



معكم خطوة بخطوة

Anatomy  
Passion



Lecture:

14

Done By:

Elaf Sameer



الجامعة الهاشمية  
The Hashemite University

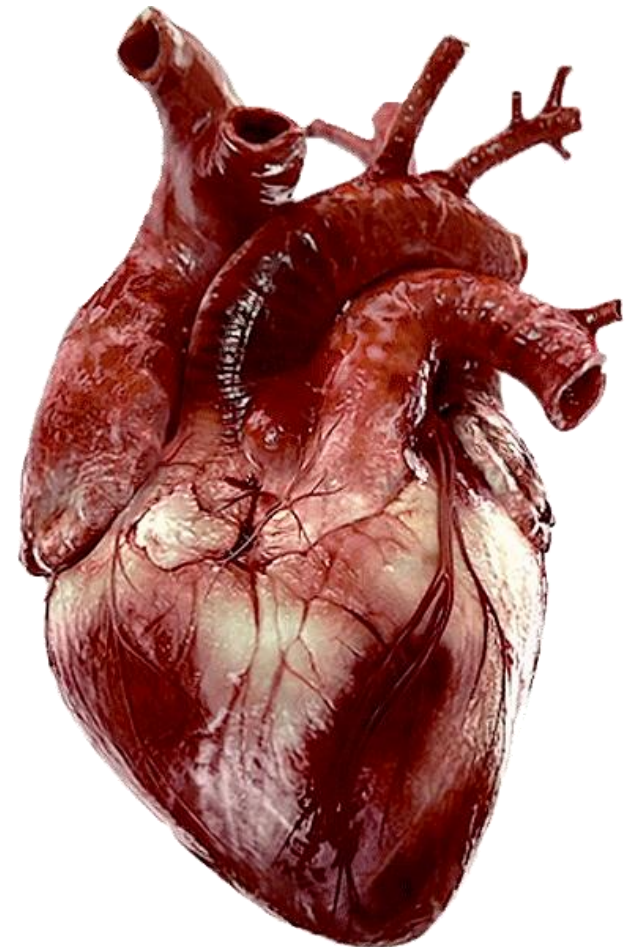


# General Anatomy

## Lecture 14: Cardiovascular System (1)

**Dr. Mohamed Fathi  
Elrefai**

**Ass. Professor of Anatomy &  
Embryology  
mohamed@hu.edu.jo**



# THE CARDIOVASCULAR SYSTEM

heart

Blood vessels  
subclavian vessels

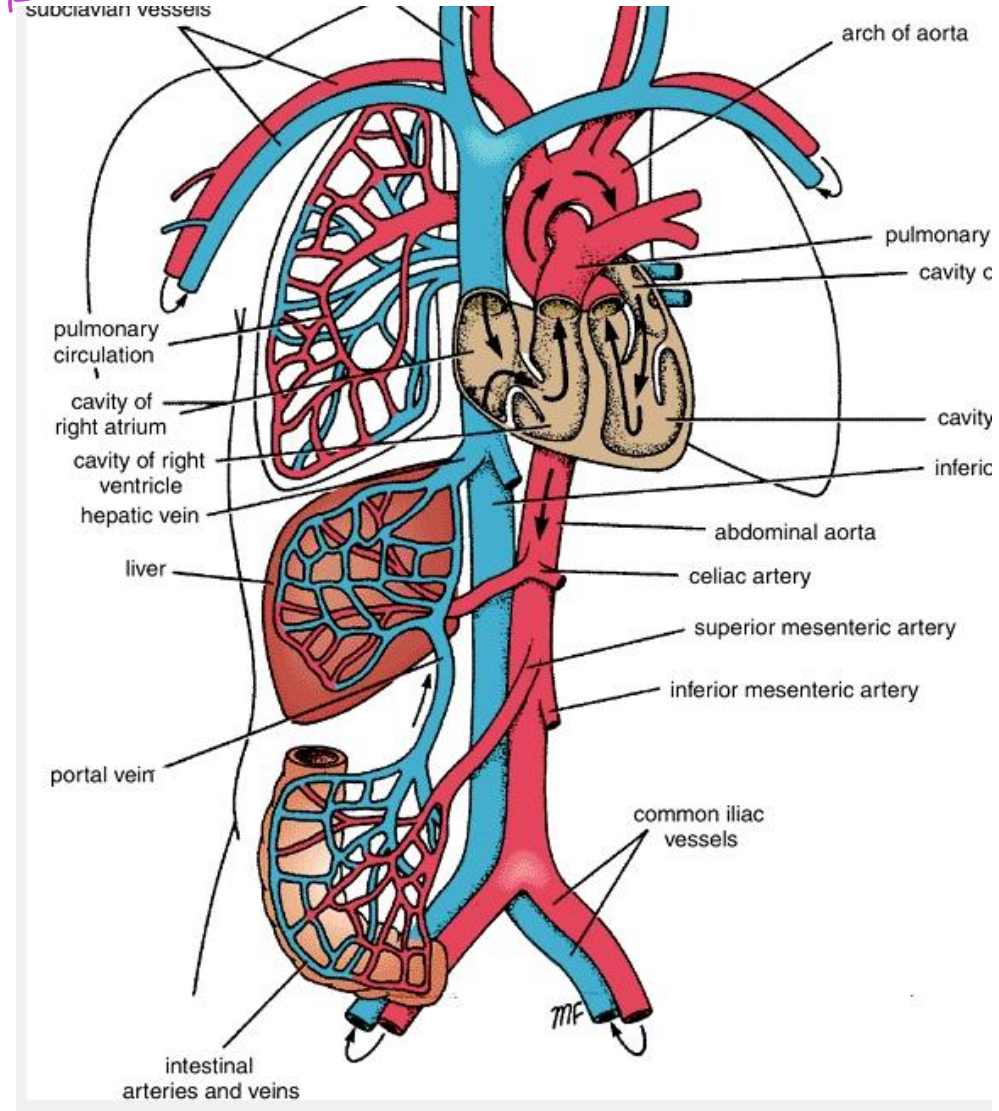
## \* Definition:

\* It is the major part of the circulatory system.

\* It consists of 2 main parts:

1. heart.

2. Blood vessels.



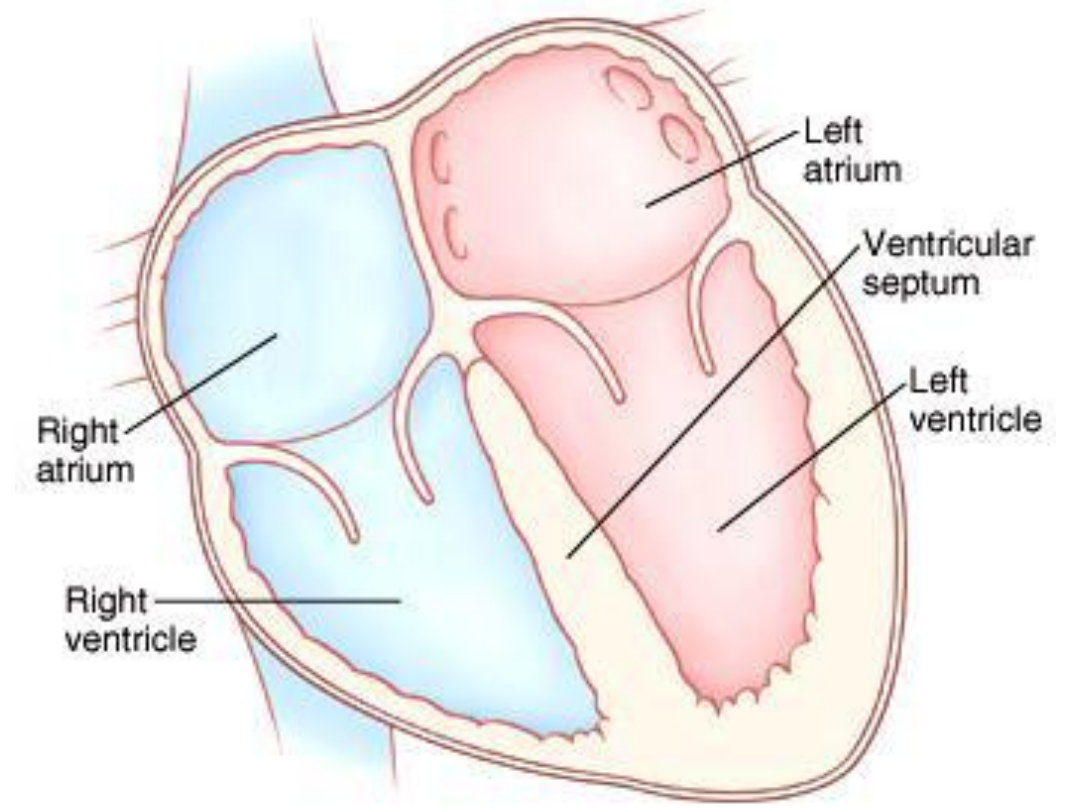


# THE HEART

مخروطی

مخروطی

- \* **Definition:** A conical hollow muscular organ that pumps the blood to various parts of the body. متوسط ← میں 2 lungs
- \* **Site:** In the middle mediastinum (middle space of thoracic cavity).
- \* **Weight:** 300 gm in males & 250 gm in females. → بابت الرامل كبير
- \* **Dimensions:** 12X9 cm.



**\*\* Pericardium:** The heart is surrounded by the **pericardium**, which is divided into: *serous membrane*

a. **outer fibrous pericardium**: **thick, fibrous & attached to diaphragm.**

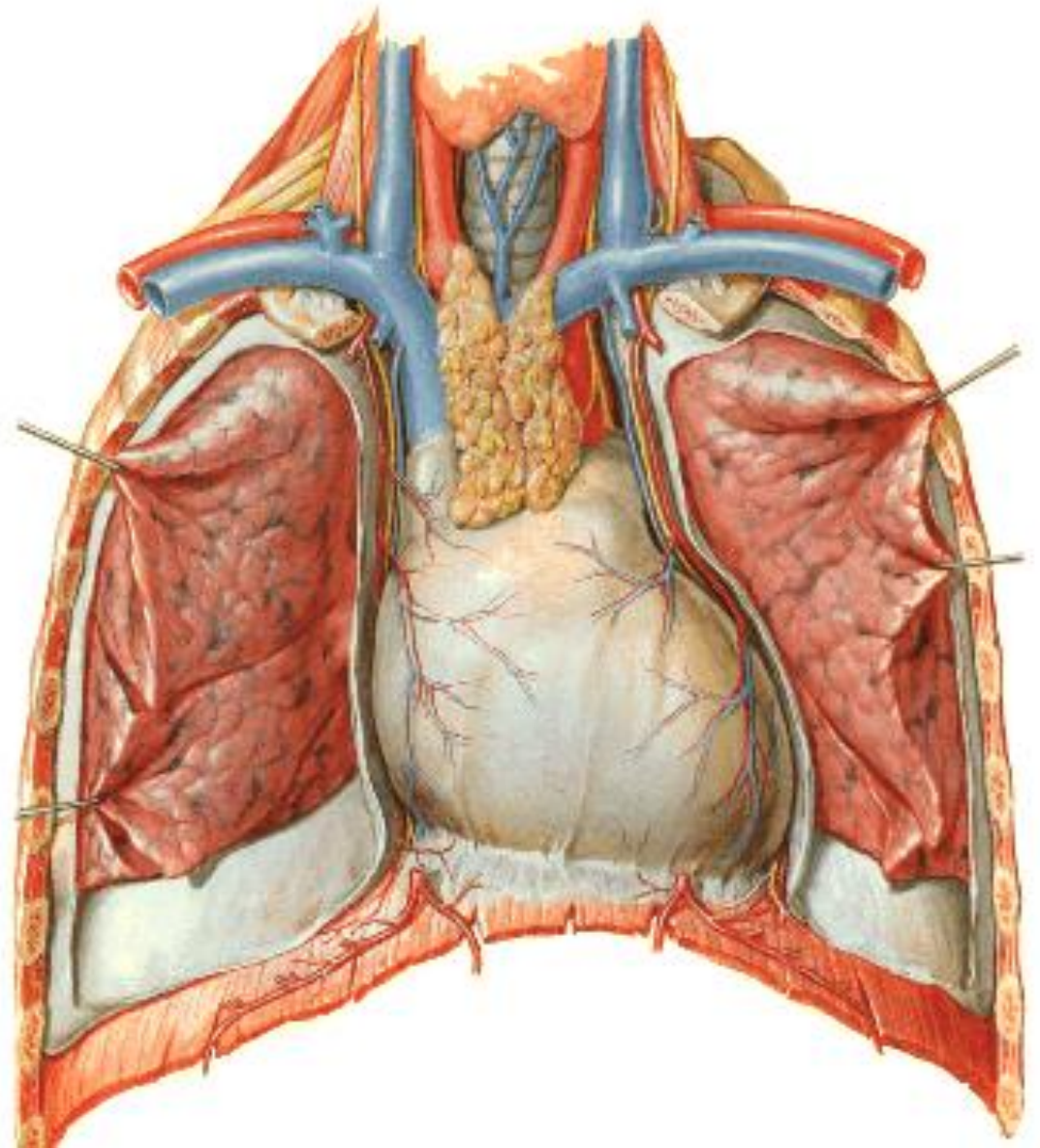
b. **inner serous pericardium**: which consists of 2 layers: *اللي يعطيو ال heart من الاملح*

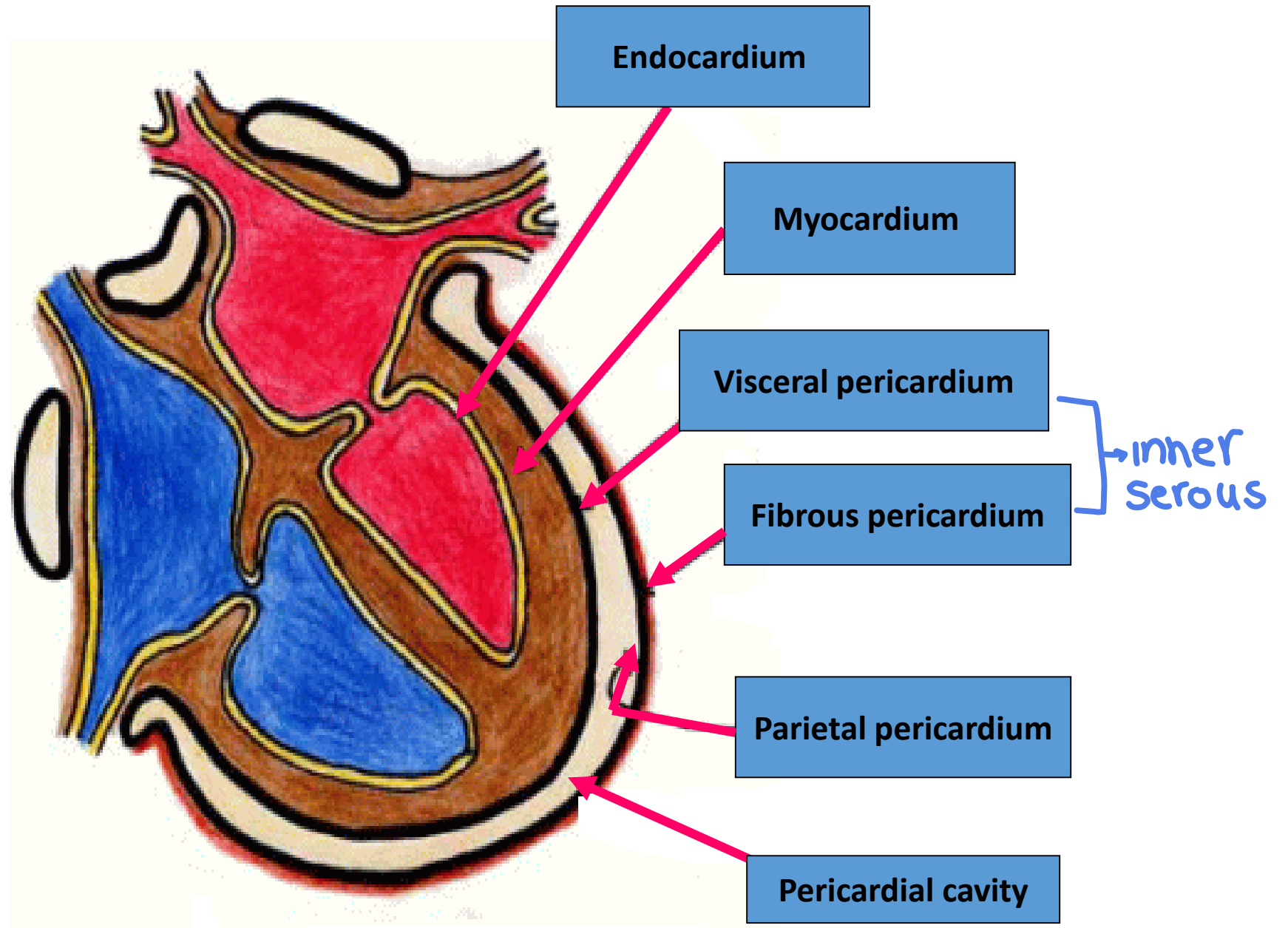
i. **outer parietal**: lines the **fibrous pericardium.**

*الطبقة الاعلى* ii. **inner visceral**: covers the heart. *Visceral pericardium*

**\*\* The space between the 2 layers is called the **pericardial cavity.****

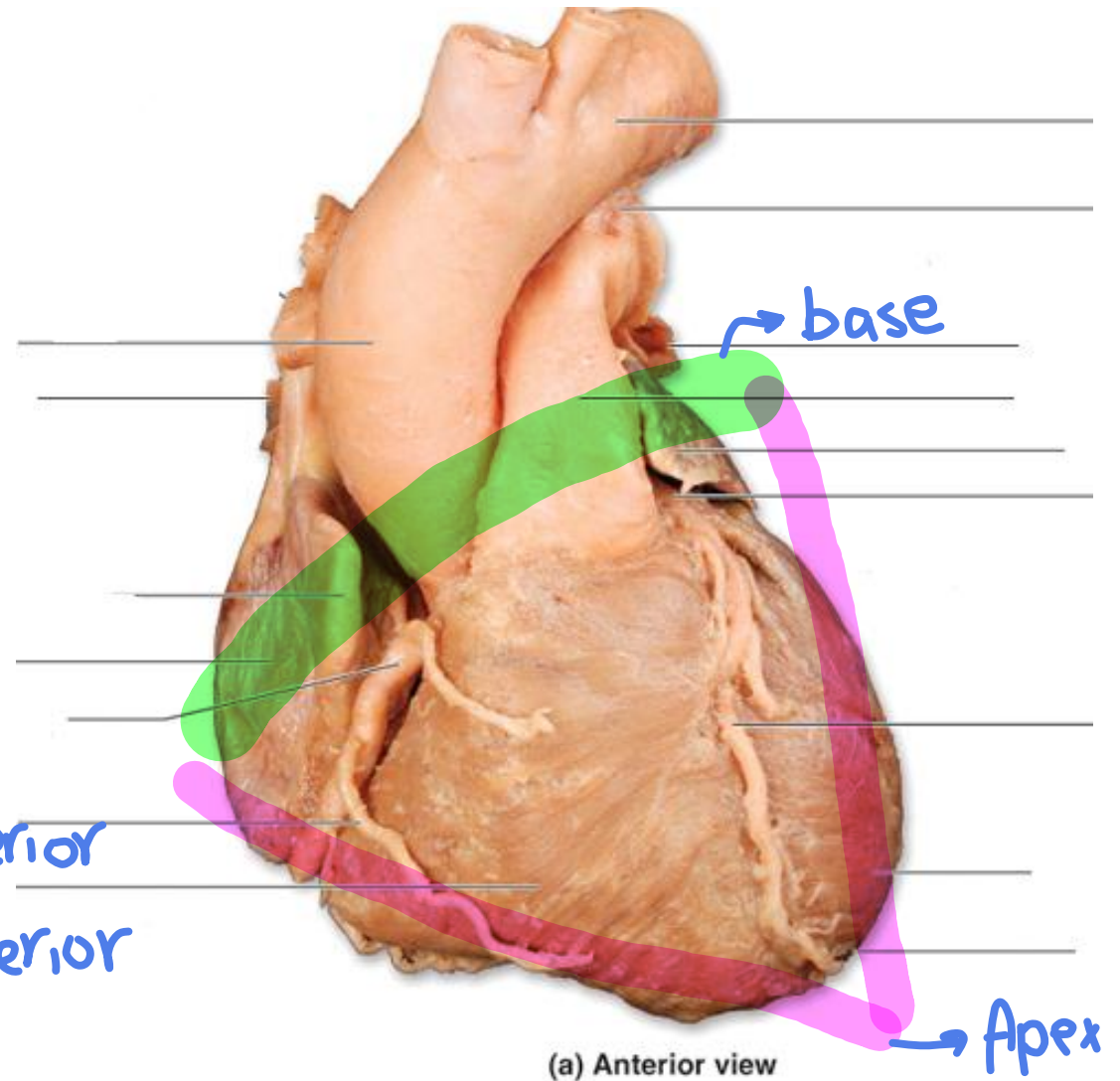
*لها fluid خفيف يمنع الاحتكاك بين layers للقلب*





**\*\* External  
features of the  
heart: it has:**

- 1. Apex.**
- 2. Base.**
- 3. Four borders.**
- 4. Two surfaces**
- 5. Four chambers.**





## 1. The apex of the heart:

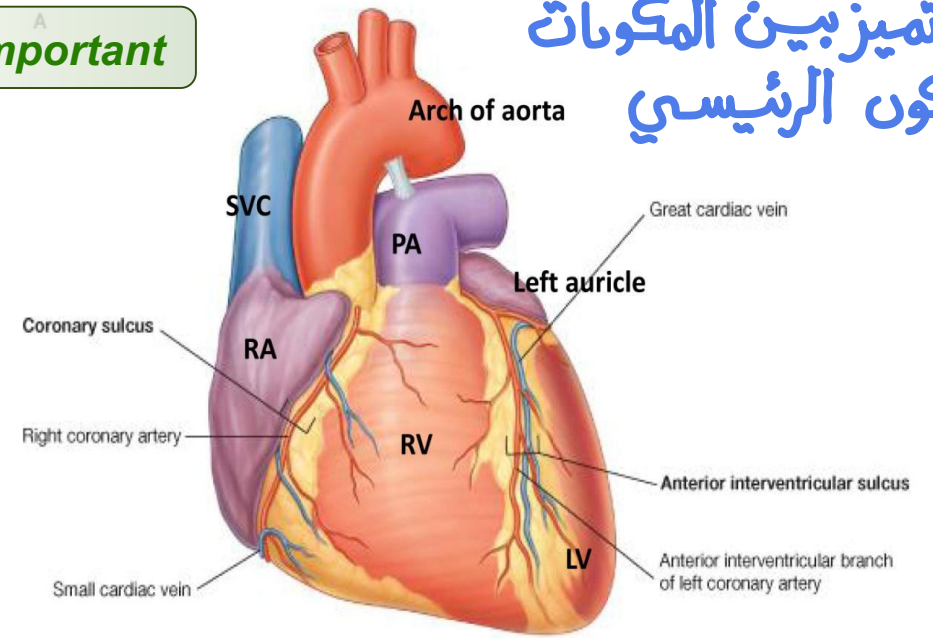
\* Formed of the **Lt ventricle** & directed downward forward to the left.

\* It lies in the **5th left intercostal space, 9.5 cm from the mid-sternal line.**

## 2. The base of the heart:

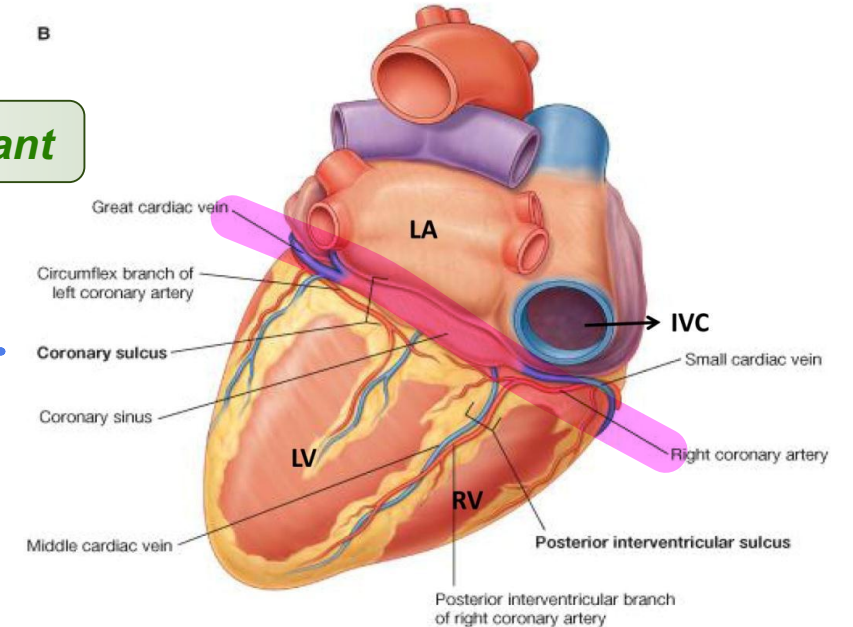
\* Formed of **both atria**, **mainly the left atrium** & directed backward, upward & to the right, forming the **posterior aspect of the heart.**

Important



مهم تميز بين المكونات  
والمكون الرئيسي

Important

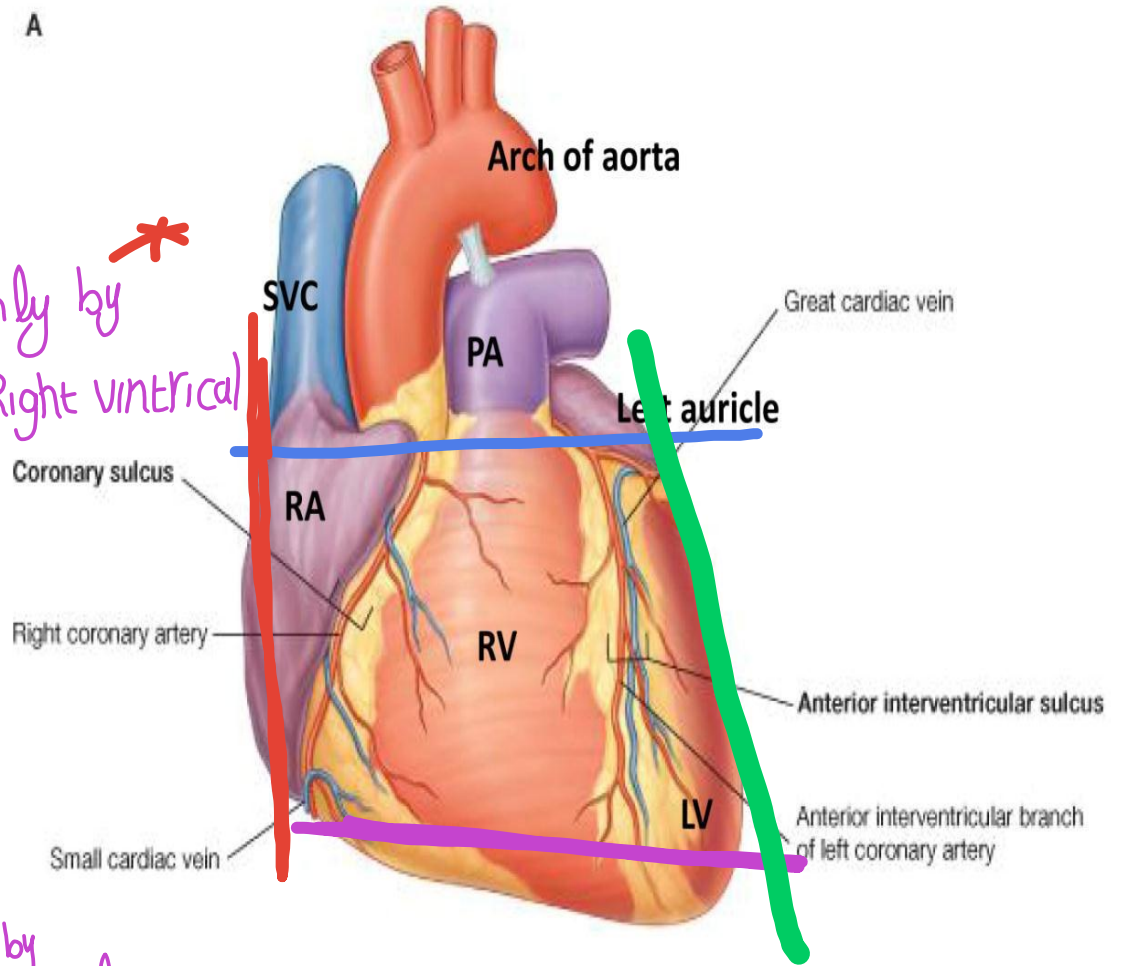


apex كى



### 3. The borders of the heart are:

- a. **Upper border** formed by the **2 atria.**
- b. **Lower border** formed by the **2 ventricles.**
- c. **Right border** formed by the **right atrium.**
- d. **Left border** formed by the **left ventricle & left auricle.**



## 4. The surfaces of the heart:

\* It has 2 surfaces:

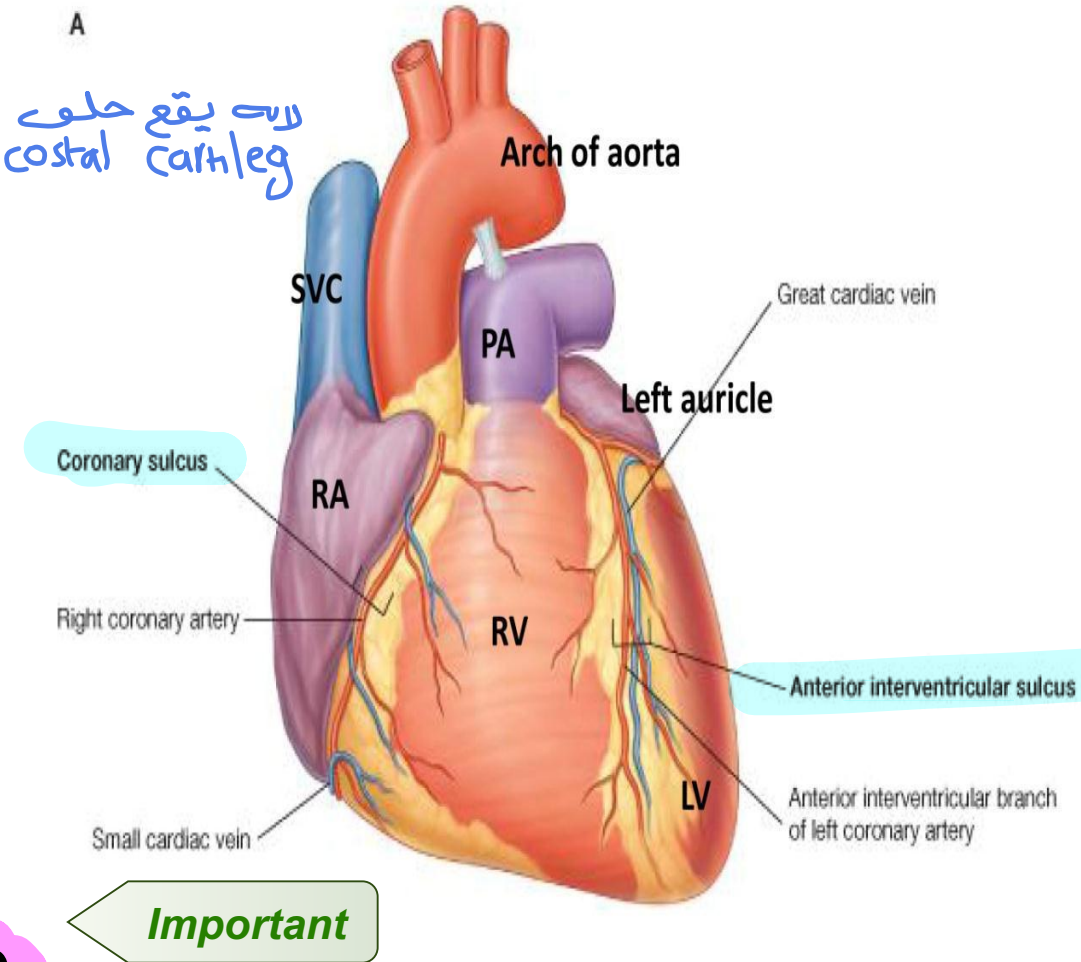
a. Anterior or sternocostal surface: is divided by **coronary sulcus** into:

1. **Atrial part** formed **mainly** by **RT atrium**.

2. **Ventricular part**: subdivided by anterior interventricular sulcus into:

\* **RT 2/3** formed by **RT ventricle**.

\* **LT 1/3** formed by **LT ventricle**.

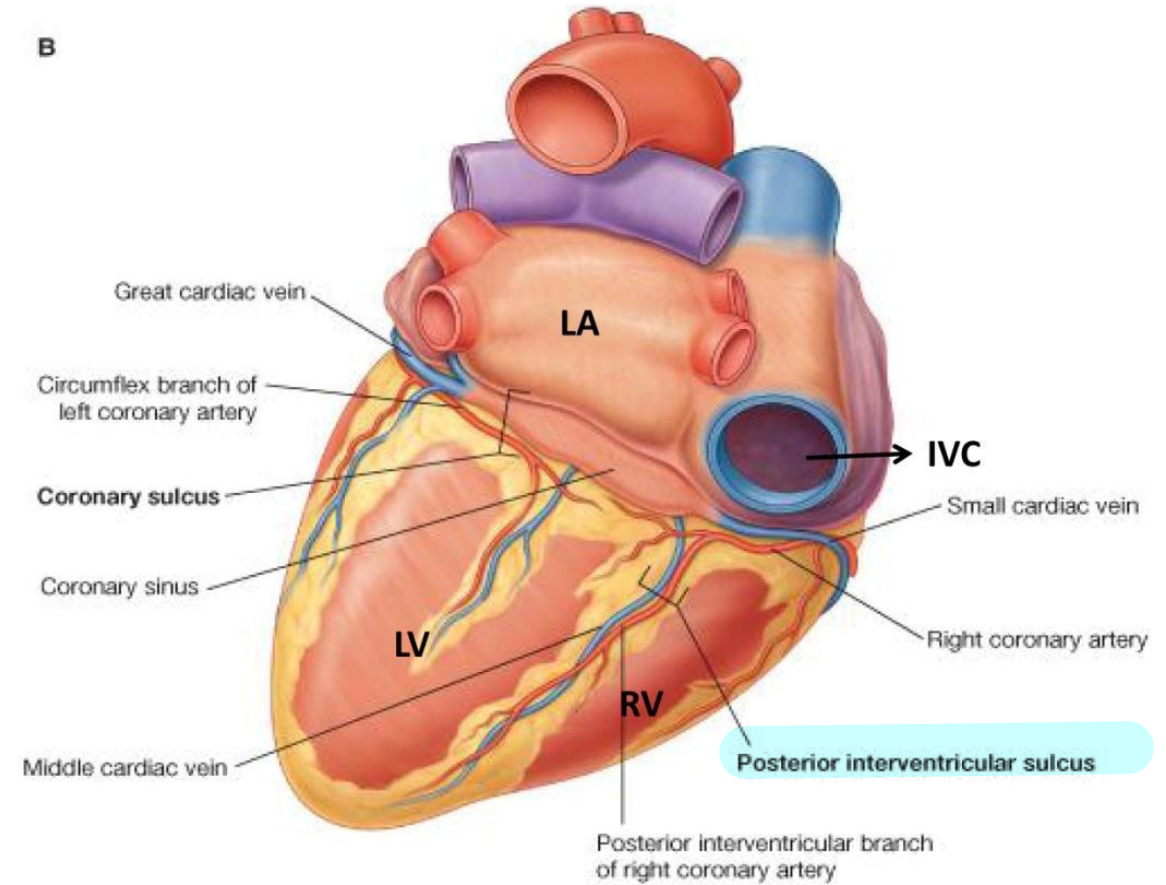


**b. Inferior or** *↳ mainly by LV*  
**diaphragmatic surface:**

\* Formed by the **2 ventricles** & divided by **posterior interventricular sulcus** into:

\* **LT 2/3** formed by **LT ventricle.**

\* **RT 1/3** formed by the **RT ventricle.**





## 5. The chambers of the heart:

### a. The RT atrium: has 2 walls:

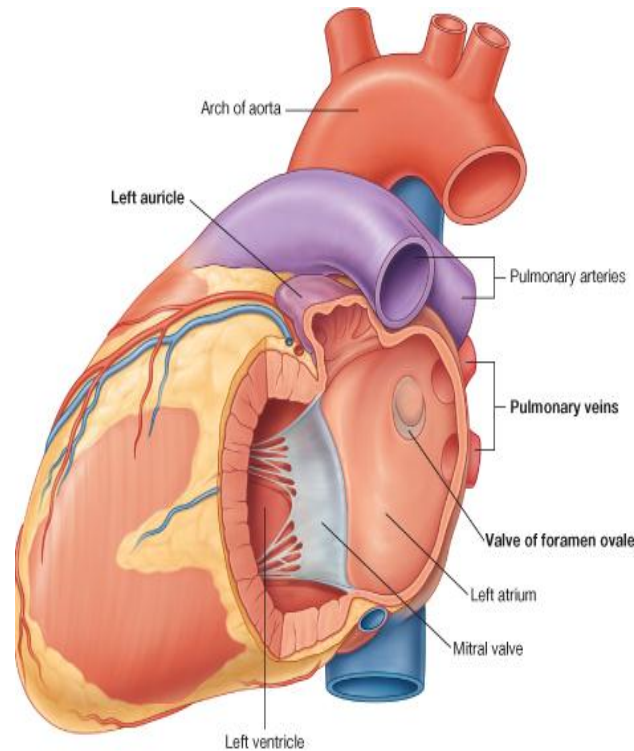
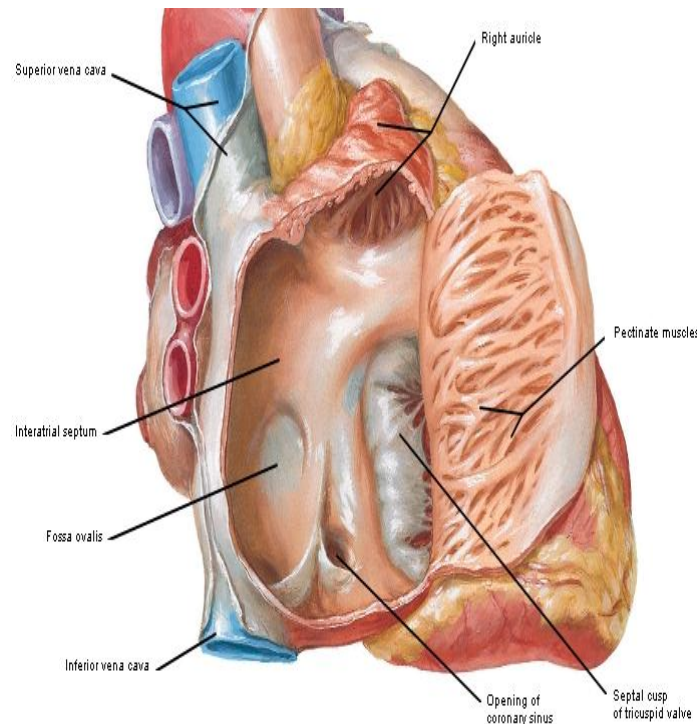
\* Anterior rough or muscular.

\* Posterior smooth receiving the openings of big veins SVC, IVC & Coronary sinus.

*The main vein of the heart*

### b. The LT atrium: its wall is mostly smooth, receiving the openings of the 4 pulmonary veins.

*للمعانة من لungs التي تحمل originated blood*



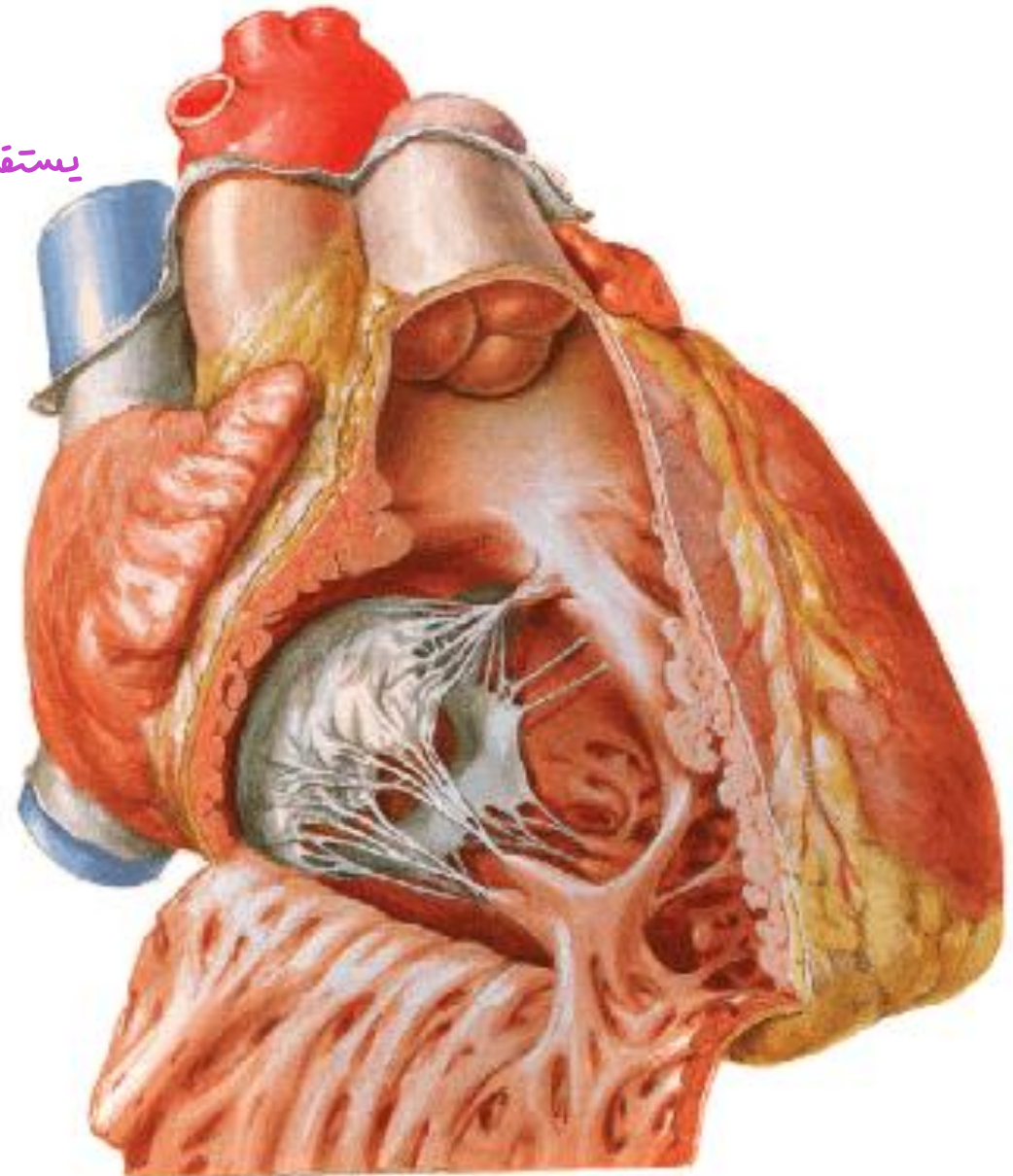
c. The RT ventricle: is divided into 2 parts:

1. Rough muscular inflowing part: receives the blood from the right atrium & contains **3 papillary muscles**.

2. Smooth outflowing part: It is called **Infundibulum**: it pushes the blood into the pulmonary trunk.

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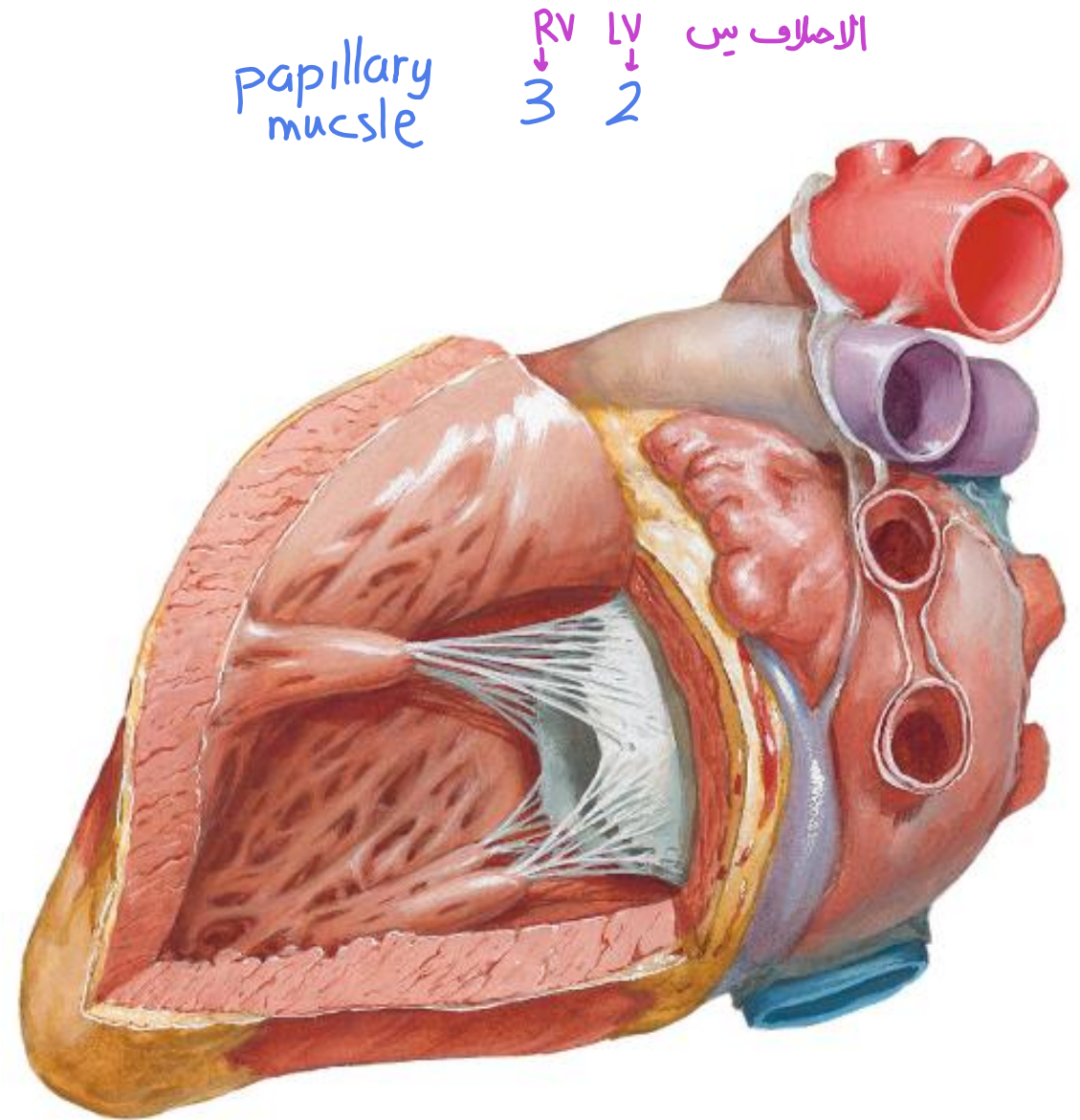
يستقبل الدم الخارج من القلب



d. LT ventricle: is divided into 2 parts:

1. Rough muscular inflowing part: receives the blood from the left atrium & contains 2 papillary muscles.

2. Smooth outflowing part: It is called vestibule: it pushes the blood into the aorta.



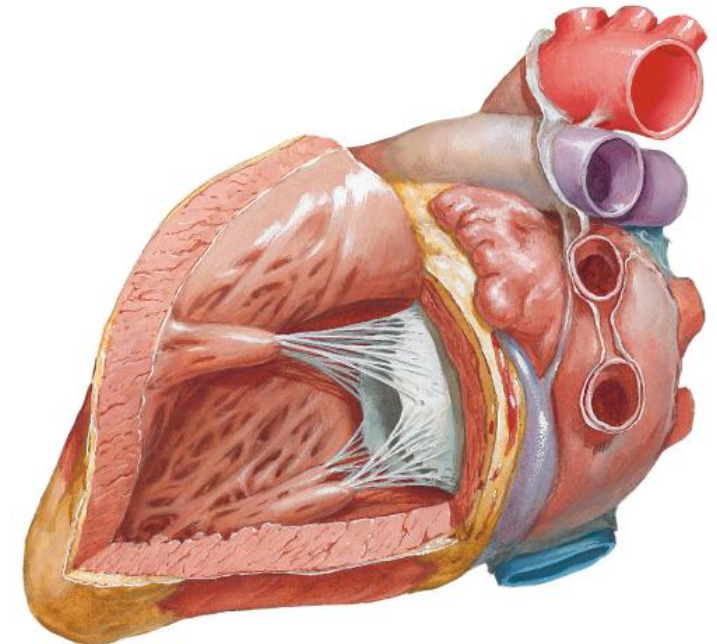
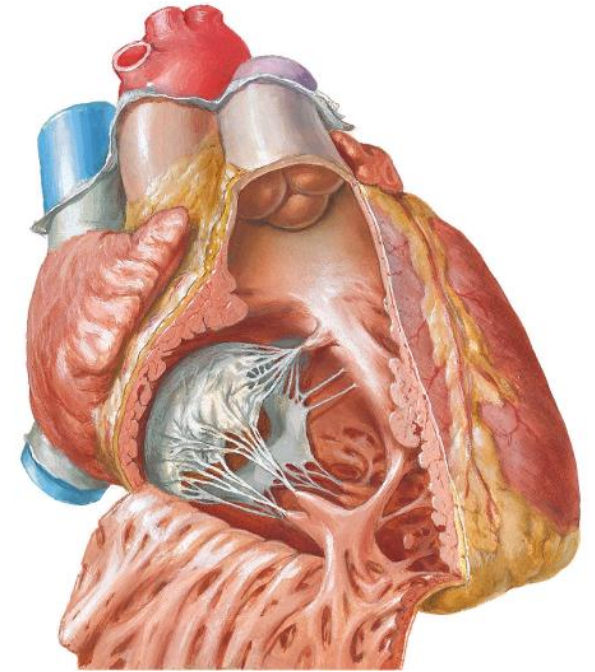


## **\*\* The valves of the heart:**

There are 2 types of heart valves:

### **a. Atrio-ventricular (AV) valves:**

1. The **right valve** called **Tricuspid**. It has **3 cusps** separating the right atrium from right ventricle.
2. The **left valve** called **Bicusped** or Mitral. It has **2 cusps** separating the left atrium from left ventricle.



## b. Semilunar valves:

They are formed of **3 cusps**,  
each **cusp** has a hollow space  
above called **sinus**.

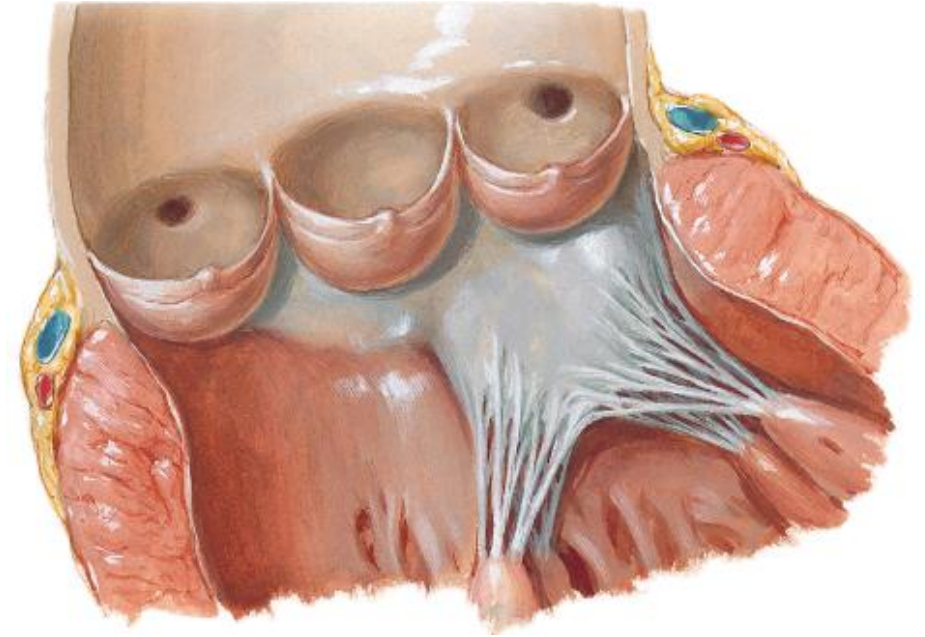
كل Cusp فيه منطقة  
مخوفة اسمها

1. Aortic valve: has **one sinus**

**1** anterior & **2 sinuses**  
posterior.

يكون بمدى aorta

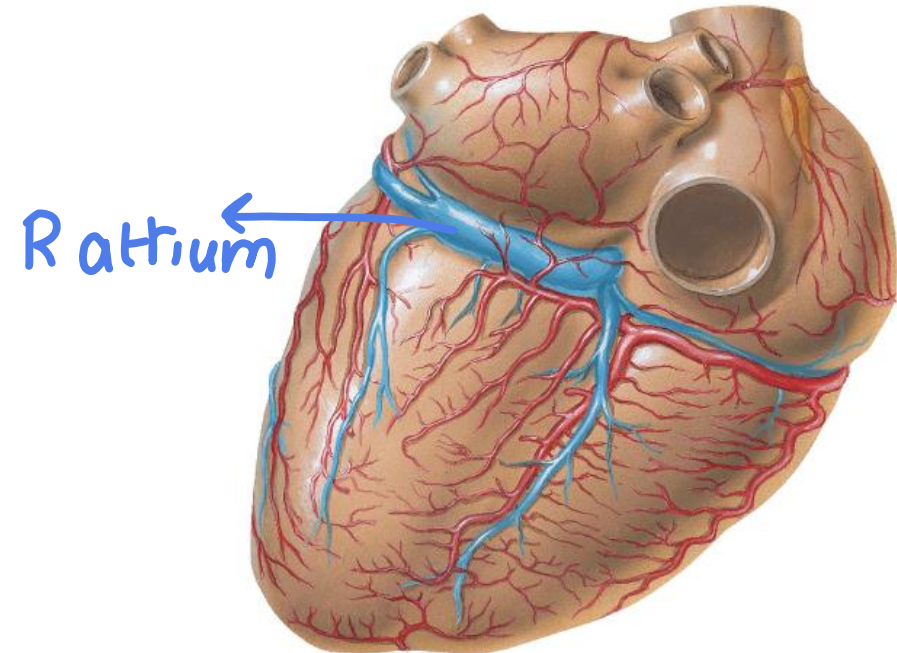
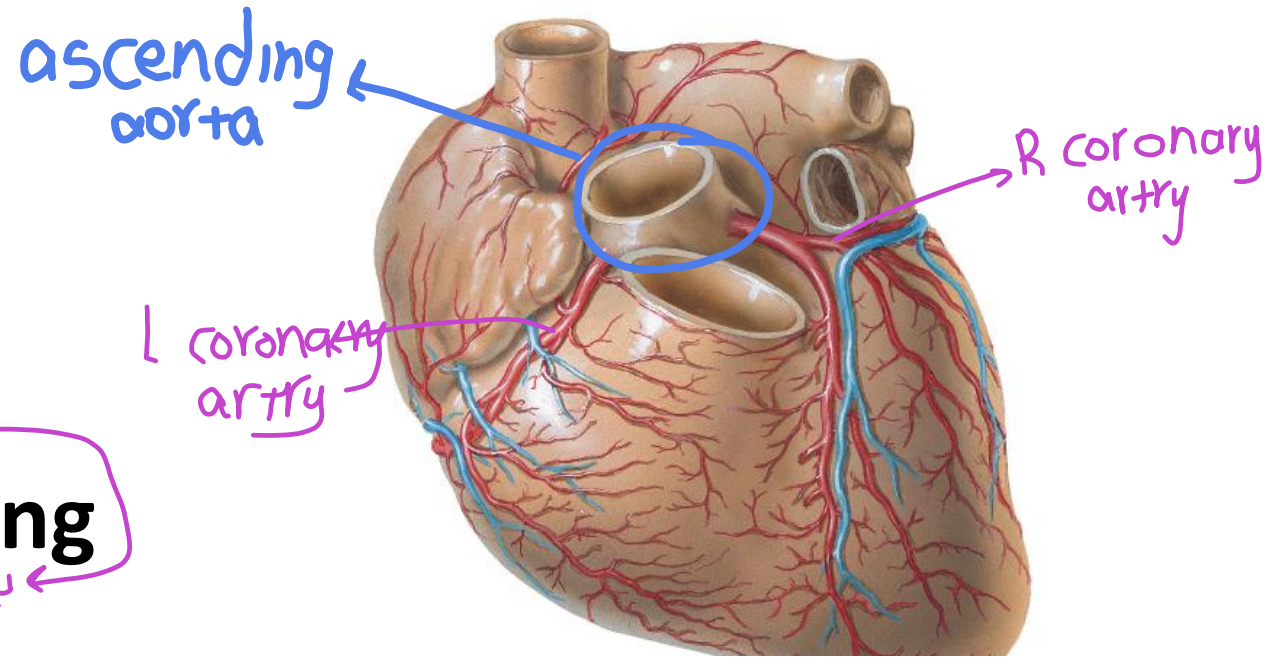
2. Pulmonary valve: has **one**  
**1** sinus posterior & **2 sinuses**  
anterior.



التي تعبر عن حمة القلب نفسها  
**\*\*Blood supply of heart:**

1. **Arterial supply:** by the **coronary arteries (RT&LT)** that arise from the beginning of **ascending aorta**.

2. **Venous drainage:** through small veins that end in short venous channel called **coronary sinus** that opens in the **RT atrium**.

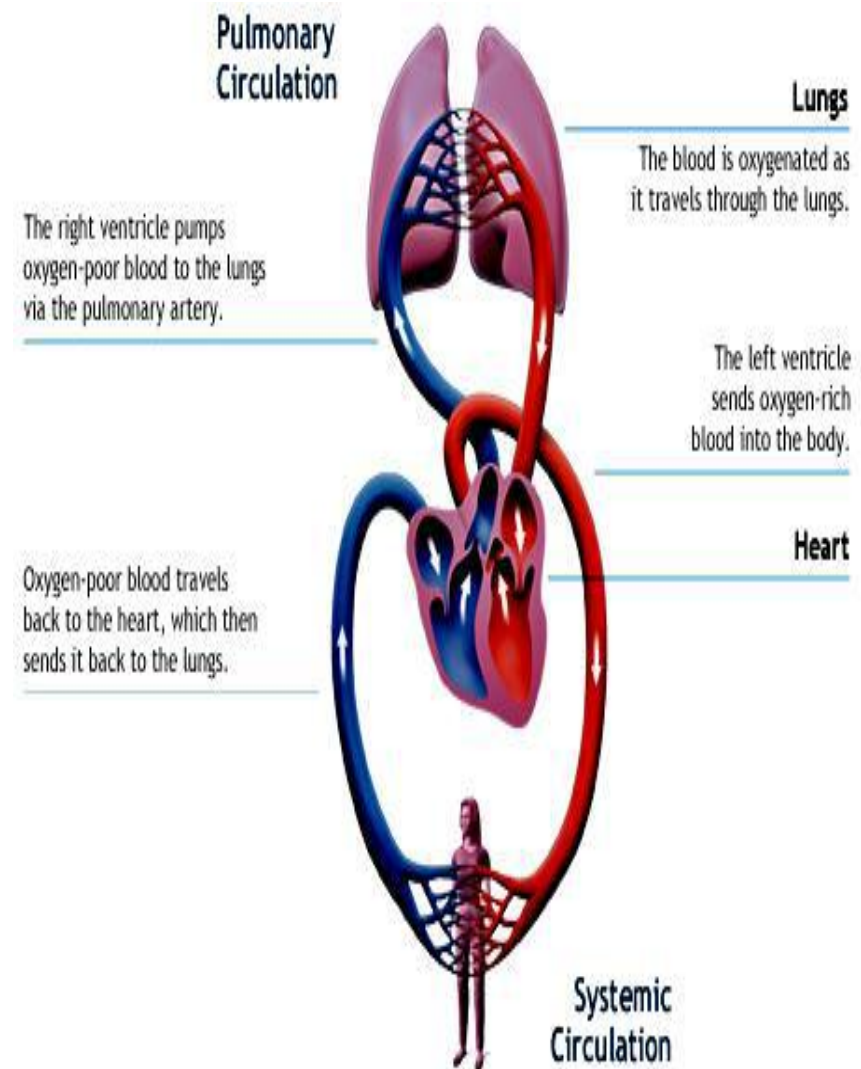




# Types of Blood Circulations

1. **Systemic circulation**: It is the passage of blood from the **Lt ventricle** to the whole body via the aorta & its branches then returning the blood back to the **Rt atrium** through the SVC & IVC.

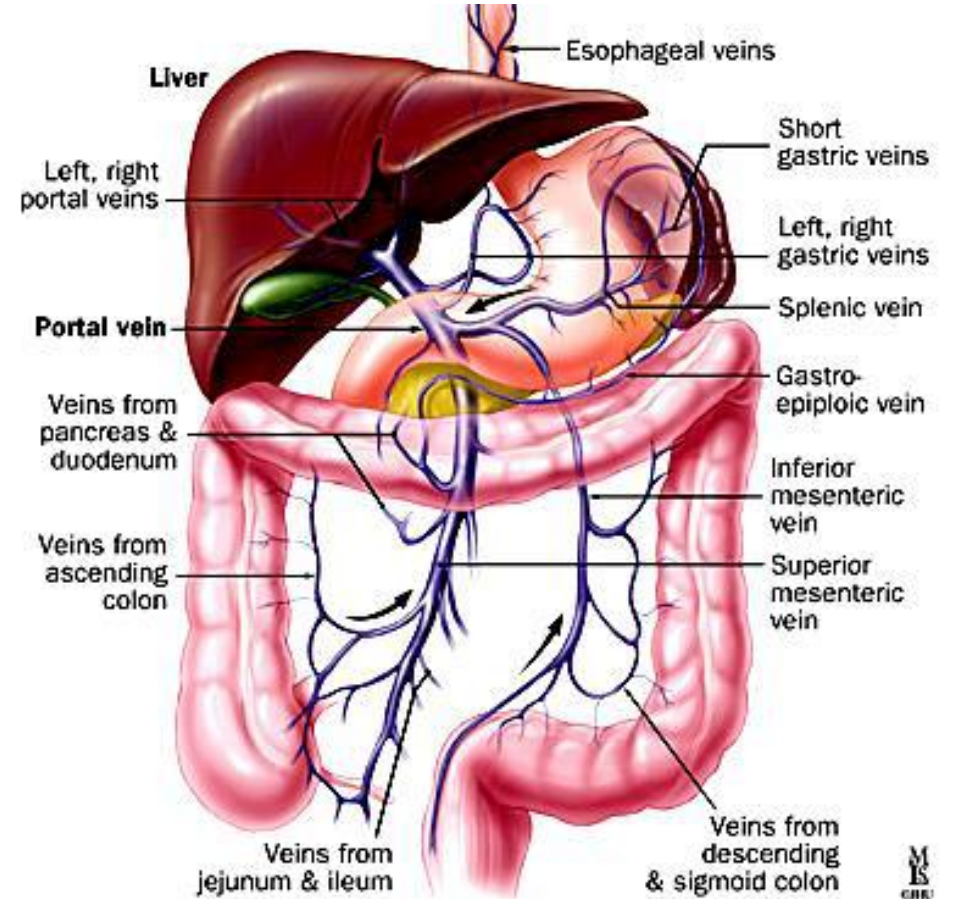
2. **Pulmonary circulation**: It is the passage of the non-oxygenated blood from the **Rt ventricle** to the lungs via the pulmonary arteries then returning the blood back to the **Lt atrium** through the pulmonary veins after oxygenation.



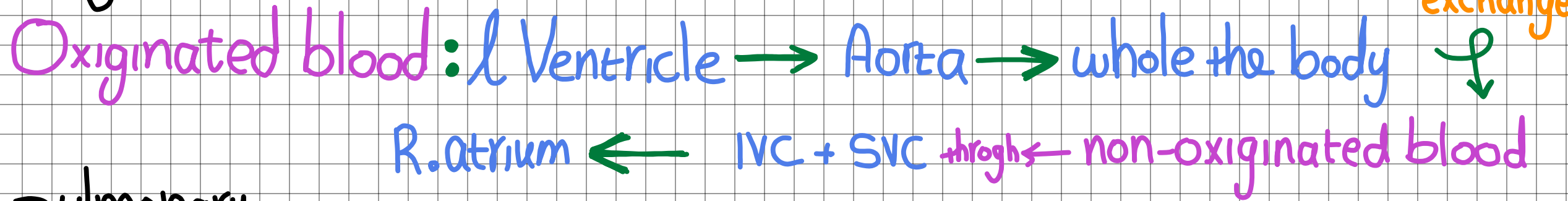
← خاصة بـ الكبد liver

**3. Portal circulation:** It is the passage of the venous blood from the gastrointestinal system carrying the products of digestion & absorption to the liver via the portal vein where the liver cells metabolize these products, then returning back the blood to the systemic circulation through the hepatic veins to the IVC to the right atrium.

Circulation ← إلى جانب الـ systematic

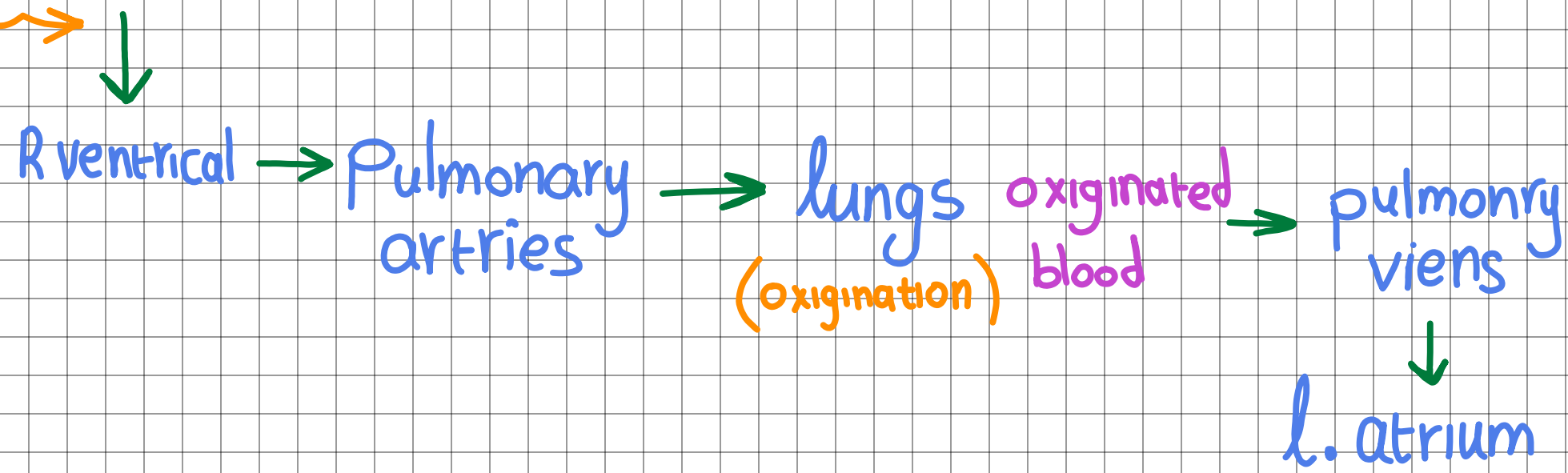


Systemic circulation From L ventricle to R. atrium



pulmonary articulation

↓ From R ventricle to L atrium





لا تَتَوَقَّفْ عِنَّمَا  
تَتَعَبُ ..

تَوَقَّفْ عِنَّمَا  
تَشْرَهِي

*Peace*