



Introduction to Human Anatomy

CVS

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Cardiovascular system

The cardiovascular system consists of the heart & blood vessels.

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

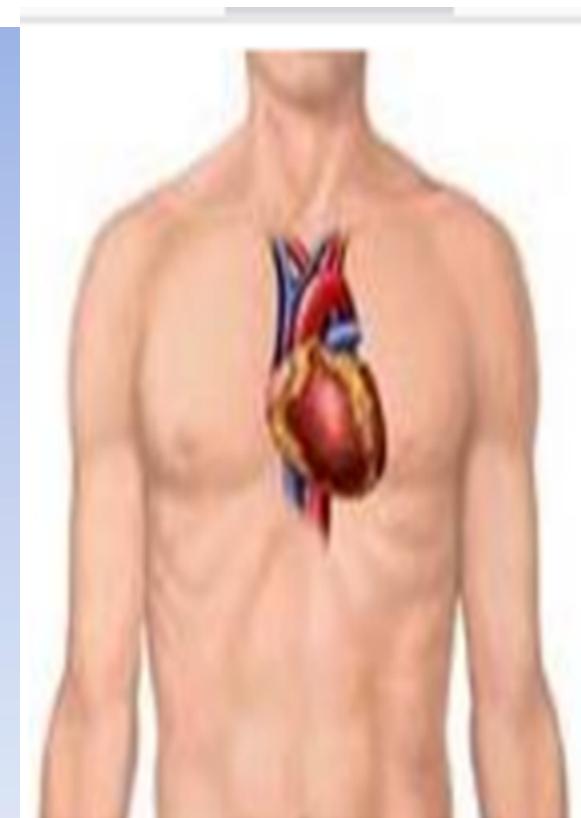
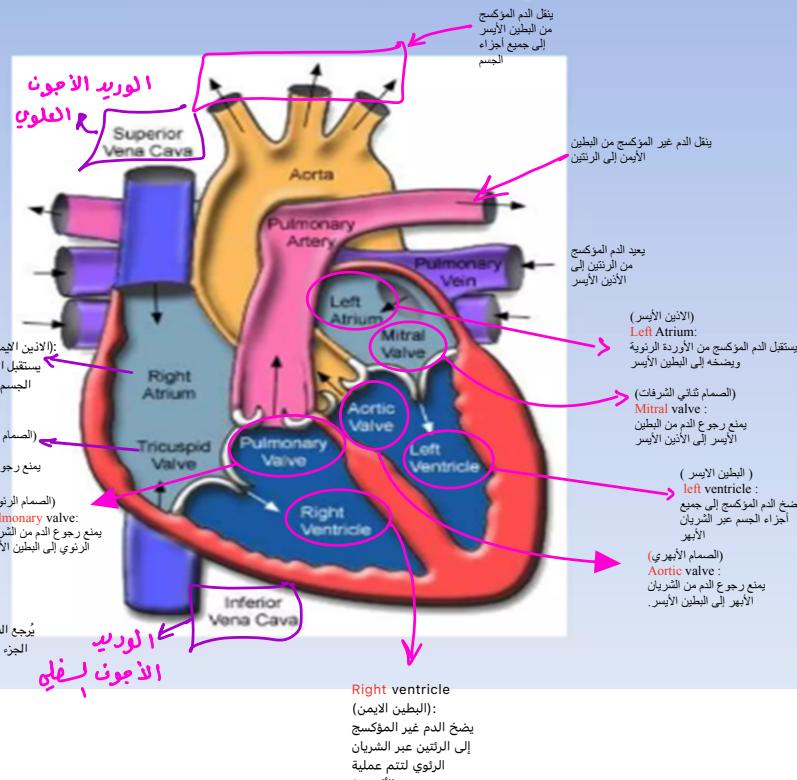
عضاو عضلي آجون يفتح الدم عبر الأوعية الدموية

Shape:

- The heart is conical in shape. عَوْنِي بَشْتَلٍ .
 - It has apex, base, 4 surfaces and 4 borders. → طَرُوح وَعِوَان
الجزء العلوي المُعرِّفُونَ الَّذِي يَصْبِرُ بِالْأَزْرِقَةِ الْمُوَدِّيَةِ مَا
 - Base of the heart is formed by both atria while its apex is formed by the left ventricle.
 - It is enclosed by a fibro-serous sac called pericardium. قاعِدَةُ الْقَلْبِ تَكْتُوَهُ مِنَ الْأَذْرِيقَةِ مَا
الْحَمَّةُ مِنَ الْبَطْنِ الْأَيْمَرِ

Gross Anatomy

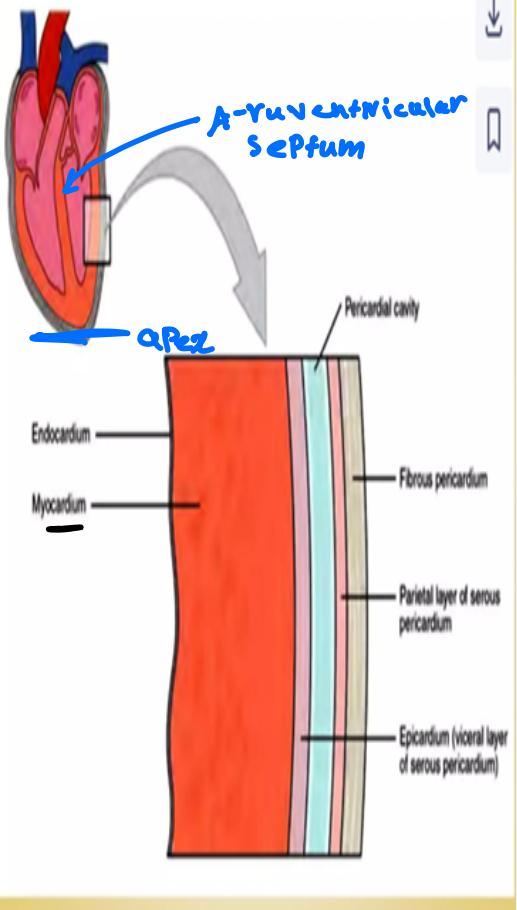
يُرجع الدم غير الموكسي من الجزء العلوي من الجسم (الرأس والذراعين والمصدر إلى الأذين اليمين)



* the name come
after the location

Pericardium

- Fibroserous sac يعنى القلب وجنود الأوعية الدموية الكبرى
 - encloses heart and roots of the great vessels
- Consists of
 - Fibrous pericardium
 - Serous pericardium
 - Parietal layer - fused with fibrous pericardium
 - Visceral layer - fused to the heart



Pericardial Cavity

- Pericardial cavity
 - Potential space between the parietal pericardium and visceral pericardium
 - Contains thin film of serous fluid

Position of the Heart

جبل

- 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 to the left
 - Left 5th intercostal space 3 ½ inches lateral to midsternal line (just medial to the left midclavicular line)

Base of the Heart

- Formed by left atrium and small part of right atrium

- نضوي على فتحات الأذوردة الлегوية
- Opening of pulmonary veins
 - Forms posterior surface of the heart

تشكل الحجر الخلفي للقلب

➤ Chambers of the heart: the heart is formed of 4 chambers;

two atria and two ventricles.

	<i>Blood content</i>	<i>Blood enters it through</i>	<i>Blood leaves it through</i>
<i>Right Atrium</i>	None oxygenated	Superior and inferior venae cavae	Tricuspid orifice to the right ventricle
<i>Right ventricle</i>	None oxygenated	Tricuspid orifice	Pulmonary trunk to both lungs
<i>Left atrium</i>	Oxygenated from the lungs	4 Pulmonary veins (2 from each lung)	Mitral orifice to the left ventricle
<i>Left ventricle</i>	Oxygenated	Mitral orifice	Aorta to the body

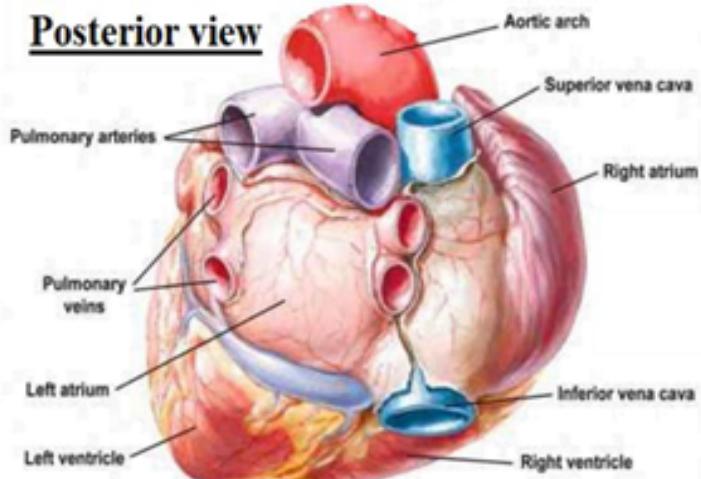
Valves of the heart: the heart has four valves; two atrioventricular (mitral & tricuspid) and two semilunar valves (aortic & pulmonary).

	<i>Site</i>	<i>Number of Cusps</i>	<i>Time of Closure</i>
<i>Mitral valve</i>	Between the left atrium and left ventricle.	Two.	During systole.
<i>Tricuspid valve</i>	Between the right atrium and right ventricle.	Three.	During systole.
<i>Aortic valve</i>	Between the left ventricle and aorta.	Three.	During diastole.
<i>Pulmonary valve</i>	Between the right ventricle and pulmonary trunk.	Three.	During diastole.

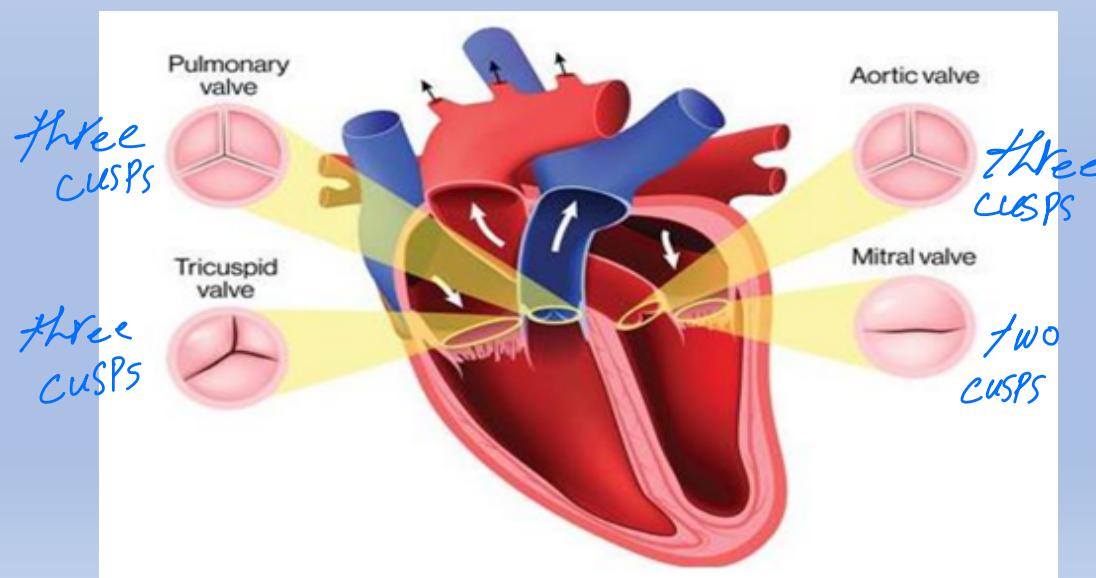
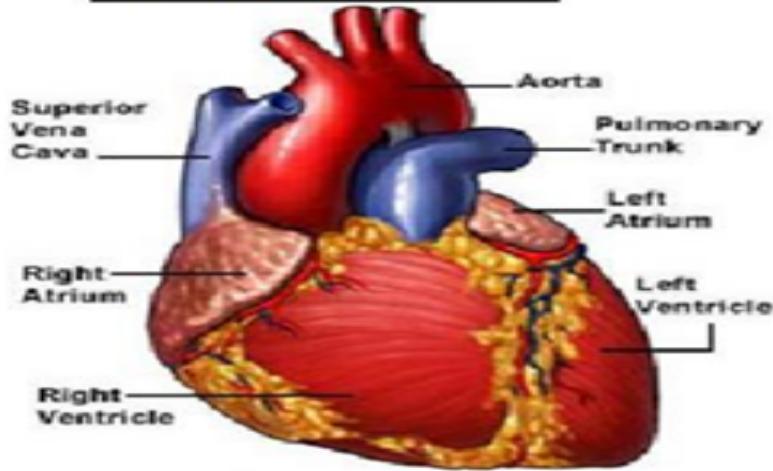
وَلَهُنَاكِي

بَلَهُنَاكِي

Posterior view



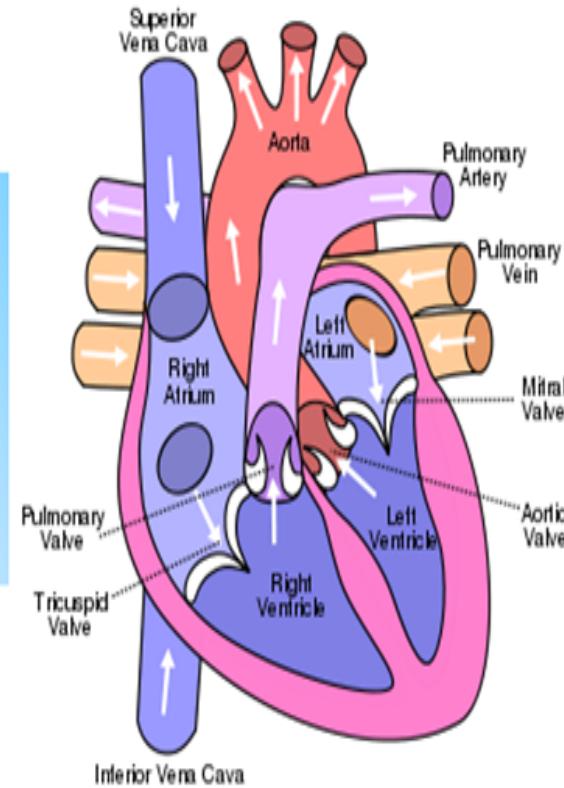
Anterior view



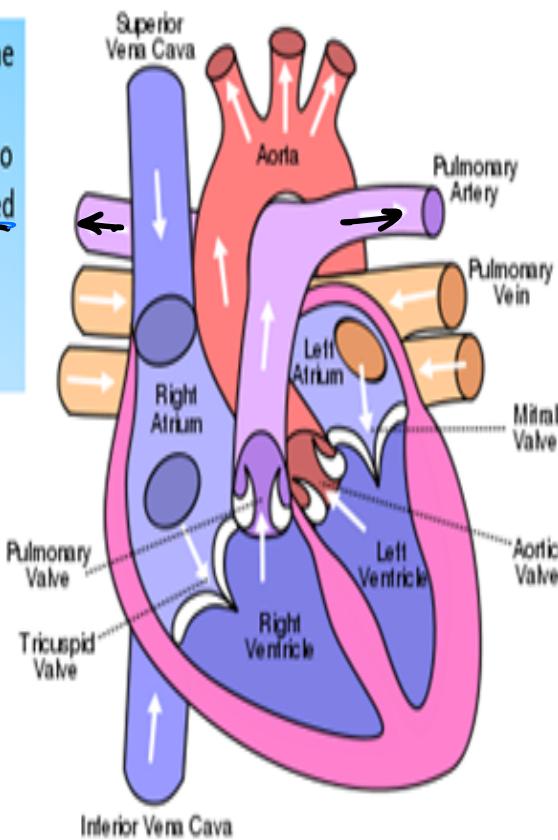
BLOOD CIRCULATION THROUGH THE HEART

- The heart is a large muscular organ which constantly pushes oxygen-rich blood to the brain and extremities and transports oxygen-poor blood from the brain and extremities to the lungs to gain oxygen.

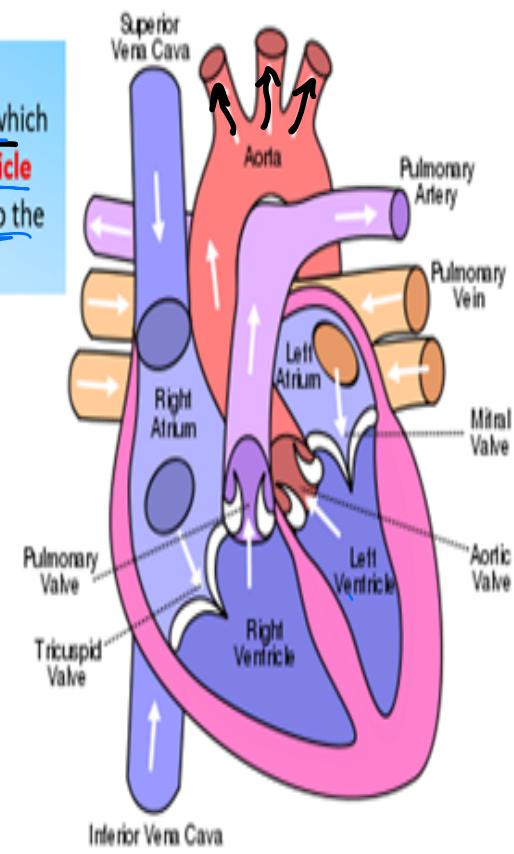
The heart pumps oxygenated blood to the body and deoxygenated blood to the lungs.



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.



Chambers of the heart

Right atrium

Non-oxygenated blood pass to the right atrium through three vessels; the superior and inferior vena cavae, and the coronary sinus. From the right atrium, 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 this blood occurs.

Left atrium

Oxygenated blood pass from the lungs to the left atrium through the four pulmonary veins (two from each lung) from the left atrium, 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.

Blood supply of the heart:

إمداد القلب بالدم

Arterial supply:

شريانين تاجيين

the heart is supplied by 2 coronary arteries (right and left)
which arise from the ascending aorta.

ينشأ عن الجزء الصاعد من الشريان الأورطي التاجي العربي

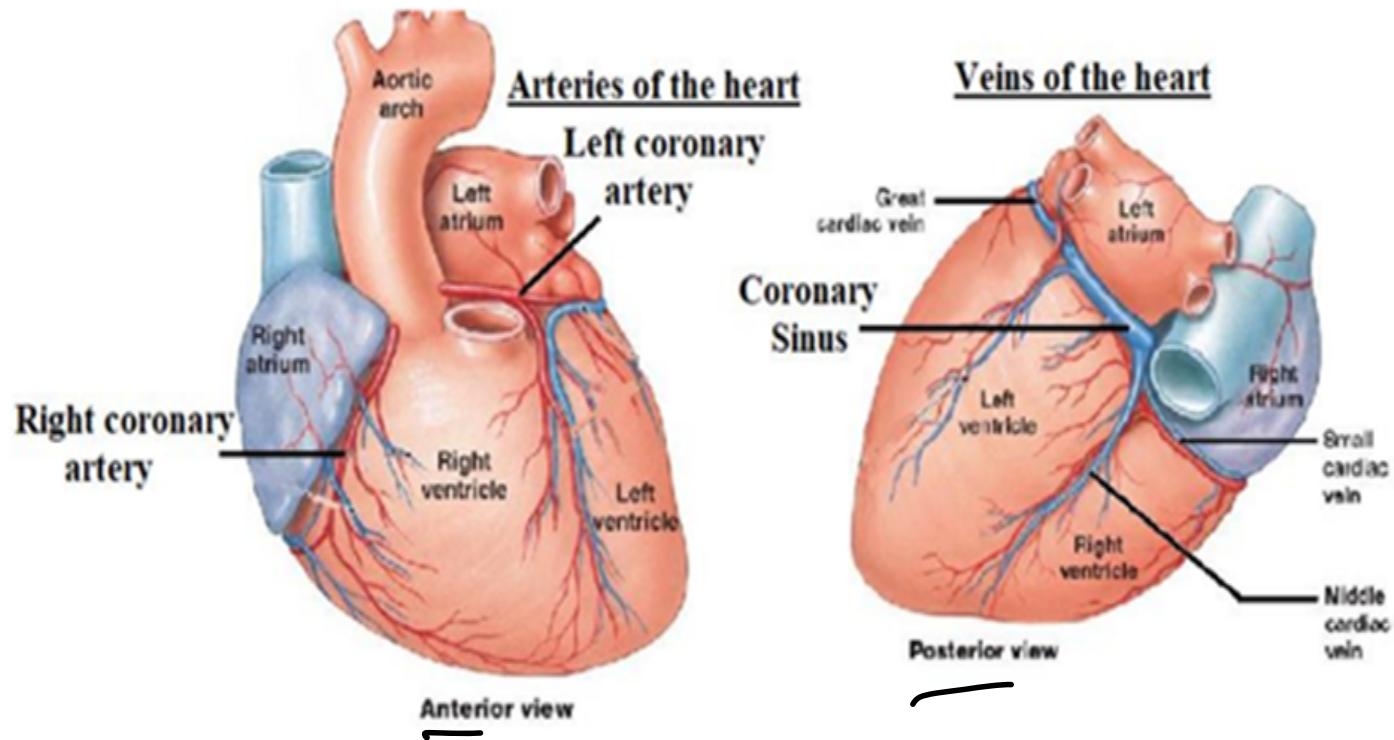
Venous drainage:

تصريف

the heart is drained by 3 cardiac veins (great, middle and small) which drain in the coronary sinus. Then, the coronary sinus ends in the right atrium.

تصب في الجيوب التاجية

والتي تصعد في الأذنين الالتين



Blood Vessels

الشريان الوريدي تبكيات موية

There are three types of blood vessels; arteries, veins and capillaries.



1. Arteries:

Arteries transport blood away from the heart to different body tissues.

They don't have valves. *دَهْمَلَكْ حِمَامَاتْ*

All arteries carry oxygenated blood except the pulmonary arteries.

They divide into branches and the small arteries are called arterioles.

تنقسم الشرايين إلى فروع وتصبح
الشرايين الصغيرة *Arterioles*

Union between arteries is known as arterial anastomosis.

يعرف اتحاد الشرايين باسم (المقاذر الشريانية)

هو اتحاد بين شريانين أو أكثر، يتحقق بتسلق اللهب عبر مادة بدبلة في حال انسداد أحد الشرايين

• End arteries don't have anastomosis (e.g.; arteries of the brain, kidney, spleen and retina). So, obstruction of end artery leads to ischemia and necrosis.

موت الأنسجة بسبب انفصال تدفق الدم إلى الأنسجة

• Wavy arteries run in a tortuous course to supply mobile or expansile organ

(e.g.; facial, lingual, splenic and uterine arteries).

تير في مكان متغير لتوفير موئل مناسب لها

بالتمدد والانكماش مع حركة الأعضاء التي تفتحها

الشريان الوريدي الشريان للسان الشريان الوريدي

2. Veins:

- Veins transport blood towards the heart.
 - Many of them have valves.
 - All veins carry non-oxygenated blood except pulmonary veins.
 - Veins have tributaries and the small veins are known as venules.

الآدوات الـ *Venues* لـ *نـ زـ عـ وـ تـ حـ* اـذـ وـ رـ دـ الصـ فـ نـ

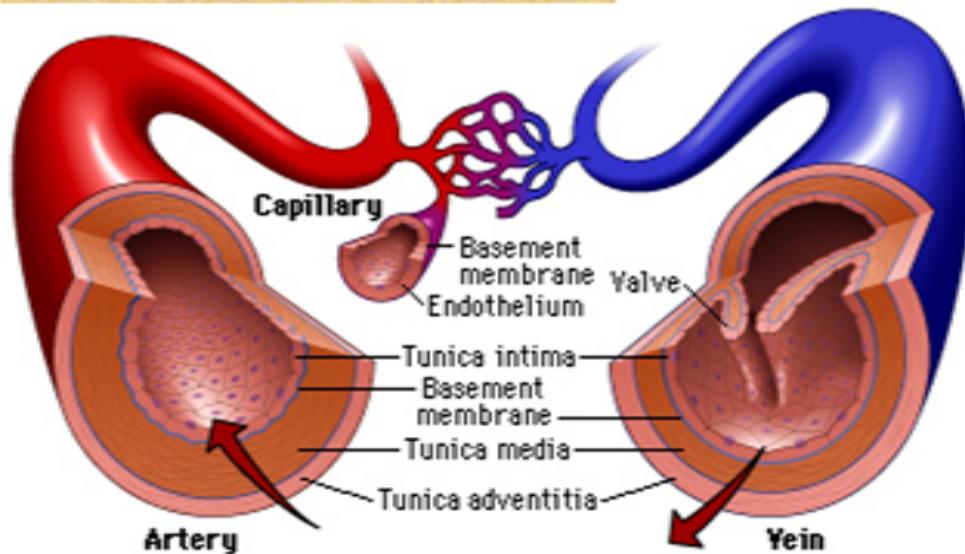
3. Capillaries:

أَوْ عِيَةً دِينَقَةً عَلَى تَحْلِيلِ شَفَّةٍ

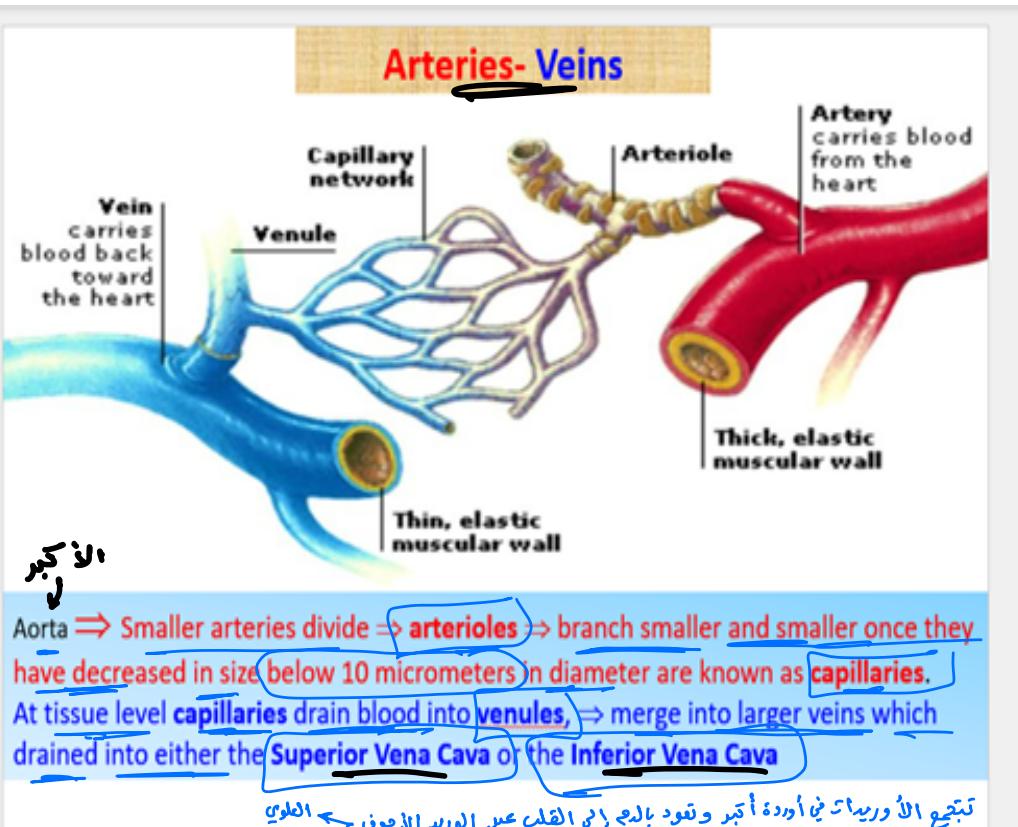
- Capillaries are minute vessels in the form of a network connecting the arterioles with the venules
 - Their walls are very thin to allow gas and fluid exchange between the
 - blood and the tissue.**ventral**): nearer to the front of the body,

Arteries- Veins

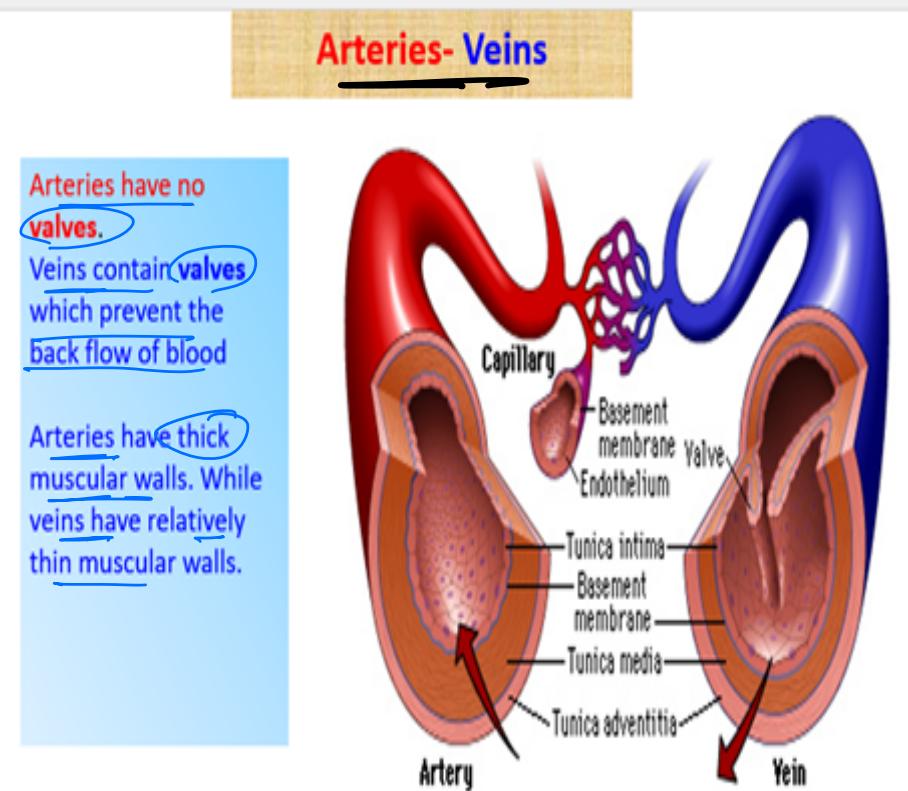
- Arteries are blood vessels which carry blood from the heart to the body.
- Veins are blood vessels which carry deoxygenated blood from the body to the heart.



- All Arteries carry oxygenated blood with the exception of the pulmonary artery.
- All veins carry deoxygenated blood except the pulmonary veins, which carry oxygenated blood, from the lungs, back to the heart.



Difference between Arteries and Veins



The largest vein in human body

- inferior vena cava

The largest artery in human body

- Aorta

Thank
you!

ربنا ألغفنا إلى ولد والدي
وللهم من نرين يوم يشفعون
الحساب

Thanks Dr. Yasser