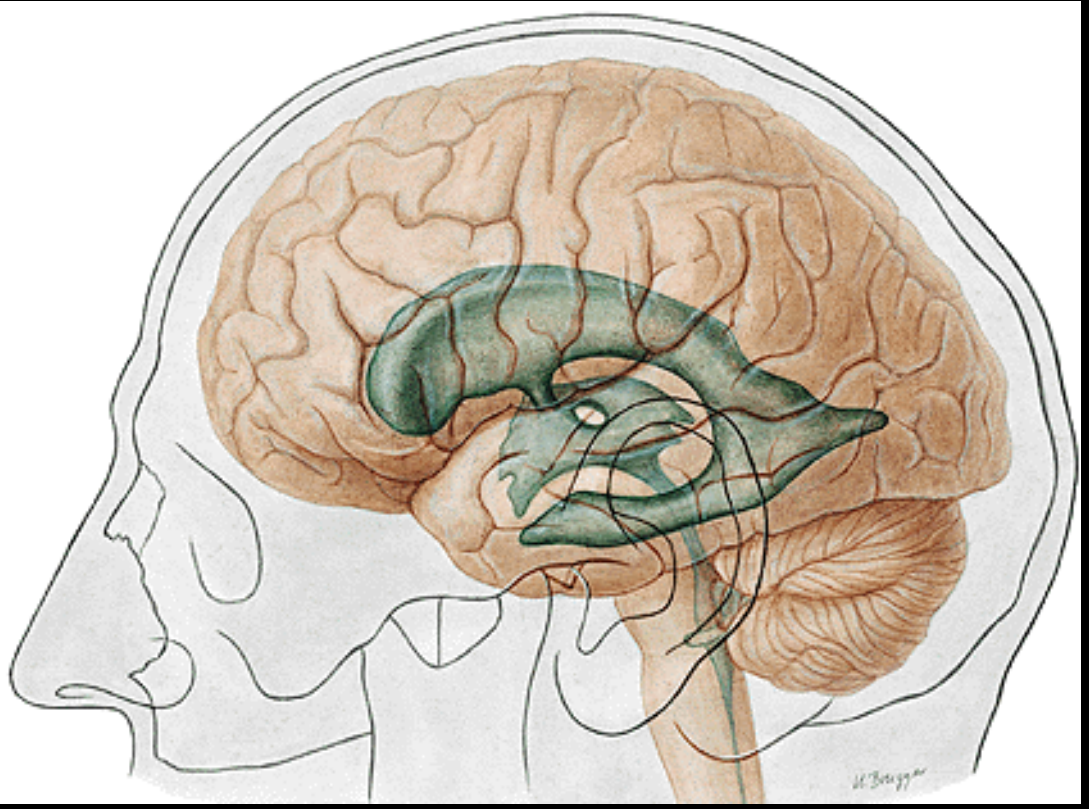
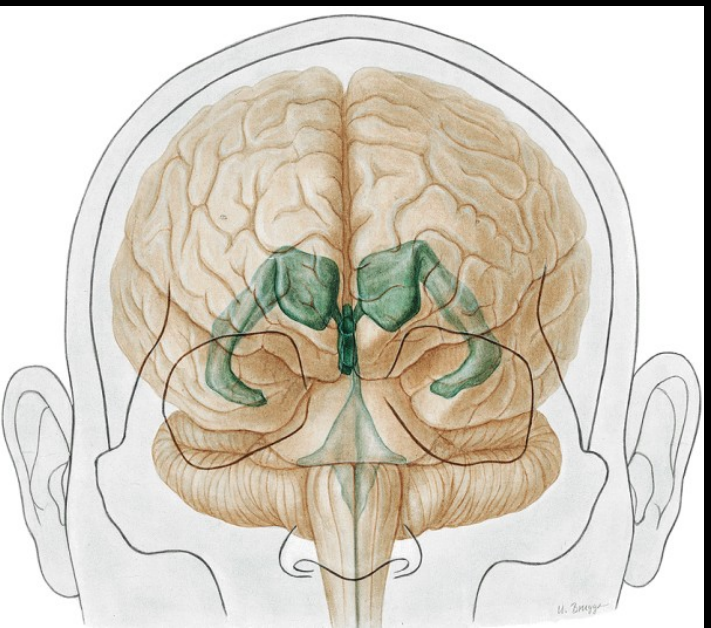
VENTRICLES OF THE CNS





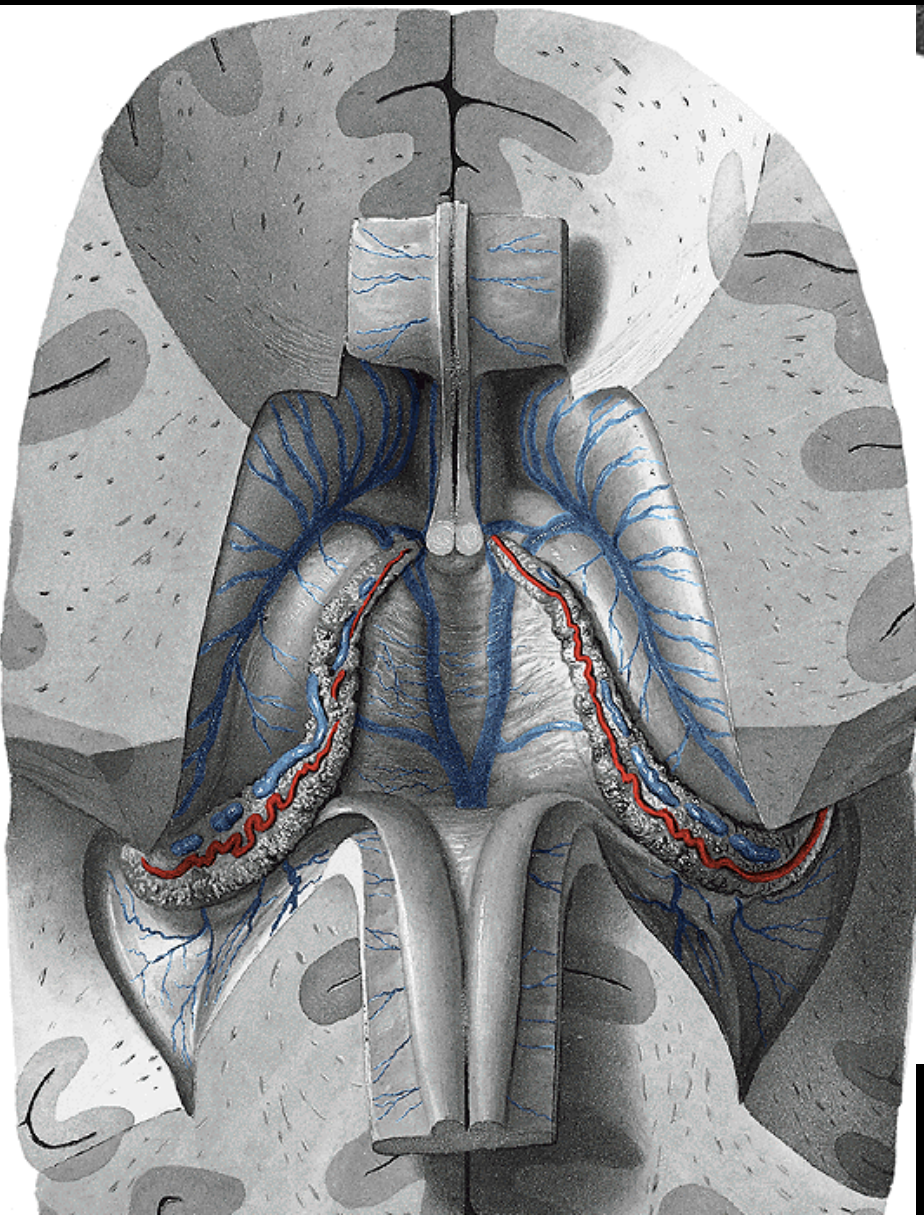
Lateral ventricle (ventriculus lateralis)

Third ventricle (ventriculus tertius)

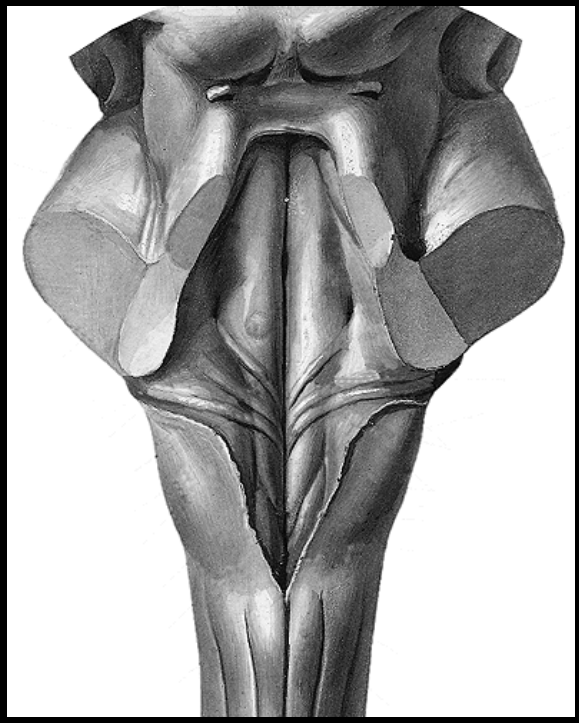
Fourth ventricle (ventriculus quartus)

Central canal (canalis centralis)

Choroid plexus

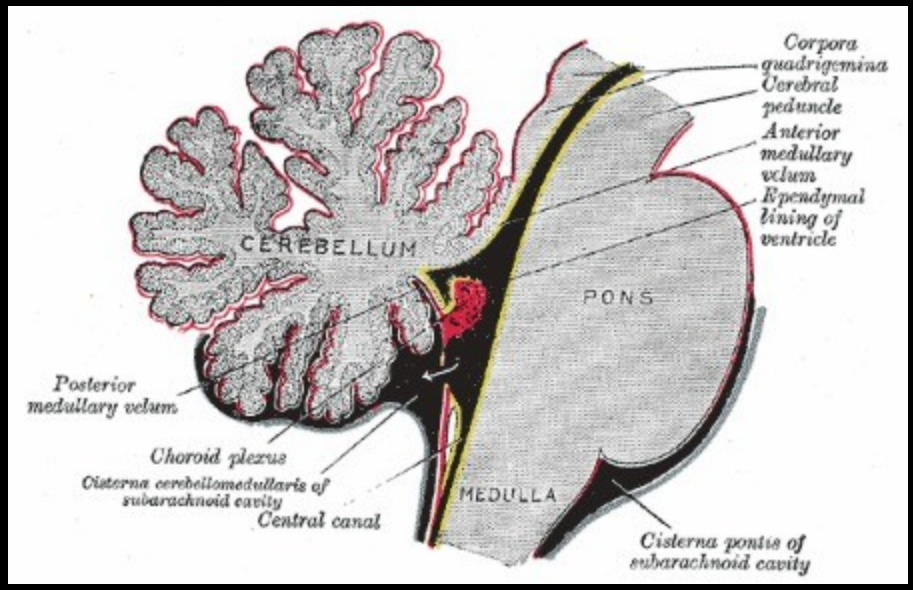


Fourth ventricle



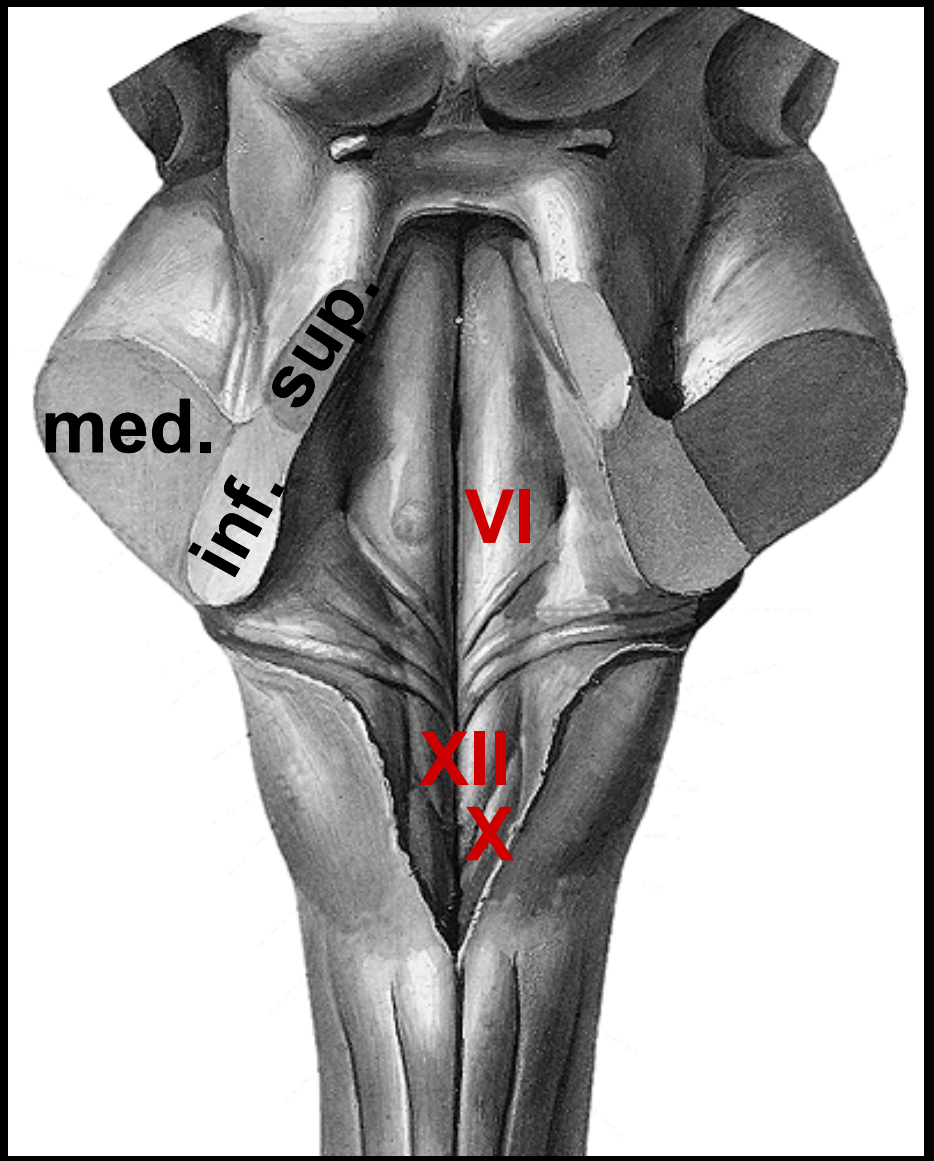
Borders:

Velum medullare sup.+ tela choroidea (fastigium)
Pedunculi cerebellares
Aqueductus cerebri
Canalis centralis



Fourth ventricle

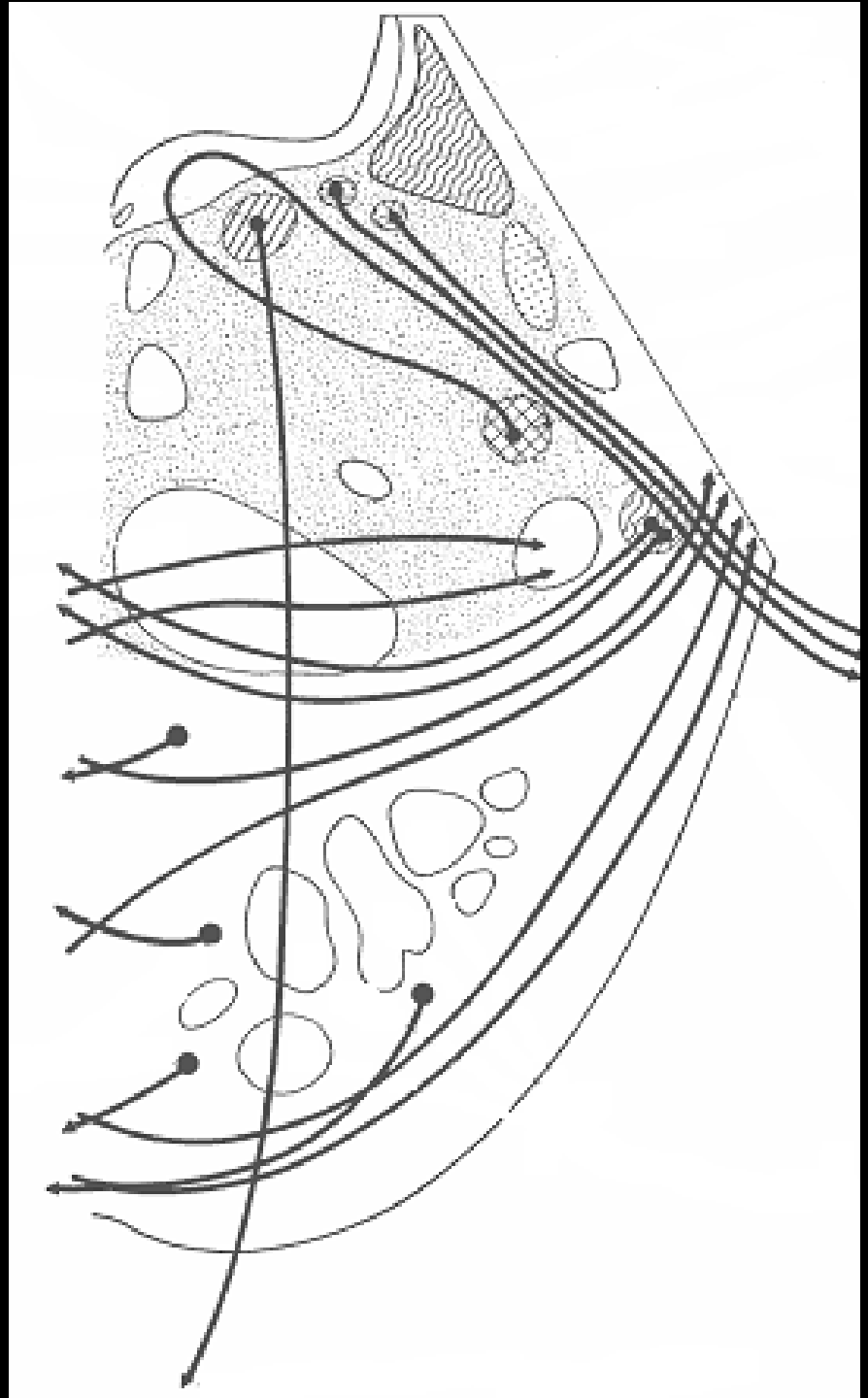
Floor = Fossa rhomboidea



Sulcus medianus
Sulcus limitans
Eminentia medialis
Striae medullares
Pars inferior, media et superior f.r.
Trigonum n. XII
Trigonum n. X

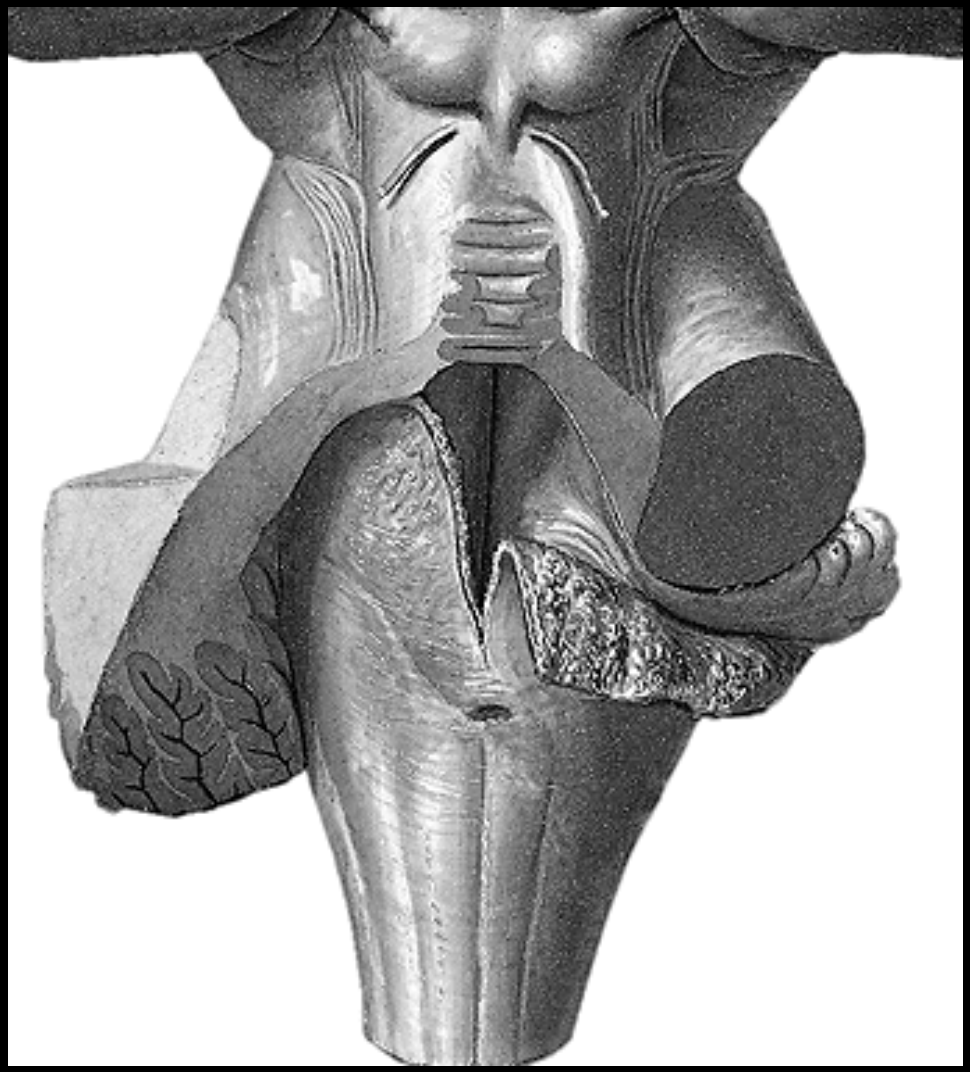
Colliculus facialis (n.VI)

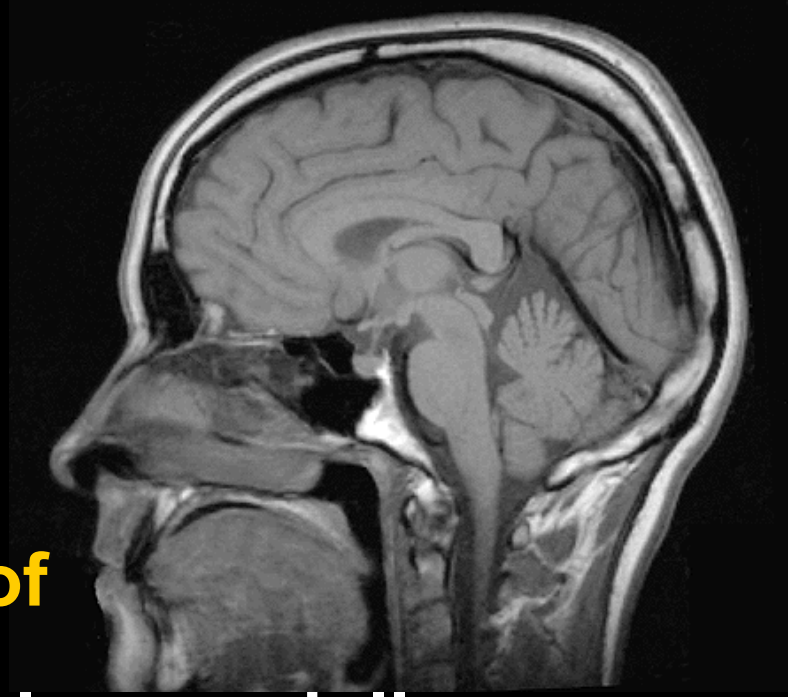
Area vestibularis
Tuberculum acusticum



Colliculus facialis

Fourth ventricle





Roof

Velum medullare sup.

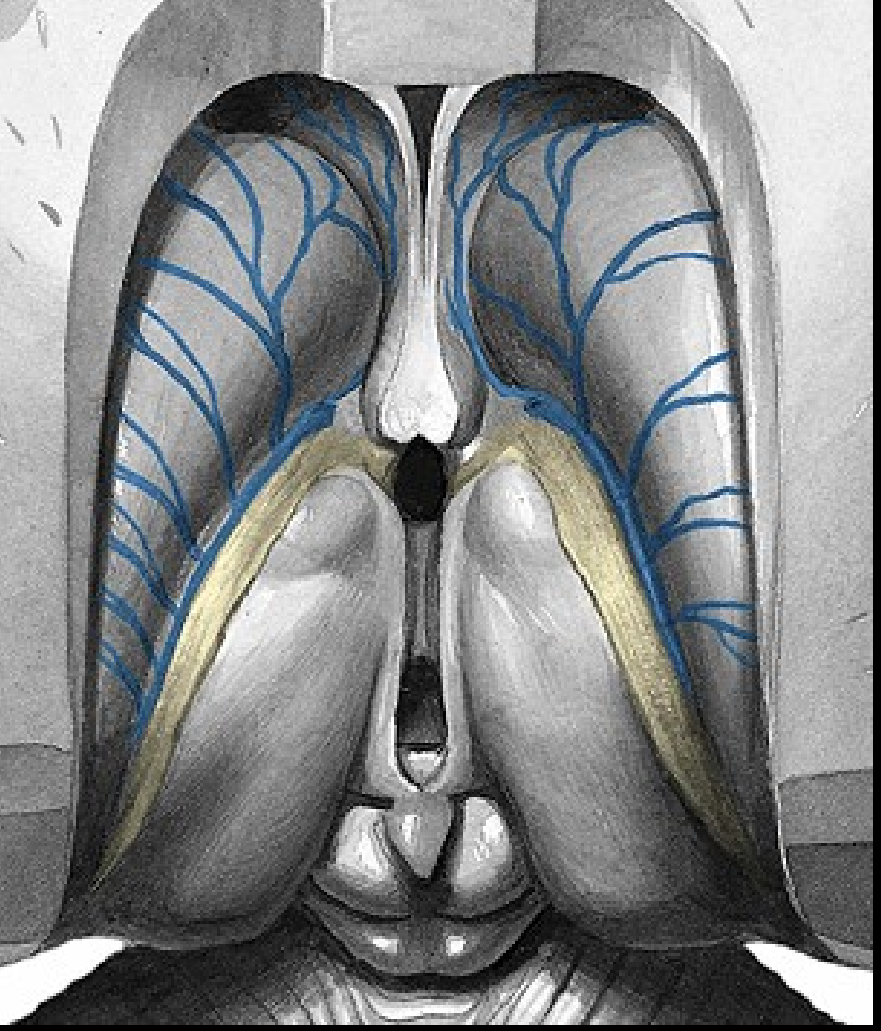
- Fastigium
- Velum medullare inf.

= tela choroidea

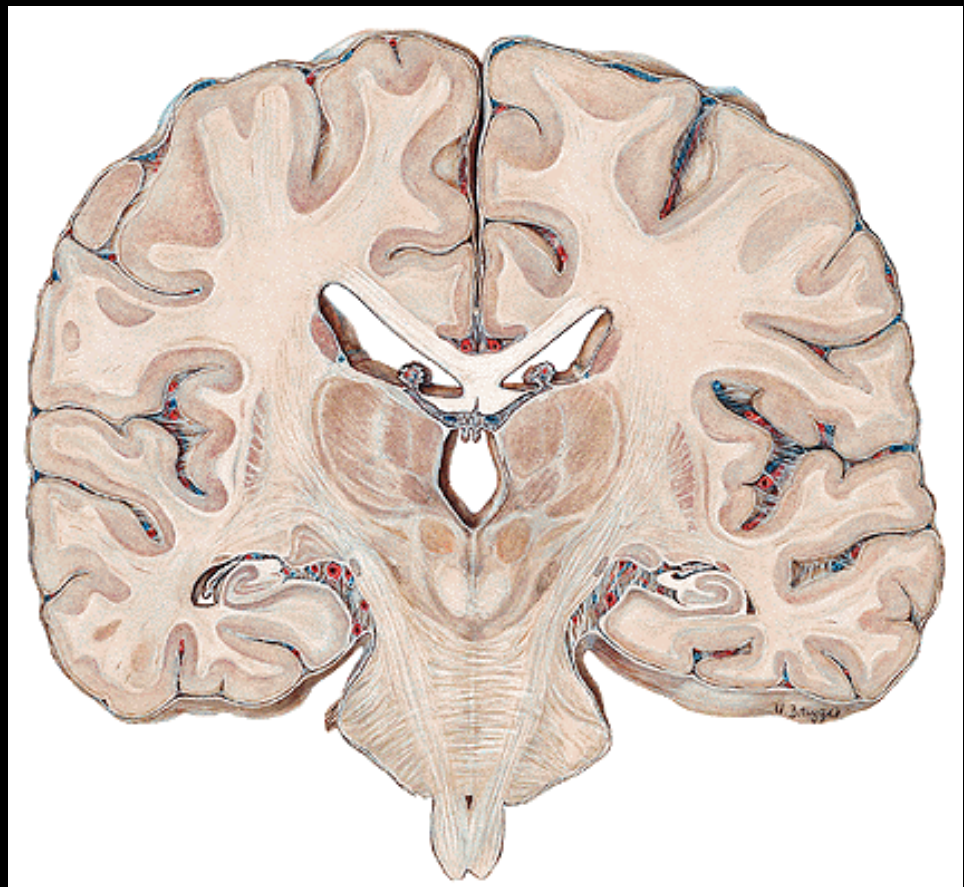
Apertura mediana (of Magendie)

Aperturae laterales (of Luschka)

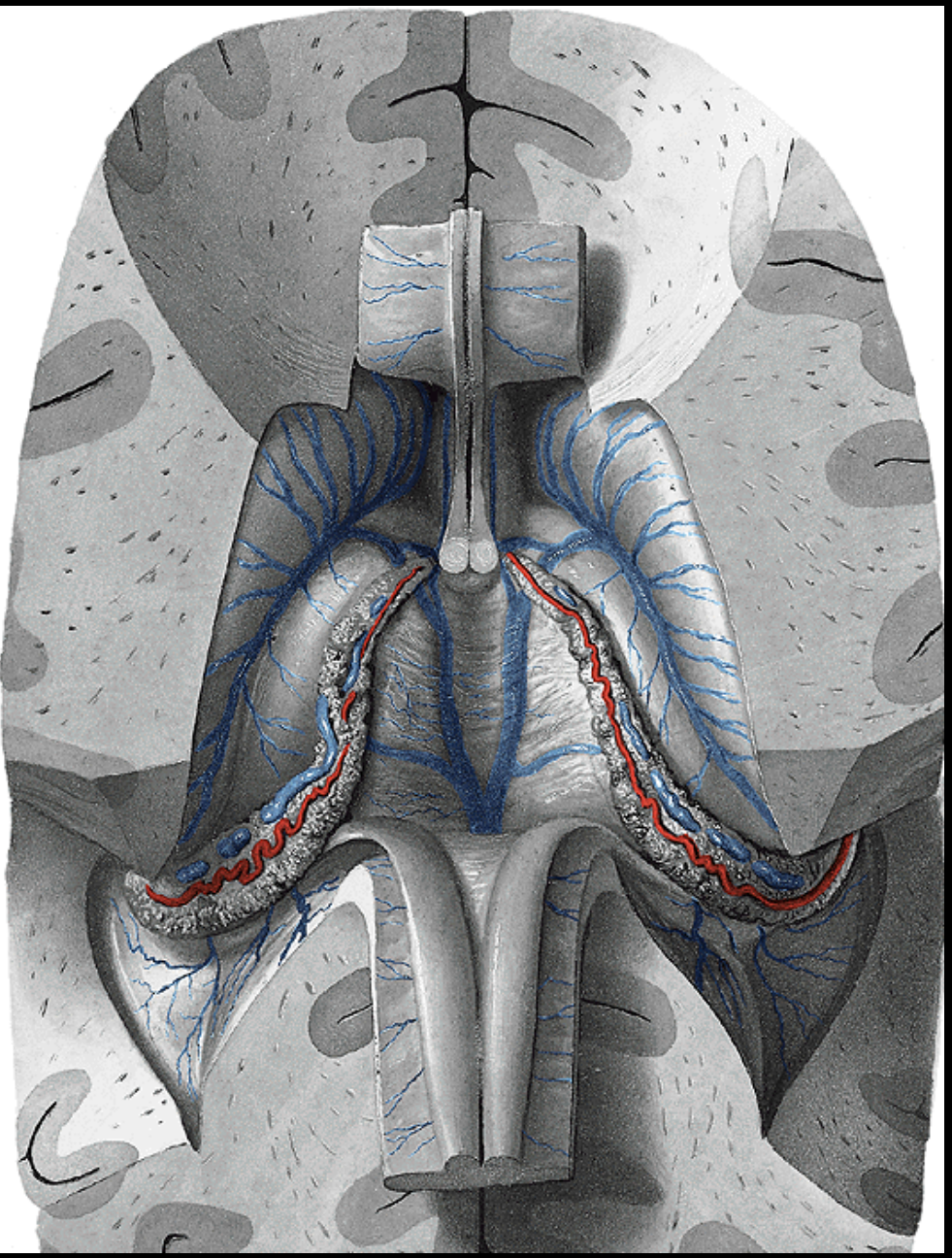
Aqueductus mesencephali – third ventricle



Third ventricle



Adhesio interthalamica



Third ventricle

Tela choroidea v. tertii

Tela choroidea v. lateralis

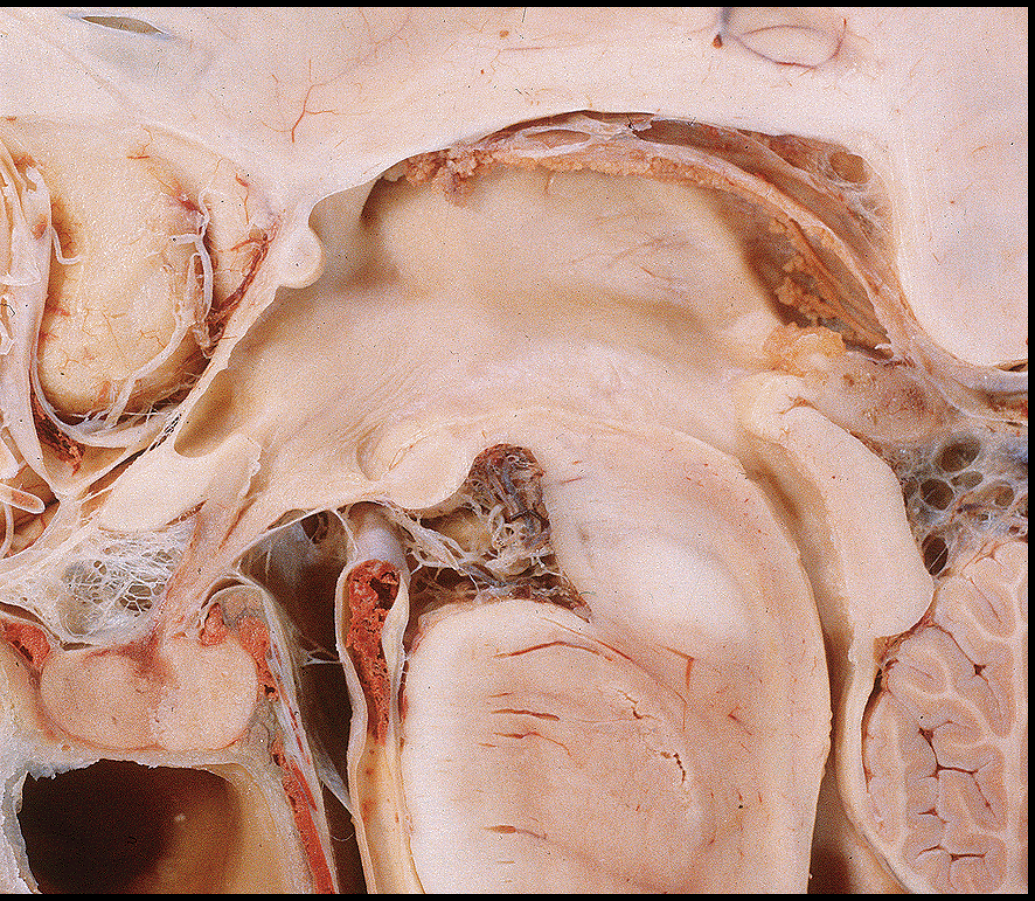
Third ventricle

Superior wall: Tela choroidea v. tertii

Rostral wall:
Columnae fornicis
Commissura ant.
Lamina terminalis

Inferior wall: Chiasma opticum
Infundibulum

Third ventricle



Posterior wall:

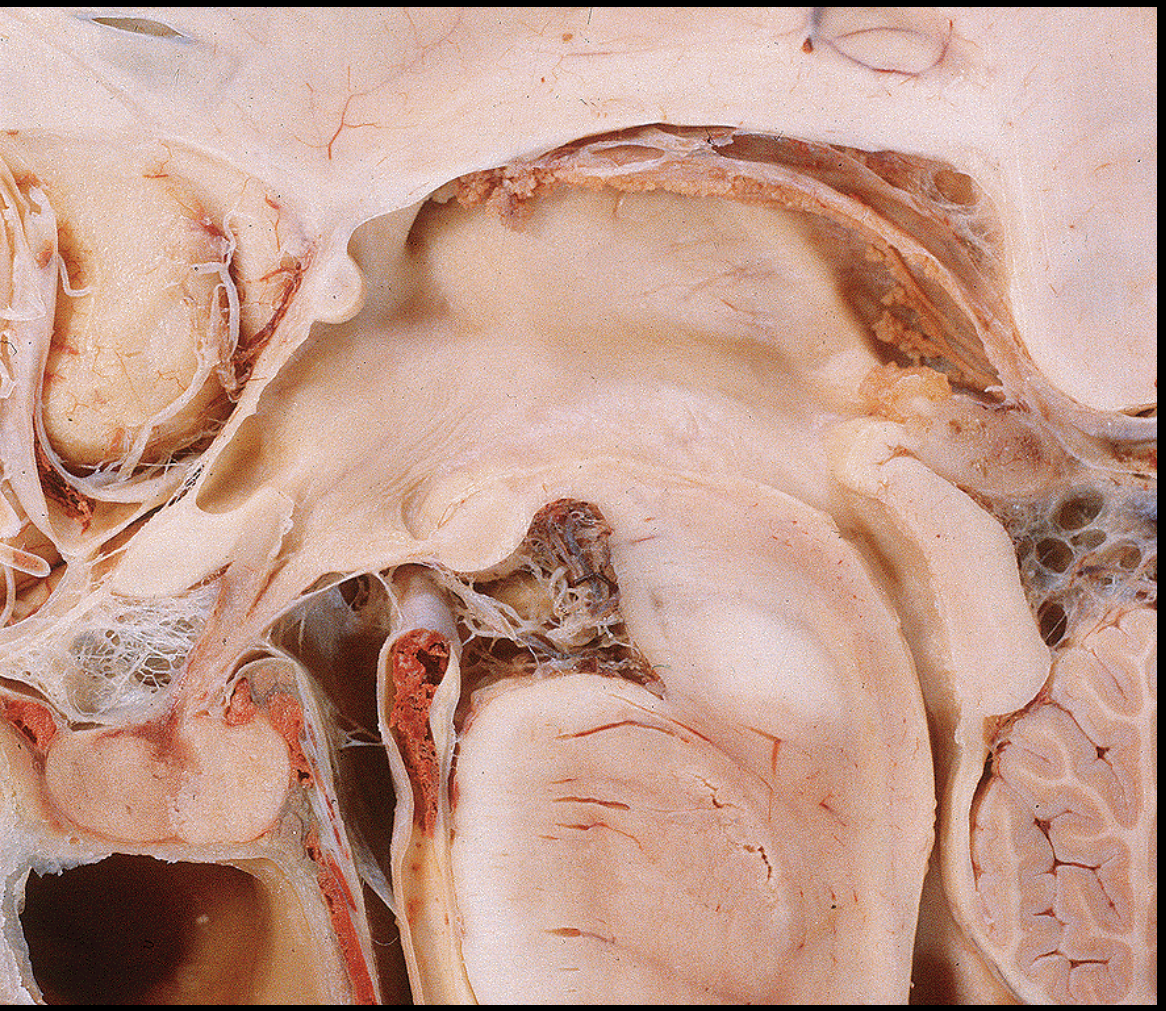
Recessus suprapinealis

Commissura habenularum

Recessus pinealis

Commissura post.

Third ventricle:



Lateral wall:

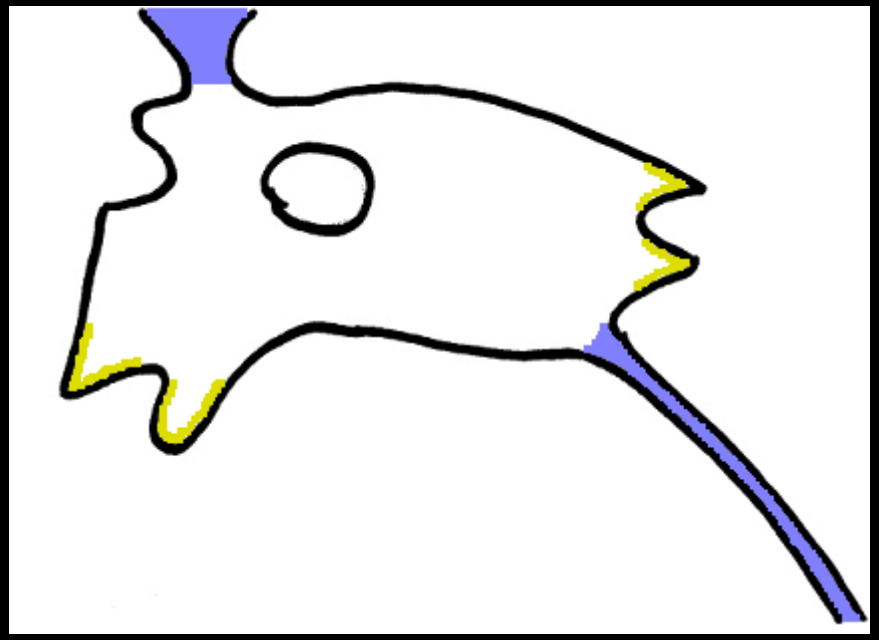
Thalamus

Sulcus
hypothalamicus

Hypothalamus

Third ventricle:

Foramen interventriculare (of Monro)

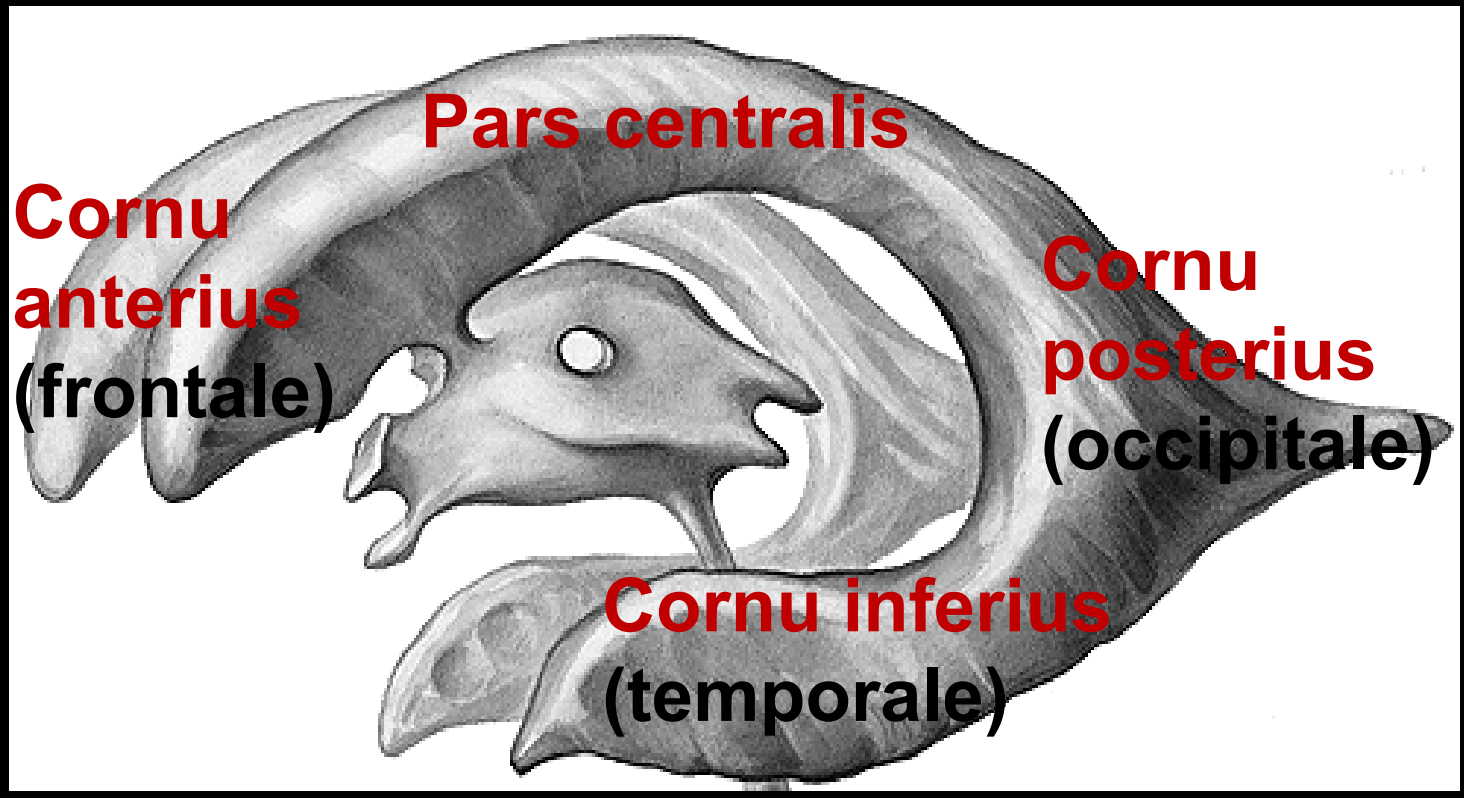


Recessus suprapinealis
Recessus pinealis

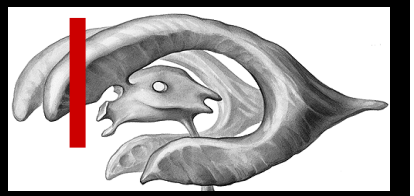
Recessus opticus
Recessus infundibuli

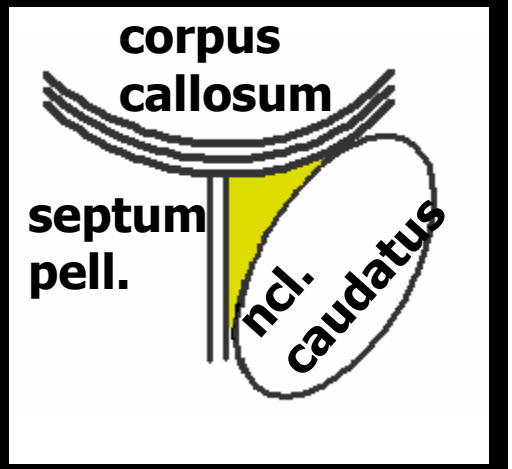
Aqueductus mesencephali
(of Sylvius)

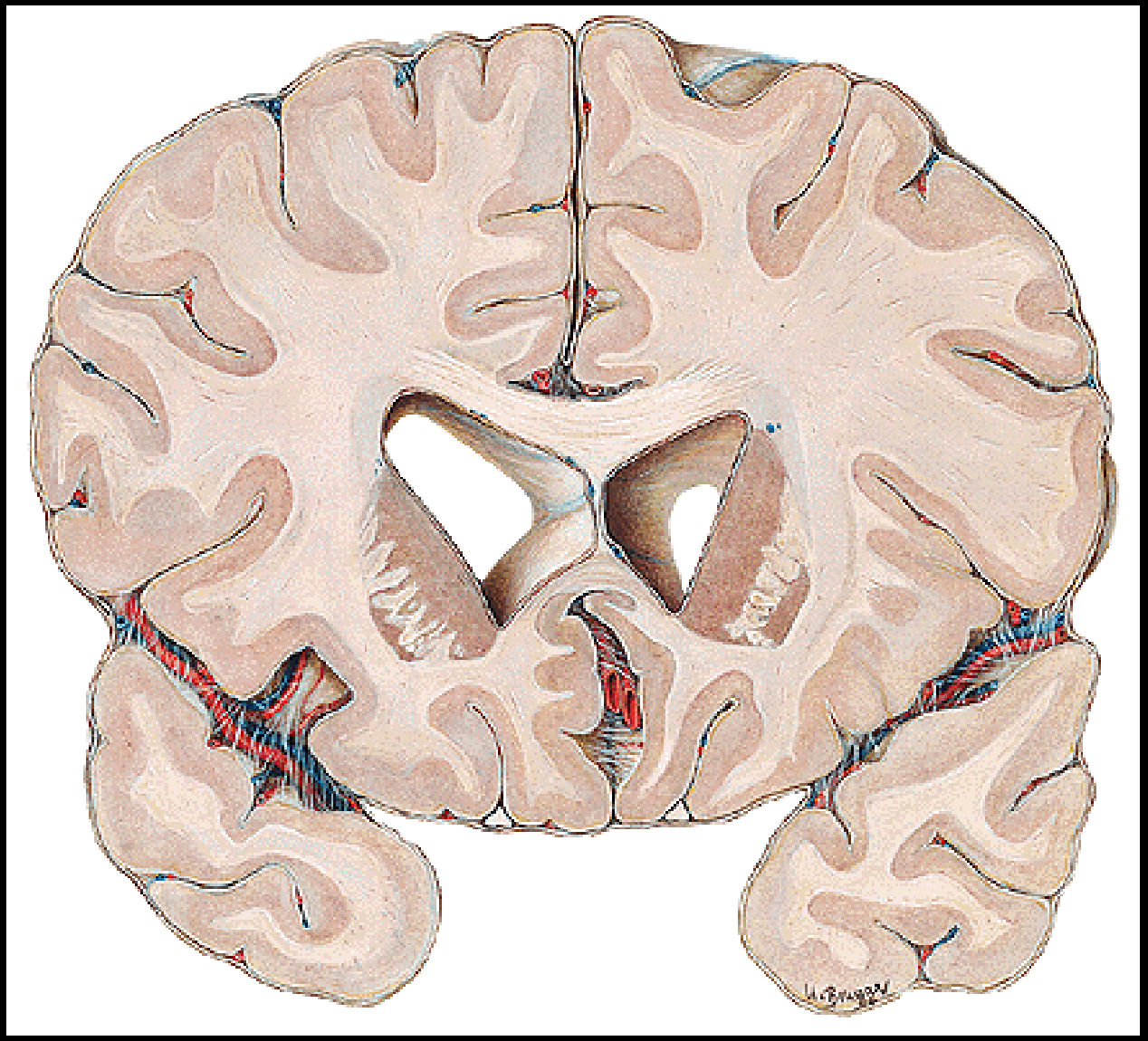
Ventriculus lateralis



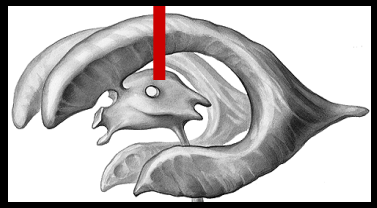
Cornu anterius

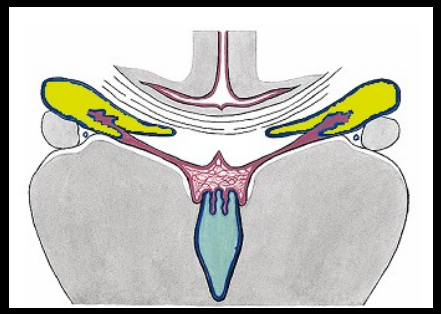


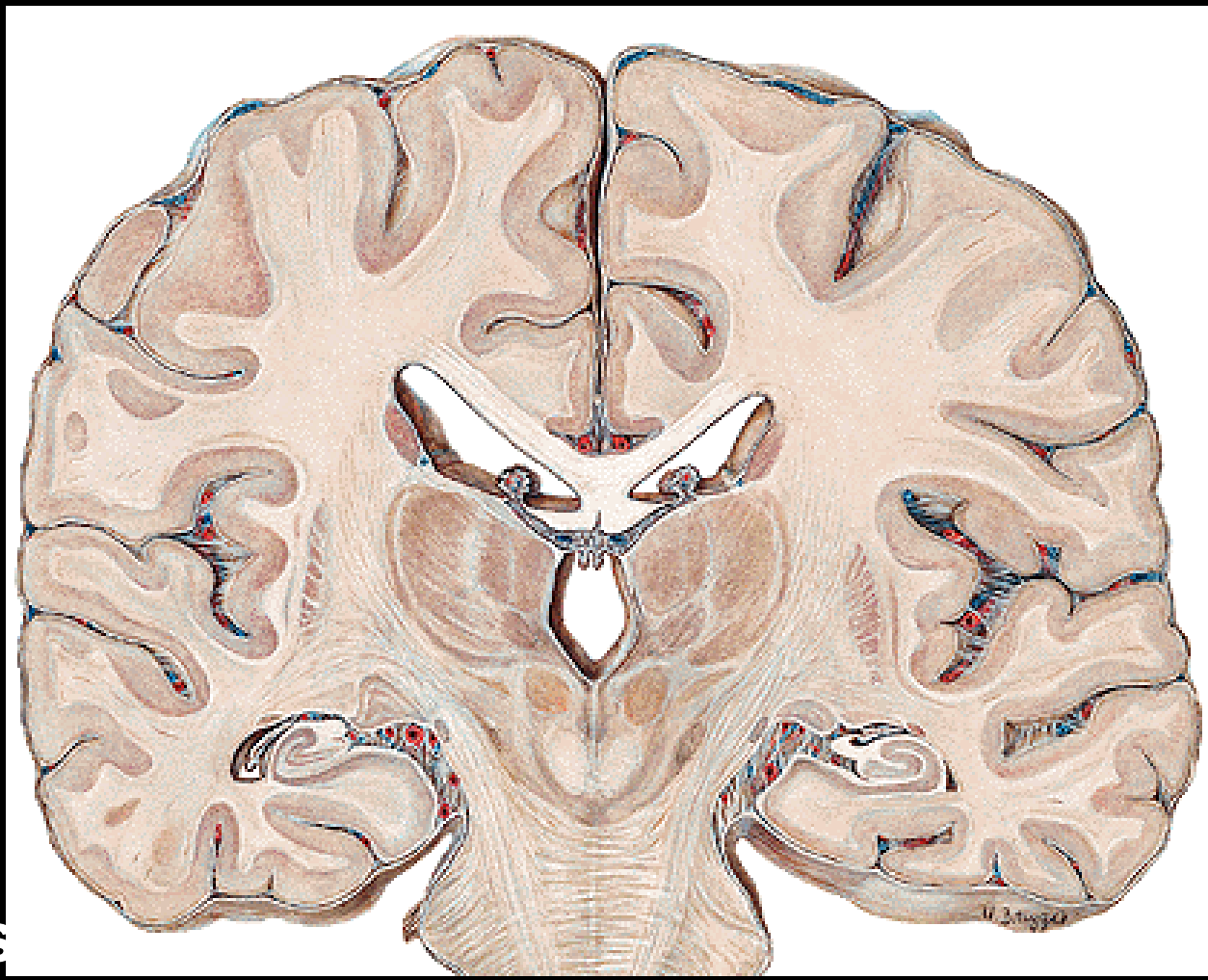




Pars centralis

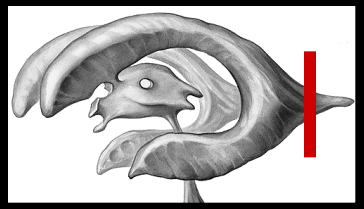




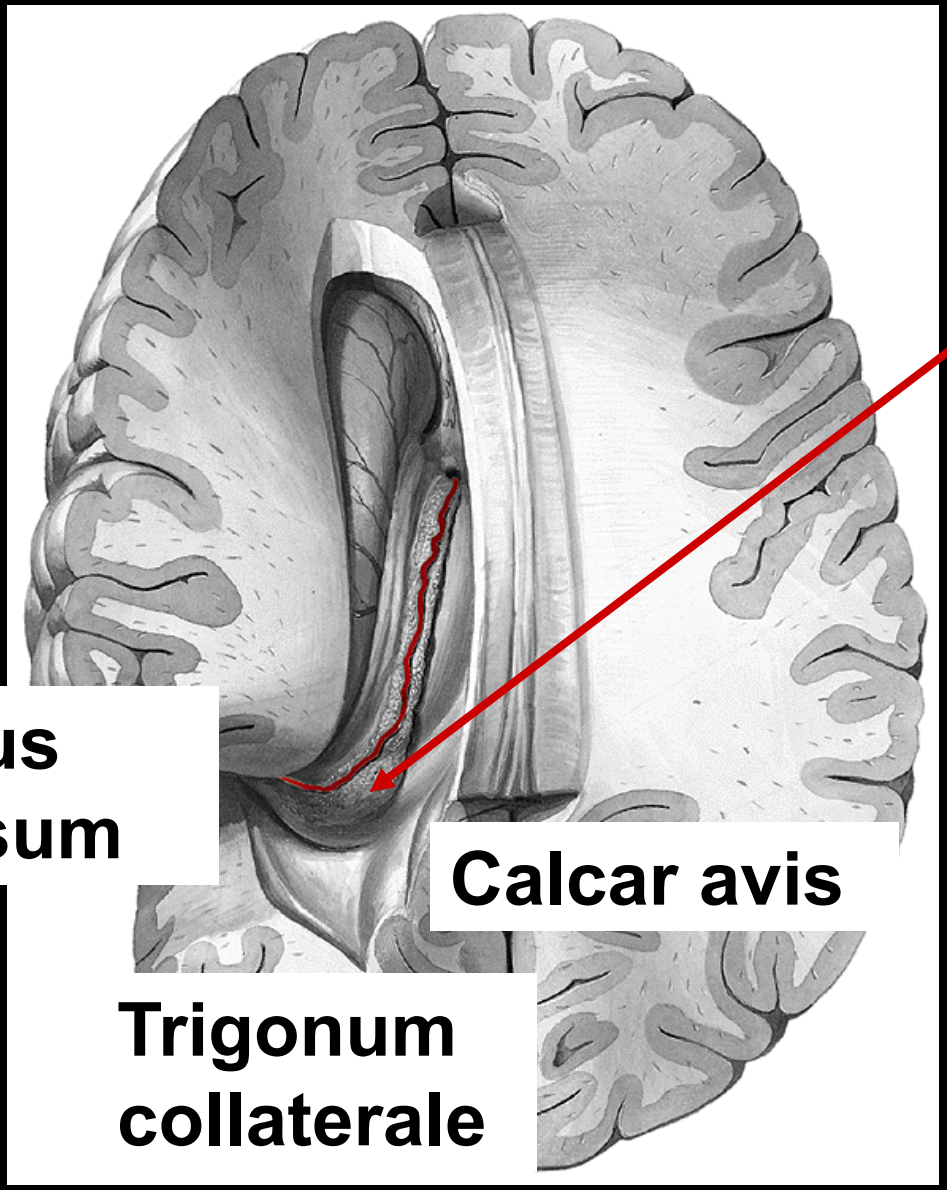


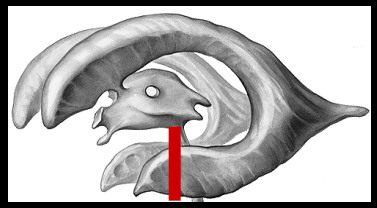
Roof:
Corpus callosum

Floor:
Fornix
Plexus choroideus
Thalamus (lamina affixa)
Stria terminalis
Corpus ncl. caudati



Cornu posterius

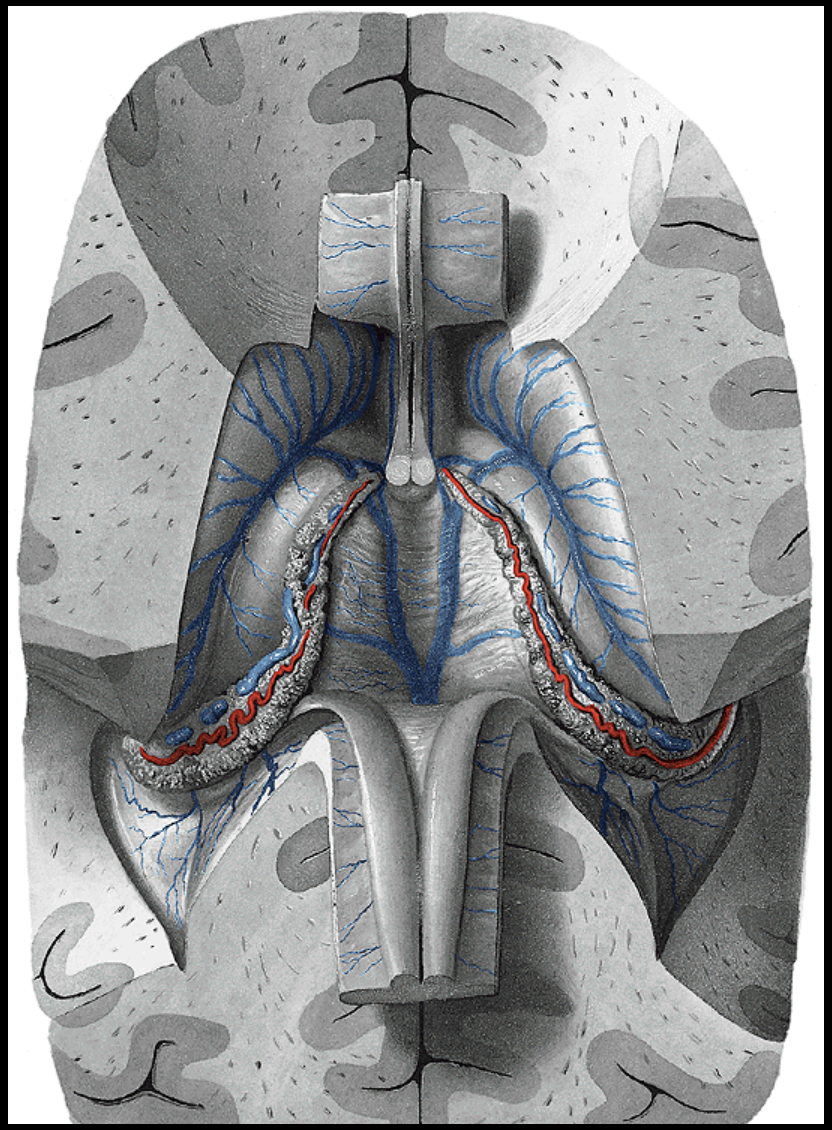


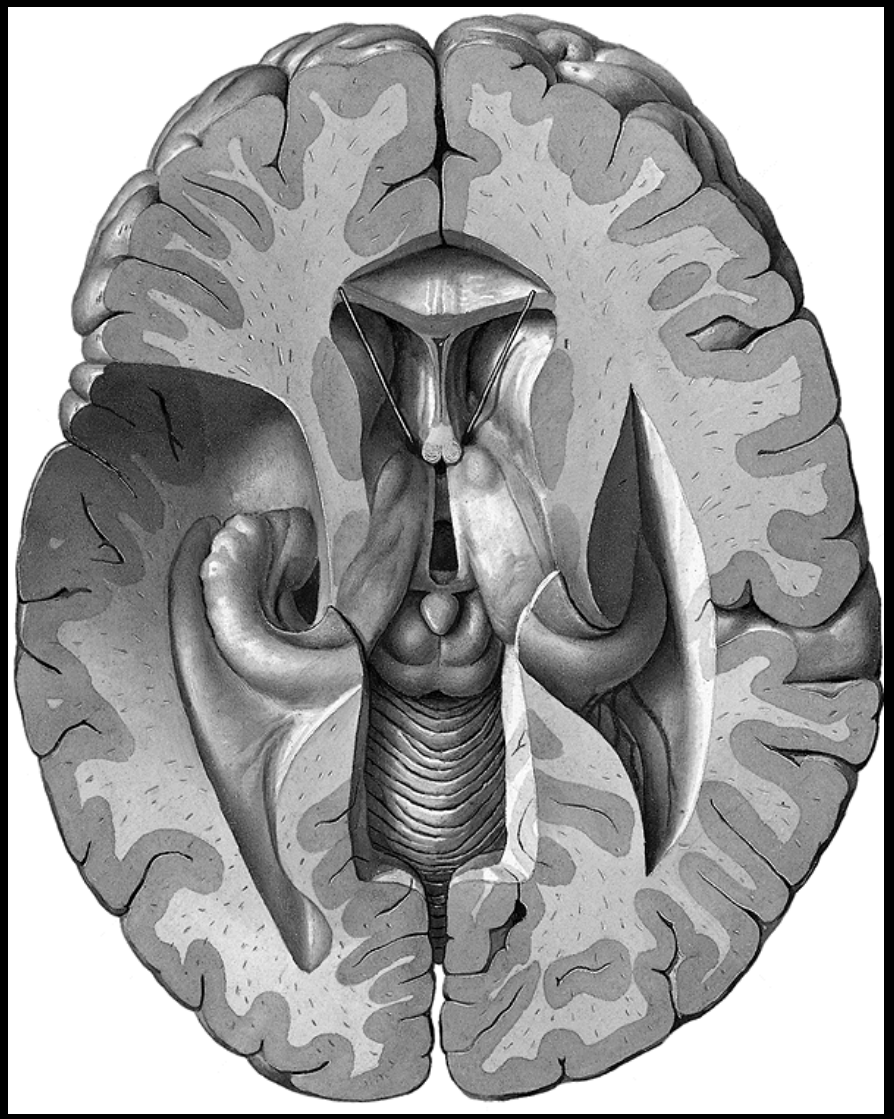


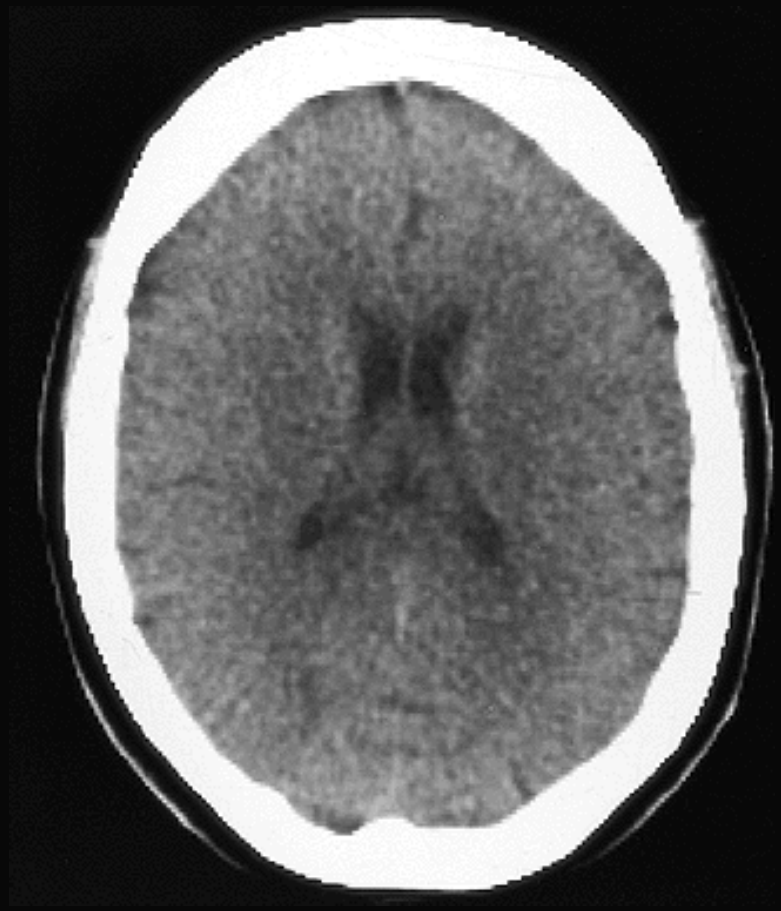
Cornu inferius

Roof:
Stria terminalis
Cauda ncl. caudati
Corpus callosum

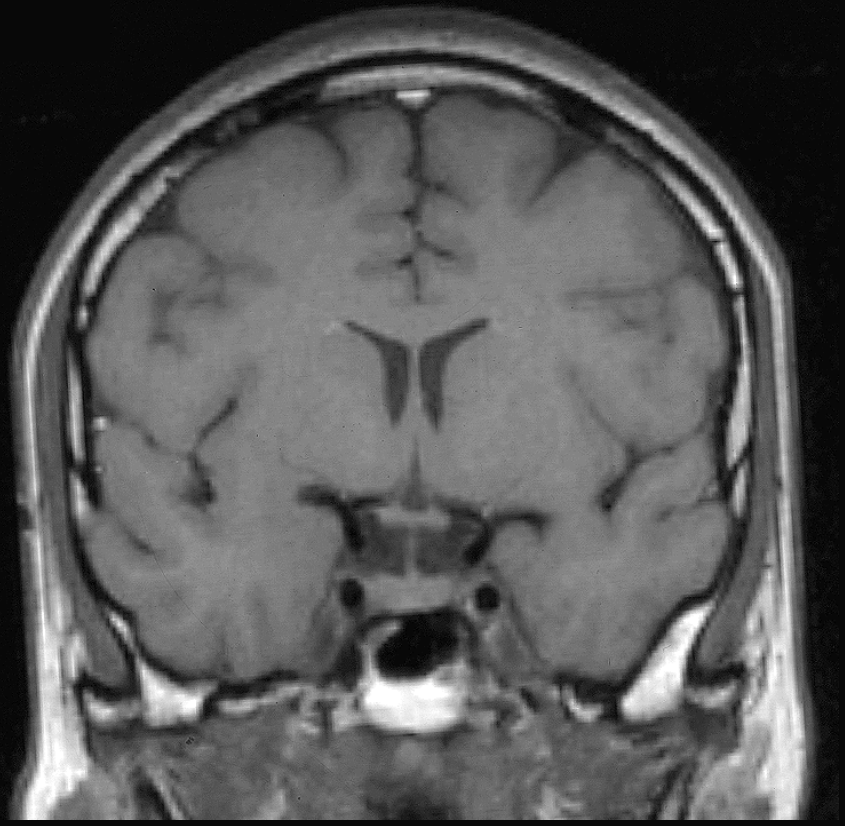
Floor:
Hippocampus
(fimbria hippocampi)
Plexus choroideus
Eminentia collateralis







CT



MRI

MENINGES OF THE CNS

Cranial meninges

Calvaria

Spatium epidurale

Ektomeninx - dura mater: endosteal, meningeal layers (pachymeninx)

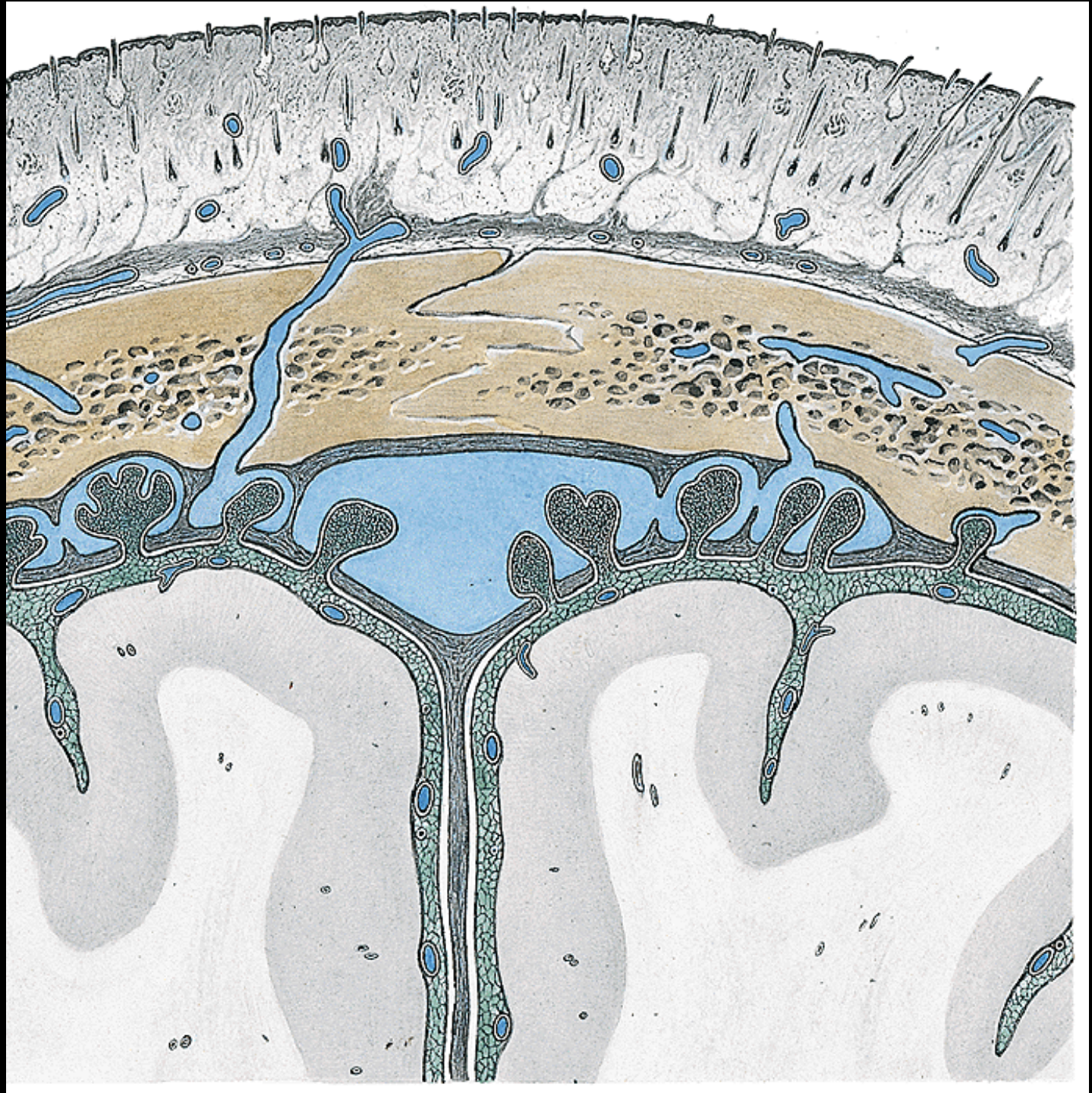
Spatium subdurale

Endomeninx (leptomeninx)

arachnoidea mater

Spatium subarachnoideum(CSF)

pia mater

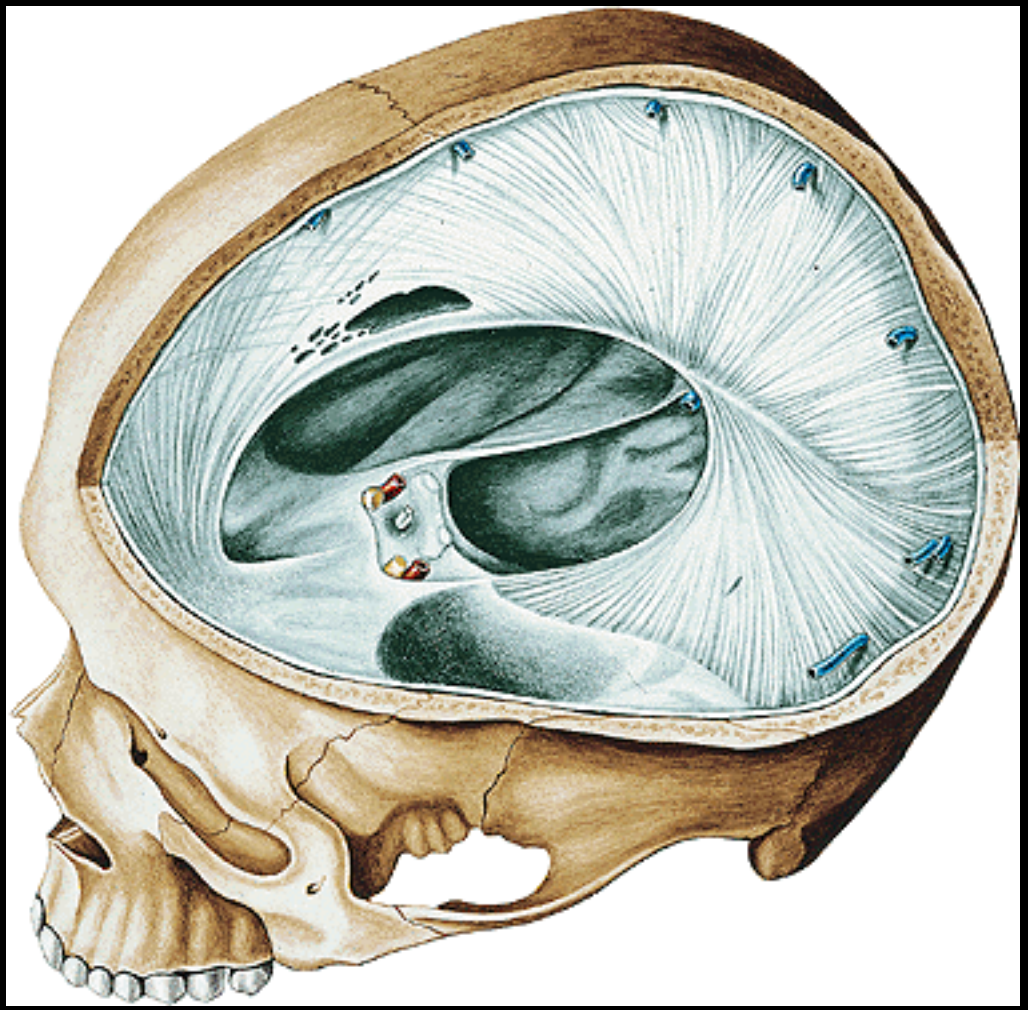


Dura mater cranialis

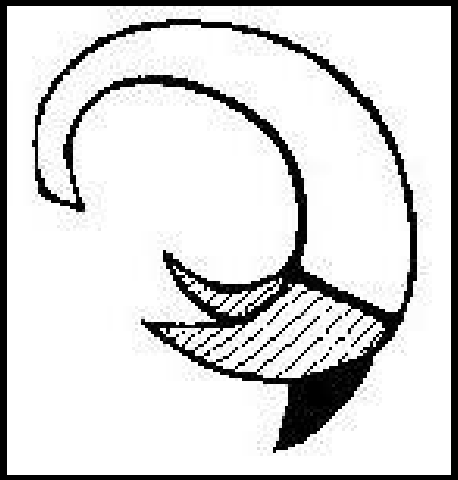
tough layer of fibrous tissue

- contains venous sinuses
- dural folds extend into the cranial cavity and help stabilize the brain

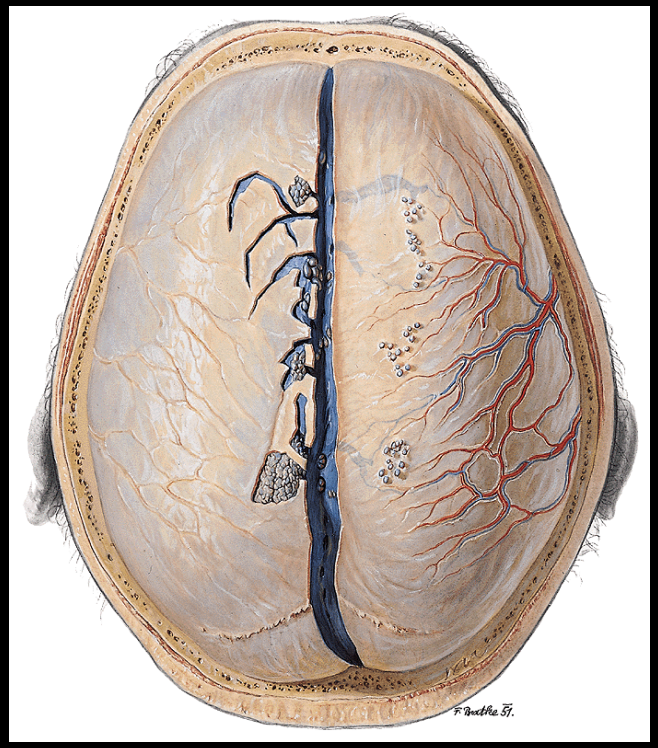
Dural folds



Falx cerebri
Falx cerebelli
Tentorium cerebelli
Diaphragma sellae
Cavum trigeminale
Vagina n. optici



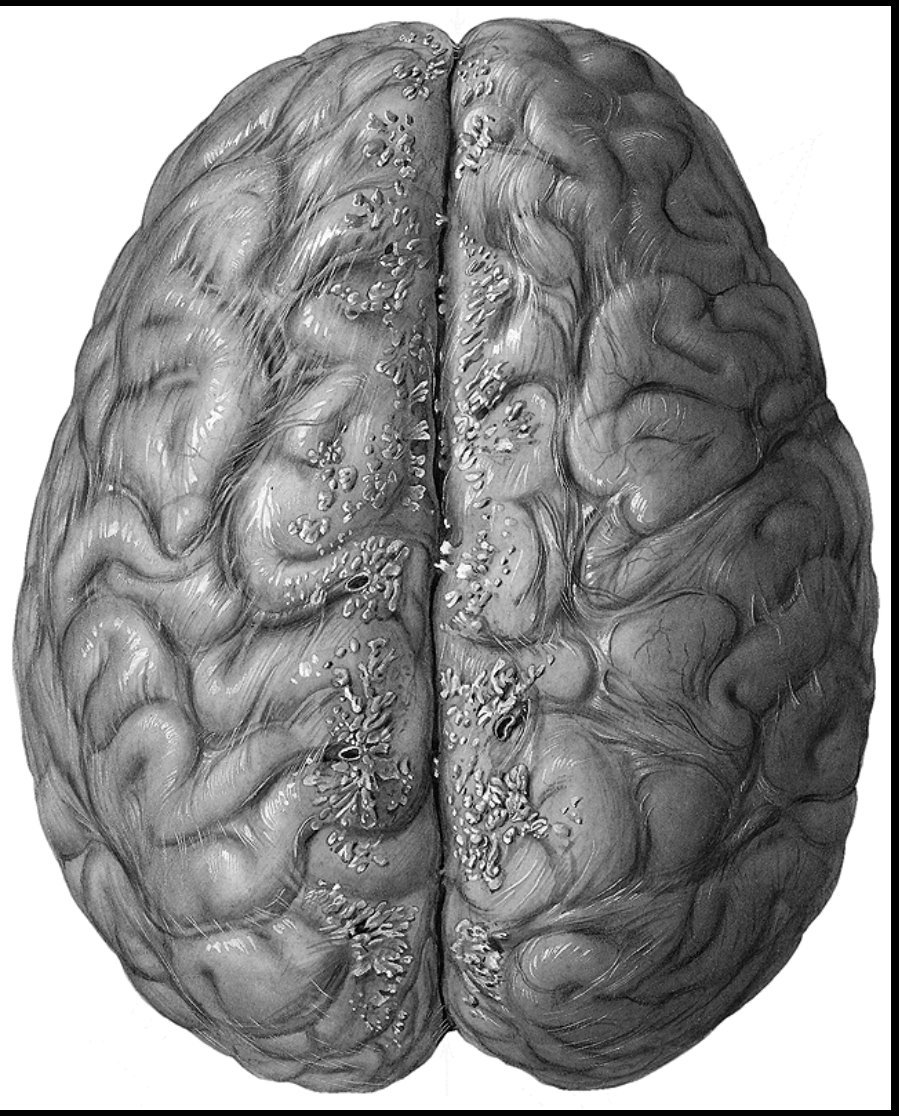
Blood and nerve supply of the dura mater



Aa. meningeae
From:
a. ethmoidalis ant. – ant. fossa
a. maxillaris – middle fossa
a. pharynfea ascendens – posterior fossa
Veins are tributaries of the dural sinuses

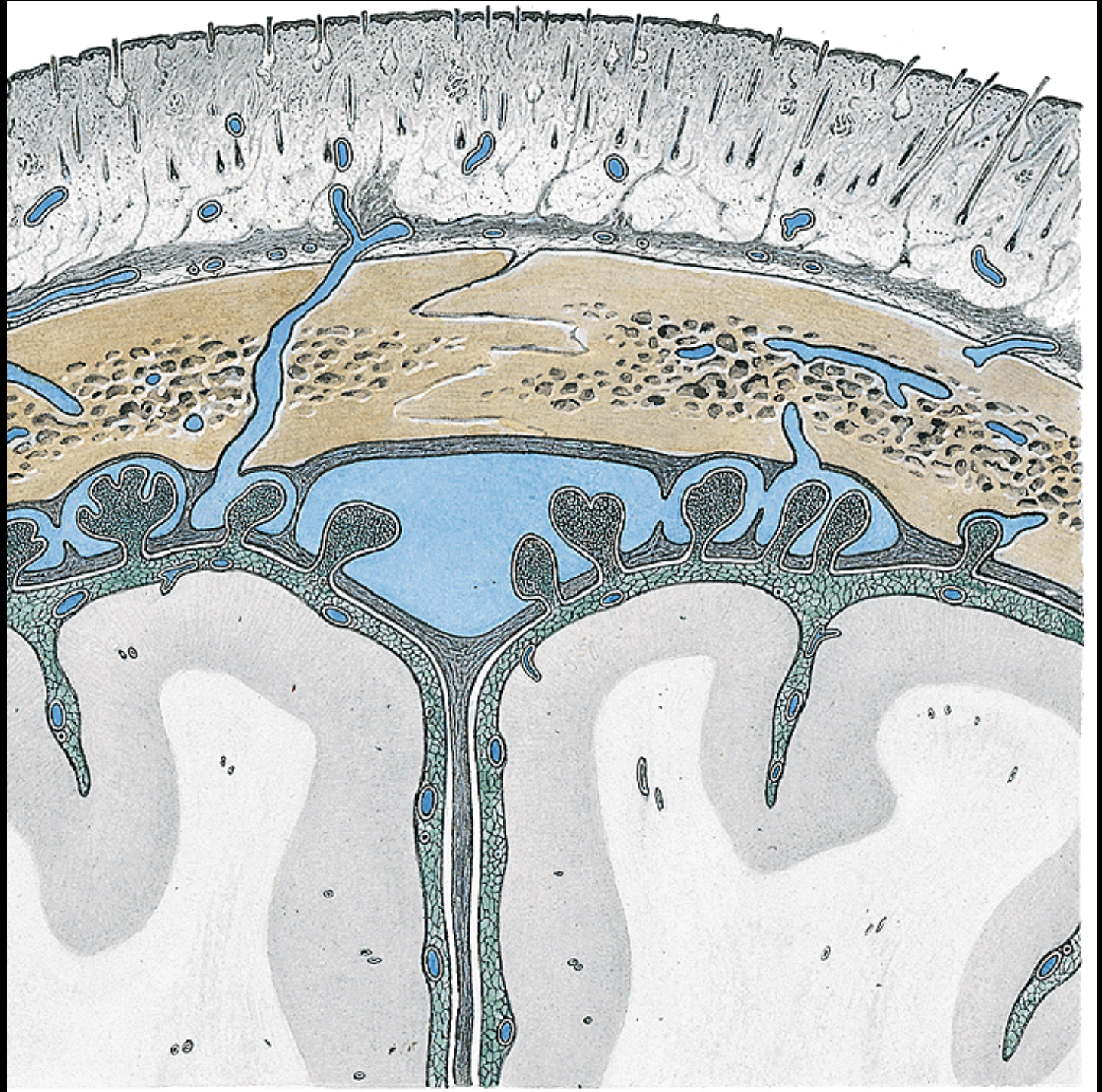
CN V:
supratentorial compartment
Spinal nerves (C1 - C3), **CN X:**
infratentorial compartment

Arachnoidea mater cranialis

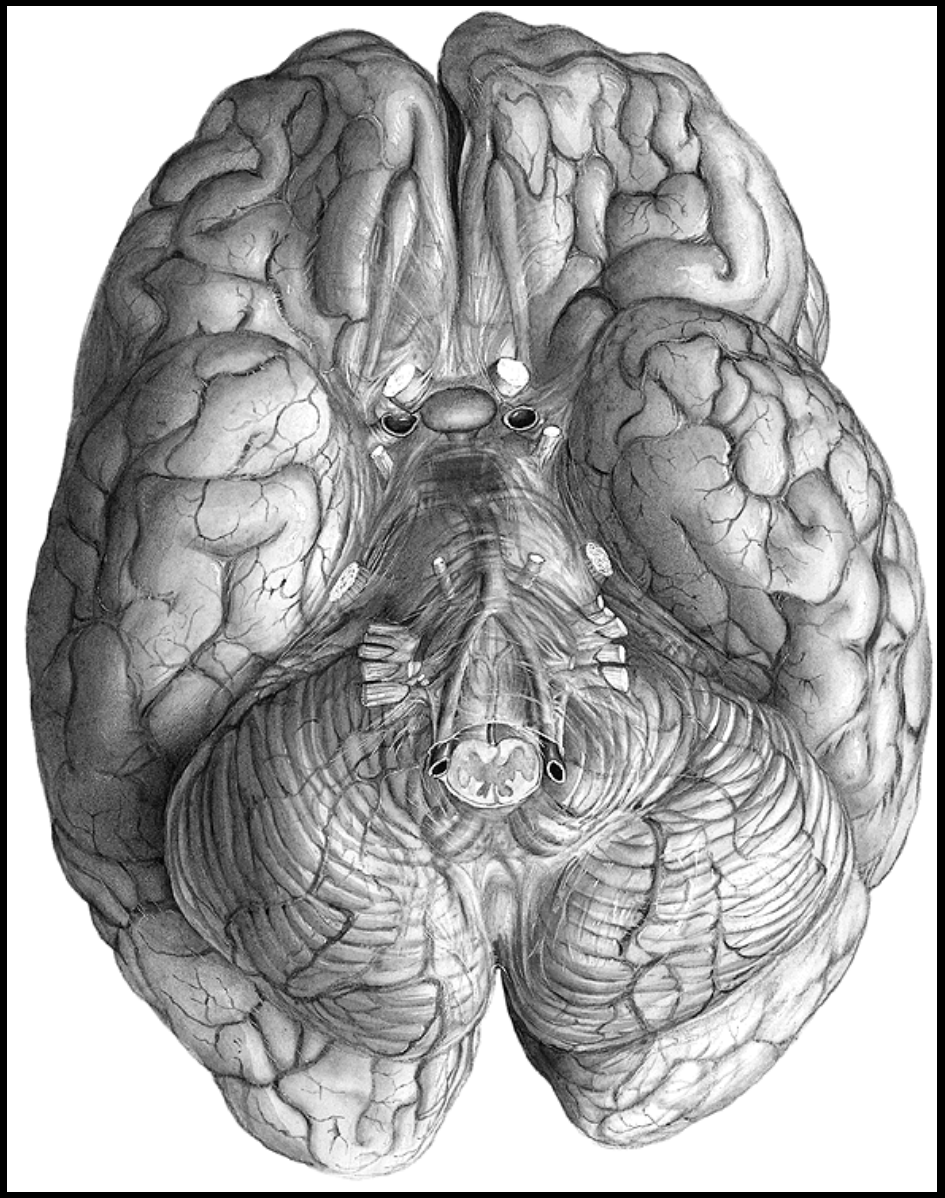


- Thin avascular delicate layer
- It passes over sulci of the brain
- Pinhead pouches project through the dural wall of the major venous sinuses -

Granulationes arachnoideales - transfer of CSF to the venous system



Pia mater cranialis

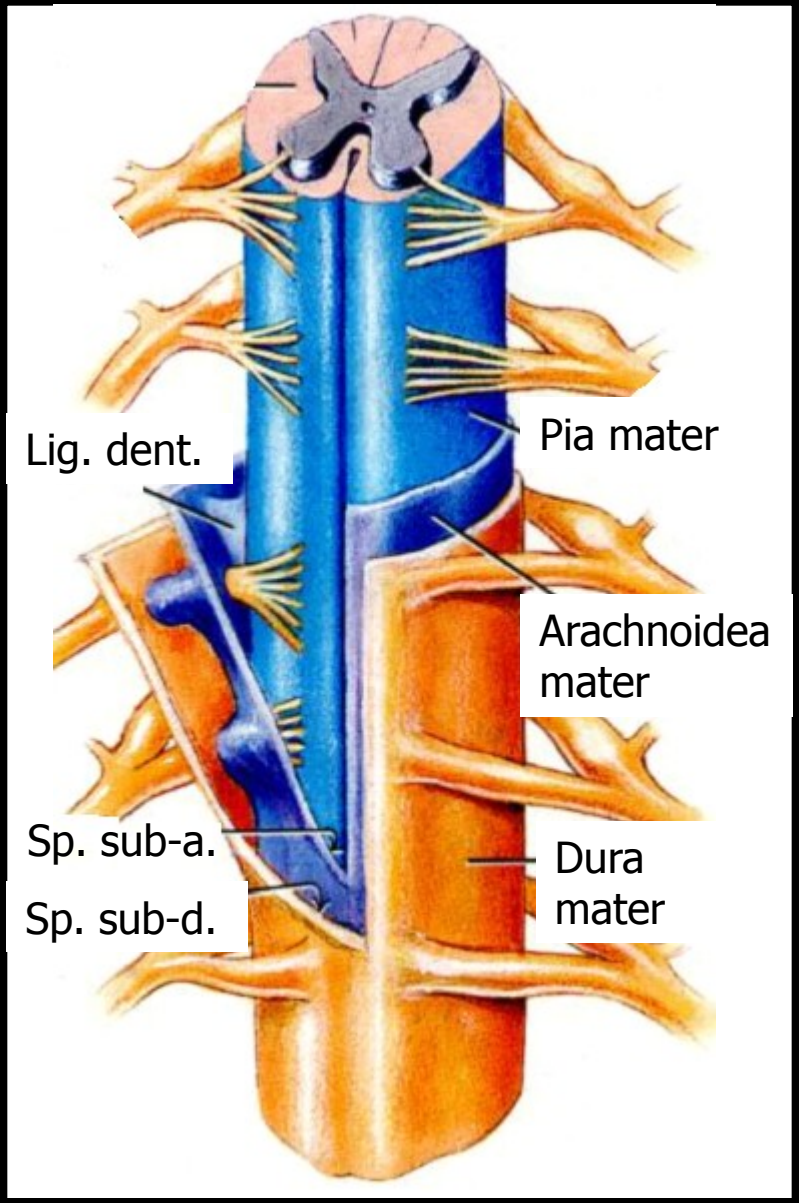


Vascular, enters sulci of the brain

Cisternae subarachnoideales:

- cerebellomedullaris
- ambiens
- interpeduncularis
- chiasmatis
- fossae lat. cerebri

Meninges of the spinal cord

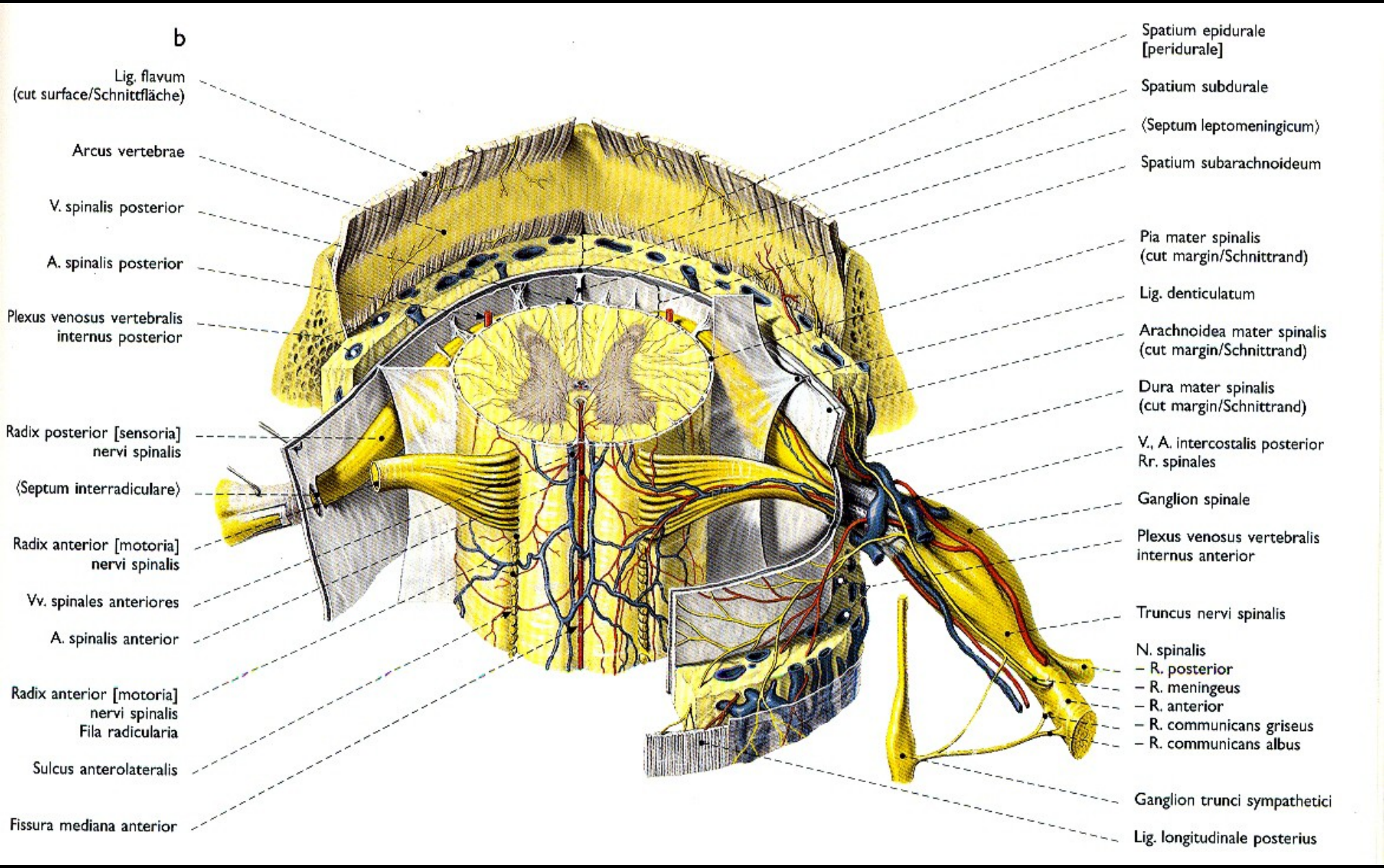


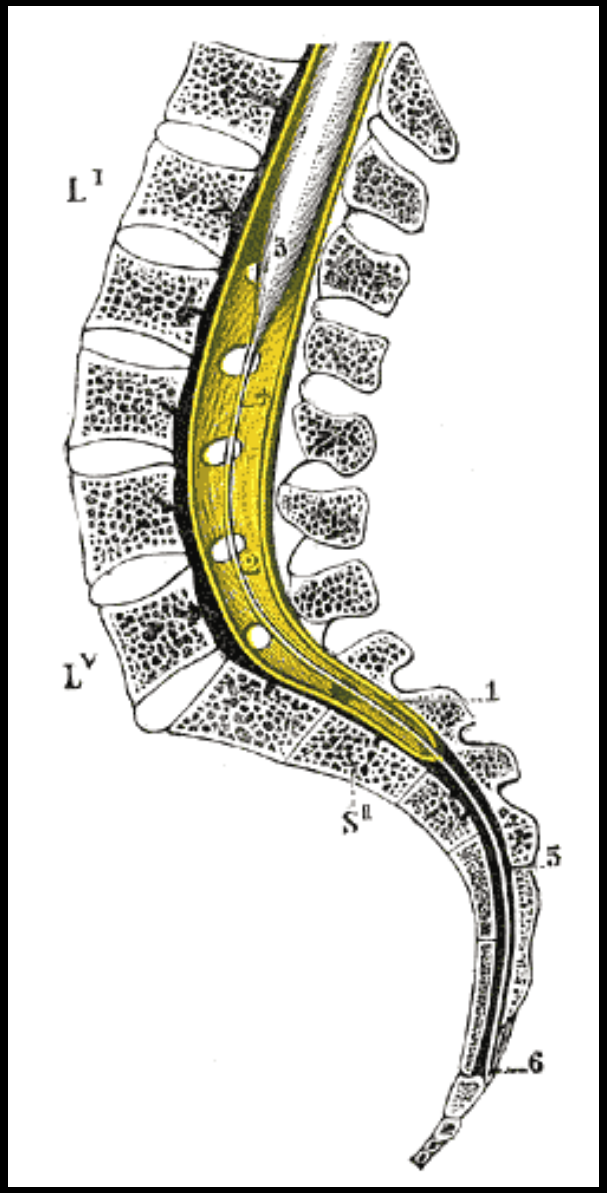
Spatium epidurale
Dura mater spinalis

Spatium subdurale
Arachnoidea mater spinalis

Spatium subarachnoideum
Pia mater spinalis:
Lig. denticulatum

b


Lig. flavum
(cut surface/Schnittfläche)
Arcus vertebrae
V. spinalis posterior
A. spinalis posterior
Plexus venosus vertebralis internus posterior
Radix posterior [sensoria] nervi spinalis
⟨Septum interradiculare⟩
Radix anterior [motoria] nervi spinalis
Vv. spinales anteriores
A. spinalis anterior
Radix anterior [motoria] nervi spinalis
Fila radicularia
Sulcus anterolateralis
Fissura mediana anterior
Spatium epidurale [peridurale]
Spatium subdurale
⟨Septum leptomeningicum⟩
Spatium subarachnoideum
Pia mater spinalis (cut margin/Schnittrand)
Lig. denticulatum
Arachnoidea mater spinalis (cut margin/Schnittrand)
Dura mater spinalis (cut margin/Schnittrand)
V., A. intercostalis posterior Rr. spinales
Ganglion spinale
Plexus venosus vertebralis internus anterior
Truncus nervi spinalis
N. spinalis
– R. posterior
– R. meningeus
– R. anterior
– R. communicans griseus
– R. communicans albus
Ganglion trunci sympathetici
Lig. longitudinale posterius



Cisterna lumbalis

Conus medullaris: L1-2

Saccus durae matris spinalis: S2-3

Filum terminale externum: coccyx

Lumbar puncture (spinal tap)

Liquor cerebrospinalis (CSF)

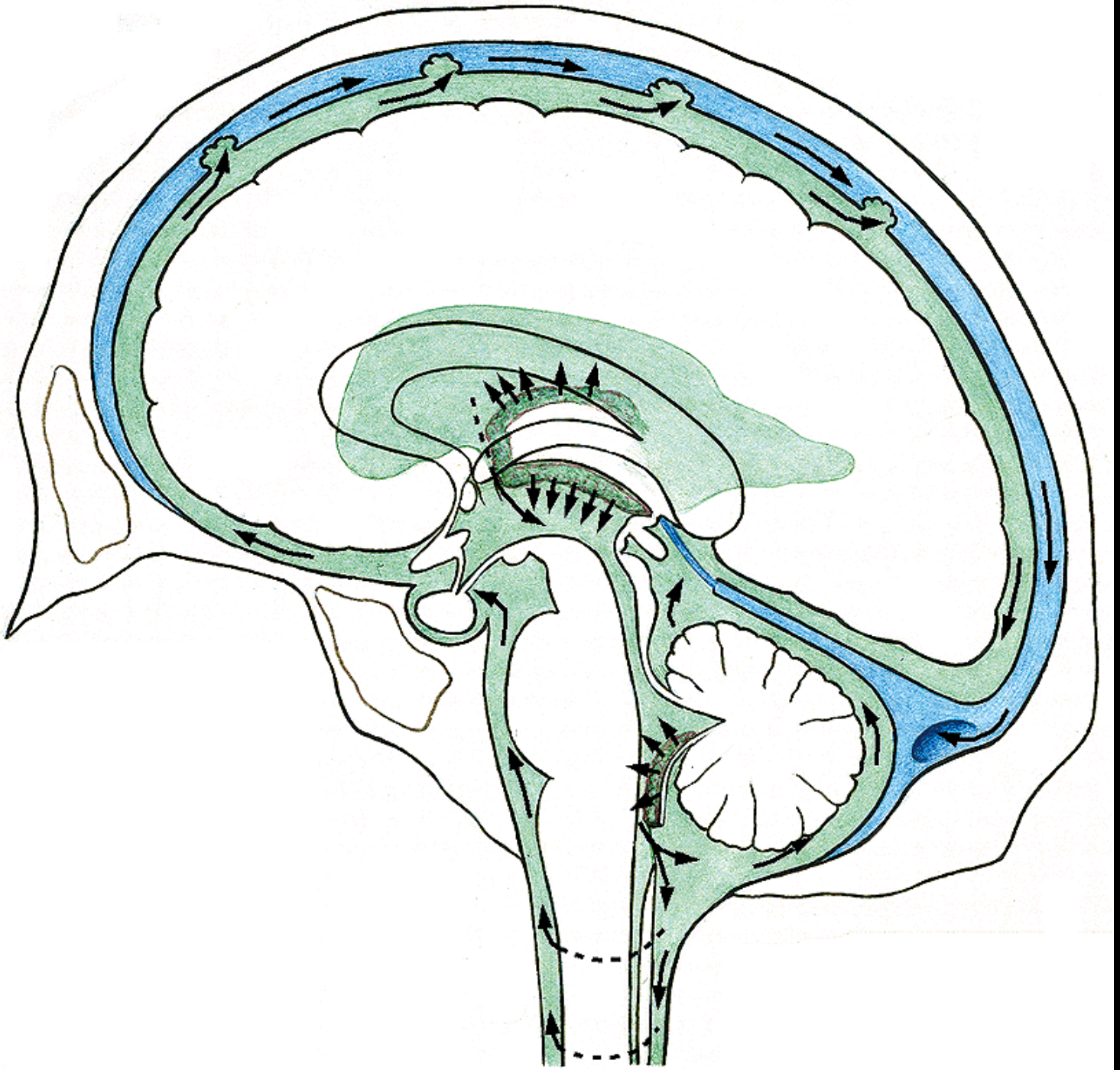
Clear, colorless fluid,150 mL, secreted at the rate of 400-500 mL daily

Produced by the choroid plexuses of ventricles

Protects the brain and spinal cord by providing a cushion against blows to the head.

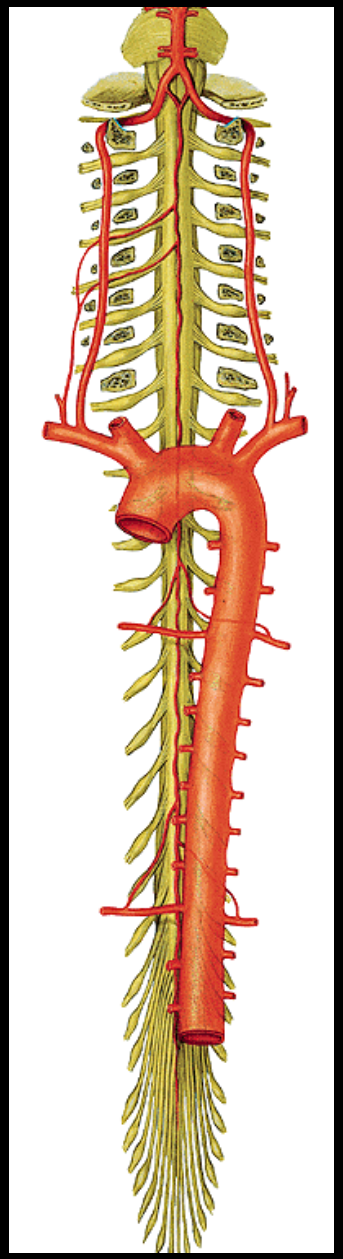
Circulation:

Lateral ventricles – for. interventriculare – 3rd ventricle – aqueductus cerebri – 4th ventricle – median and lat. apertures – subarachnoid space – sinus durae matris



Hydrocephalus

BLOOD SUPPLY TO THE CNS



Arteries of the CNS

Spinal cord

Rr. spinales

a. cervicalis asc.

a. vertebralis

a. cervicalis prof.

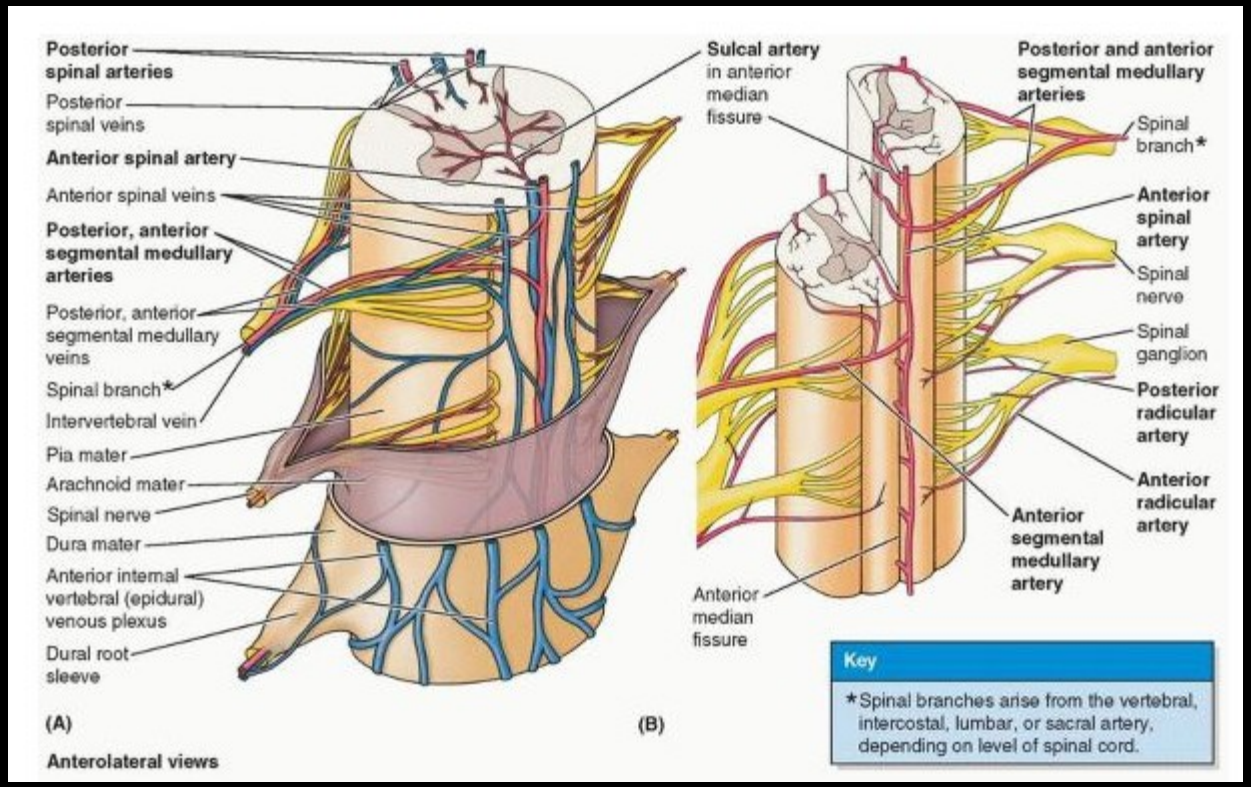
aa. intercostales post.

aa. lumbales

a. iliolumbalis

a. sacralis lat.

a. sacralis mediana



Rr. spinales:

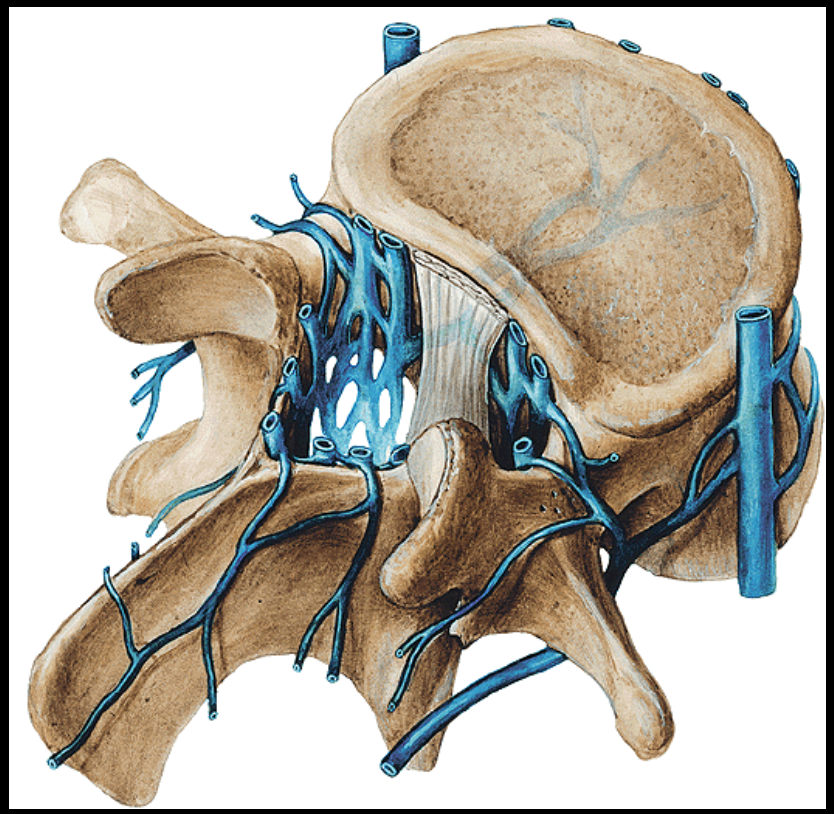
aa. medullares segmentales

a. spinalis ant. (fissura med. ant.)

aa. spinales post. (sulcus lat. post.)

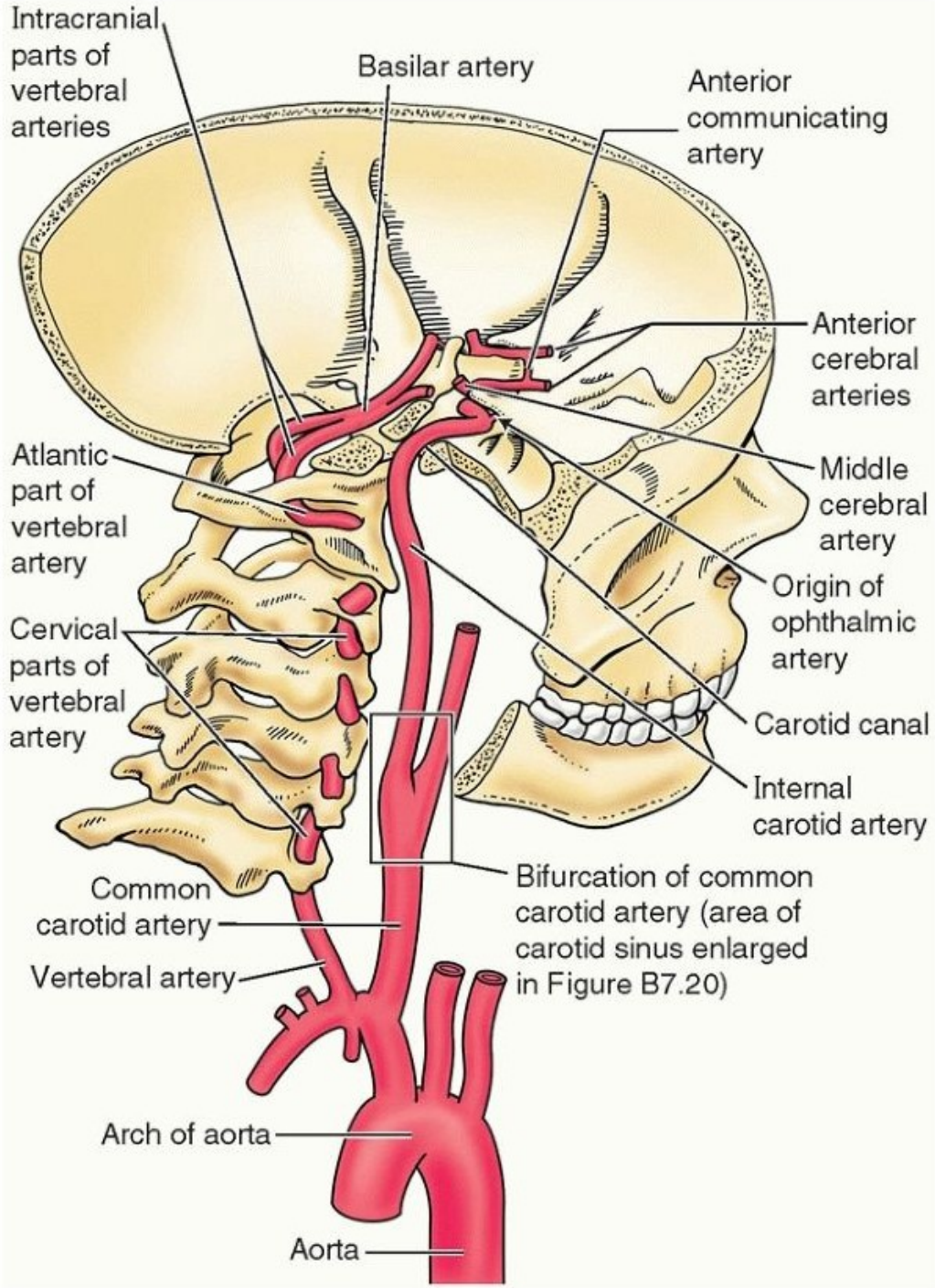
aa. radiculares ant. et post.:

Vv. spinales



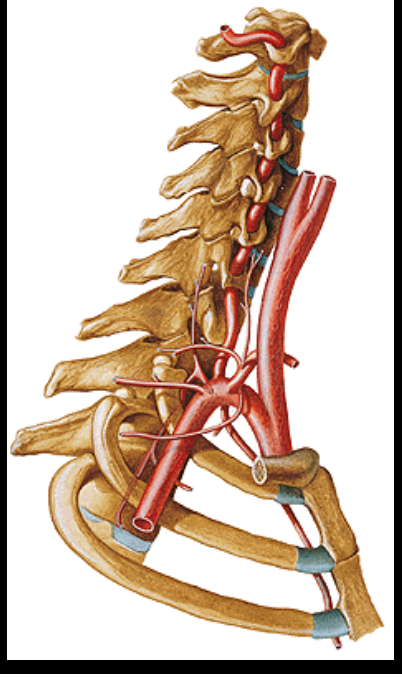
Plx. venosi vertebr. int.
> vv. intervertebrales
> plx. venosi verteb. ext.
> plx. suboccipitalis
> vv. vertebrales
vv. cervicales prof.
vv. intercostales
vv. lumbales
vv. sacrales lat.

A. CAROTIS INTERNA

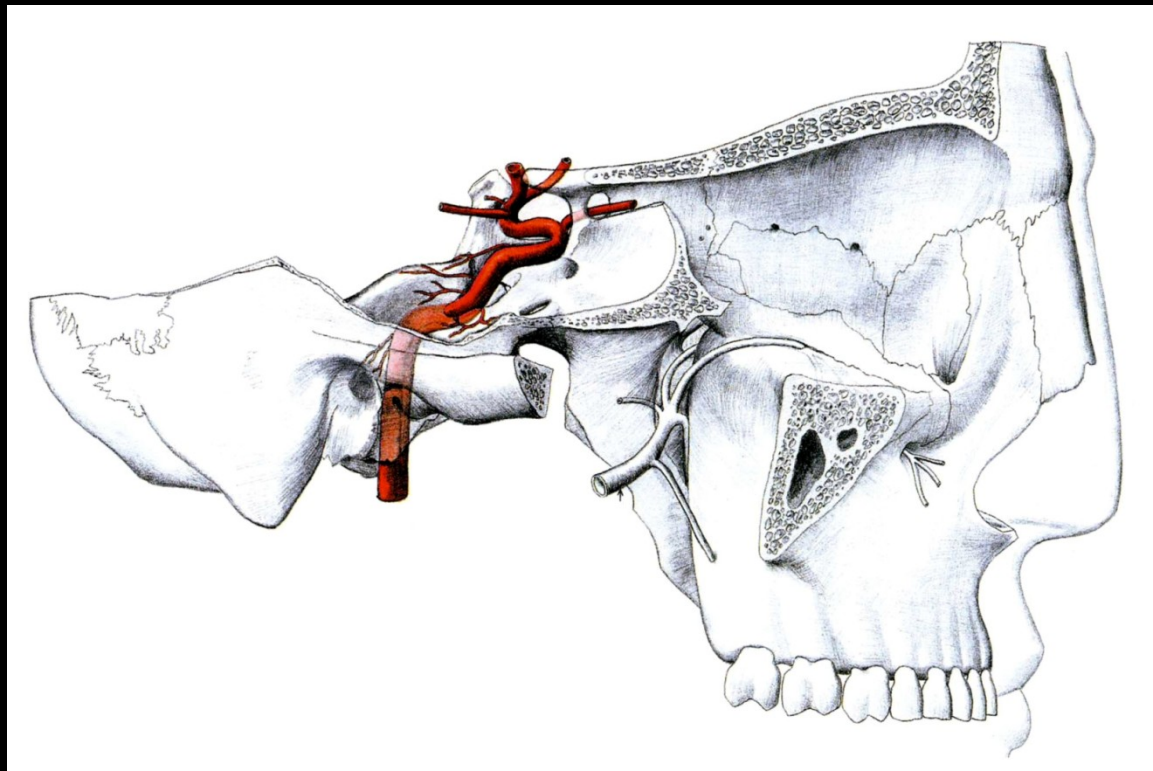


A. CAROTIS INTERNA:

- aa. caroticotympanicae
- rr. sinus cavernosi
- r. meningeus
- rr. tentorii
- aa. hypophysiales
- a. ophthalmica
- a. cerebri ant.
- a. cerebri media

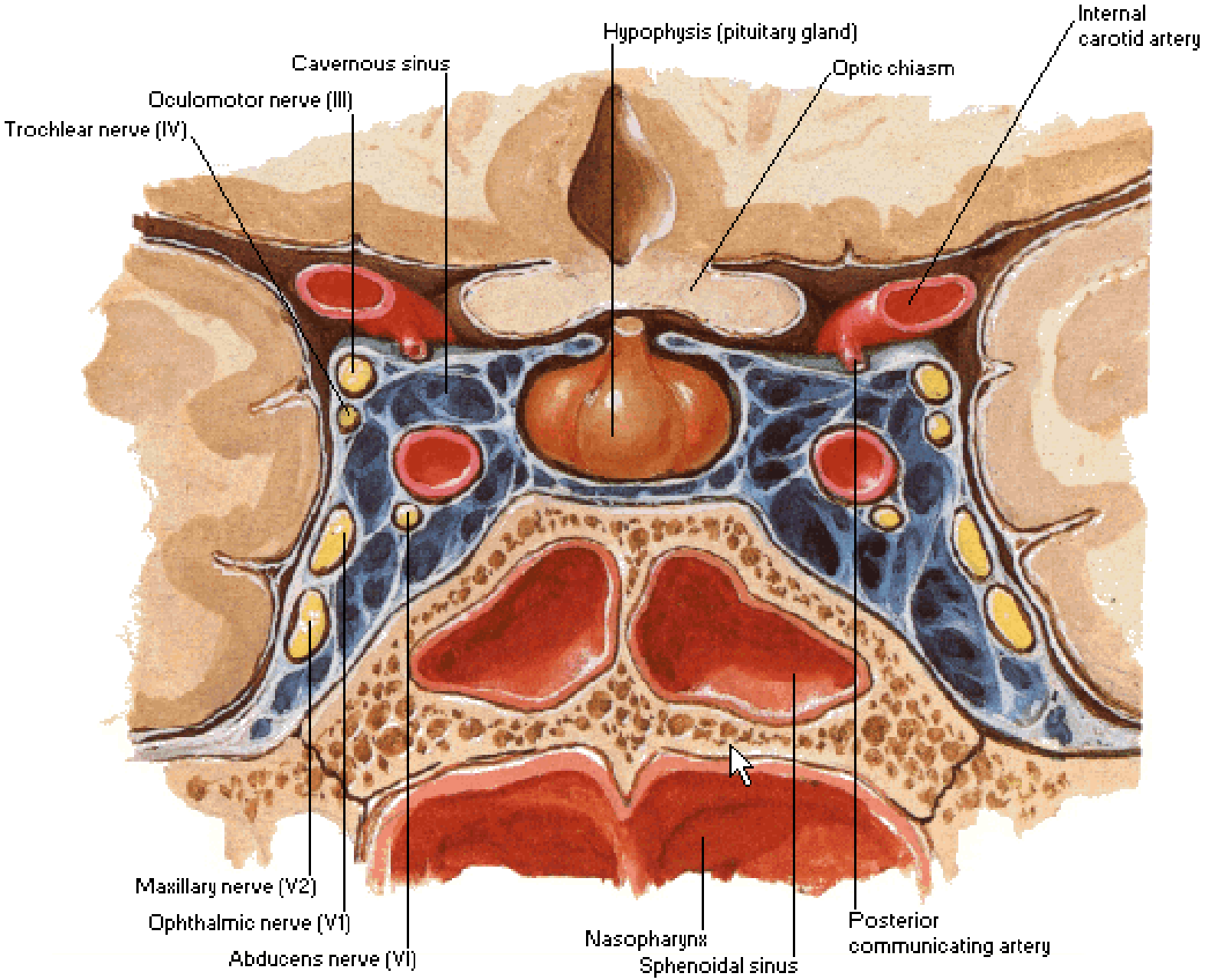


Carotid syphon



Cavernous Sinus

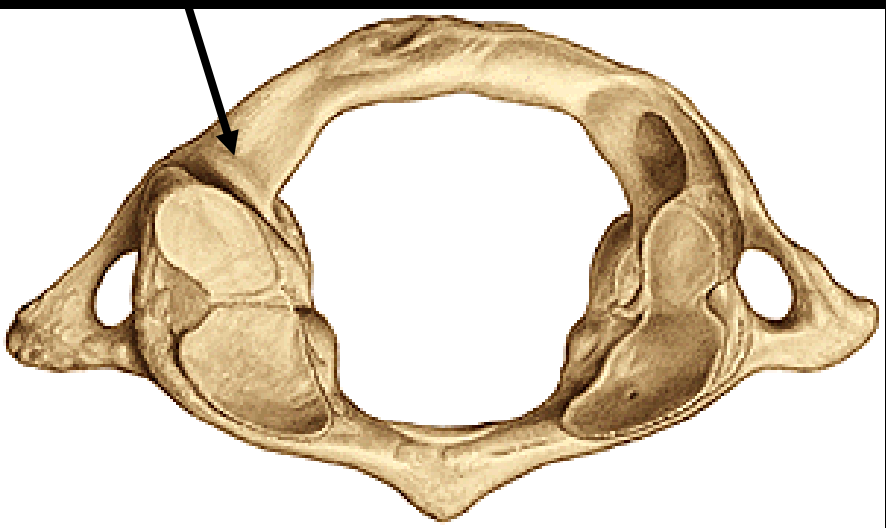
Coronal Section

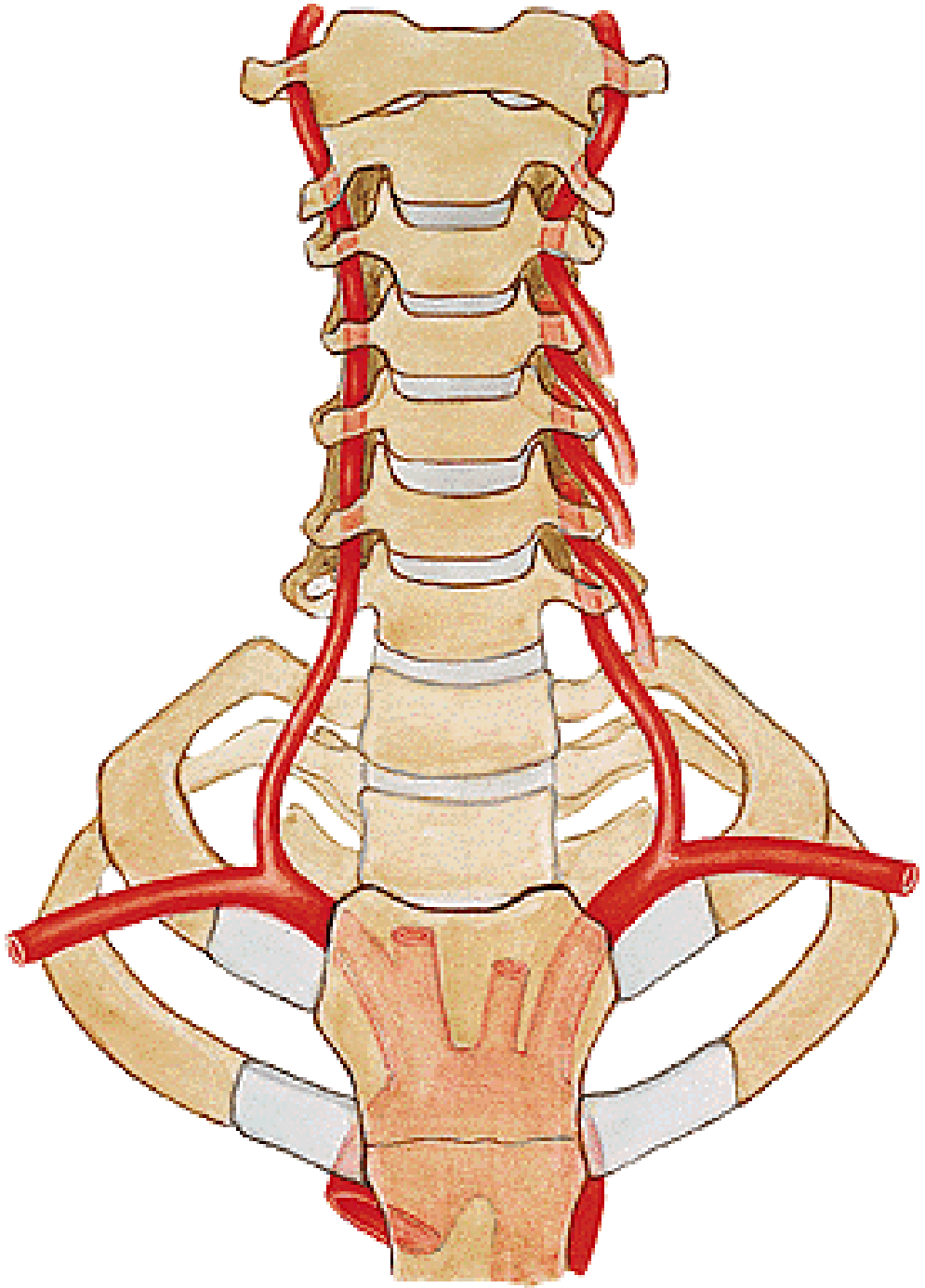


A. VERTEBRALIS

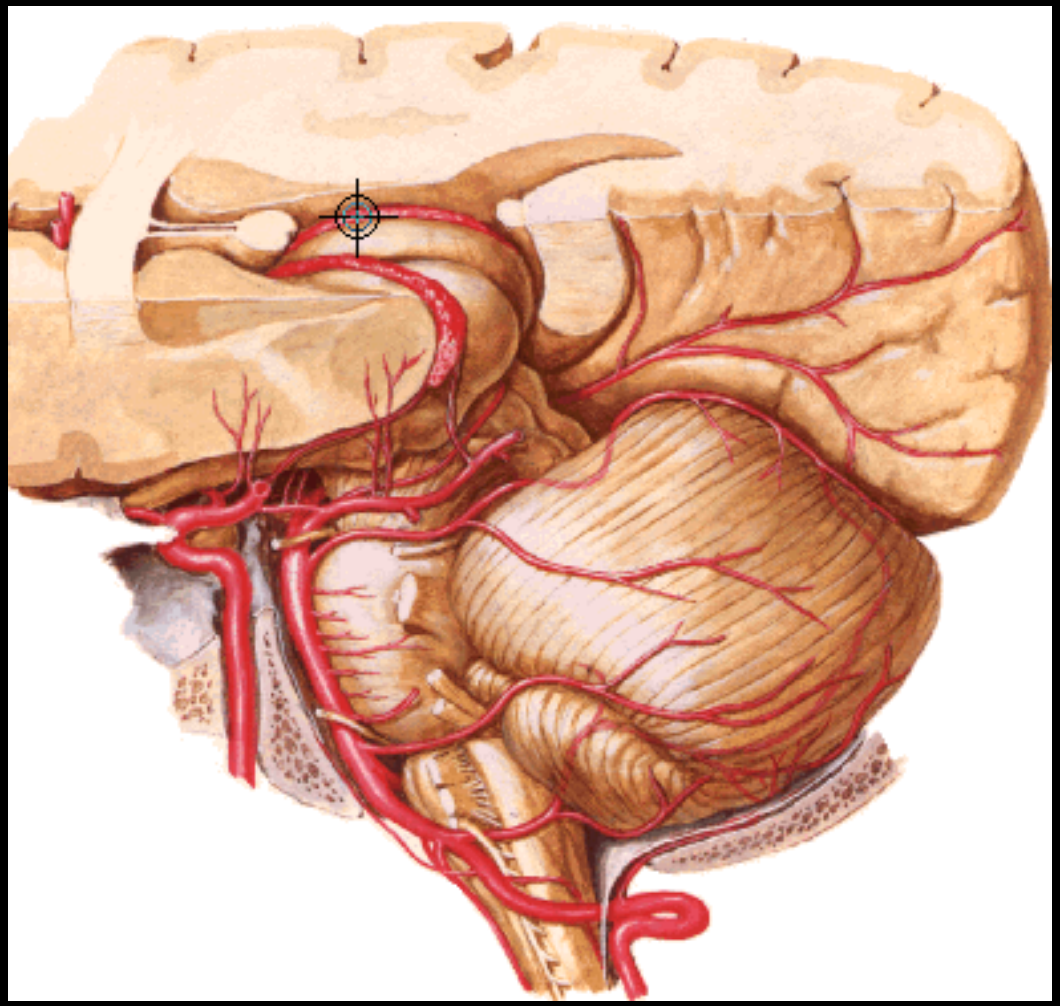
- rr. spinales
- rr. musculares

Sulcus a. vertebralis





Brainstem, cerebellum



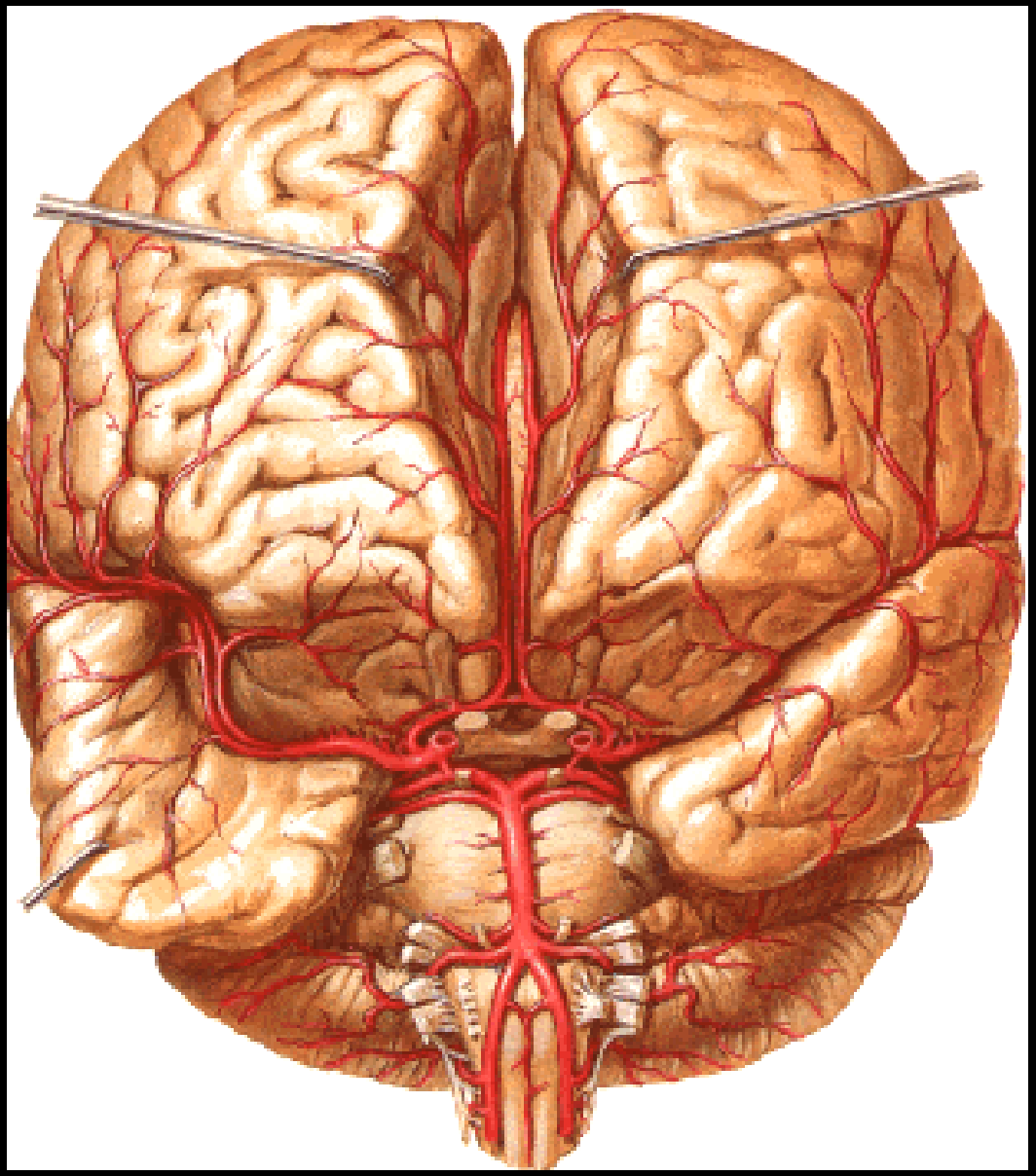
Aa. vertebrales

Aa. spin. ant. et post.
Aa. cerebelli inf. post.

A. basilaris

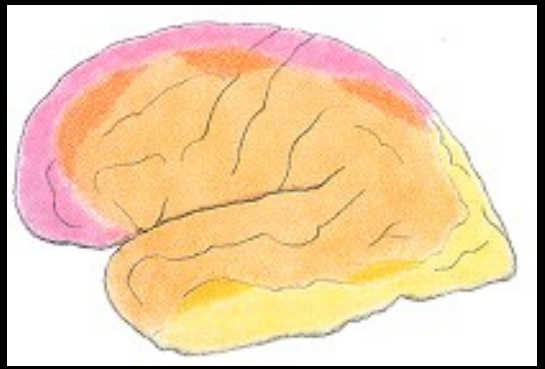
Aa. cerebelli inf. ant.
Aa. pontis
Aa. labyrinthi
Aa. cerebelli sup.
Aa. cerebri post.

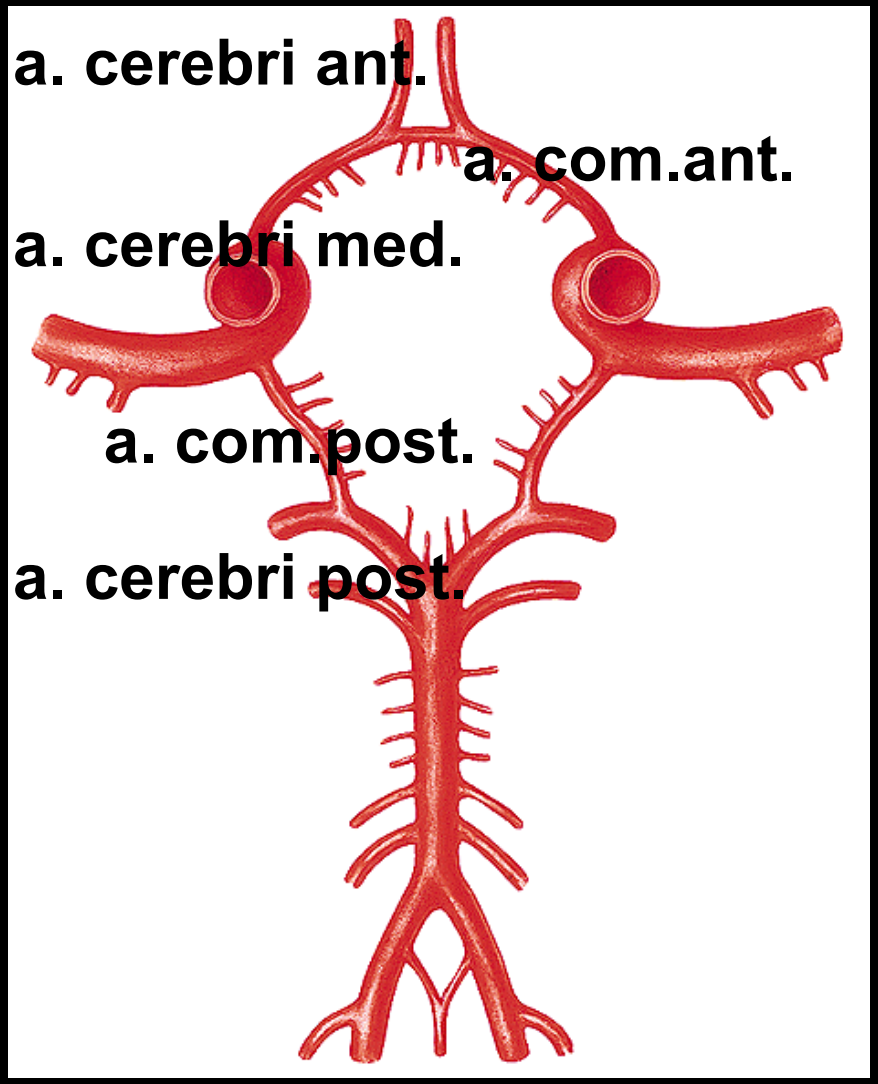
Brain

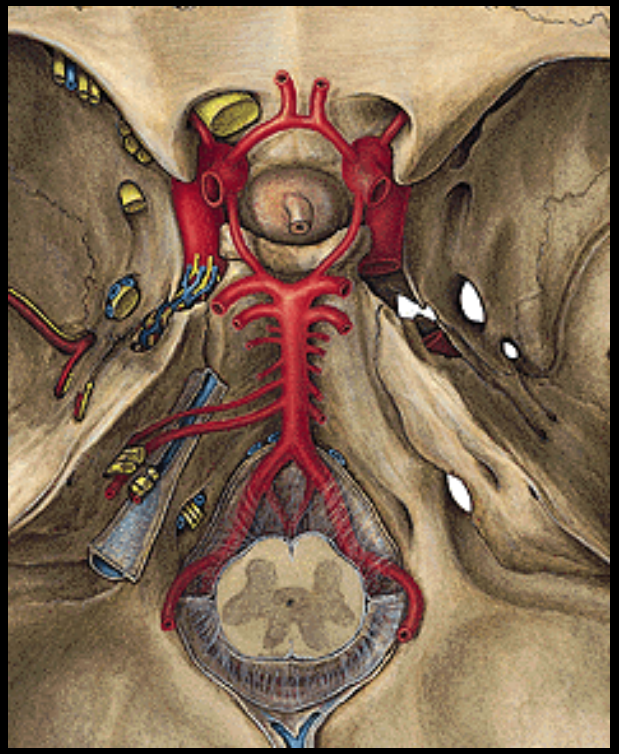


Aa. cerebri:

anterior (A. car. int.)
media (A. car. int.)
posterior (A. basil.)

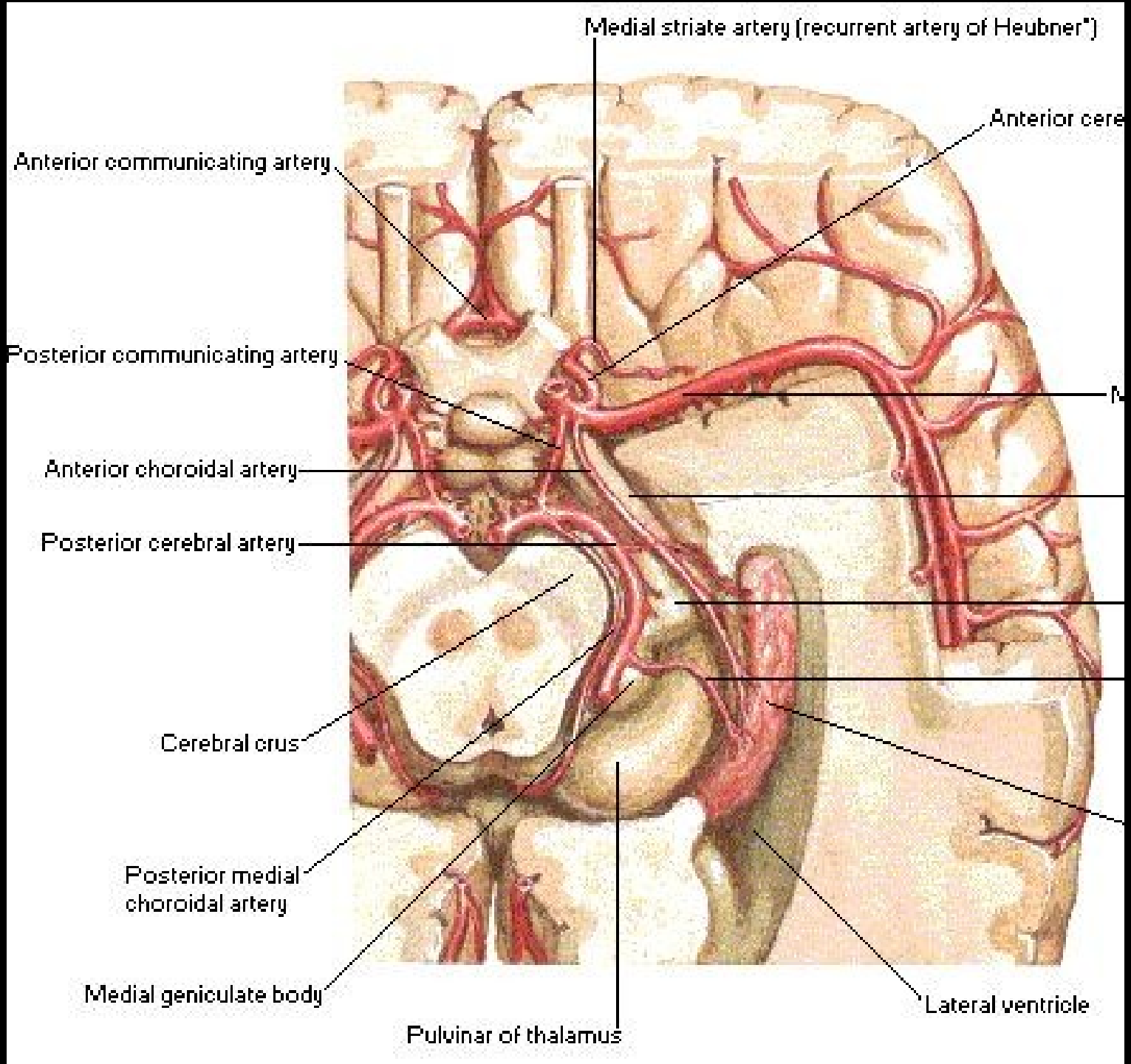


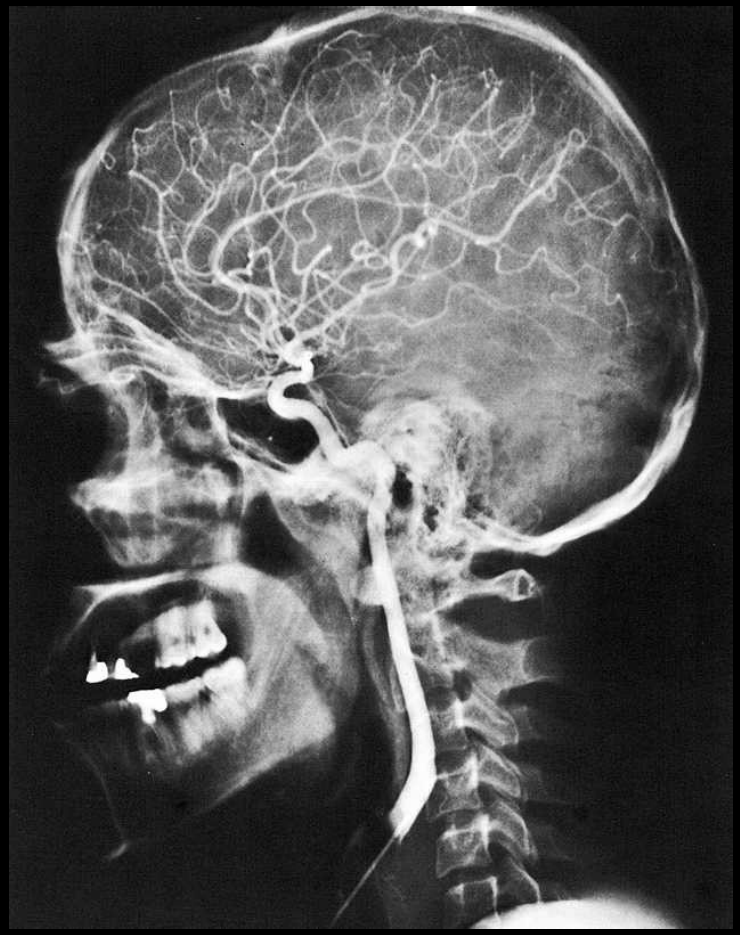


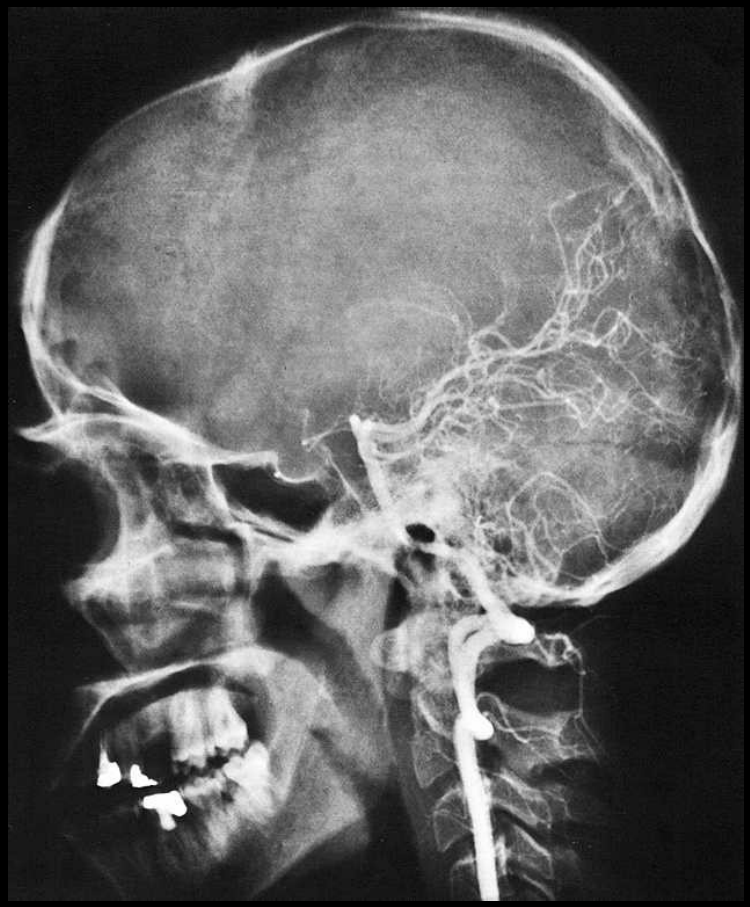


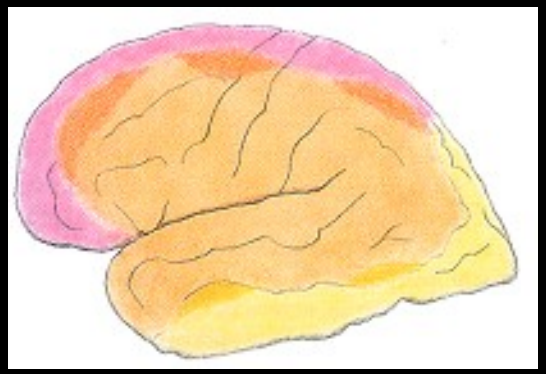
Circulus arteriosus (of Willis)

- Aa. corticales
- Aa. centrales
- Aa. choroideae

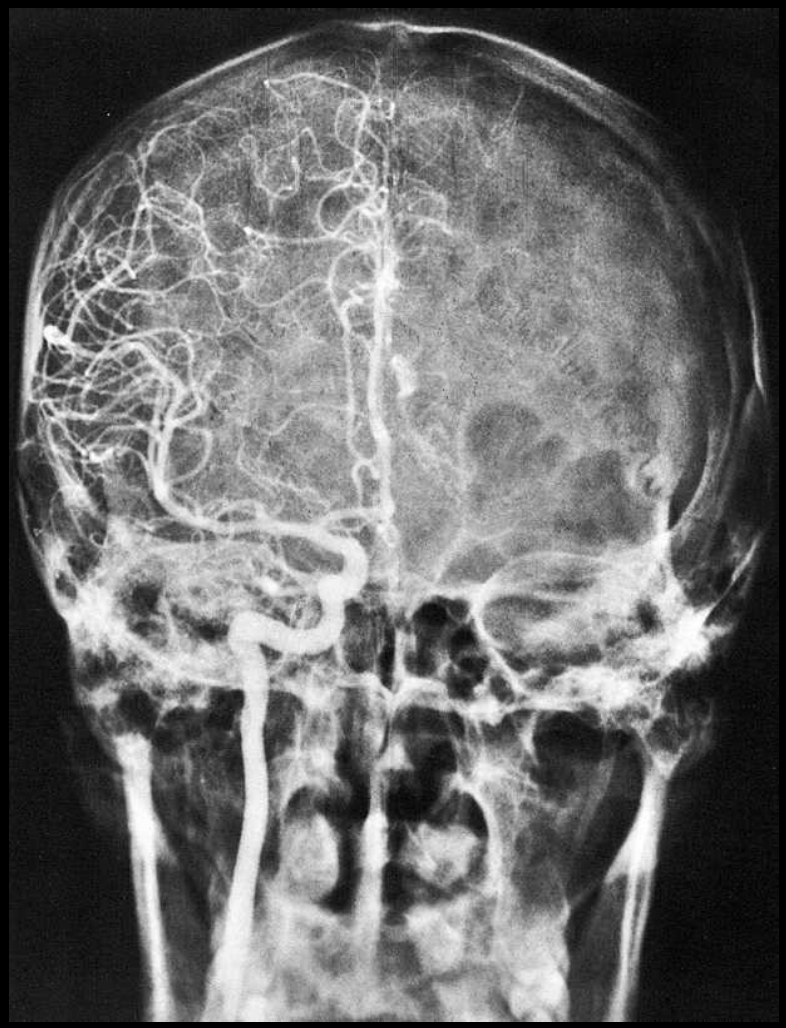

Medial striate artery (recurrent artery of Heubner")
Anterior cere
Anterior communicating artery
Posterior communicating artery
Anterior choroidal artery
Posterior cerebral artery
Cerebral crus
Posterior medial choroidal artery
Medial geniculate body
Pulvinar of thalamus
Lateral ventricle

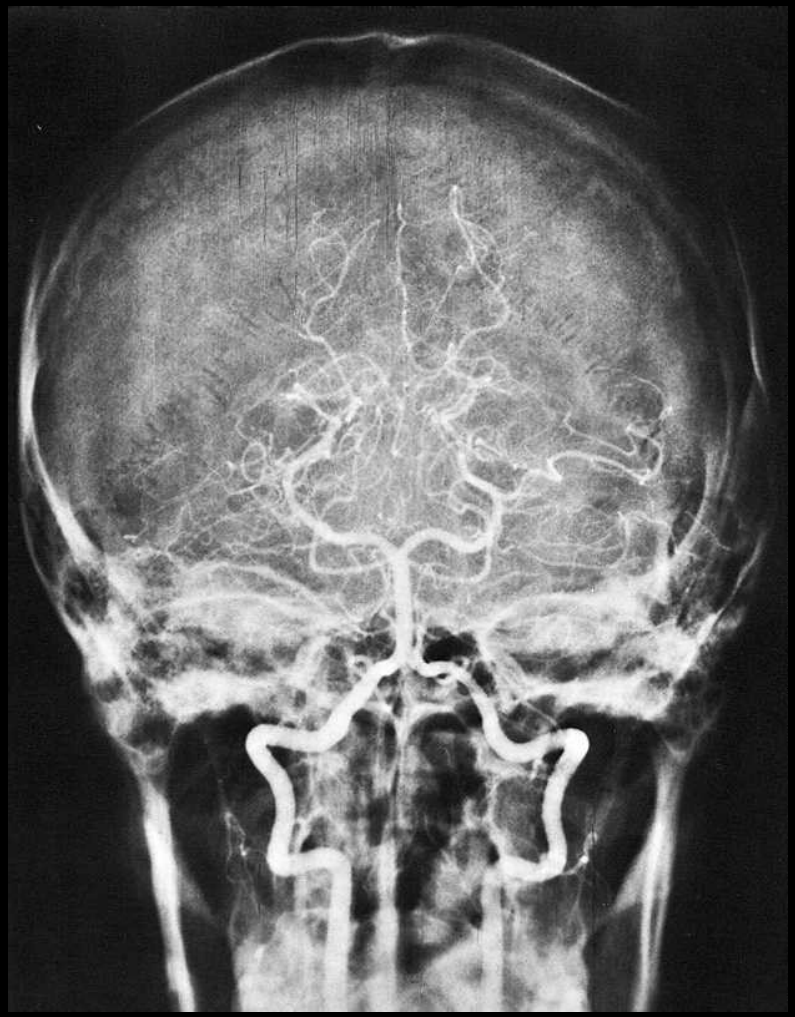






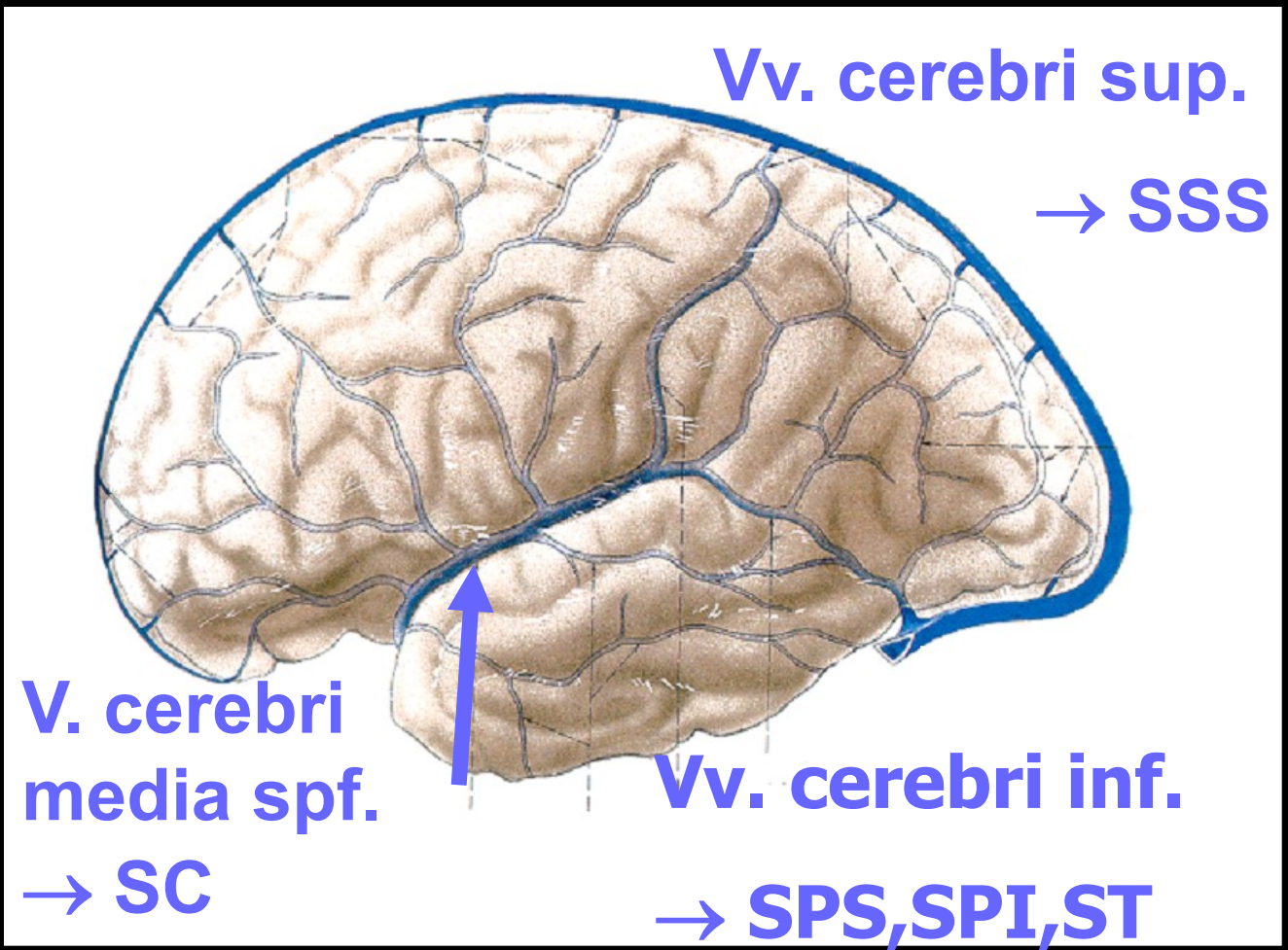
anterior
media
posterior

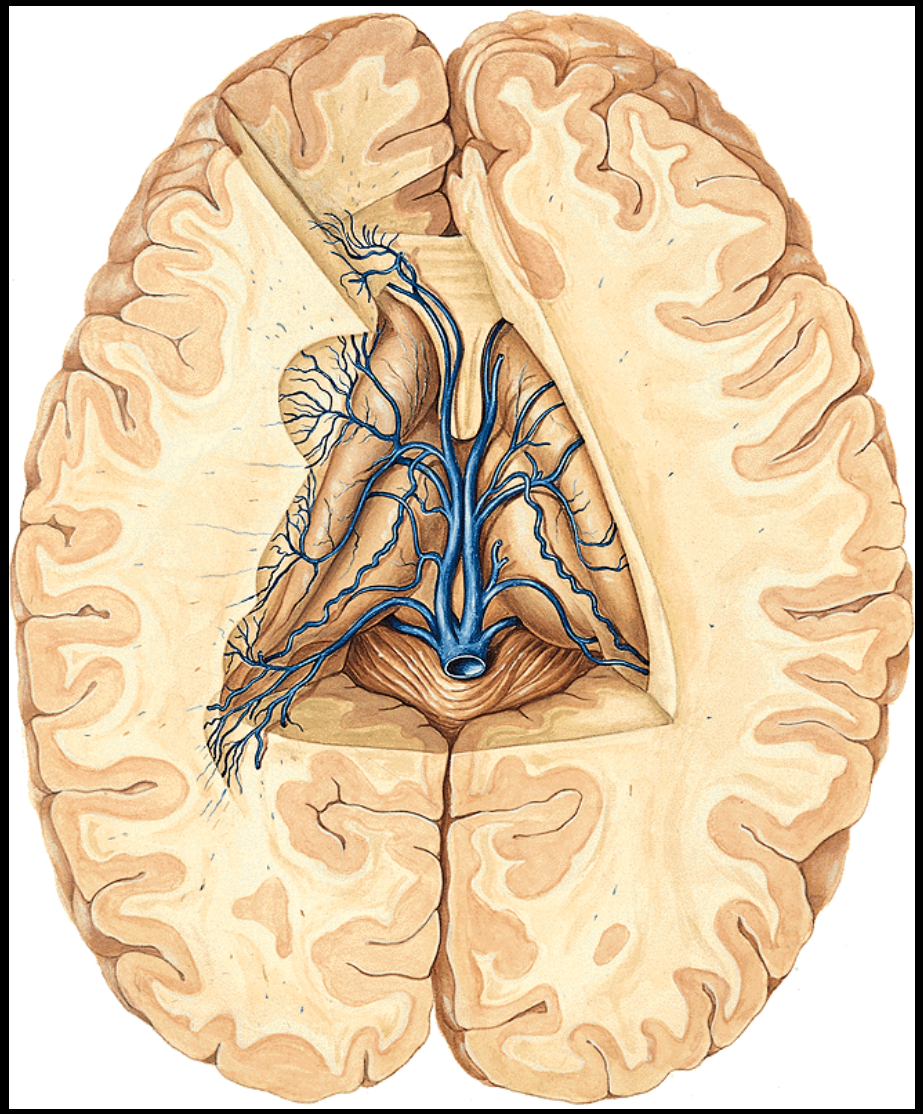




Veins of the brain

- superficial





deep veins

1. vv. septi pellucidi
2. vv. thalamostr. sup.
3. vv. choroideae sup.

↓

= Vv. cerebri int.

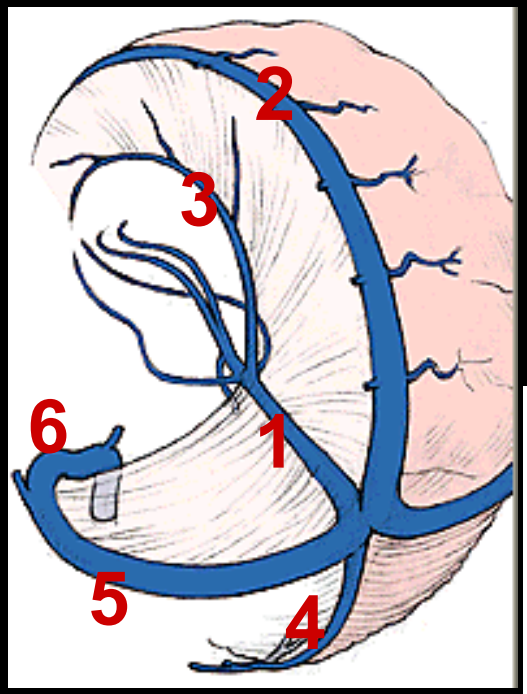
↓

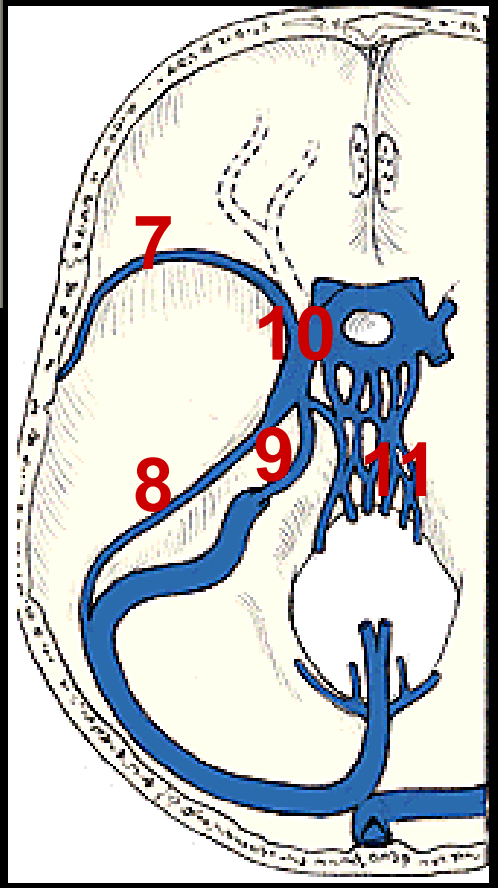
V. magna cerebri
+ Vv. basales

↓

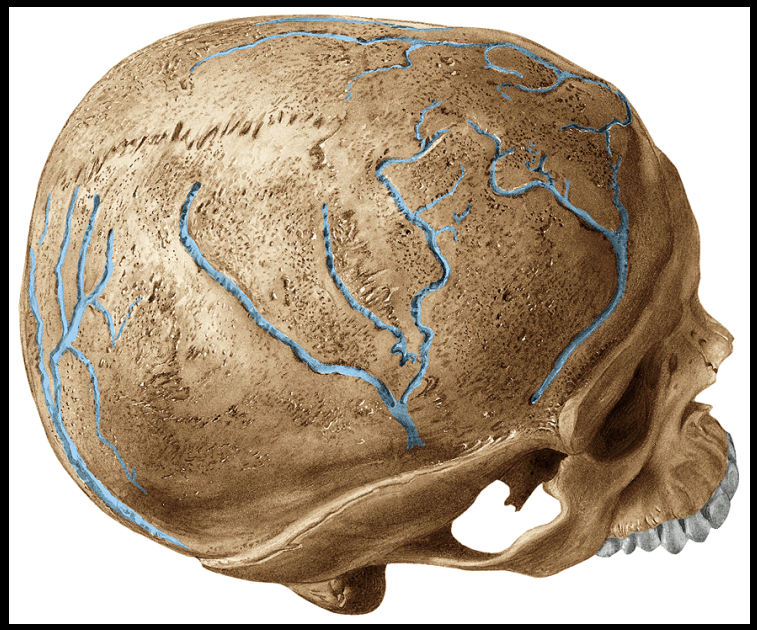
Sinus rectus

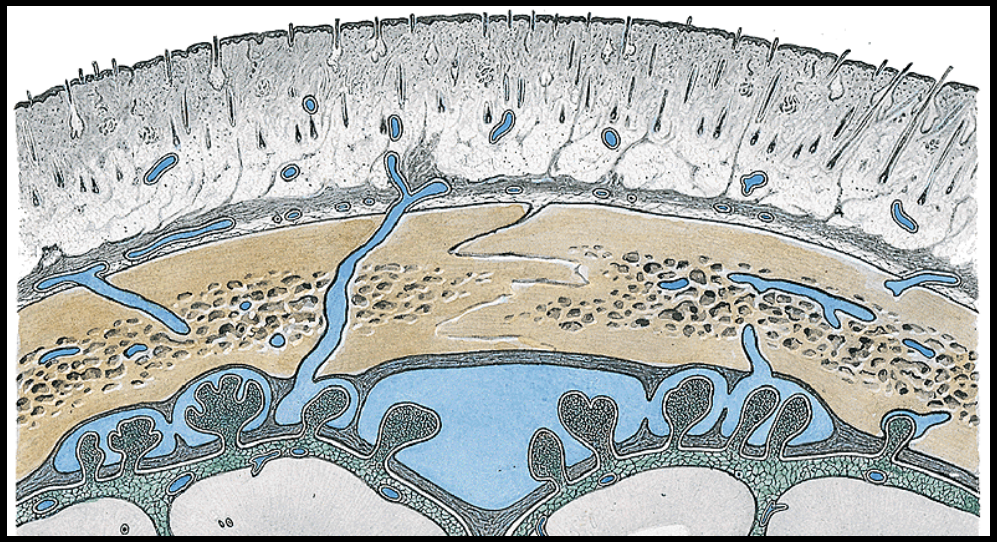
Sinus durae matris





1 rectus
2 sagittalis sup.
3 sagittalis inf.
4 occipitalis
5 transversus
6 sigmoideus
7 sphenoparietalis
8 petrosus sup.
9 petrosus inf.
10 cavernosus
11 plx. basilaris





Tributaries of sinuses

- Vv. cerebri
- Vv. cerebelli
- Vv. ophtalmicae
- Vv. labyrinthi
- Vv. meningeae
- Vv. diploicae
- Vv. emissariae

- Illustrations were copied from:
- **Atlas der Anatomie des Menschen/ Sobotta. Putz,R., und Pabst,R. 20. Auflage. München: Urban & Schwarzenberg, 1993**
- **Netter: Interactive Atlas of Human Anatomy. Windows Version 2.0**