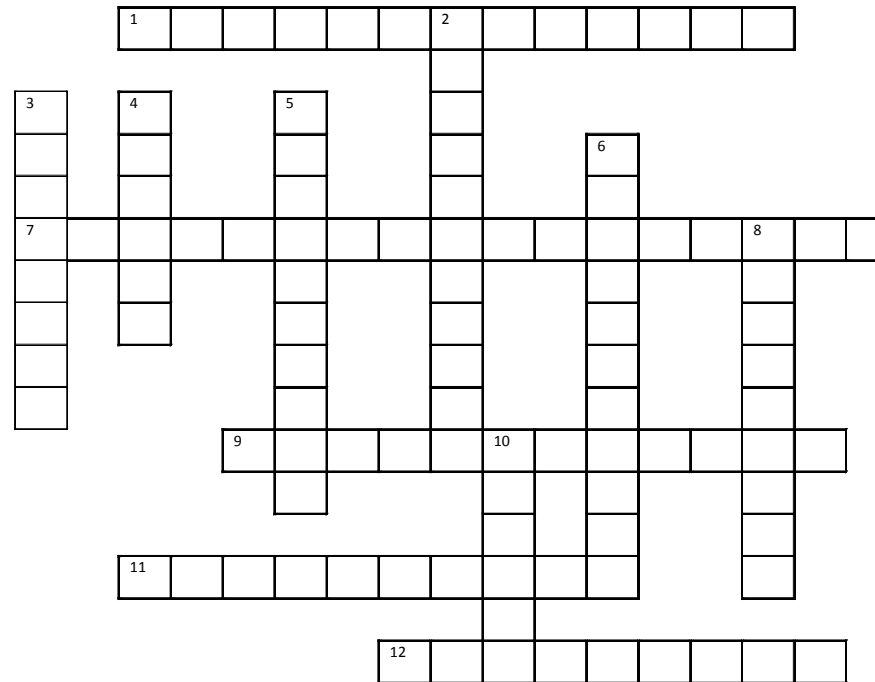


The Cardiovascular System:

The Heart ♥



Across

1. The spontaneously changing pacemaker membranes.
7. The distinguishing feature of heart muscle.
9. What allows heart cells to beat without neural stimulus?
11. Another name for heart muscle.
12. The valve looks like a half moon.

Down

2. This membrane covers the fibrous skeleton.
3. This means little ear.
4. This divides left and right halves.
5. This membrane is integrated into the wall of the heart.
6. Found in the middle of the thorax.
8. When the heart muscle works as a single unit, it is called functional.
10. These chambers lie superiorly.

The Cardiovascular System: The Heart



		¹ P	R	E	P	O	T	² E	N	T	I	A	L	S		
								N								
³ A		⁴ S			⁵ E			D								
U		E			P			O			⁶ M					
R		P			I			C			E					
⁷ I	N	T	E	R	C	A	L	A	T	E	D	D	I	⁸ S	C	S
C		U			A			R			I			Y		
L		M			R			D			A			N		
E					D			I			S			C		
S					I			U			T			Y		
				⁹ A	U	T	O	M	¹⁰ A	T	I	C	I	T	Y	
					M				T		N			I		
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		¹¹ M	Y	O	C	A	R	D	I	U	M			M		
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CARDIOVASCULAR

Blood Vessels

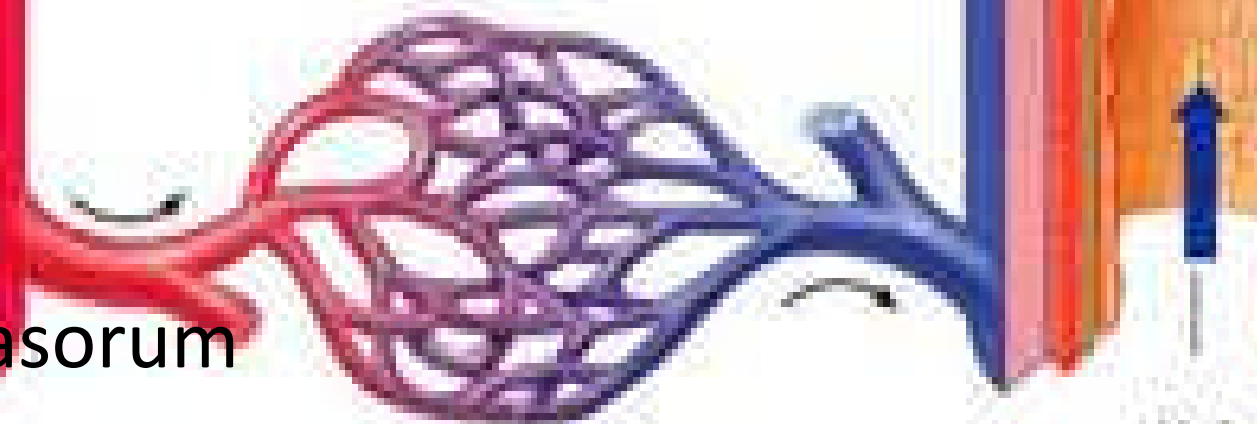


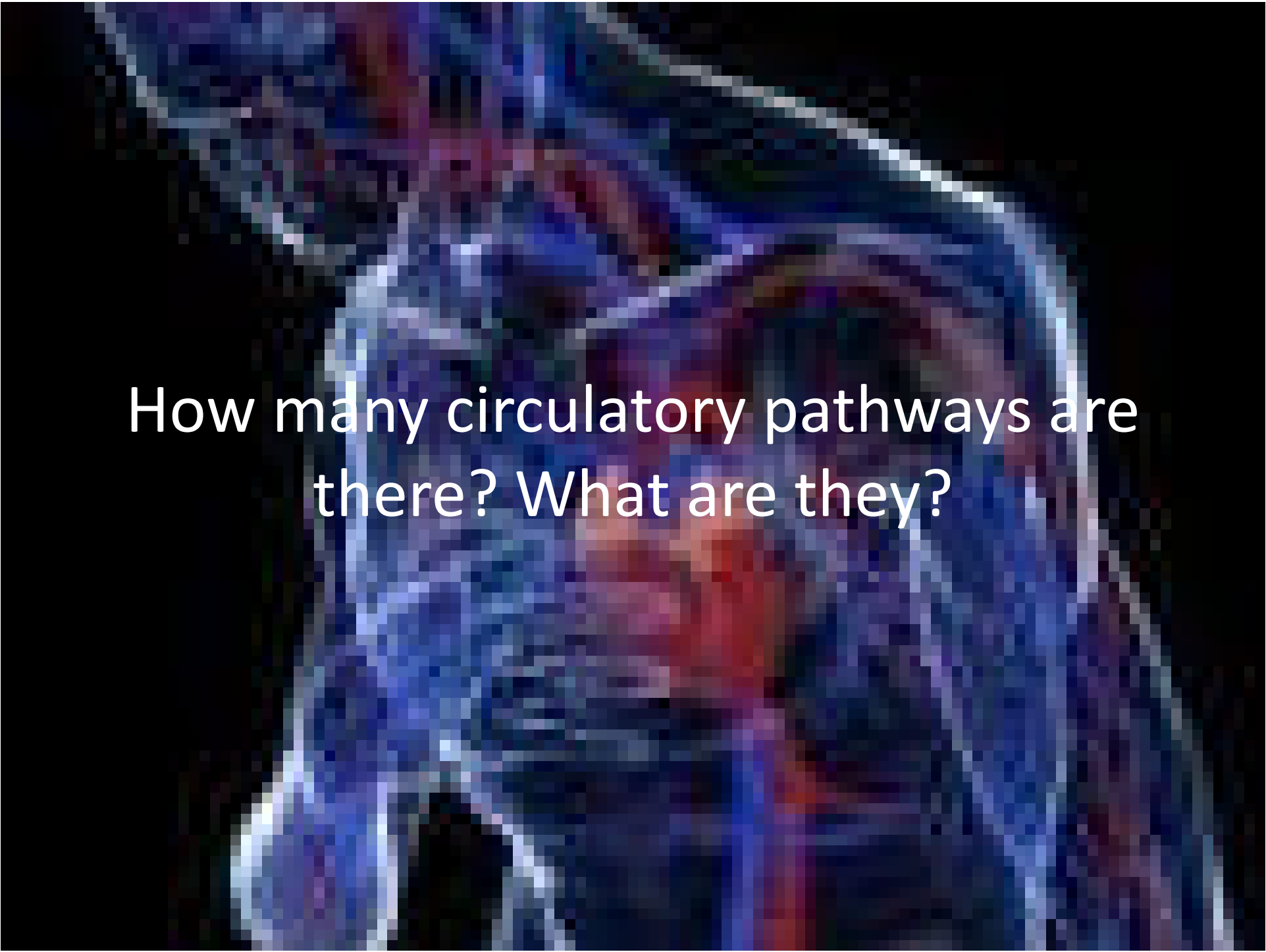
What are the three major types of blood vessels?

- A. Aorta, Common Carotid Artery, Superior Vena Cava
- B. Brachiocephalic Artery, Right Coronary Sinus, Intraventricular Artery
- C. Arteries, Capillaries, Veins
- D. Arterioles, Venules, Veins

On the border between the Tunica media and the Tunica Externa, there are small blood vessels supplying O_2 and nutrients to the wall of the artery. What are these called?

- A. Lumen
- B. Veins
- C. Vasa Vasorum
- D. Vasa Viserous





How many circulatory pathways are there? What are they?

Pulmonary Circulation

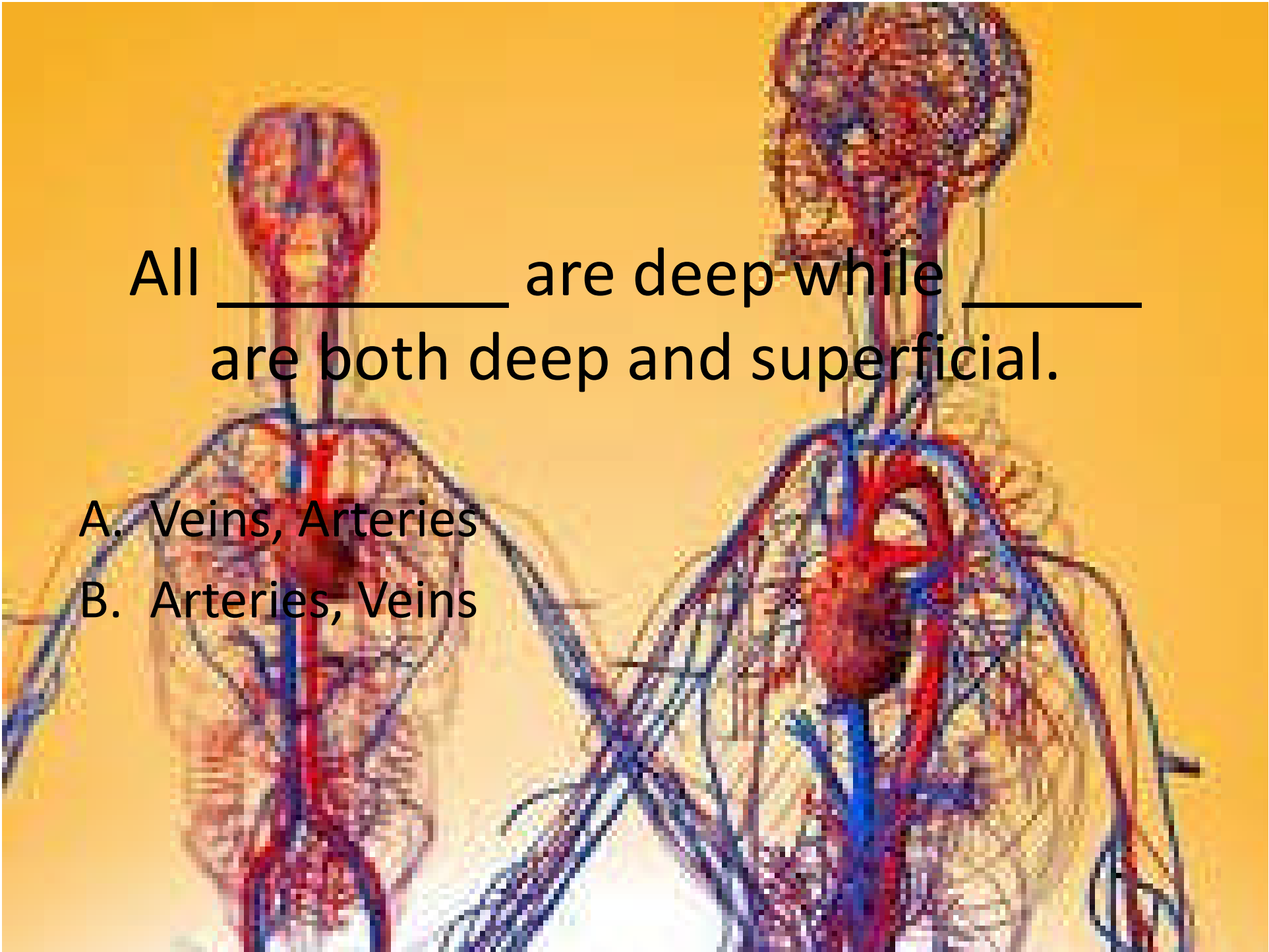
The pulmonary circulation functions only to bring _____ into close contact with the _____ (air sacs) of the lungs so that _____ can be exchanged.

- A. O_2 , bronchi, nutrients
- B. Bronchi, O_2 , gases
- C. O_2 , alveoli, gases

Systemic Circulation

An anatomical diagram of the human circulatory system, focusing on the systemic circulation. The heart is centrally located, with red vessels (oxygenated blood) and blue vessels (deoxygenated blood) branching out to various parts of the body. The diagram is set against a dark background with a grid pattern.

The systemic circulation provides the functional blood supply to all body tissues; that is, it delivers _____, _____, and other needed substances while carrying away _____ and other metabolic wastes.



All _____ are deep while _____
are both deep and superficial.

A. Veins, Arteries

B. Arteries, Veins



All blood vessels except capillaries
have three layers.

Capillaries are composed of the
tunica only.

A. Externa

B. Intima

C. Media

An anatomical illustration of the human circulatory system, showing the heart in the center, with arteries (red) and veins (blue) branching out to the arms and torso. The background is black, and the illustration is semi-transparent, allowing the text to be overlaid.

What type of blood vessel can serve as
“a blood reservoir”?

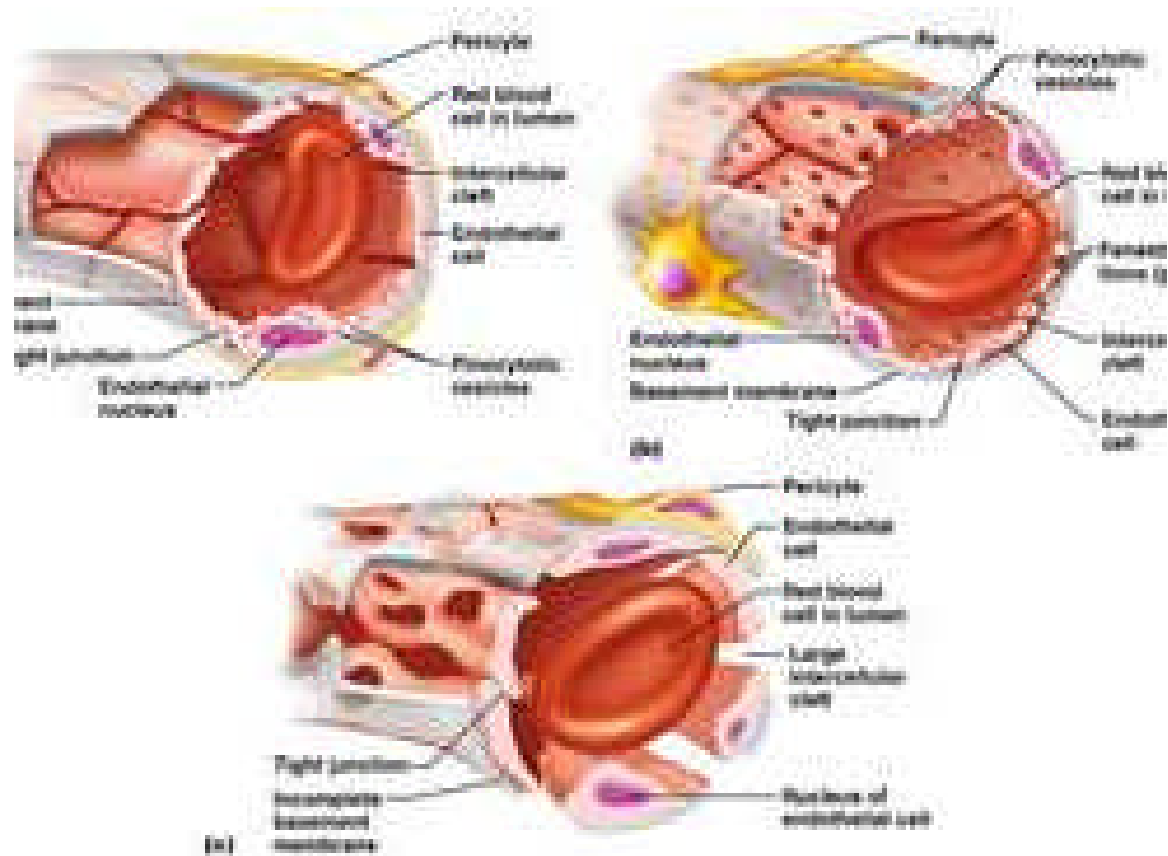
A. Capillaries

B. Veins



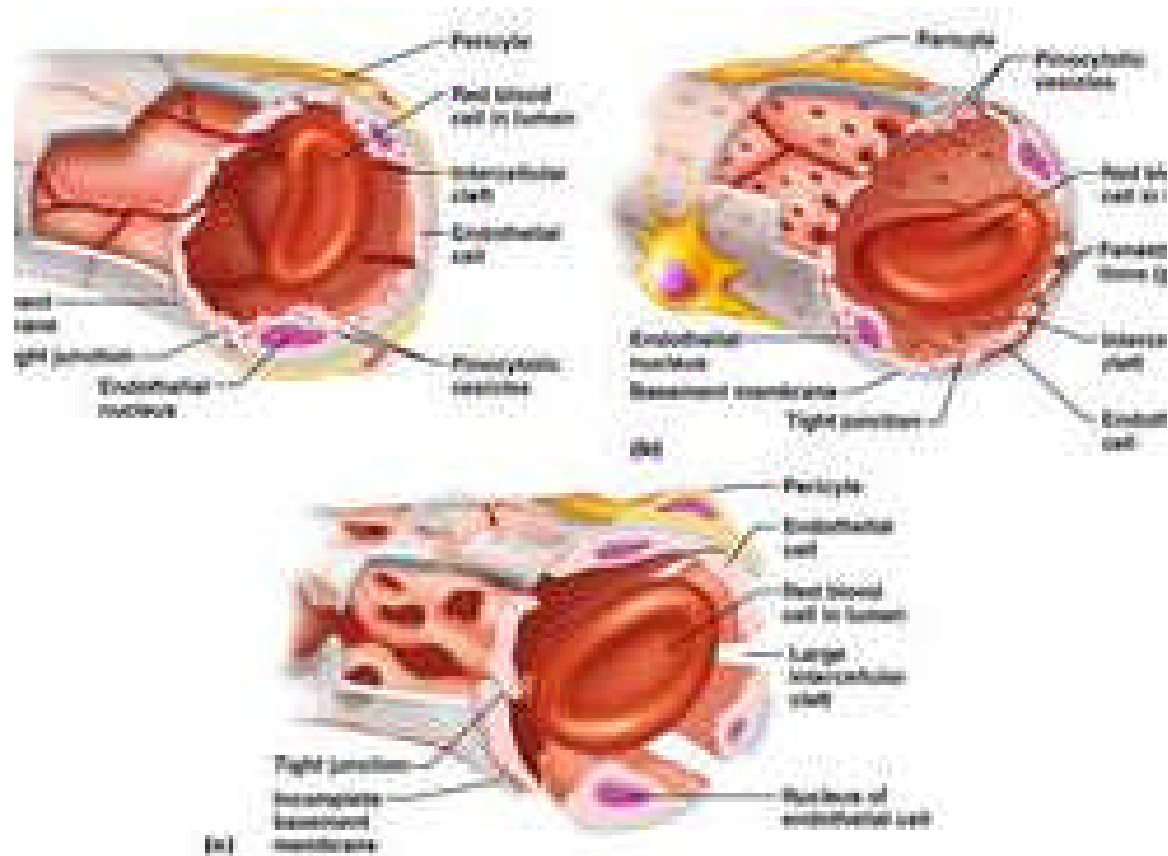
Vessels returning blood to the heart
are:

- A. Superior and inferior vena cava
- B. Left pulmonary arteries
- C. Right pulmonary veins
- D. Right and left pulmonary veins



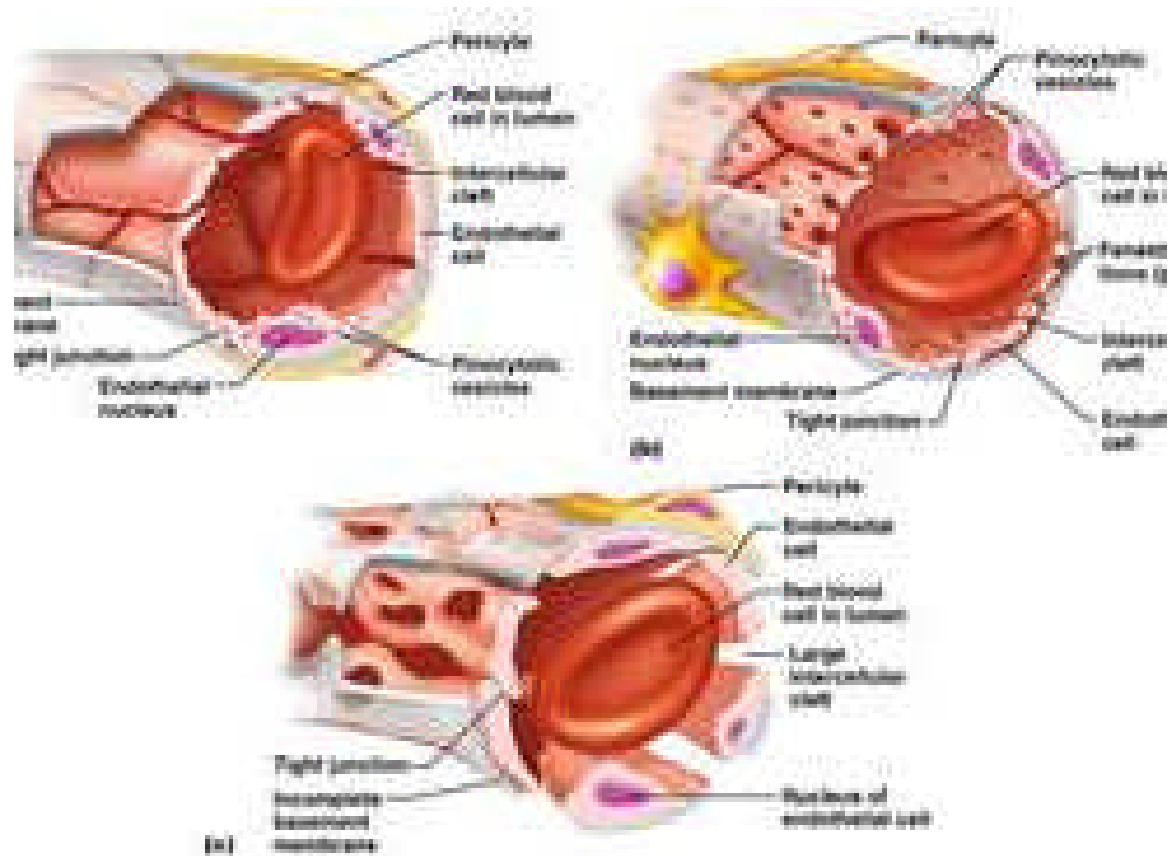
What type of capillary is A?

- A. Fenestrated
- B. Sinusoidal
- C. Continuous



What type of capillary is C?

- A. Continuous
- B. Sinusoidal
- C. Fenestrated

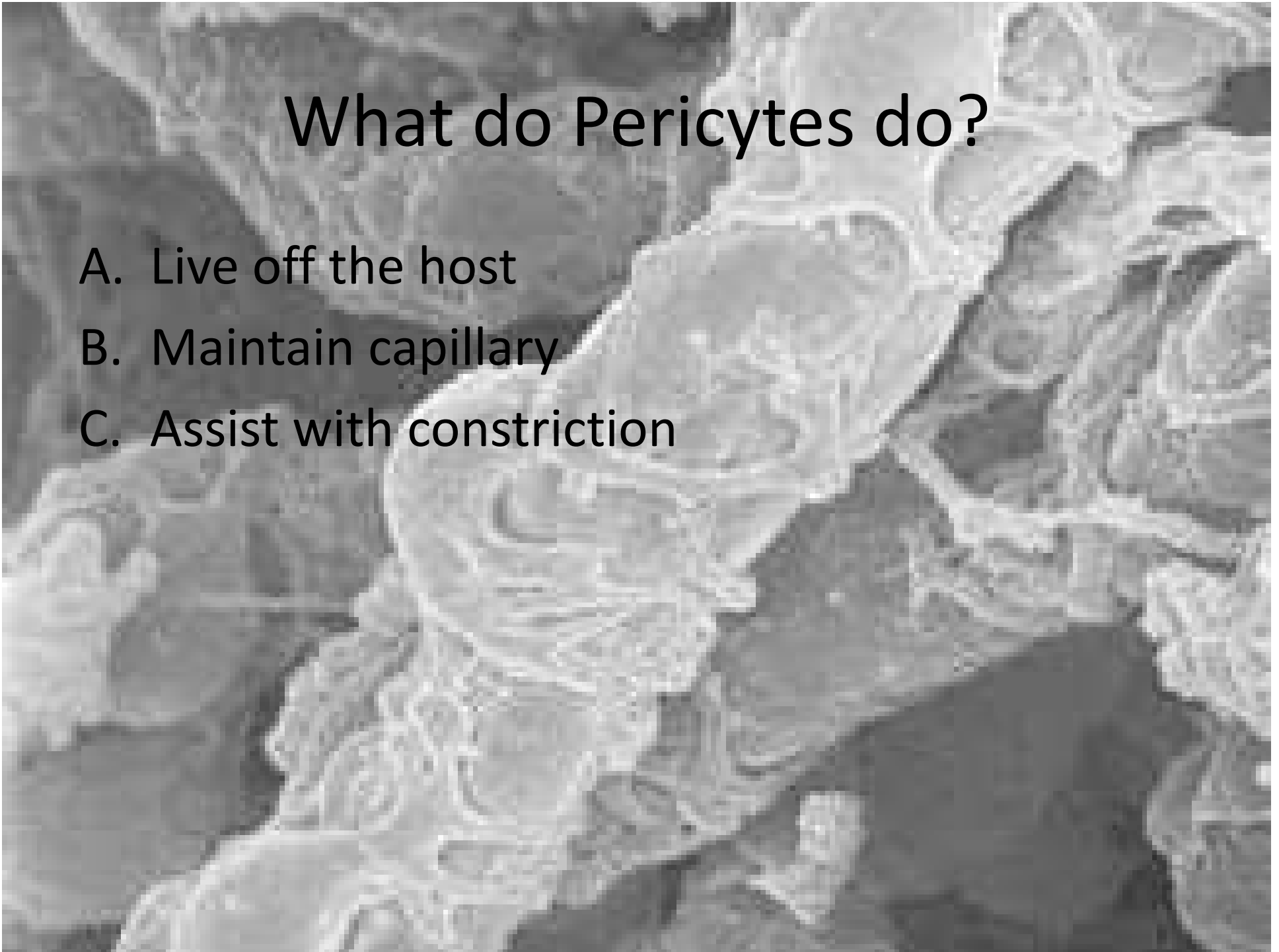


What type of capillary is B?

- A. Fenestrated
- B. Continuous
- C. Sinusoidal

What do Pericytes do?

- A. Live off the host
- B. Maintain capillary
- C. Assist with constriction



A black and white electron micrograph showing a cross-section of a blood vessel. The vessel lumen is on the left, and the vessel wall is on the right. A large, electron-dense, oval-shaped structure, likely a pericyte, is visible in the center of the vessel wall, partially overlapping the endothelial layer. The pericyte has a granular internal structure. The surrounding tissue is less dense and more fibrous.

What is another name for Pericyte?


What is the formula for Mean Blood Pressure?

- A. $(SR \bullet HR) / 1000$
- B. $DBP + 1/3PP$
- C. CO / HR
- D. $220 - \text{Age}$

How much blood volume is in the veins?

- A. 80%
- B. 75%
- C. 60%
- D. 20%



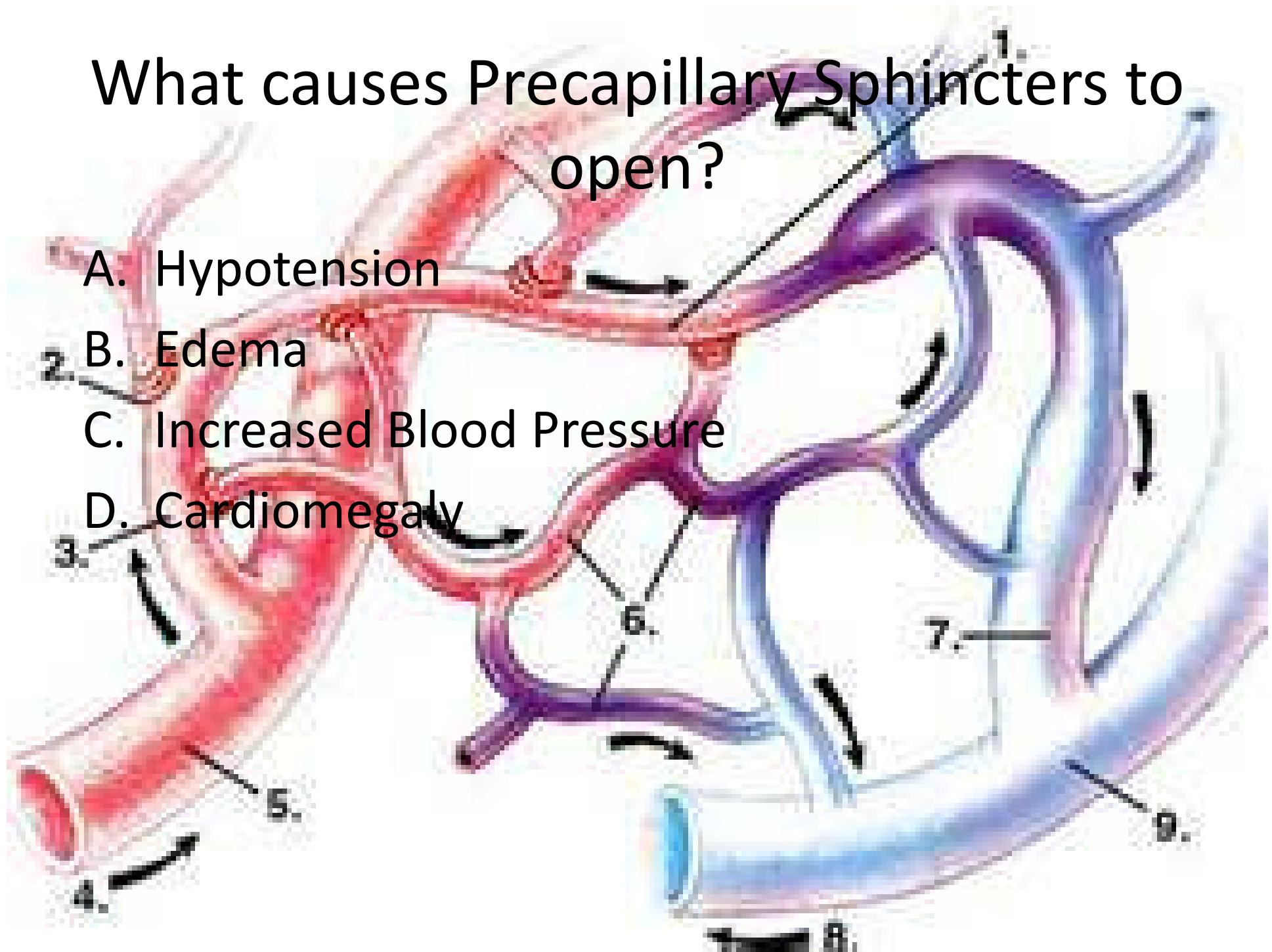
A high-magnification electron micrograph showing fenestrated capillaries. The image displays several cross-sections of blood vessels with prominent fenestrations (pores) in their endothelial lining, which are characteristic of organs like the liver and endocrine glands. The surrounding tissue is stained, showing various cellular structures and extracellular matrix components.

Fenestrated Capillaries can be found in several places. Which of them are shown below?

- A. Liver
- B. Small Intestine
- C. Skin
- D. Bone Marrow

What causes Precapillary Sphincters to open?

- A. Hypotension
- B. Edema
- C. Increased Blood Pressure
- D. Cardiomegaly



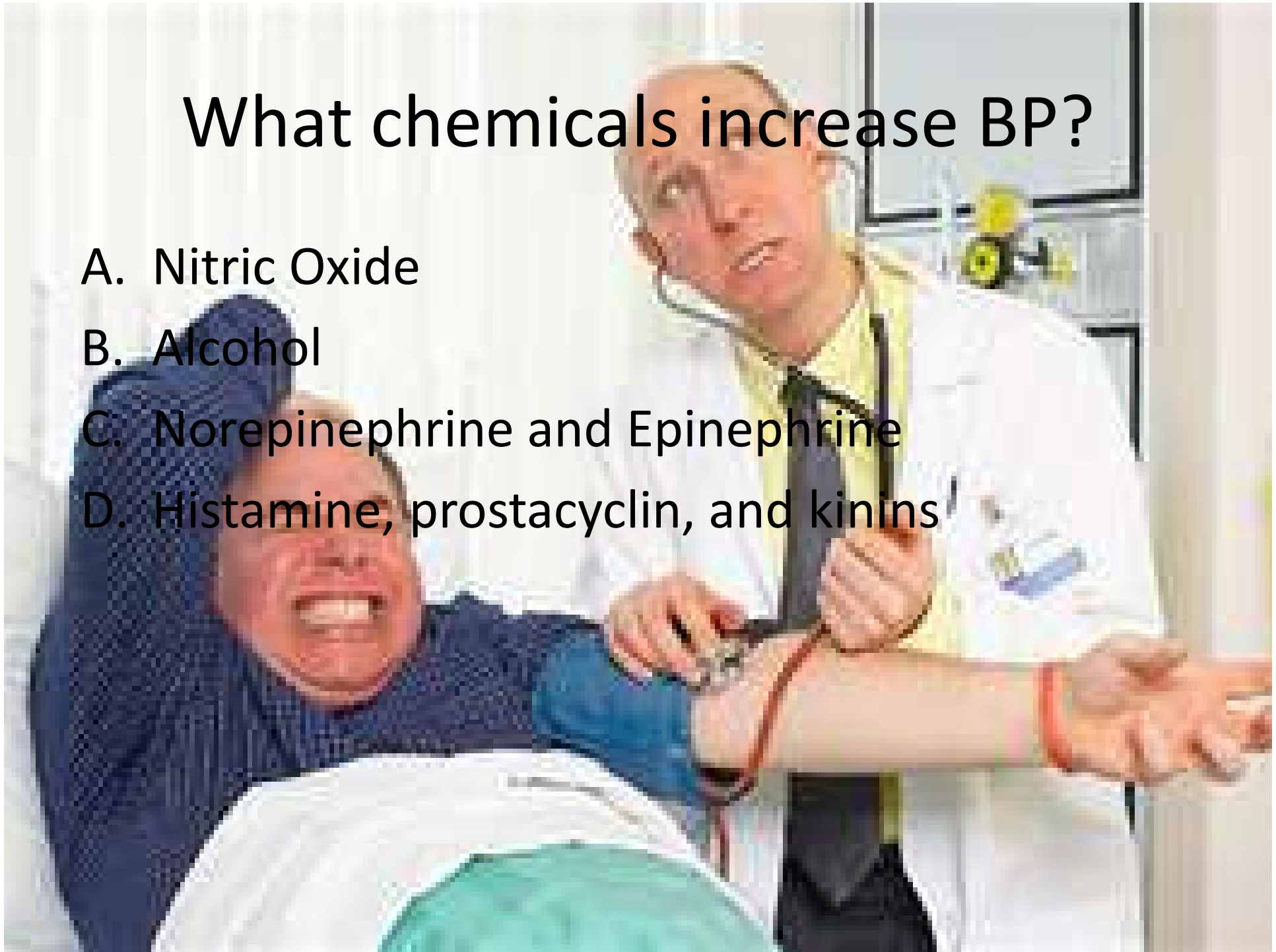
An anatomical diagram of the human head and neck, viewed from the front. The diagram is color-coded to show the locations for palpating the pulse. The carotid arteries are highlighted in red, and the brachial arteries are highlighted in blue. The diagram shows the head, neck, and upper chest area, with the pulse points marked on the neck and upper arm.

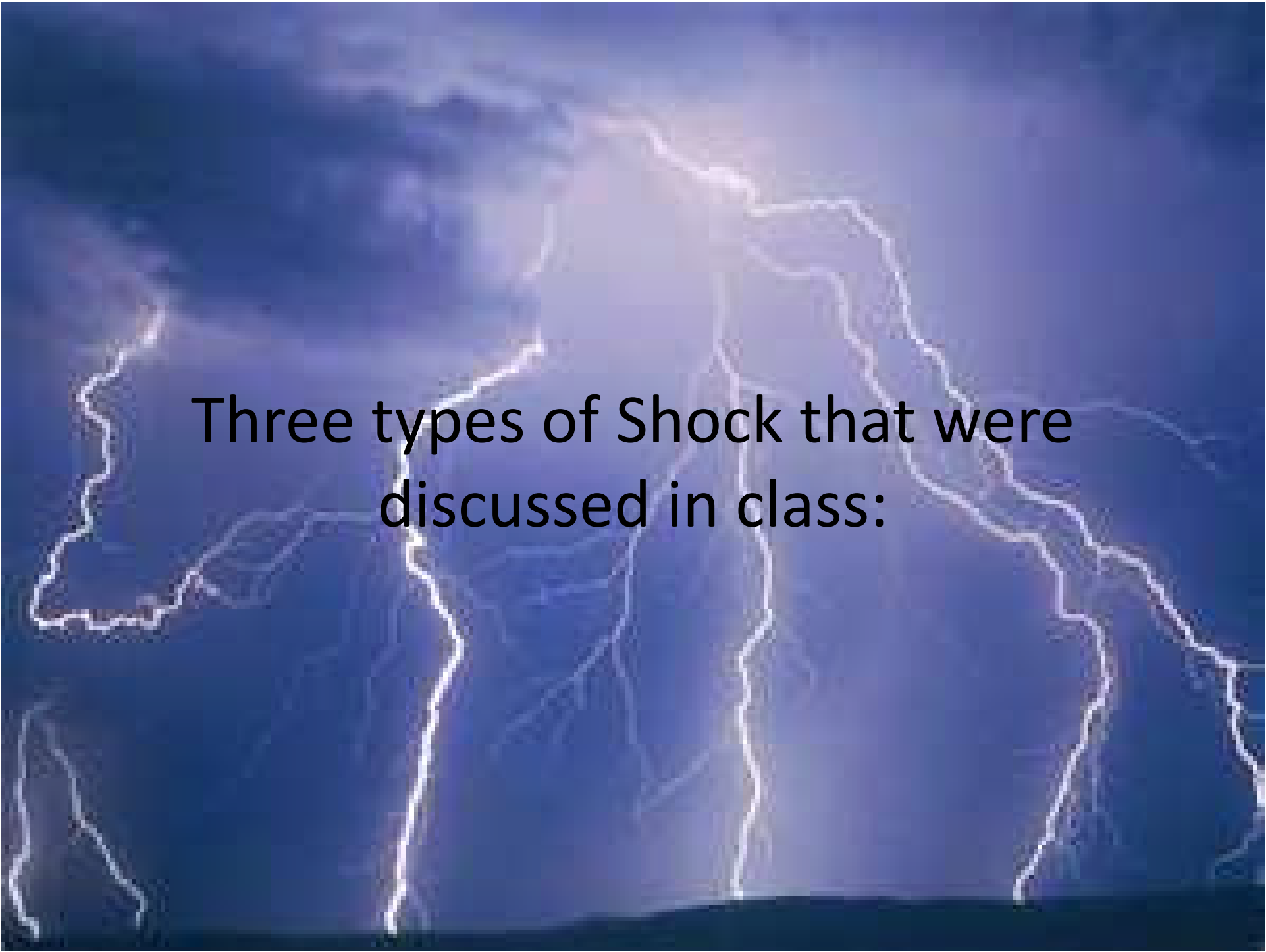
How many locations are used for
Palpating Pulse?

- A. 2
- B. 5
- C. 10
- D. 9

What chemicals increase BP?

- A. Nitric Oxide
- B. Alcohol
- C. Norepinephrine and Epinephrine
- D. Histamine, prostacyclin, and kinins





Three types of Shock that were
discussed in class:

What is this a picture of?





Name 3 Vasodilators

An anatomical diagram of the heart, viewed from the front. A catheter is inserted into the right atrium, and another is inserted into the main branch of the pulmonary artery. The diagram is color-coded: red for oxygenated blood (left side) and blue for deoxygenated blood (right side).

Systemic pressure in the right atrium?

- A. 5 mmHg
- B. 0 mmHg
- C. 100 mmHg
- D. 90 mmHg



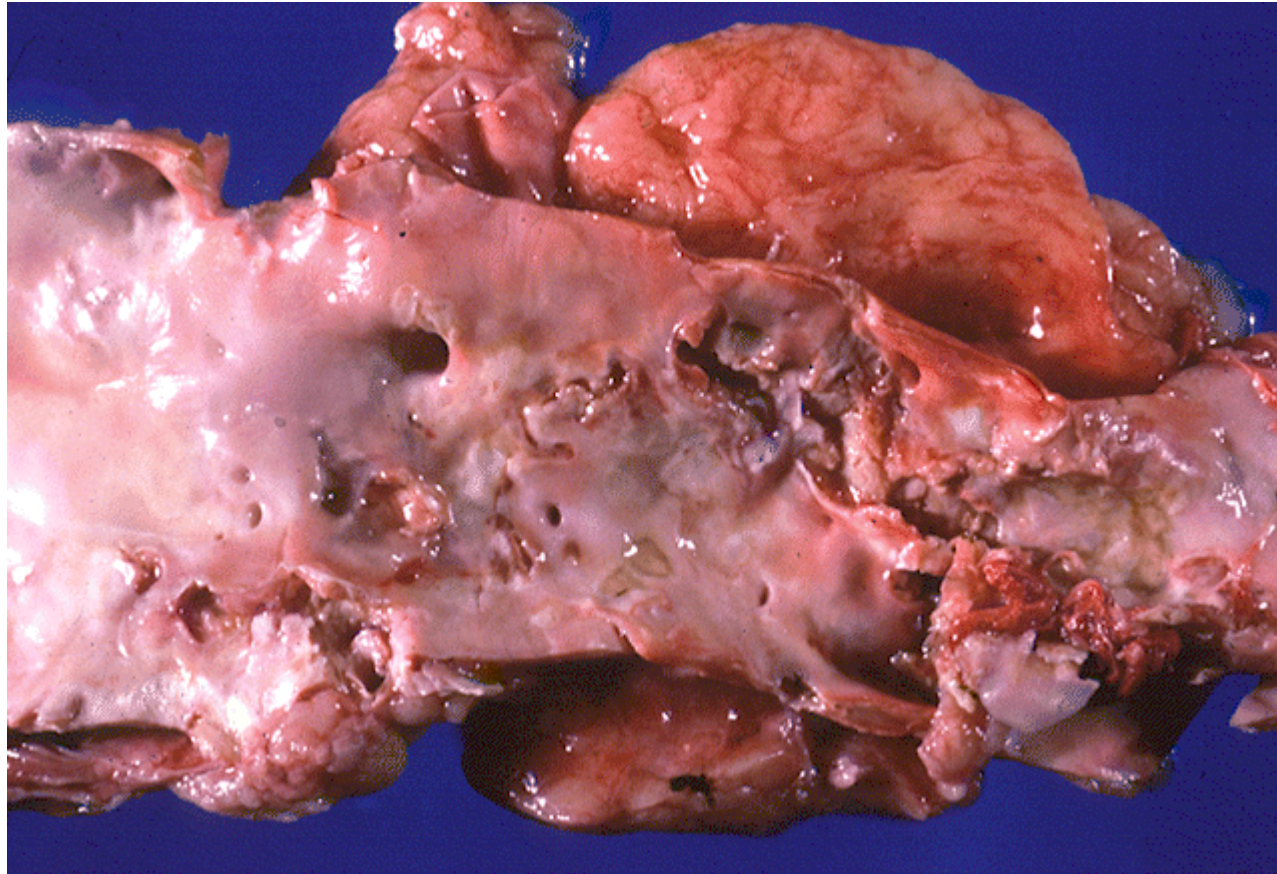
Which of the following is/are a type of blood vessel?

A. Arteries, Capillaries, Veins

B. Lymphatic

C. All of the above

What is this picture of?





What blood vessel is most abundant?

An anatomical illustration of a human torso, viewed from the front, showing the internal organs and the lymphatic system. The lymphatic system is highlighted in red, showing a complex network of vessels and nodes throughout the body. The vascular system, including the heart and major blood vessels, is shown in blue. The text "Lymphatics are found in all tissues except:" is overlaid in white.

Lymphatics are found in all tissues
except:

Lymphatic system

What are the 2 most important functions of the lymphatic system?



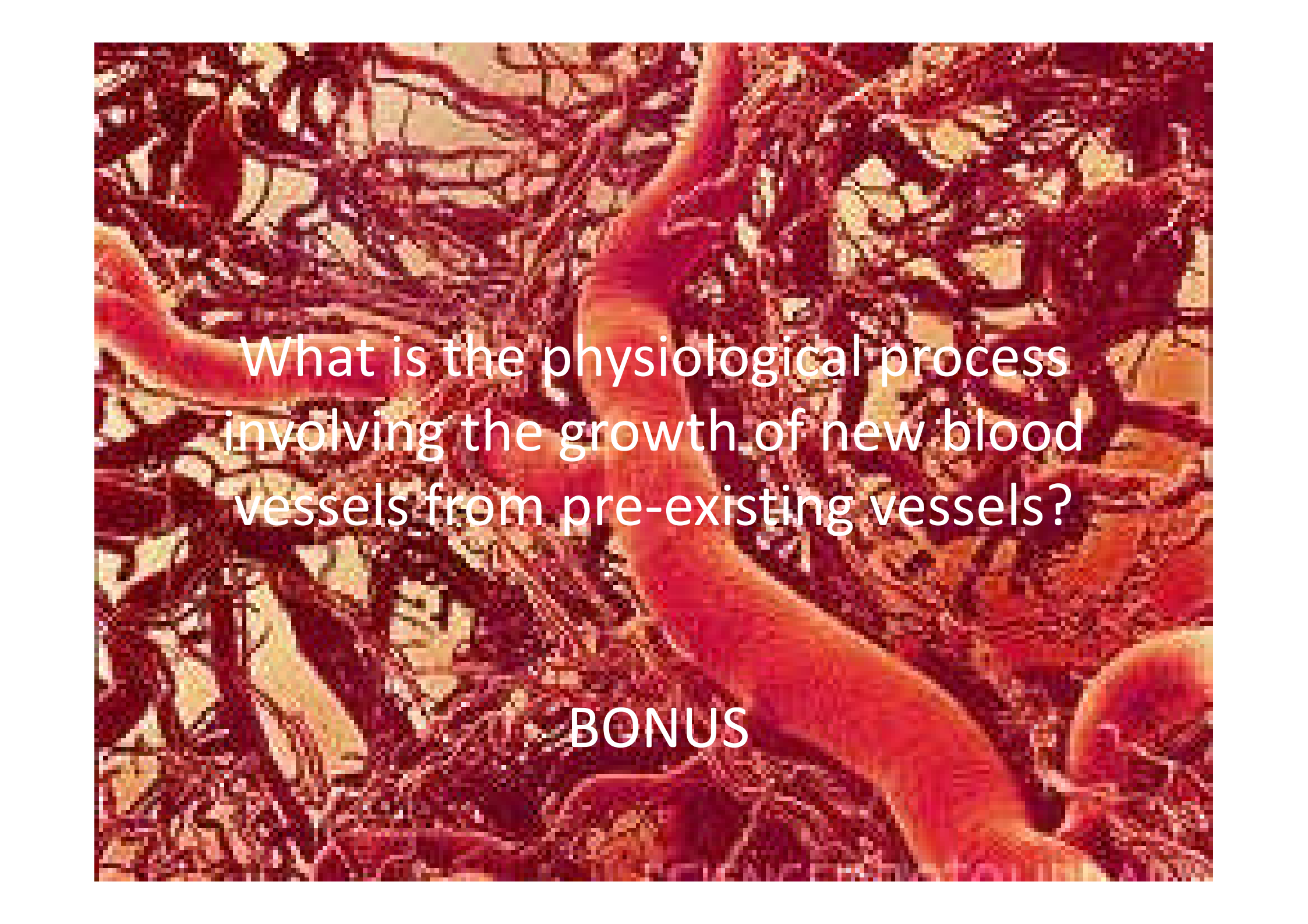


The thoracic duct arises from the cisterna chyli and drains _____.

Pathway of Blood

- Right atrium → _____ valve → right ventricle
- Right ventricle → pulmonary semilunar valve → _____ arteries → lungs
- Lungs → pulmonary veins → left _____
- Left _____ → _____ valve → left ventricle
- Left ventricle → _____ semilunar valves → aorta
- Aorta → _____ circulation

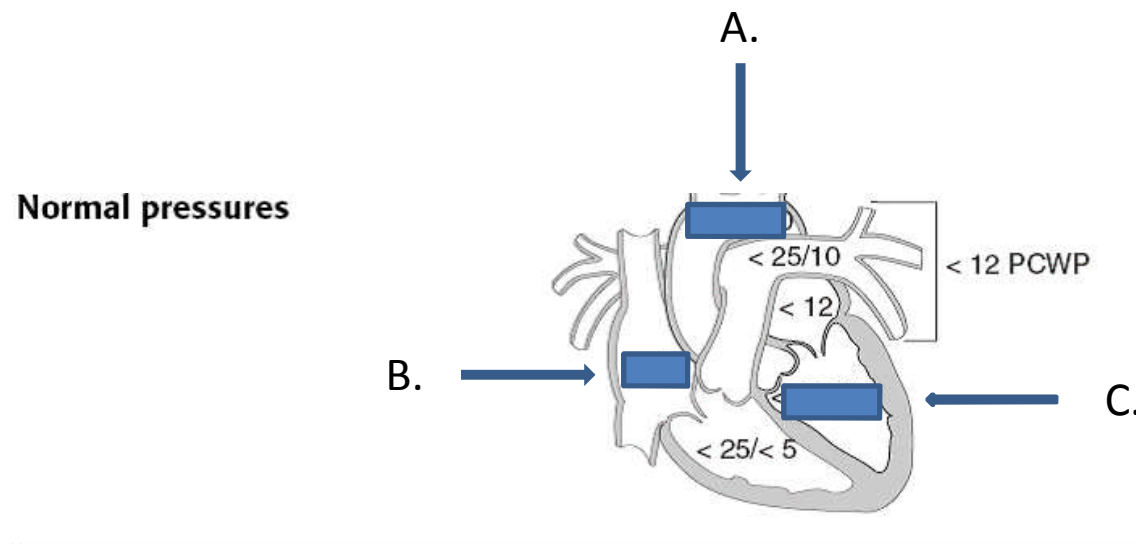
BONUS

A high-magnification micrograph showing a dense network of blood vessels. The vessels are stained in shades of red and orange, with some appearing as thick, curved structures and others as thinner, more delicate branches. The background is a complex, textured pattern of cellular and extracellular components.

What is the physiological process involving the growth of new blood vessels from pre-existing vessels?

BONUS

Fill in the blanks:



BONUS

EKG Review

Question and Answer

Samples and Techniques

If the PP interval is 40mm long, what is the atrial rate ?

37.5 atrial contractions/1minute



If the EKG picks up an atrial abnormality, with which wave would you associate this problem ?

P Wave

P Wave





Atrial Fibrillation



***Calculate the height of the P wave in mV
measuring 2.5mm. When 10mm=1mV***

0.25mV

2.5mm .1mV/10mm

What is the result of conduction of pulse going through the Bundle of His to Purkinje fiber?

Contraction of left ventricle



***Calculate the duration of this PR Interval
When Width is 6mm and 25mm of paper is used per 1 second***

0.24sec

6mm. 1sec/25mm



Bundle Branch Block

Match the following

V1

V2

V3

V4

V5

Anterior Axillary line 5th ICS

Midway between V2 and V4

Right Sternal border 4th ICS

Left Sternal Border 4th ICS

Midclavicular line 5th ICS



What does the ST Segment Represent ?

**Beginning of Ventricular
Repolarization**



ST Segment Depression Characteristics

HINT: "Depressed ST"

**Drooping valve (mitral valve prolapse) •
Enlargement of LV with strain • Potassium loss
(hypokalemia) • Reciprocal ST depression
(inferior MI) • Embolism (PE) • Subendocardial
ischemia • Subendocardial infarct •
Encephalon hemorrhage • Dilated
cardiomyopathy • Shock • Toxicity of digitalis,
quinidine**

What are the four basic types of sinus mechanism rhythms?

Normal sinus rhythm (NSR)

Sinus bradycardia

Sinus tachycardia

Sinus arrhythmia



What is the likely sinus rhythm for a heart beat less than 60beats/minute

Sinus bradycardia



What is the normal PR Interval and P wave height ?

PR Interval – 0.12 to 0.20s

P wave Height - < 2.5mm in Lead II



Atrial Flutter

1st degree AV block is defined by PR intervals greater than ?

A. 200ms

B. 50ms

C. 500ms

D. 300ms

E. 0.1ms

How many leads does the standard EKG have

12

3 Standard Limb Leads

3 Augmented Limb Leads

6 Precordial Leads

What is meant by the term bipolar leads when referring to EKG's

- A. Two different points on the body
- B. A condition of Britney Spears
- C. V2 connecting to Lead 3 and Lead 2
- D. One point on the body and a virtual reference point with zero electrical potential, located in the center of the heart.
- E. Leads 2 connecting to V2, and then to ventricles

Match the following

Lead I, V5, aVL, V6

Lead II, Lead III, aVF

V3, V4,

VI, V2

aVR

None

Anterior

Lateral

Inferior

Septal



What are the characteristics of ST Segment Elevation

Electrolytes • Left bundle branch block • Early repolarization • Ventricular hypertrophy • Aneurysm • Treatment (pericardiocentesis) • Injury (acute MI, contusion) • Osborne waves (hypothermia) • Nonocclusive vasospasm

BONUS:

NAME THE PACEMAKERS OF THE HEART IN ORDER

SA NODE

AV NODE

BUNDLE OF HIS

BUNDLE BRANCH

PURKINJE FIBERS

