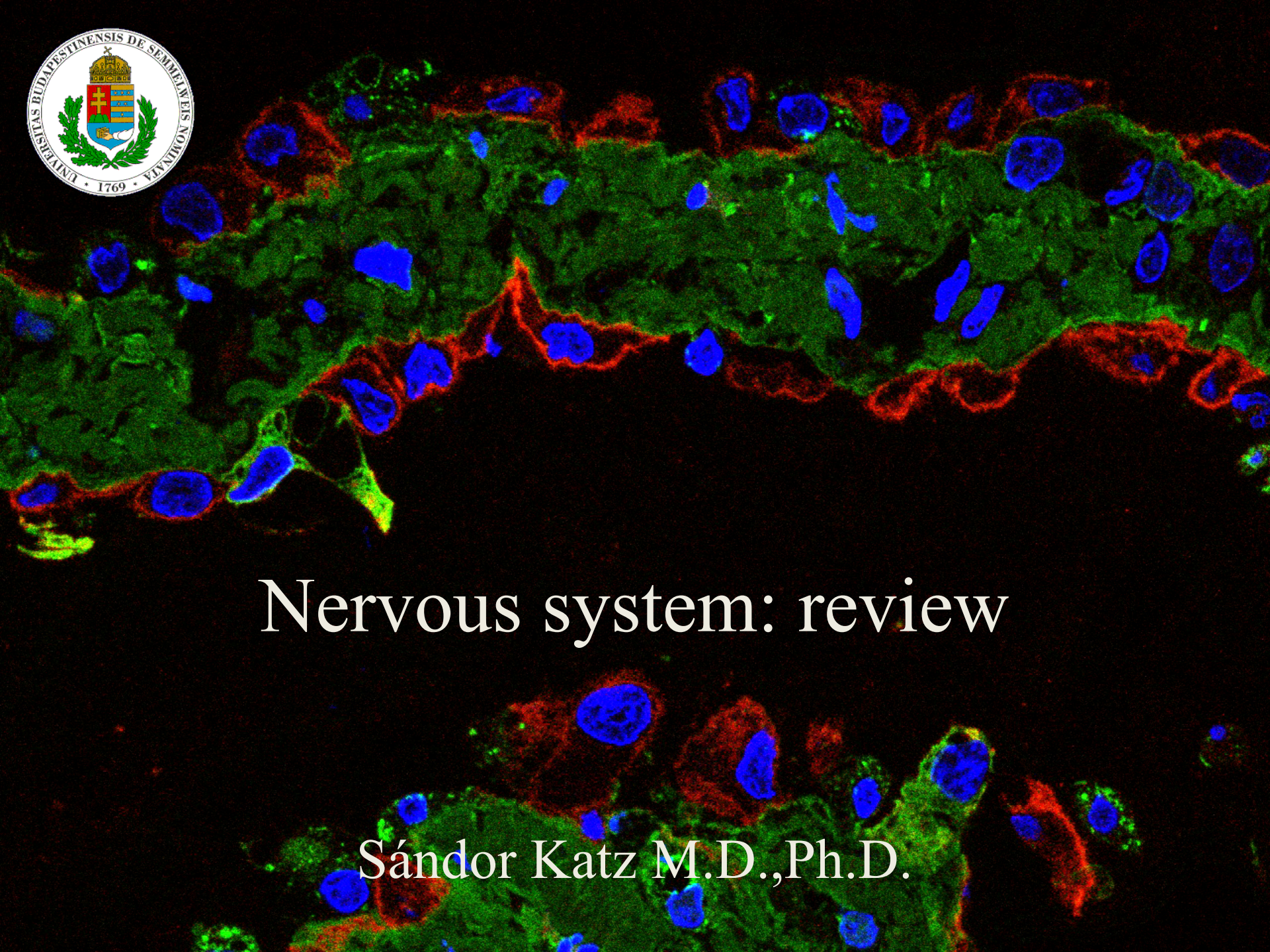
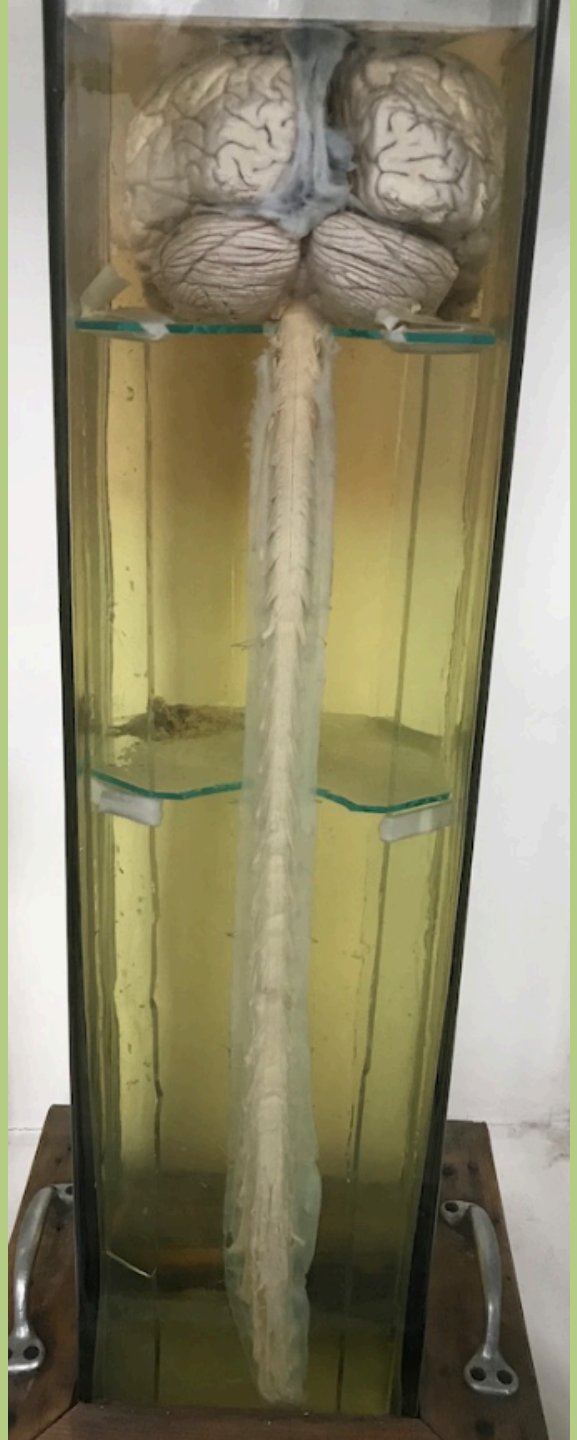


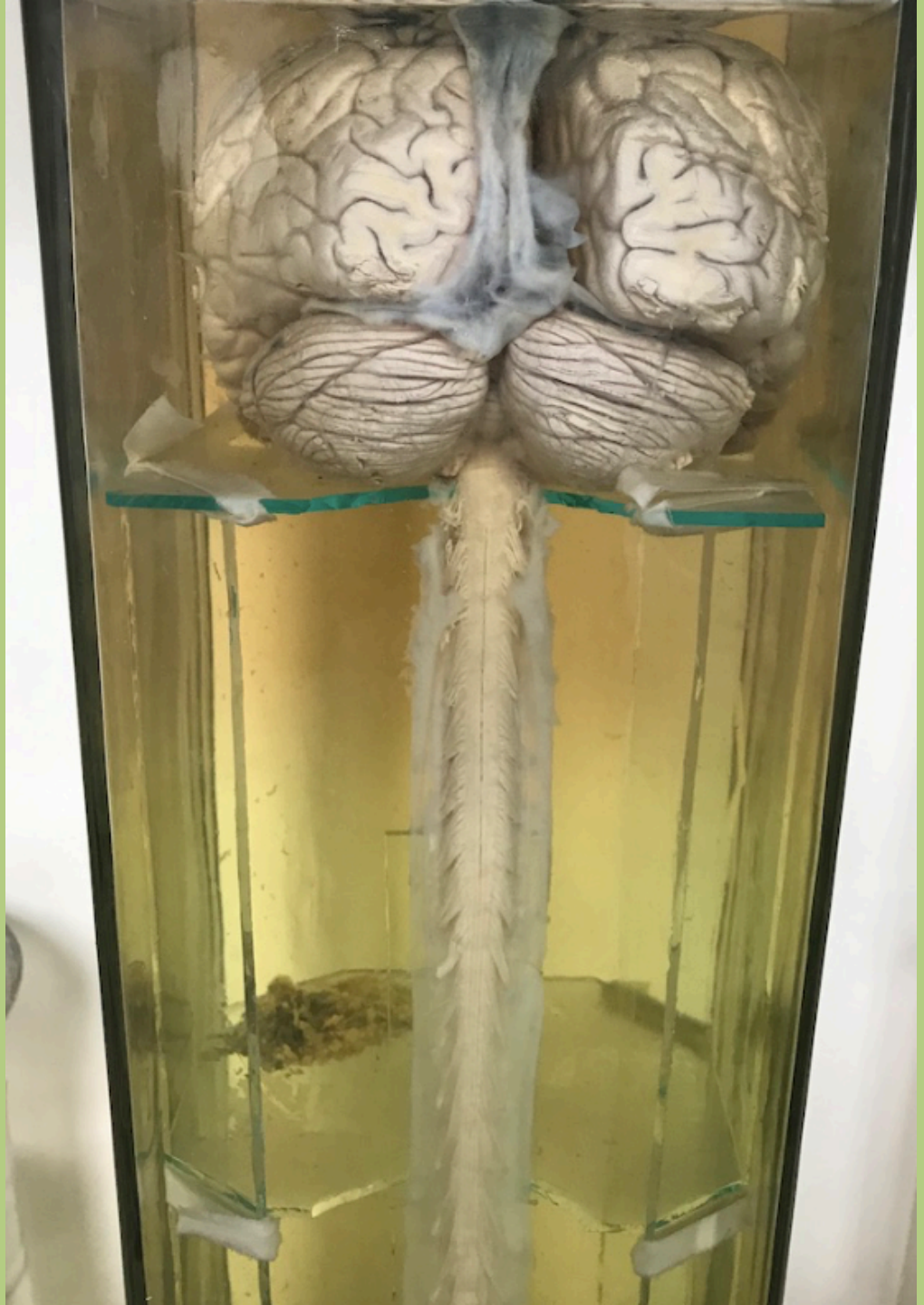
Nervous system: review

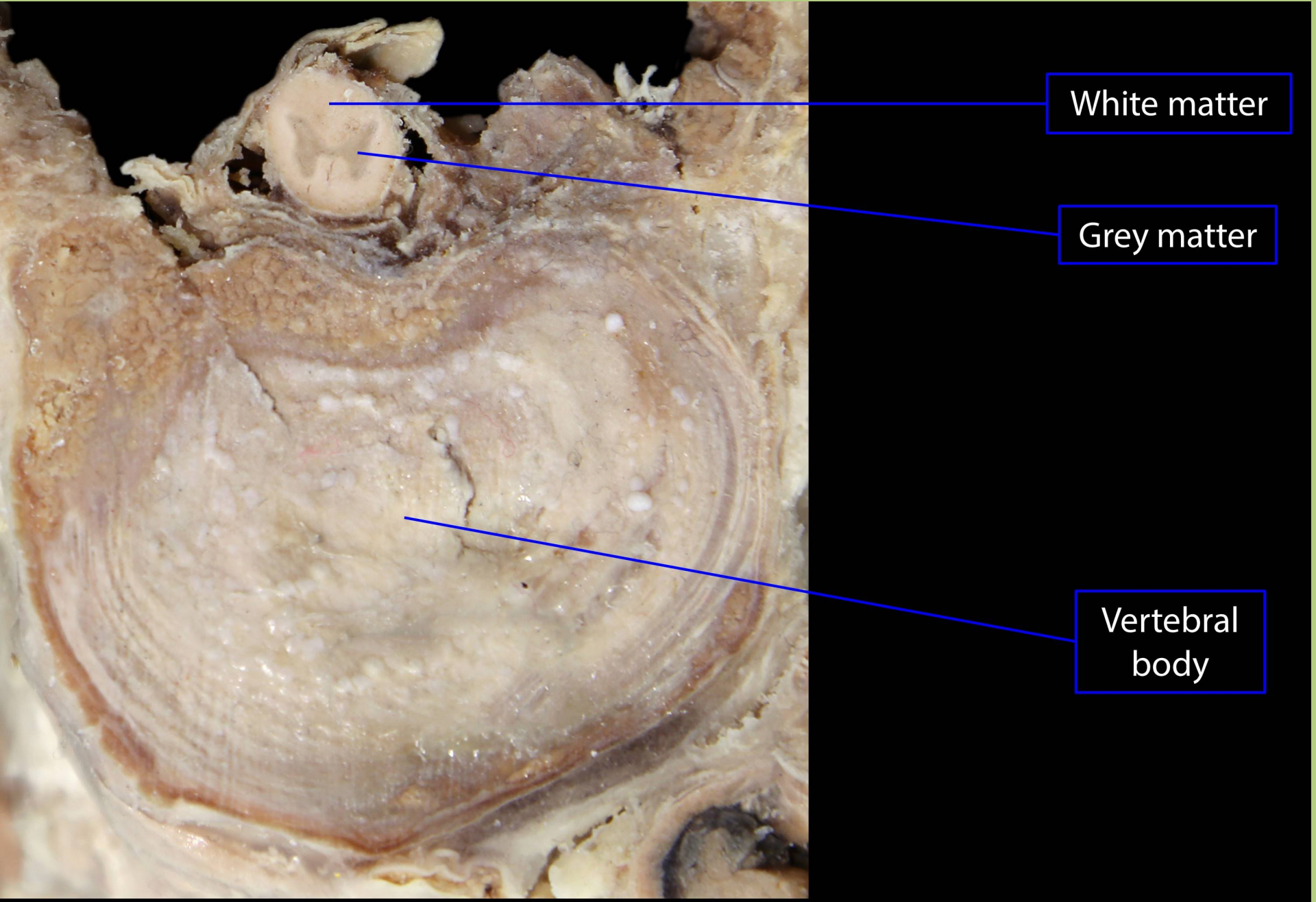
Sándor Katz M.D.,Ph.D.


Donald Siwek, PhD©
Copyright, 2006

Spinal cord

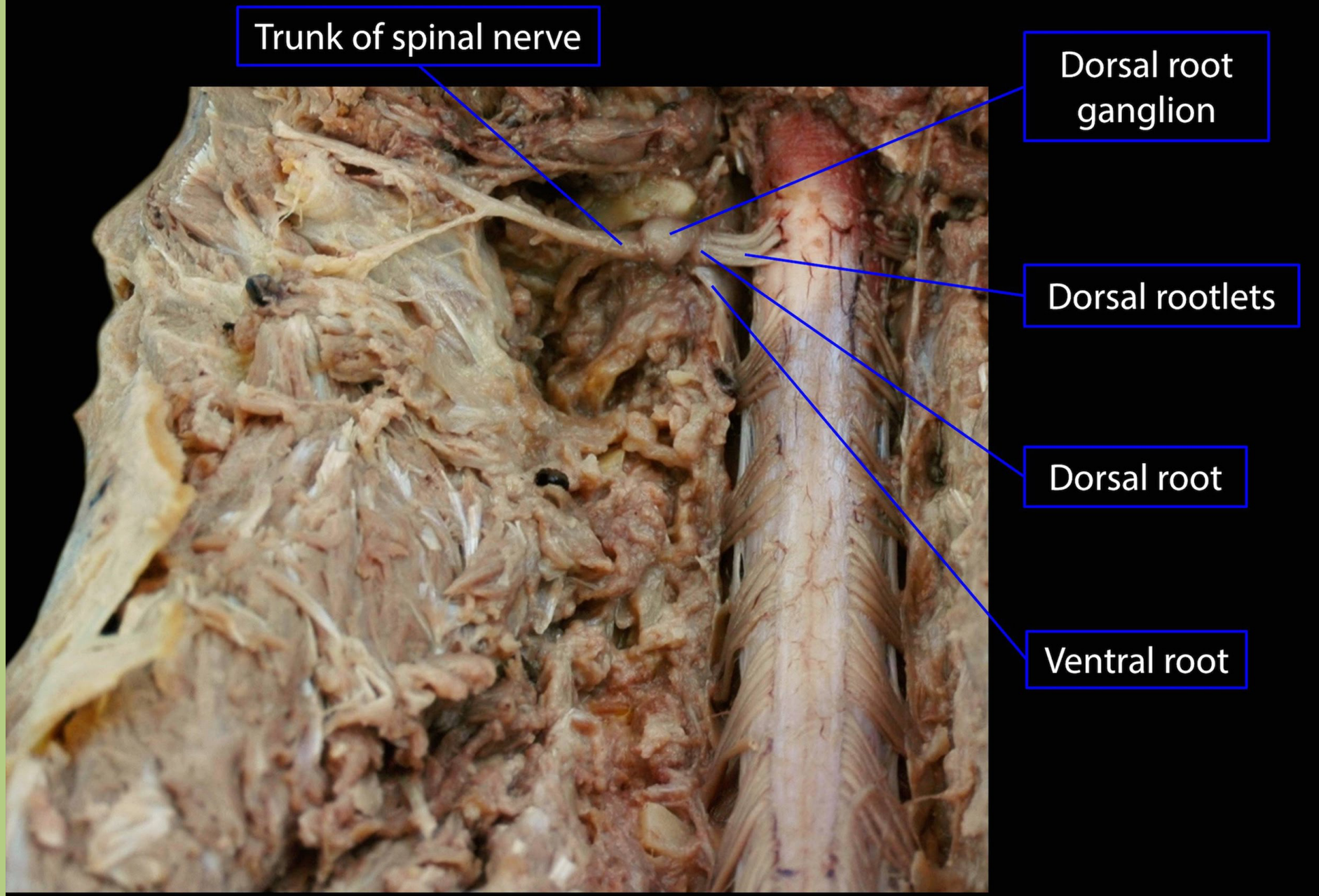




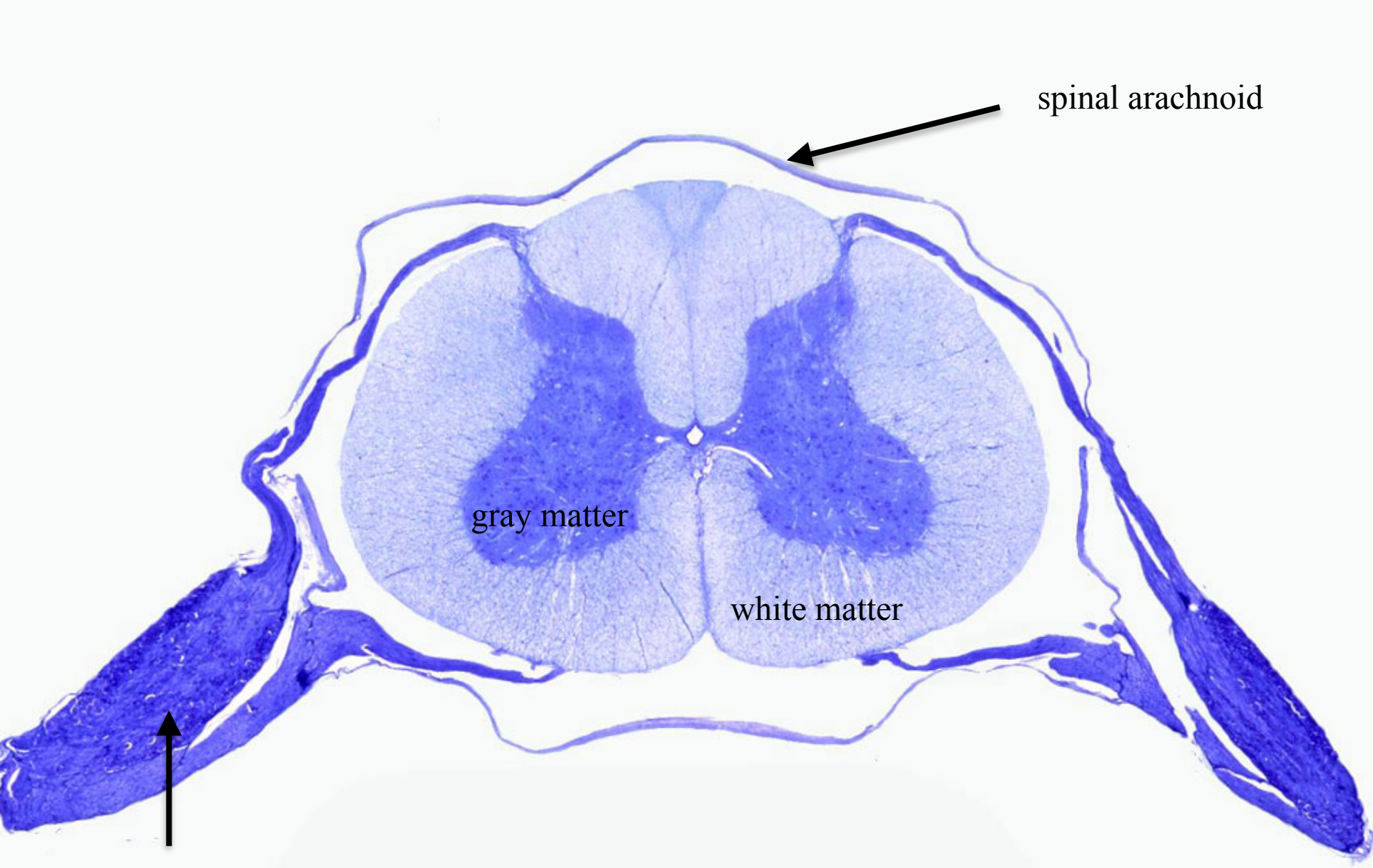


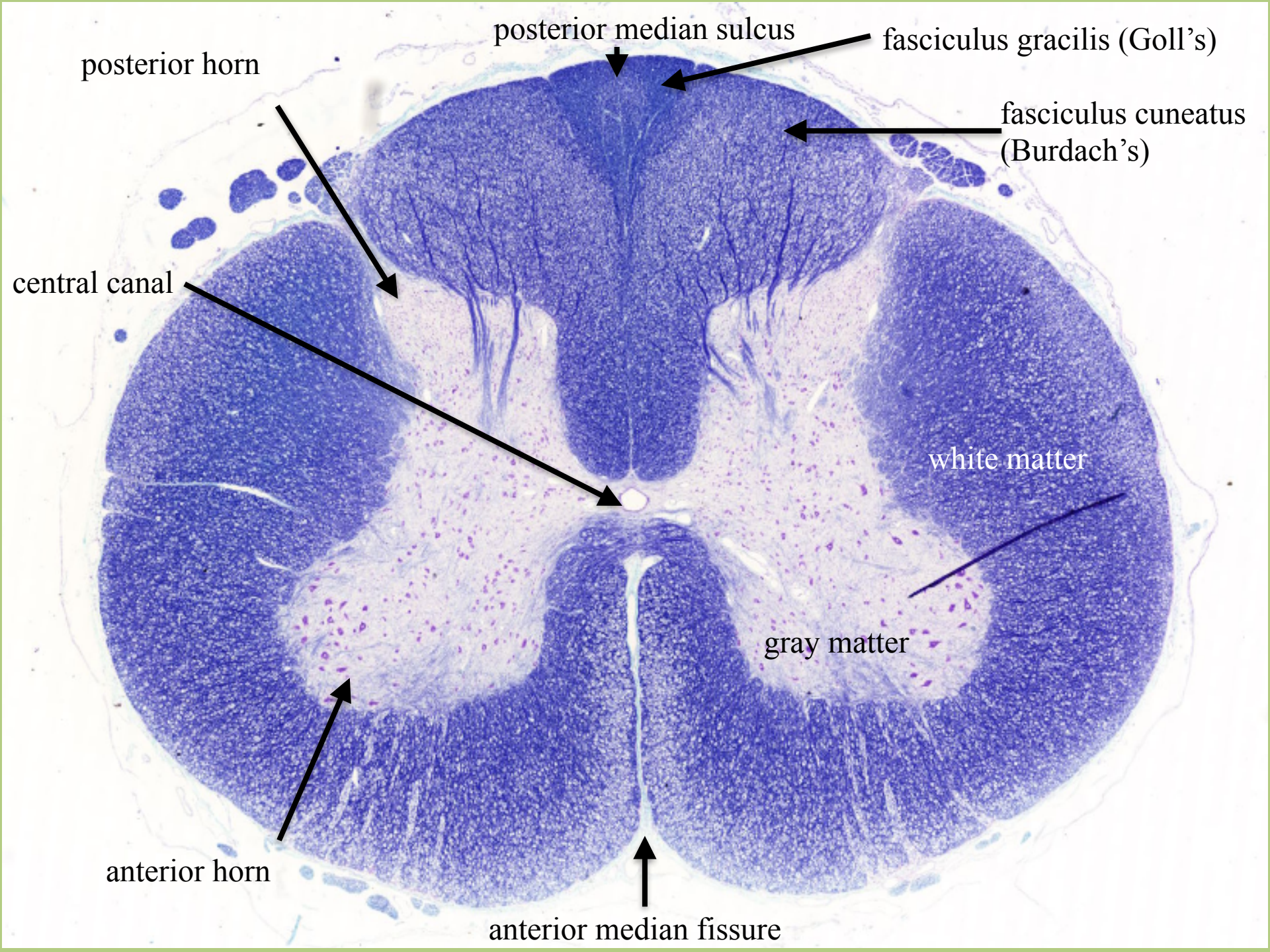
Transverse section of vertebral column, superior

BlueLink



Spinal nerve, posteroinferior


spinal arachnoid
gray matter
white matter
dorsal root ganglion

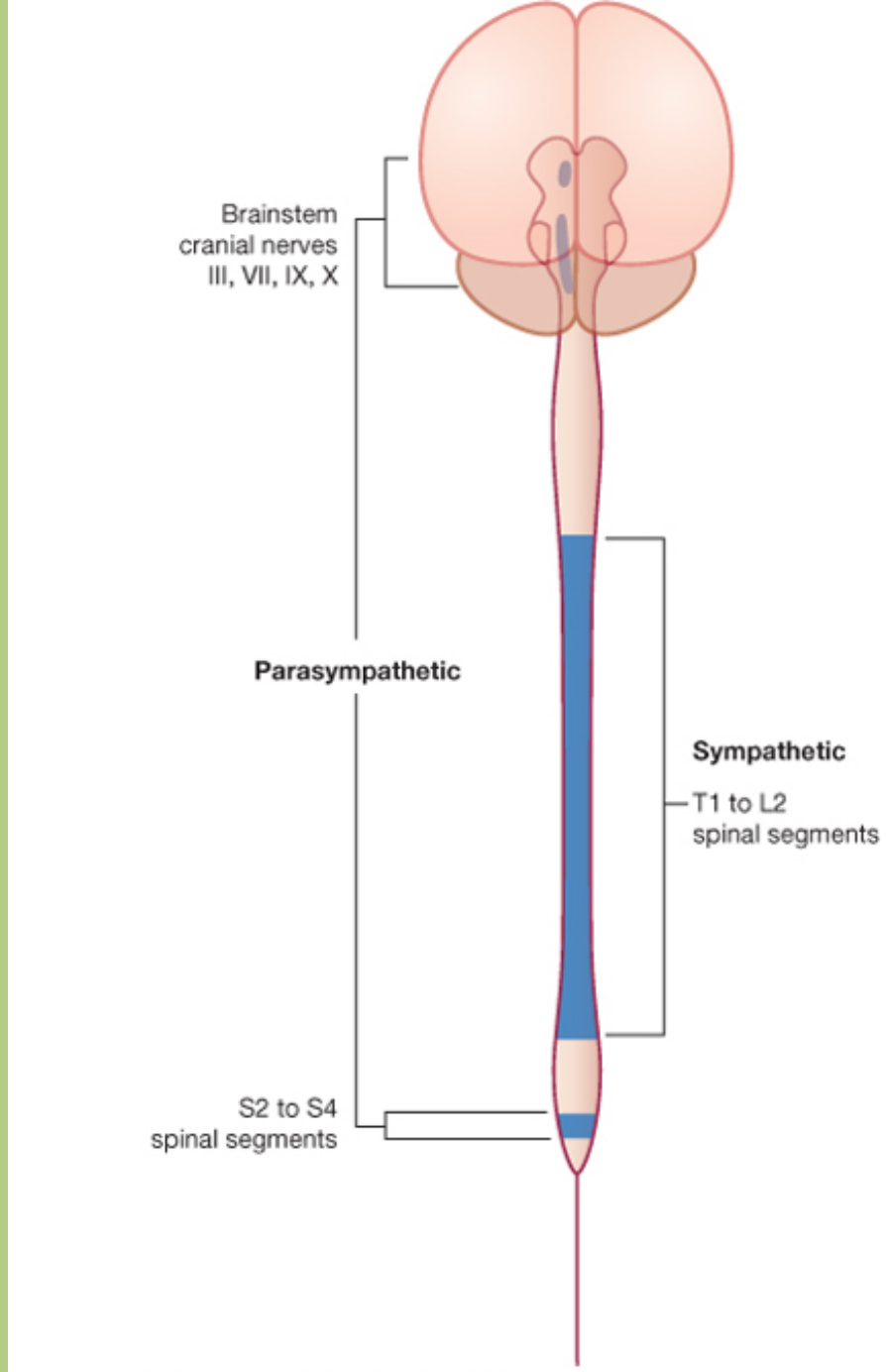

posterior median sulcus
fasciculus gracilis (Goll's)
posterior horn
fasciculus cuneatus (Burdach's)
central canal
white matter
gray matter
anterior horn
anterior median fissure

Autonomic nervous system

The neurons of the **sympathetic nervous system** are located in the lateral horns of ***thoracic and lumbar segments of the spinal cord (T1-L2)***.

The neurons of the **parasympathetic system** are located in parts of the ***brainstem*** and in the ***sacral spinal cord (S2-S4)***.

The **enteric nervous system** is now regarded as an ***independent part*** of the autonomic nervous system.

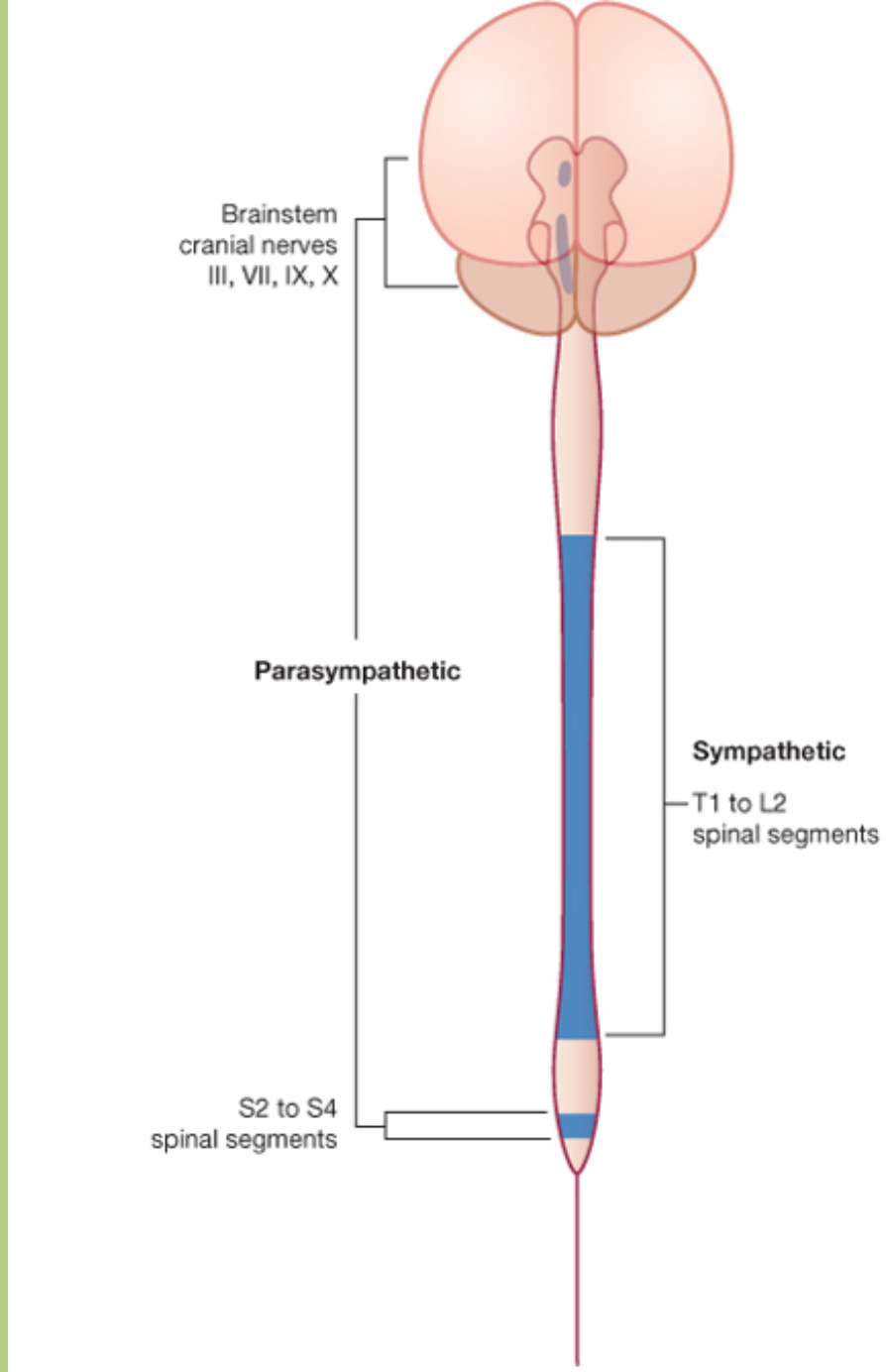


Autonomic nervous system

The ***sympathetic nervous system is excitatory part of the autonomic nervous system (fight or flight)***.

The ***parasympathetic nervous system coordinates rest and digestive processes (rest and digest)***.

The transmitter at the target organ is ***acetylcholine in the parasympathetic*** and ***norepinephrine in the sympathetic nervous system.***

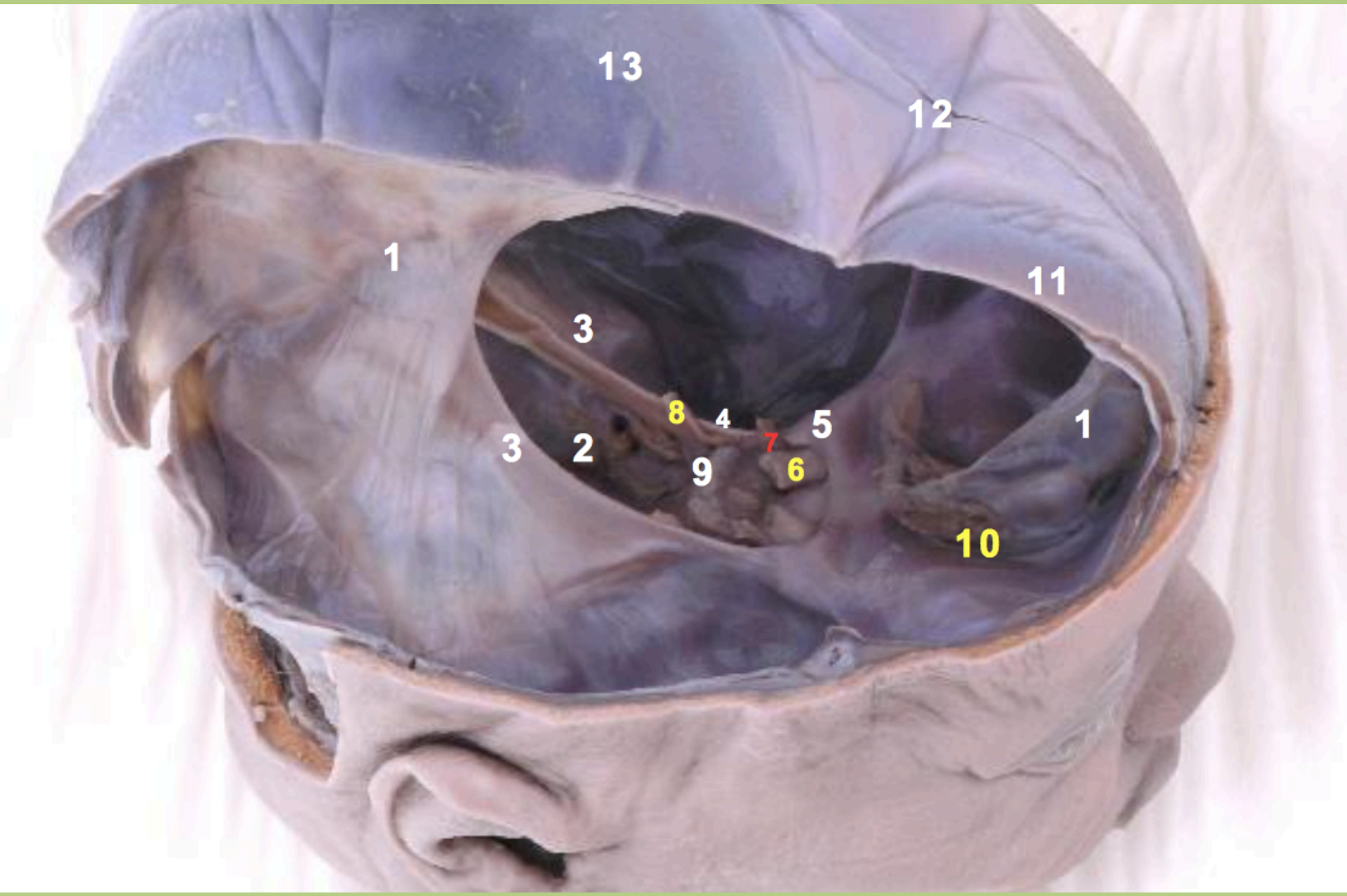


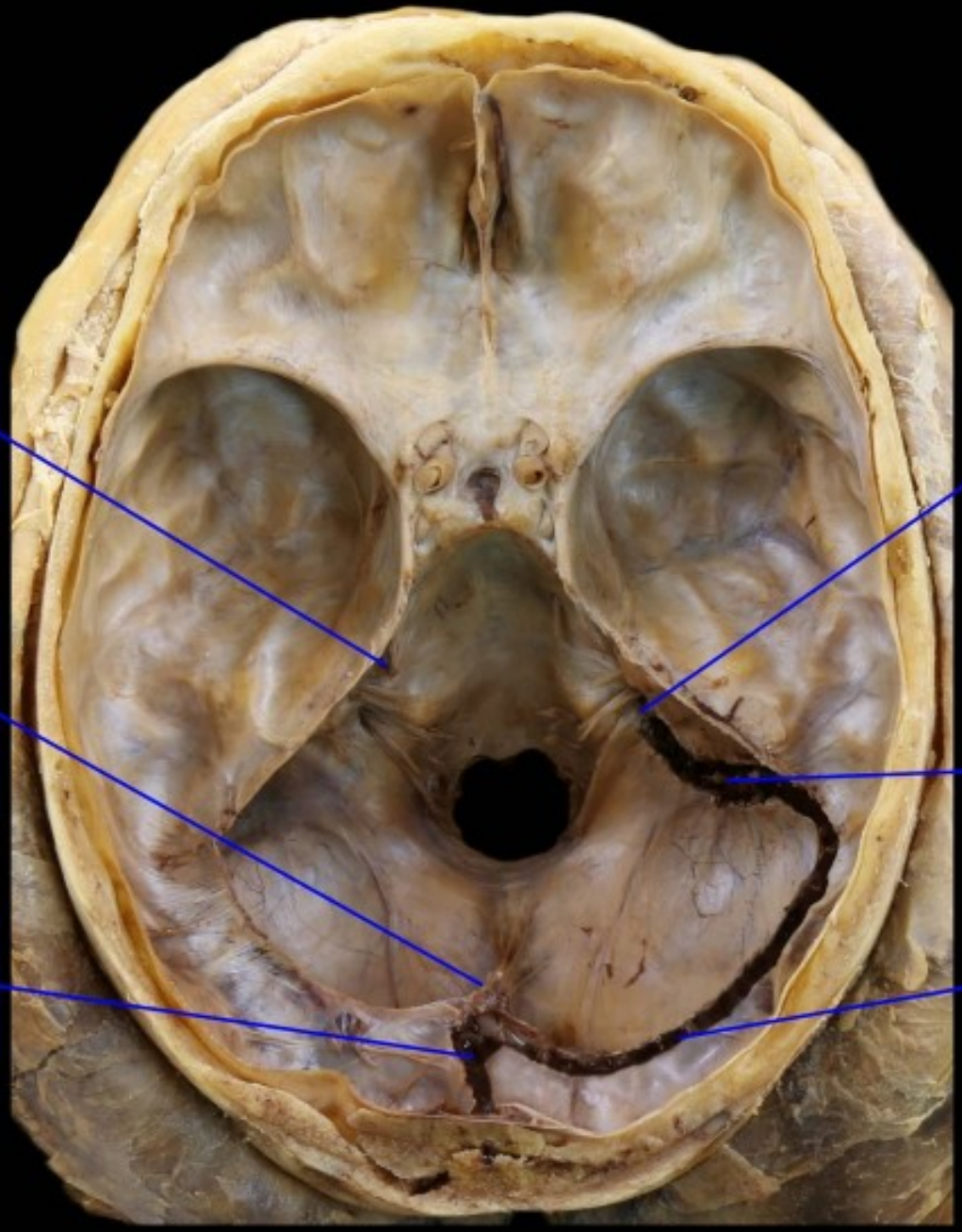
organ	sympathetic nervous system	parasympathetic nervous system
eye	pupillary dilation	pupillary constriction
salivary glands	decreased salivation	increased salivation
heart	increased heart rate	decreased heart rate
lungs	decreased bronchial secretion and bronchodilation	increased bronchial secretion and bronchoconstriction
gastrointestinal tract	decrease in secretion and motility	increase in secretion and motility
male sex organs	ejaculation	erection
skin	vasoconstriction, sweating and piloerection	no effect

Cerebrum


1
2
3

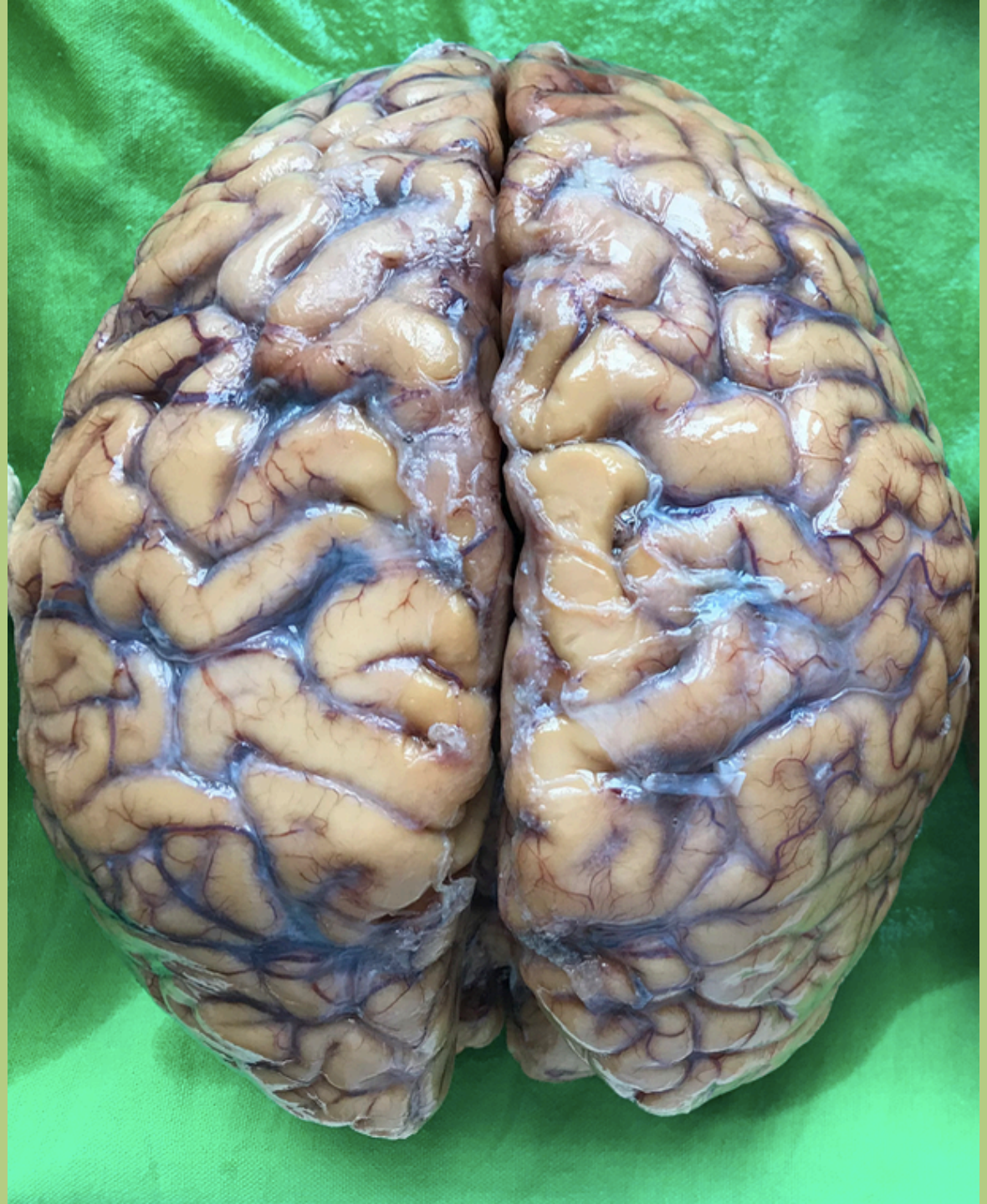

1
2

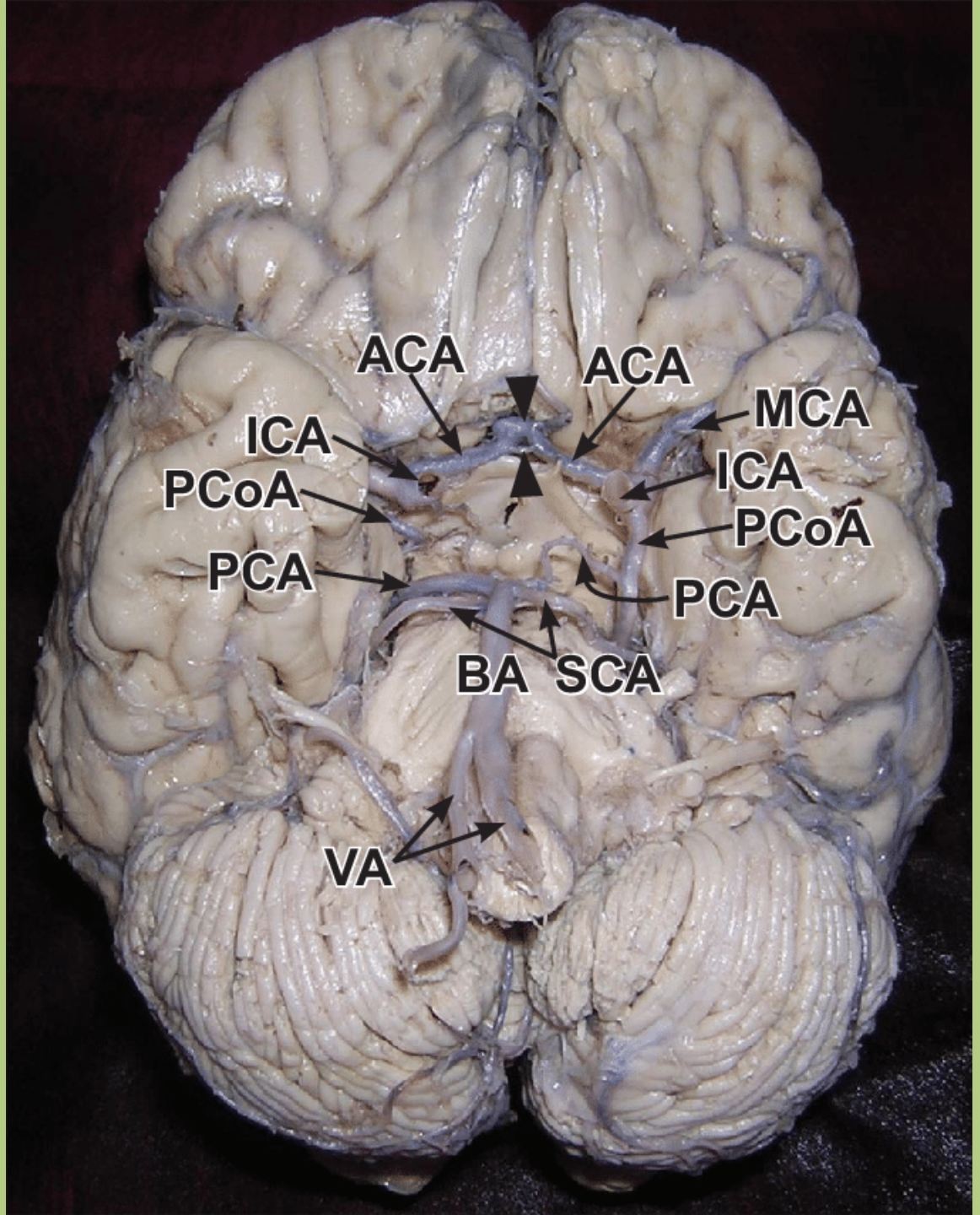

13
12
1
11
3
8
4
5
7
3
2
1
9
6
10



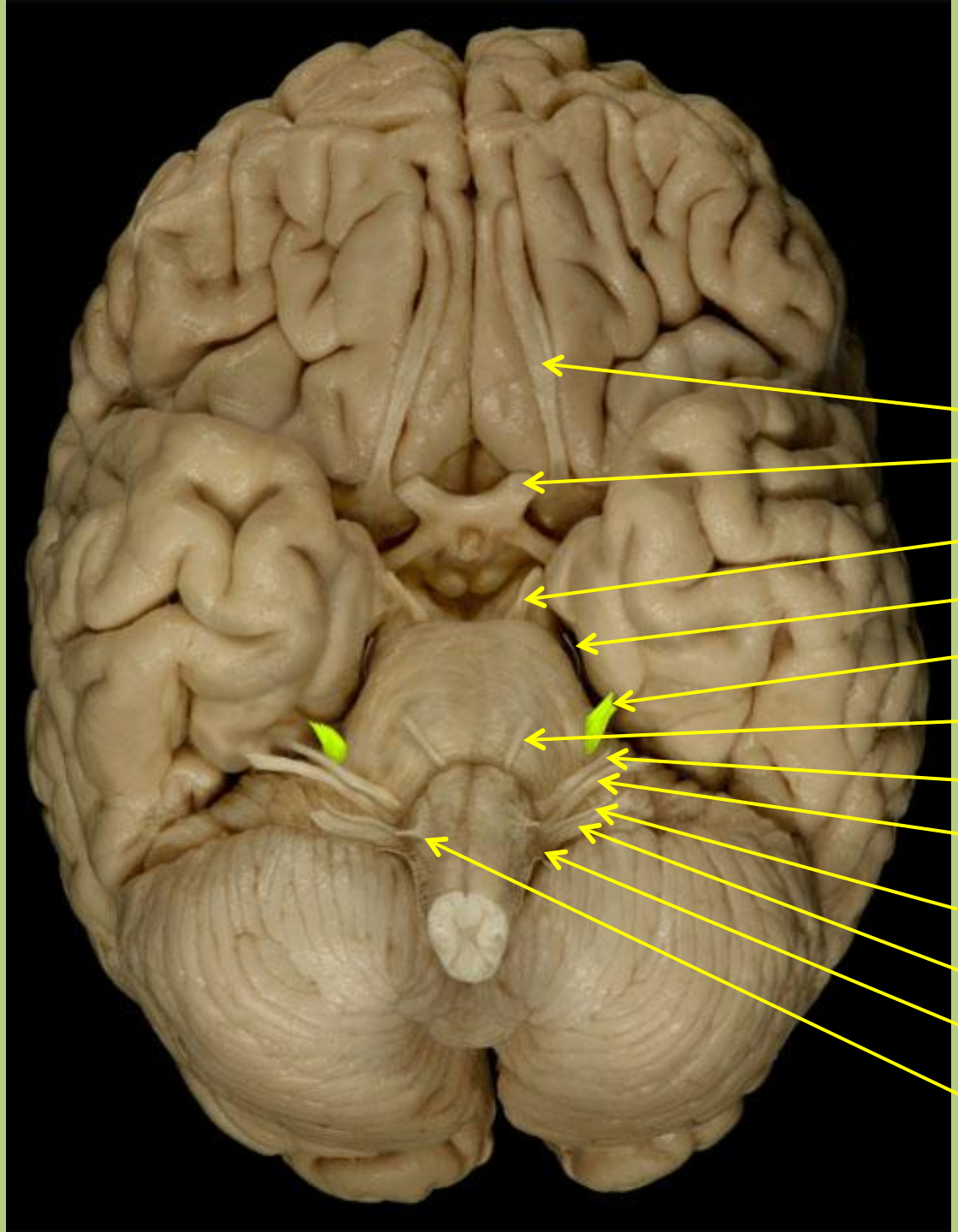
Cranial cavity, superior

BlueLink

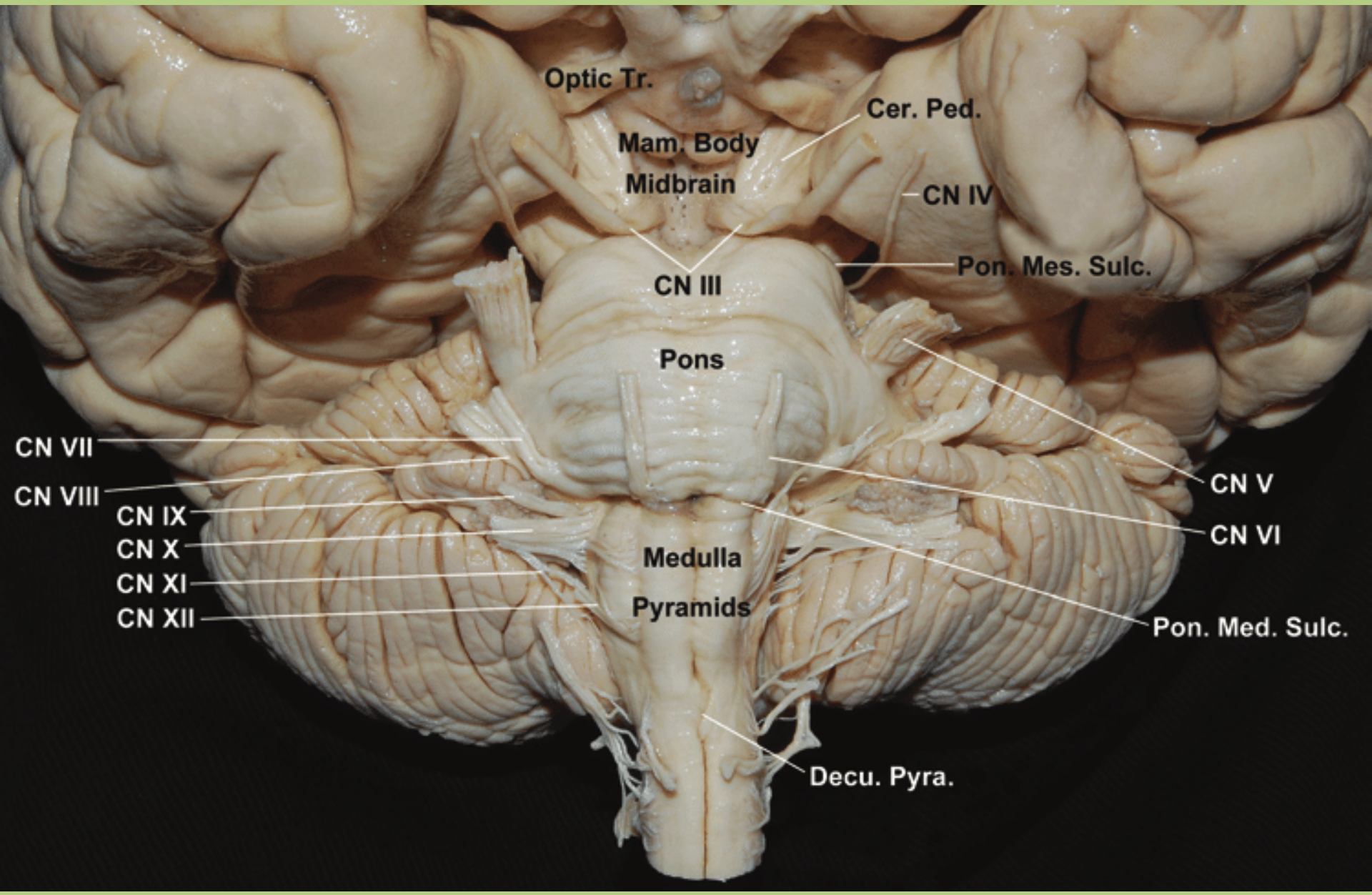


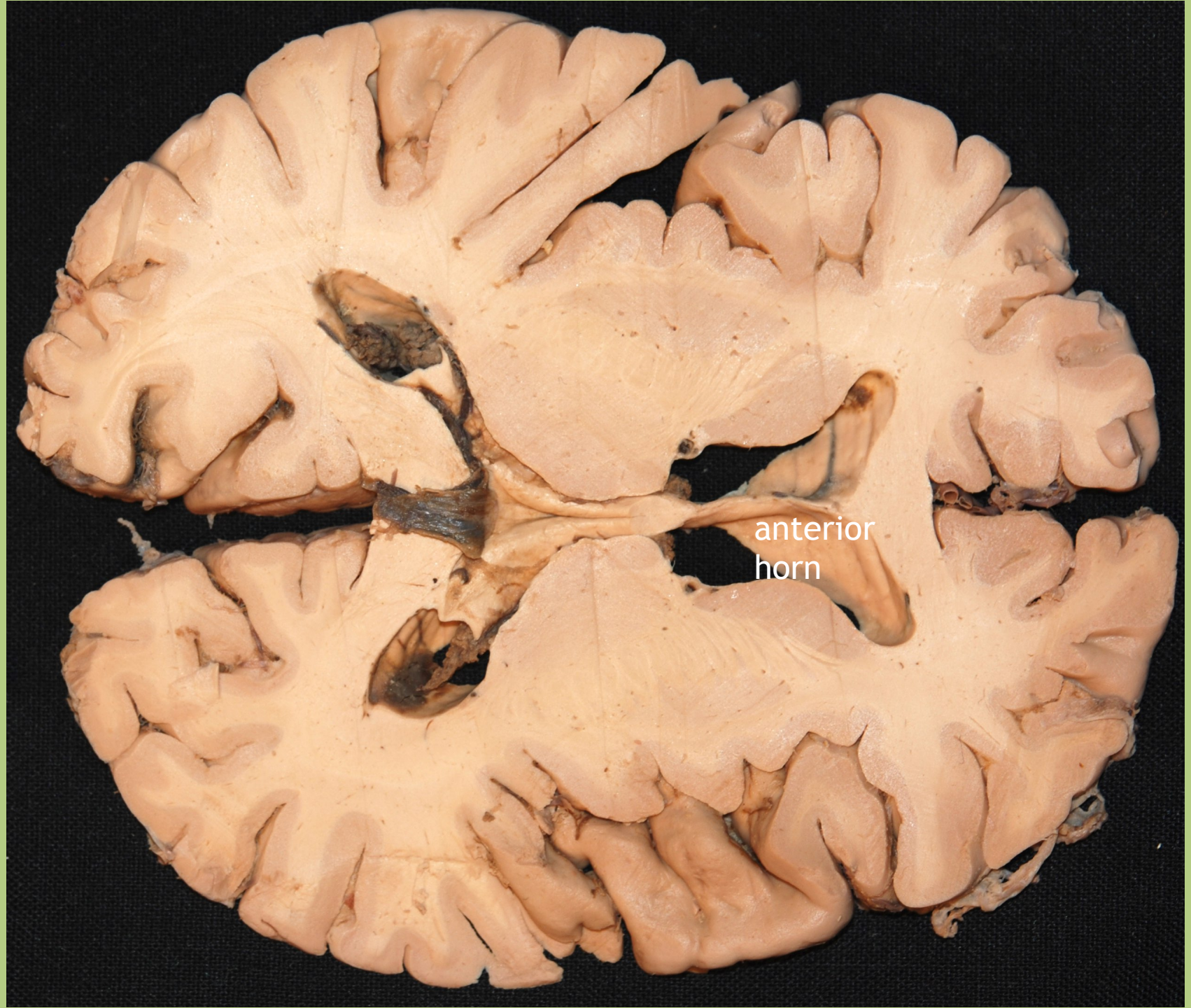

ACA
ACA
MCA
ICA
ICA
PCoA
PCoA
PCA
PCA
BA
SCA
VA

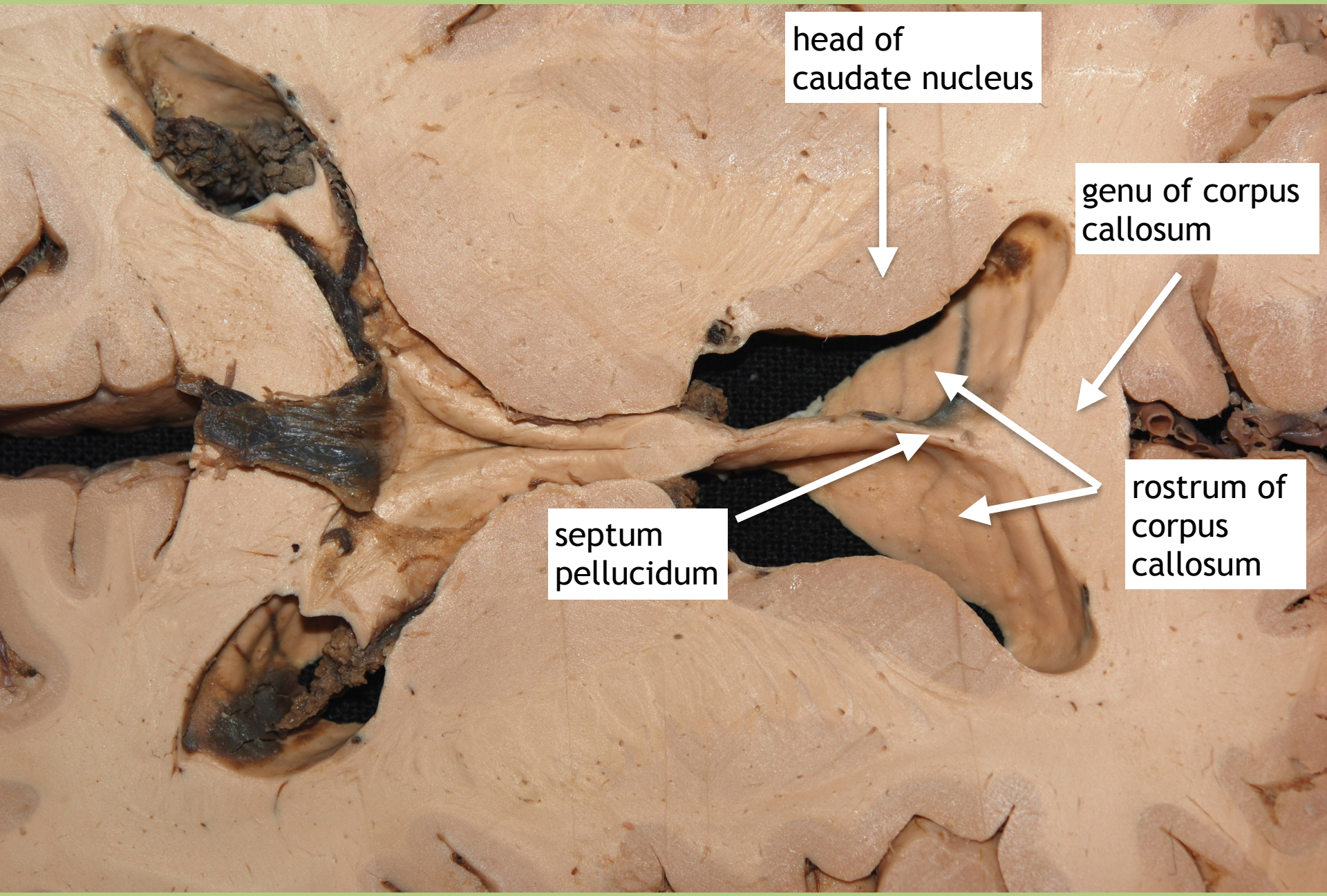
Cranial nerves

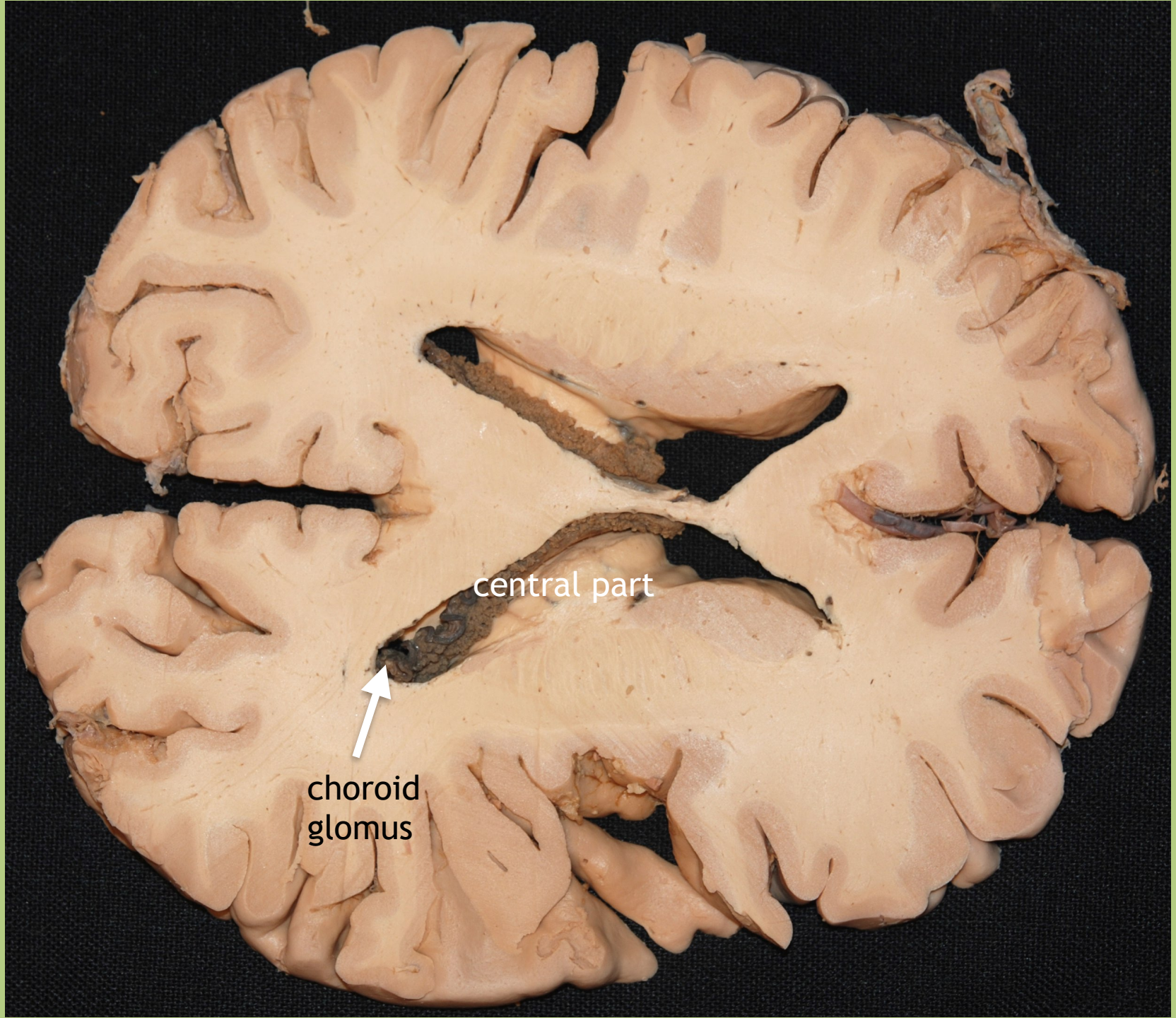


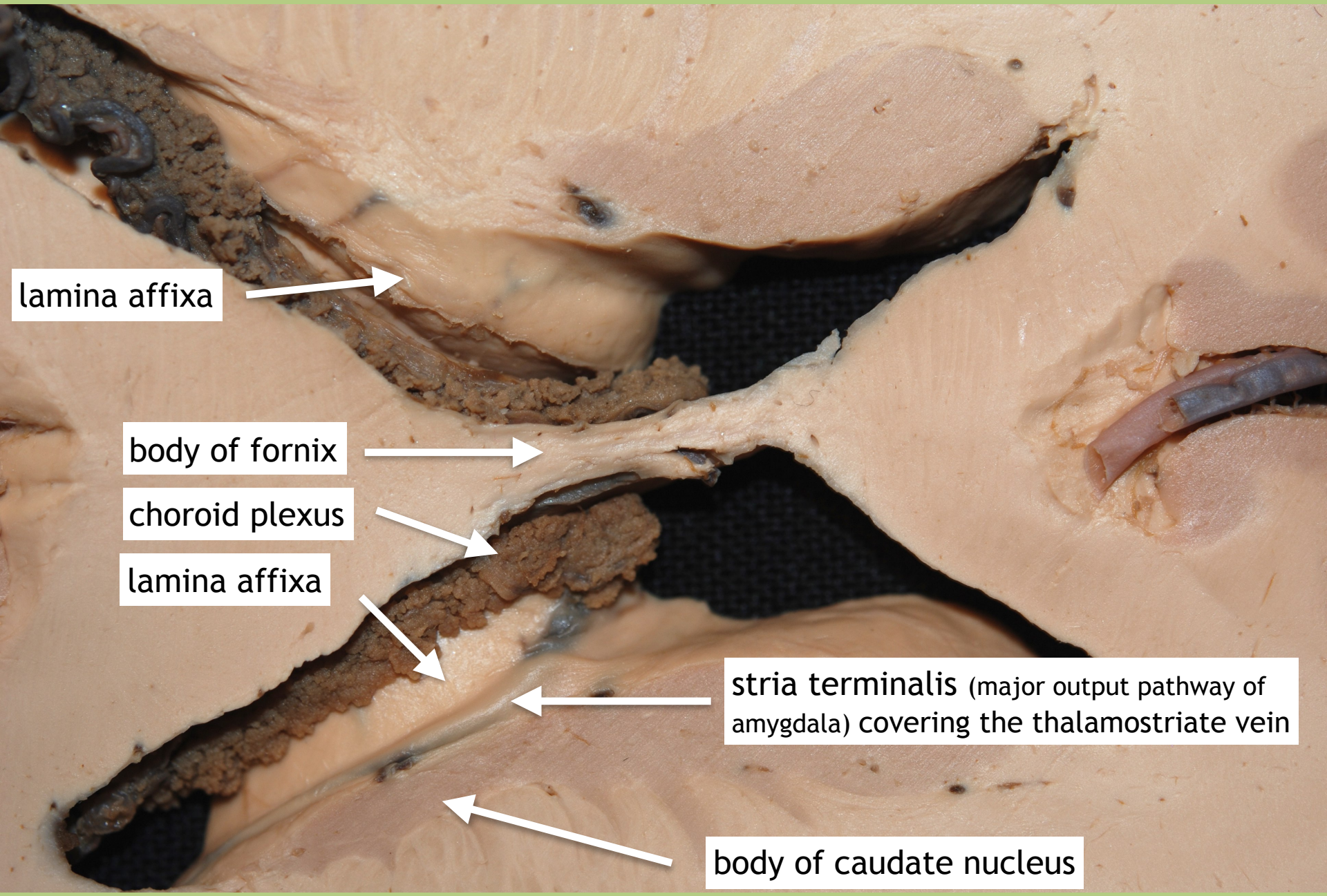
I. Olfactory nerve
II. Optic nerve
III. Oculomotor nerve
IV. Trochlear nerve
V. Trigeminal nerve
VI. Abducent nerve
VII. Facial nerve
VIII. Vestibulocochlear nerve
IX. Glossopharyngeal nerve
X. Vagus nerve
XI. Accessory nerve
XII. Hypoglossal nerve

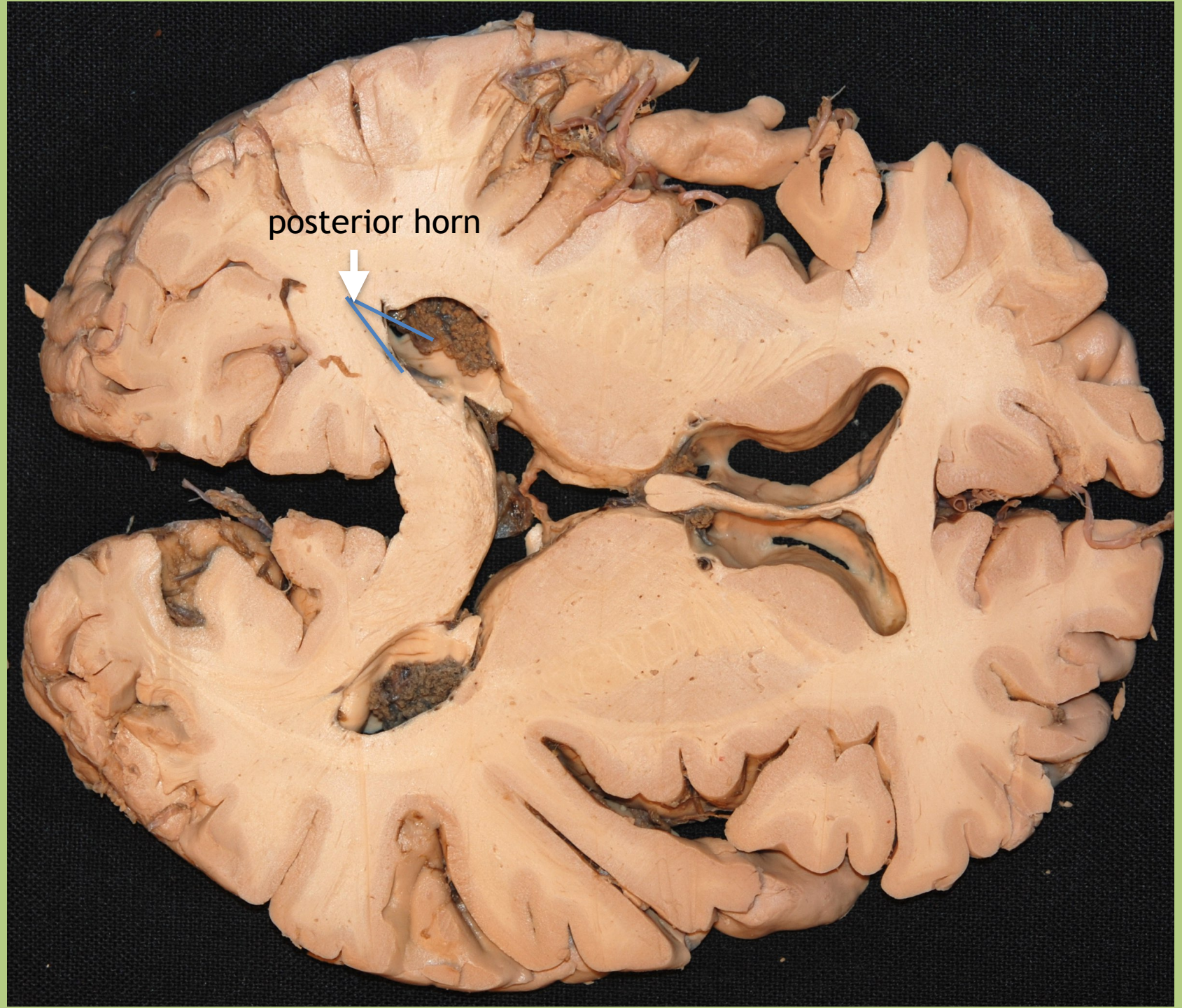

Optic Tr.
Cer. Ped.
Mam. Body
Midbrain
CN IV
Pon. Mes. Sulc.
CN III
Pons
CN VII
CN VIII
CN IX
CN X
CN XI
CN XII
CN V
CN VI
Medulla
Pyramids
Pon. Med. Sulc.
Decu. Pyra.

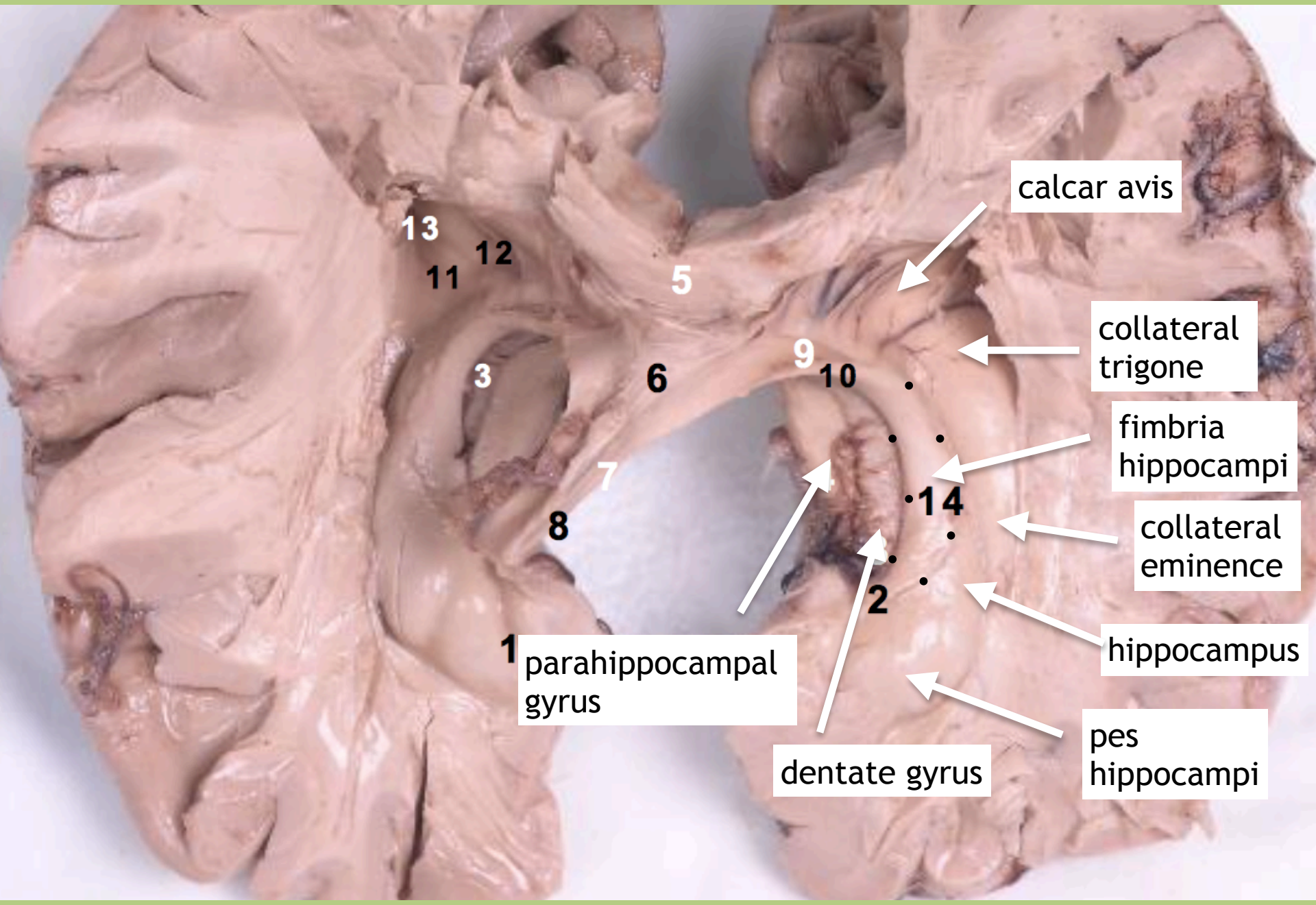

anterior
horn


head of caudate nucleus
genu of corpus callosum
rostrum of corpus callosum
septum pellucidum


central part
choroid
glomus


lamina affixa
body of fornix
choroid plexus
lamina affixa
stria terminalis (major output pathway of amygdala) covering the thalamostriate vein
body of caudate nucleus


posterior horn


13
12
11
5
3
6
9
10
7
8
14
2
1
calcar avis
collateral trigone
fimbria hippocampi
collateral eminence
hippocampus
pes hippocampi
dentate gyrus
parahippocampal gyrus

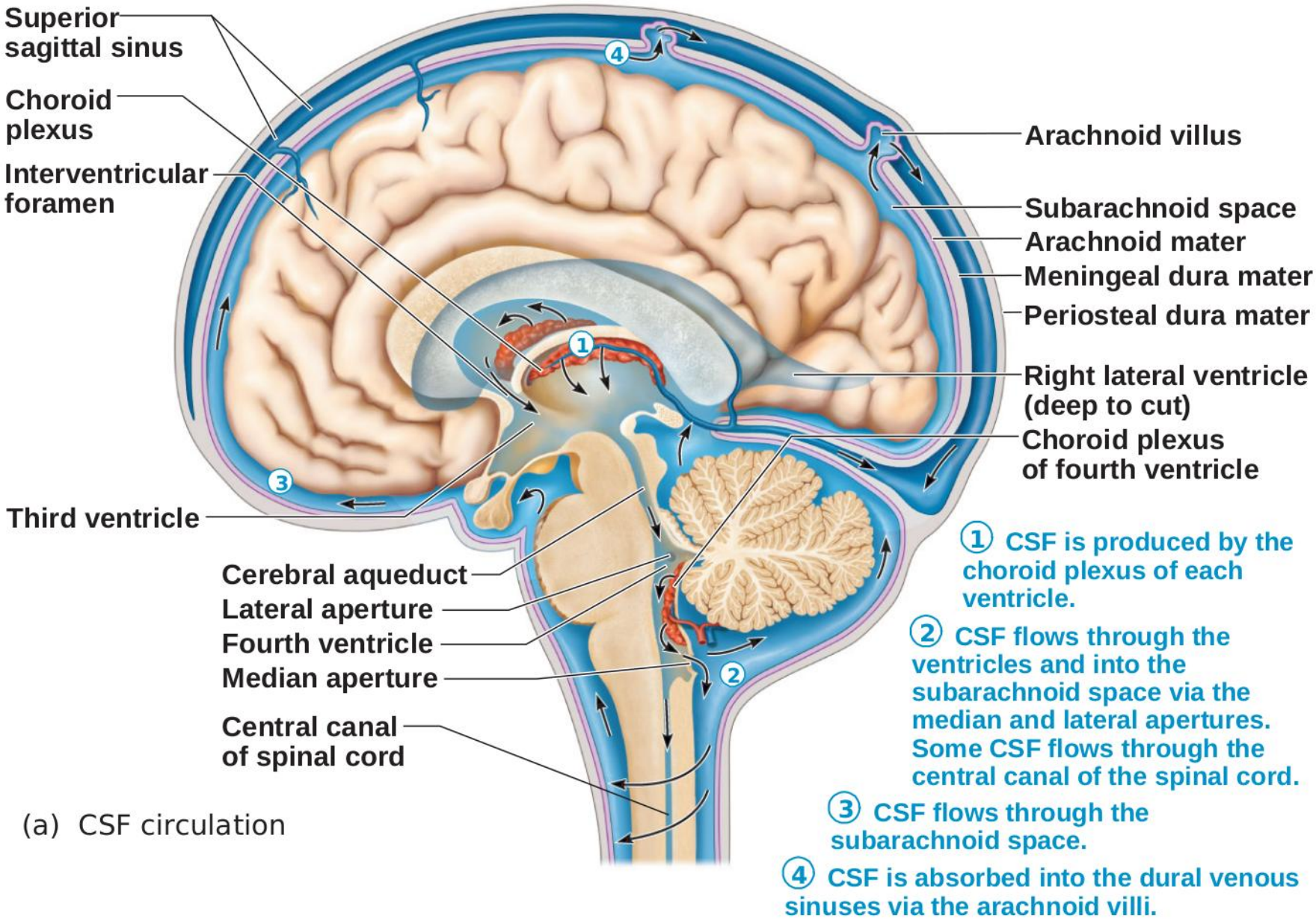
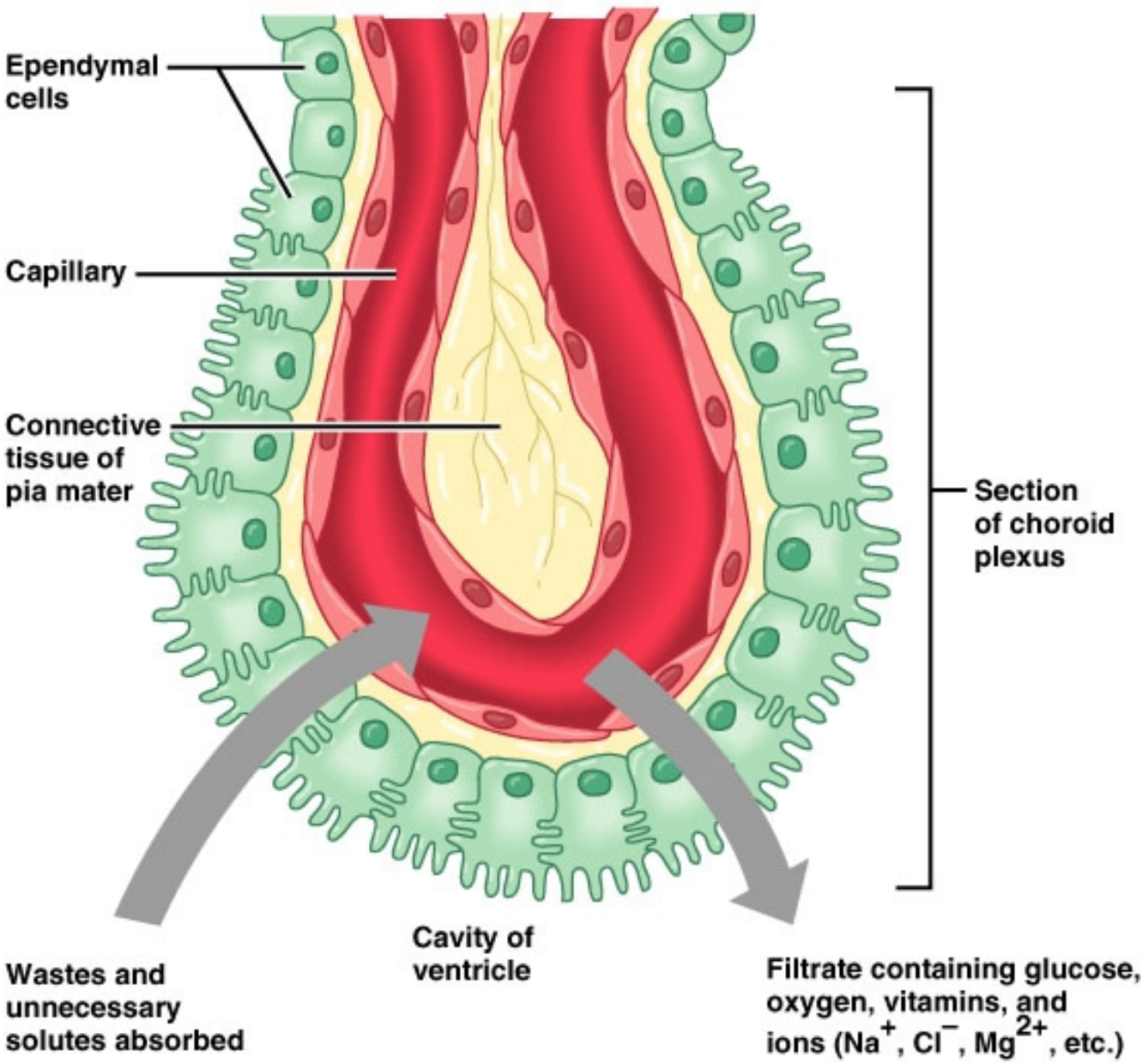
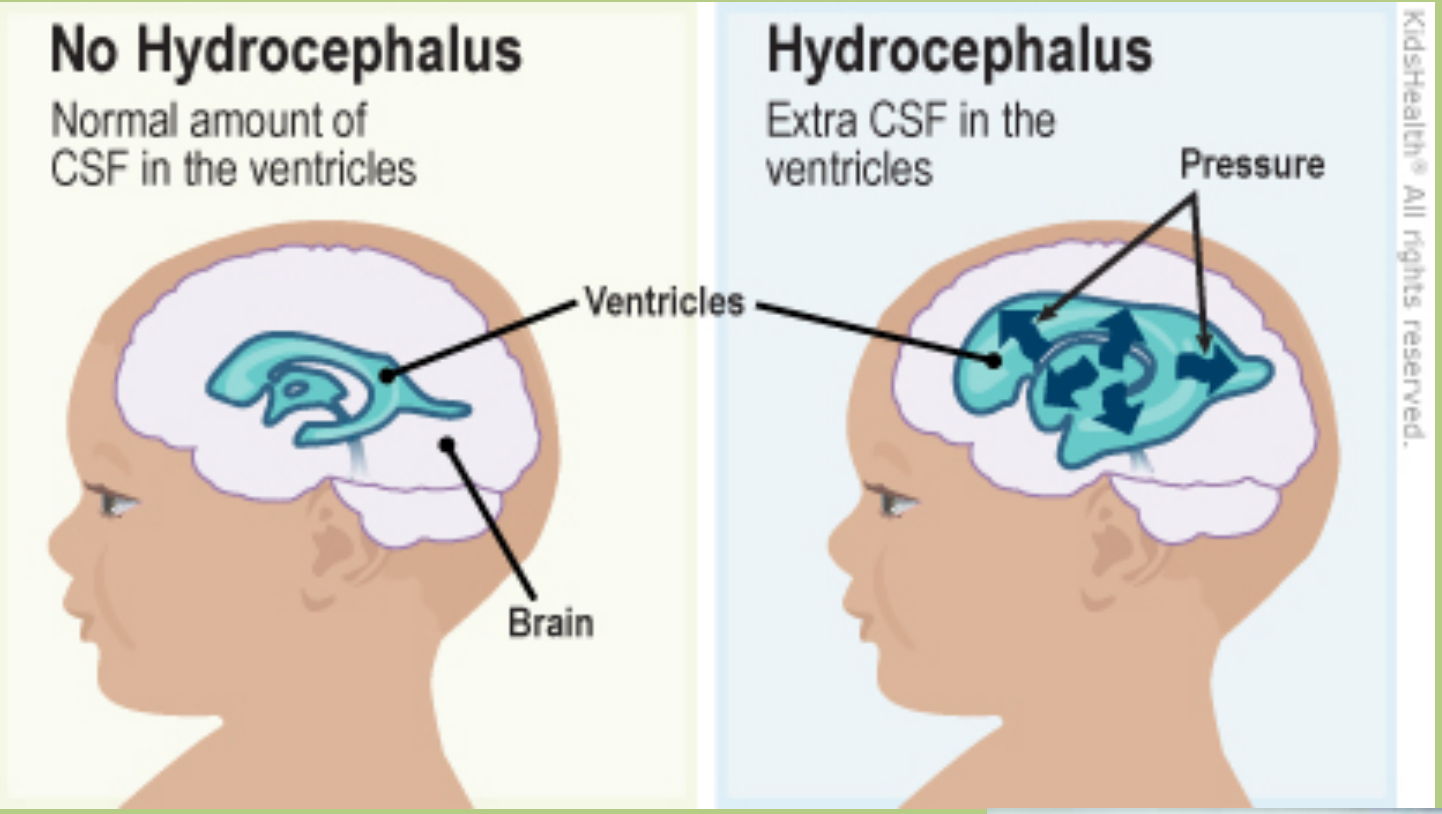
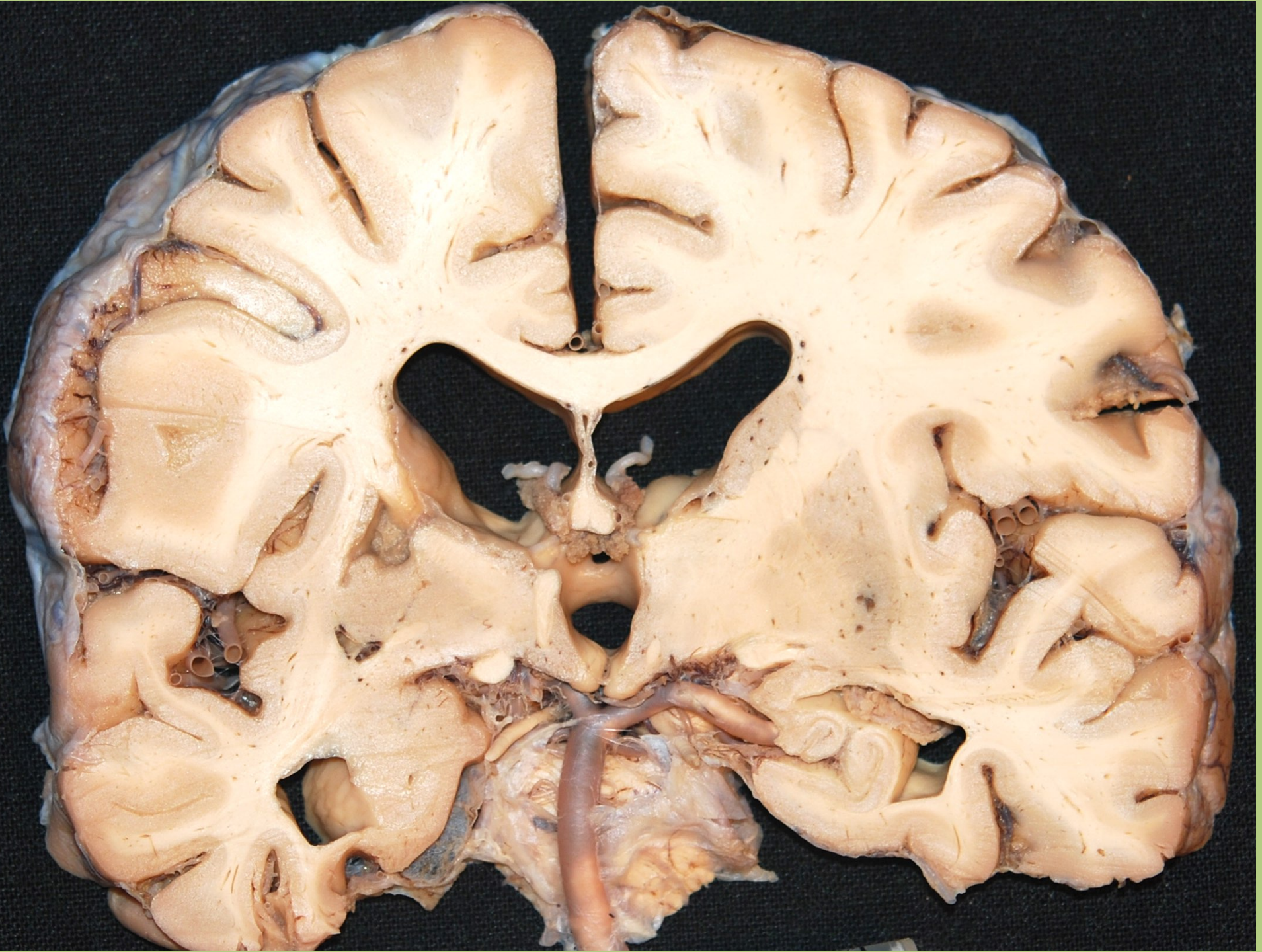


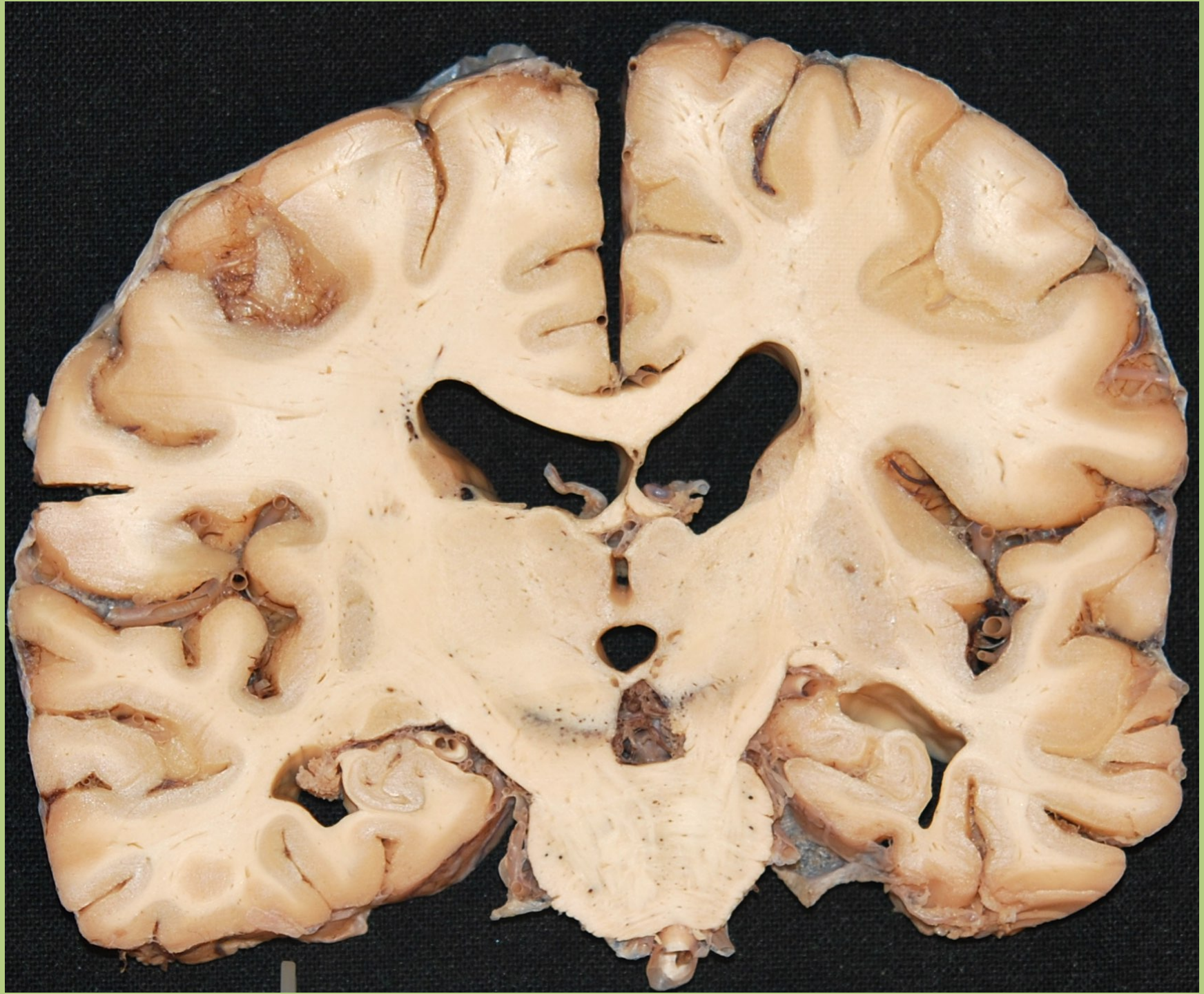
Figure 12.26a

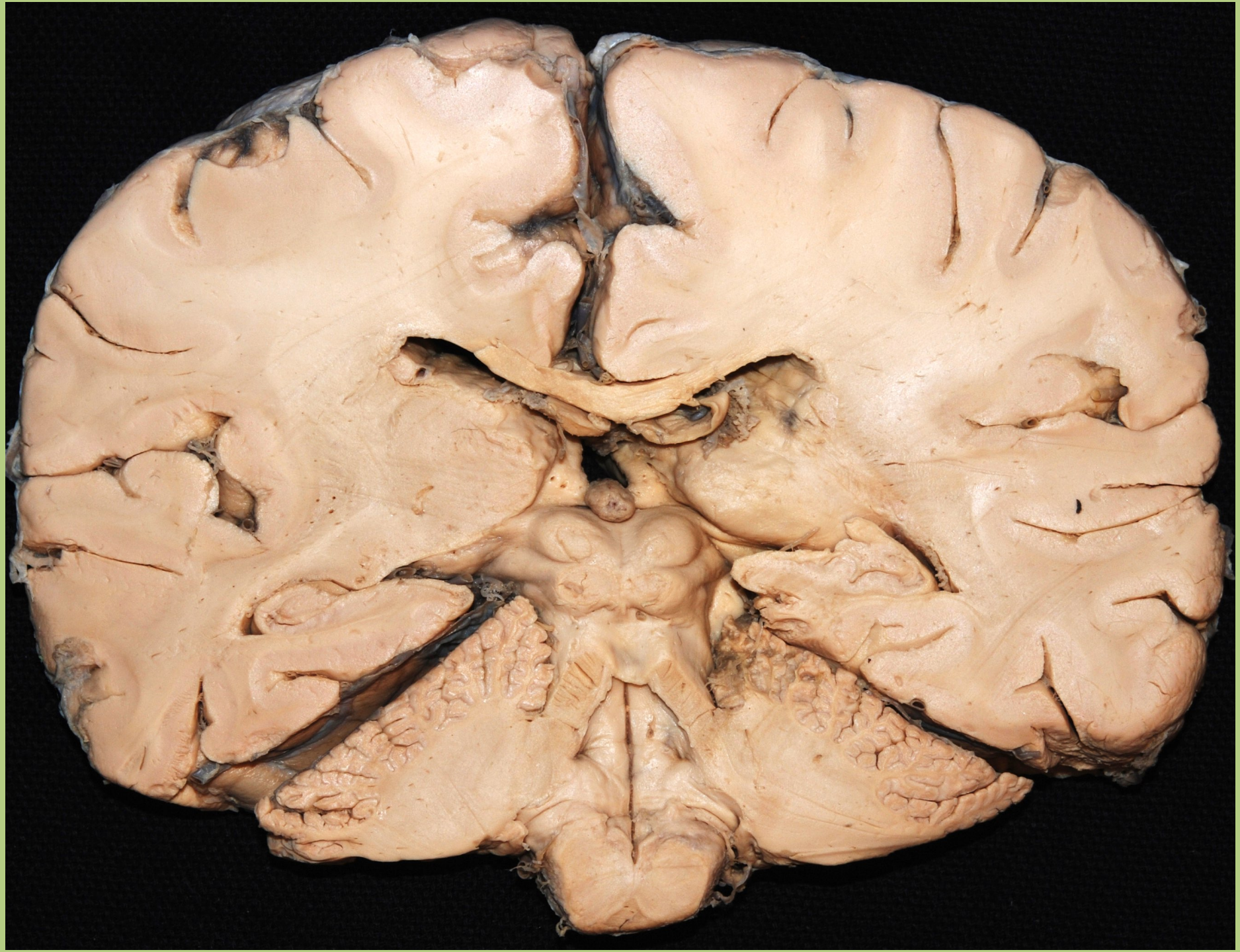
choroid plexus




No Hydrocephalus
Normal amount of CSF in the ventricles
Ventricles
Brain
Hydrocephalus
Extra CSF in the ventricles
Pressure
KidsHealth® All rights reserved.

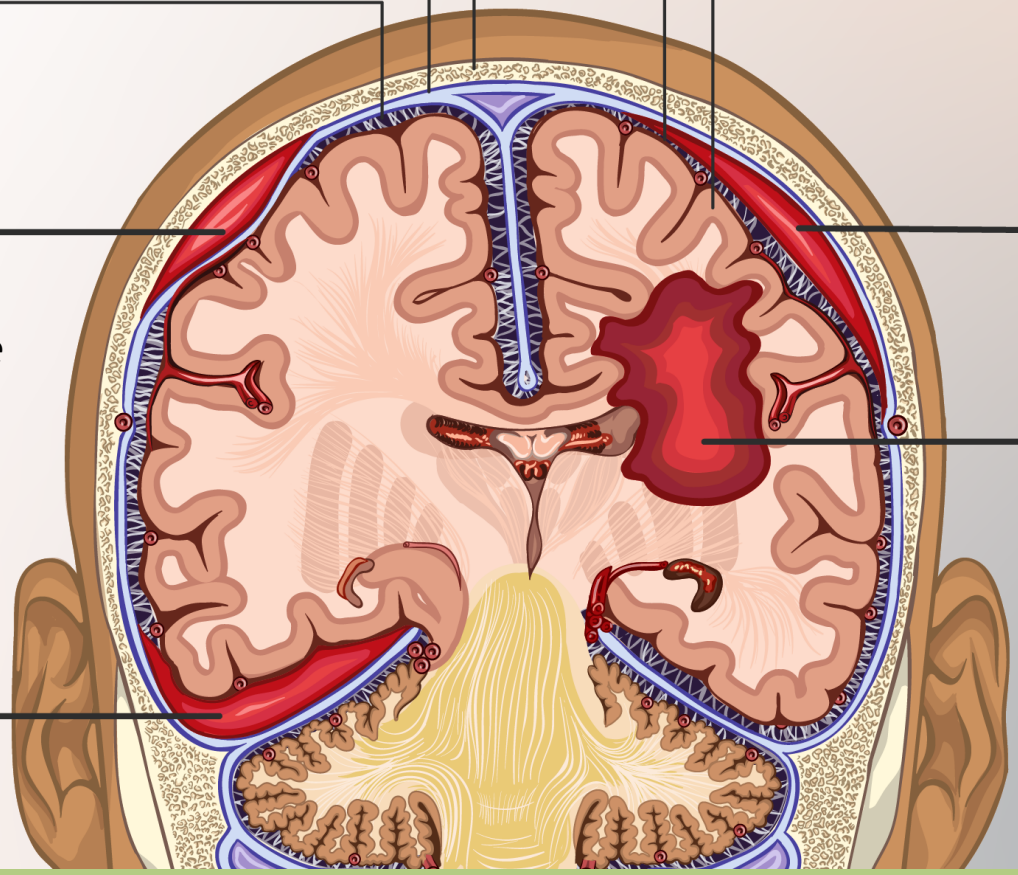






Pathology

Types of brain hemorrhage



1 Epidural Hematoma

rupture of the middle meningeal artery

2 Subdural Hematoma

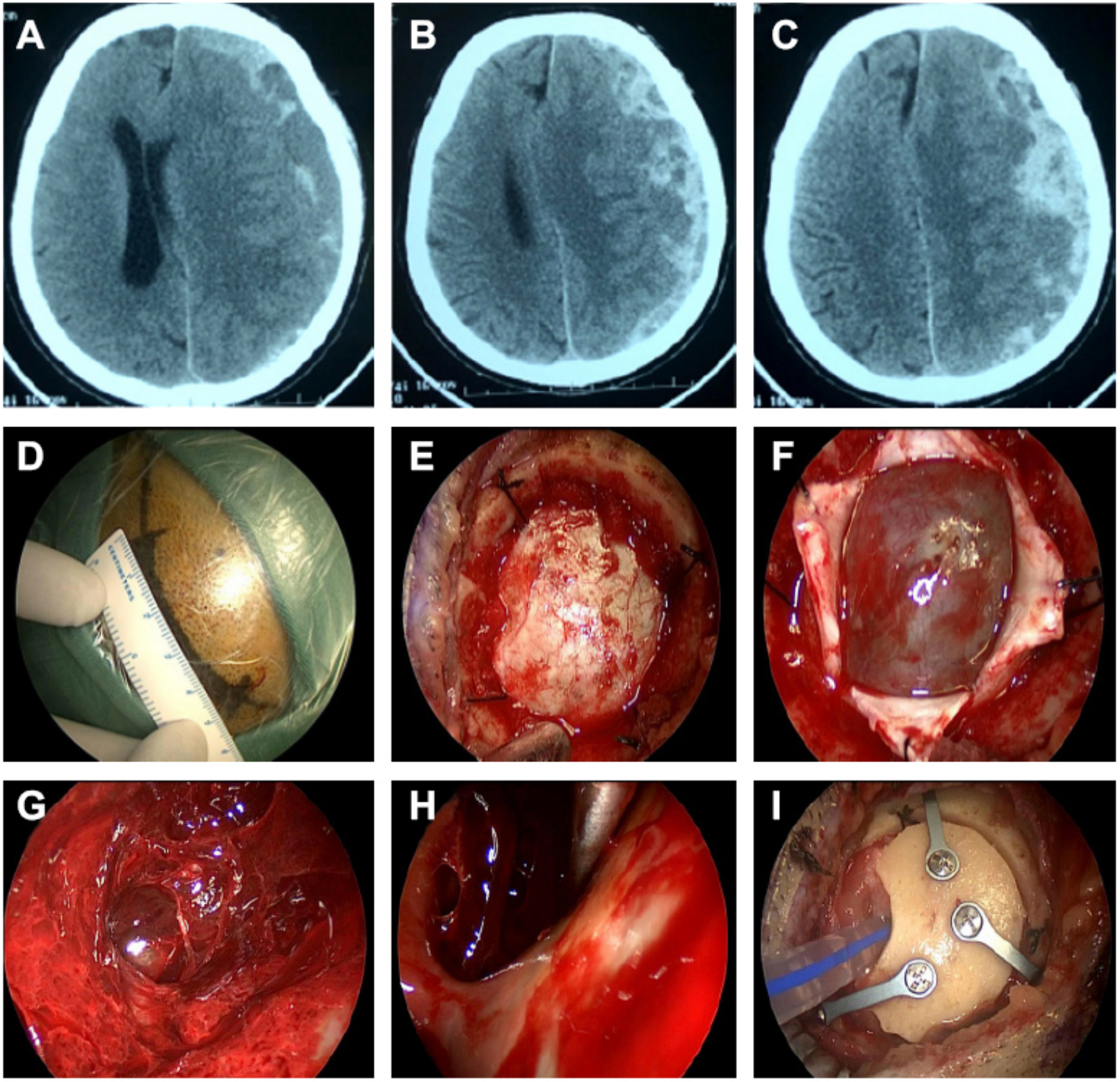
rupture of the bridging veins

3 Subarachnoid Hemorrhage

rupture of the Willis' circle

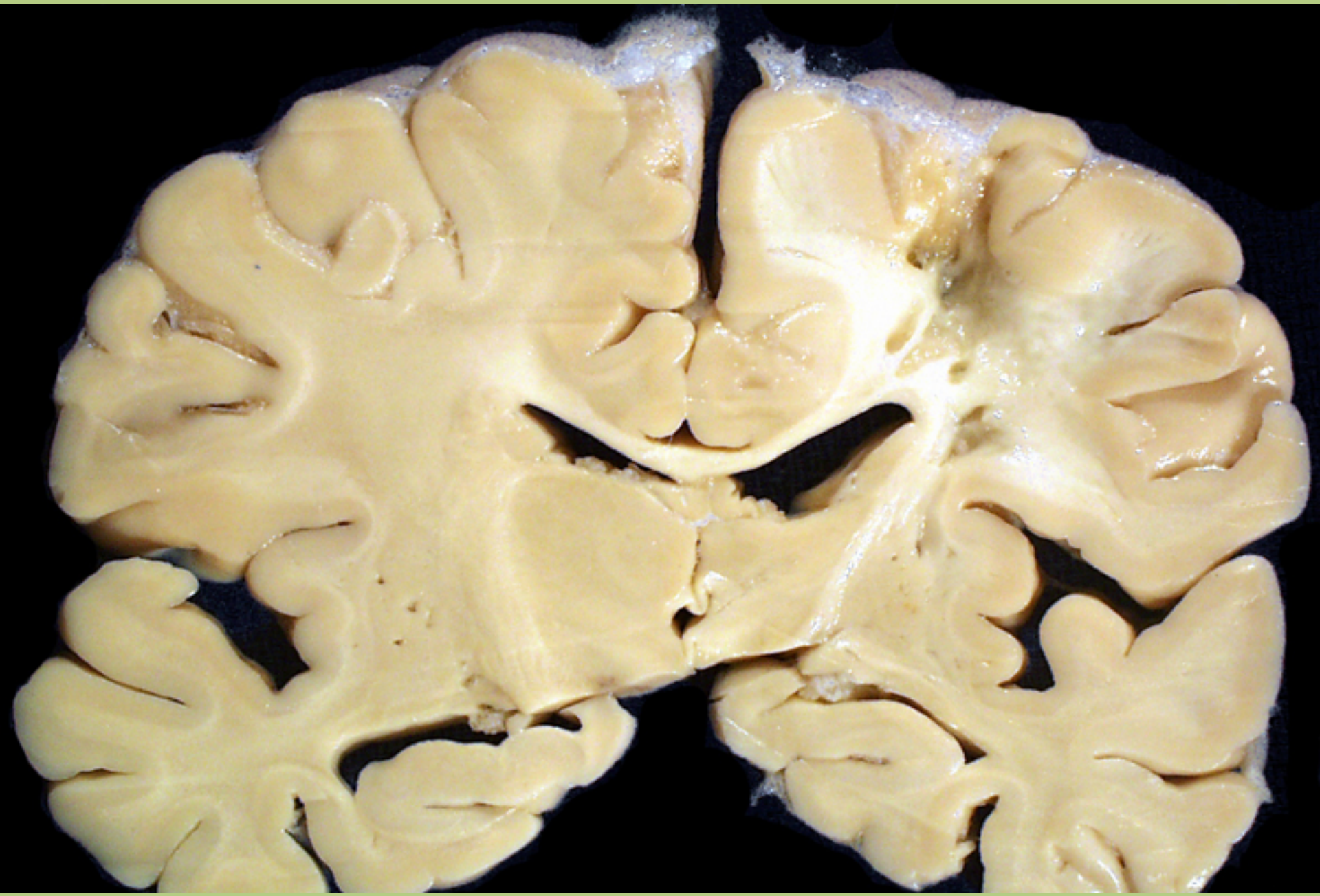
4 Intracerebral Hemorrhage

subdural hemorrhage


A
B
C
D
E
F
G
H
I

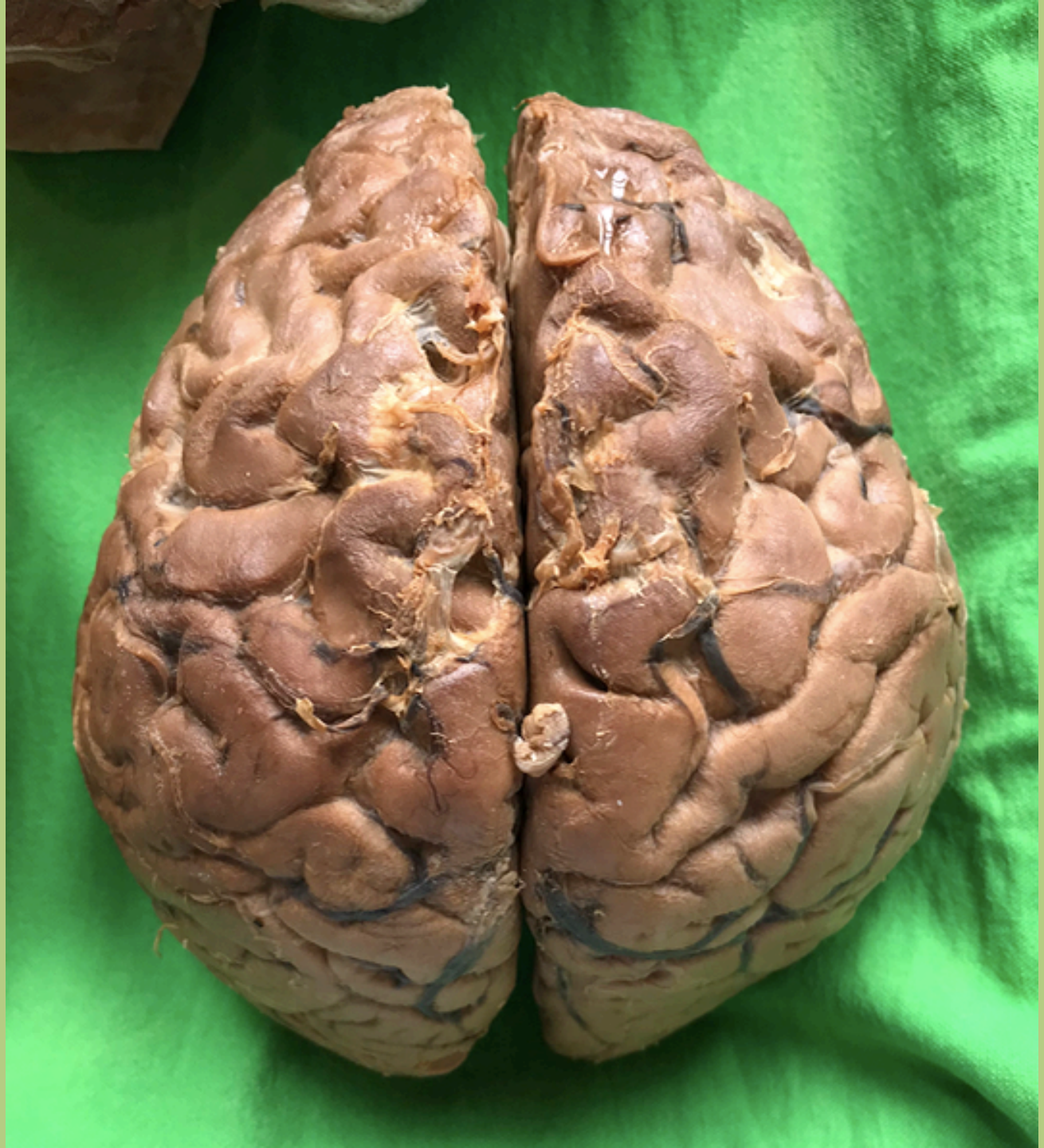
subarachnoid hemorrhage

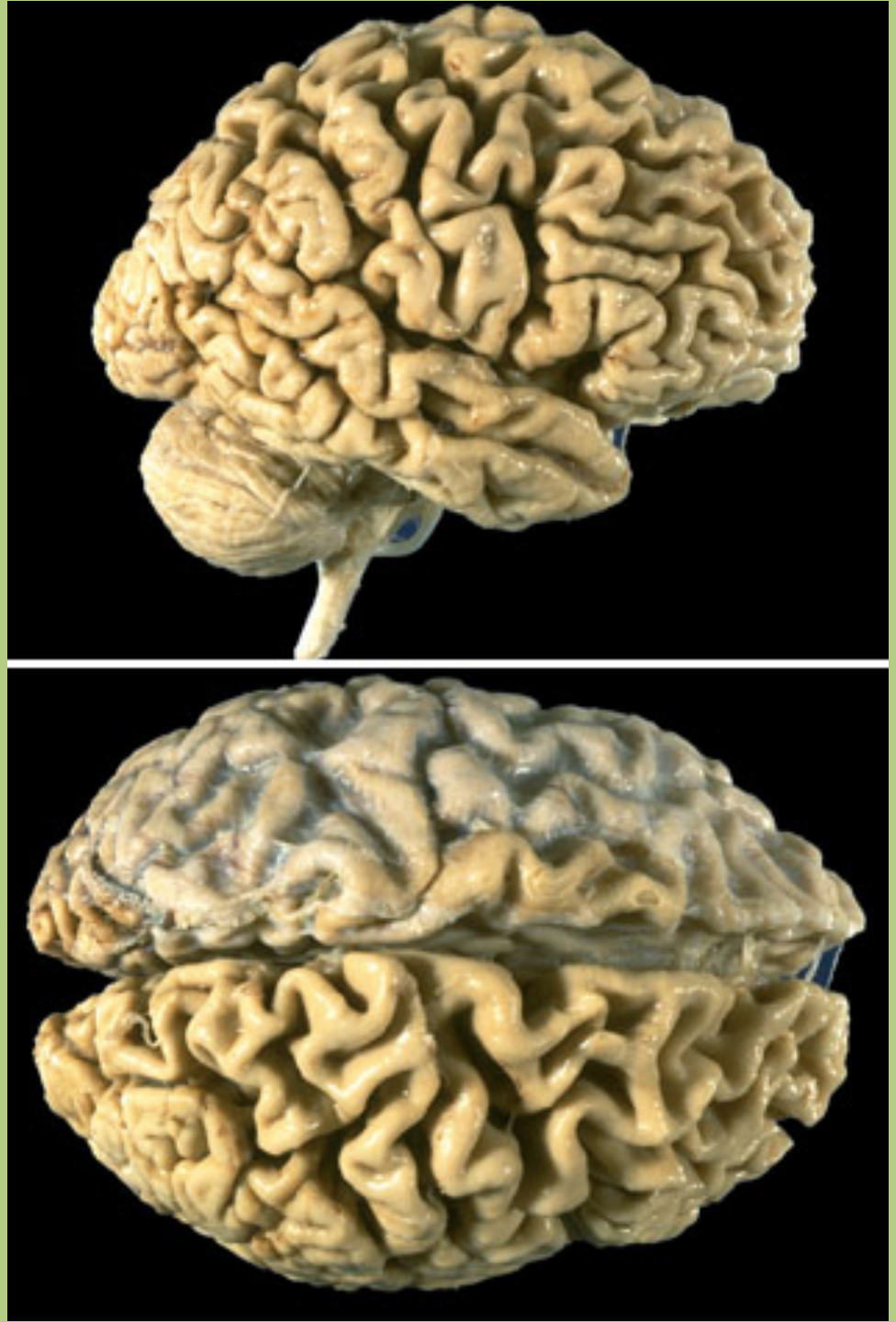
hemorrhagic stroke



ischemic stroke

Atrophy





Alzheimer’s disease

Thank you for your attention.

References:
A.D.A.M.
McGraw-Hill Company's pictures
WebPath
Nature Reviews
Pearson Education
Sinauer Associate
studyblue.com
BlueLink.com