

Cardiovascular system Lab

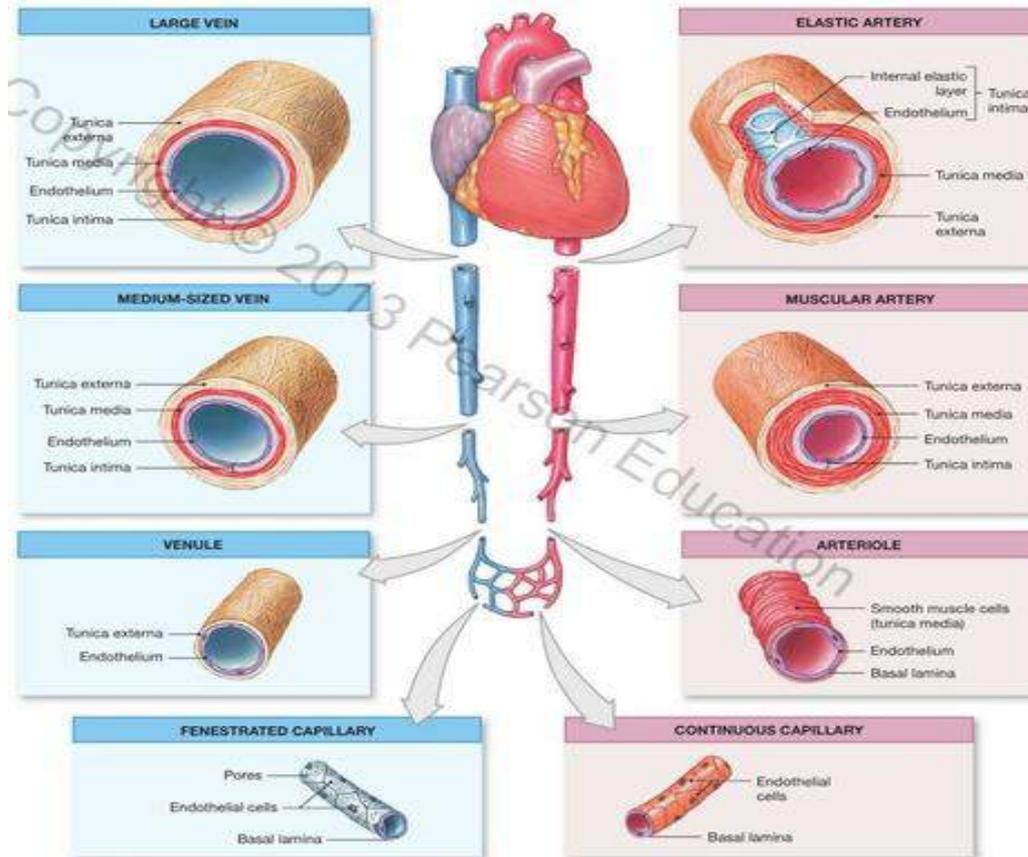


Figure 19-2 Histological Structure of Blood Vessels. Representative diagrammatic cross-sectional views of the walls of arteries, capillaries, and veins. Notice the relative sizes of the layers in these vessels.

DR. AMIRA OSMAN

Associate professor of Human histology & Cell Biology

Components

A. The heart.

B. Blood vessels

1. Arteries

- *Large (elastic) arteries.*
- *Medium-sized (muscular) arteries.*
- *Arterioles.*

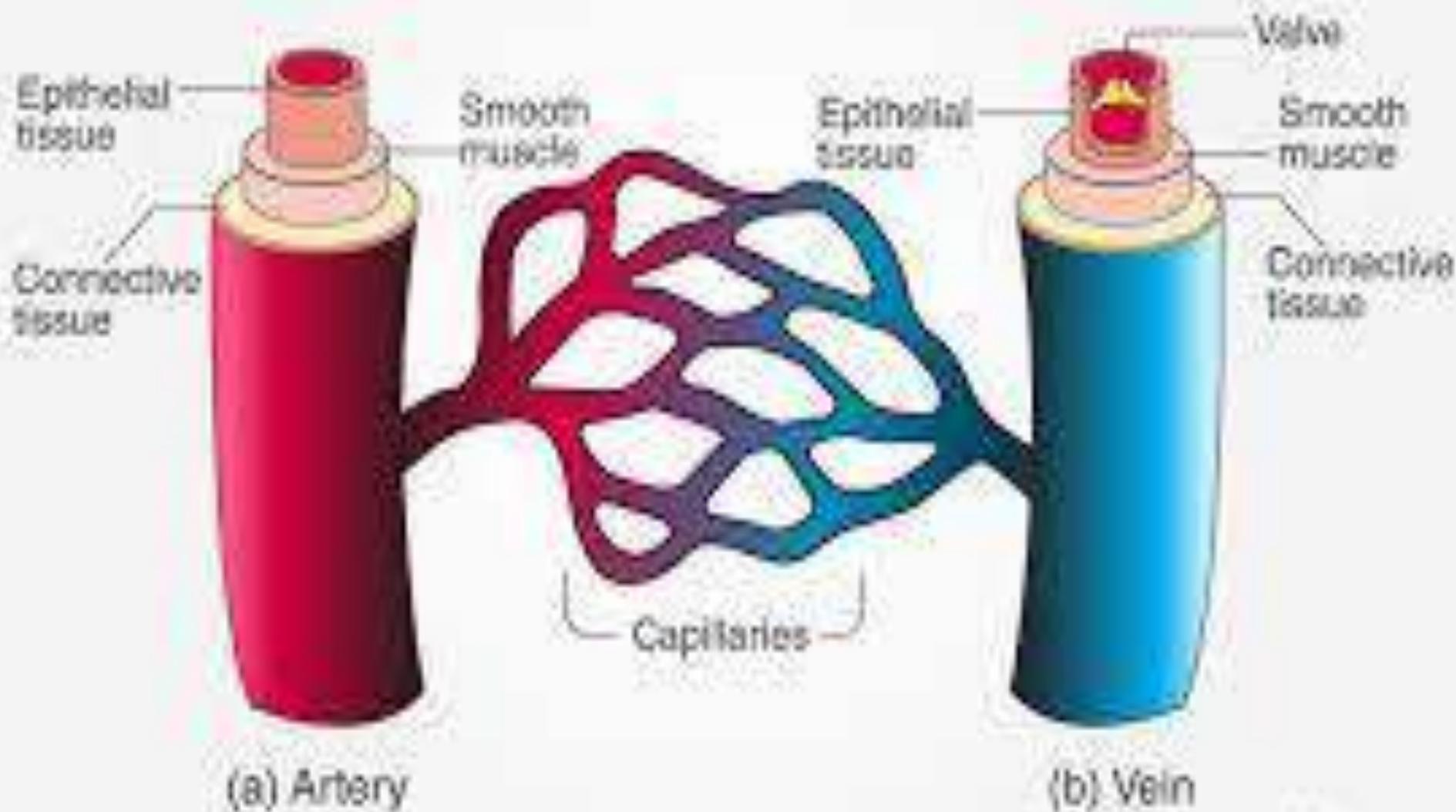
2 .Veins

- *Venules.*
- *Medium-sized veins.*
- *Large veins.*

3 .Connecting vessels

- *Capillaries.*
- *Blood sinusoids.*
- *A.V. shunts*

TYPES OF BLOOD VESSELS



General structure of Bl. vessels

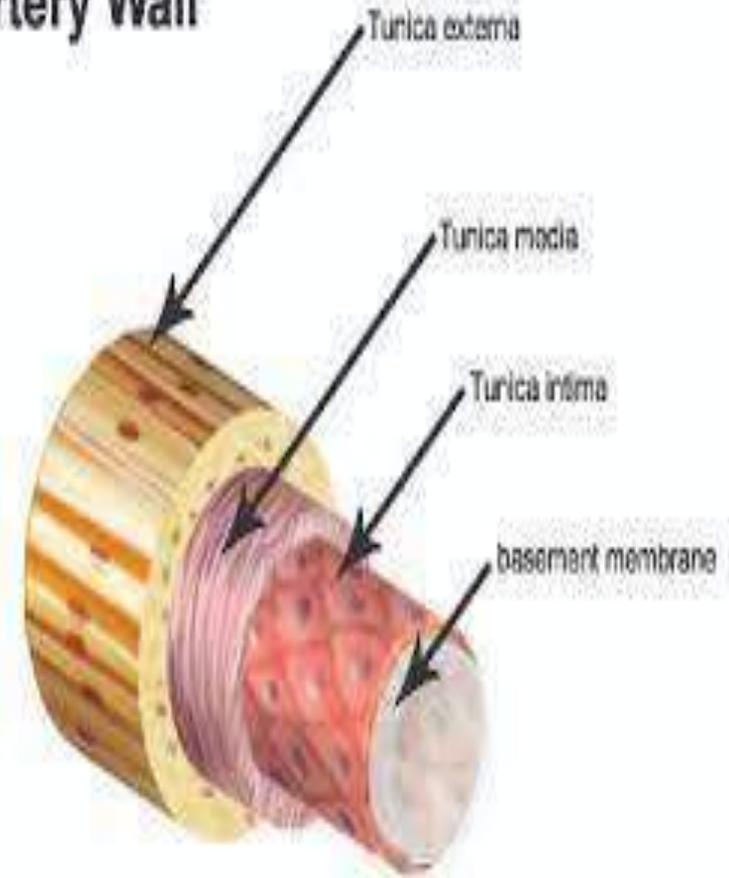
3 Tunics (coats)

A. Tunica Intima.

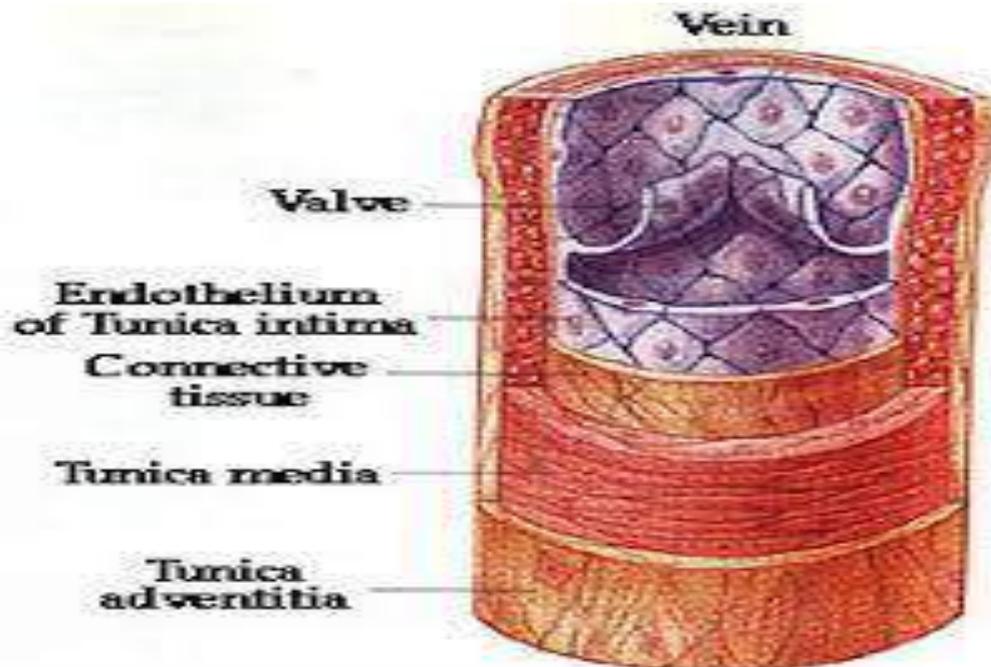
B. Tunica media.

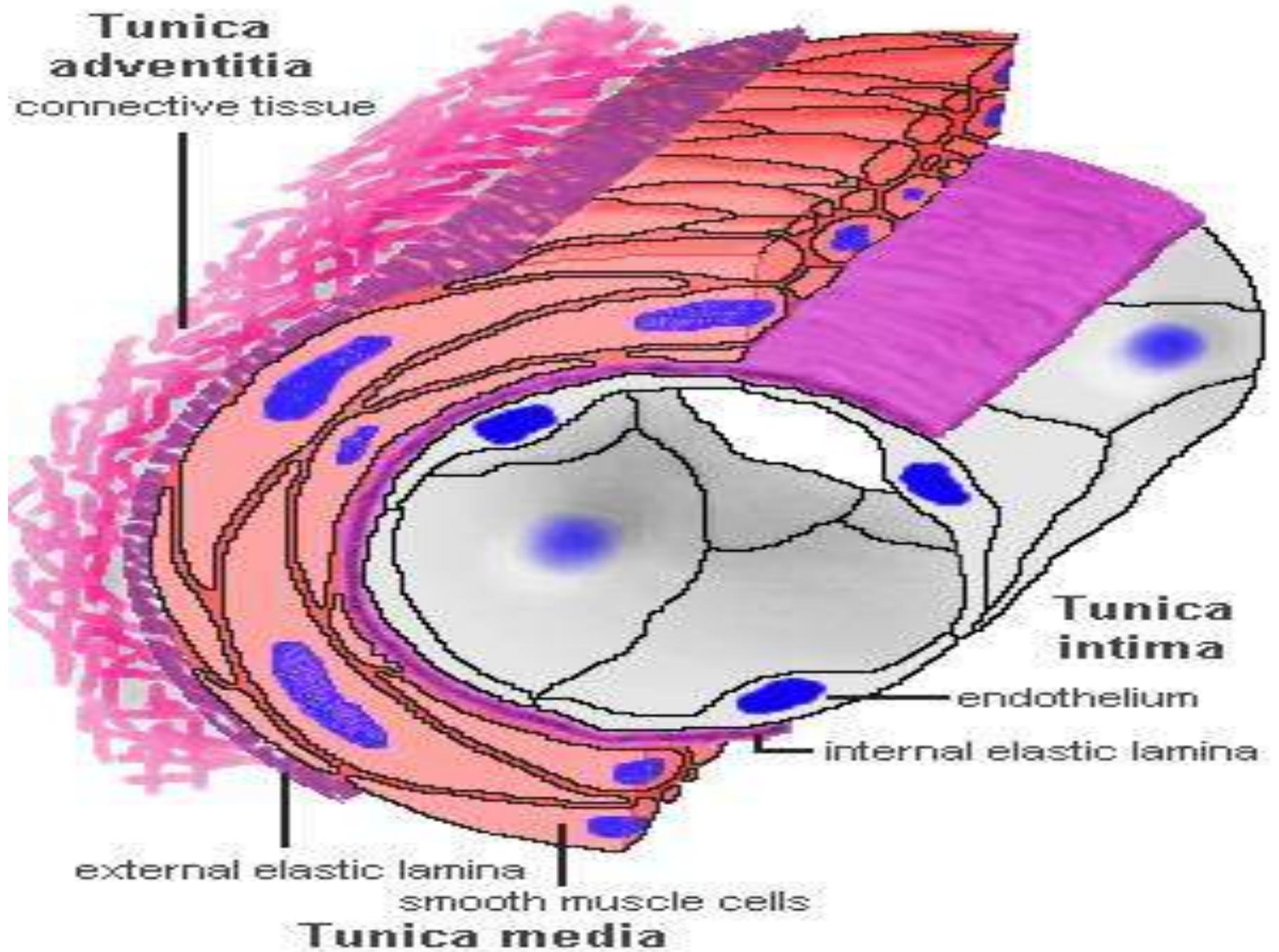
C. Tunica adventitia.

Artery Wall



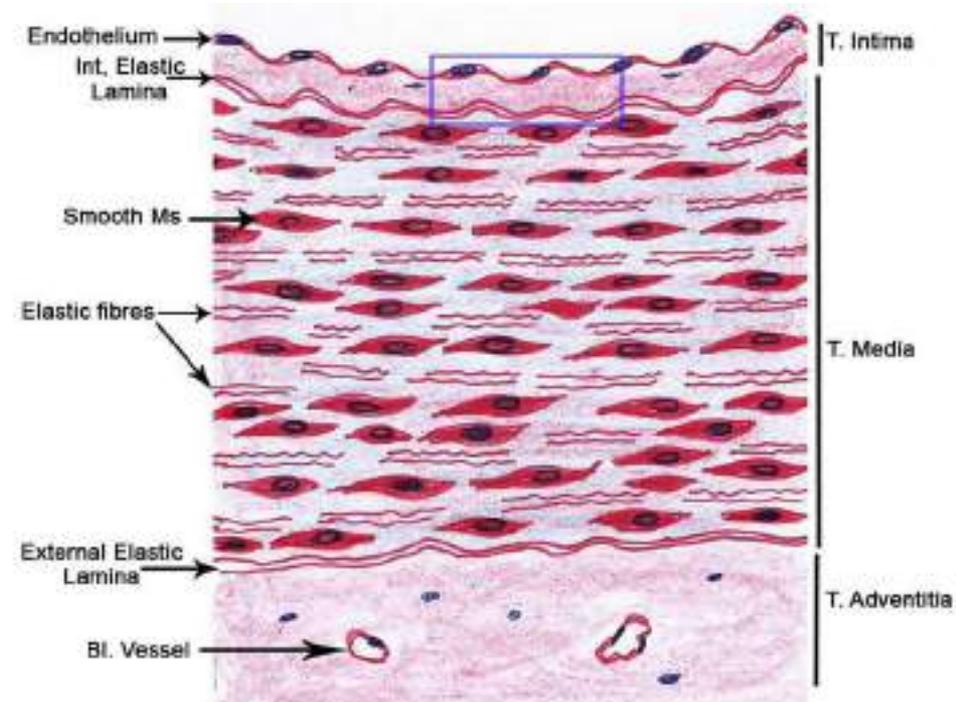
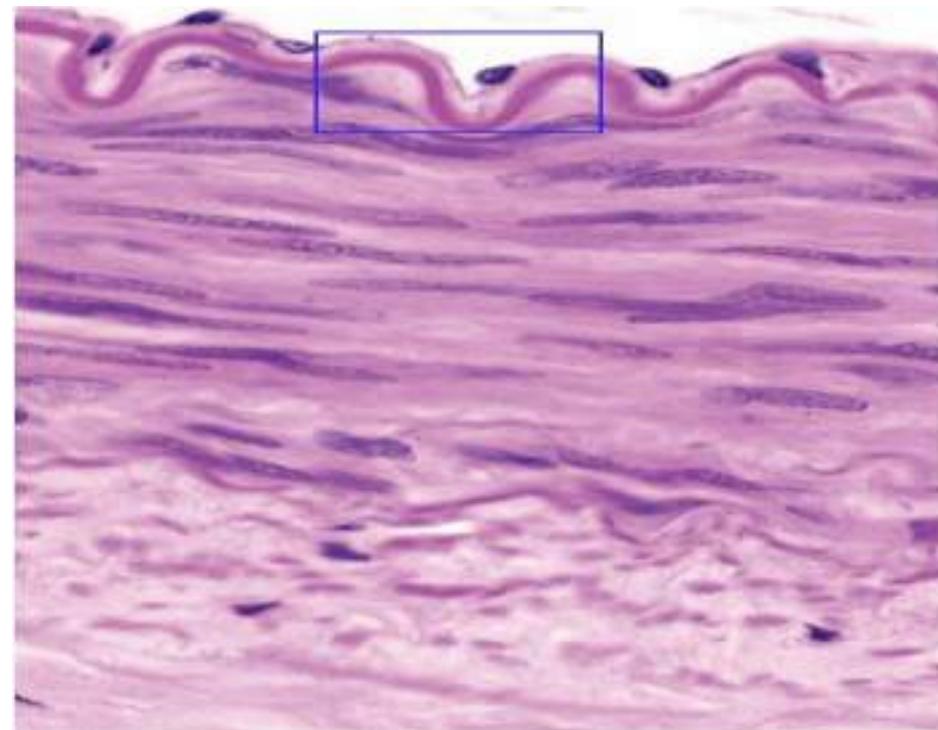
Vein





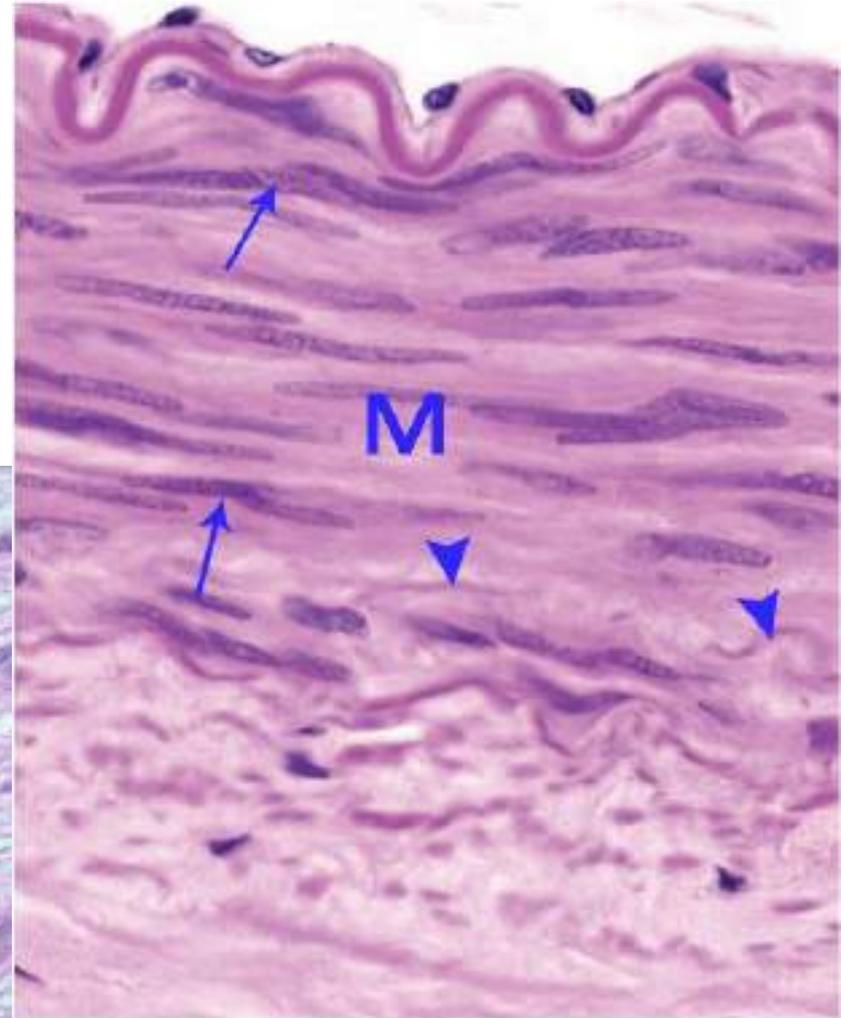
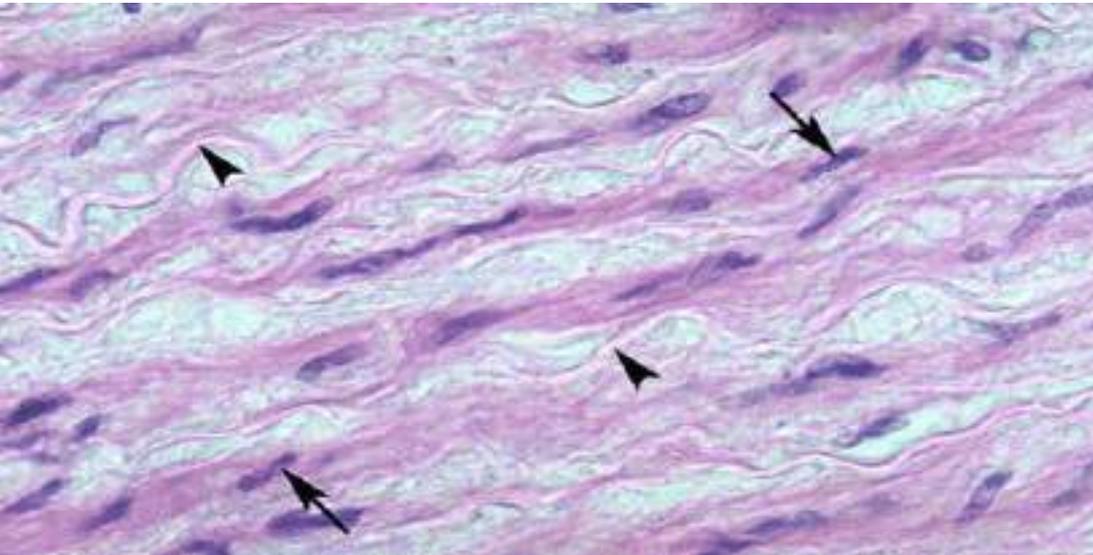
A. Tunica Intima.

1. Endothelium.
2. Subendothelial layer of C.T.
3. Internal elastic lamina ? *In most arteries.*



B. Tunica media

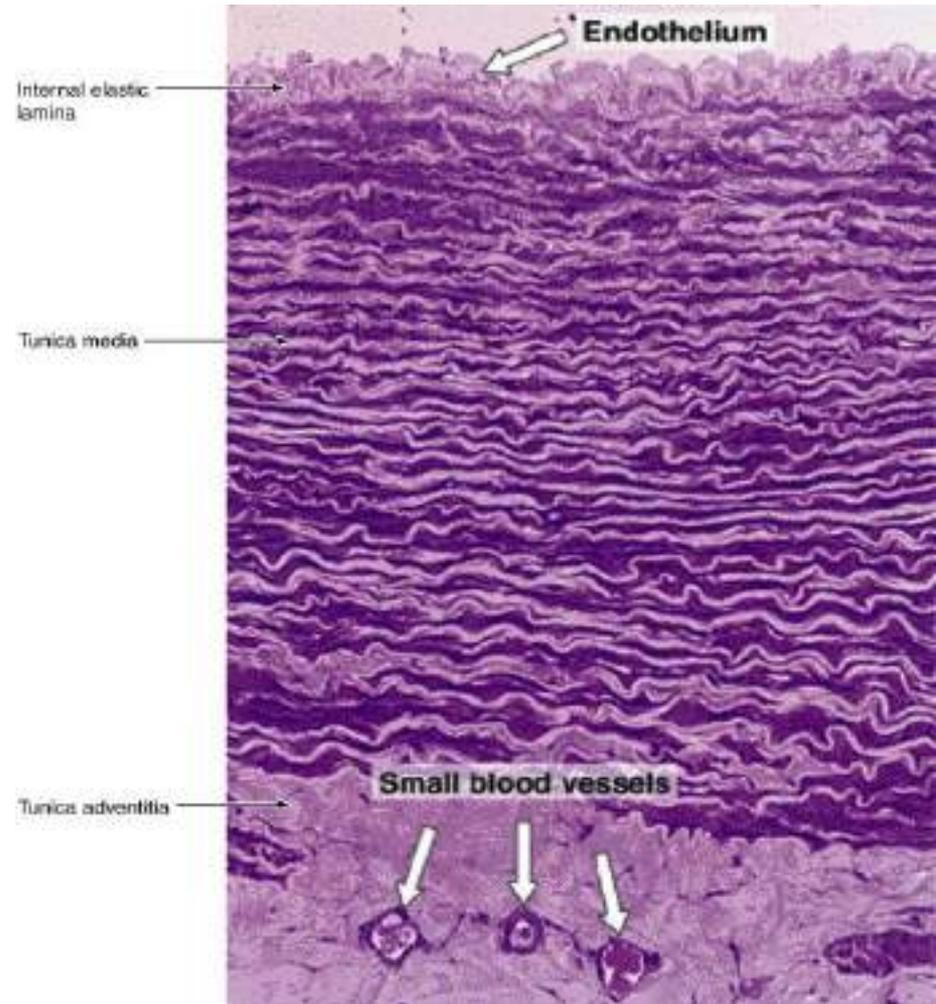
- Cells: circular smooth muscles (*sworra*)
- Fibres: elastic fibres (*sdaeh worra*)
- Matrix (ground substance): *synthesized by smooth ms cells.*
- External elastic lamina? May or may not be present. (*seiretra ralucsum egral ni*)

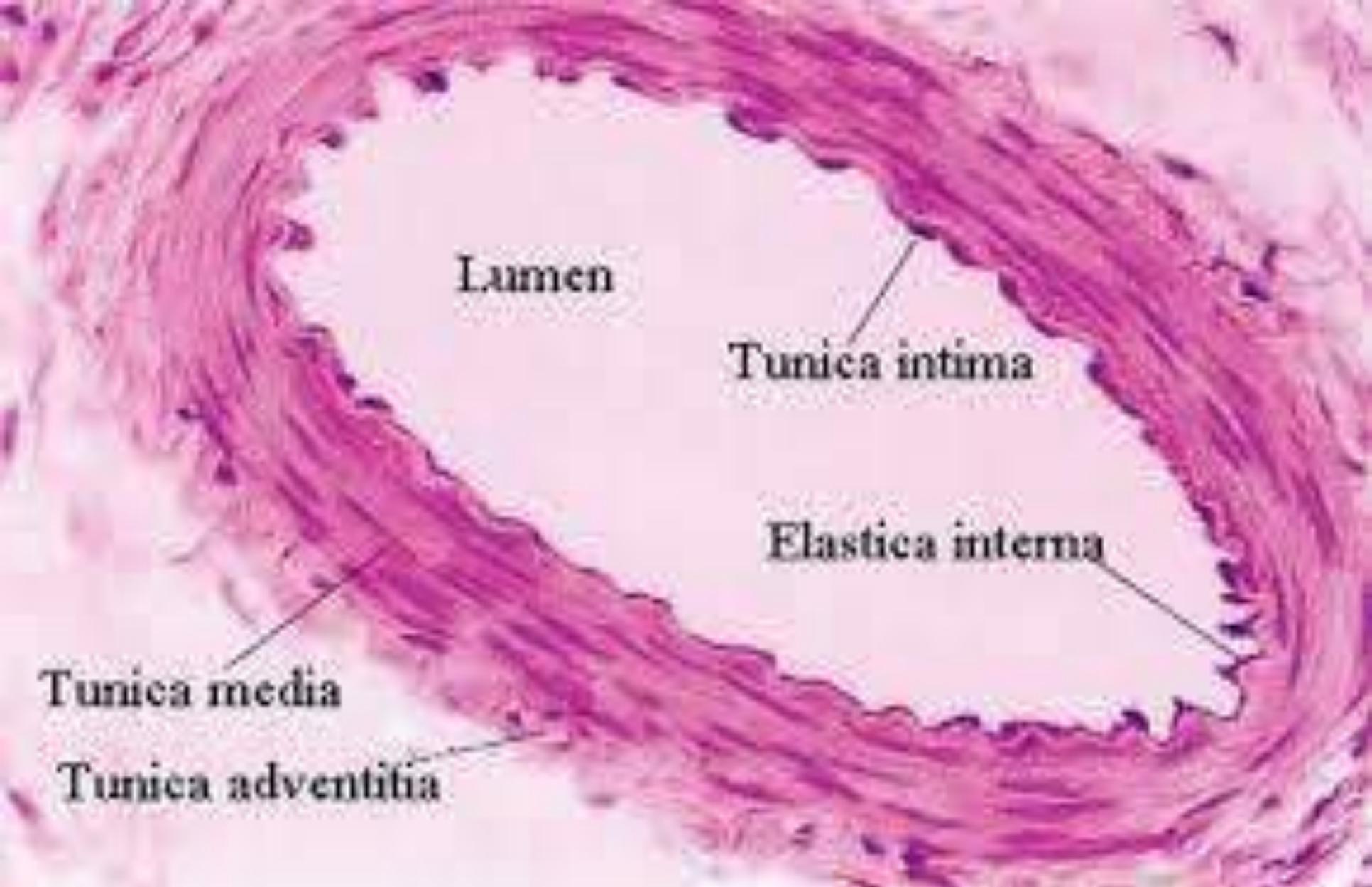


C. Tunica adventitia (externa)

- Fine collagenous fibres.
- Few elastic fibres.
- Vasa vasorum (vessel of the vessel).

N.B. adventitia is larger in veins than arteries.





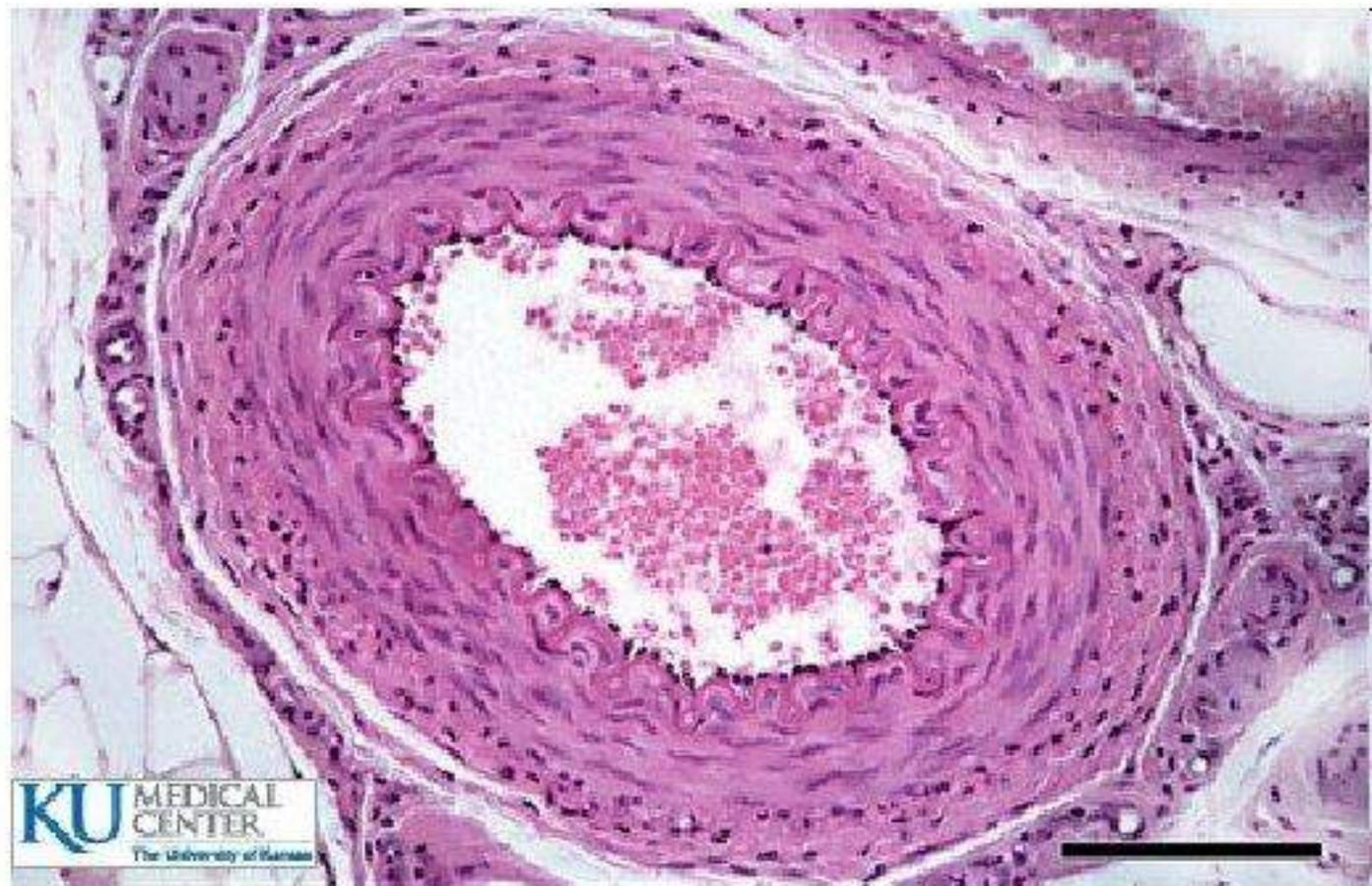
General structure of blood vessels

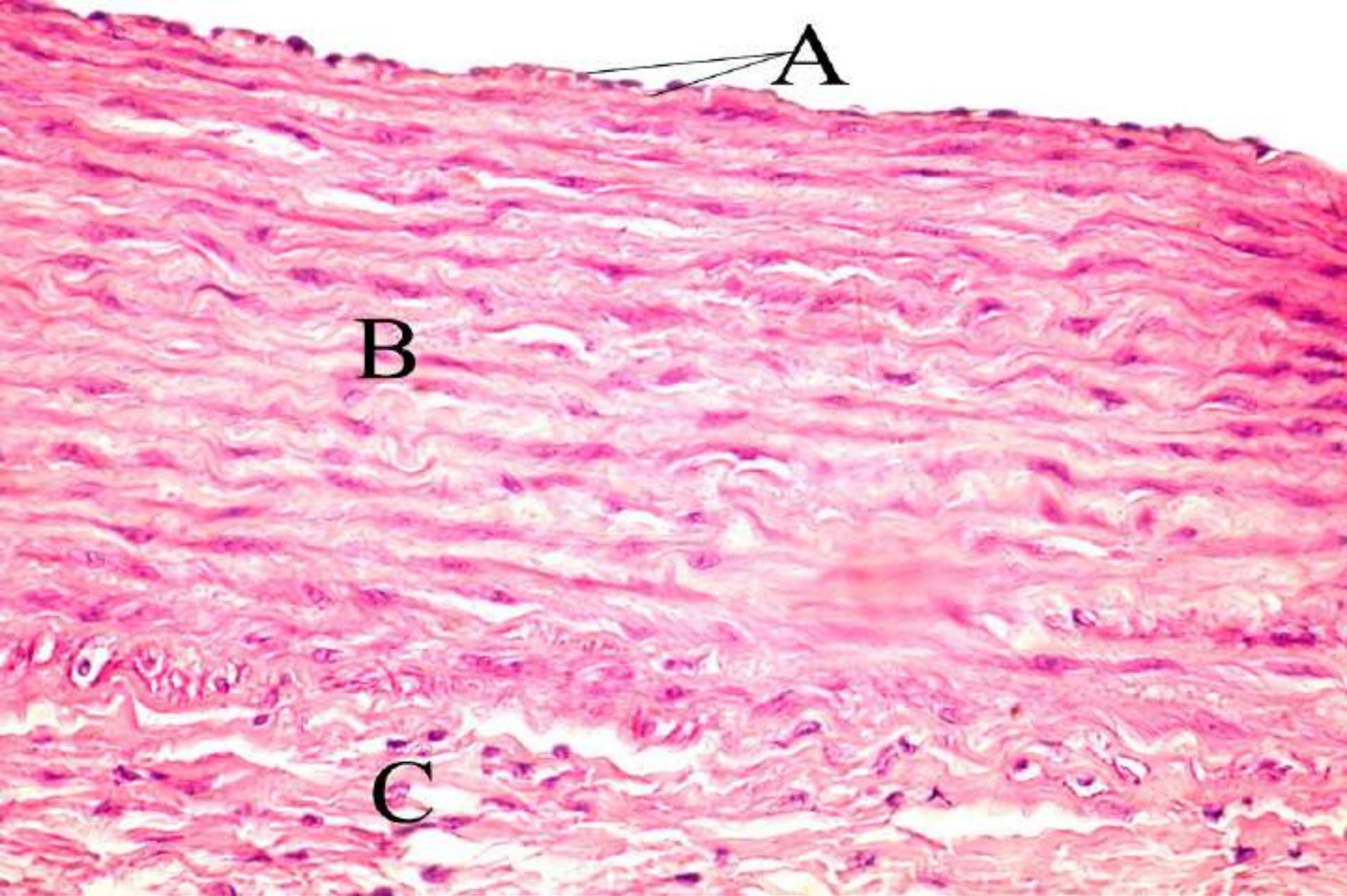
Blood Vessel Layers

Tunica intima

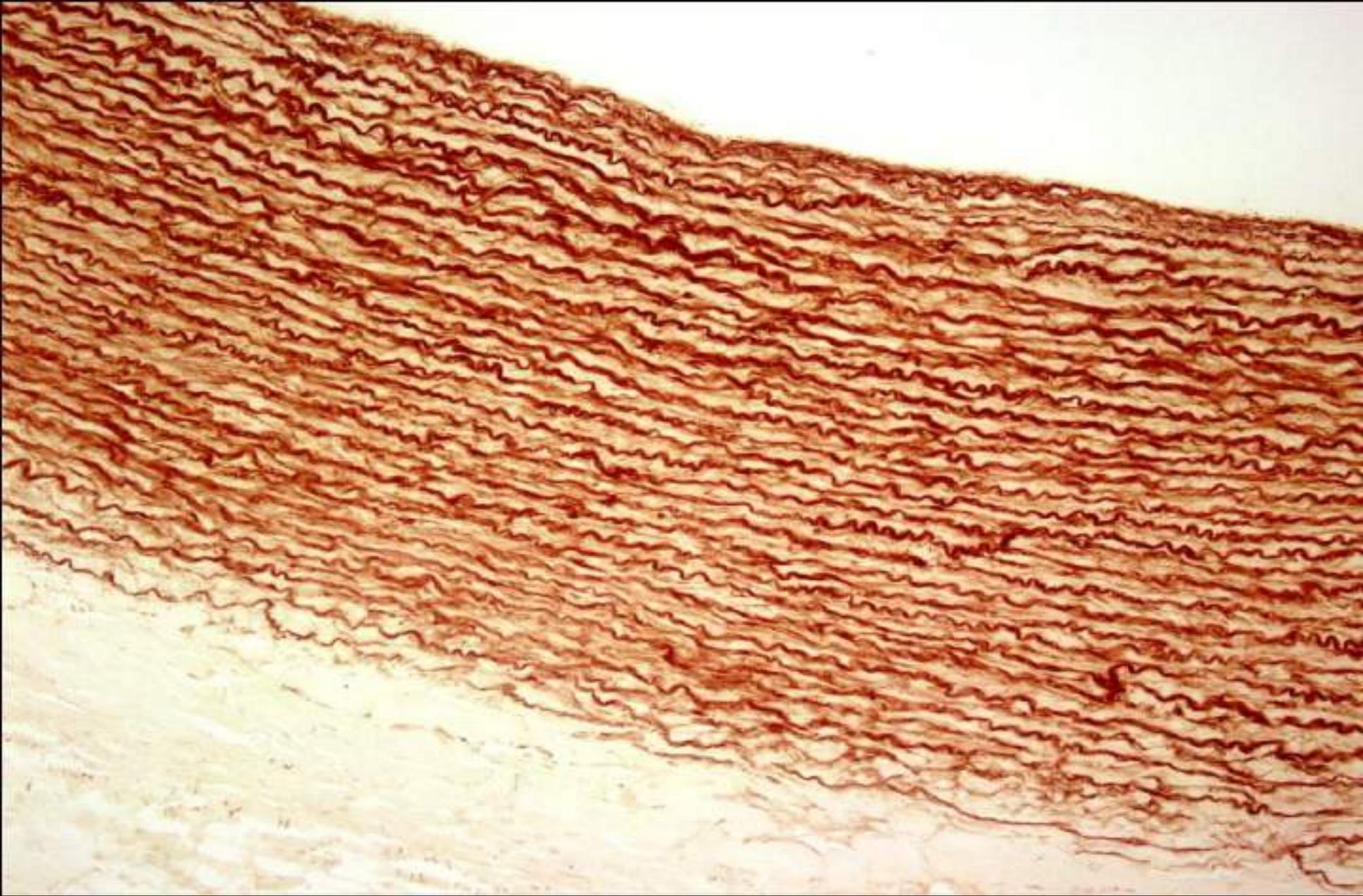
Tunica media

Tunica externa

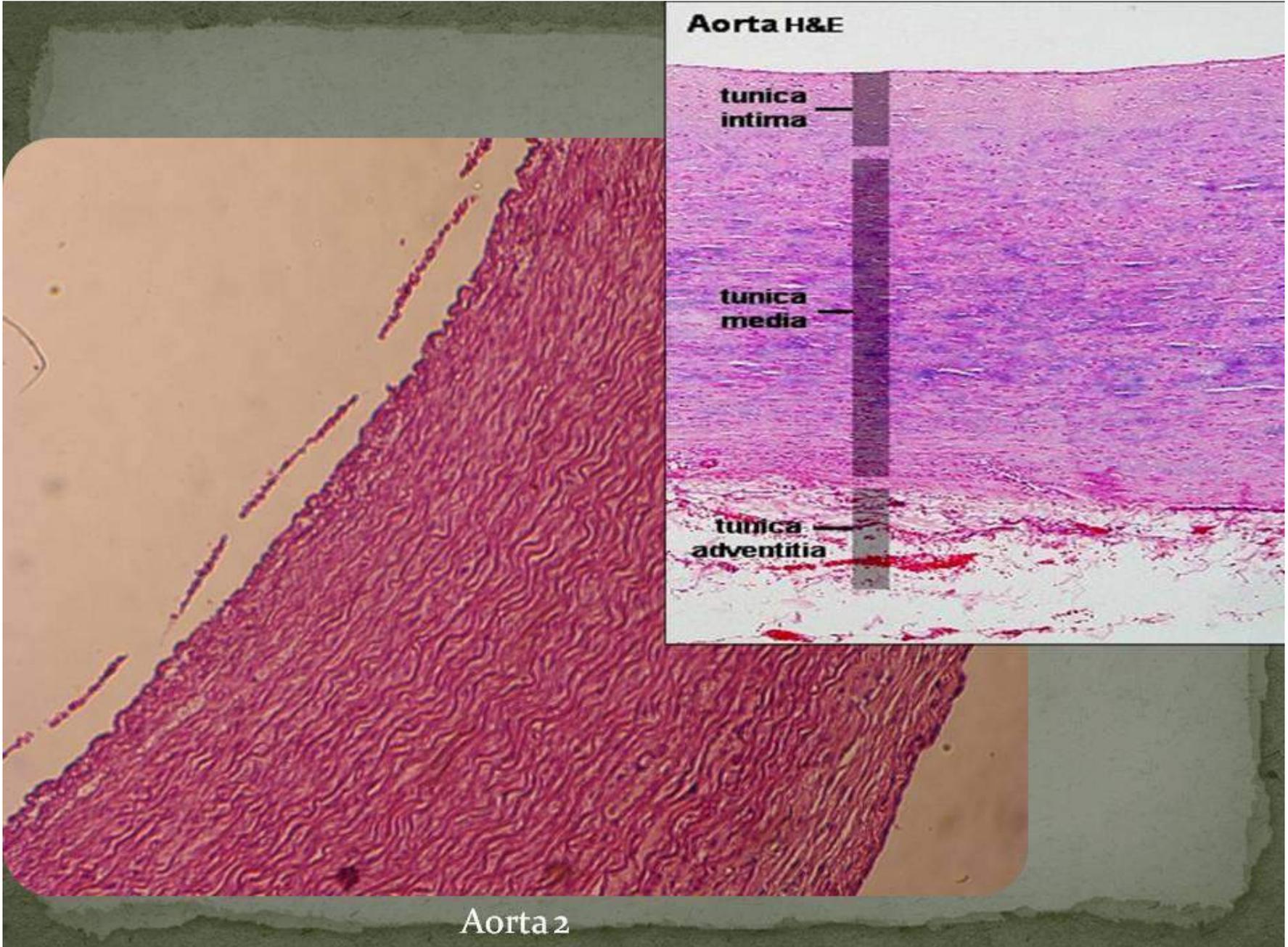


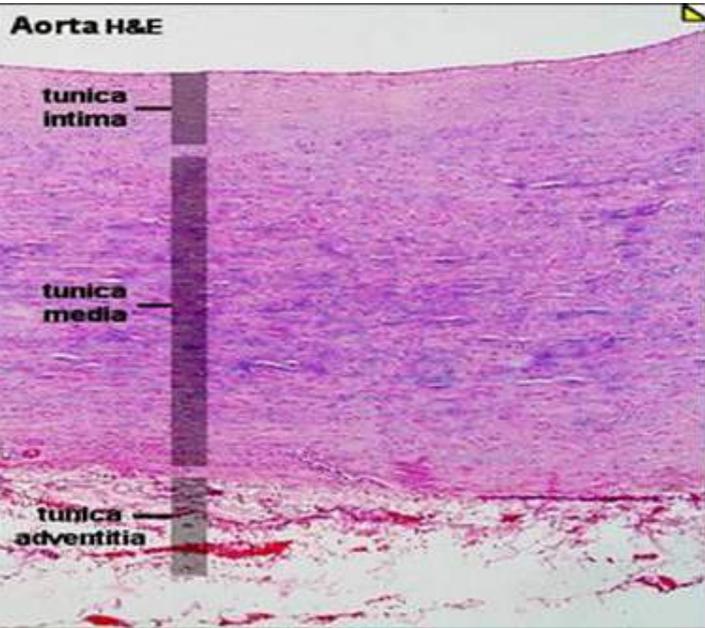


Large elastic (aorta) artery

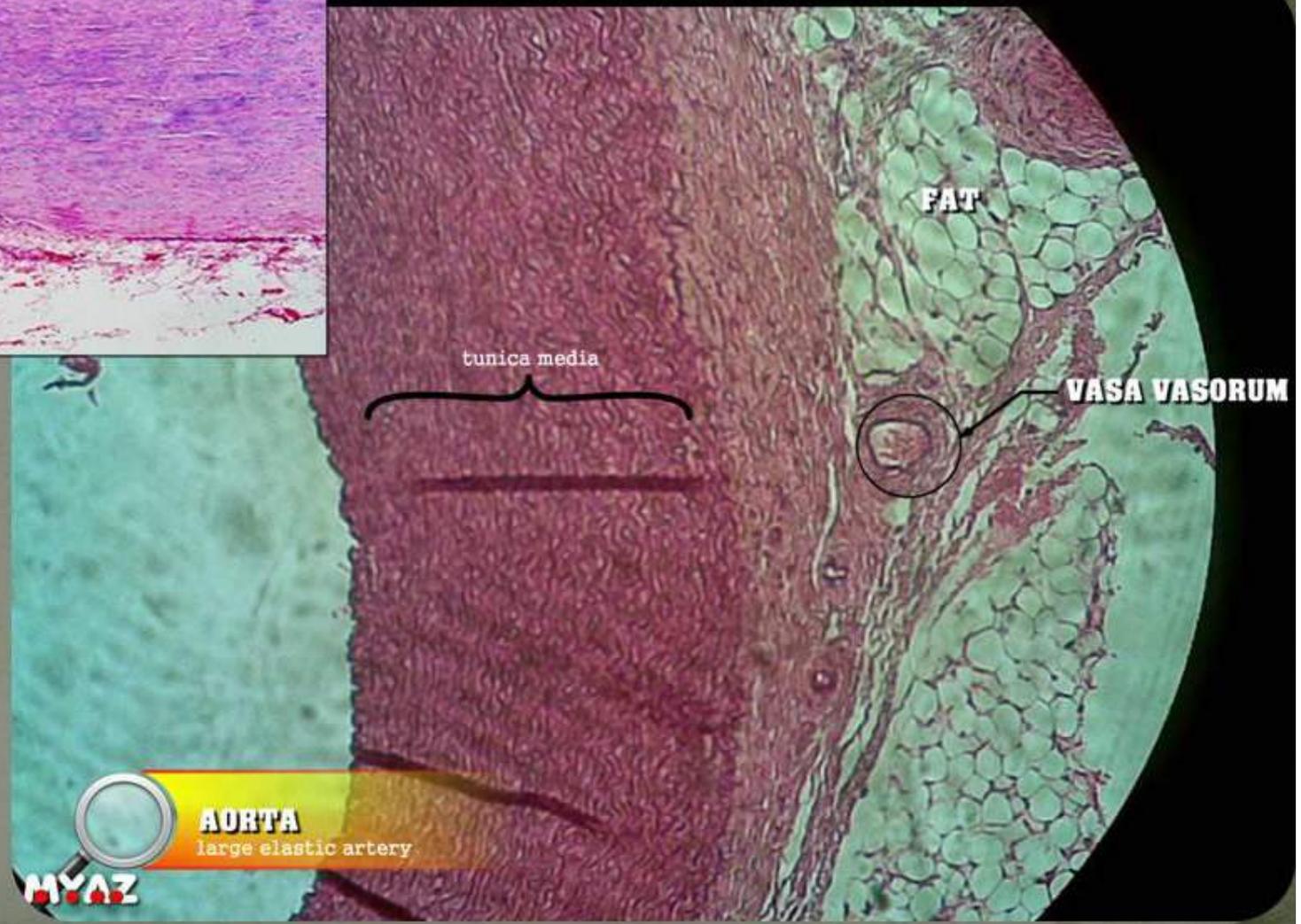


Large elastic (aorta) artery stained with orcein





University of Medicine - Third Year - CardioVascular Module - Histology Lab. - Powered By MYAZ



AORTA
large elastic artery

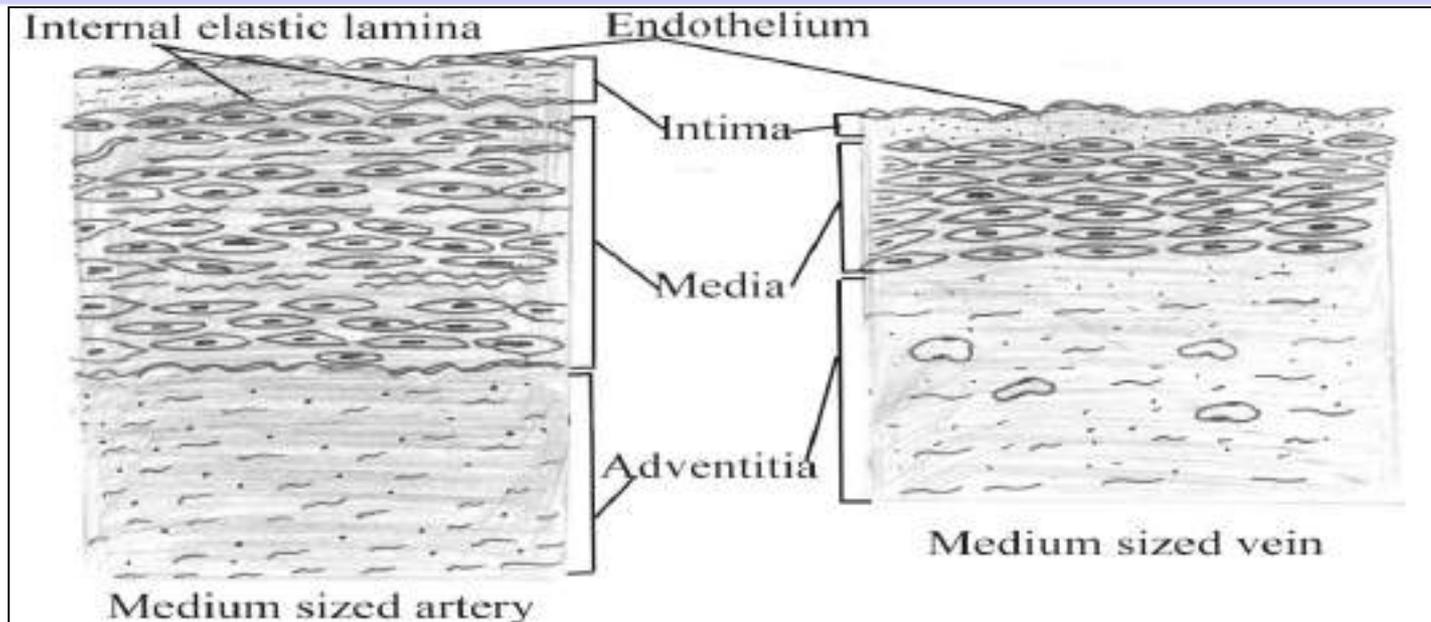


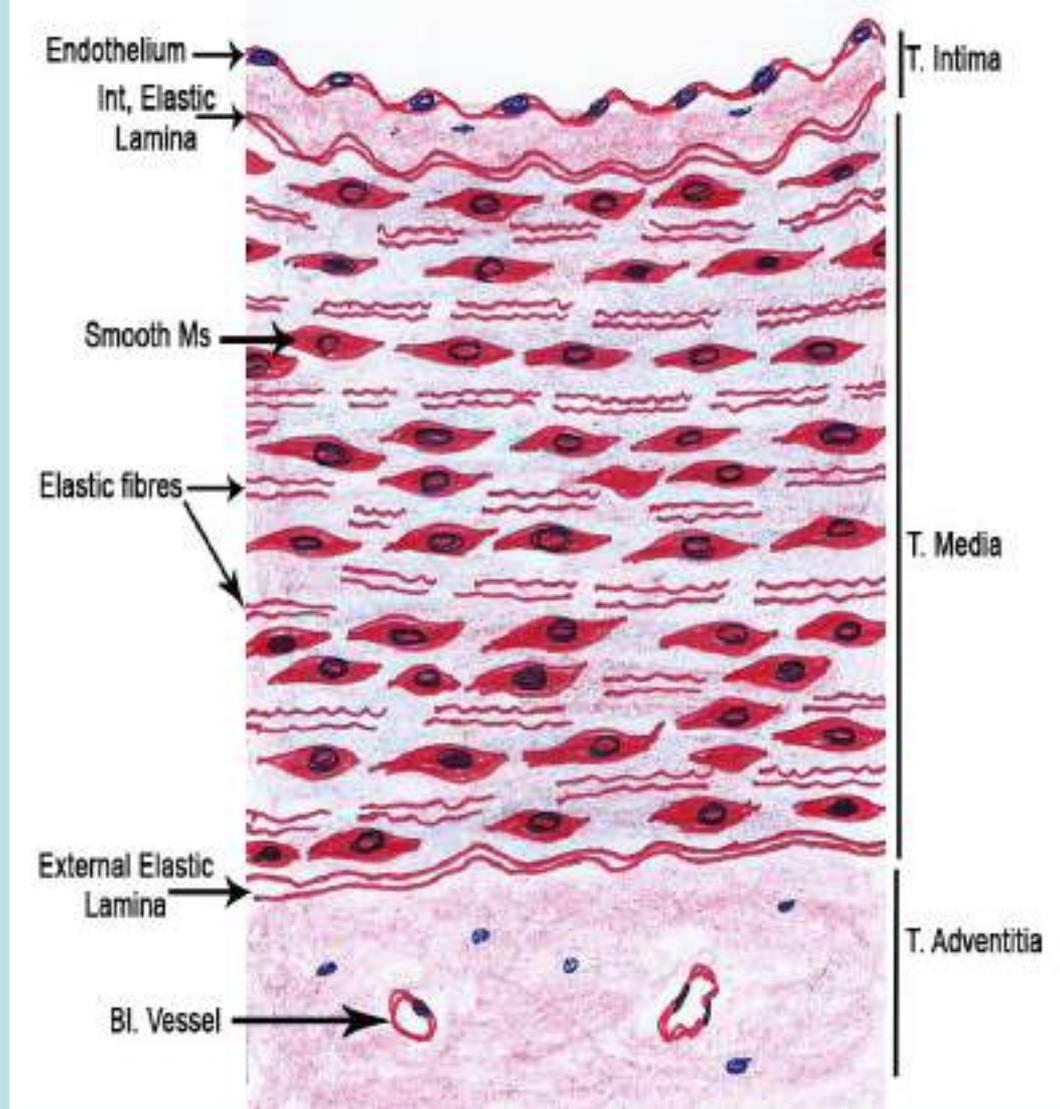
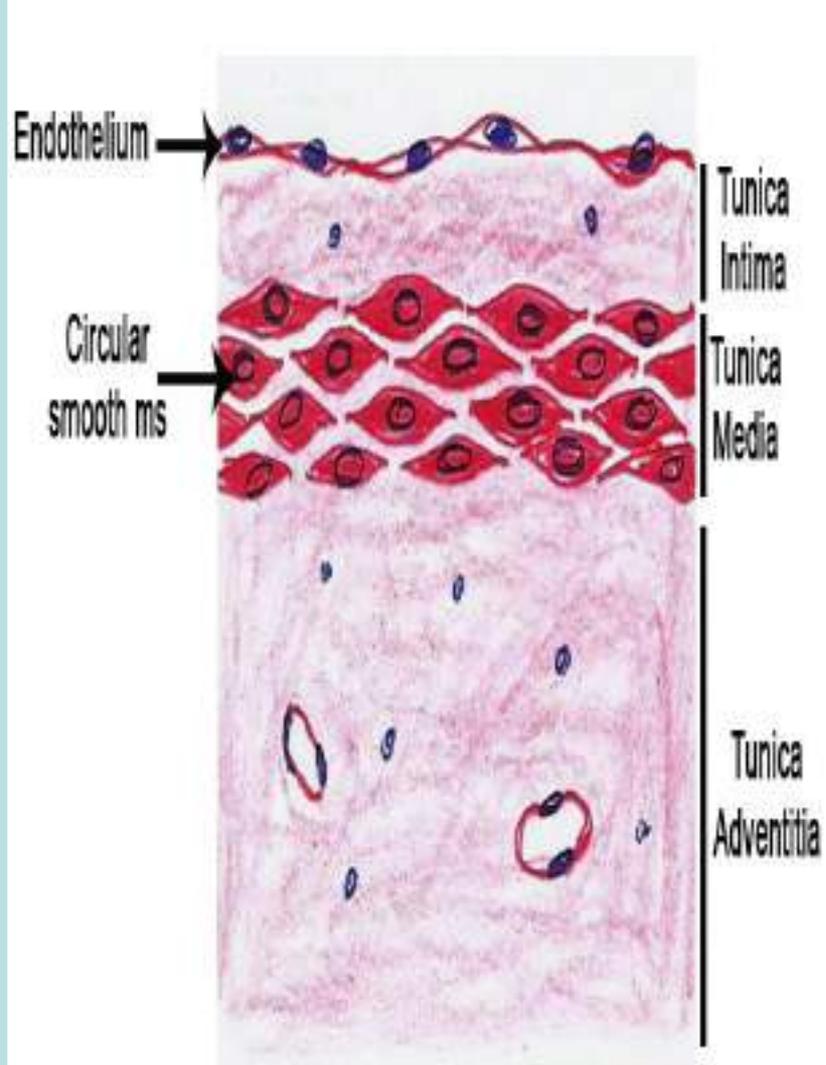
Aorta- Vasa vasorum + Fat

Muscular arteries & veins

Also called

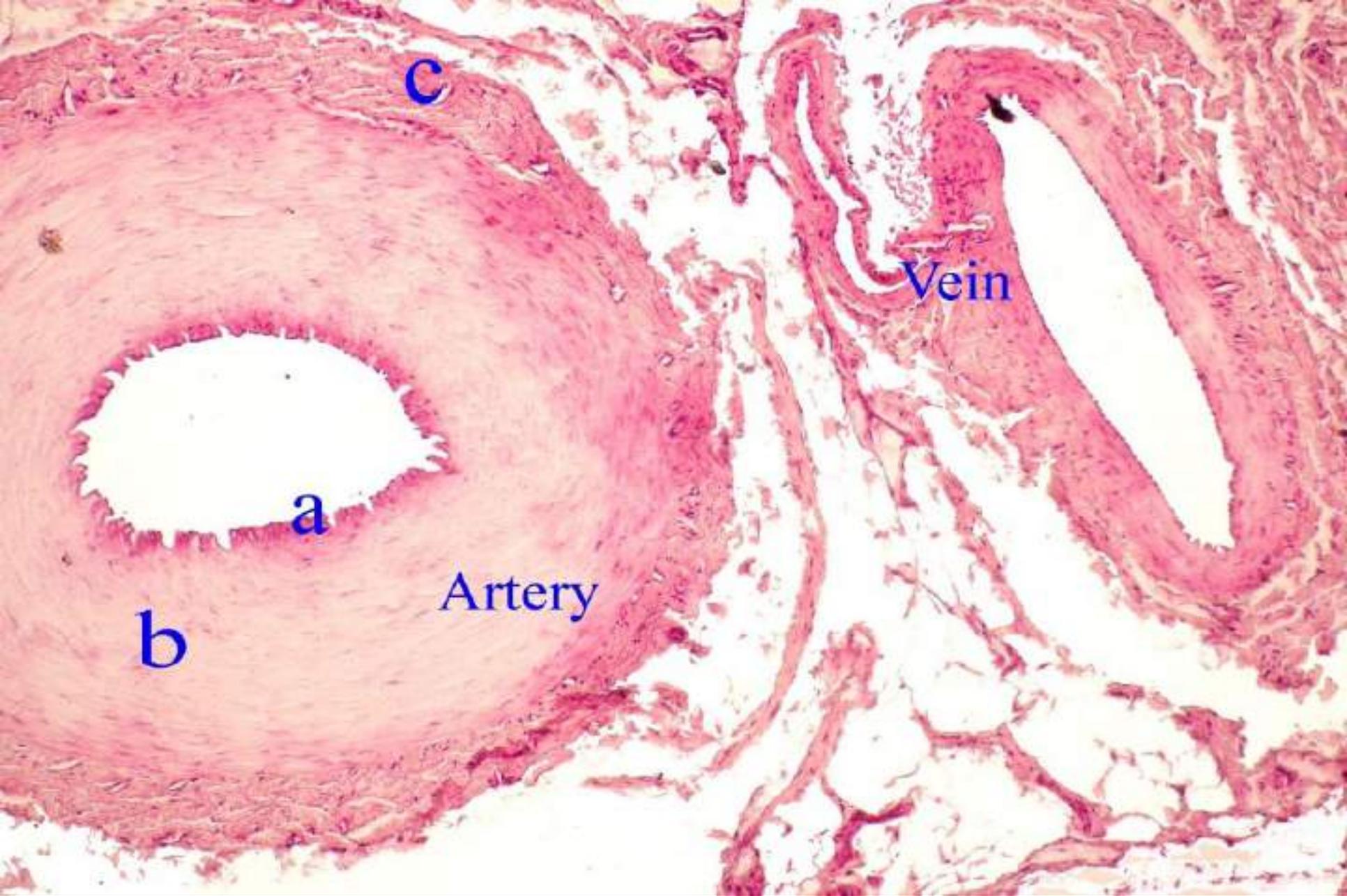
Medium-sized arteries & veins





Medium sized vein

Medium sized artery



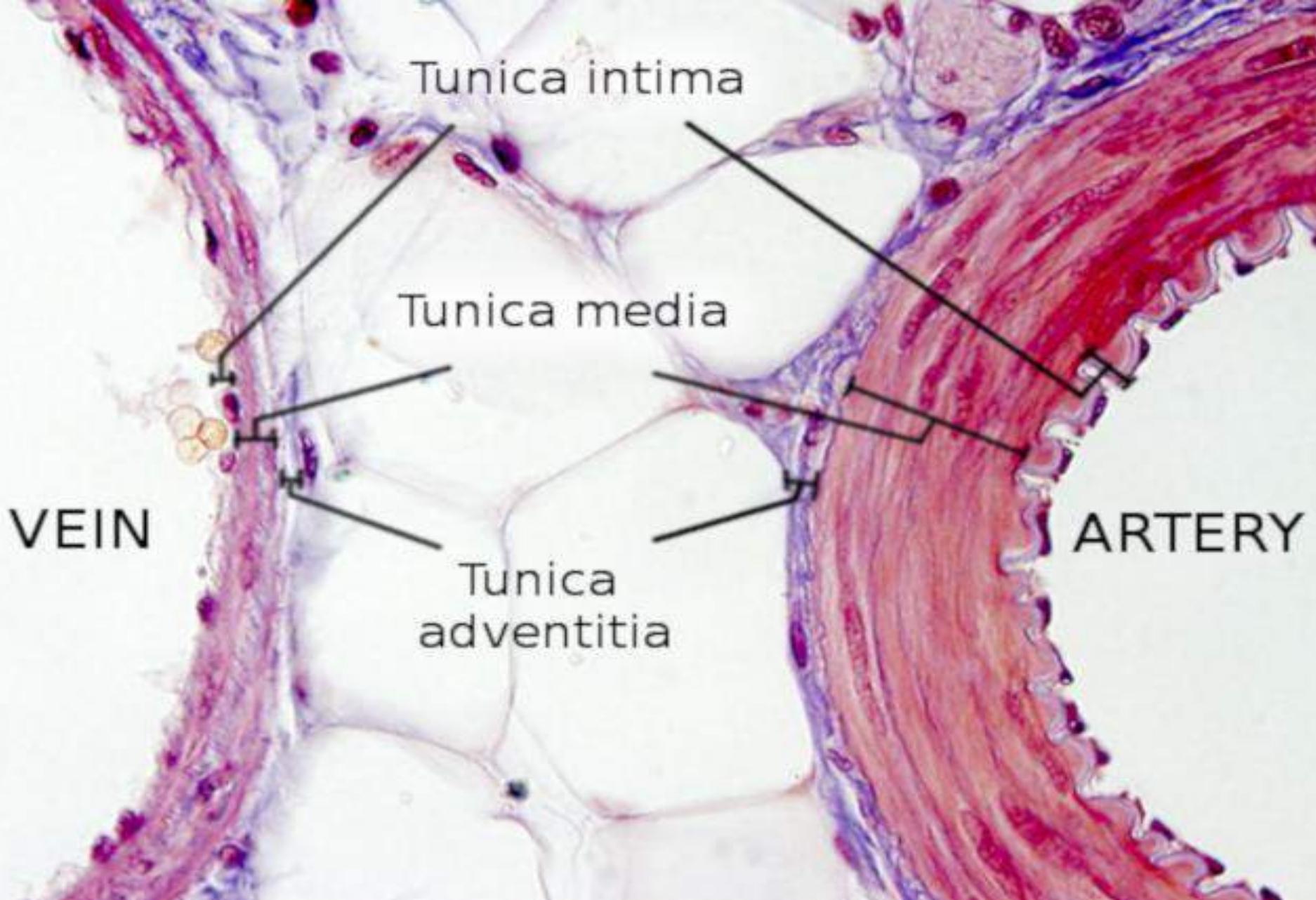
Medium sized artery and vein



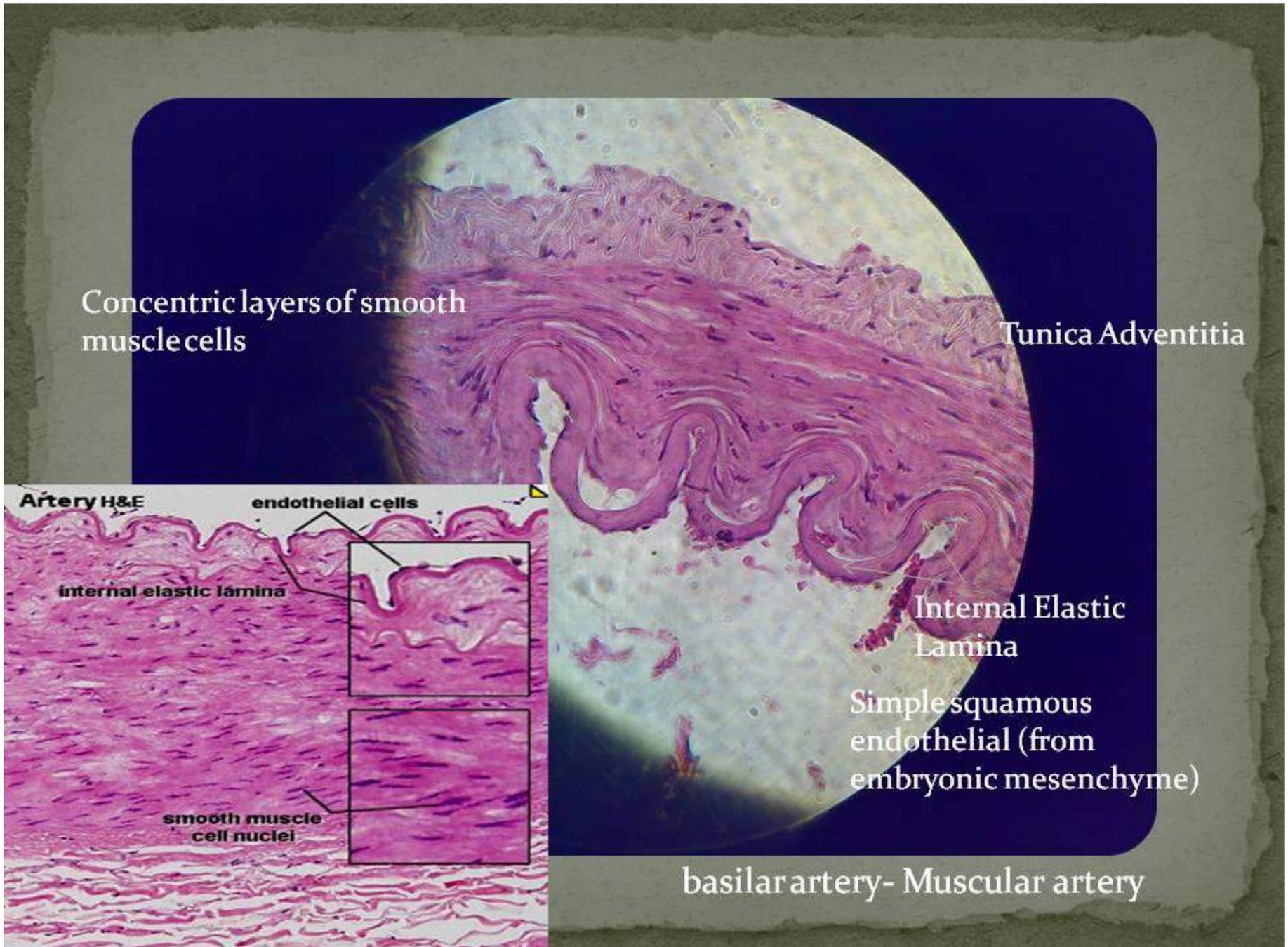
Medium sized artery and vein



Medium sized artery and vein



Medium sized artery and vein



Concentric layers of smooth muscle cells

Tunica Adventitia

Artery H&E

endothelial cells

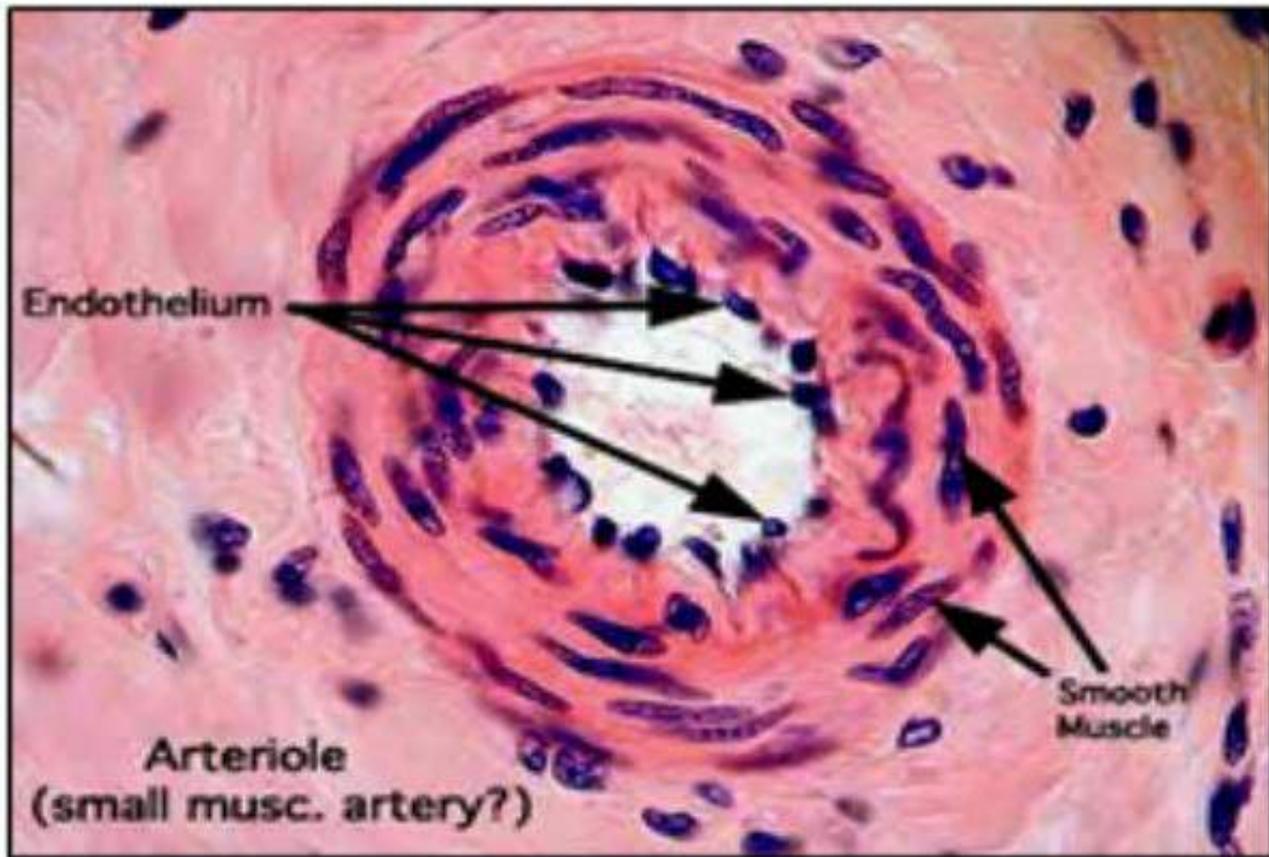
internal elastic lamina

smooth muscle cell nuclei

Internal Elastic Lamina

Simple squamous endothelial (from embryonic mesenchyme)

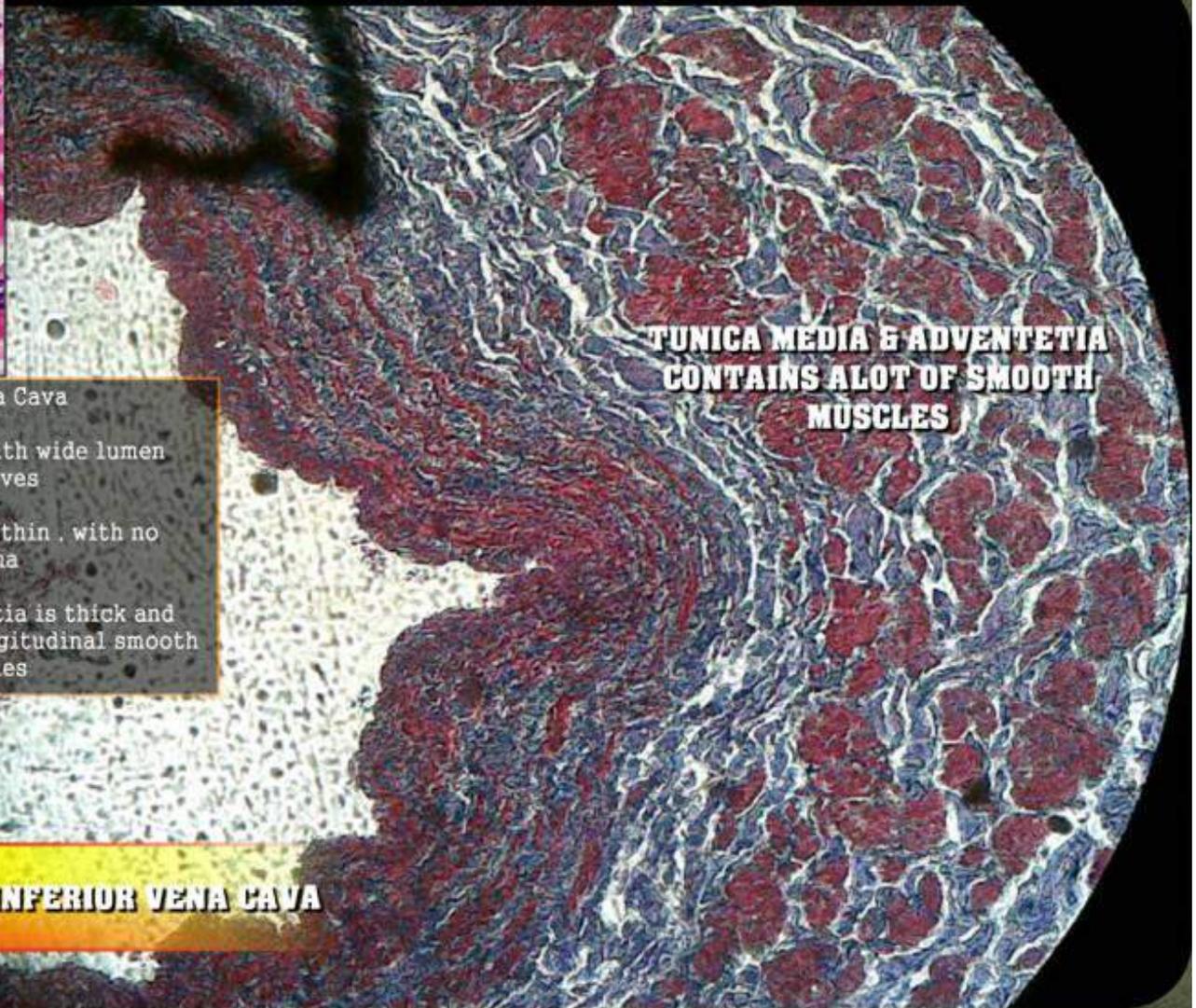
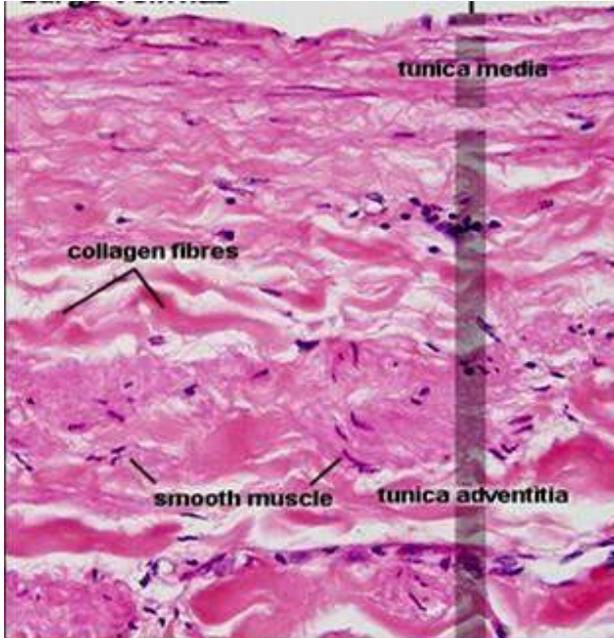
basilar artery- Muscular artery



Endothelium

Smooth Muscle

Arteriole
(small musc. artery?)



**TUNICA MEDIA & ADVENTETIA
CONTAINS ALOT OF SMOOTH
MUSCLES**

Inferior Vena Cava

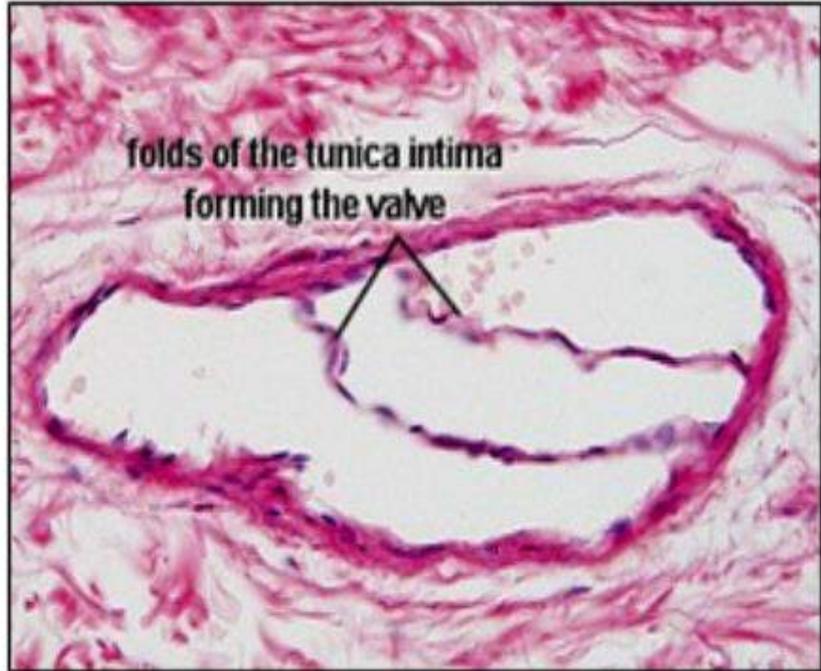
- It is large with wide lumen and many valves
- The media is thin, with no elastic lamina
- The adventitia is thick and contains longitudinal smooth muscle bundles

INFERIOR VENA CAVA

MYAZ

IVC - large vein



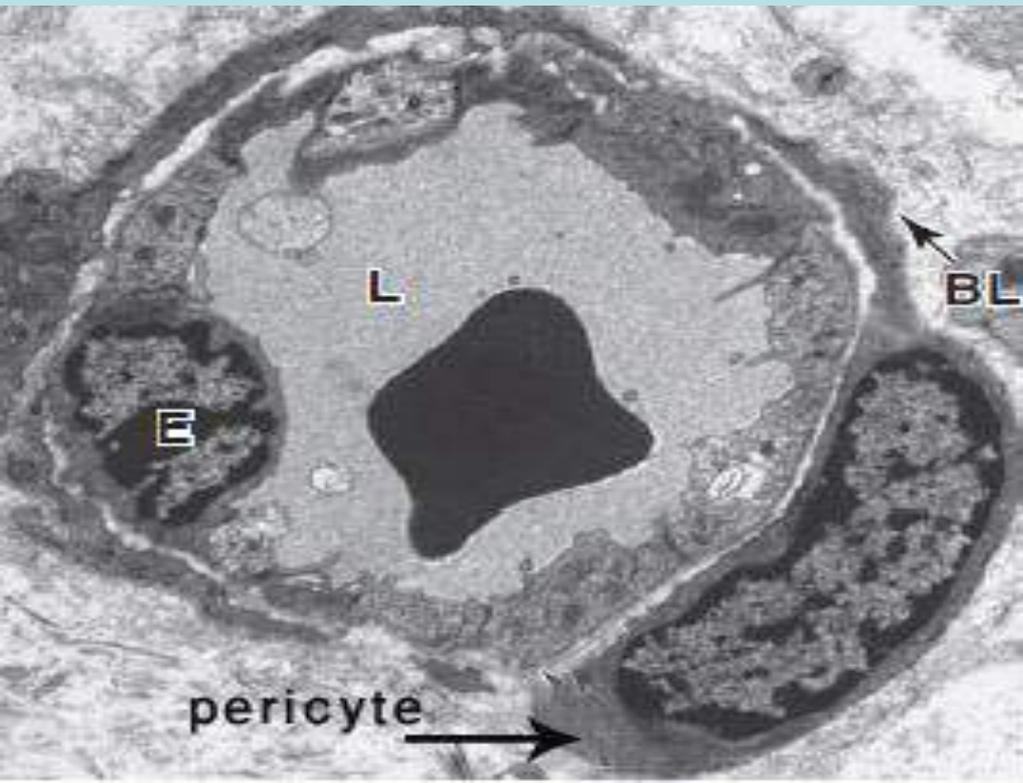
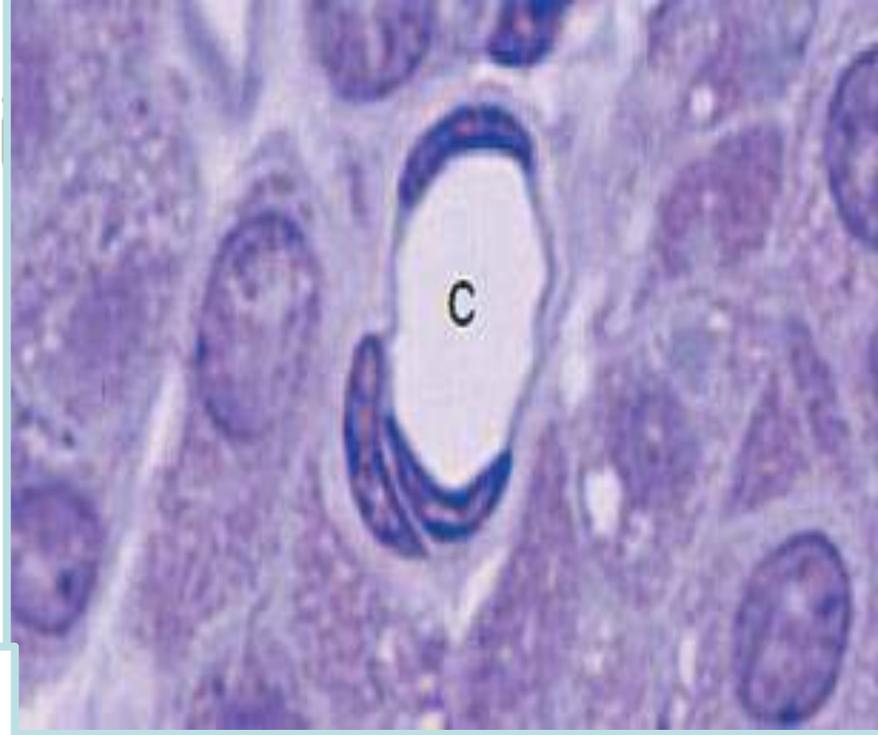


**folds of the tunica intima
forming the valve**

Blood capillar

Structure:

1. Endothelium (single layer).
2. Basal lamina.
3. Pericytes:

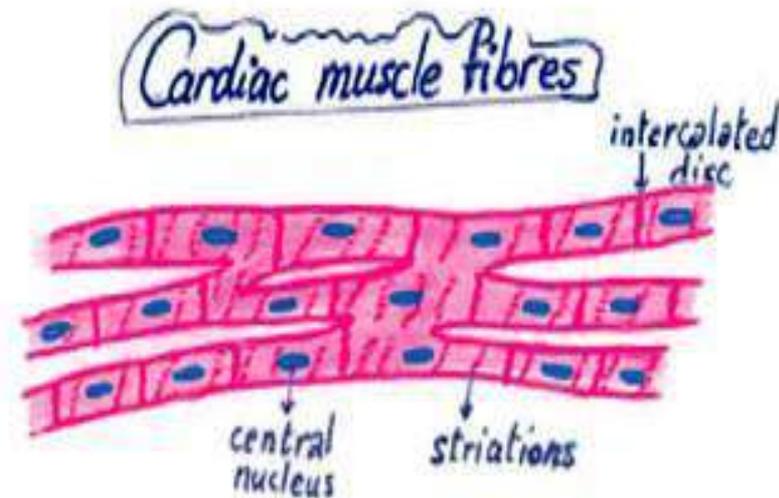


Cardiac Muscle

Histological Structure

Characters:

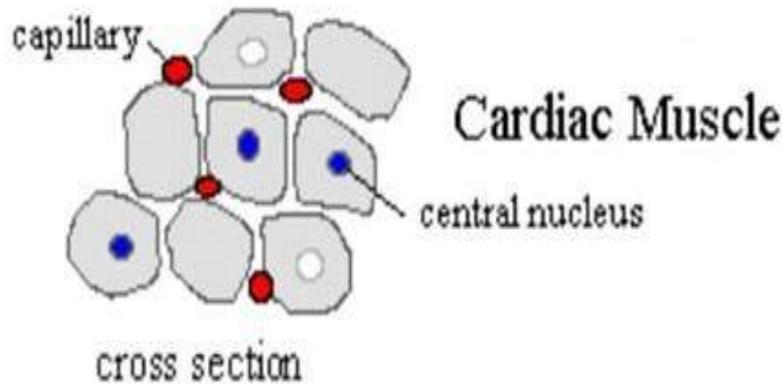
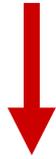
1. Striated muscle in the wall of the **heart**.
2. **Involuntary** contraction.
3. **Branching** & anastomosing fibers.
4. **Less** striation than skeletal muscle.
5. **Acidophilic cytoplasm** .
6. One or two oval or rounde
7. **central** nuclei.
8. **Intercalated discs**.



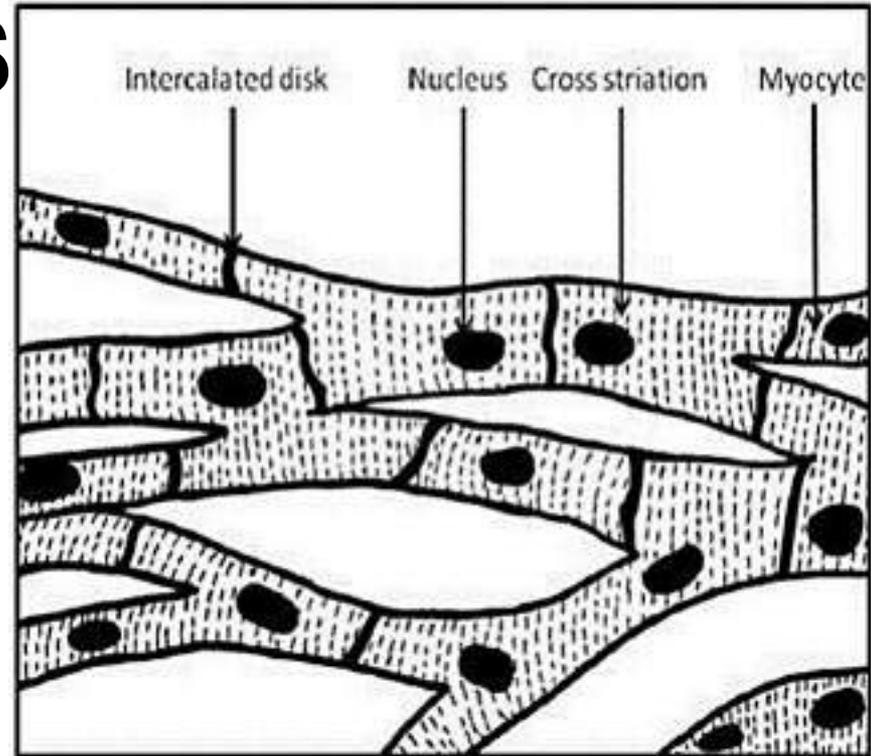
Cardiac Muscle

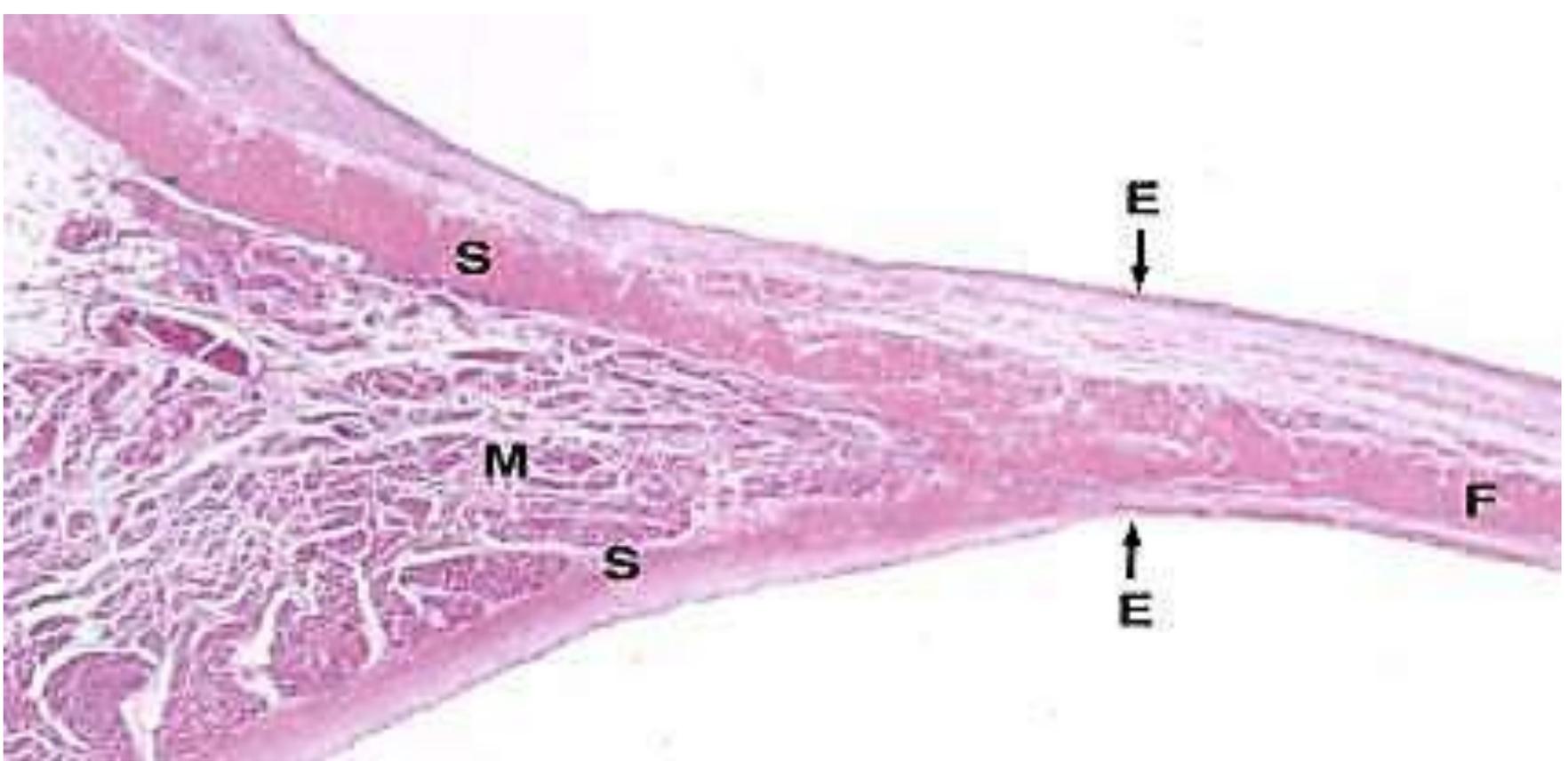
L/M

T.S.



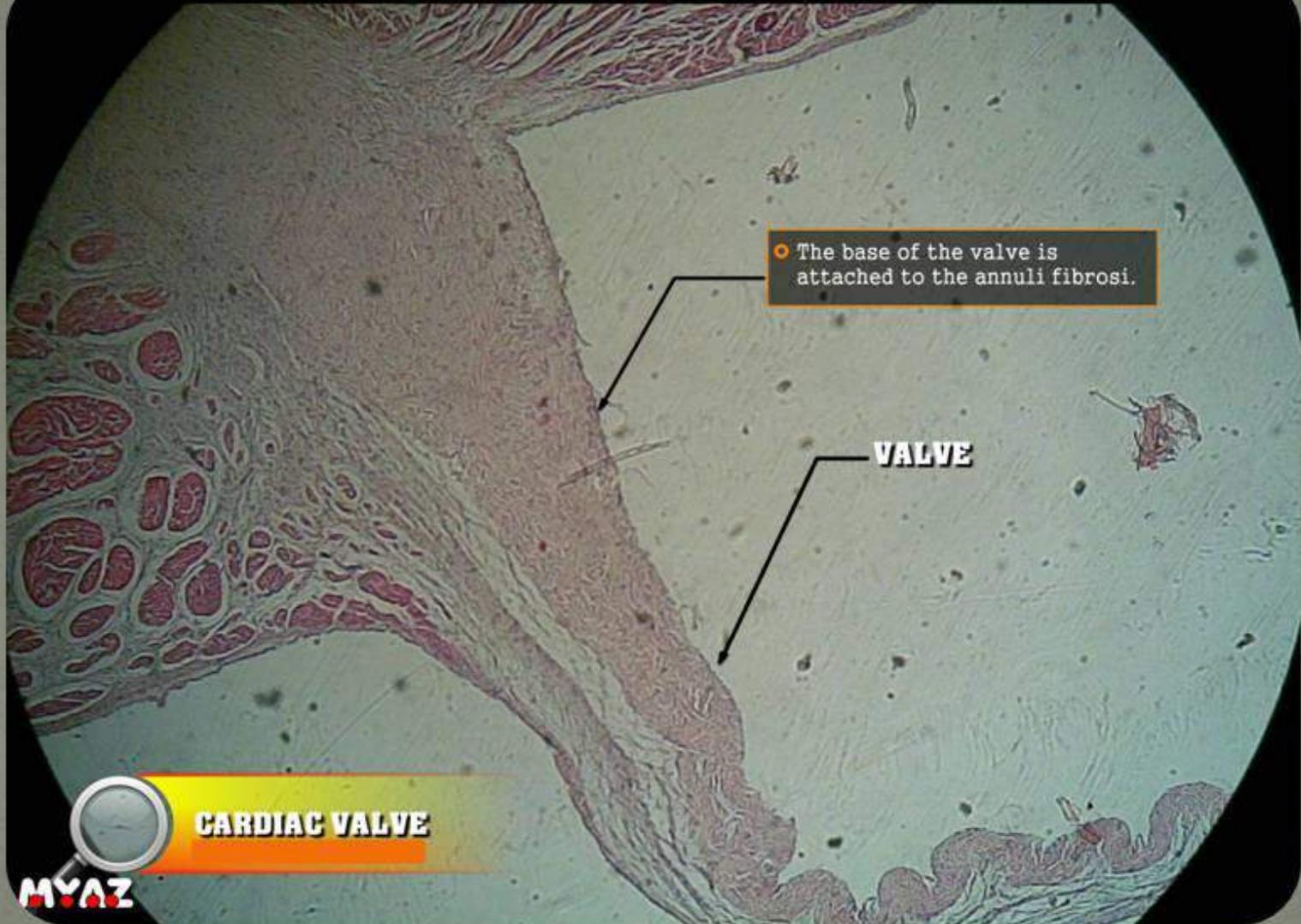
.S





Cardiac muscle and valve

E: endothelium, M: myocardium, S: supporting tissues, F: fibrous tissue

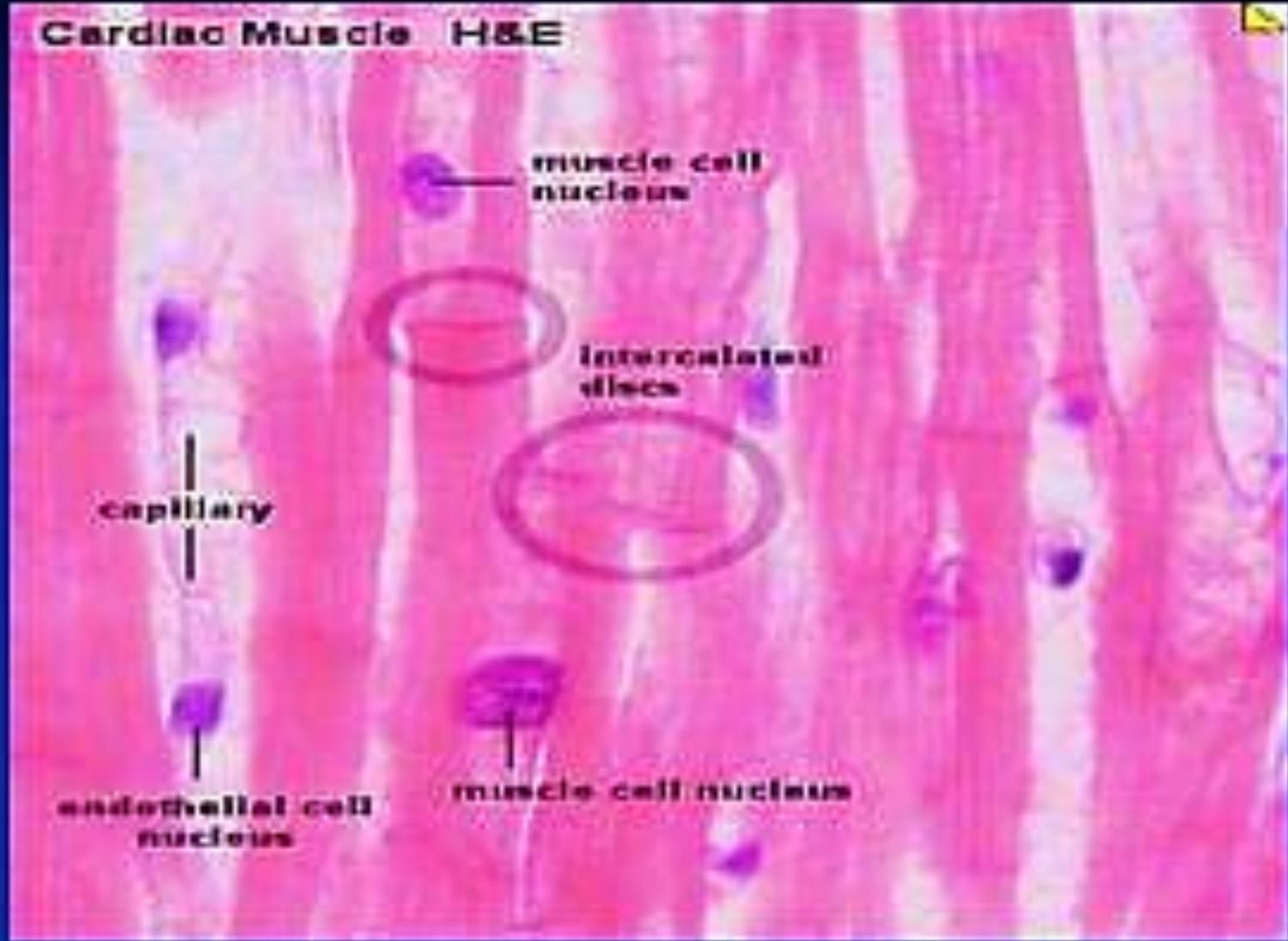


CARDIAC VALVE

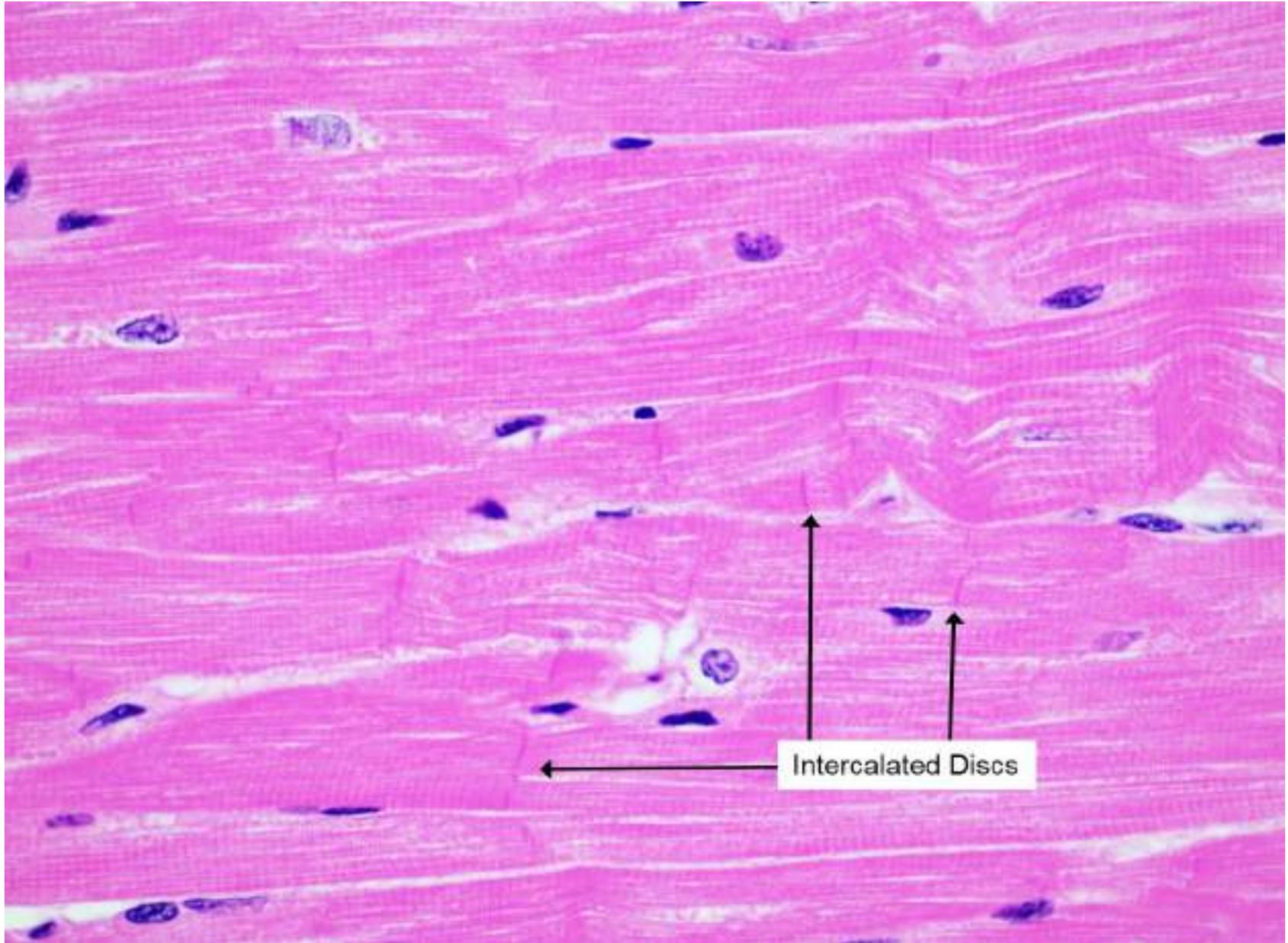
MYAZ

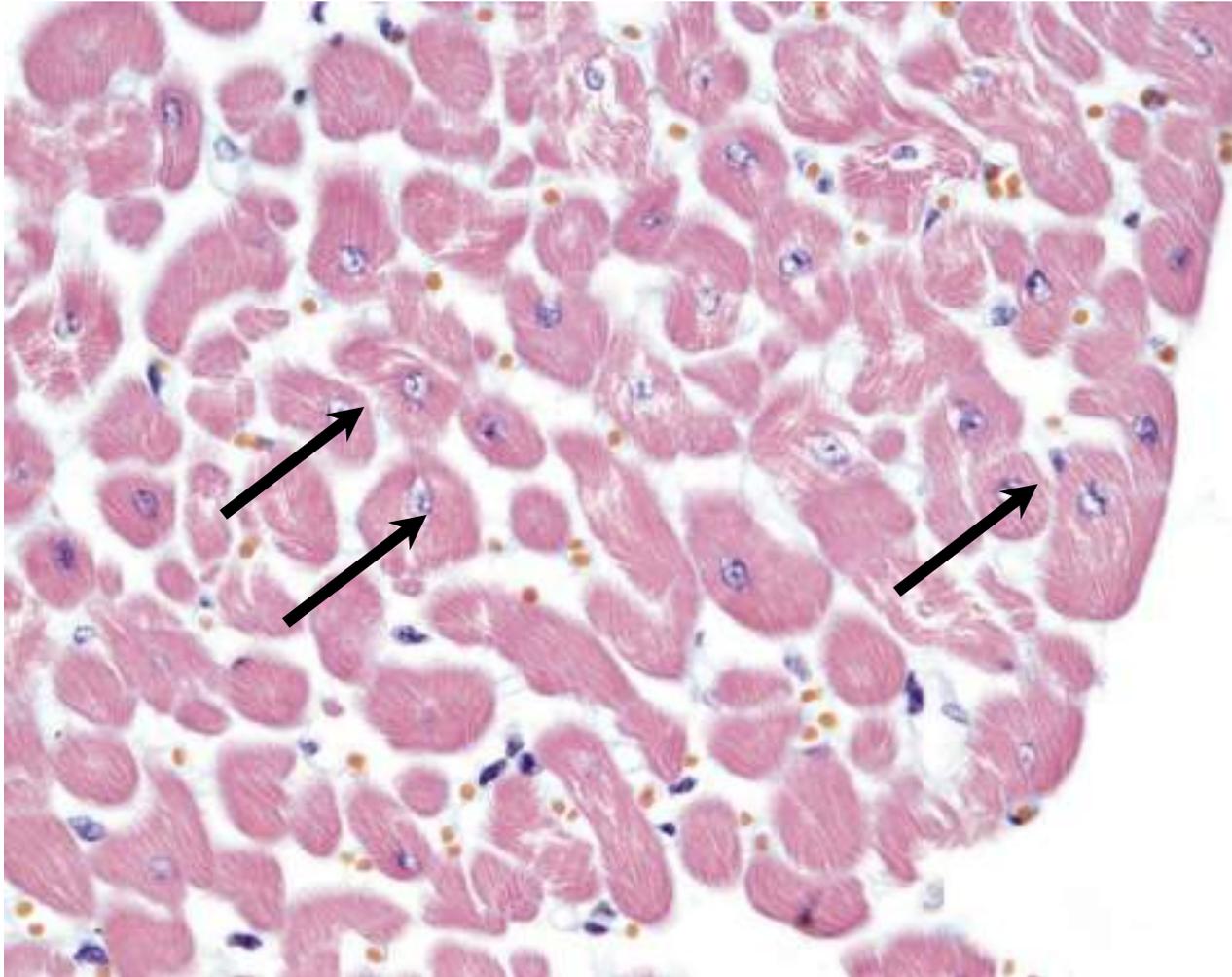
Cardiac Valve

Cardiac Muscle H&E



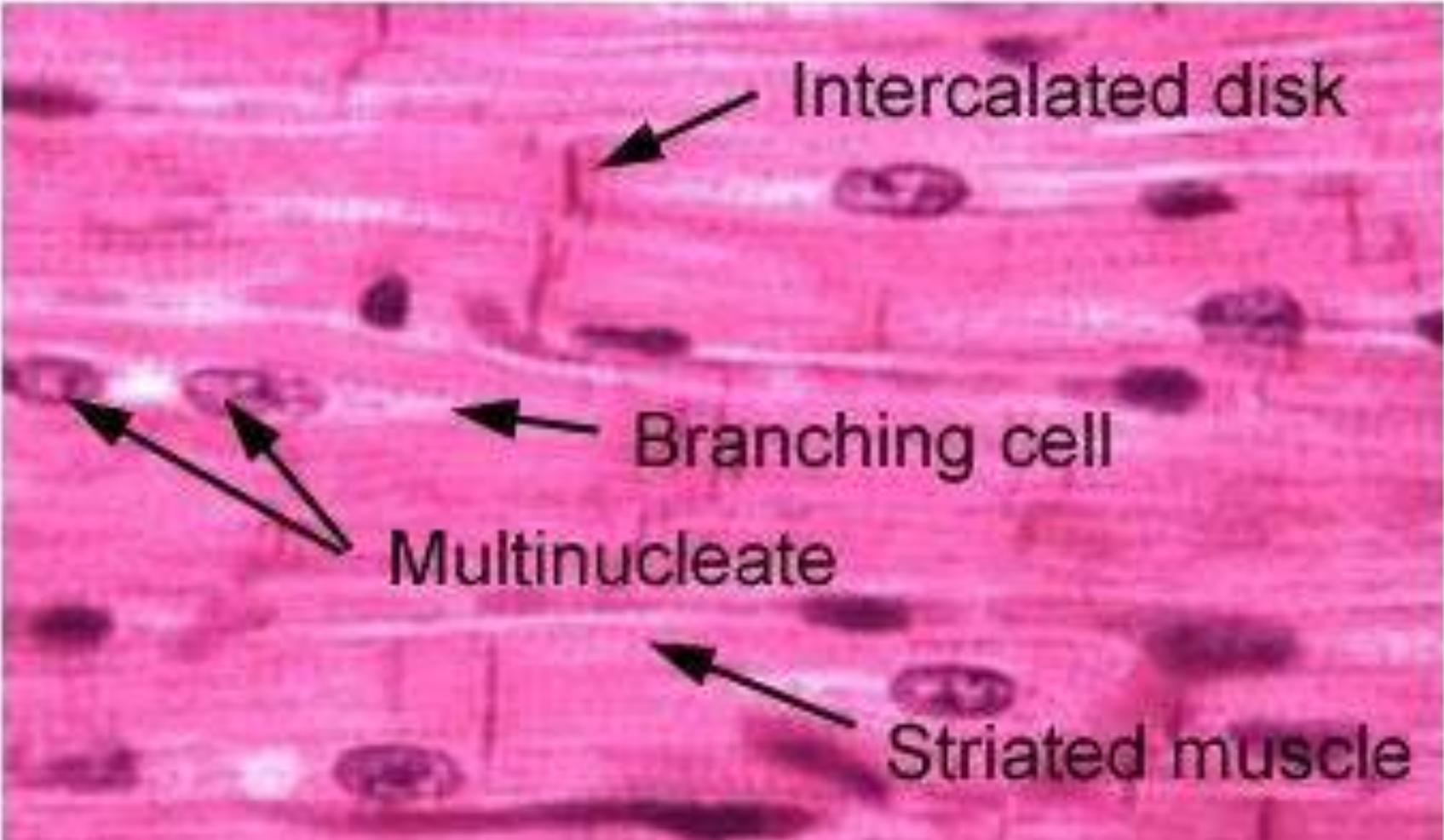
Cardiac muscle

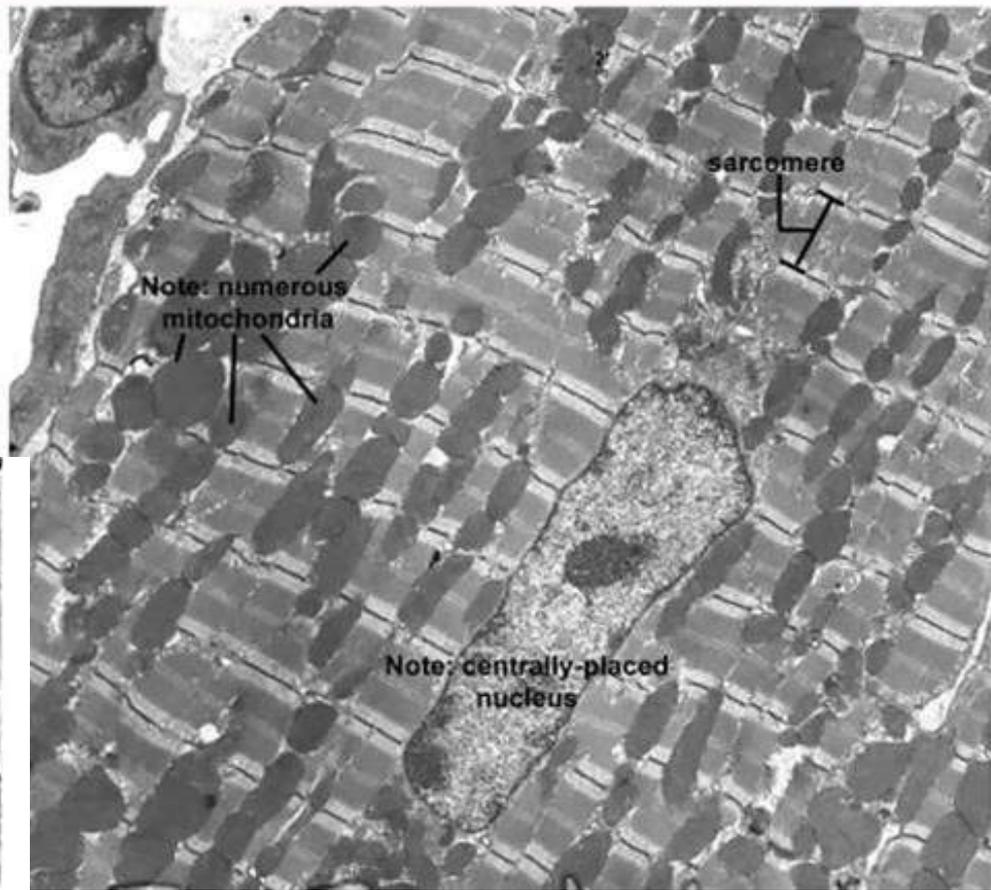
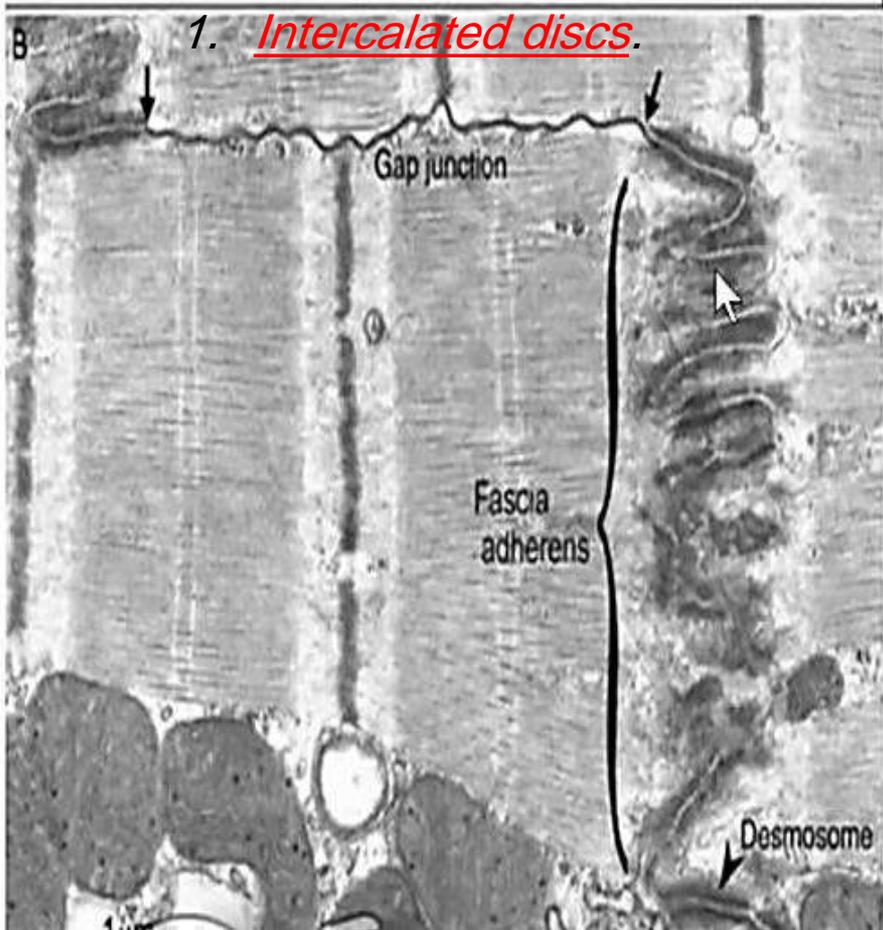




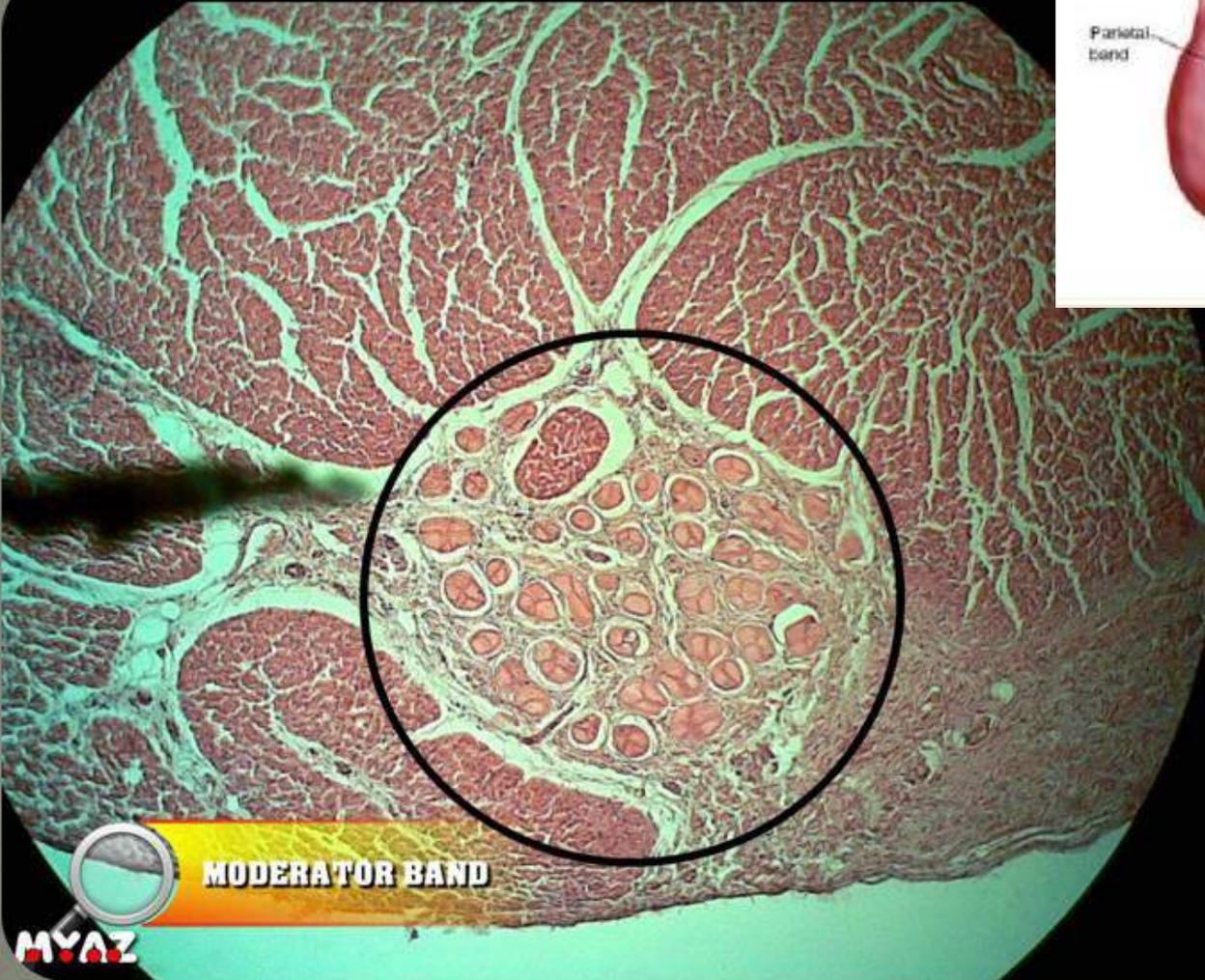
TS in cardiac ms with central nuclei

Cardiac muscle



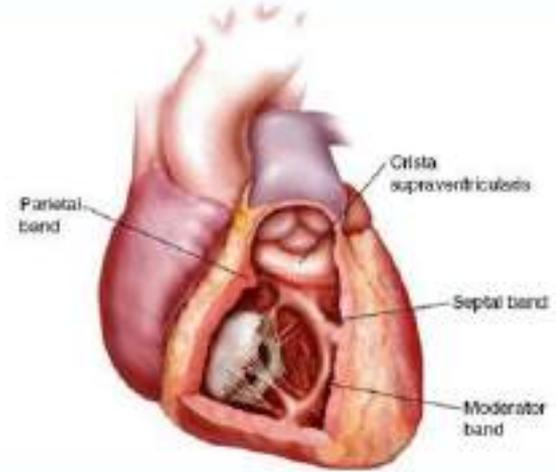


E M cardiac ms



MODERATOR BAND

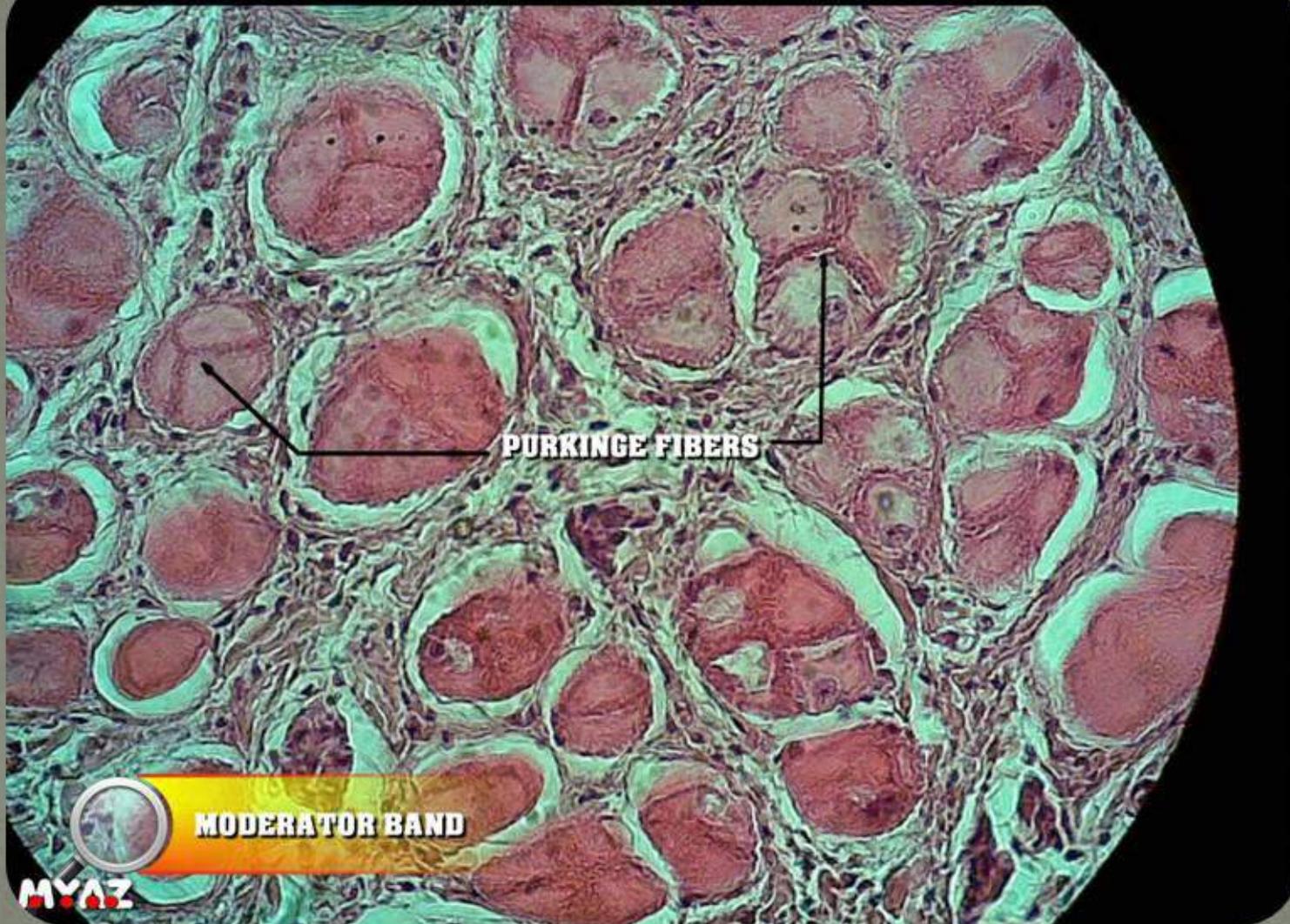
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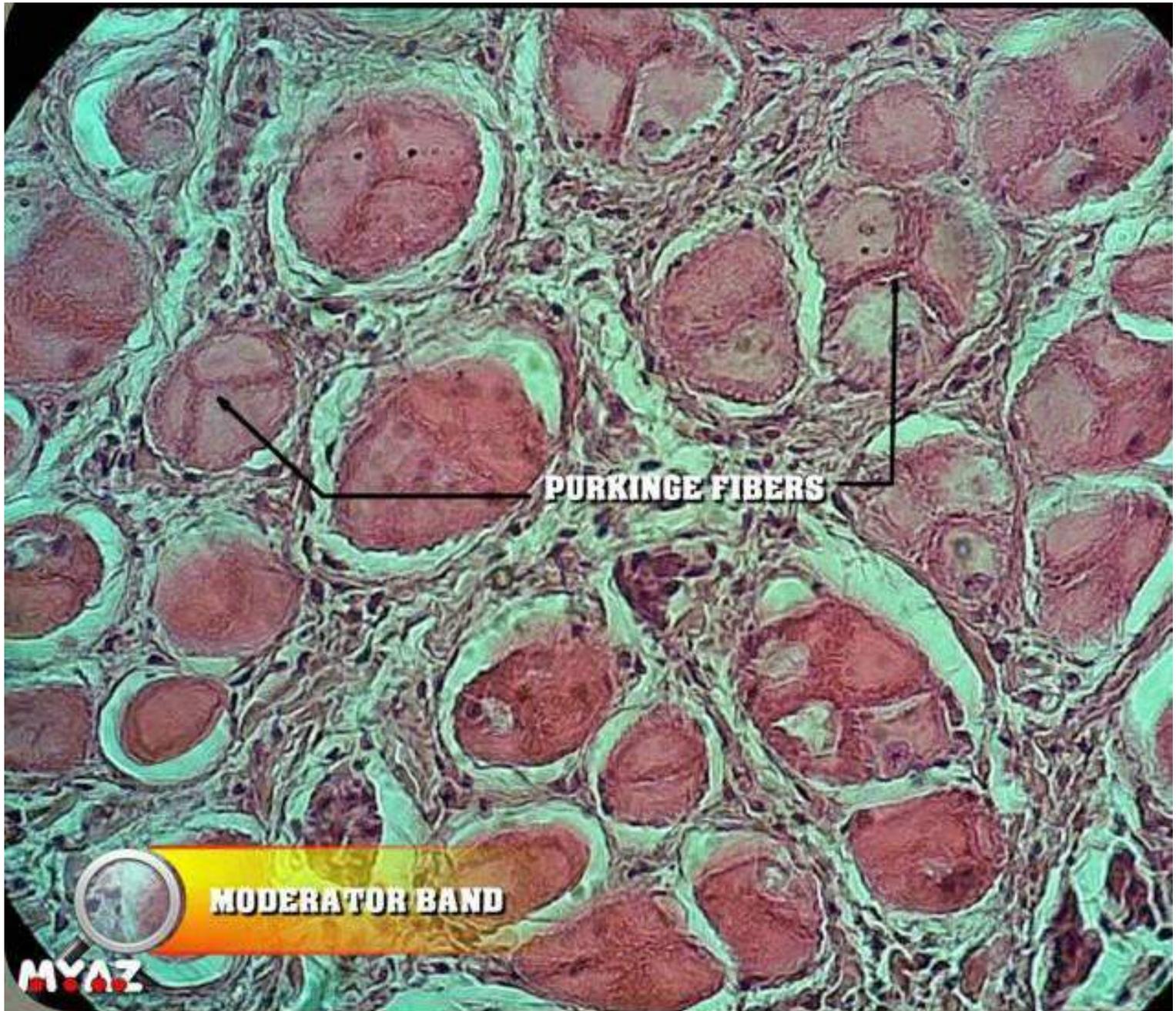
Moderatorband (3) - Copy



Moderator band (Purinkije fiber) X10



Moderatorband (2) - TS



PURKINGE FIBERS

MODERATOR BAND





Thank You
Thank You
Thank You!!!!