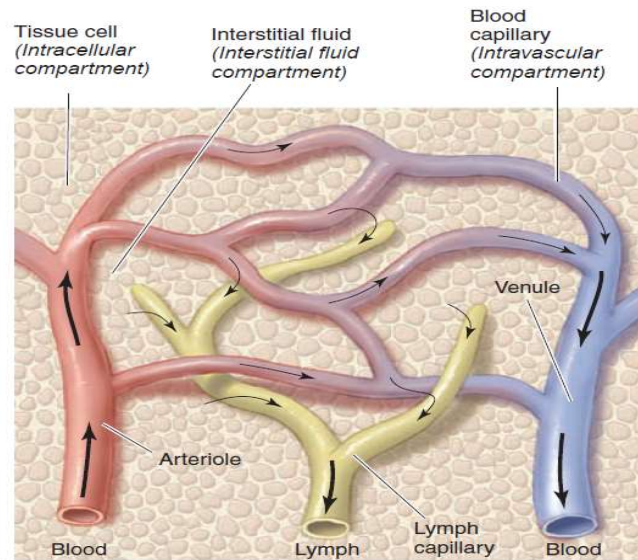


The blood vessels.

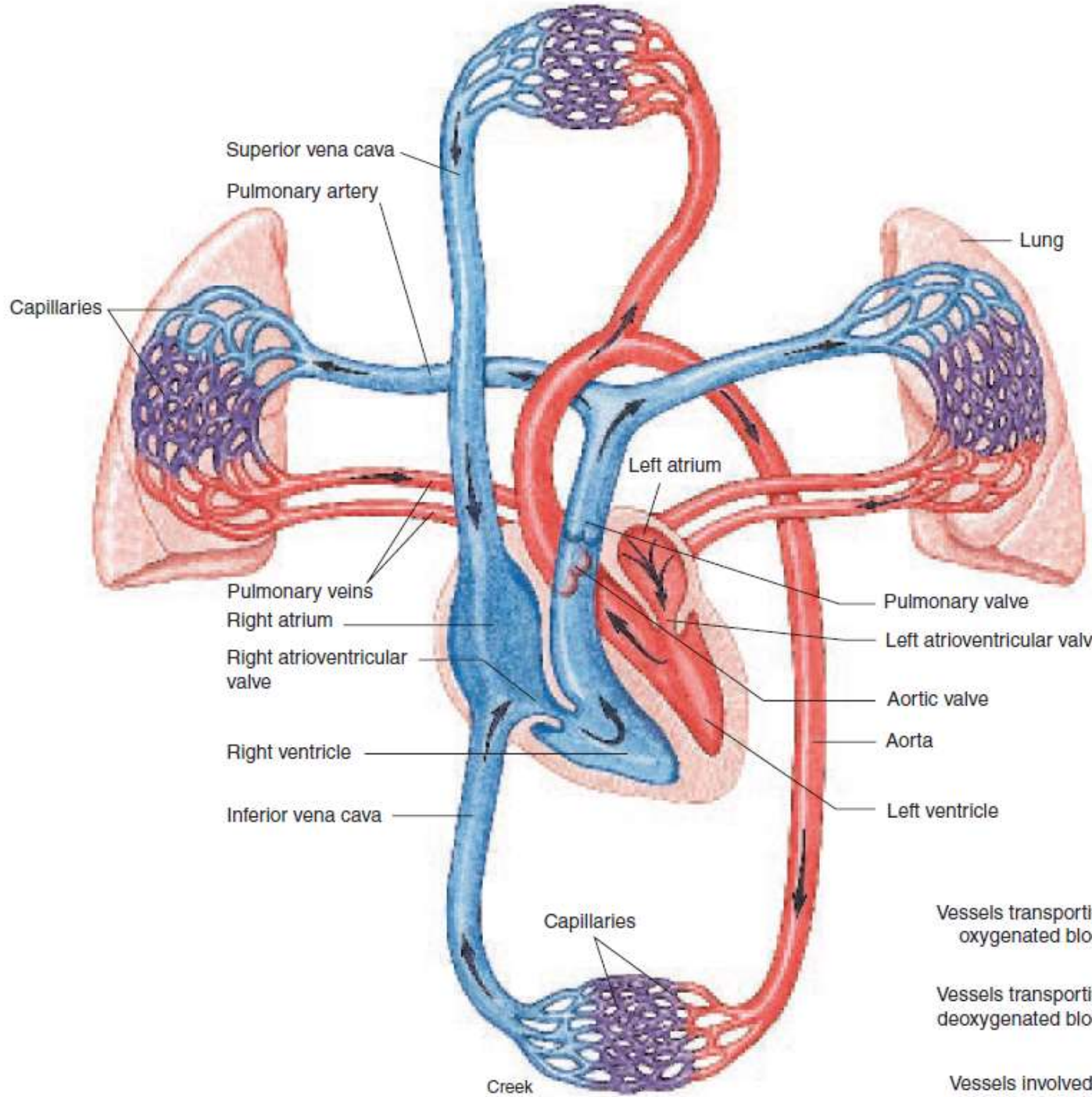


Cardiovascular system consists of:

1) heart, *cor*;

**2) blood vessels,
vasa sanguinea;**

**3) lymphatic vessels,
vasa lymphatica.**



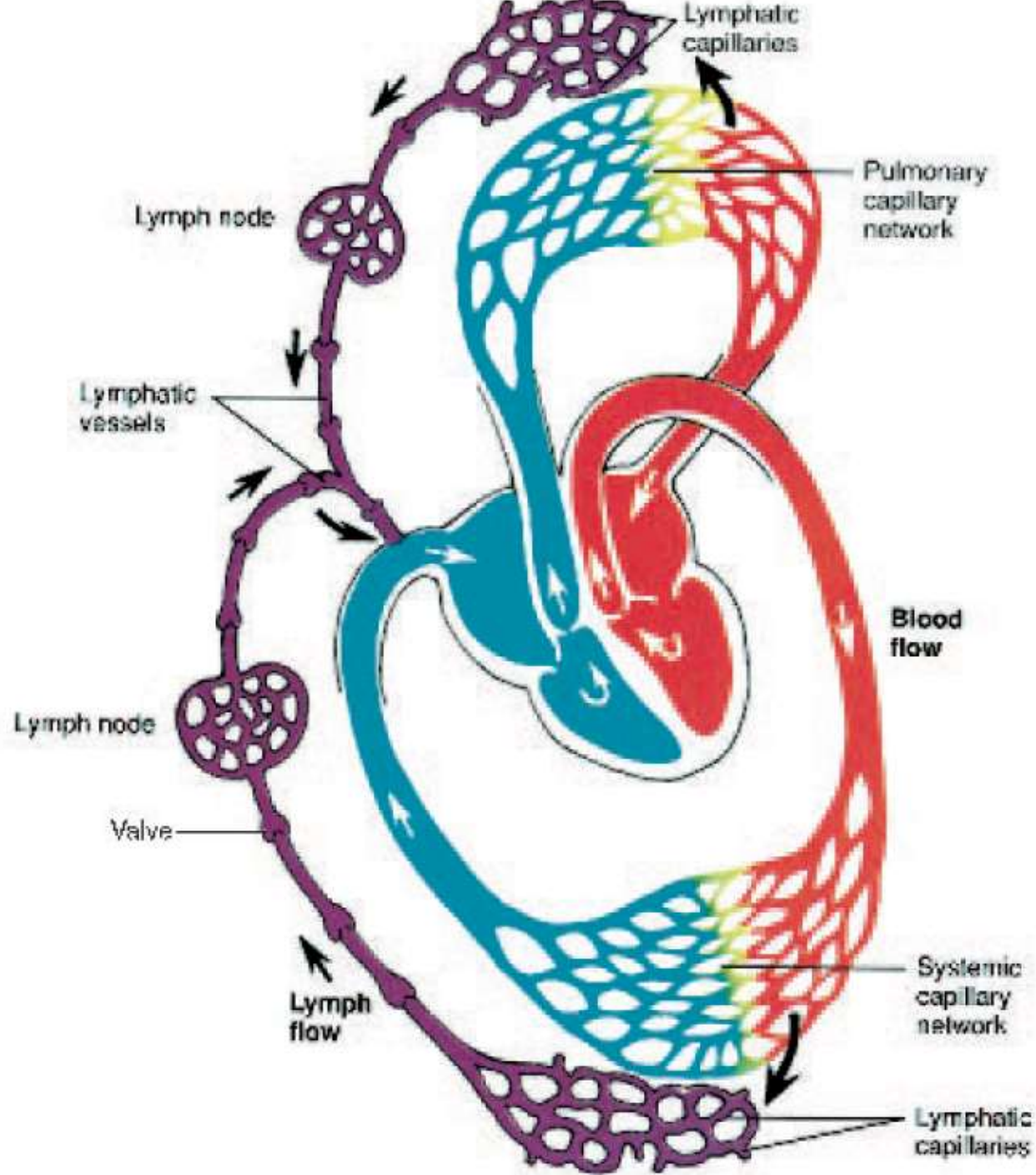
- Vessels transporting oxygenated blood
- Vessels transporting deoxygenated blood
- Vessels involved in gaseous exchange

Blood vessels are divided into:

1) arteries (transport blood from the heart);

2) veins (transport blood to the heart).

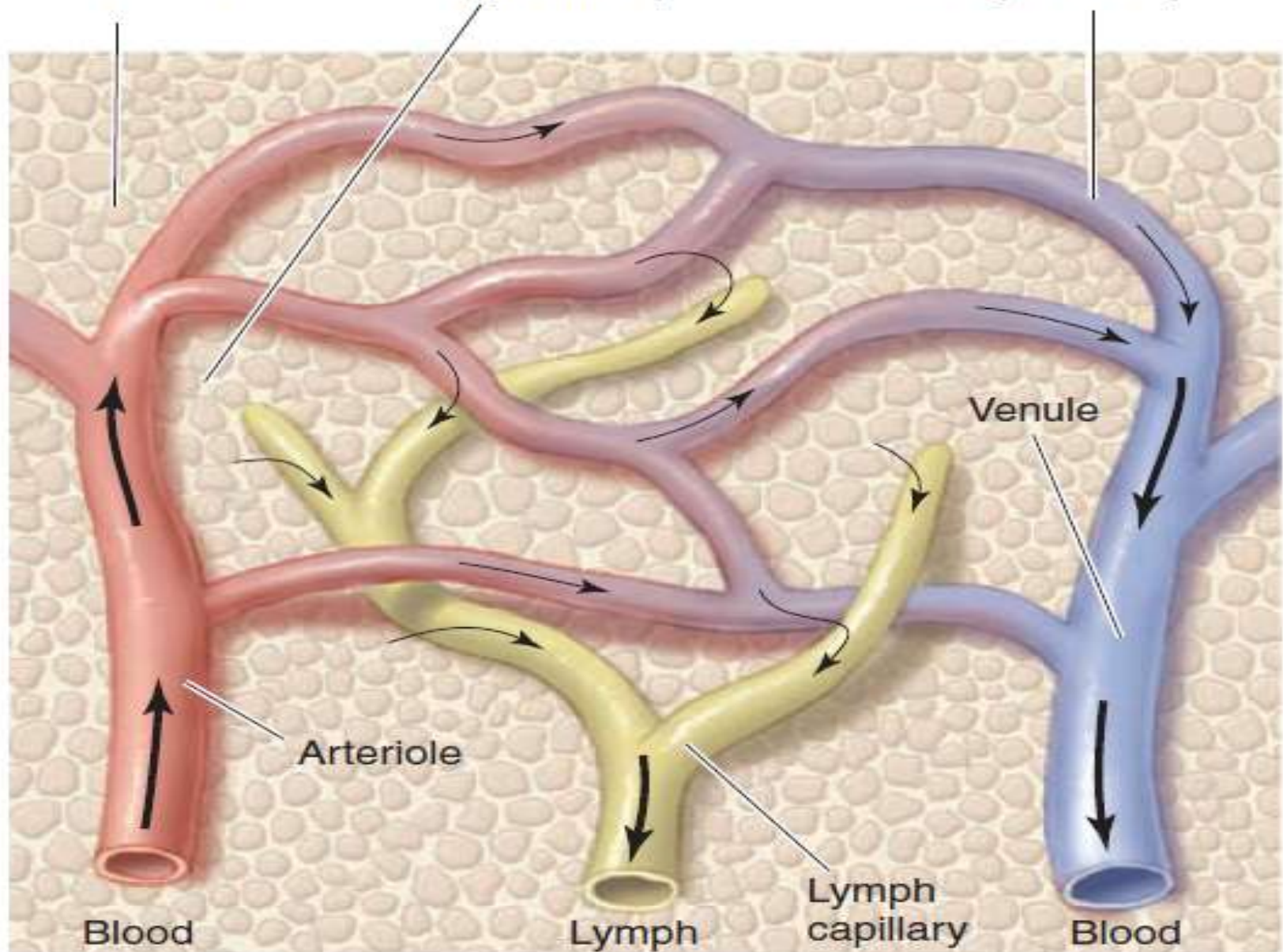
Lymphatic vessels carry the lymph to the left and right vein corners.



Tissue cell
(Intracellular
compartment)

Interstitial fluid
(Interstitial fluid
compartment)

Blood
capillary
(Intravascular
compartment)



Blood

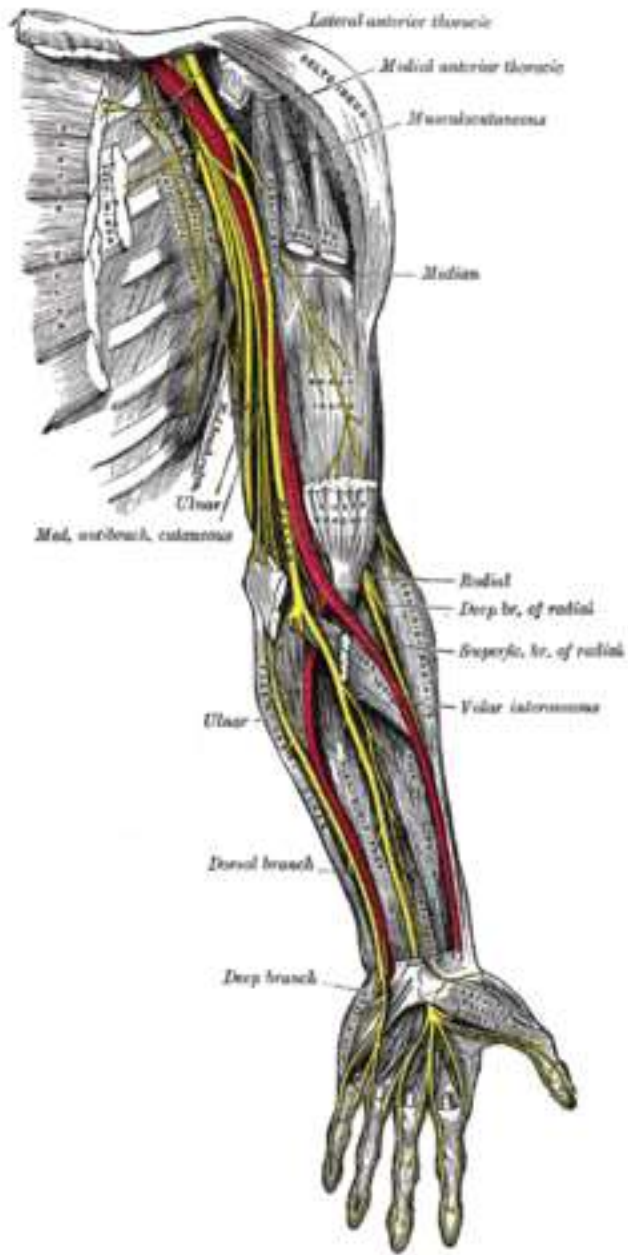
Lymph

Lymph
capillary

Blood

Distribution of the extraorgan arteries:

1. Arteries are located on the way of the nerve tube and nerves.



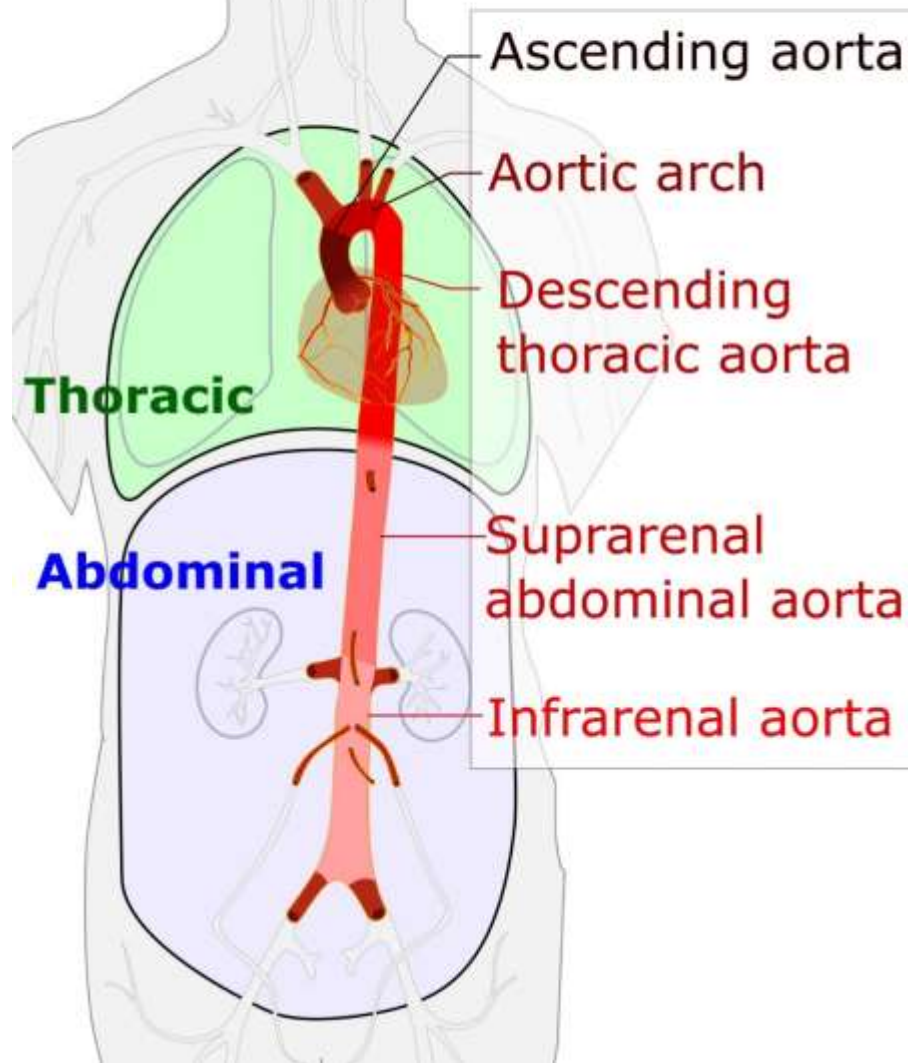
**Distribution of the extraorgan
arteries:**

2. Arteries are divided into:

-parietal

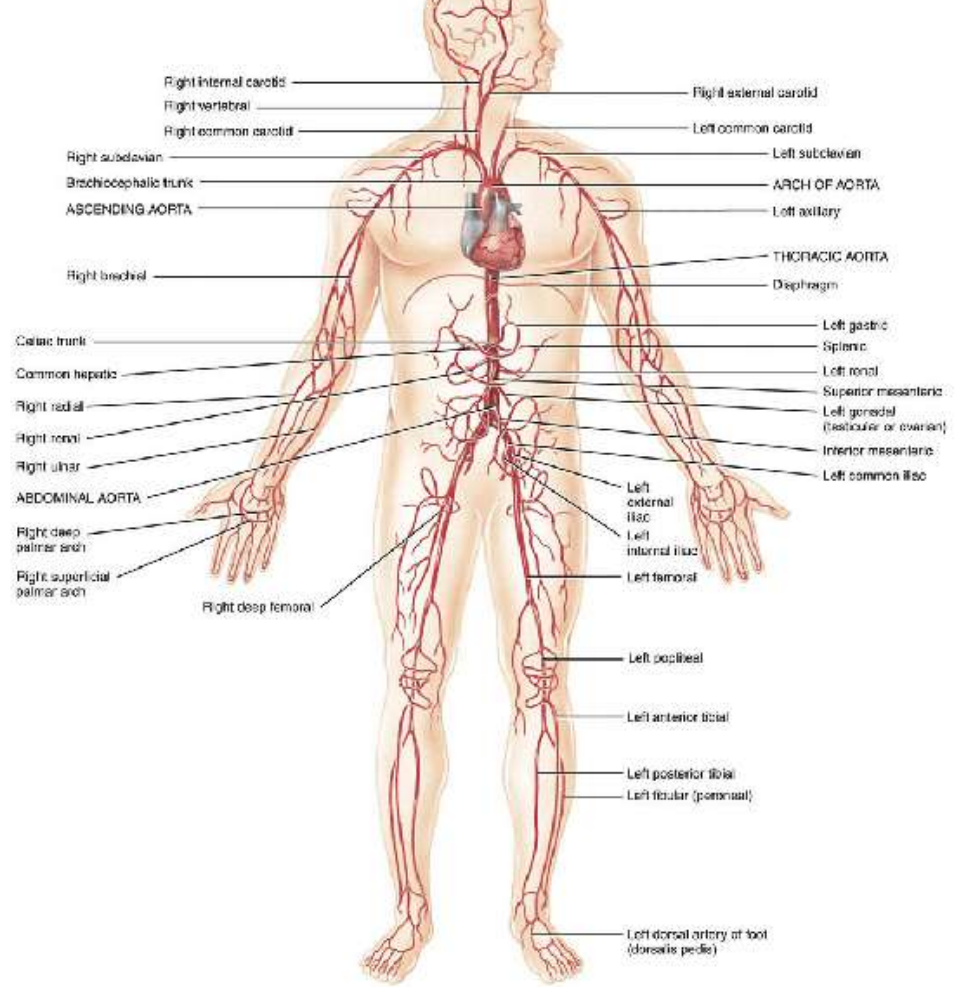
- visceral

Aorta segments



**Distribution of the extraorgan
arteries:**

**3. Each extremity gets one
main trunk.**



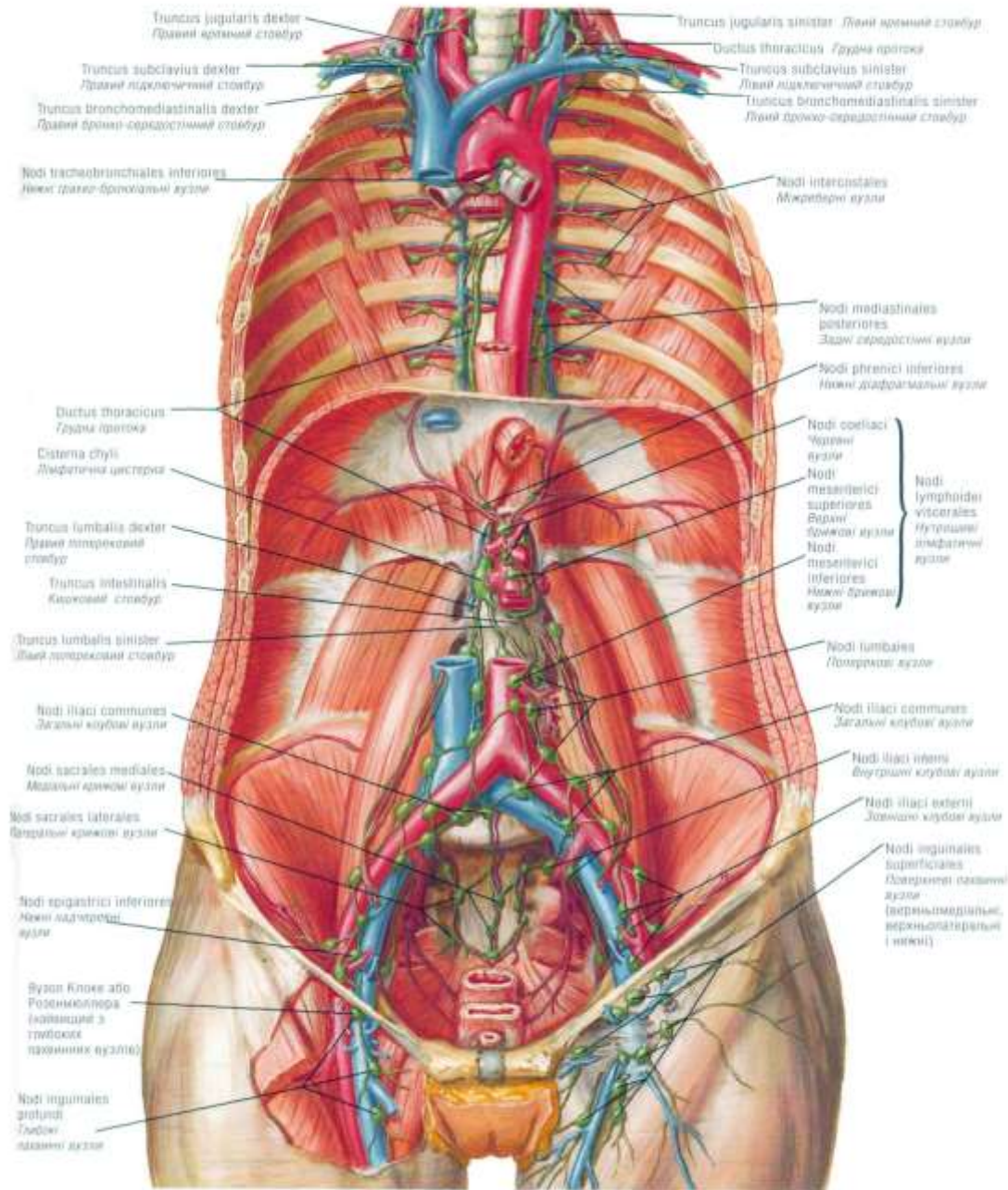
Overall anterior view of the arterial branches of the aorta

Image via: anatomylibrary99.com

**Distribution of the extraorgan
arteries:**

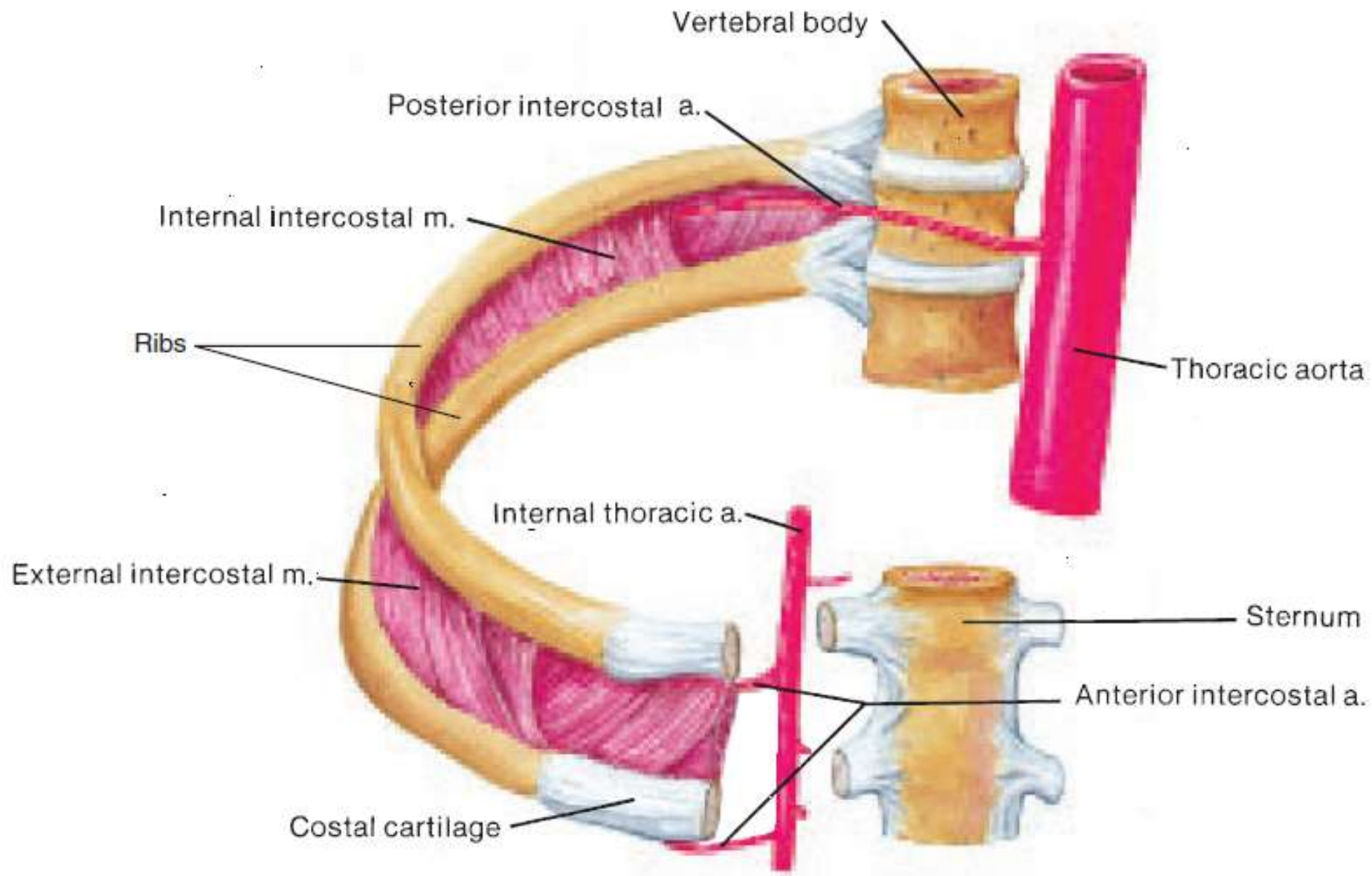
4. Arteries of the trunk save the segment structure.

Лімфатичні судини і вузли задньої стінки живота



Distribution of the extraorgan arteries:

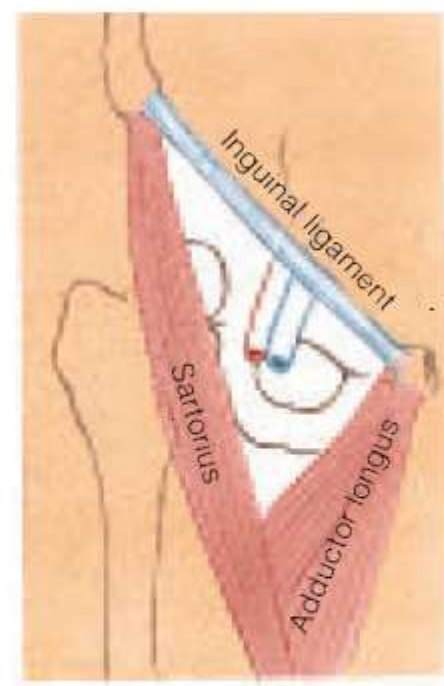
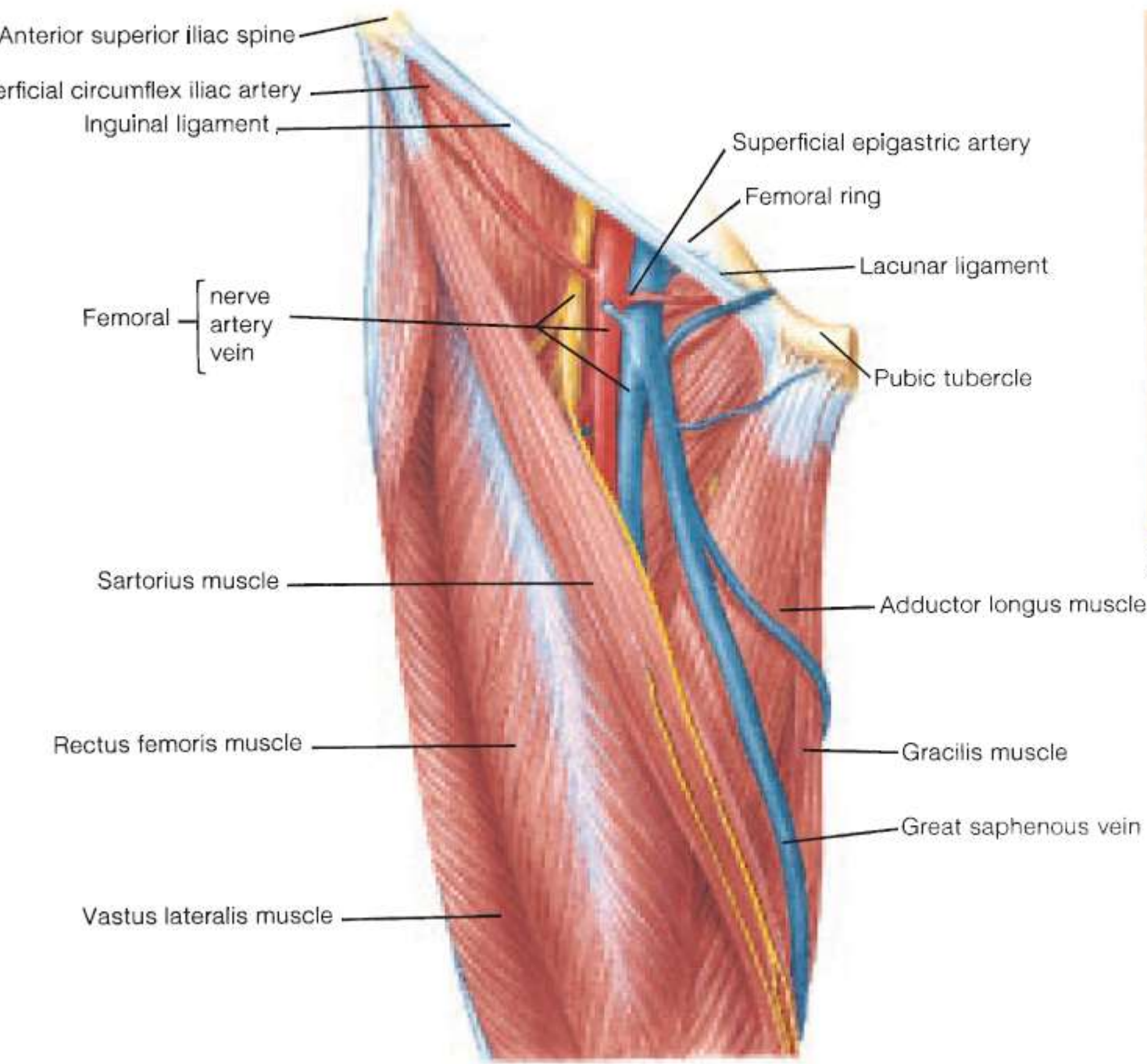
5. Most of the arteries are distributed as paired arteries of the soma and visceral.



Arteries that serve the thoracic wall.

**Distribution of the extraorgan
arteries:**

6. Arteries go together with veins and the lymphatic vessels, forming the common vessel complex.



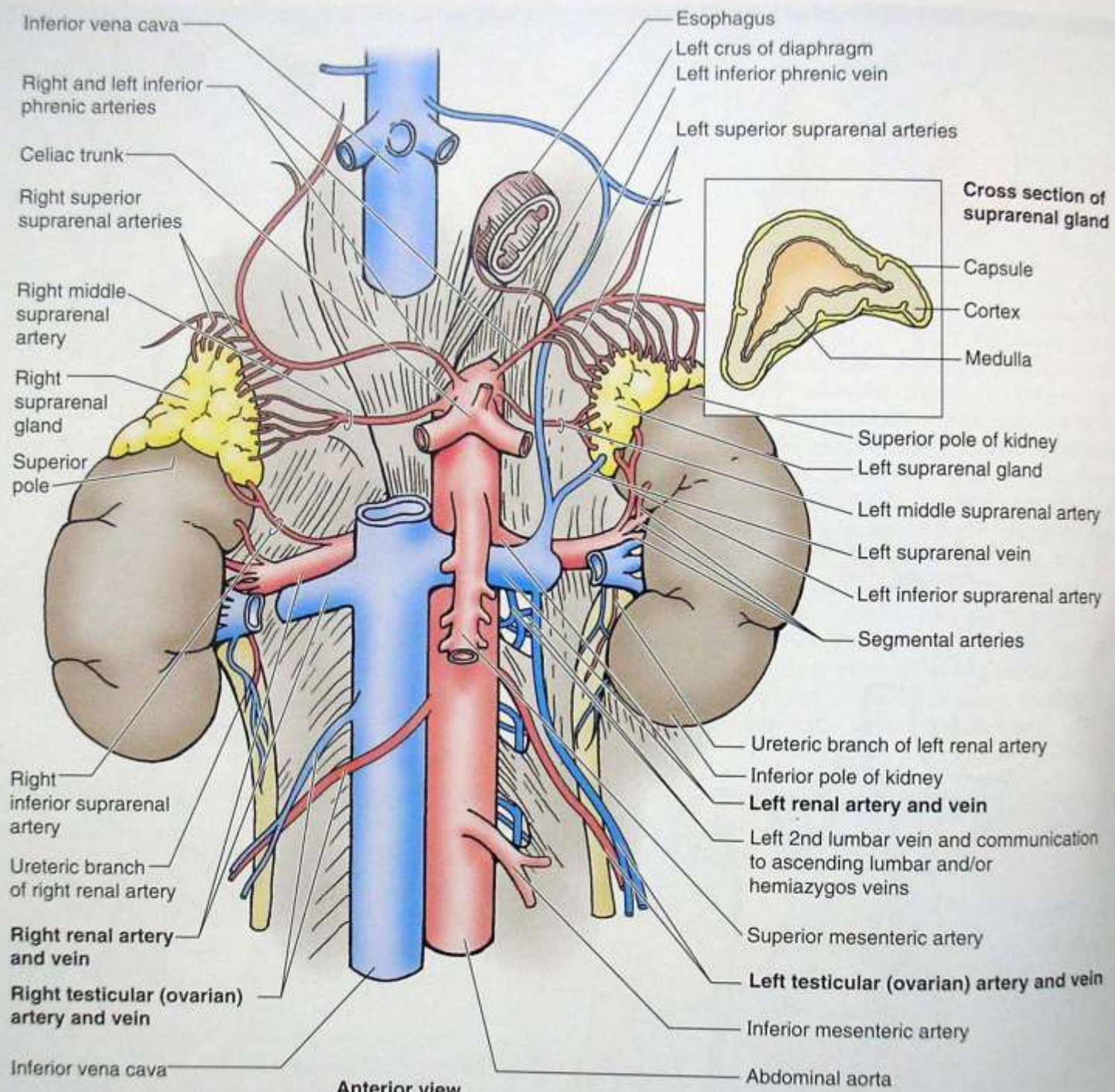
(b)

(a)

Regularities of the arteries' location

Regularities of the arteries' location

1. Arteries choose the shortest way to move to the organ.



Inferior vena cava

Right and left inferior phrenic arteries

Celiac trunk

Right superior suprarenal arteries

Right middle suprarenal artery

Right suprarenal gland

Superior pole

Right inferior suprarenal artery

Ureteric branch of right renal artery

Right renal artery and vein

Right testicular (ovarian) artery and vein

Inferior vena cava

Esophagus

Left crus of diaphragm

Left inferior phrenic vein

Left superior suprarenal arteries

Cross section of suprarenal gland

Capsule

Cortex

Medulla

Superior pole of kidney

Left suprarenal gland

Left middle suprarenal artery

Left suprarenal vein

Left inferior suprarenal artery

Segmental arteries

Ureteric branch of left renal artery

Inferior pole of kidney

Left renal artery and vein

Left 2nd lumbar vein and communication to ascending lumbar and/or hemiazygos veins

Superior mesenteric artery

Left testicular (ovarian) artery and vein

Inferior mesenteric artery

Abdominal aorta

Anterior view

Regularities of the arteries' location

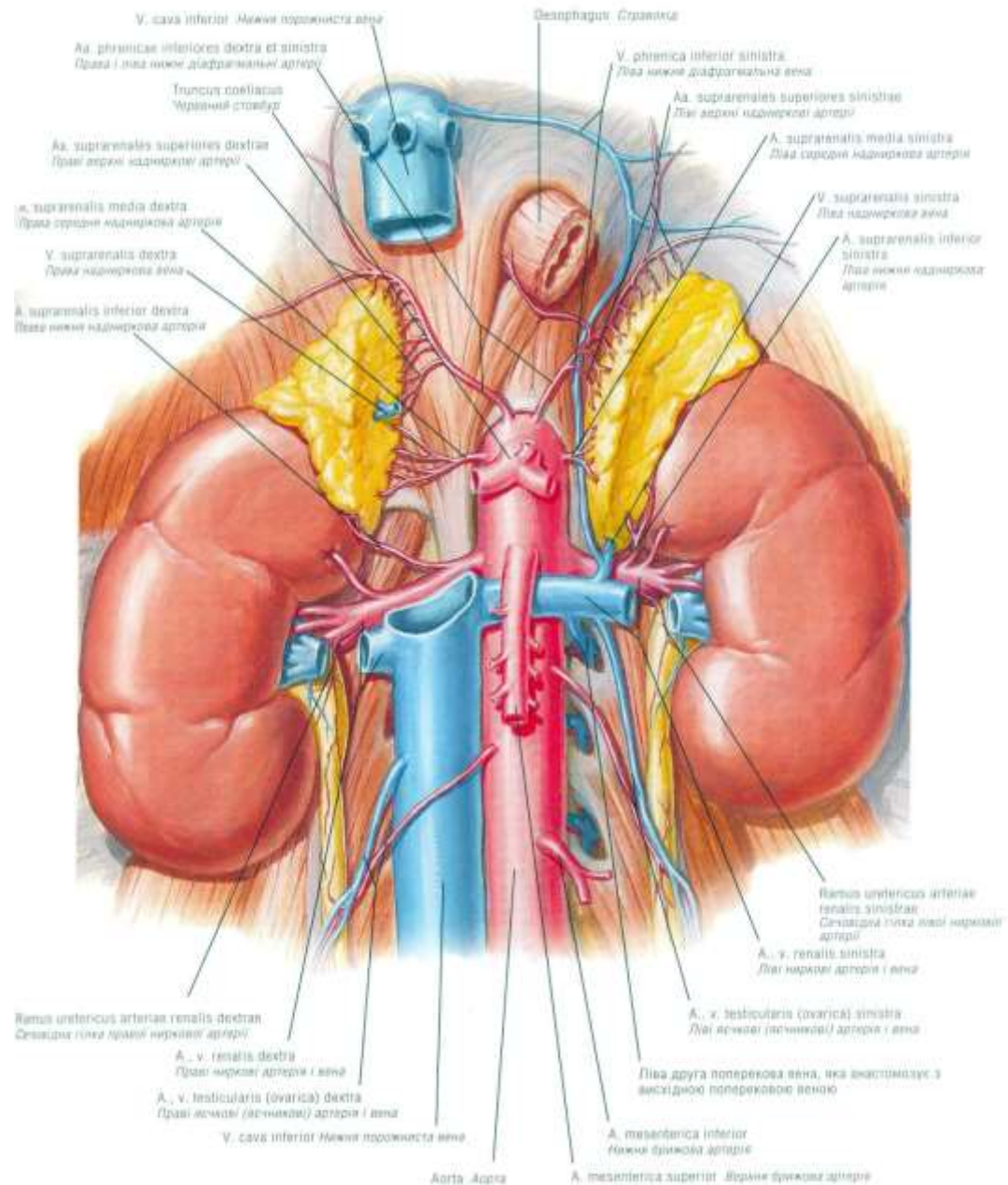
2. Arteries are located on the flexor surfaces of the body.

Regularities of the arteries' location

3. Arteries are located in the grooves and canals formed by bones, muscles and fascia, which protect blood vessels from compression.

Regularities of the arteries' location

4. Arteries enter the organ on its concave medial surface, which faces the blood supply.



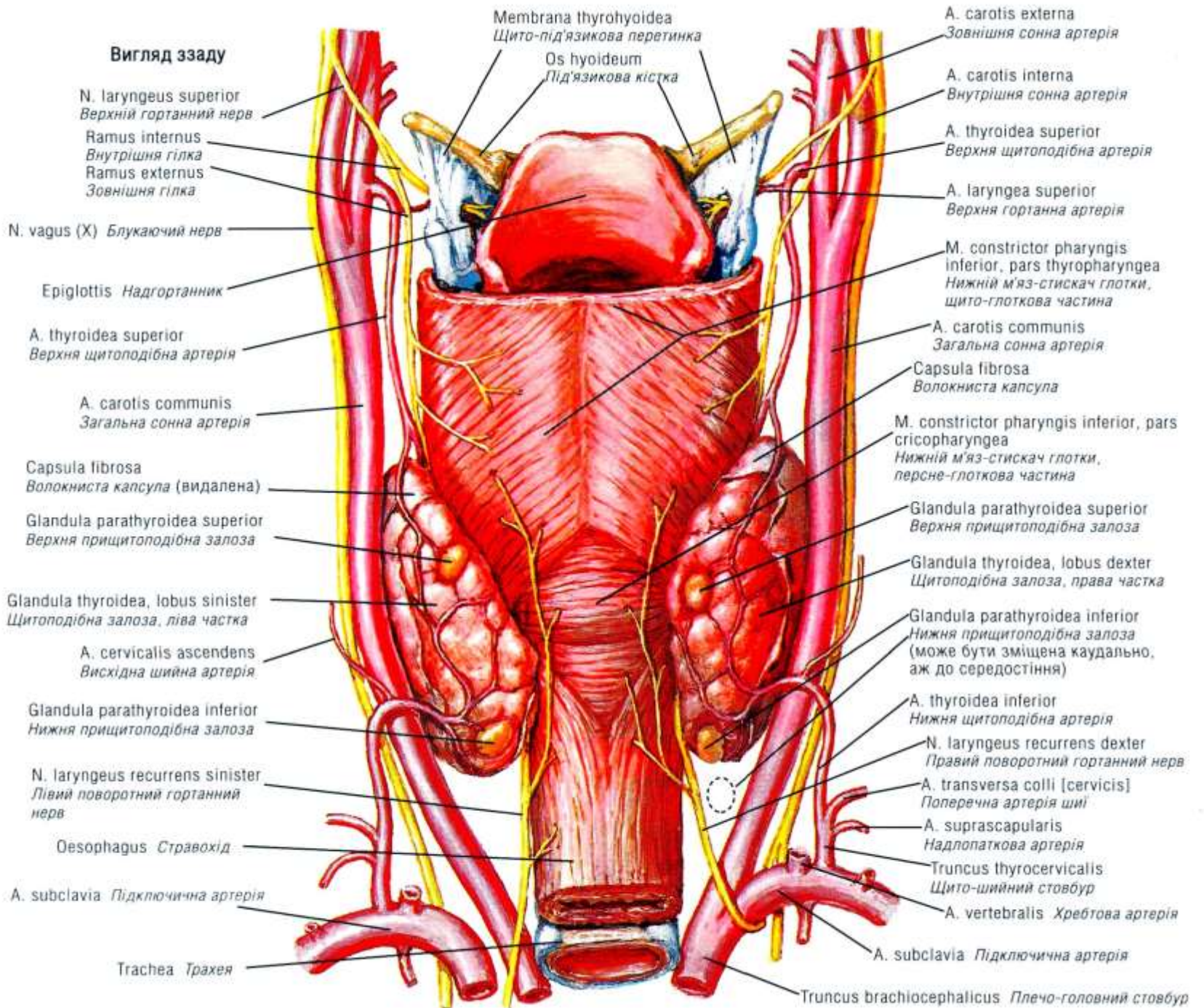
Regularities of the arteries' location

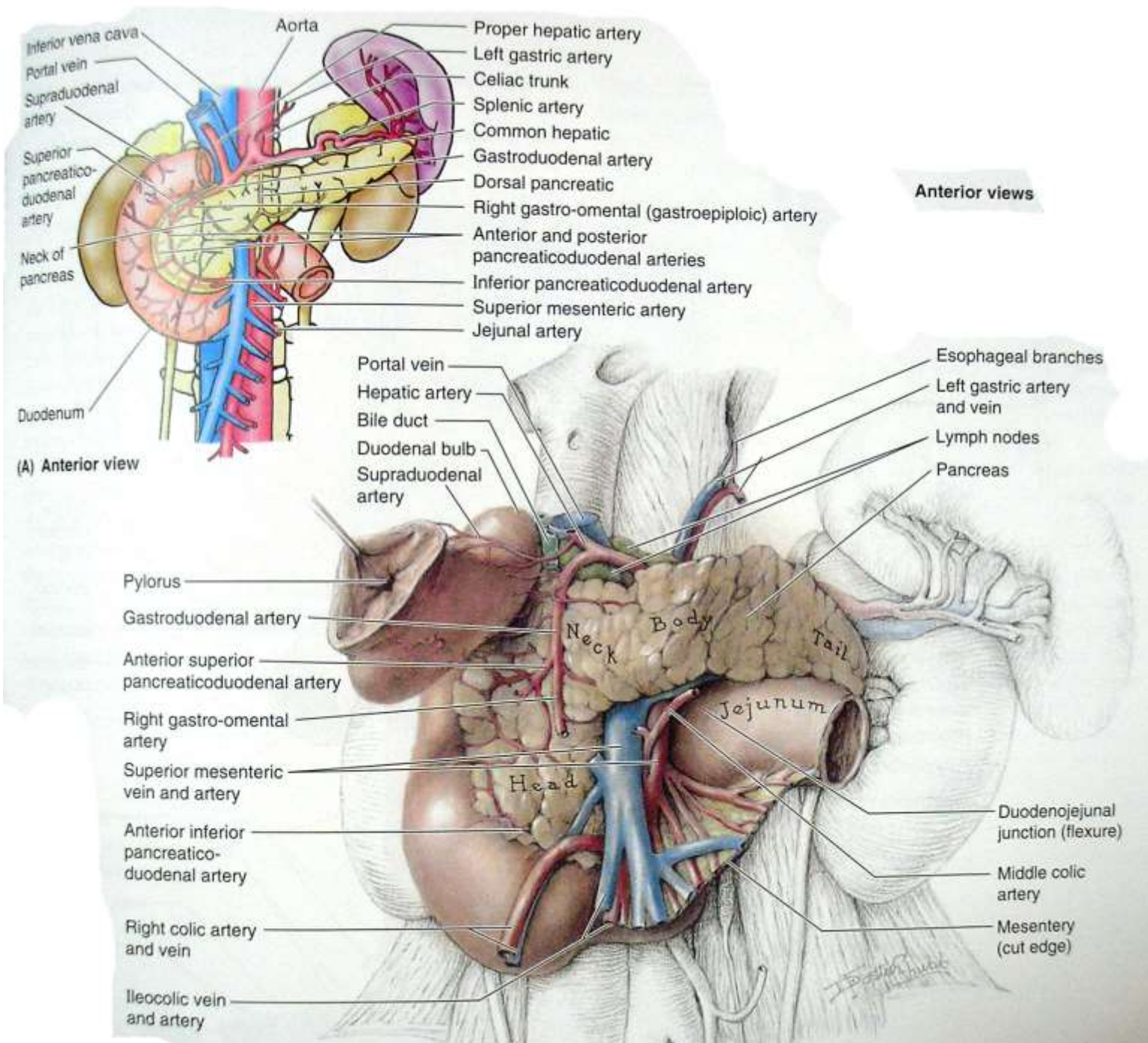
5. Arteries form devices according to the function of the body:

a) vascular networks, rings and arcuate anastomoses are formed in the organs associated with movements.

Regularities of the arteries' location

- 5. Arteries form devices according to the function of the body:**
- b) the caliber of the arteries is determined not only by the size of the organ, but also its function;**
 - c) due to the latter, the endocrine glands have numerous power sources.**



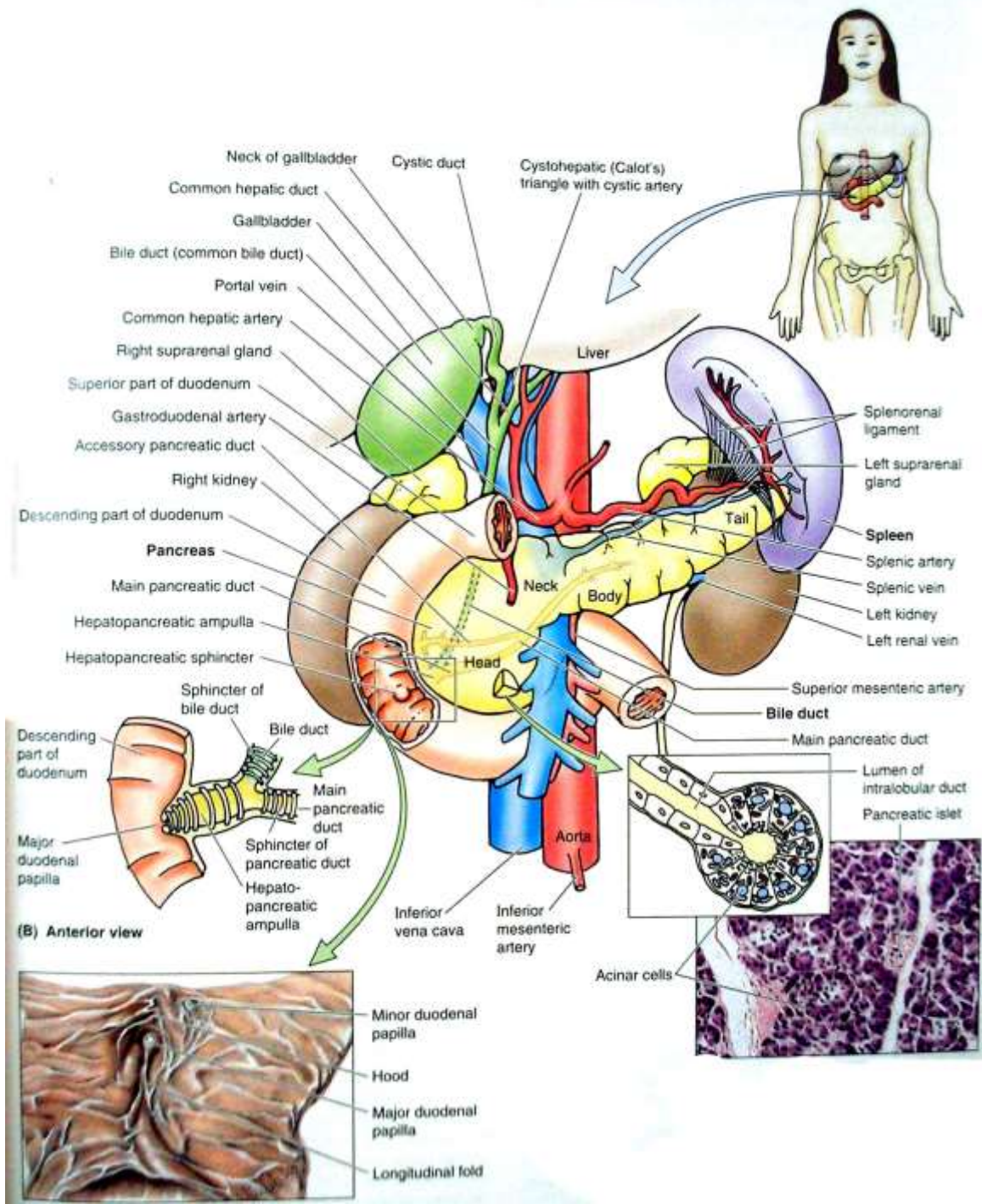


- Inferior vena cava
- Portal vein
- Supraduodenal artery
- Superior pancreaticoduodenal artery
- Neck of pancreas
- Duodenum
- Aorta
- Proper hepatic artery
- Left gastric artery
- Celiac trunk
- Splenic artery
- Common hepatic
- Gastroduodenal artery
- Dorsal pancreatic
- Right gastro-omental (gastroepiploic) artery
- Anterior and posterior pancreaticoduodenal arteries
- Inferior pancreaticoduodenal artery
- Superior mesenteric artery
- Jejunal artery

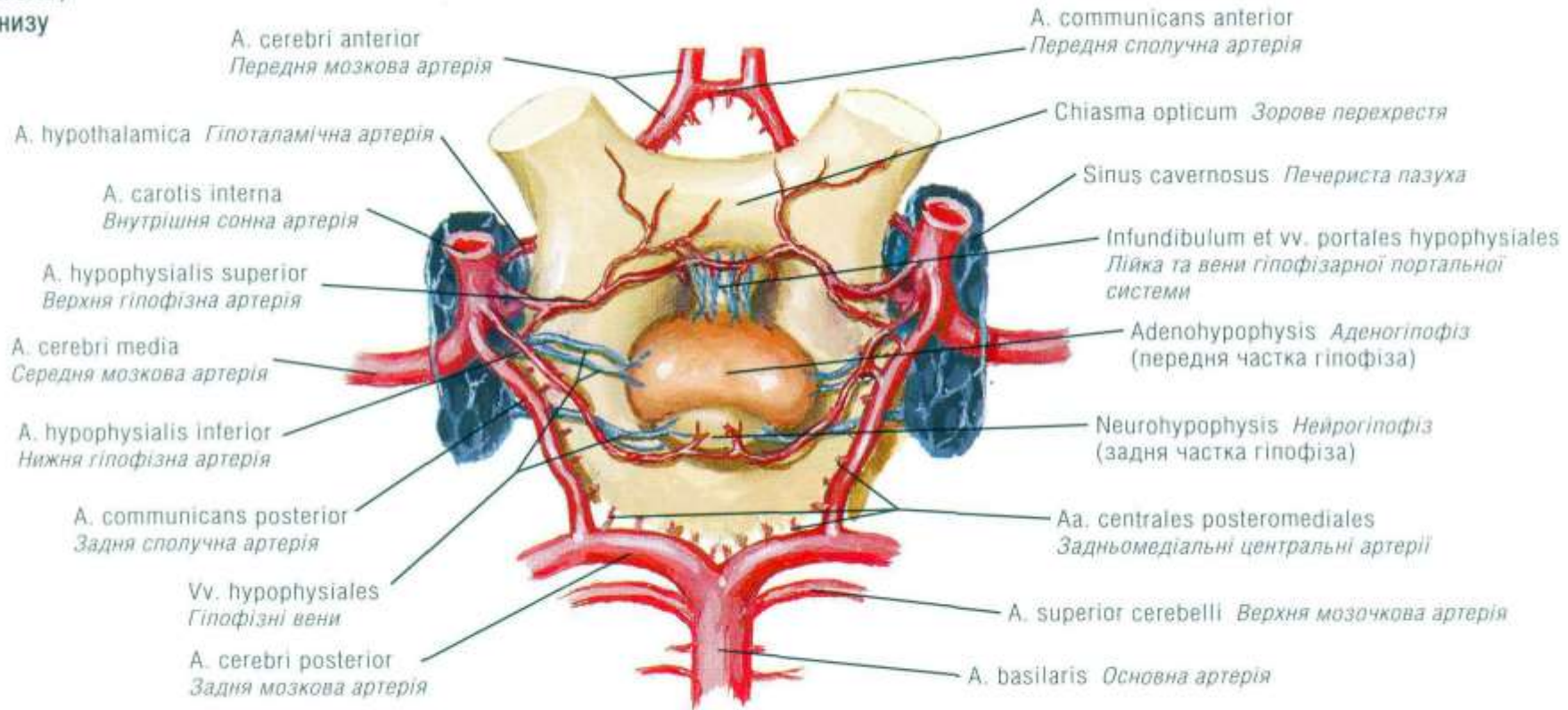
Anterior views

(A) Anterior view

- Portal vein
- Hepatic artery
- Bile duct
- Duodenal bulb
- Supraduodenal artery
- Pylorus
- Gastroduodenal artery
- Anterior superior pancreaticoduodenal artery
- Right gastro-omental artery
- Superior mesenteric vein and artery
- Anterior inferior pancreaticoduodenal artery
- Right colic artery and vein
- Ileocolic vein and artery
- Esophageal branches
- Left gastric artery and vein
- Lymph nodes
- Pancreas
- Head
- Neck
- Body
- Tail
- Jejunum
- Duodenojejunal junction (flexure)
- Middle colic artery
- Mesentery (cut edge)

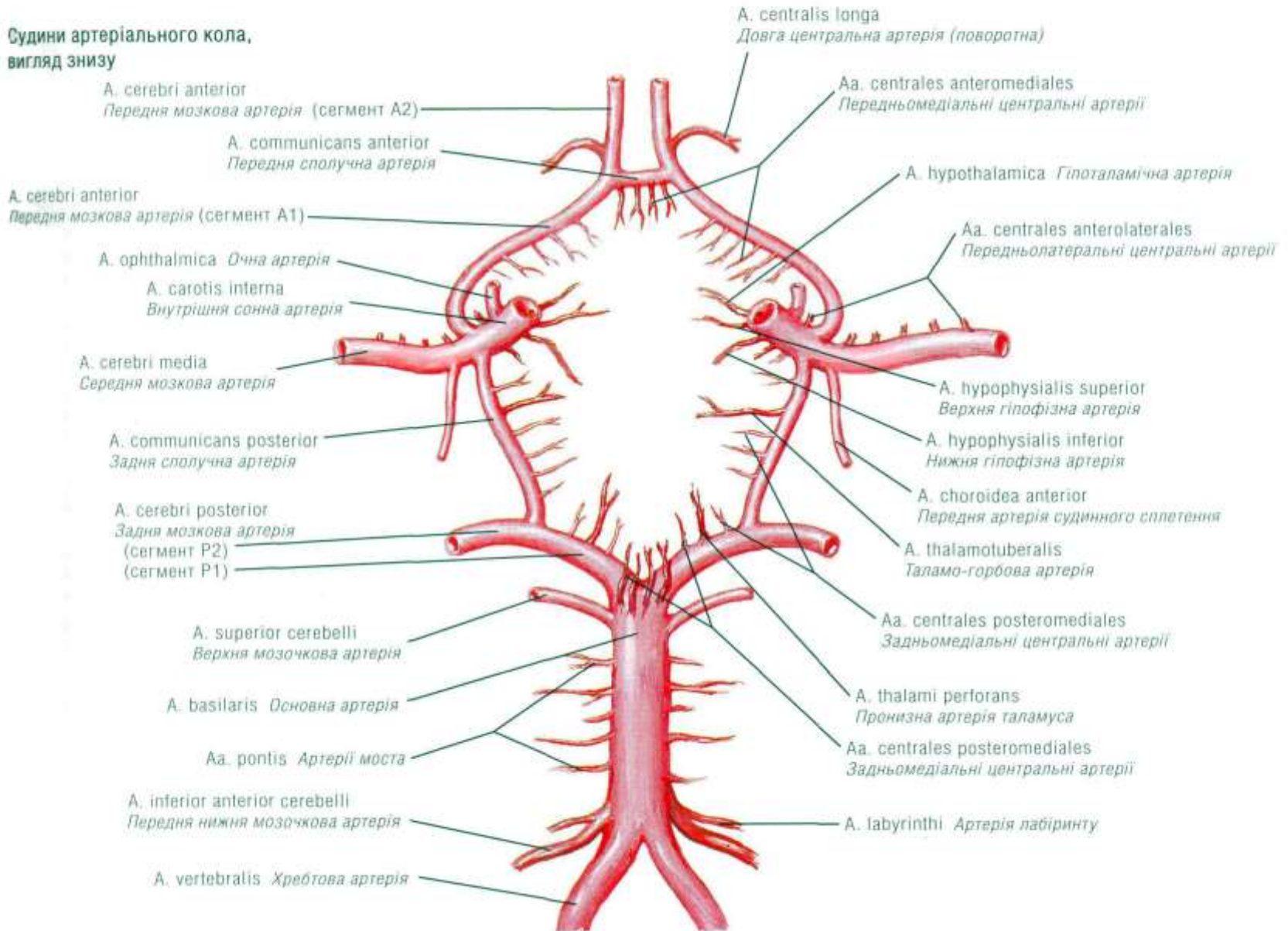


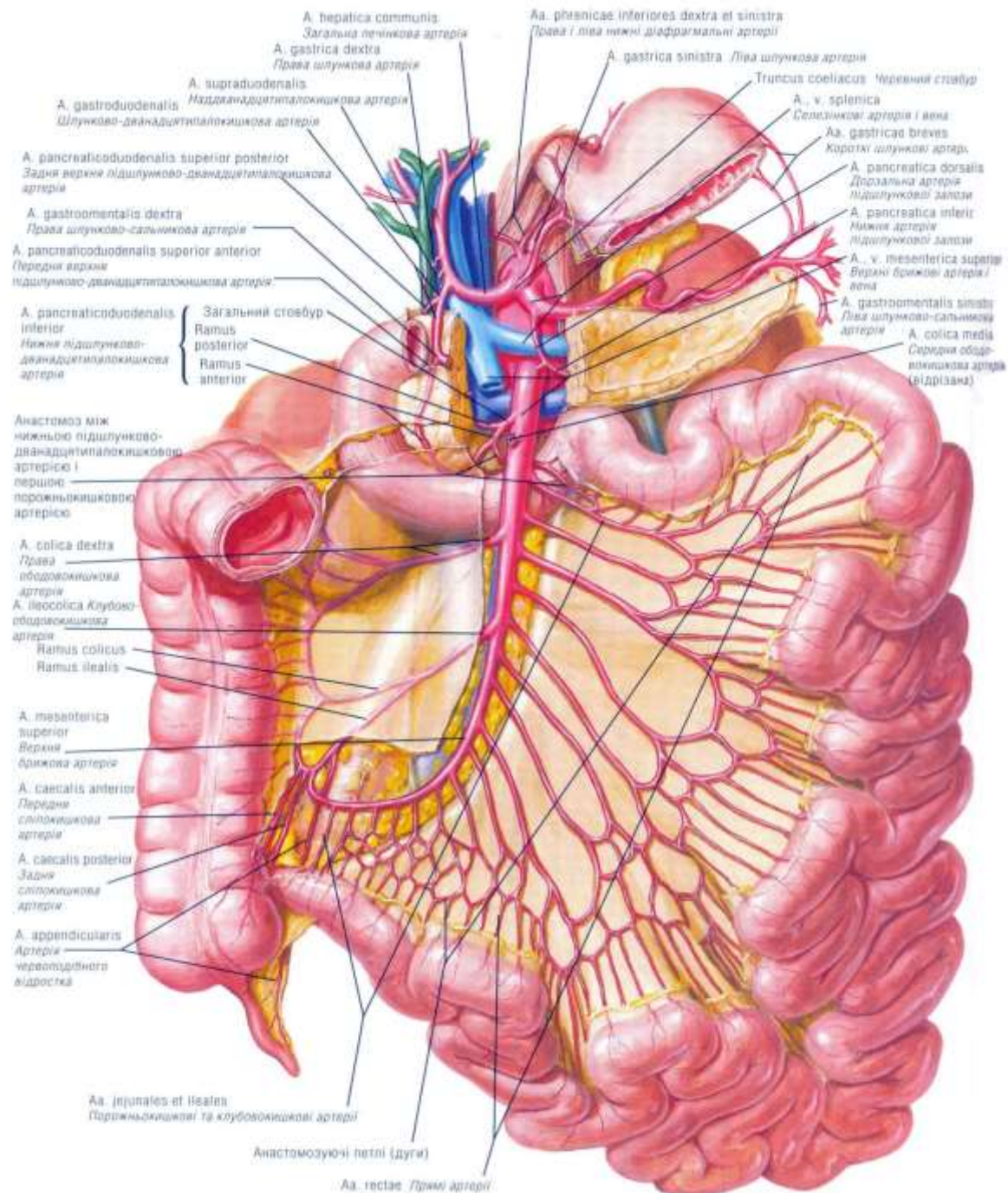
Судини *in situ*,
вигляд знизу



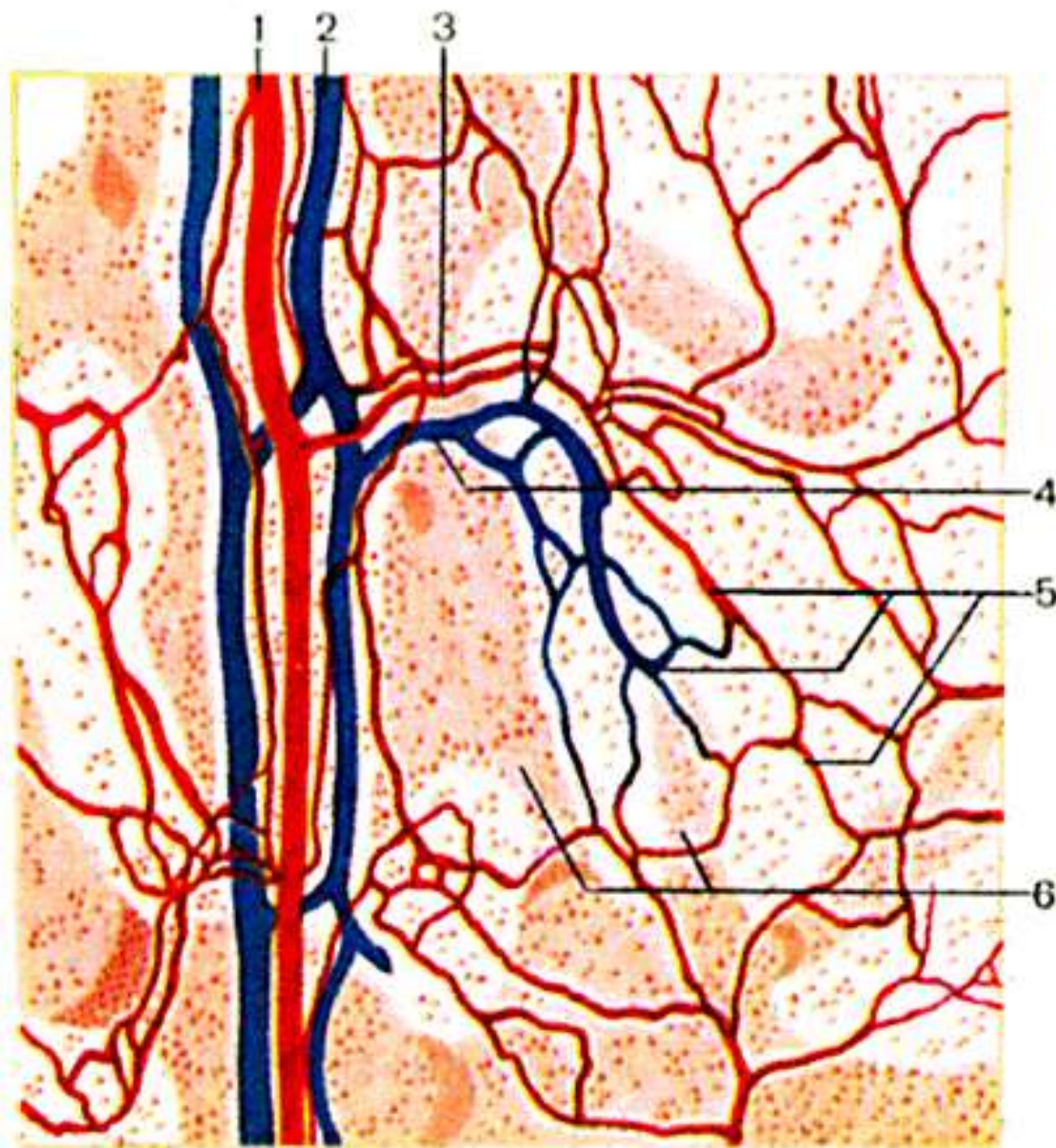
Артеріальне коло великого мозку (Вілізія)

Судини артеріального кола,
вигляд знизу

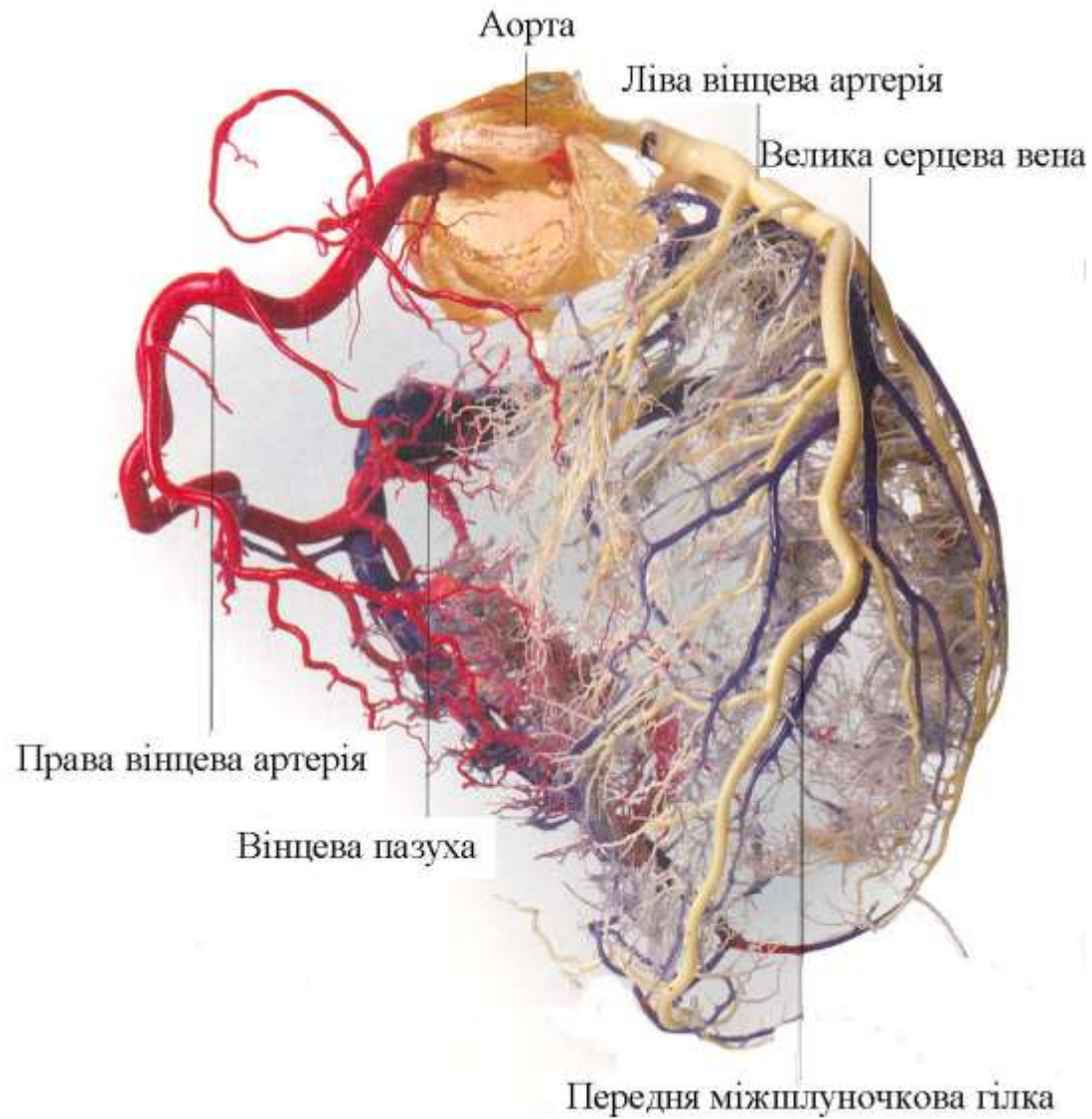




Мікроциркуляторне русло очеревини.



- 1 - артерія;
- 2 - вена;
- 3 - артеріола;
- 4 - венула;
- 5 - сітка кровоносних капілярів;
- 6 - лімфатичні капіляри і судини.



Кровоносні судини серця (корозія)



Kaiparambil Pra...



Oleksandr Kovalchuk



Marwa Zeithar

Elumalai shiva s...



Ajvad Aju

Mehmet Turgut...



Maya Abdelaziz



Naeema Ashraf

anatom.ua

Essraa helaly

boris bockima c...

Ahmed Fathi

TANYA CHOUD...



JYOTHI VEERESH

Jakkula nikitha

Nidhi Ramesh



ANATOMY and PAT...

Enes Ozpolat



forsta U.



Nuray Alkan

Найти участни...

MT Mehmet Tur...

Naeema Ash...

NR Nidhi Rames...

Nirmal Krish...

Nuray Alkan

RA RABIH ABDEL...

R RASHA RIYAS...

R3 realme 3 Pro

R Redmi

SW Sakshi Wakal...

S Salwa Attako...

shubham bh...

Sumer Pasha...

TK Tanvi Kaspal...

TC TANYA CHOUD...

V Vattakkandiy...

A Veliparambil...

abolfazl kam...

The wall of an adult artery consists of three membranes:

- internal,**
- medium,**
- external.**

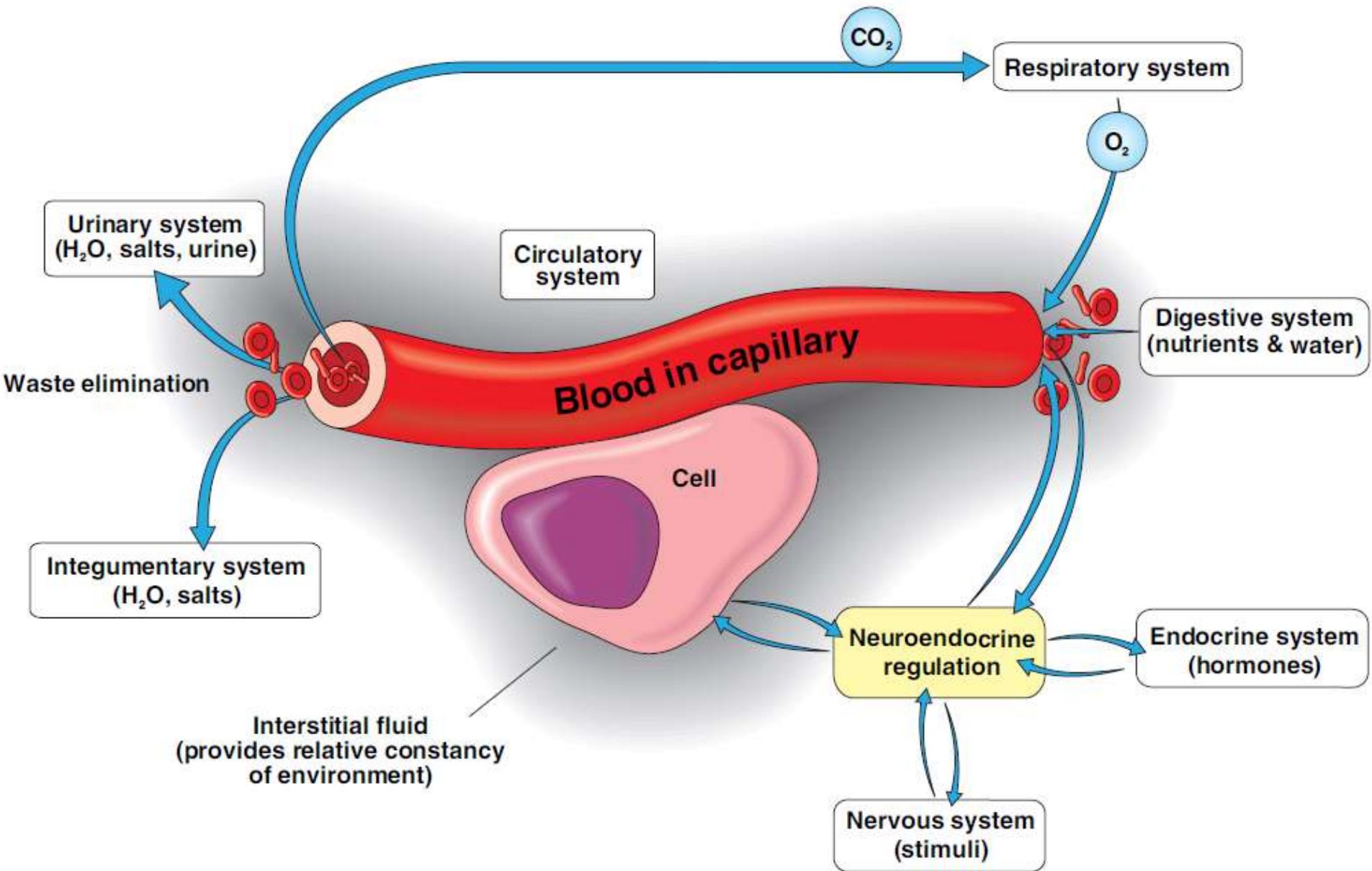


FIGURE 16.1 The relationship of the circulatory system to the other body systems in maintaining homeostasis.

The **inner shell (tunica intima)** is formed by a layer of endothelial cells, a subendothelial layer and a basement membrane.

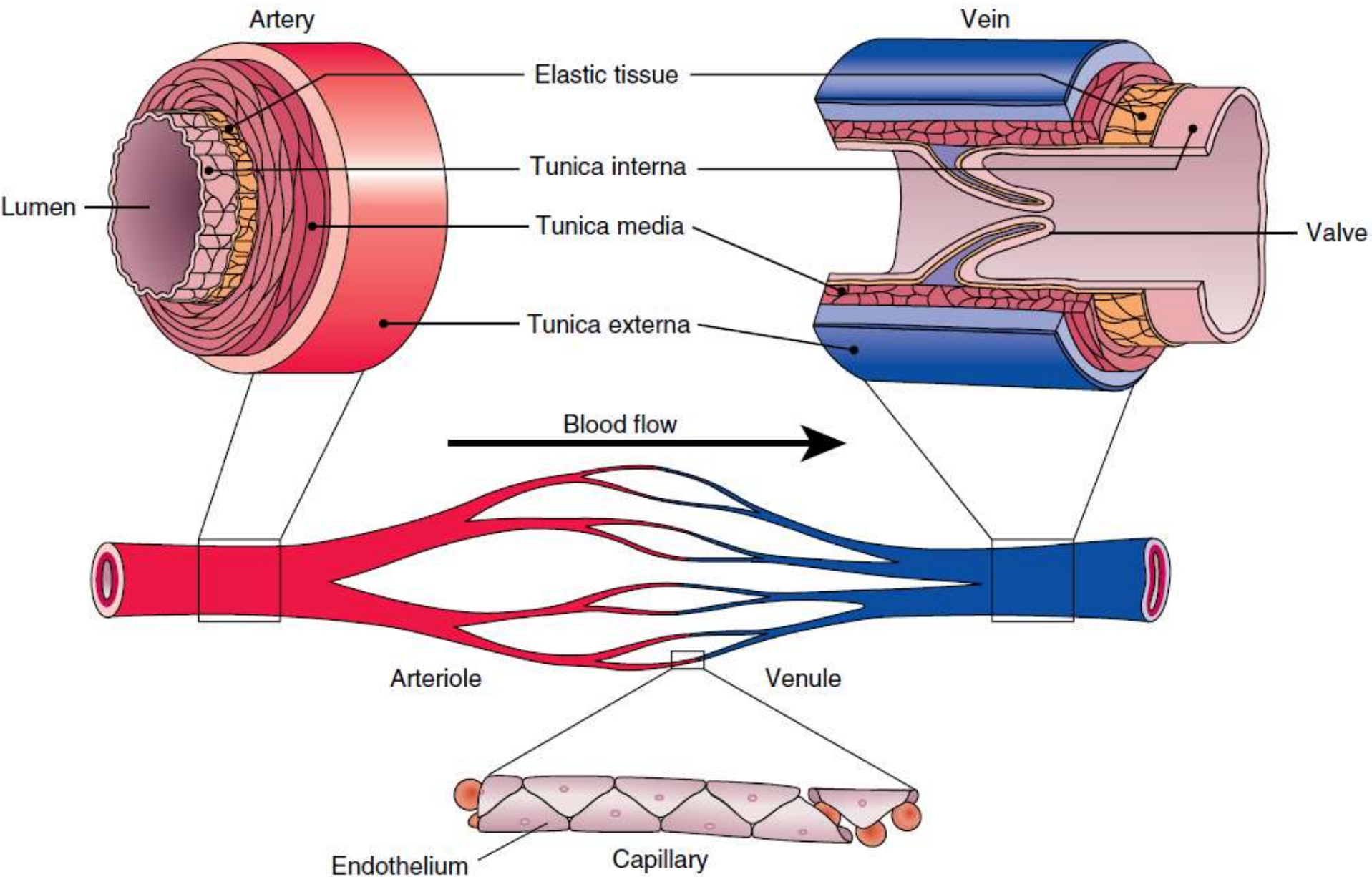


FIGURE 8.17. Structure of Capillary, Vein, and Artery

The **middle membrane (tunica media)** is formed by circular fibers of unstriated muscle tissue and elastic fibers.

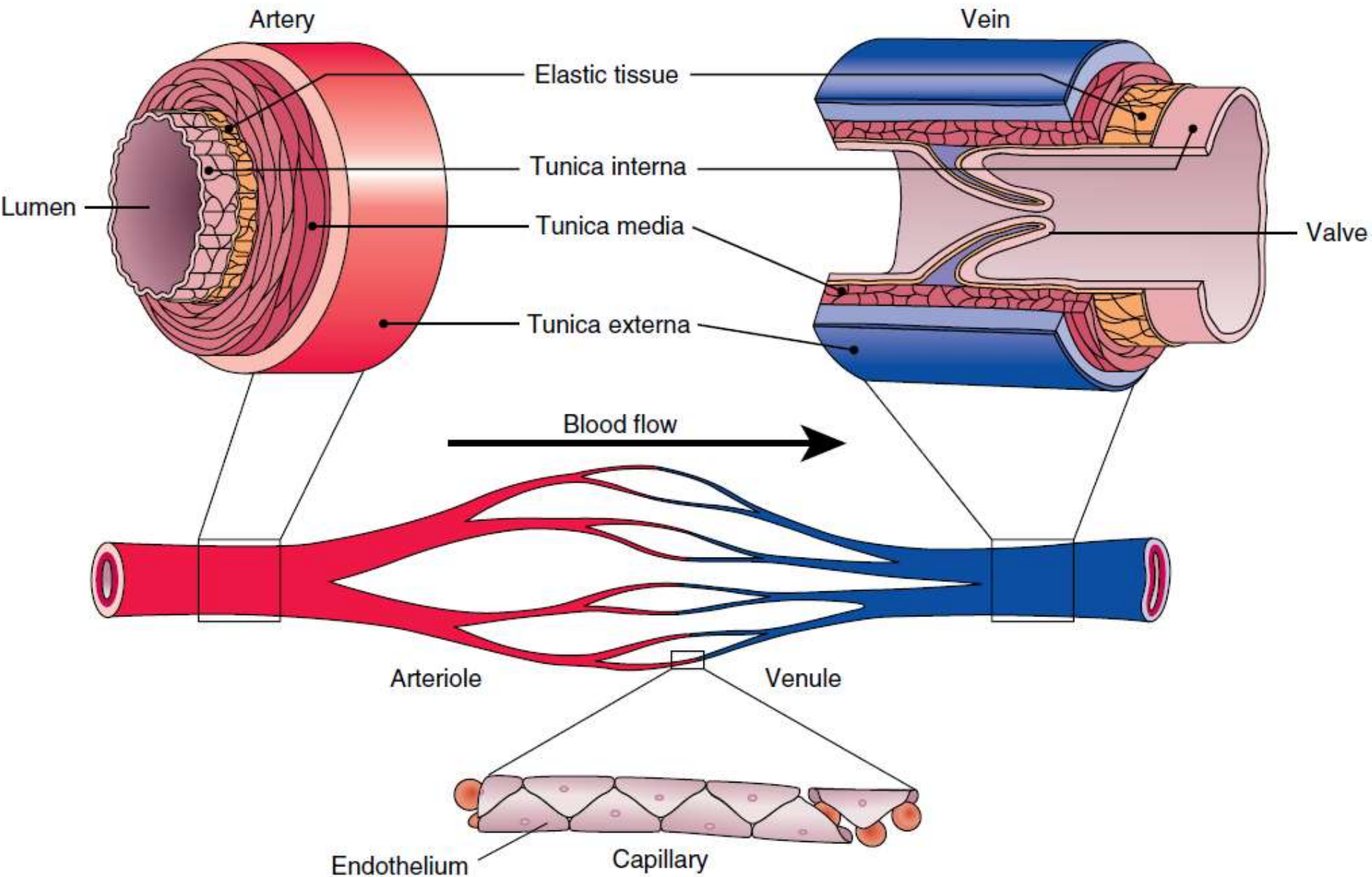


FIGURE 8.17. Structure of Capillary, Vein, and Artery

The outer shell (tunica externa) contains loose connective tissue with vascular vessels (vasa vasorum) and vascular nerves (nervi vasorum).

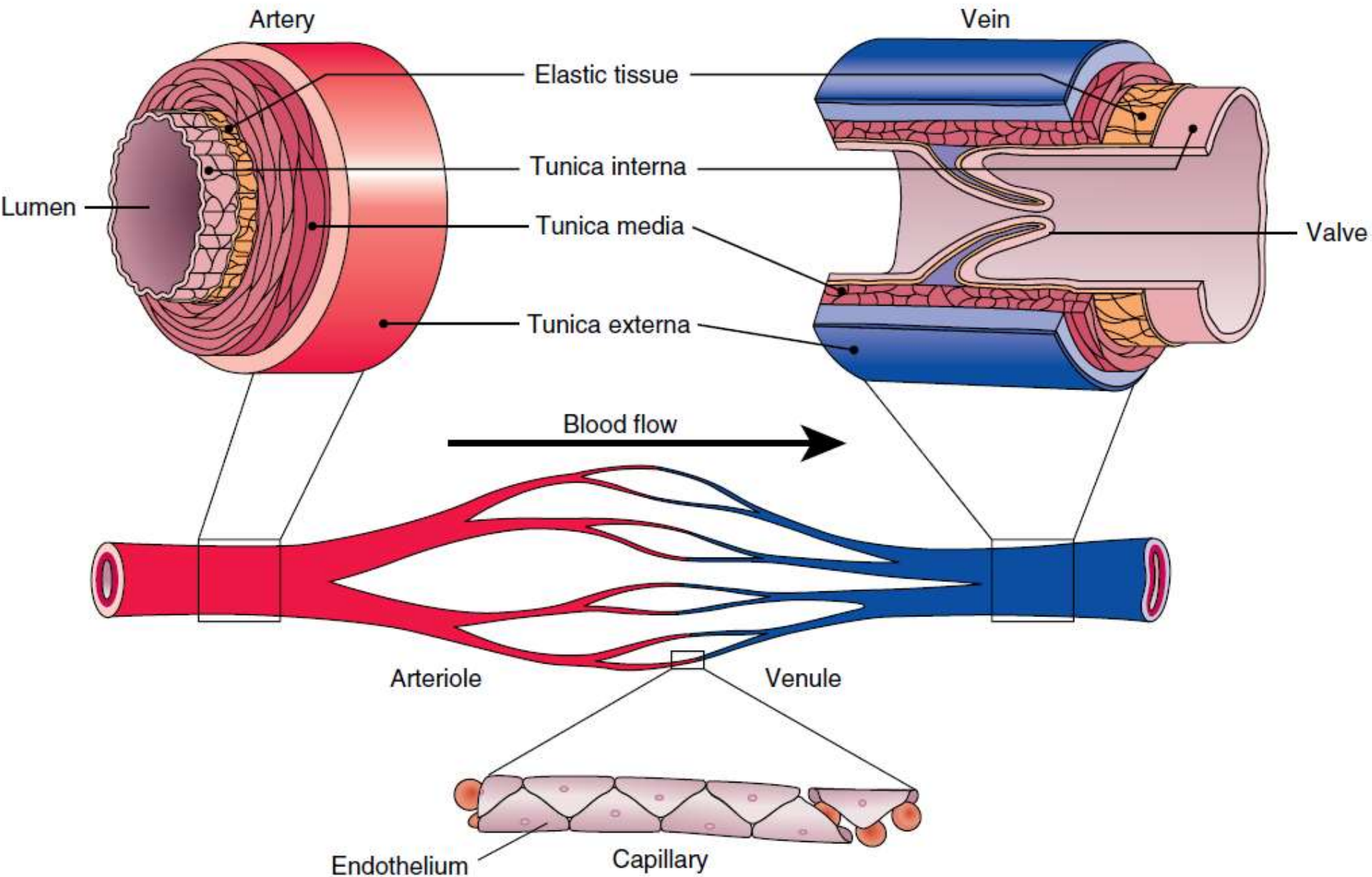
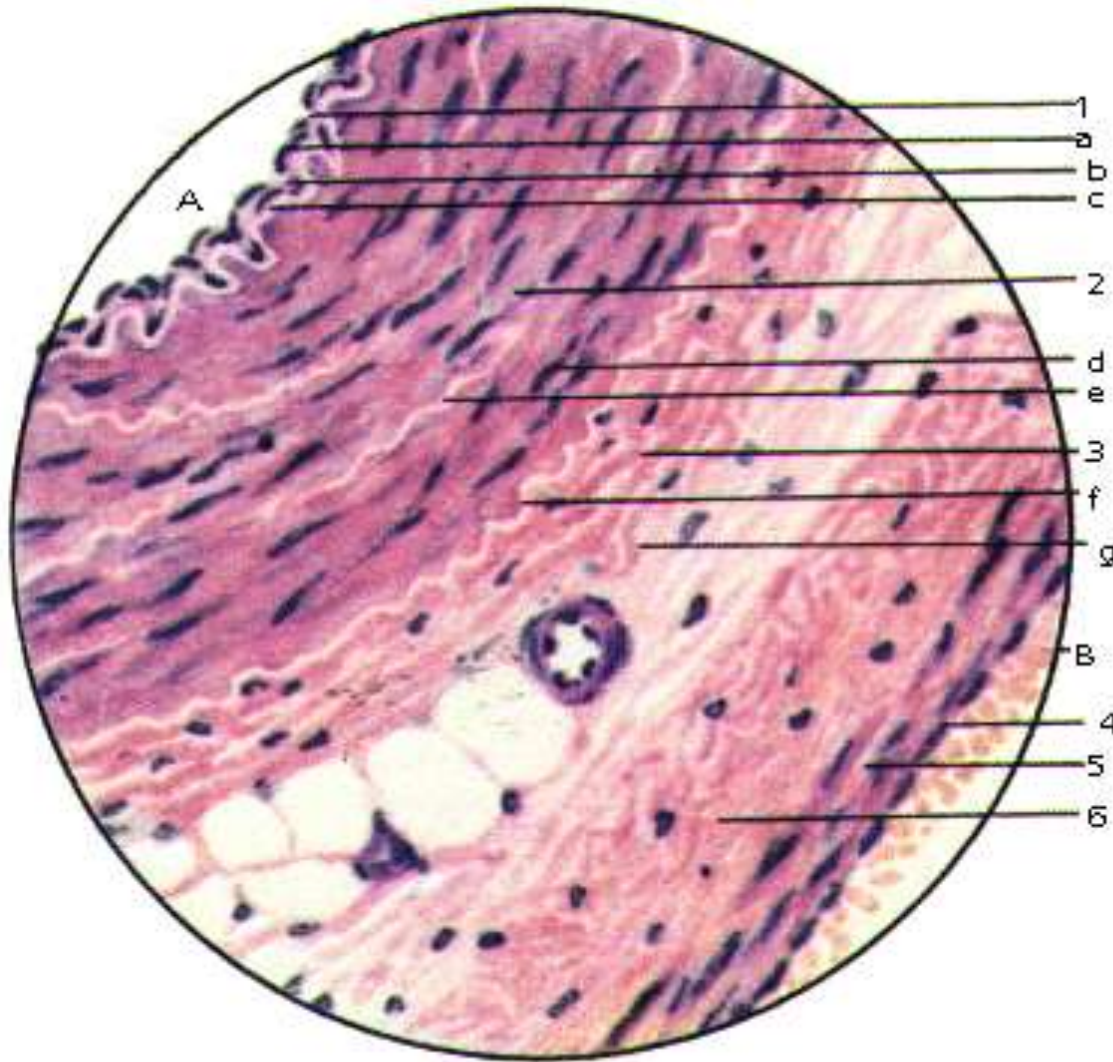


FIGURE 8.17. Structure of Capillary, Vein, and Artery

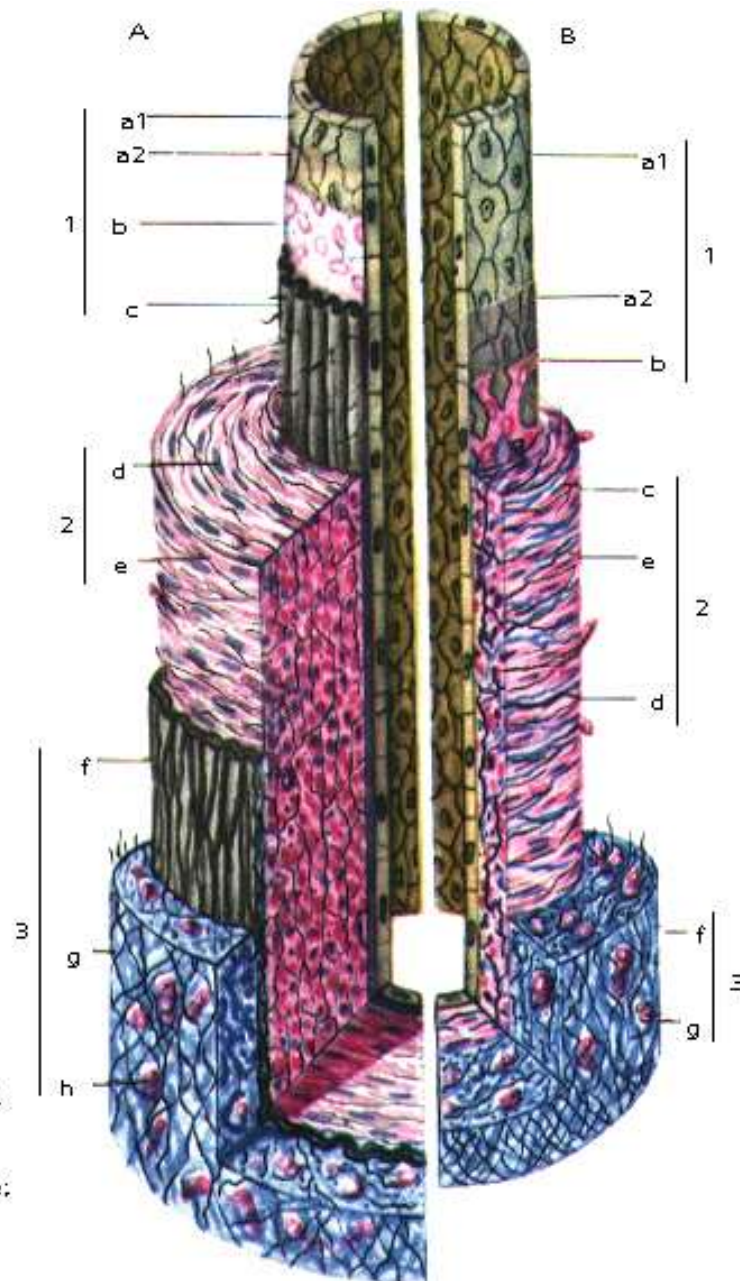
**Inner and outer elastic membranes
(*membrana elastica interna et
membrana elastica externa*) are
placed between the shells.**

Стінка артерії і вени м'язового типу. (HE x 400).



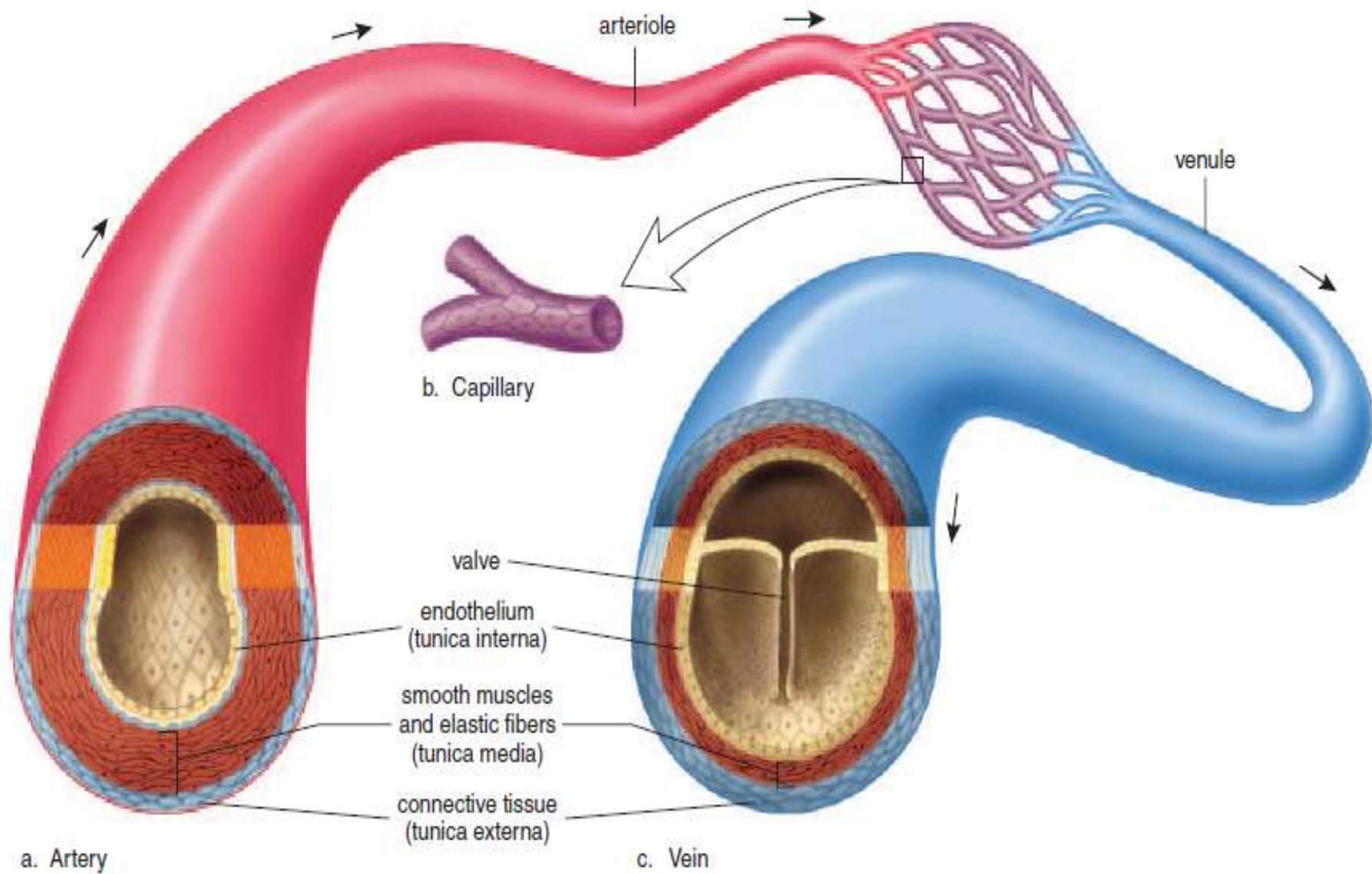
- A - artery.
- 1 - internal membrane:
- a - endothelium;
- b - subendothelial layer;
- c - internal elastin membrane;
- 2 - middle membrane:
- d - smooth muscle cells;
- e - elastin fibres;
- 3 - external membrane:
- f - external elastin membrane;
- g - fibrous tissue.
- B - vein:
- 4 - internal membrane;
- 5 - middle membrane;
- 6 - external membrane.

Структура кровоносних судин (середній калібр, м'язовий тип), схема.



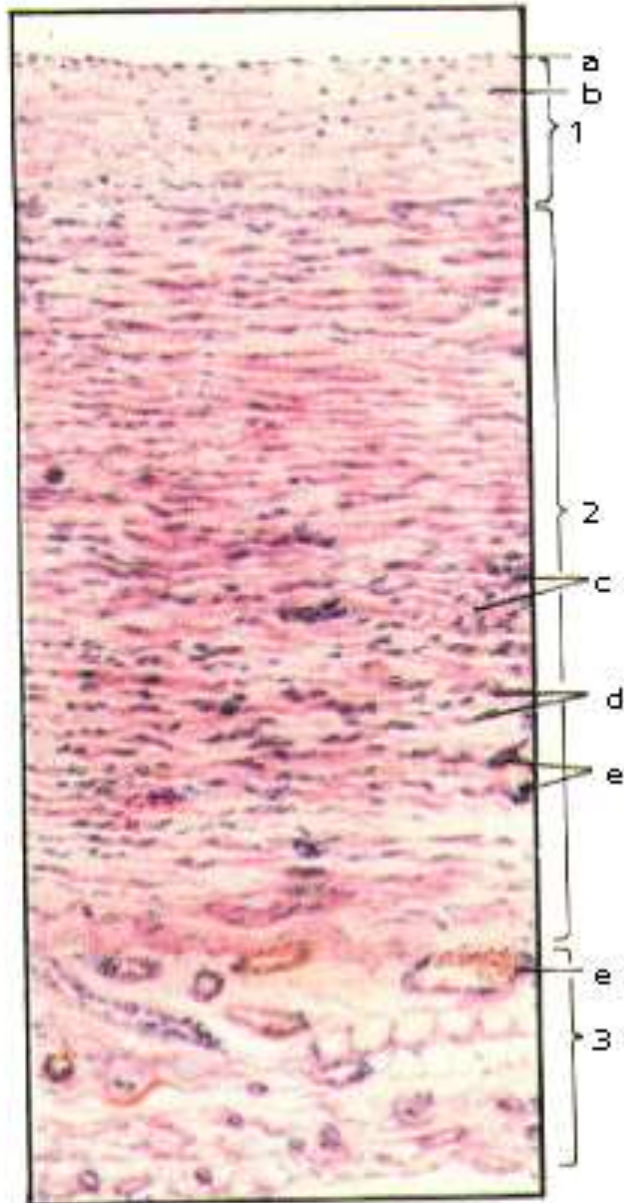
A - artery;
 1 - internal membrane:
 a1- endothelium;
 a2- basement membrane;
 b - subendothelial layer;
 c - internal elastin membrane;
 d - smooth muscle cells;
 e - elastin fibres;
 3 - external membrane:
 f - external elastin membrane;
 g - fibrous tissue of external membrane;
 h - blood vessels.

B - vein.
 1 - internal membrane:
 a1- endothelium;
 a2- basement membrane;
 b - subendothelial layer;
 2 - middle membrane:
 c - cords of smooth muscle cells;
 d - elastin fibres;
 e - collagen fibres;
 3 - external membrane:
 f - fibrous tissue;
 g - vascular blood vessels.



The large arteries (the aorta and its large branches) are arteries of the elastic type, because their walls are dominated by elastic fibers and membranes. They increase in diameter after the ejection of blood mass by heartbeat. This expansion spreads to subsequent arteries, and thus a pulse wave is formed that travels along the walls of the arteries in the distal direction, helping the heart to push blood to the periphery.

Artery of elastic type. The aortic wall (HE x 80).

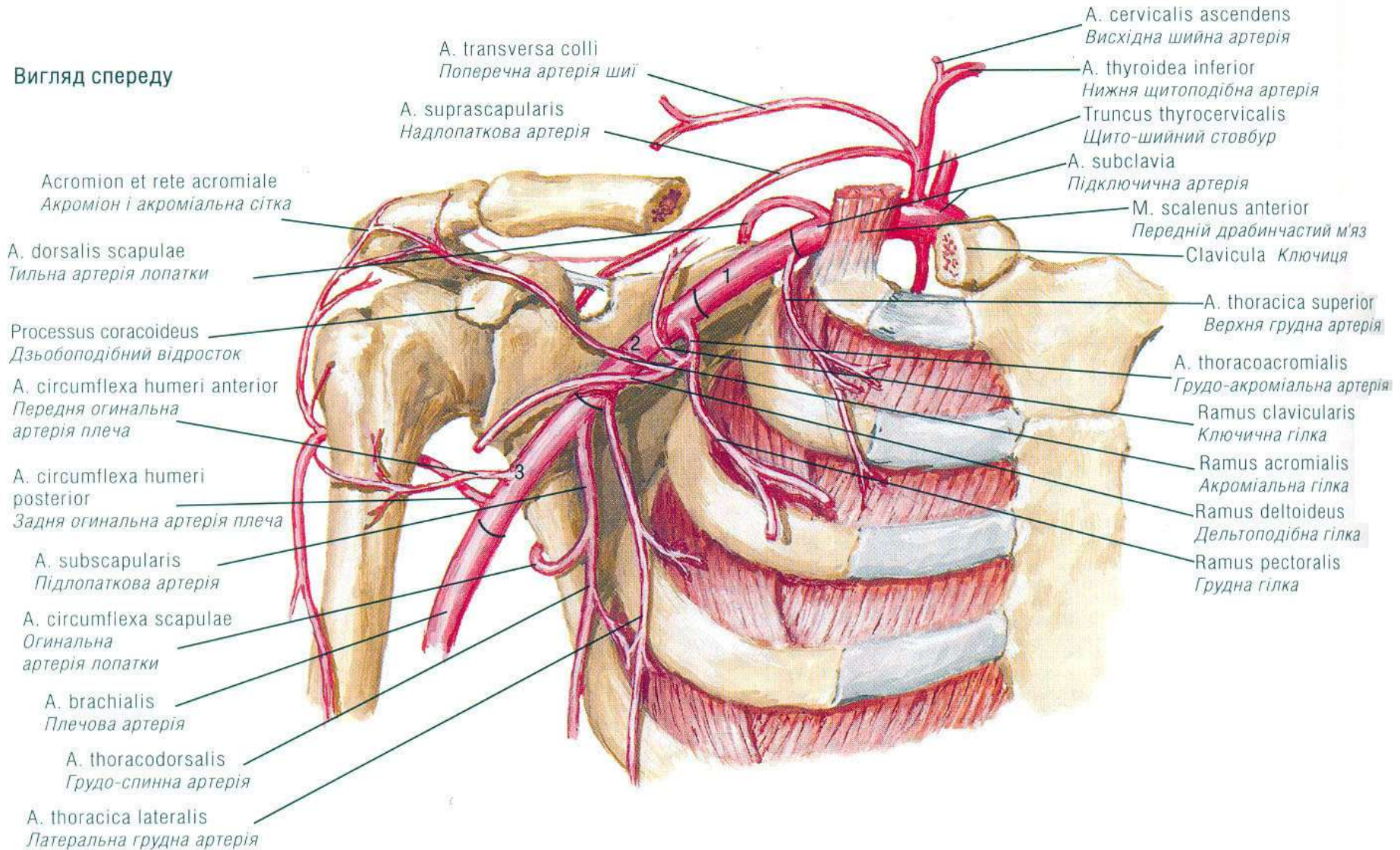


- 1 - internal membrane:
 - a - endothelium;
 - b - subendothelial layer;
- 2 - middle membrane:
 - c - fenestrated elastin membranes;
 - d - smooth muscle cells;
 - e - vascular vessels;
- 3 - external membrane.

The arteries of medium and small caliber are dominated by **muscular elements (arteries of the muscular type)**, the contractile function of which helps the further movement of blood to the periphery. In arteries of **muscular-elastic (mixed) type**, there are almost the same number of muscle cells and elastic fibers in the middle membrane (for example, subclavian and femoral arteries).

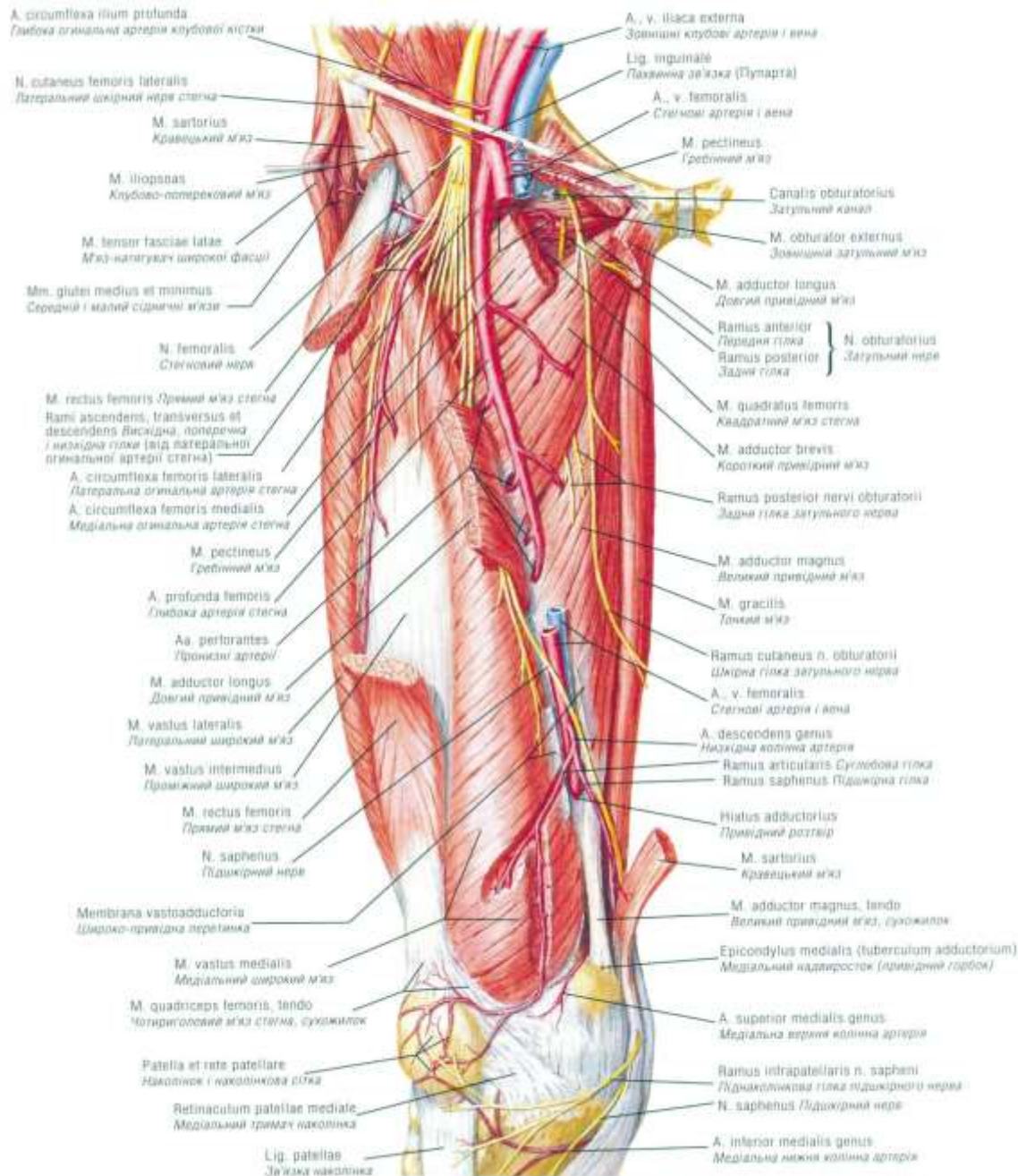
Пахвова артерія

Вигляд спереду



Артерії і нерви стегна: вигляд спереду

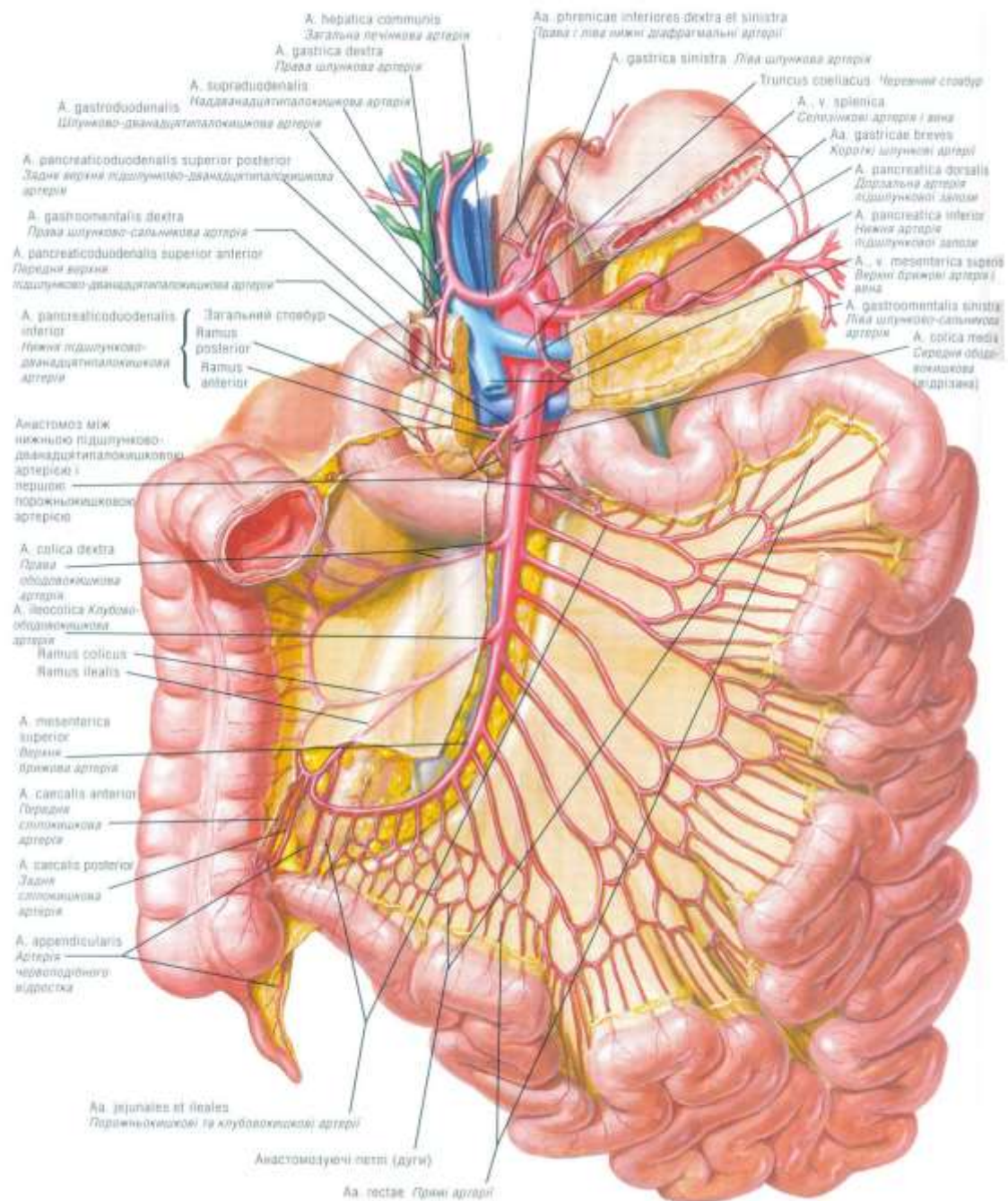
Глибокі структури



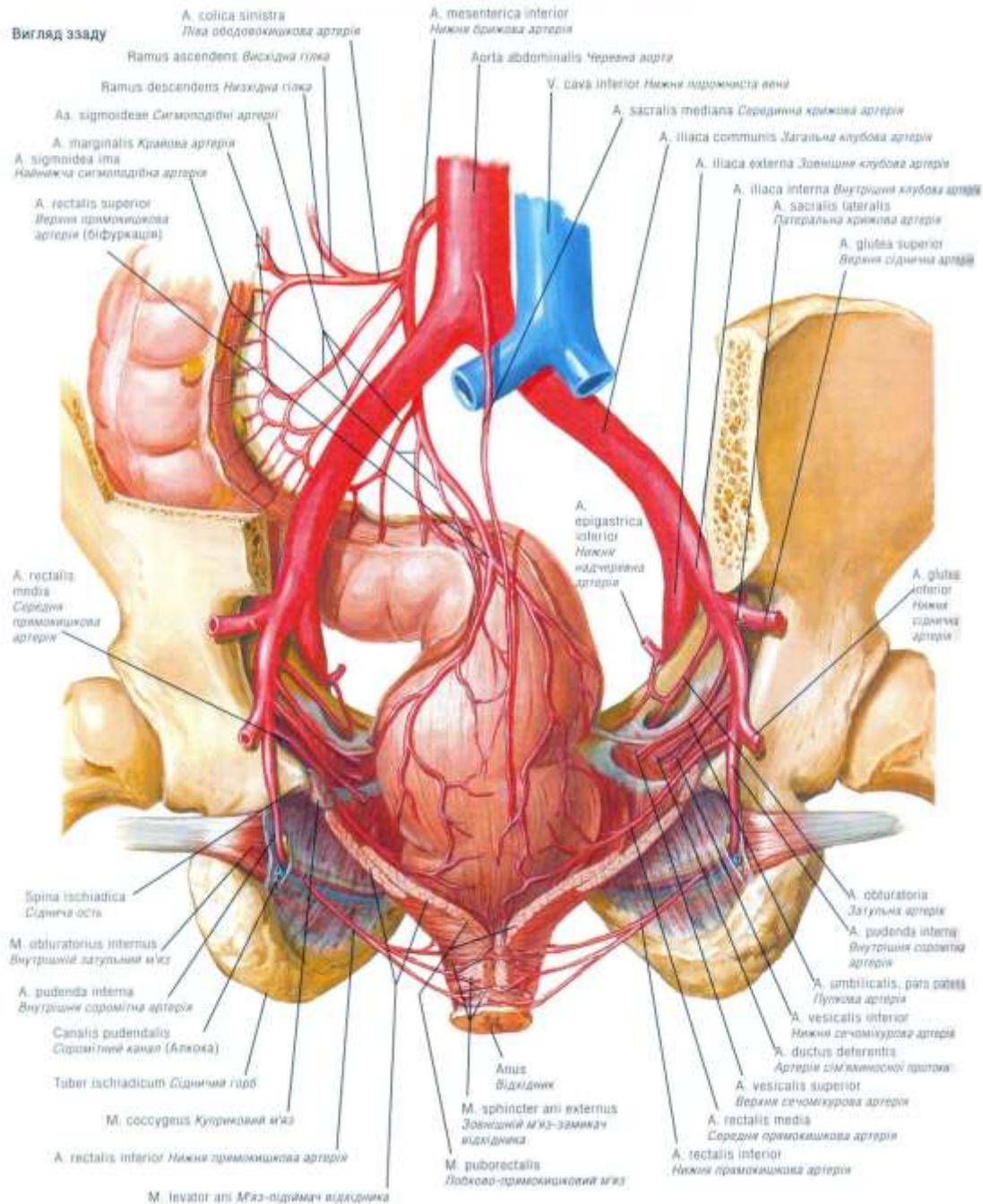
By the nature of the branches, the arteries are distinguished by the main type of branches, loose and mixed types of branches.

According to the main type of branches, the lateral branches depart from the well-defined main trunk of the artery (for example, the superior mesenteric artery), and according to the placer type, the artery is initially divided into terminal branches (for example, the internal iliac artery).

Артерії тонкої кишки



Артерії прямої кишки і відхідникового каналу



Артерії і вени чоловічого таза

Саргальний
присерединний переріз

V. cava inferior
Нижня порожниста вена

Aorta abdominalis
Черевна аорта

A., v. obturatoria dextra
Праві затульні артерія і вена

A., v. iliaca communis
Загальні клубові артерія і вена

A. umbilicalis dextra, pars patens
Права пупкова артерія, відкрита частина

A., v. sacralis mediana
Серединні крижові артерія і вена

A. vesicalis superior dextra
Права верхня сечоміхурова артерія

A., v. iliaca externa sinistra
Ліві зовнішні клубові артерія і вена

A. umbilicalis dextra, pars occlusa
Права пупкова артерія, закрита частина

A., v. iliaca interna sinistra
Ліві внутрішні клубові артерія і вена

A., v. circumflexa
ilium profunda
Глибокі огинальні
артерія і вена
клубової кістки

A. iliofemoralis
Клубово-поперекова артерія

A. sacralis lateralis
Латеральна крижова артерія

A. glutea superior sinistra
Ліва верхня сіднична артерія

A., v. epigastrica
inferior Нижні
надчервні
артерія і вена

A. obturatoria sinistra
Ліва затульна артерія

A. umbilicalis, pars patens
Пупкова артерія, відкрита
частина

Ductus deferens et
a. ductus deferentis
Сім'явиносна протока
і артерія сім'явиносної
протоки

Ureter Сечовід

A. glutea inferior sinistra
Ліва нижня сіднична артерія

Lig. umbilicale mediale
Медіальна
пупкова зв'язка

A. vesicalis inferior
Нижня сечоміхурова артерія

A. rectalis media sinistra
Ліва середня прямокишкова
артерія

Lig. umbilicale medianum
(urachus) Серединна
пупкова зв'язка (урахус)

A. pudenda interna
Внутрішня соромітна артерія

A. umbilicalis,
pars occlusa
Пупкова артерія,
закрита частина

Ductus deferens et a. ductus
deferentis Сім'явиносна протока
і артерія сім'явиносної
протоки

Rami prostatici a. vesicalis inferioris
Гілки передміхурової залози нижньої
сечоміхурової артерії

A. vesicalis superior
Верхня сечоміхурова
артерія

A. rectalis inferior
Нижня прямокишкова артерія

Vv. dorsales
superficiales
penis Поверхневі спинкові
вени статевго члена

Plexus venosus prostaticus
Венозне сплетення передміхурової залози

A. dorsalis et v. dorsalis
profunda penis
Спинкова артерія і
глибока спинкова вена
статевго члена

M. sphincter urethrae externus
Зовнішній м'яз-замікач сечівника

Fascia penis profunda









A. perinealis
Промежинна артерія

A. testicularis
Яєчкова артерія

A. pudenda interna
Внутрішня соромітна артерія (на перетинці промежини)

Rami scrotales
posteriores a.
perinealis
Задні мошонкові
гілки промежинної
артерії

Microsoft Teams Meeting Grid

 Shrishti Moses	Celine mary 17	 ANATOMY and PATHO...
 Samar Ashraf	Ojebode Eytayo	 AIKIN MUTHOO
Gouri Priya	Mohamed Ghazy	 Deepak Suman, gro...
meghansh khan...	Aiswarya pattayil	 gena ashraf
 Raushan Kumar	 Nikitha Nandhini	Nwokedi kamsy...

Participant List (Right Panel):

- MA Muhammed afsal
- Nikitha Nandhini
- NS Nilabh Sengupta C
- NK Nwokedi kamsy sa
- OE Ojebode Eytayo
- PS pradyot saho
- R Ramatou
- R Rasheeka MP
- Raushan Kumar
- Samar Ashraf
- S Shreya
- Shrishti Moses
- Tasneem Mohame
- YS Yogendra Sihag
- ANATOMY and PA

Meeting Controls (Bottom):

- Видео выключено
- Безопасность
- Участники: 33
- Демонстрация экрана
- Реакции
- Дополнительно
- Завершение (Alt+Q)
- Пригласить
- Выход

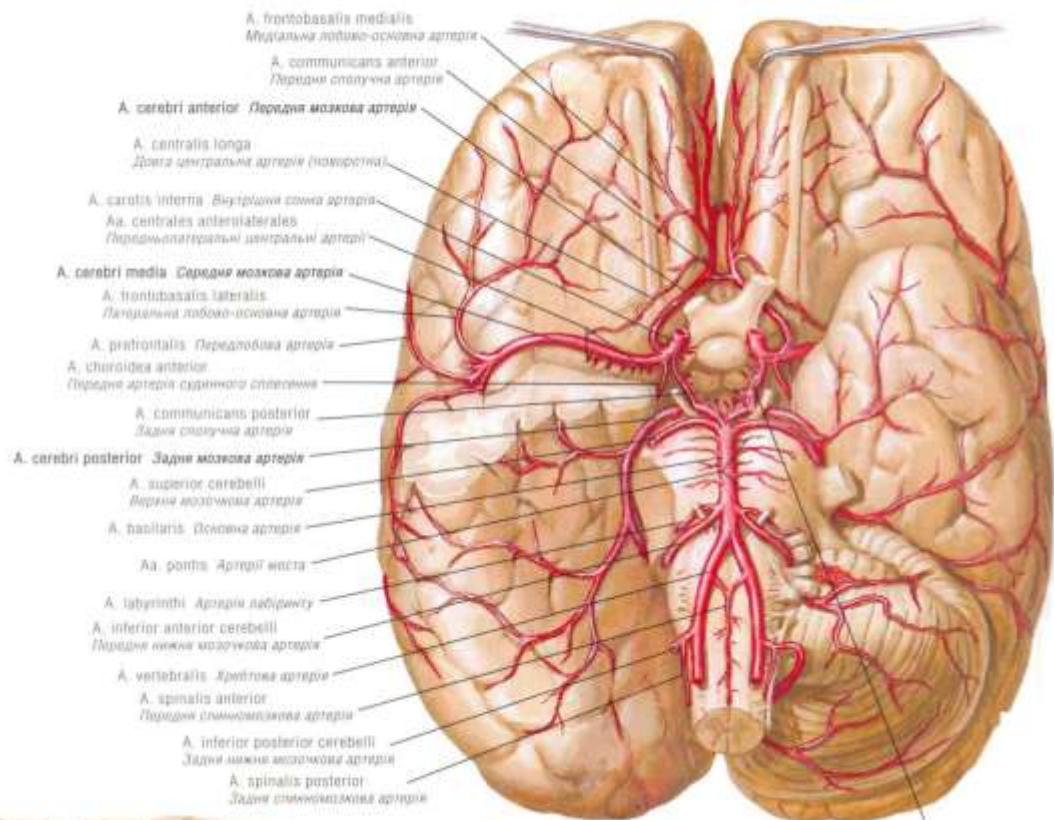
Taskbar (Bottom):

- Microsoft Word
- Telegram
- Zoom
- Microsoft Edge
- File Explorer
- 321

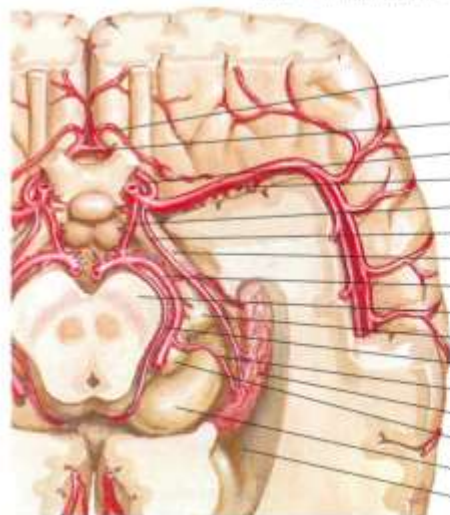
The vessel that provides blood flow bypassing the main pathway is called the collateral vessel, the vas collaterale. The vessel that connects the lateral branches of one arterial trunk or different trunks of one main vessel is called the **anastomotic vessel, (vasa anastomotica)**. In accordance with this, there are:

- 1) intrasystem anastomoses (for example - Zakharchenko-Wallenberg circle);
- 2) intersystem anastomoses (for example - Vilisian circle).

Артерії головного мозку: вигляд знизу



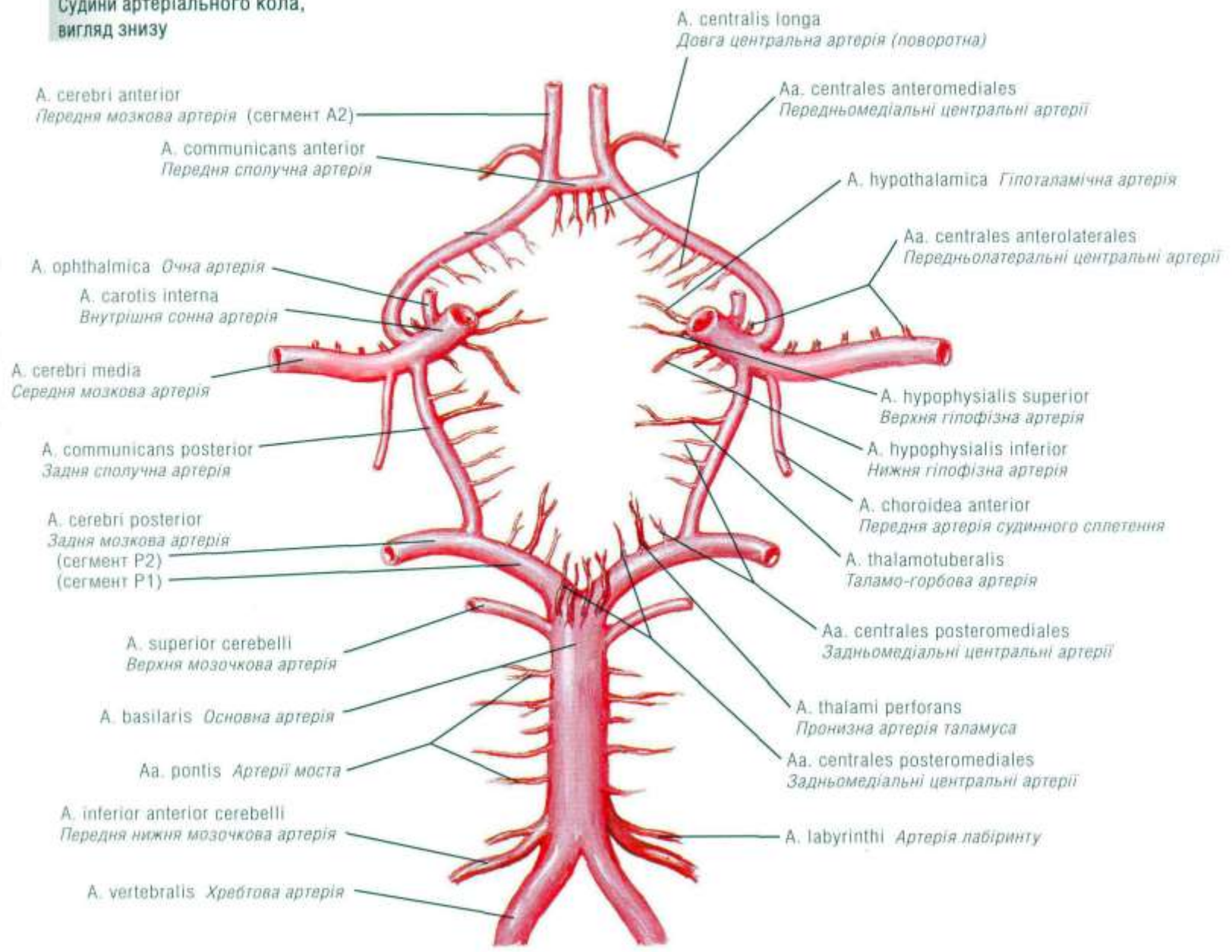
Circulus arteriosus cerebri
 Артеріальне коло великого мозку (Вілізія)



A. centralis longa
 Довга центральна артерія (поворотна)
A. communicans anterior Передня сполучна артерія
A. cerebri anterior Передня мозкова артерія
A. cerebri media Середня мозкова артерія
A. communicans posterior Задня сполучна артерія
A. choroidea anterior Передня артерія судинного сплетіння
Tractus opticus Зоровий тракт
A. cerebri posterior Задня мозкова артерія
Crus cerebri Ніжка мозку
Corpus geniculatum laterale Латеральне колінчасте тіло
Ramus choroideus posterior medialis Задня медіальна гілка судинного сплетіння
Ramus choroideus posterior lateralis Задня латеральна гілка судинного сплетіння
Plexus choroideus ventriculi lateralis Судинне сплетіння латерального шлуночка
Corpus geniculatum mediale Медіальне колінчасте тіло
Pulvinar thalami Подушка таламуса
Ventriculus lateralis Латеральний шлуночок

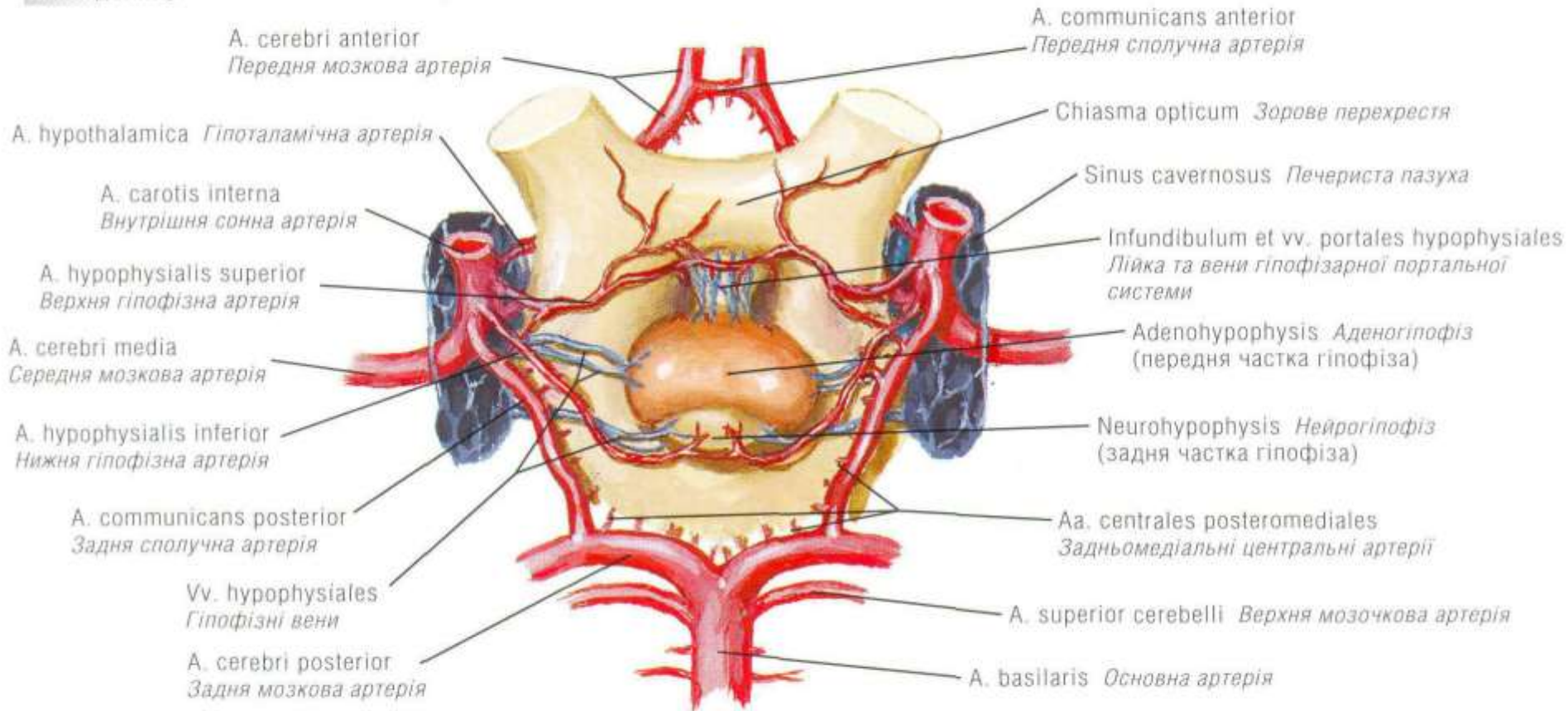
Артеріальне коло великого мозку (Вілізія)

Судини артеріального кола,
вигляд знизу

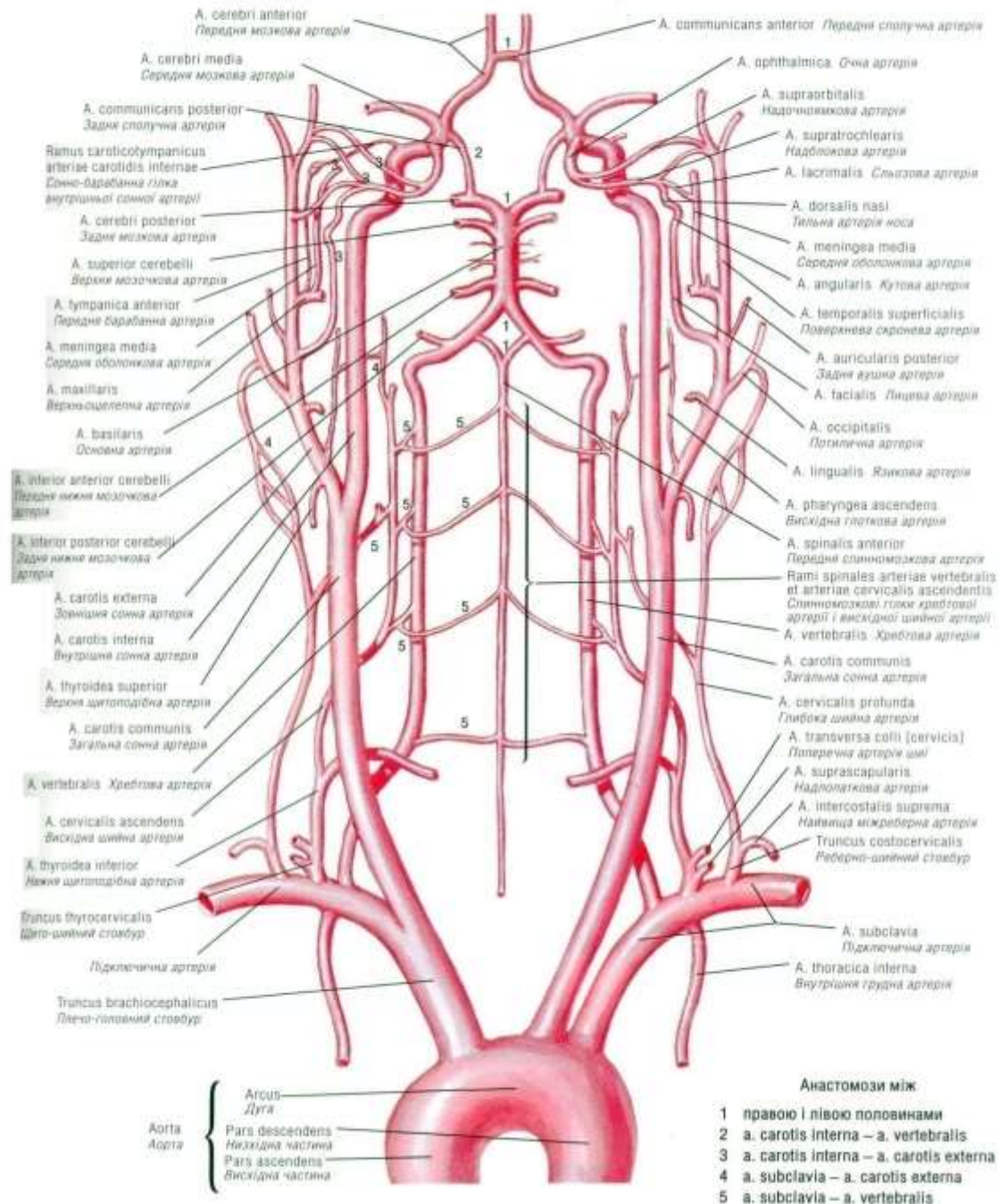


Артеріальне коло великого мозку (Вілізія)

Судини *in situ*,
вигляд знизу

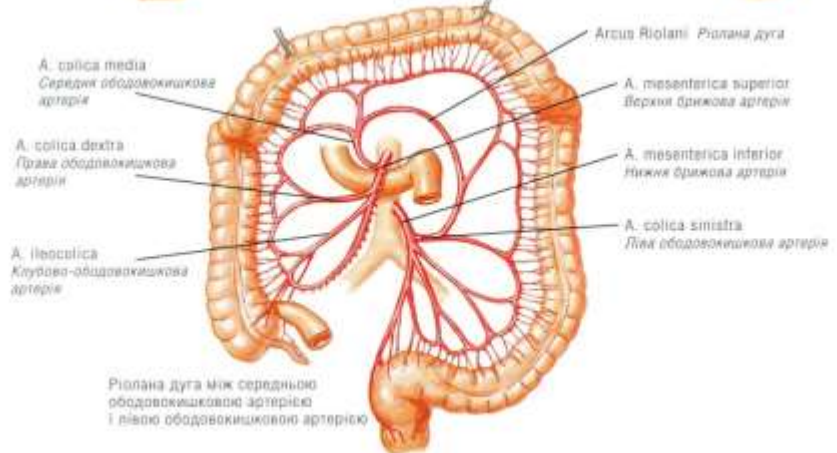
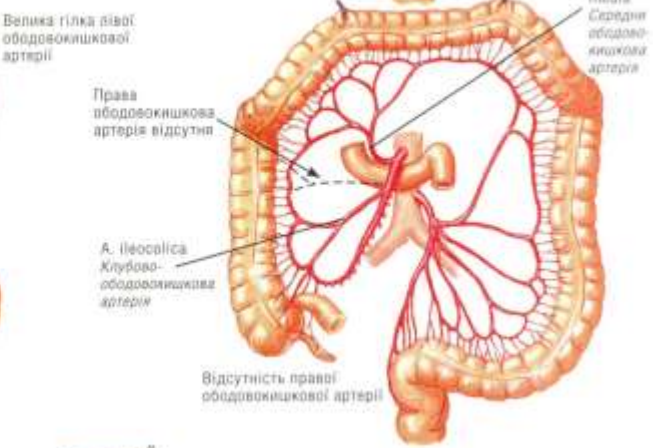
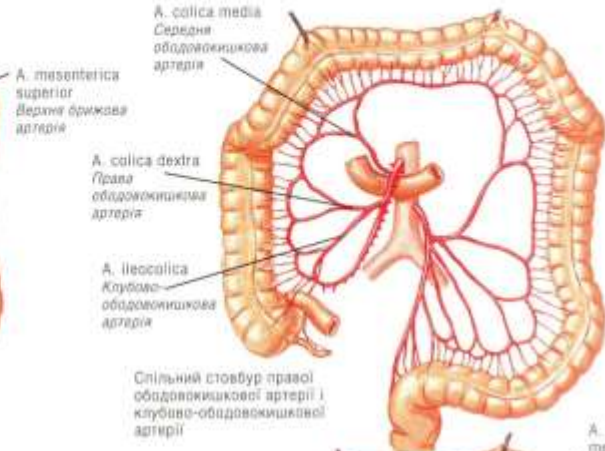
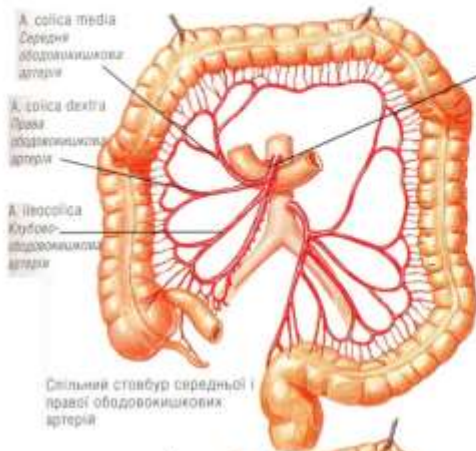


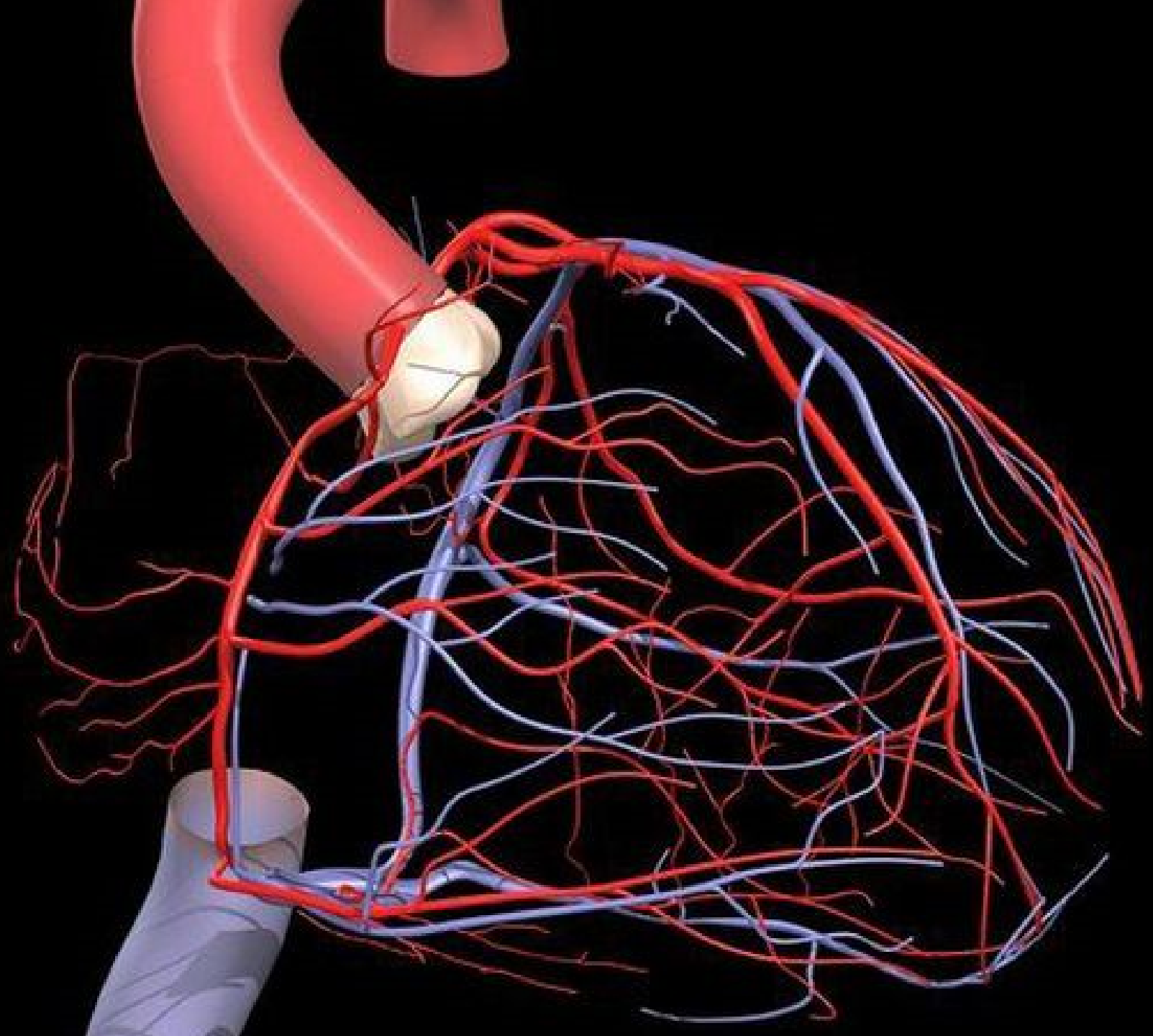
Артерії головного мозку: схема



Arteries and veins are very variable with structure, which should be considered in the clinic.

Варіанти ободовокишкових артерій (arteriae colicae)







Medulla spinalis, vertebrae cervicales

A. Vertebralis dexter/

A. carotis communis dexter/

A. carotis communis sinister/

A. Vertebralis sinister/

Musculi, textus, glandulae thyroideae, cinguli membri superioris

Truncus thyrocervicalis dexter/

A. subclavia dexra /

Truncus brachiocephalicus/

A. subclavia sinistra /

Truncus thyrocervicalis sinister/

M. pectoralis, m. axillaris

A. Axillaris dexter/

Glandula mammaria, pericardium

A. thoracicae internae dexter/

Arcus aortae /

A. thoracicae internae sinister/

A. Axillaris sinister/

Brachii et cubitus

A. Brachialis dexter/

A. Brachialis sinister/

Margo antebrachii lateralis

A. Radialis dexter/

A. Radialis dexter/

Margo antebrachii ulnaris

Ventriculus sinister /

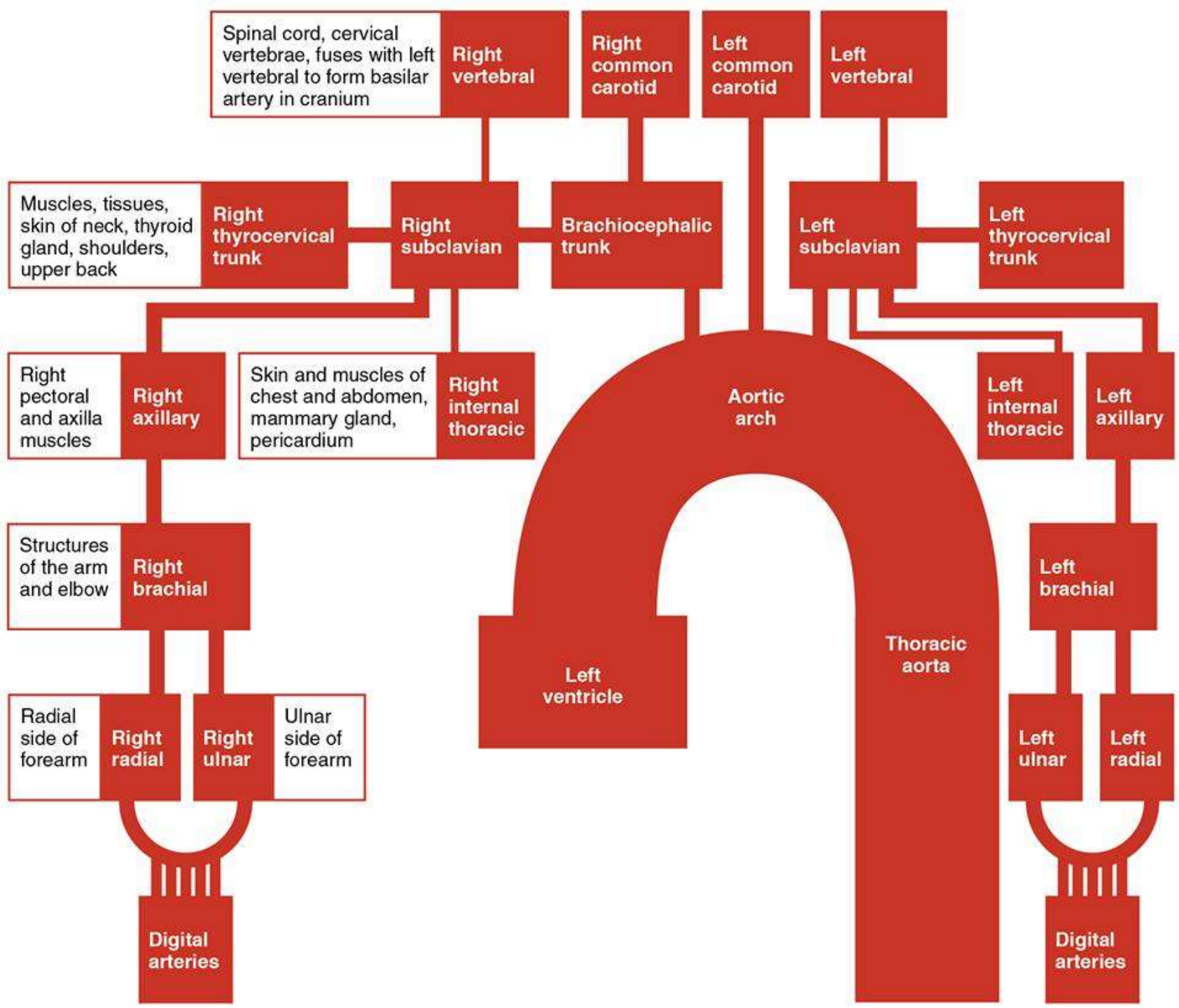
Aorta thoracica /

A. Ulnaris sinister/

A. Radialis sinister/

Aa. digitales/

Aa. digitales/



Rami viscerales /

Tractus
respiratorii

A. Bronchialis/

Aorta
thoracica/

Pericardium

A. Pericardiaci/

Rami parietales /

A. Intercostalis /

Medulla
spinalis,vertebra
e, musculi dorsi,
cutis

Oesophageus

A. Esophagealis /

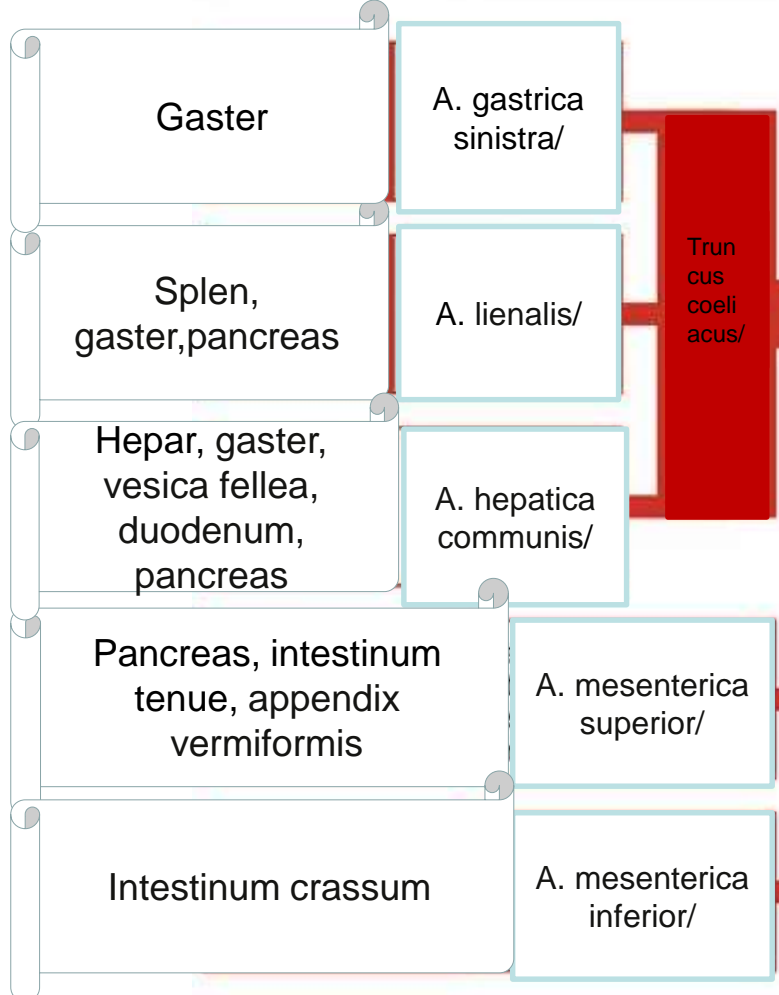
A. phrenicae
superiores/

Medulla
spinalis,vertebrae,
musculi dorsi,
cutis, diaphragma

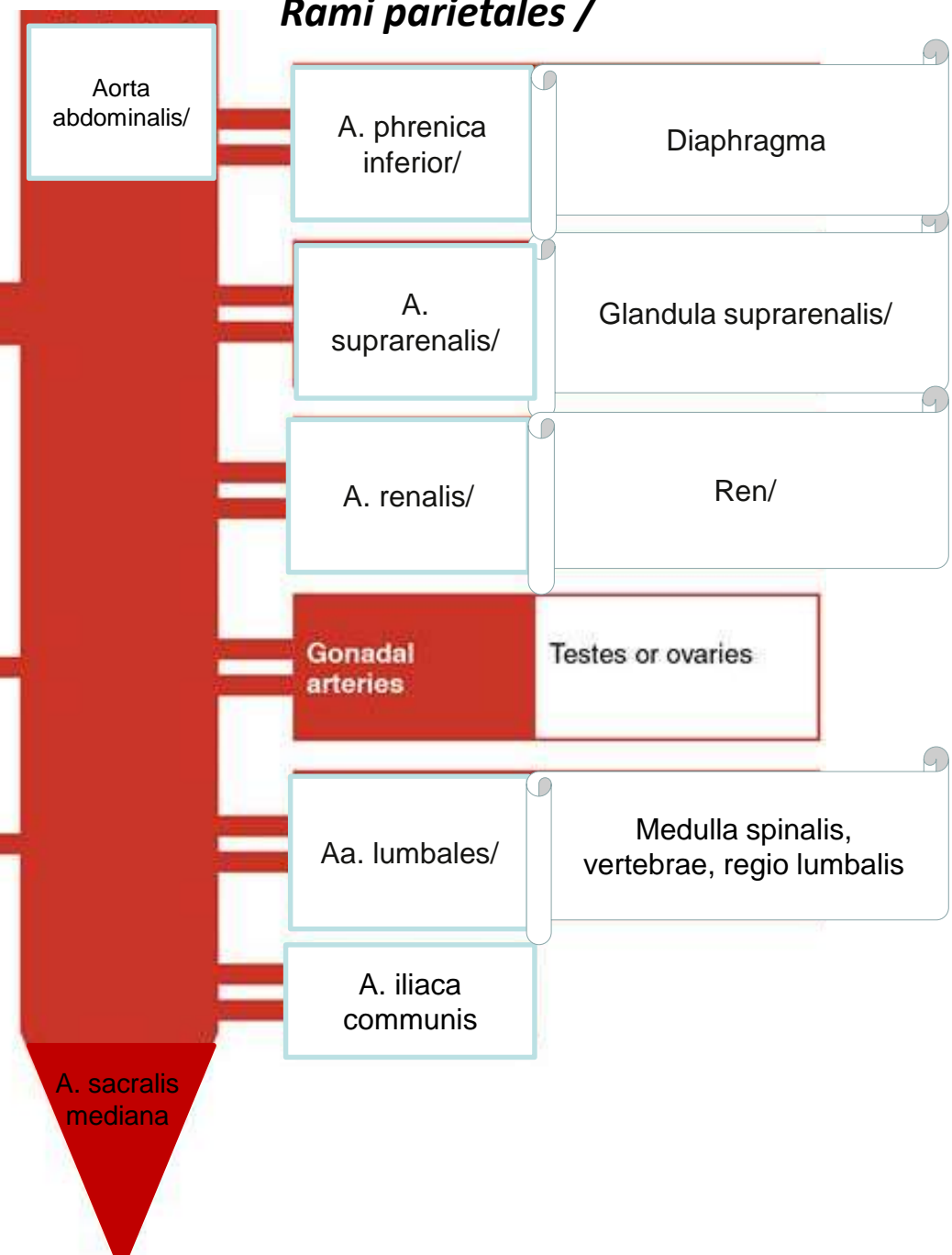
Mediastinalis

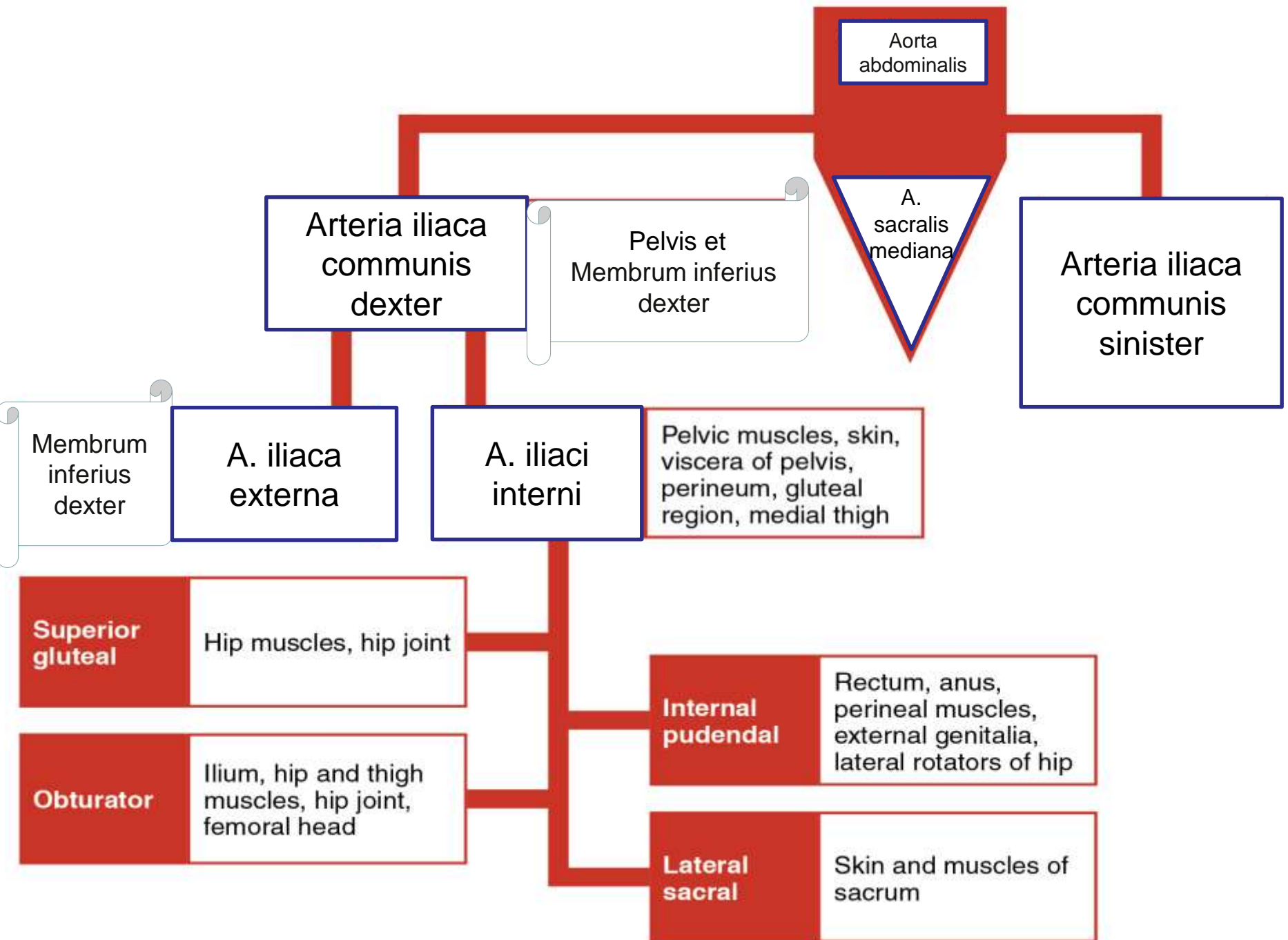
A. Mediastinalis/





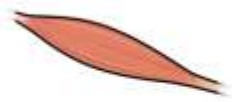




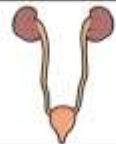
Rami viscerales /



Rami parietales /





System	Role of Circulatory System
Digestive 	Absorbs nutrients and water; delivers nutrients (except most lipids) to liver for processing by hepatic portal vein; provides nutrients essential for hematopoiesis and building hemoglobin
Endocrine 	Delivers hormones: atrial natriuretic hormone (peptide) secreted by the heart atrial cells to help regulate blood volumes and pressures; epinephrine, ANH, angiotensin II, ADH, and thyroxine to help regulate blood pressure; estrogen to promote vascular health in women and men
Integumentary 	Carries clotting factors, platelets, and white blood cells for hemostasis, fighting infection, and repairing damage; regulates temperature by controlling blood flow to the surface, where heat can be dissipated; provides some coloration of integument; acts as a blood reservoir
Lymphatic 	Transports various white blood cells, including those produced by lymphatic tissue, and immunoglobulins (antibodies) throughout the body to maintain health; carries excess tissue fluid not able to be reabsorbed by the vascular capillaries back to the lymphatic system for processing
Muscular 	Provides nutrients and oxygen for contraction; removes lactic acid and distributes heat generated by contraction; muscular pumps aid in venous return; exercise contributes to cardiovascular health and helps to prevent atherosclerosis
Nervous 	Produces cerebrospinal fluid (CSF) within choroid plexuses; contributes to blood-brain barrier; cardiac and vasomotor centers regulate cardiac output and blood flow through vessels via autonomic system
Reproductive 	Aids in erection of genitalia in both sexes during sexual arousal; transports gonadotropic hormones that regulate reproductive functions
Respiratory 	Provides blood for critical exchange of gases to carry oxygen needed for metabolic reactions and carbon dioxide generated as byproducts of these processes
Skeletal 	Provides calcium, phosphate, and other minerals critical for bone matrix; transports hormones regulating buildup and absorption of matrix including growth hormone (somatotropin), thyroid hormone, calcitonins, and parathyroid hormone; erythropoietin stimulates myeloid cell hematopoiesis; some level of protection for select vessels by bony structures
Urinary 	Delivers 20% of resting circulation to kidneys for filtering, reabsorption of useful products, and secretion of excesses; regulates blood volume and pressure by regulating fluid loss in the form of urine and by releasing the enzyme renin that is essential in the renin-angiotensin-aldosterone mechanism

