Introduction to Human Anatomy

CVS

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CardioVascular System

❖ CardioVascular System consist of

- Heart
- Blood Vessels

➢ **The Heart : It is a hollow muscular organ which pumps blood throughout the blood vessels**

❑Shape :

- **The heart is Conical in shape**
- **It has apex , base**
- **It has 4 surfaces and 4 borders**

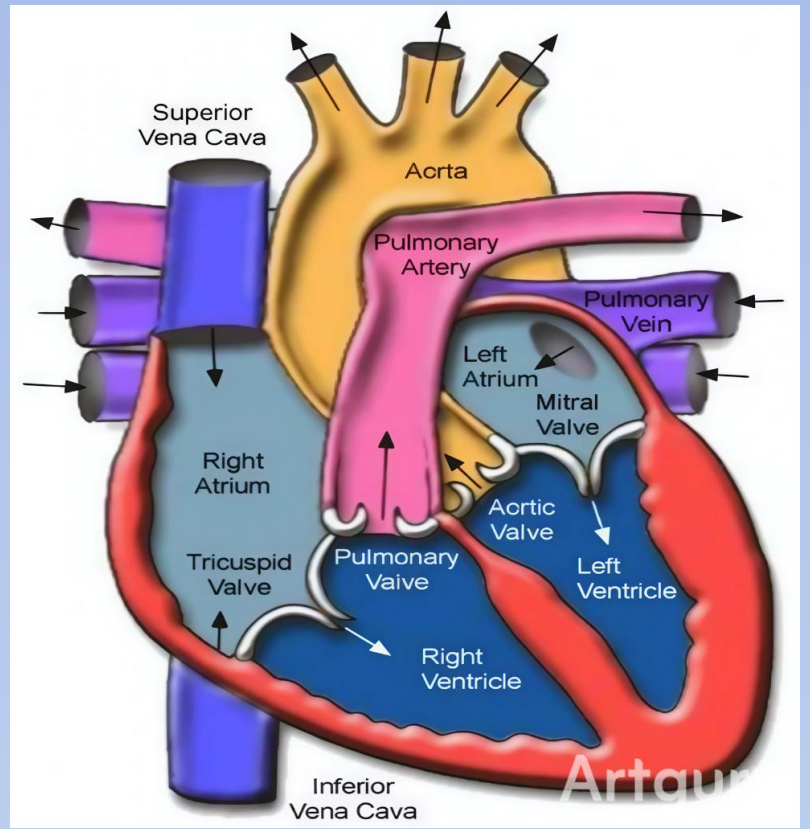
Formed by both atria

Formed by the left ventricle

CardioVascular System

- Heart is enclosed by a fibro-serous sac called Pericardium

GROSS ANATOMY



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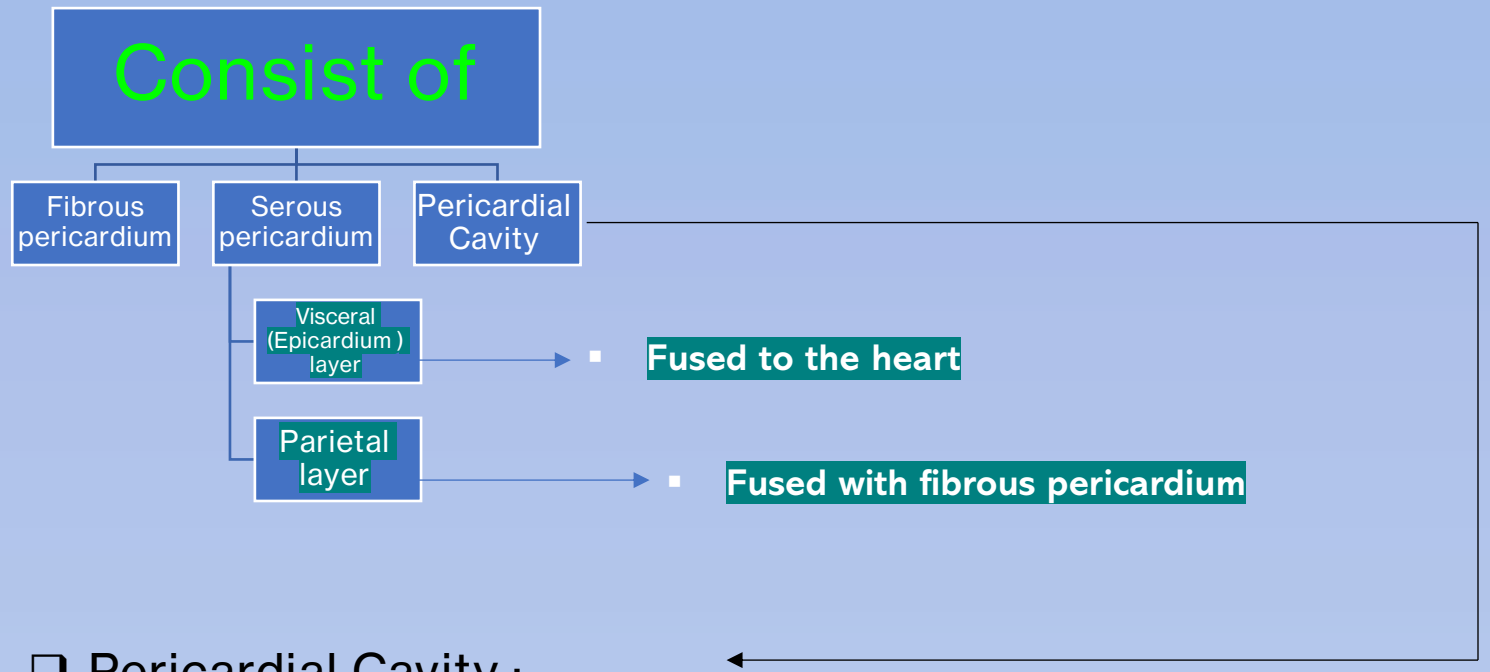
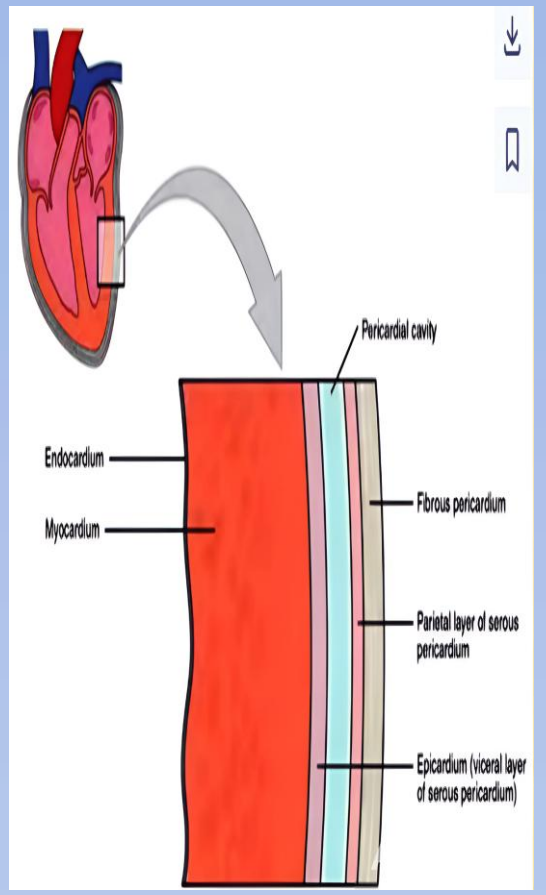
➢ Pericardium :

Fibroserous sac

- Encloses heart and roots of the great vessels



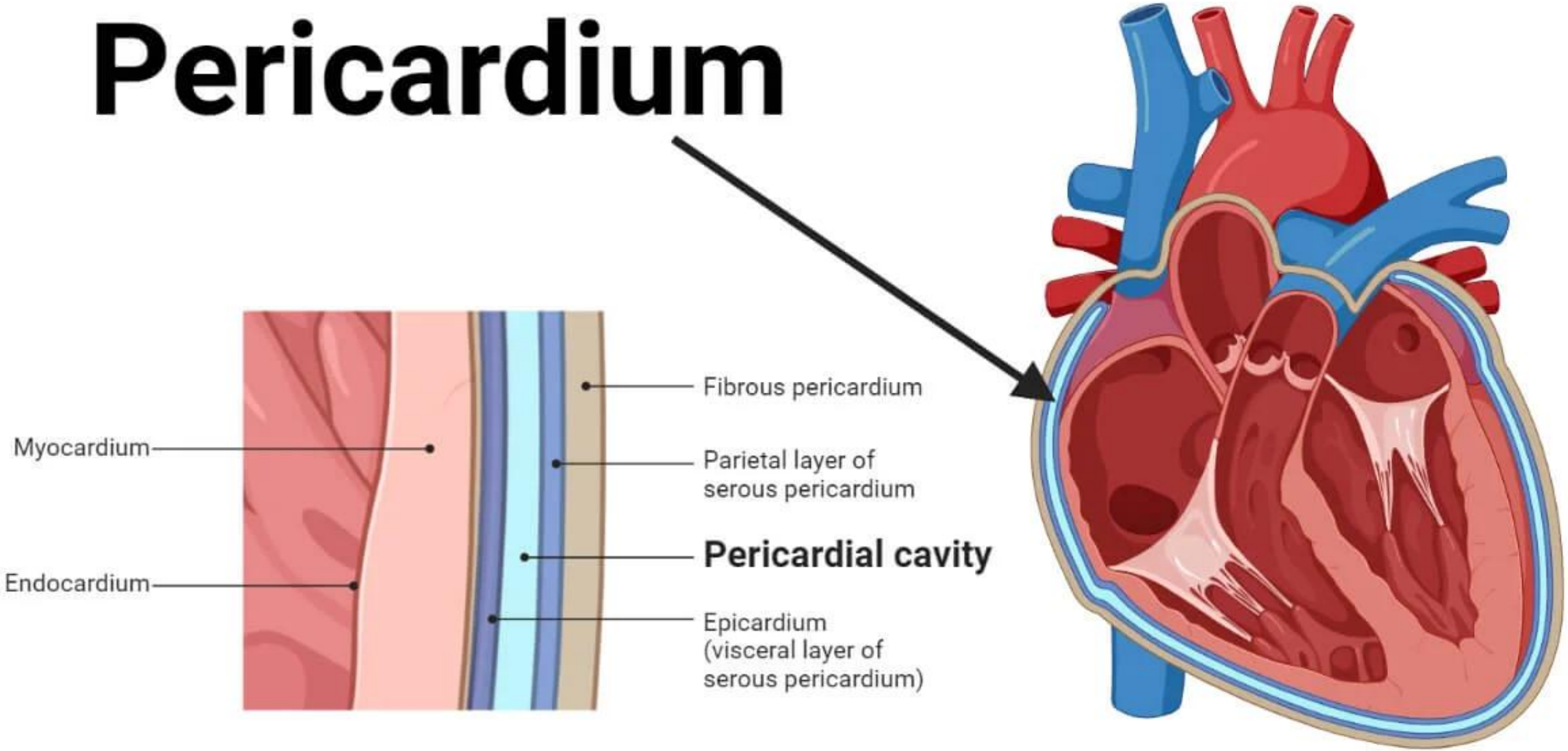


❑ Pericardial Cavity :

Potential space between the parietal and visceral pericardium

Cnotains thin film of serous fluid

صورة أوضح لطبقات الPericardium (للمعرفة فقط)



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❖ Position of the Heart

- Obliquely behind the body of the sternum
- 1/3 right to the median plane , other 2/3 left to the median plane

Apex of the heart

- Formed by Left ventricle
- Directed downward , forward and to the left
- Left 5th intercostal space 3.5 inches lateral to midsternal line
  (just medial to the left midclavicular line)

Base of the heart

- Formed by left artium and small part of right artium
- Opening of pulmonary veins
- Forms posterior surface of the heart

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❖ Chambers of the heart

The heart is formed of 4 chamber :

- Two artia
- Two ventricles

	Blood content	Blood enters it through ?	Blood leaves it through ?
Right Atrium	Non-oxgynated	Superior and inferior venae cavae	Tricuspied orifice to the Right ventricle
Right Ventricle	Non-oxgynated	Tricuspied orifice	Pulmonary Trunk To both lungs
Left Atrium	Oxgynated from lungs	4 pulmonary veins (2 from each lungh)	Mitral orifice To the Left ventricle
Left Ventricle	oxgynated	Mitral orifice	Aorta to the body

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❖ Chambers of the heart

❑ Right atrium :

Non-oxygenated blood pass to the right atrium through 3 vesselse :

- Superior venae cavae
- Inferior venae cavae
- The coronary sinus

Then ....
Blood passes into the right ventricle through the tricuspid valve

❑ Right ventricle :

Non-oxygenated blood in the right ventricle pass through the pulmonary artery to the two lungs where oxygenation of the blood occurs

❑ Left atrium :

oxygenated blood pass from the lungs to the left atrium through : :

- The 4 pulmonary veins (2 from each lung)

Then ....
Blood passes into the left ventricle through the mitral valve

❑ Left ventricle :

Oxygenated blood in the left ventricle pass through the aorta to the different parts of the body

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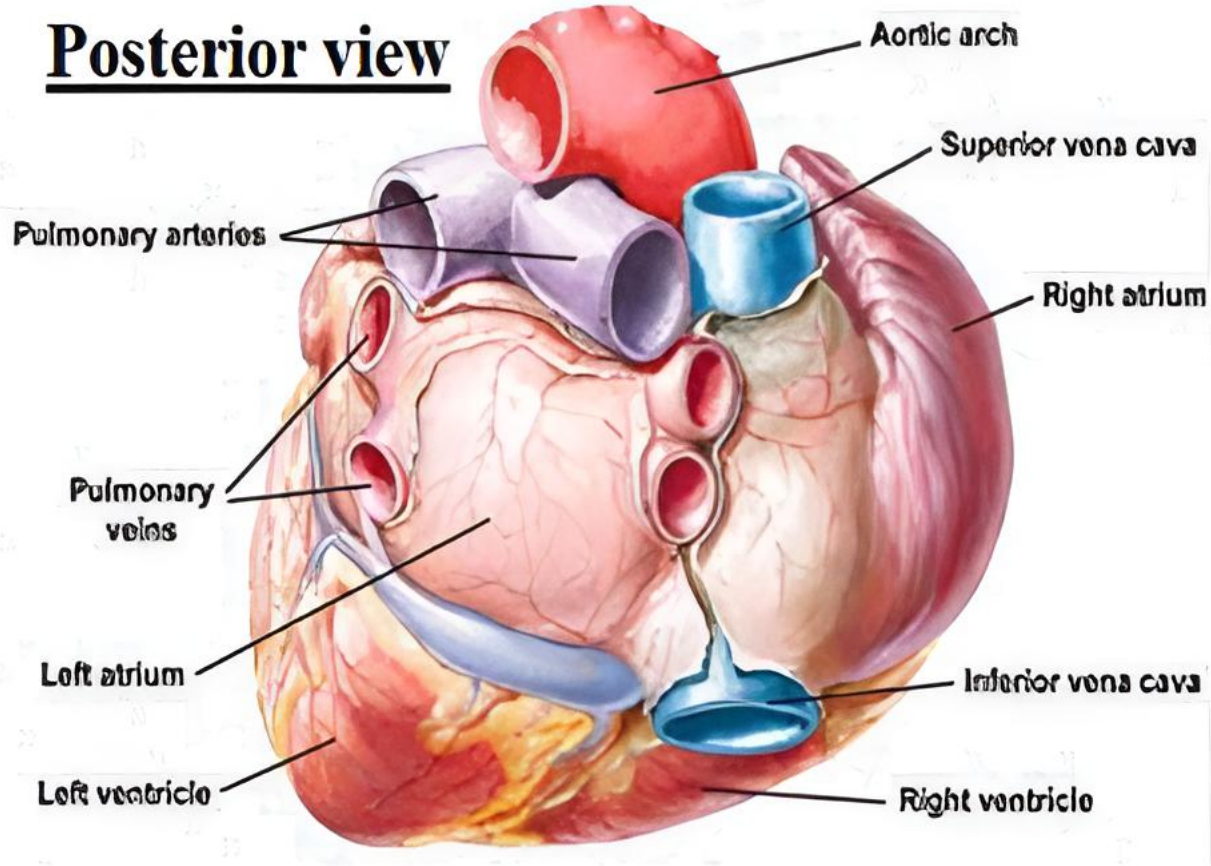
❑ Valves of the heart

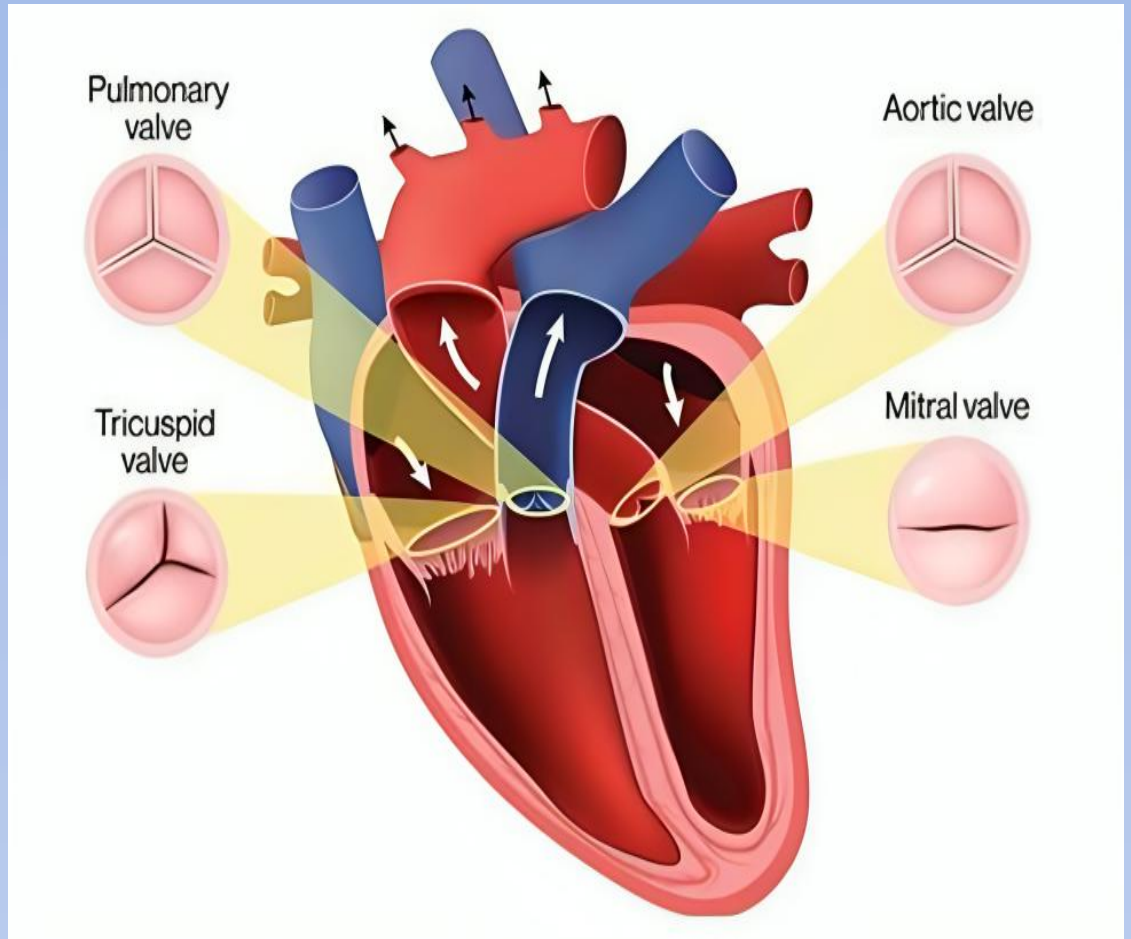
The heart has 4 Valves

- Two atrioventricular (mitral and tricuspid)
- Two semilunar valves (aortic & pulmonary)

	Site	Number of Cusps	Time of closure
Mitral valve	Between the left atrium and left ventricle	2	During systole
Tricuspid valve	Between the right atrium and right ventricle	3	During systole
Aortic valve	Between the left ventricle and aorta	3	During diastole
Pulmonary Valve	Between the right ventricle and pulmonary trunck	3	During diastole

صور توضيحية للصمامات والقلب من الخلف





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❖ Blood Circulation Through The Heart

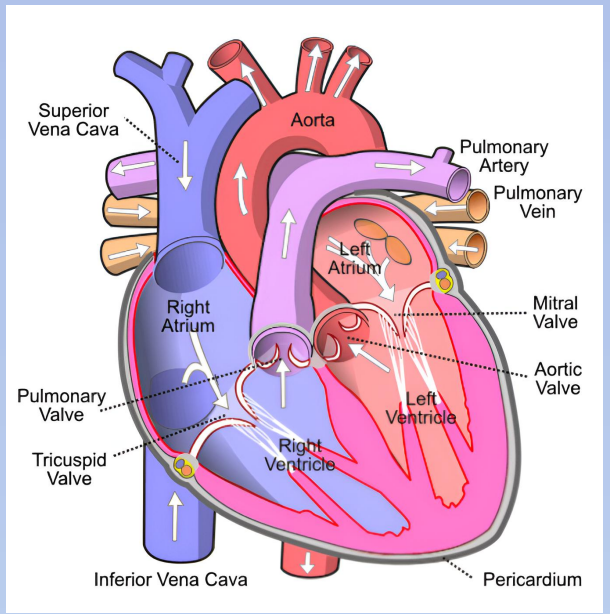
- ❑ The heart is a large muscular organ which constantly :
  - pushes oxygen-rich blood to the brain and extremities (body)
  - transports oxygen-poor blood from the brain and extremities to the lungs to again oxygen
- ❑ The heart pupms : → Oxgenated-blood to → The body

↓

deoxygenated-blood to

↓

Lungs



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❖ Blood Circulation Through The Heart

- The blood that is returned to the right atrium is deoxygenated (poor in oxygen) and passed into the right ventricle to be pumped through the pulmonary artery to the lungs for re-oxygenation and removal of carbon dioxide

- The left atrium receives newly oxygenated blood from the lungs which is passed into the strong left ventricle to be pumped through the aorta to the different organs of the body

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❑ Blood supply of the heart

Artery supply

the heart is supplied by
2 coronary arteries (right and left)

Arise from ?

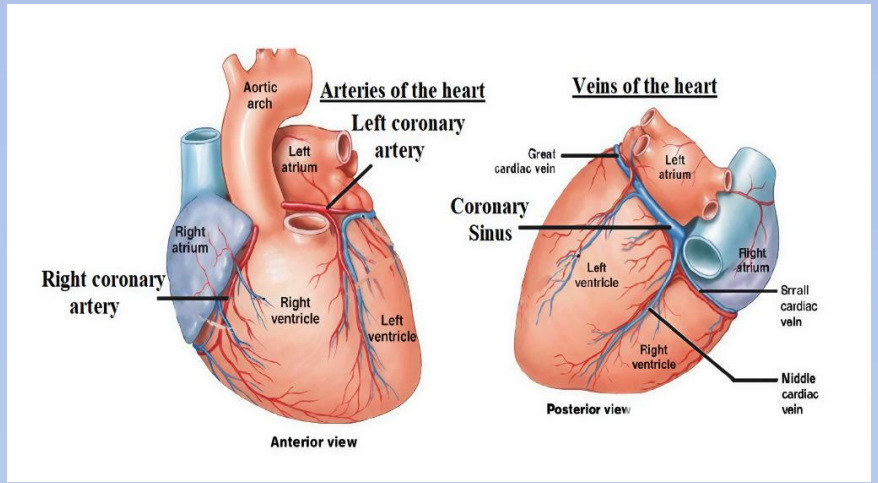
The ascending aorta

Venous drainage

the heart is drained by 3 cardiac veins

- Great
- Middle
- Small

→ They drain in → The coronary sinus



Note :

#Coronary sinus ends in the right atrium

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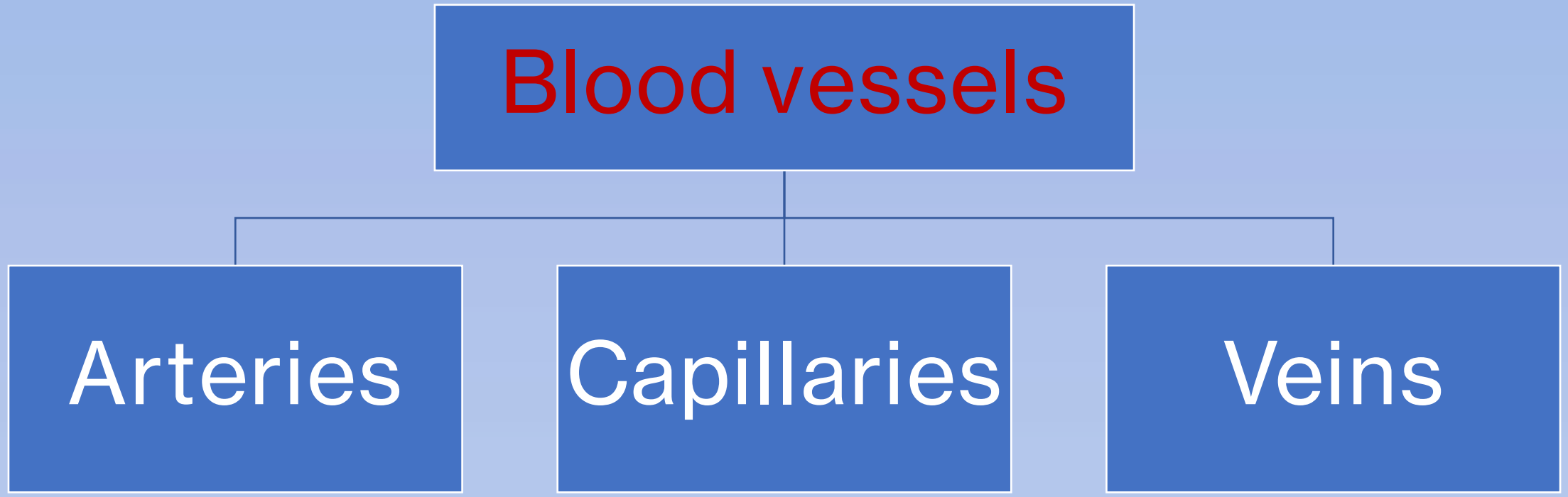
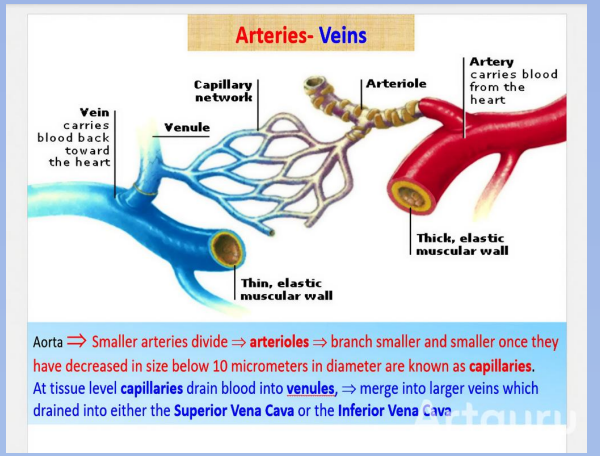
- There are 3 types of blood vessels in the body :



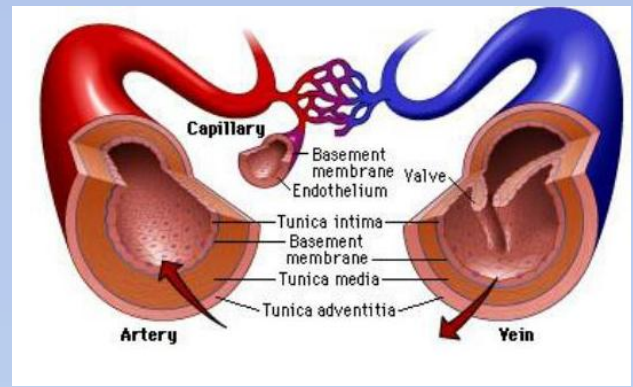
CardioVascular System



الصورة مهمة والكلام اللي عليها كمان

❖ Arteries :

- Arteries transport blood away from the heart to the body tissues
- They don't have valves
- All arteries carry oxygenated blood except → Pulmonary arteries
- They divide into branches
- Small arteries are called arterioles
- Union between arteries is known as arterial anastomosis
- Ends arteries don't have anastomosis (arteries of the brain , kidney , spleen and retina) so obstruction of end artery leads to ischemia and necrosis
- Wavy arteries run in tortuous course to supply mobile or expansile organs (e.g : facial , lingual , splenic and uterine arteries)
- Arteries have thick muscular walls to withstand pressure



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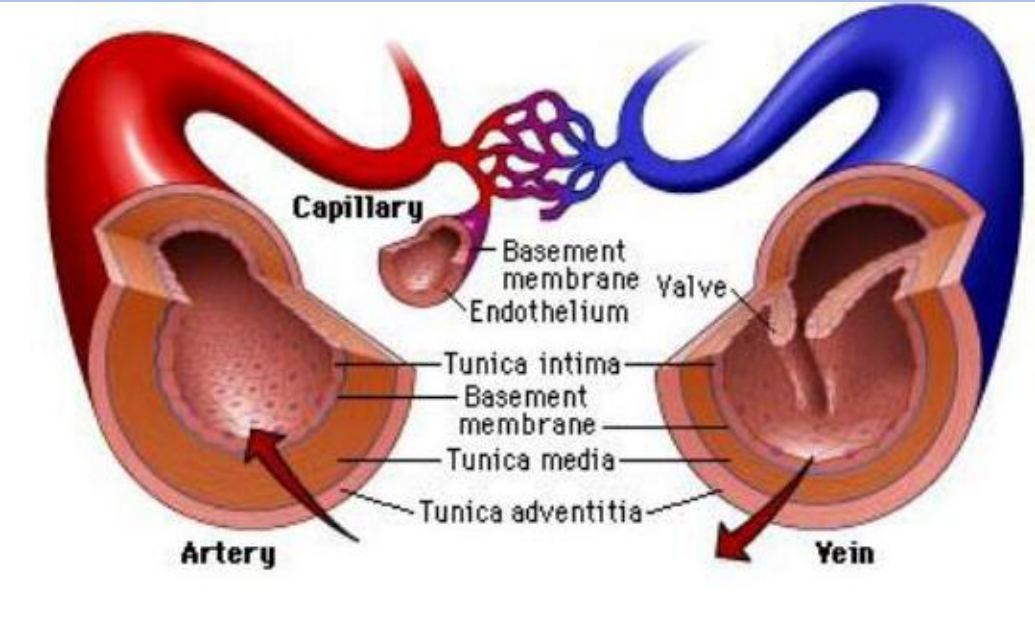
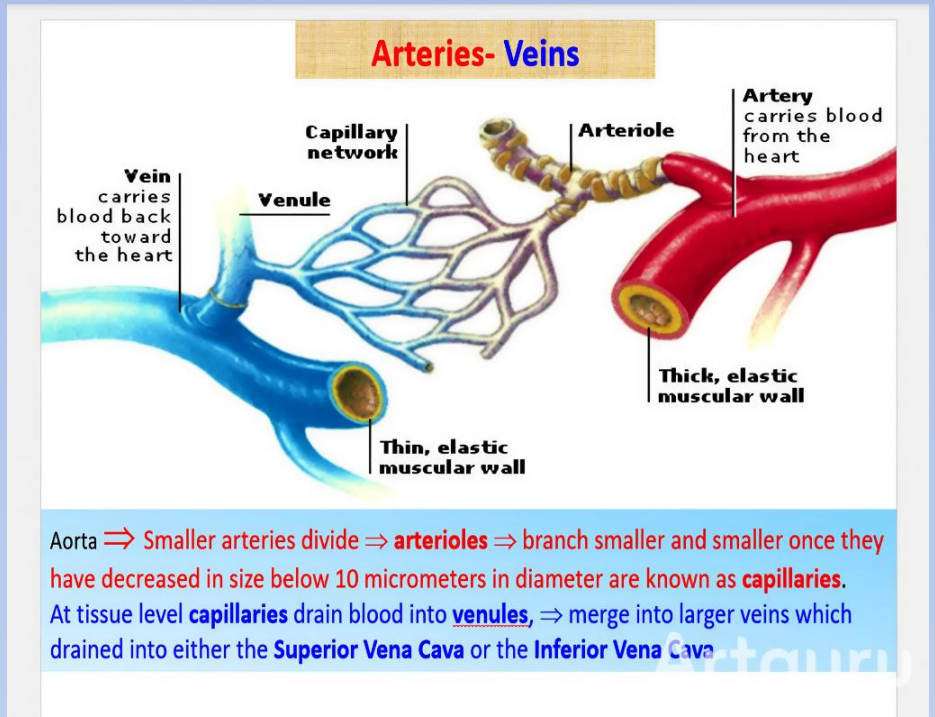
❖ Veins :

- Veins transport blood towards the heart
- Many of them have valves which prevent the back flow of blood
- All veins carry non-oxygenated(deoxygenated) blood except → Pulmonary veins
- Veins have tributaries and small veins are known as venules
- The walls here is More thinner than arteries





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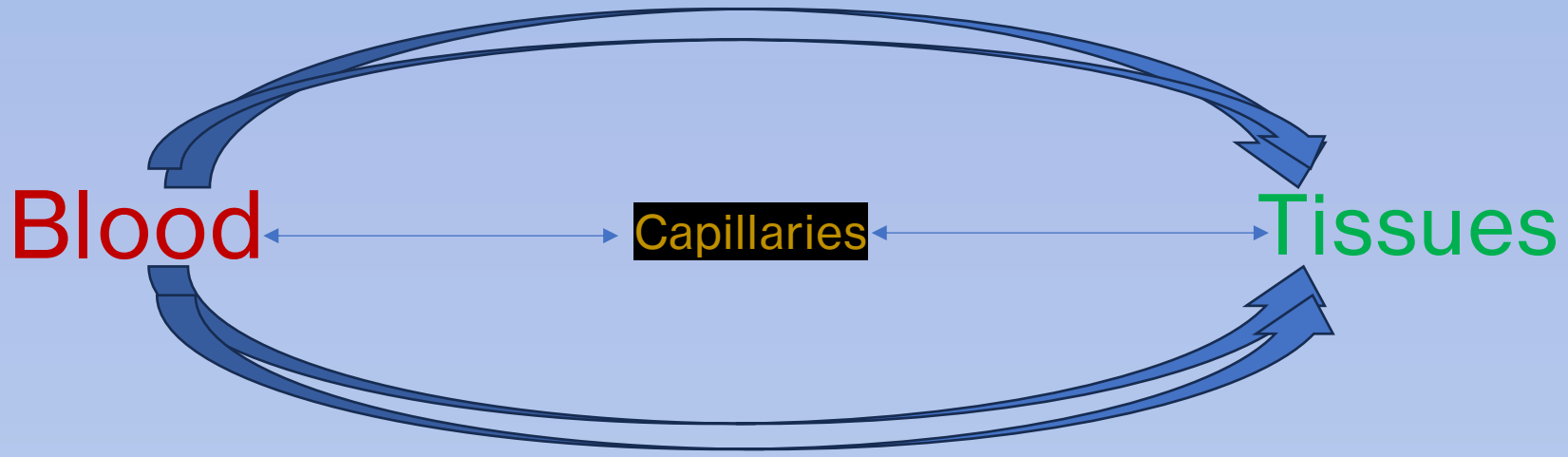
❖ Capillaries :

- Capillaries are minute vessels in the form of a network connecting the arterioles with the venules
- Their walls are very thin to allow gas and fluid exchange between :



- !!! Most of capillaries are ventral (nearer to the front of the body)

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صورة توضيحية