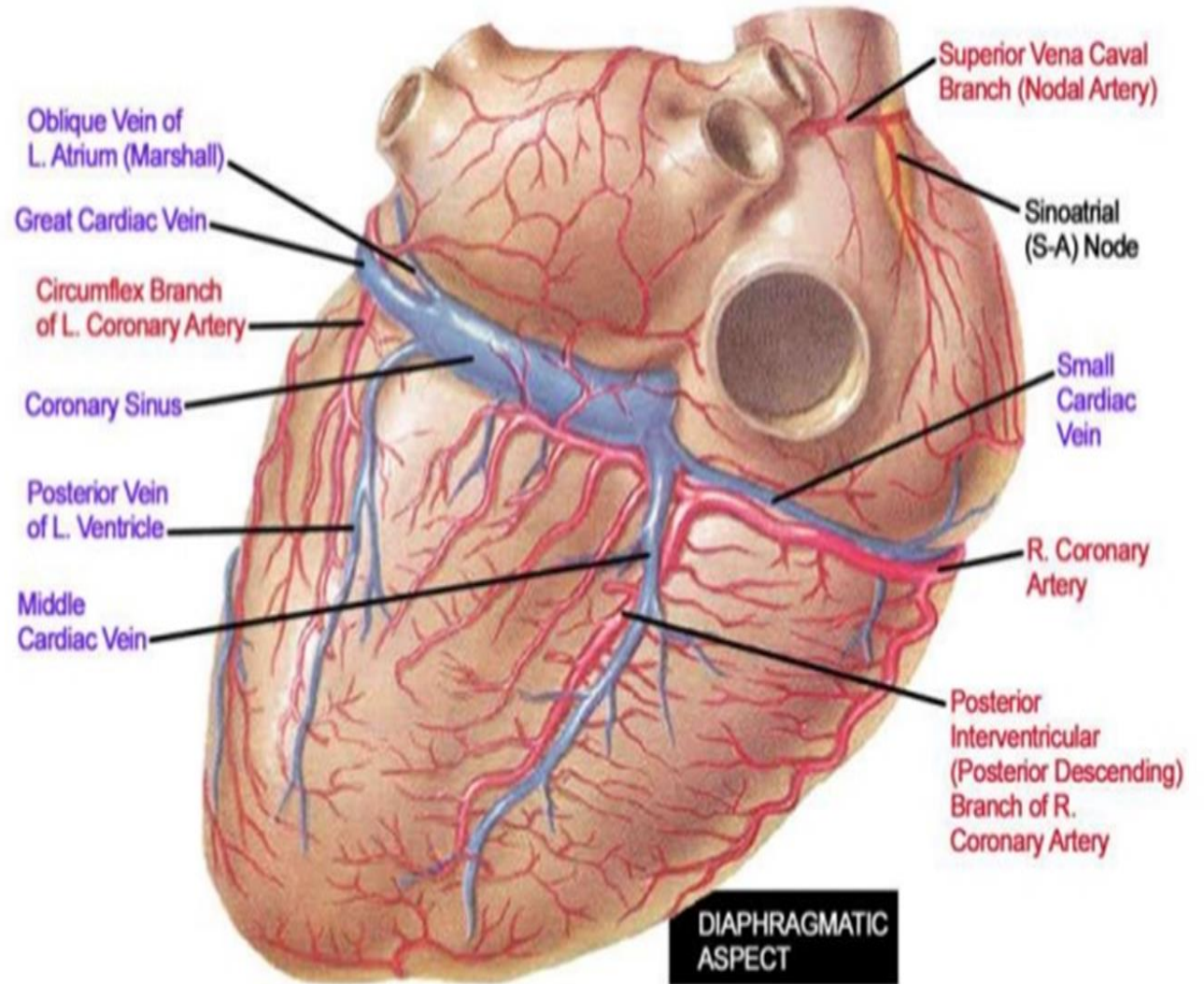
- Arises from ascending aorta from the right sinus of Valsalva and runs forward between the pulmonary trunk and the right auricle.
- Descends vertically in right atrioventricular groove and winds posteriorly in the same groove.



Right coronary artery



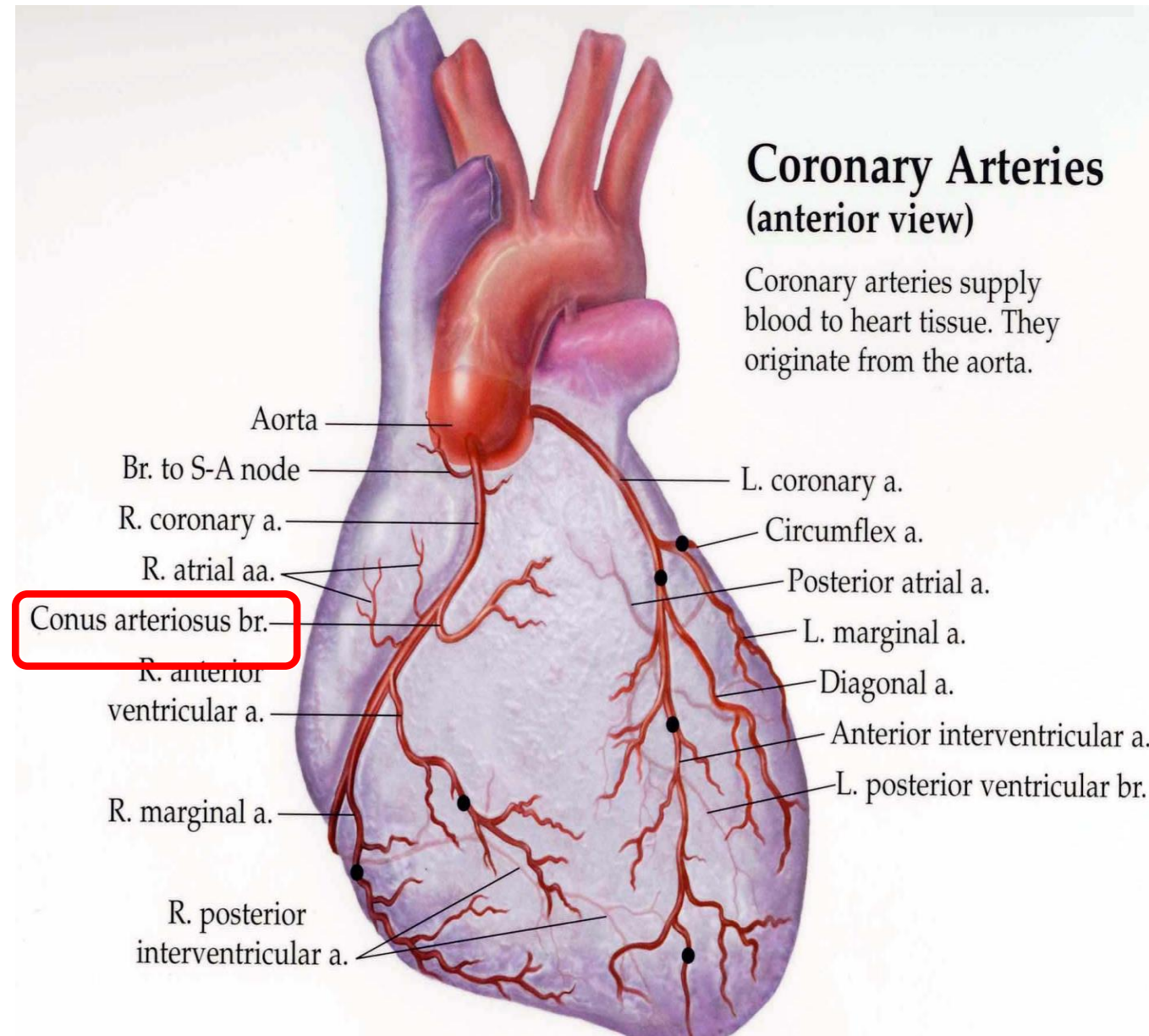
- Continues • posteriorly along the interventricular ventricular groove.
- Anastomose with the branches of left coronary artery.



Branches Are :

Supplies the anterior surface of the pulmonary conus (infundibulum of the right ventricle) and the upper part of the anterior wall of the right ventricle .

1. The right conus artery

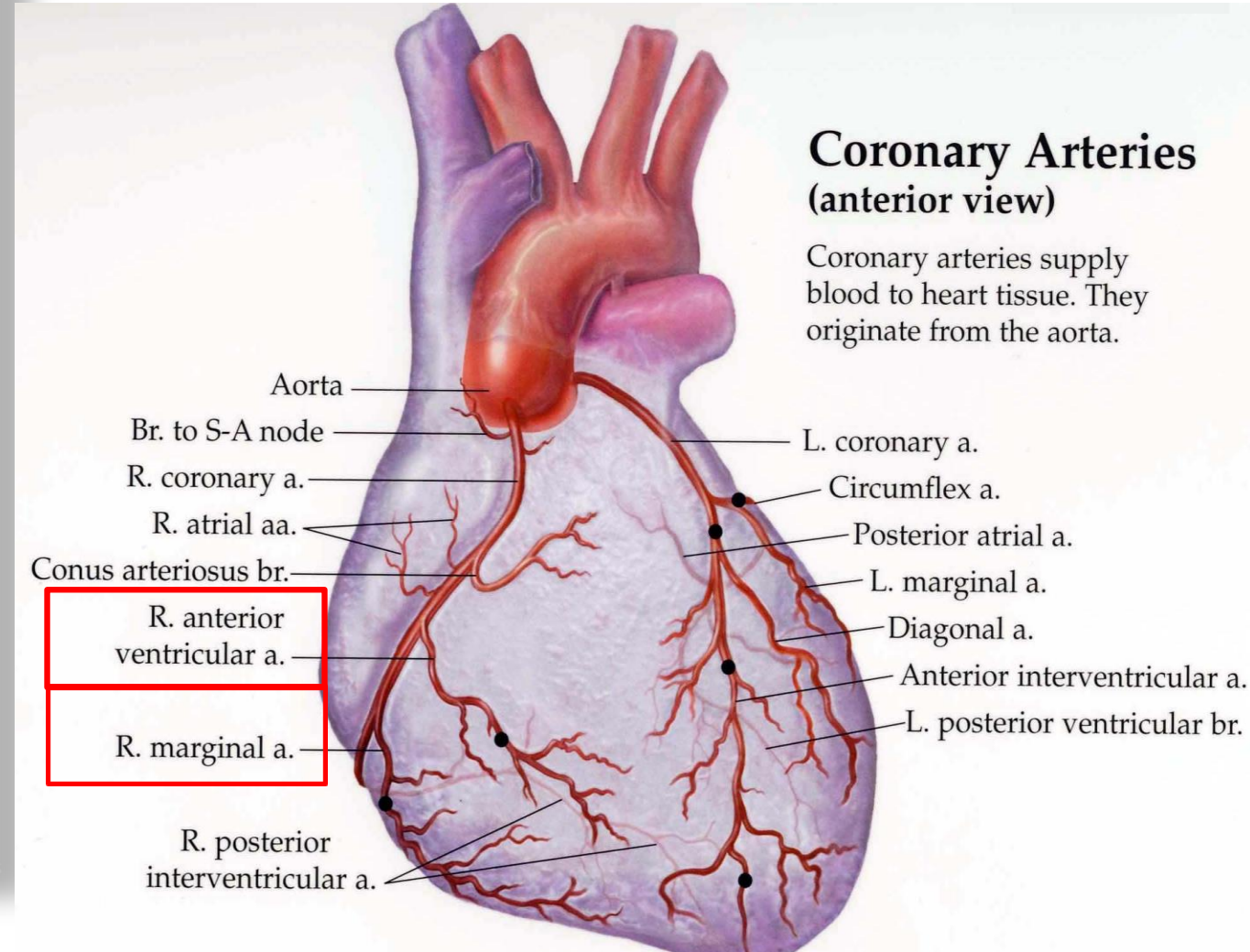


Branches Are:

Are two or three in number and supply the anterior surface of the right ventricle.

***Right marginal branch is the largest and runs along the lower margin of the costal surface to reach the apex.**

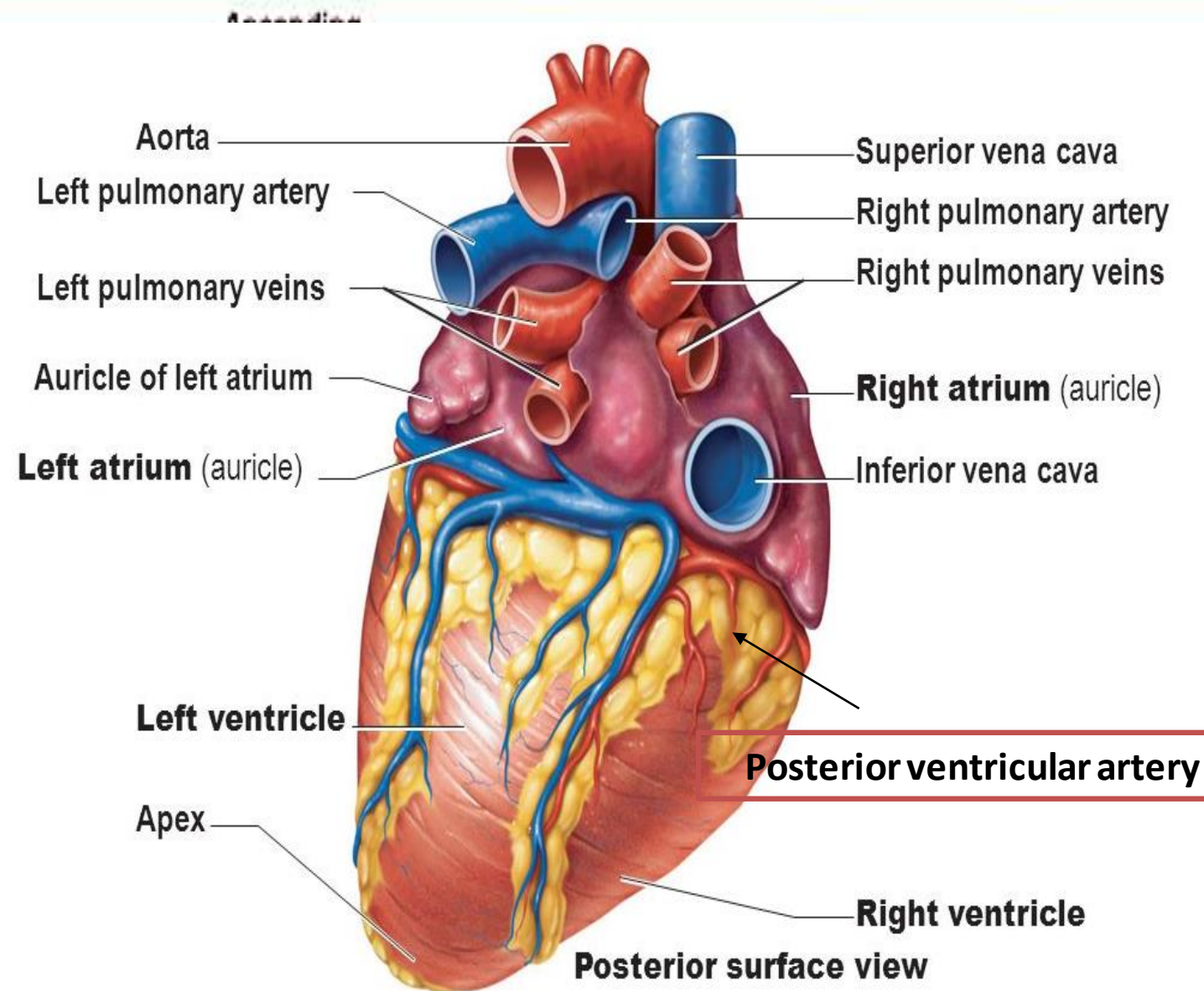
2. Right Anterior ventricular artery



Branches Are

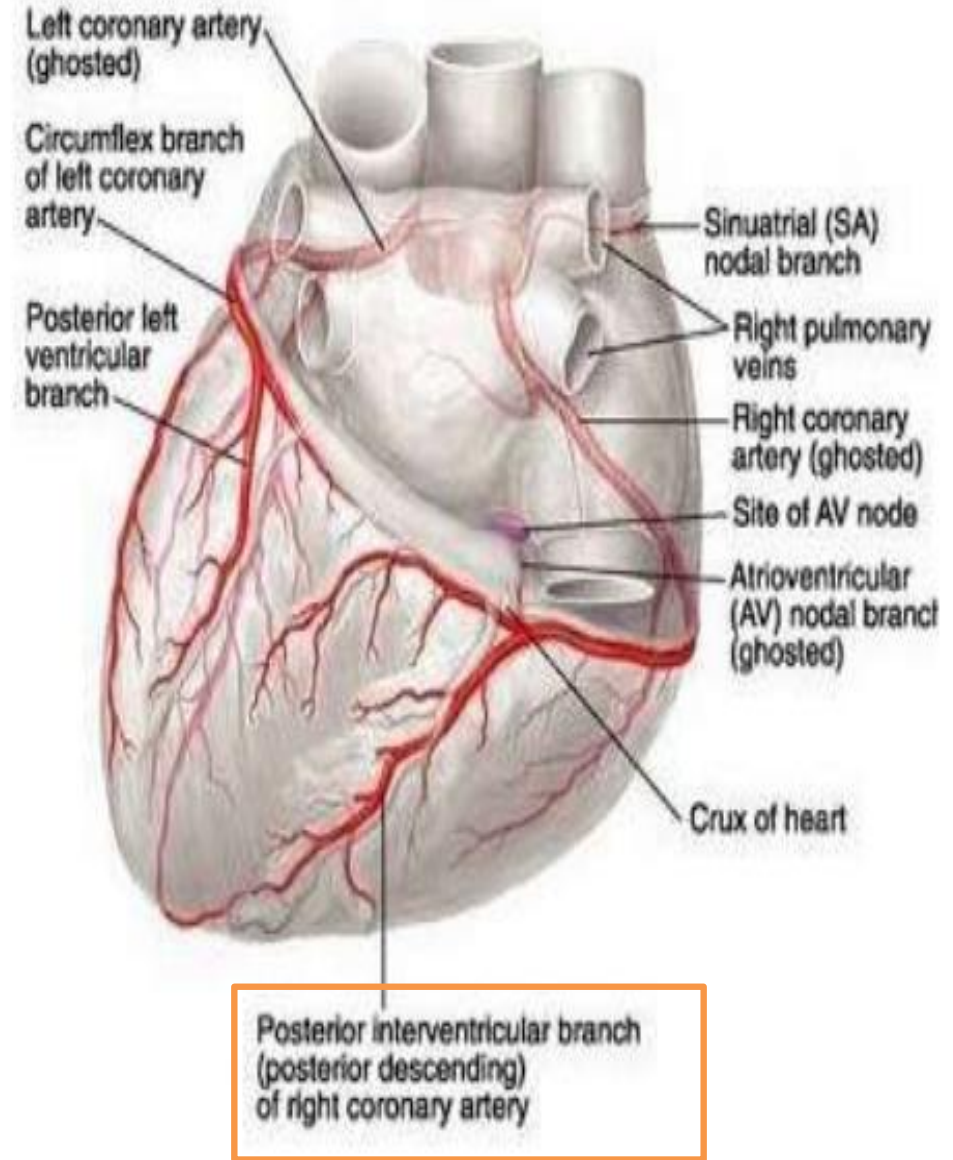
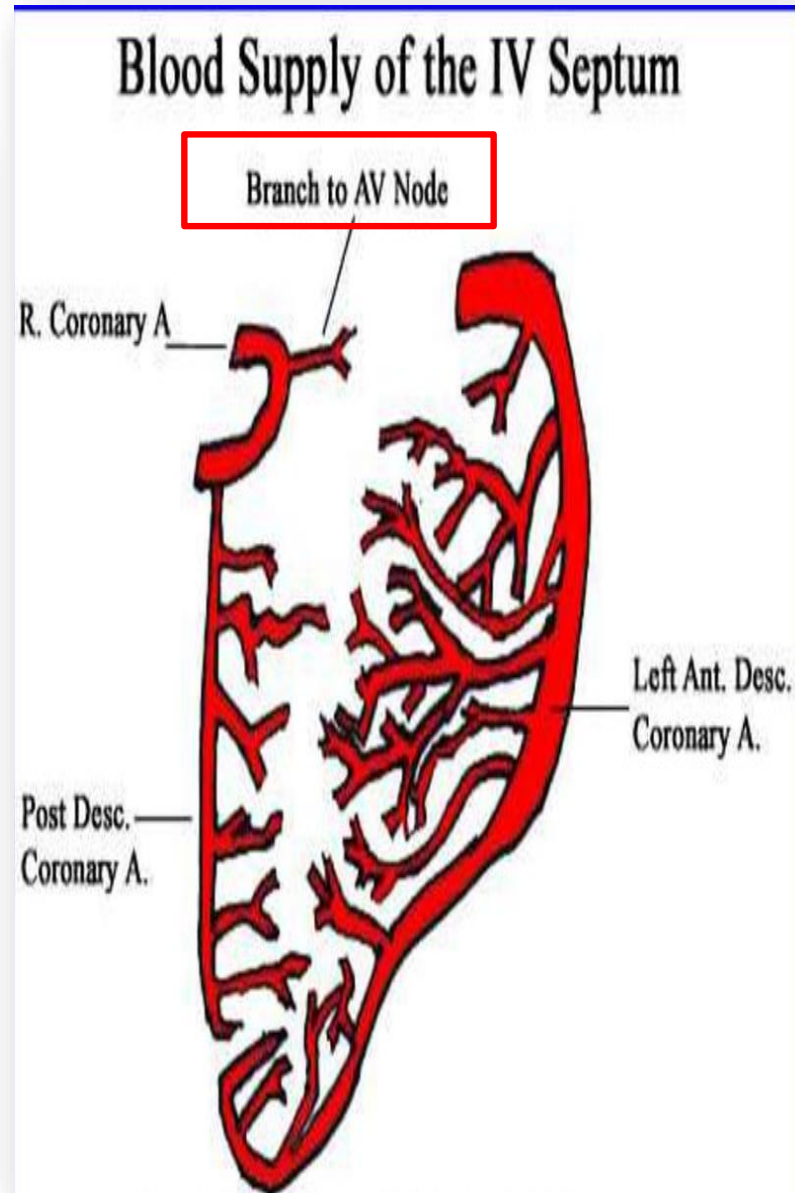
3. The posterior ventricular artery

Also called
**posterolateral
ventricular artery**
Usually two in
number and supply
the diaphragmatic
surface of the right
ventricle.



Branches Are: 4. Posterior interventricular (descending) artery

It runs toward the apex in the posterior interventricular groove
It gives off branches to:
*right and left ventricles, including inferior wall
* posterior part of ventricular septum but not to apical part.
A large septal branch supplies the atrioventricular node.
In 10% of individuals, the posterior interventricular artery is replaced by a branch from the left coronary artery.



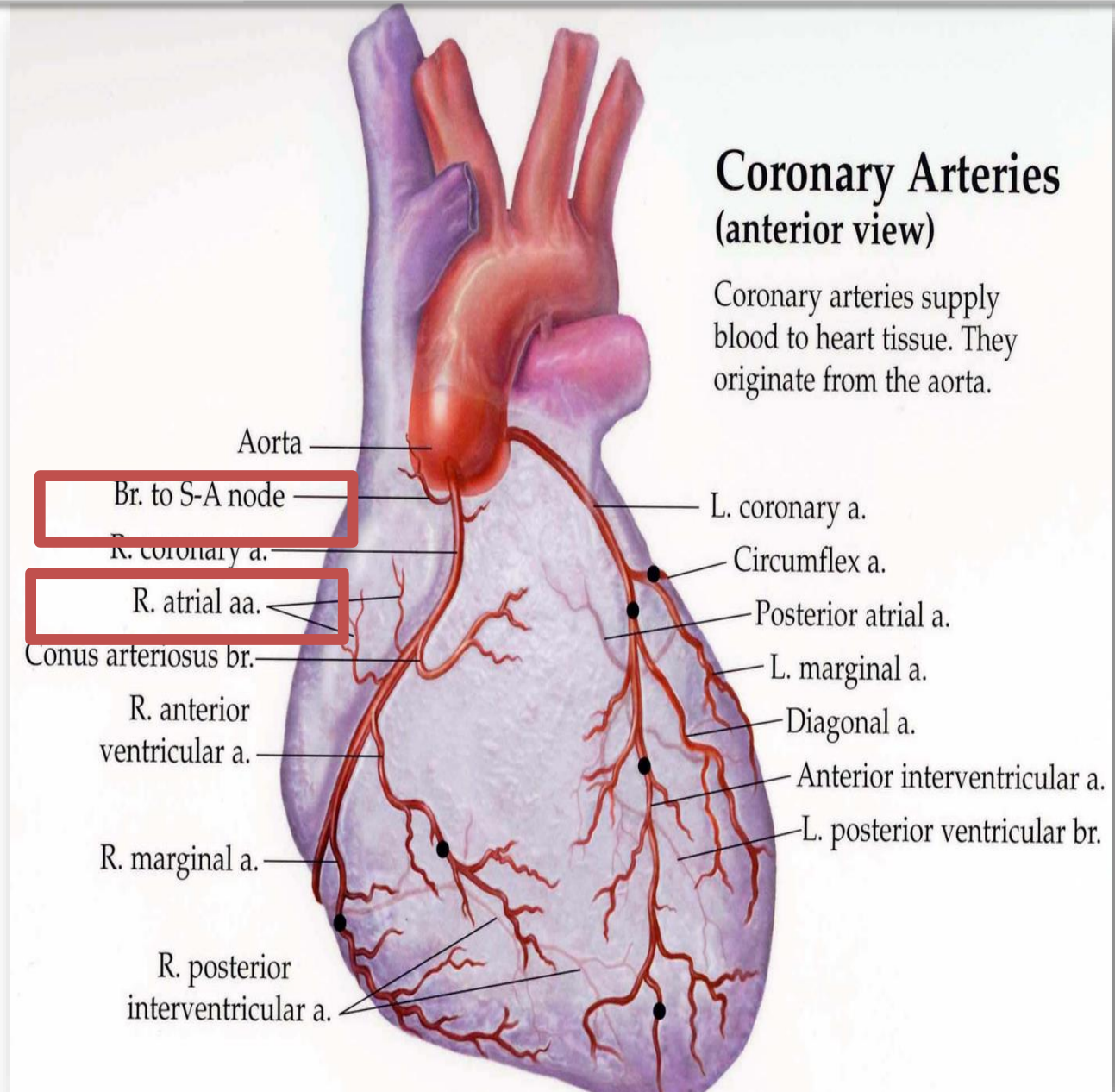
Branches Are :

Supply the anterior and lateral surfaces of the right atrium.

Supplies the posterior surface of both the right and left atria

***Artery of the Sinoatrial node** supplies the node and the right and left atria; in 35% of individuals it arises from the left coronary artery.

5. The atrial branches



② The left coronary artery

_ Usually larger than the right coronary artery, supplies the major part of the heart, including the greater part of the left atrium, left ventricle, and ventricular septum.

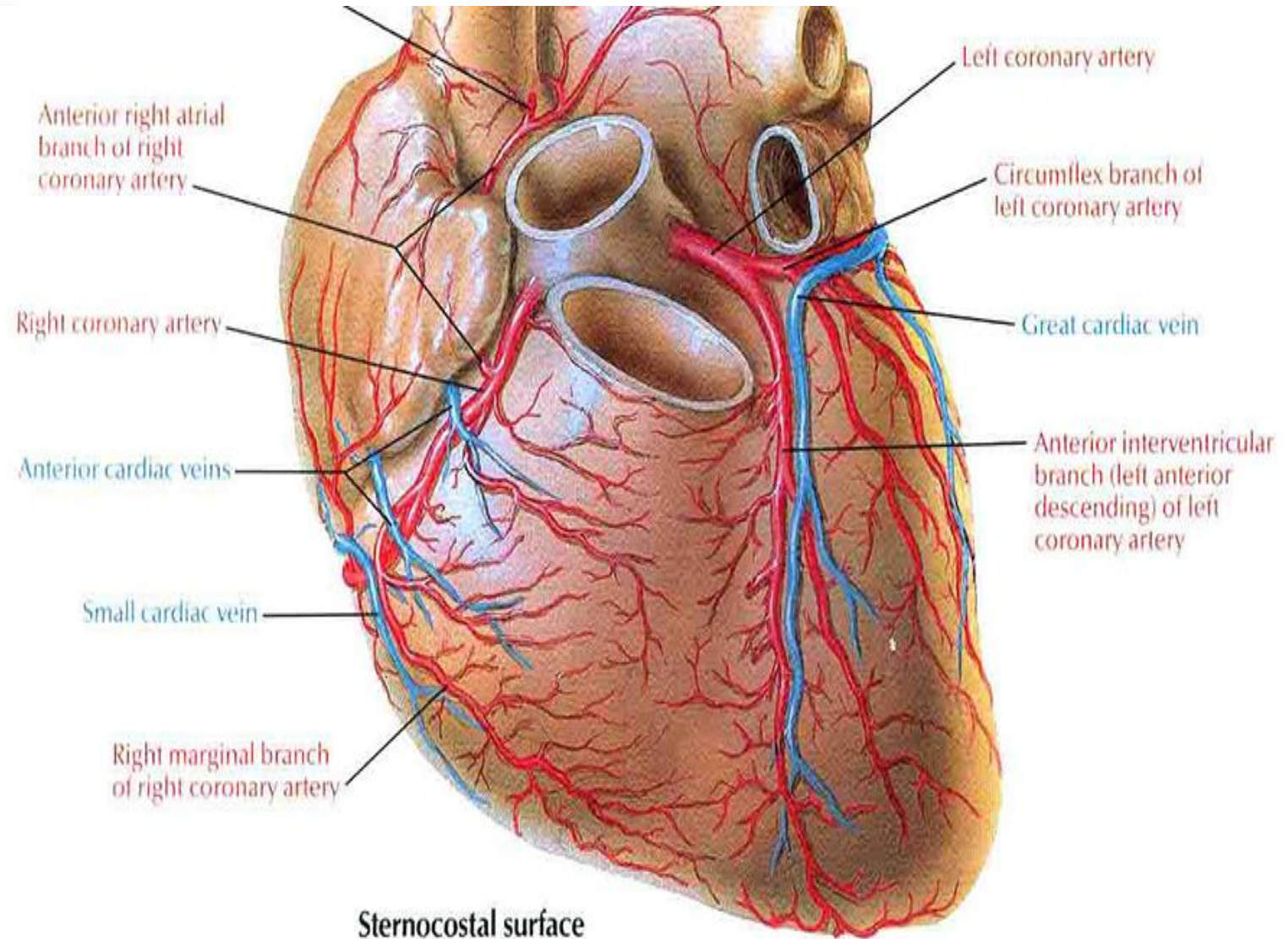
_ It arises from Ascending aorta from the left sinus of Valsalva and passes forward between the pulmonary trunk and the left auricle.



② The left coronary artery

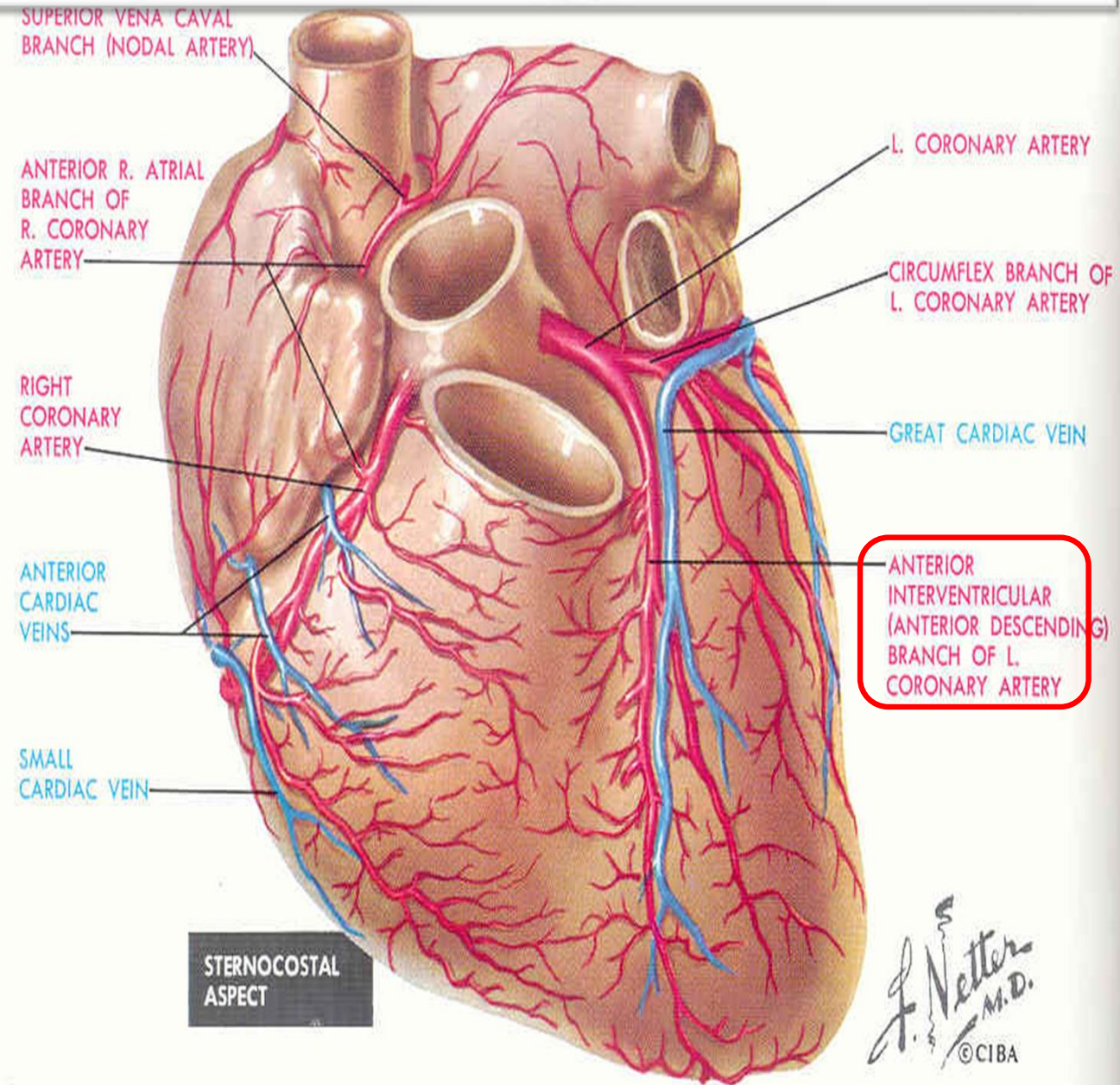
— It then enters the atrioventricular groove and divides into

1. Anterior interventricular branch
2. Circumflex branch.



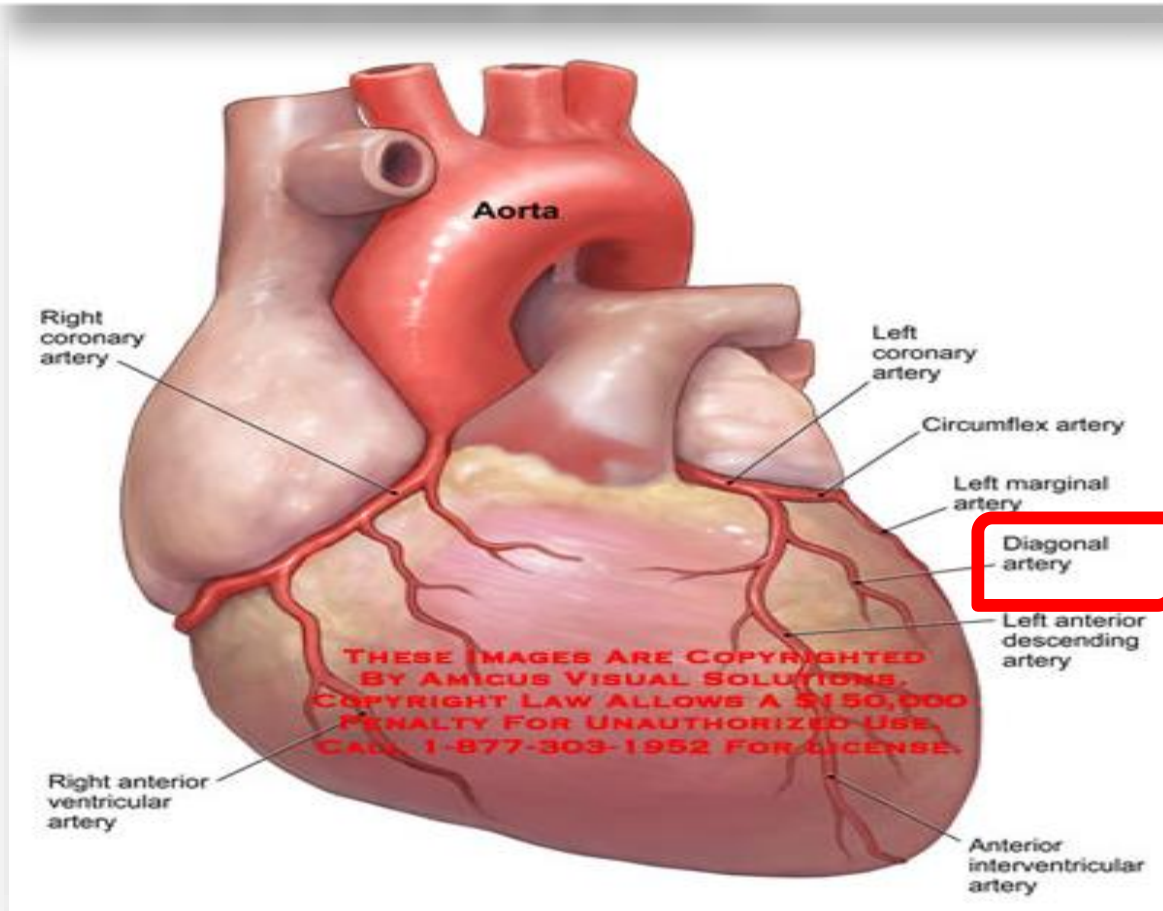
1. The anterior intraventricular (descending) branch

- *Runs downward in the anterior interventricular groove to the apex of the heart .
- *Then passes around the apex of the heart and anastomose with terminal branches of the right coronary artery.
- *In 3rd of individuals, it ends at the apex of the heart.
- *It supplies the right and left ventricles with numerous branches that also supply the anterior part of the ventricular septum

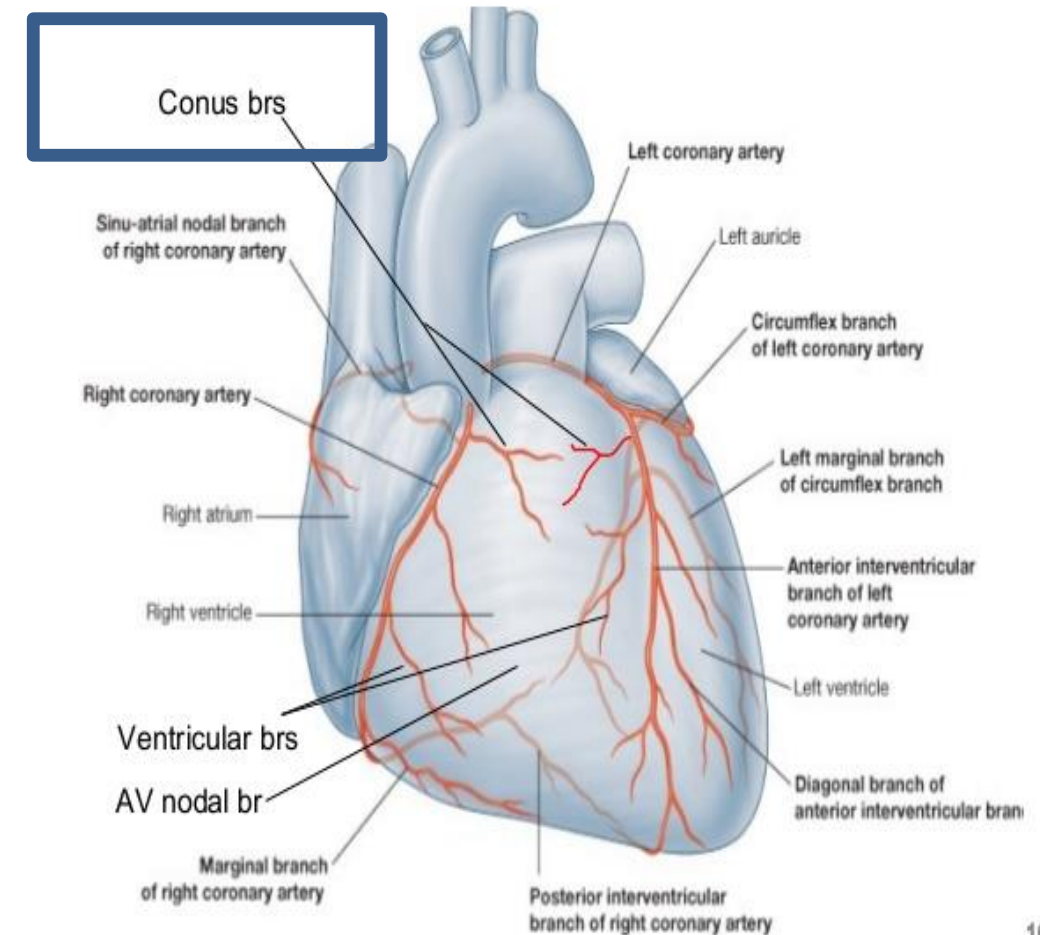


Branches are of anterior descending artery :

A. Left diagonal artery may arise directly from the trunk of the left coronary artery or from anterior interventricular branch.

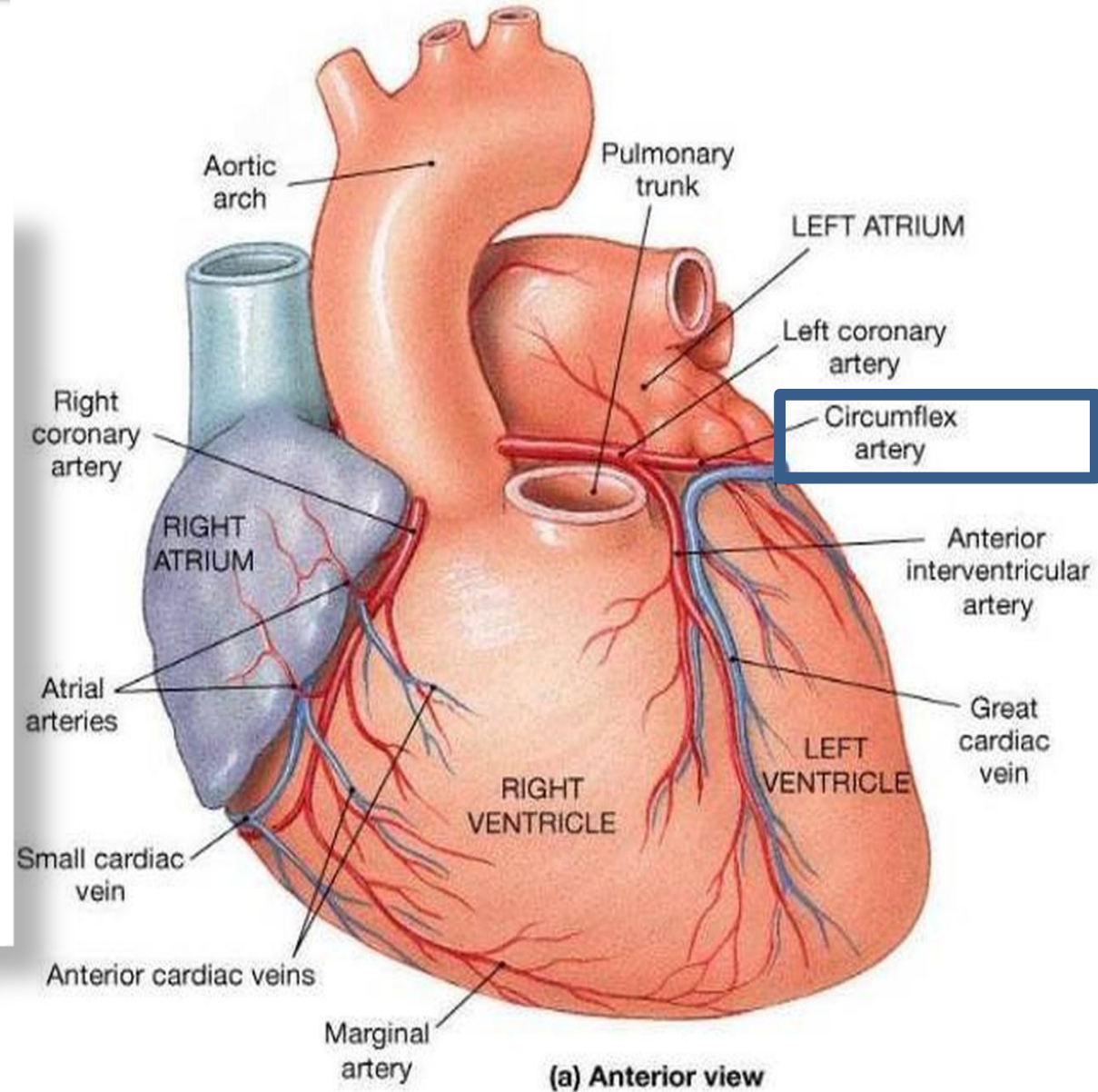


B. Left conus artery small branch supplies the pulmonary conus.



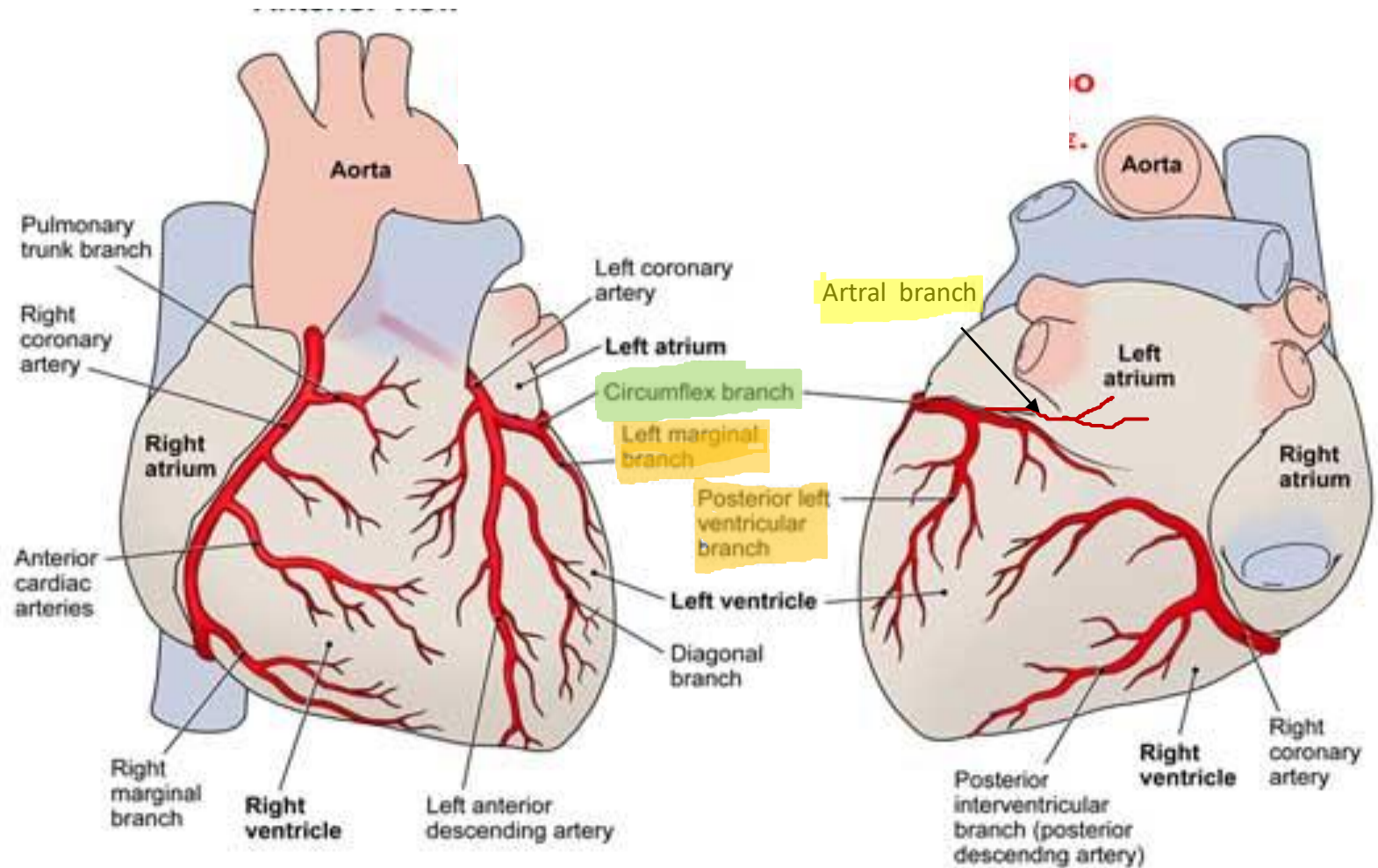
2. The circumflex artery

- * It is the same size as the anterior interventricular artery .
- * It turns around the left margin of the heart in the left atrioventricular groove.



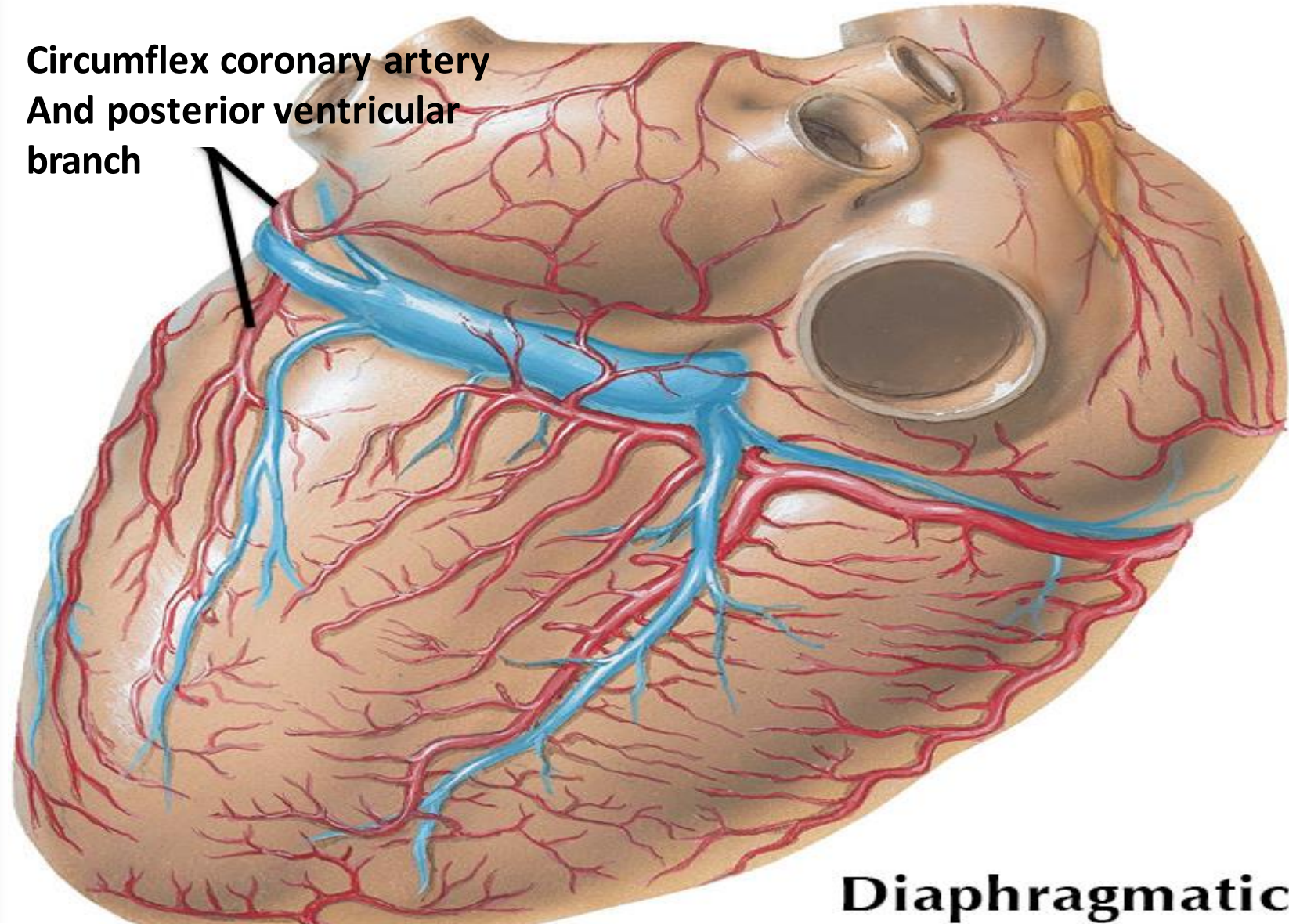
Branches of The circumflex artery

1. Anterior and posterior ventricular branches supply the left ventricle .
2. **Left marginal artery** is a large branch that supplies the left margin of the left ventricle down to the apex.
3. **Atrial branches:** Supply left atrium.



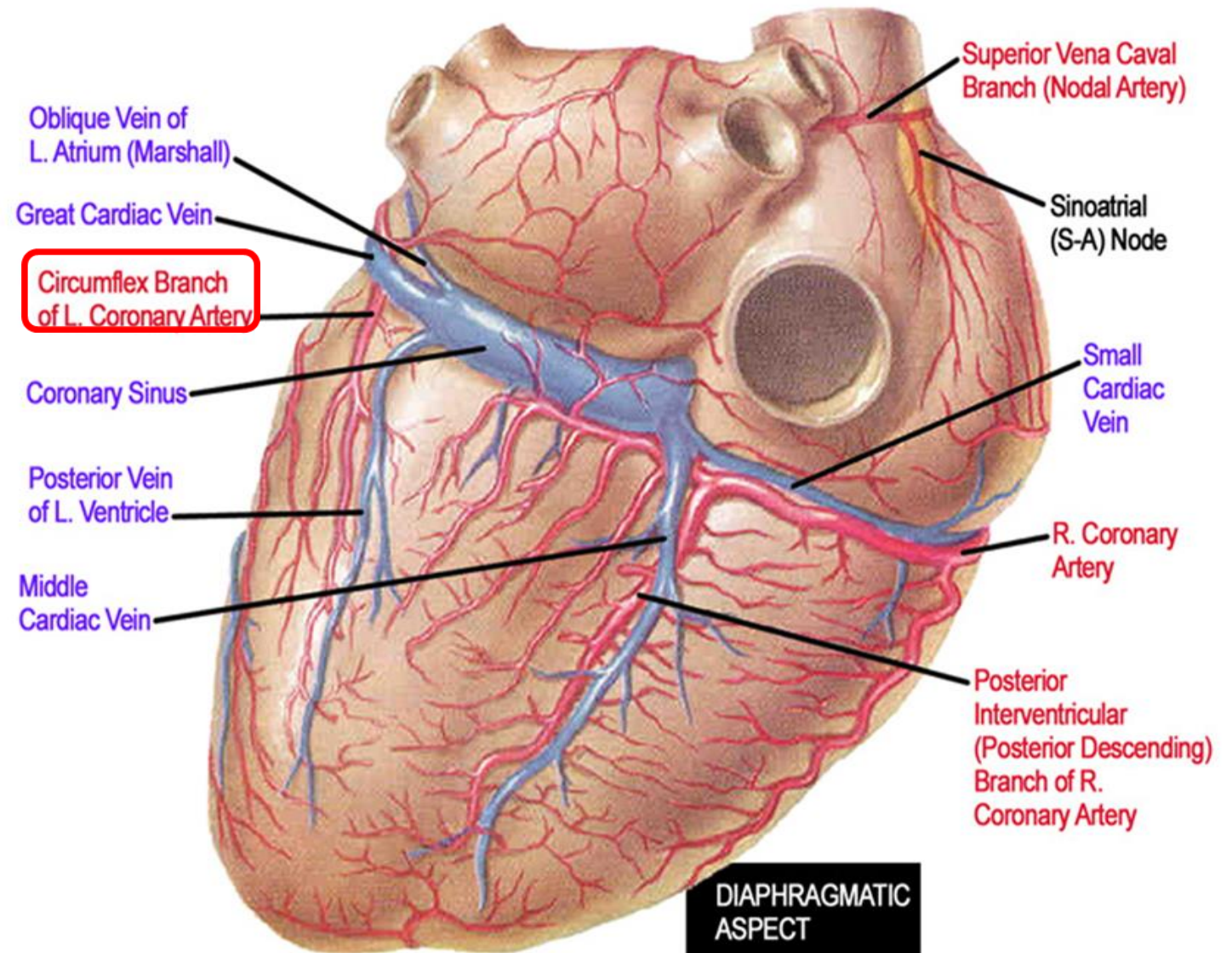
Branches of The circumflex artery

- 1. Anterior and posterior ventricular branches supply the left ventricle**
- 2. Left marginal artery** is a large branch that supplies the left margin of the left ventricle down to the apex.
- 3. Atrial branches:** Supply left atrium.



Venous drainage of heart

The venous blood is collected by the cardiac veins that roughly follow the path of coronary arteries. All the cardiac veins ultimately join to form an enlarged vessel known as The Coronary sinus

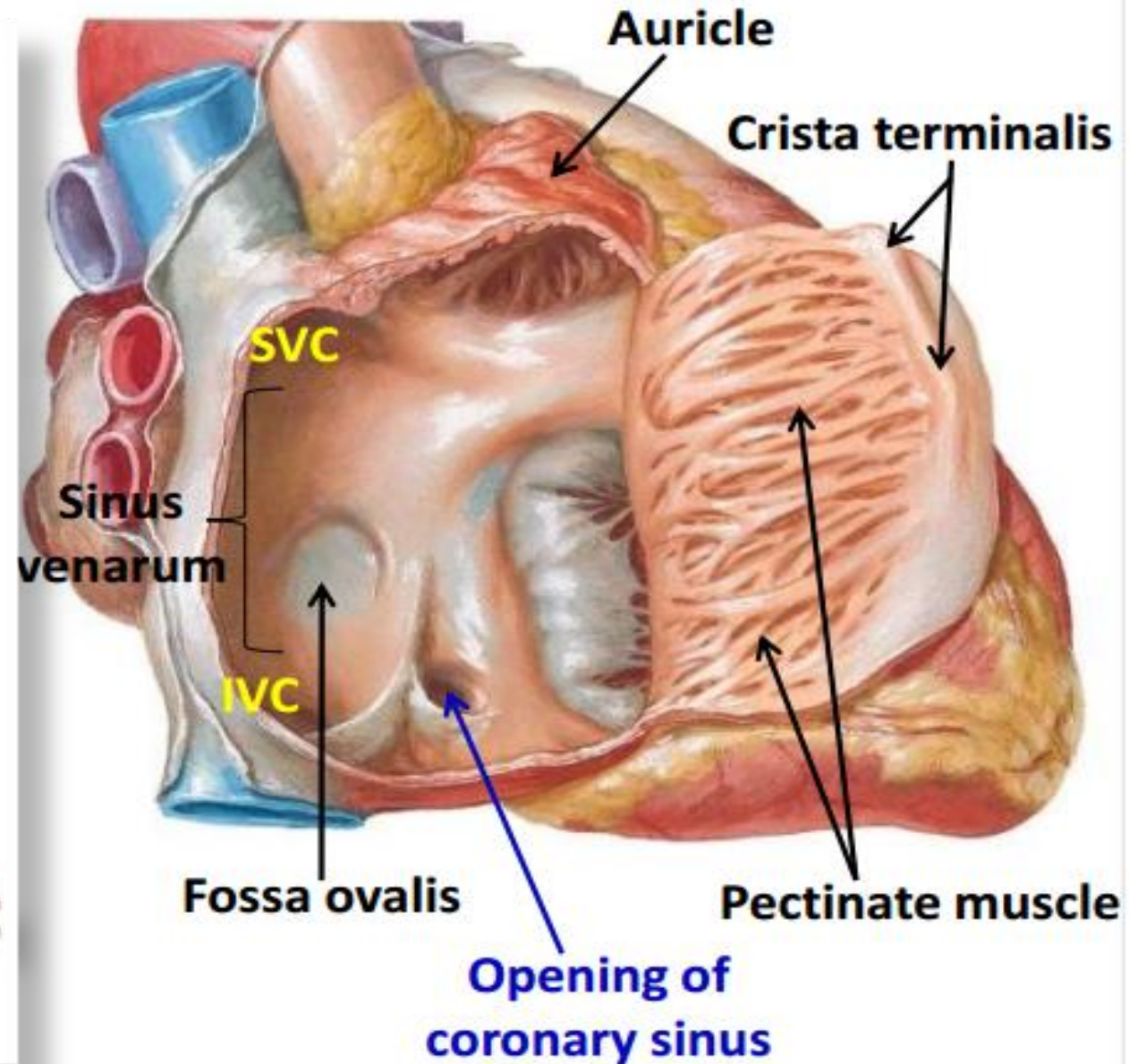


Coronary sinus

➔ Occupies the posterior part of the coronary sulcus.

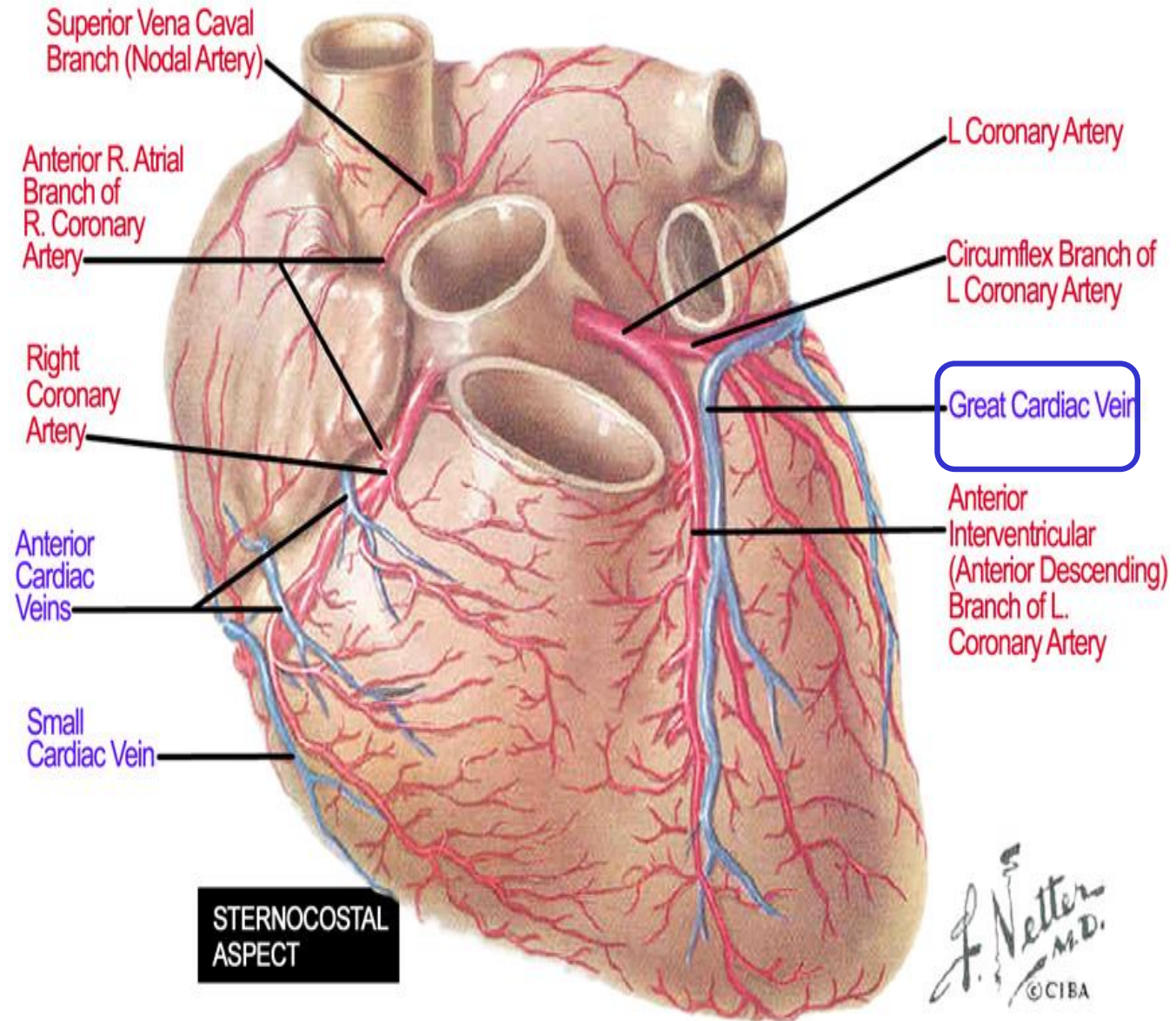
➔ Opens into the right atrium between the opening of the inferior vena cava and the tricuspid valve.

➔ Returns almost all the venous blood from the heart into the right atrium.



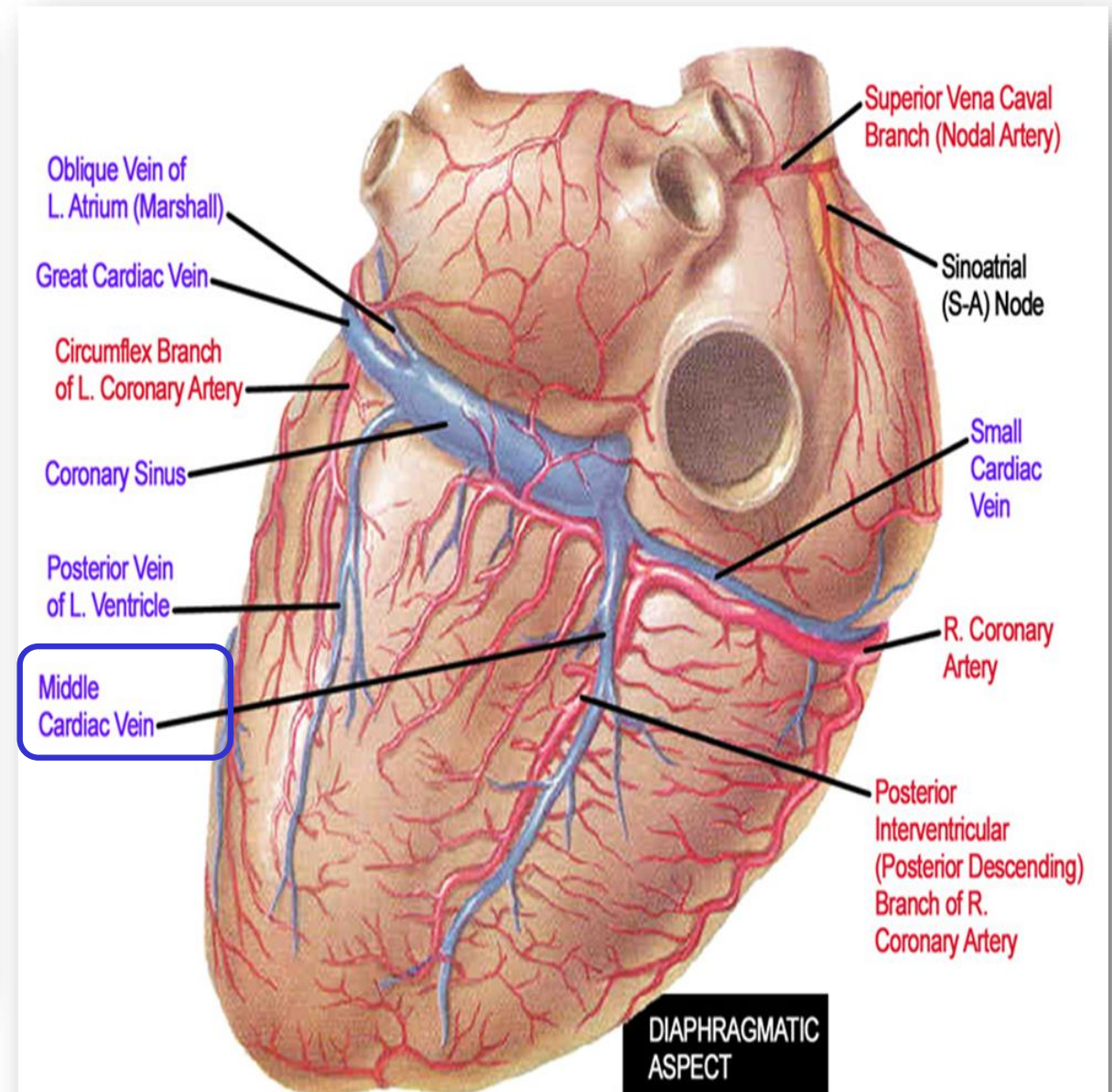
The Great cardiac vein,

- ➔ Begins at the cardiac apex
- ➔ Runs in the anterior interventricular sulcus along with anterior interventricular artery.
- ➔ Drains the areas of the heart supplied by the left coronary artery, (left and right ventricles and left atrium).



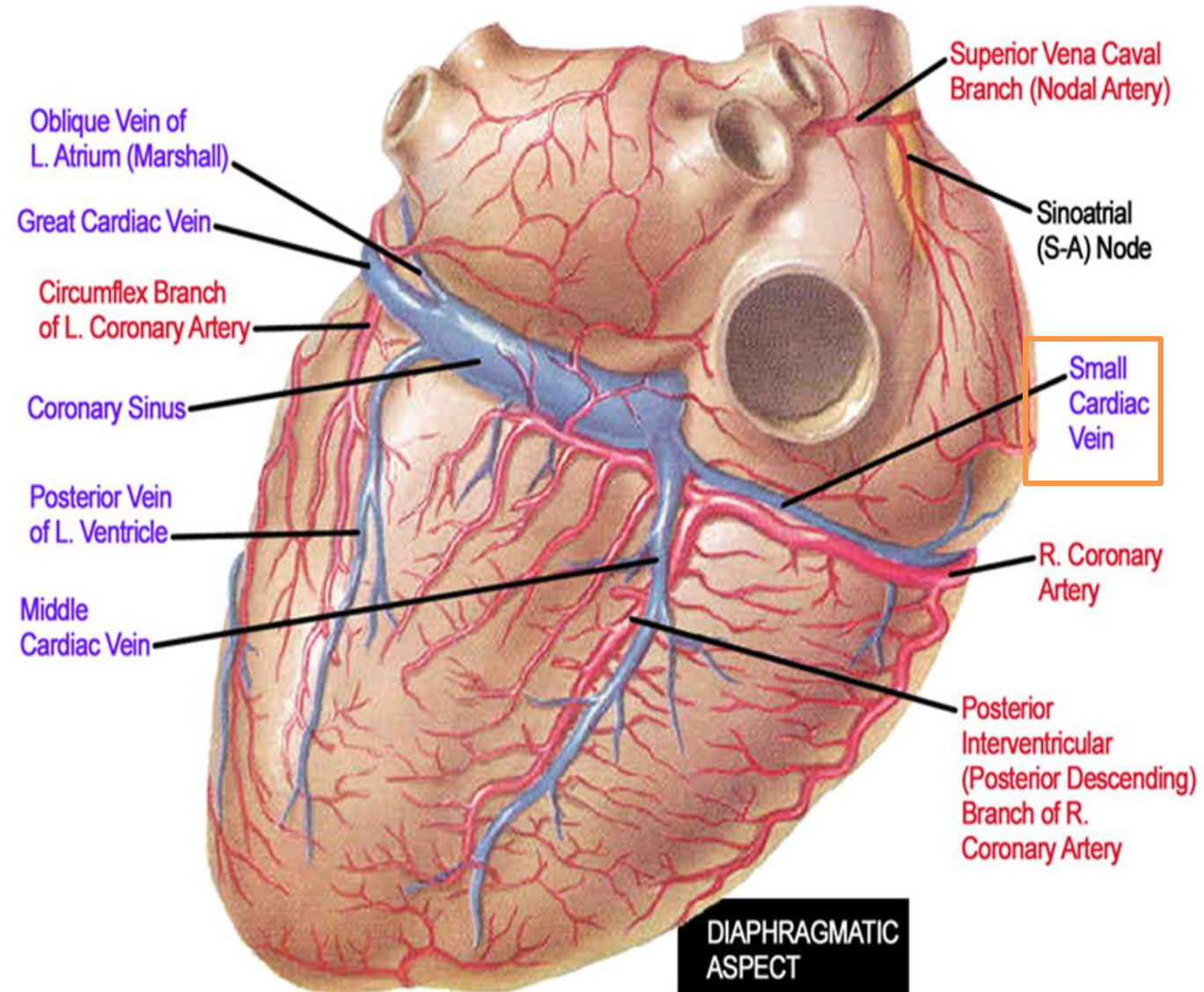
The Middle cardiac vein

- ➔ Runs in the posterior interventricular groove with posterior descending artery and drains directly into the coronary sinus close to its termination.
- ➔ Drains the posterior wall of both ventricles and the posterior interventricular septum.
- ➔ At the cardiac apex small tributaries of the middle cardiac vein anastomose with tributaries of the great cardiac vein



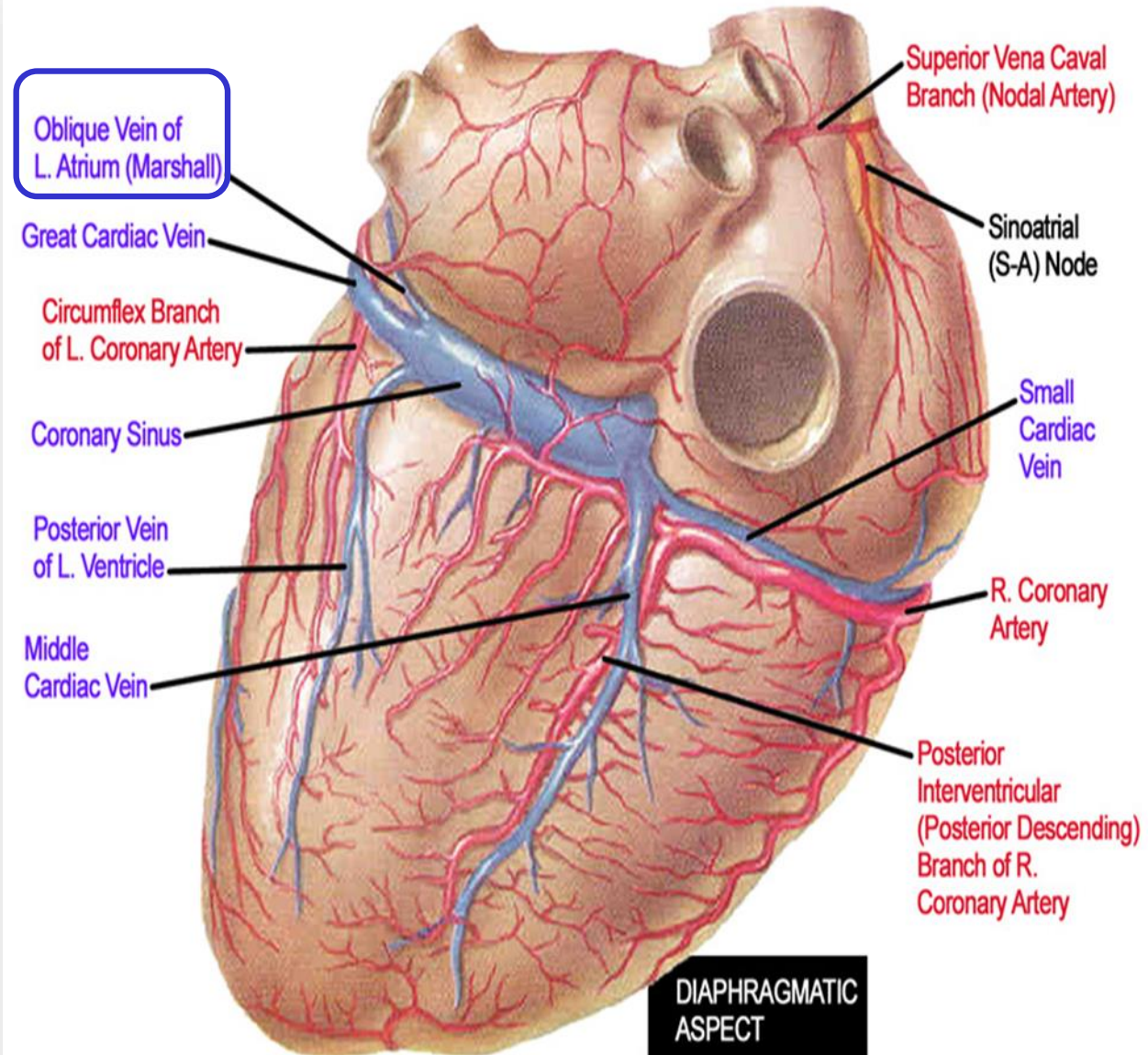
The Small cardiac vein

- ➔ Accompanies the acute marginal artery from the RCA.
- ➔ Runs in the right posterior atrioventricular groove and
- ➔ Drains the right ventricle
- ➔ Drains into the **coronary sinus** close to its termination but may drain directly into the right atrium.

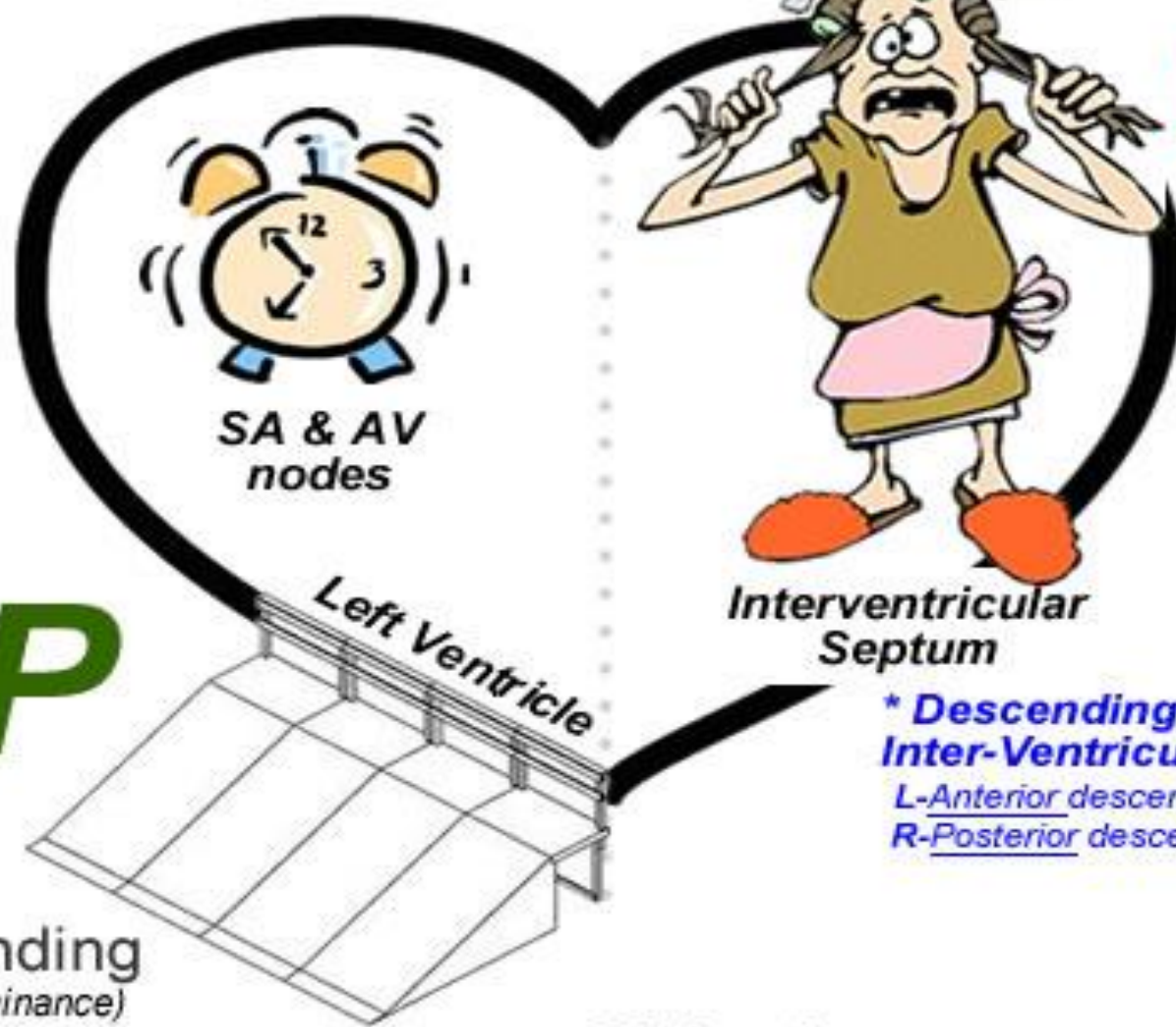


The Oblique vein

The Oblique vein of the left atrium descends obliquely on the back of the left atrium to join the coronary sinus.



Coronary Artery Anatomy



L-O-C-A

"crazy" in Spanish

- Left coronary
- Circumflex (*20% -> PDA)
- Anterior descending (most often occluded)
- "L.A. most occluded city" supply the most of LV

SA & AV nodes

R-aM-P

- Right coronary
- Marginal
- Posterior descending (*80% -> PDA = Right dominance)

Interventricular Septum

* **Descendings irrigate the Inter-Ventricular Septum**

L-Anterior descending (LAD) = anterior IV septum
R-Posterior descending = posterior IV septum

ST elevation

- Sinus dysfunction: II, III, aVF
- Septum: V1, V2
- Transmural anterior LV: V3, V4
- LAD occlusion: V1 to V4; maybe I, aVL

