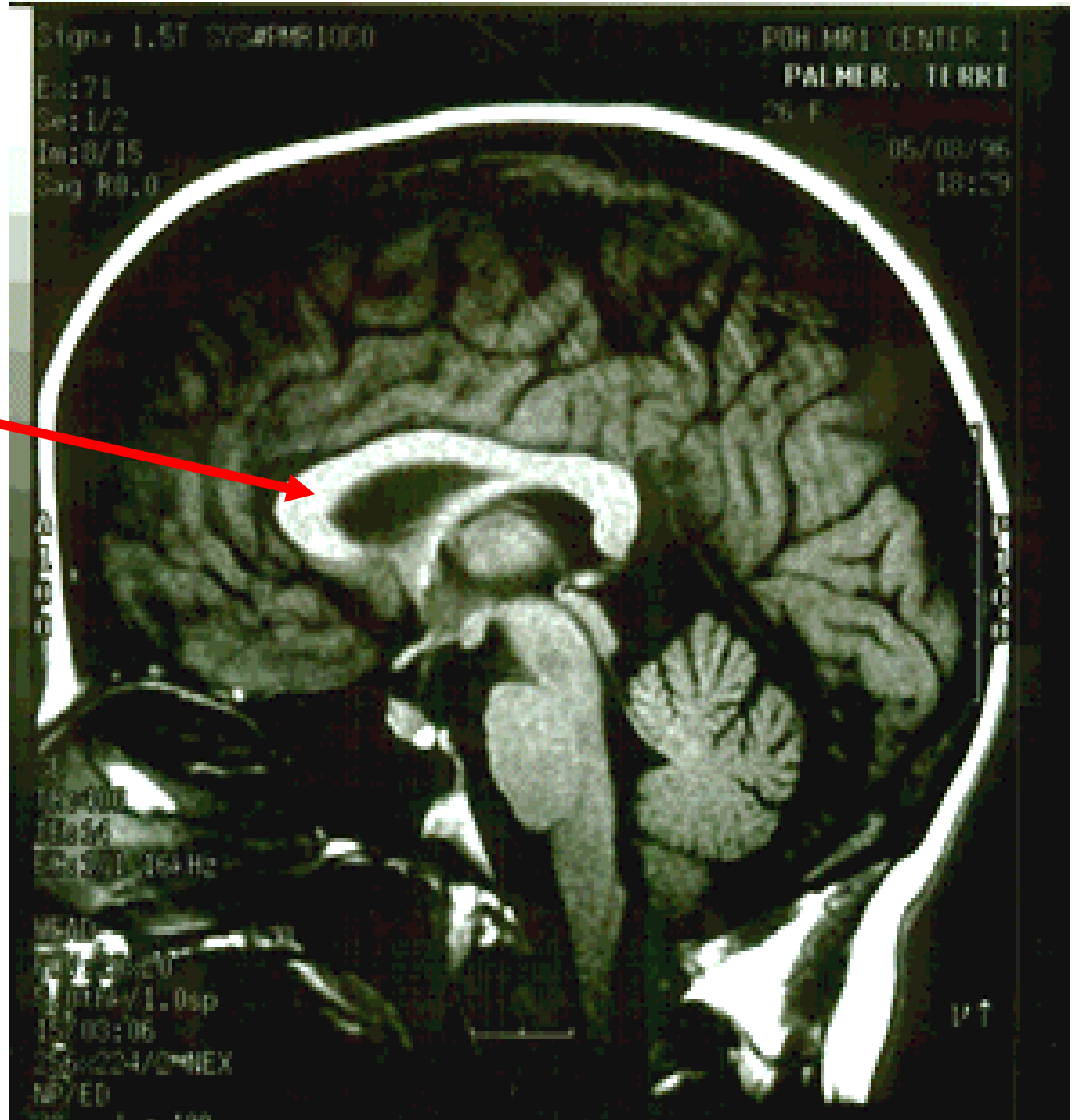
Open Lab Nevous System Review

D.HAMMOUDI, MD
Prince George community college
Tutoring Center Lago

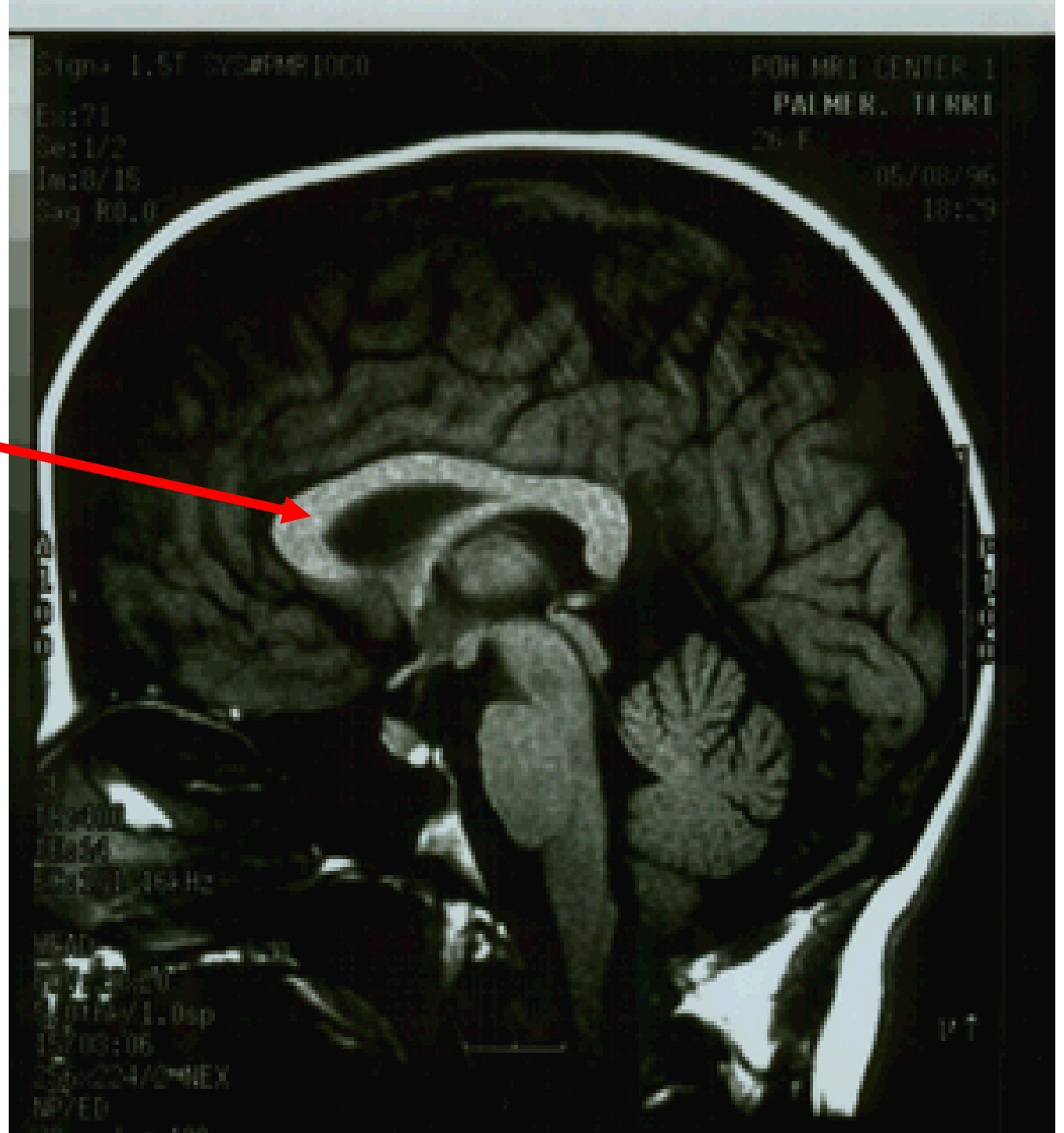
PRINCE GEORGE'S COMMUNITY COLLEGE

http://sinoemedicalassociation.org/anatomyphysiology

- **Identify the area marked with an arrow in the picture to the right.**

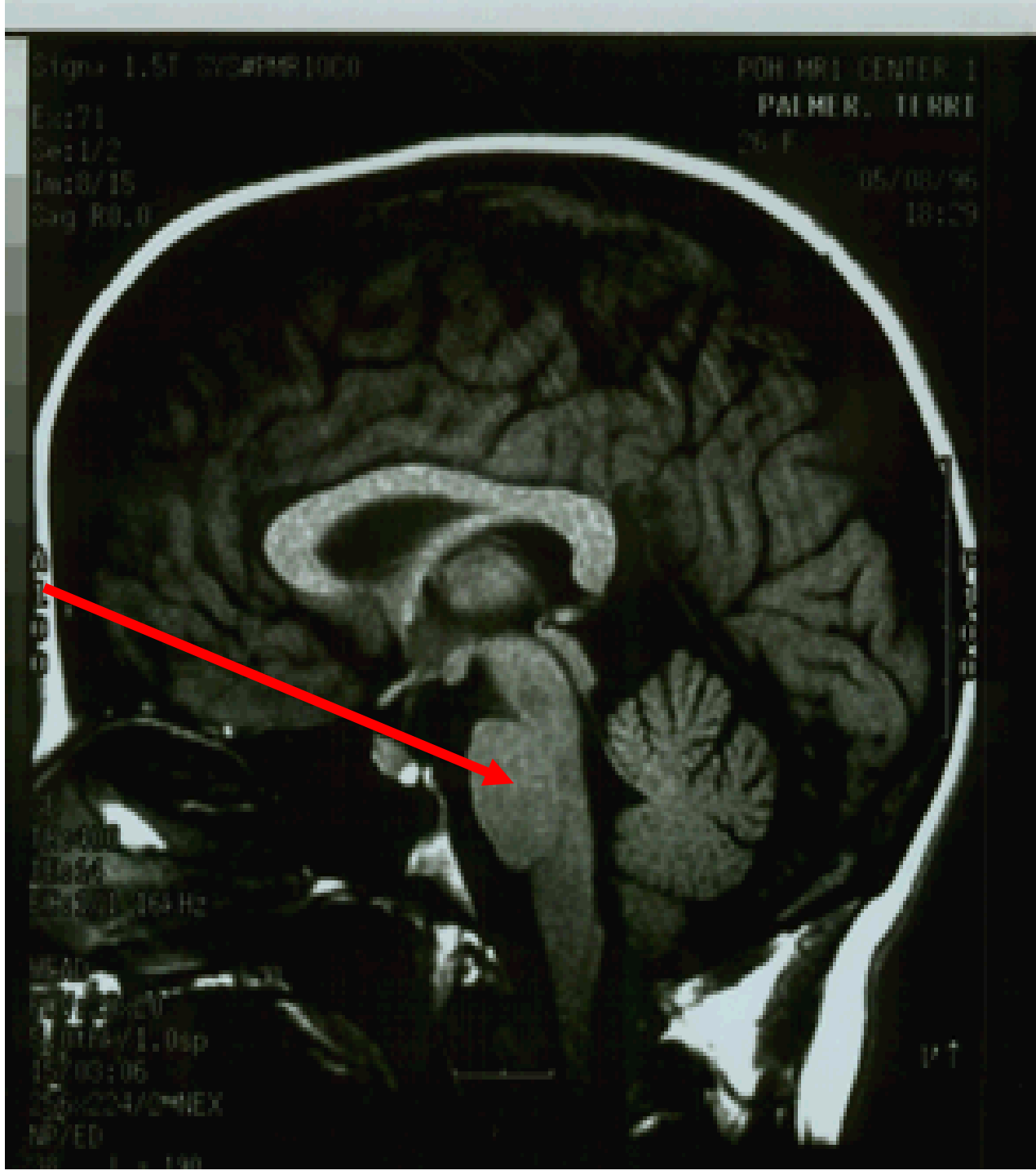


- **Identify the area marked with an arrow in the picture to the right.**
  - ***Answer: Corpus callosum***

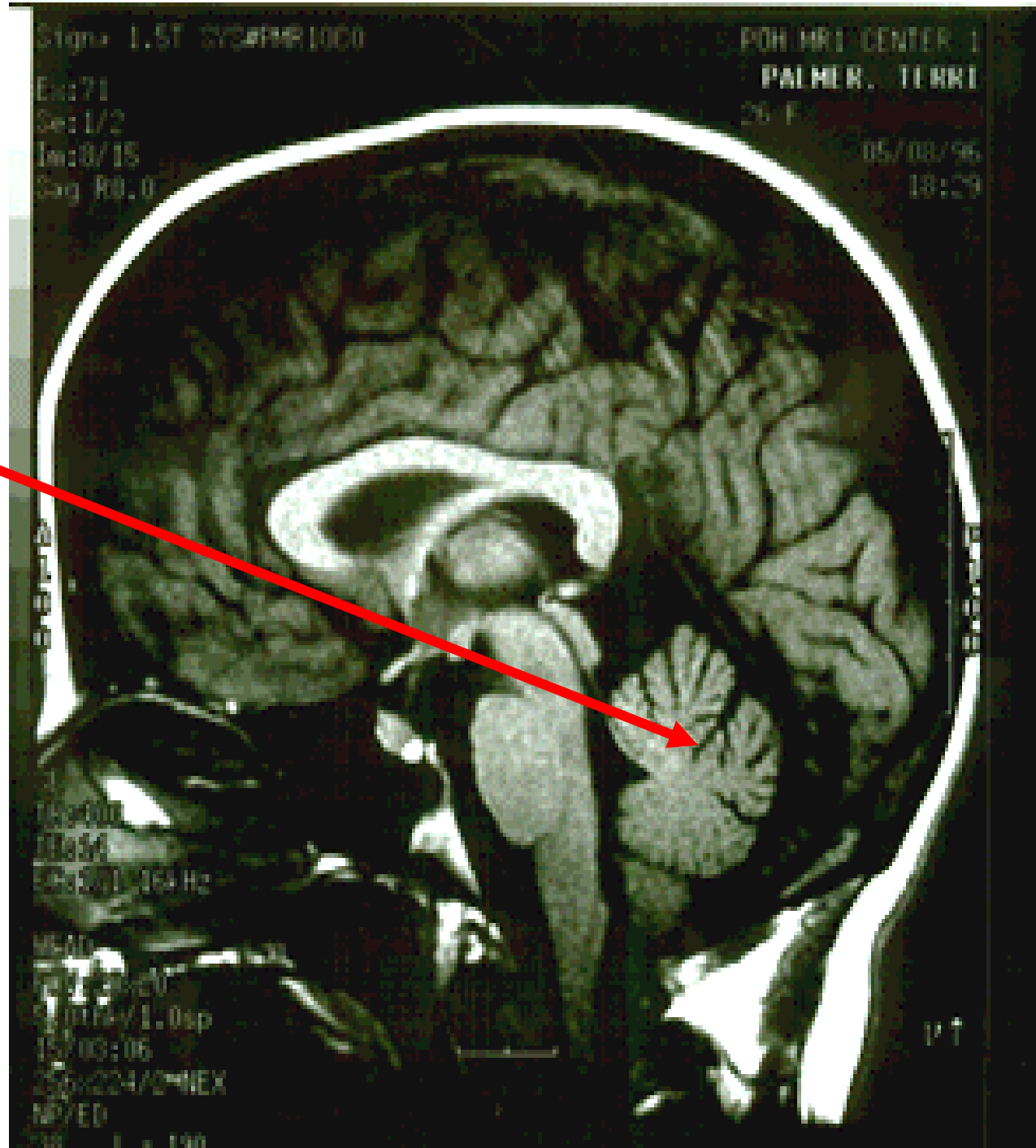


- **Identify the area of the brain stem marked with an arrow in the picture to the right.**

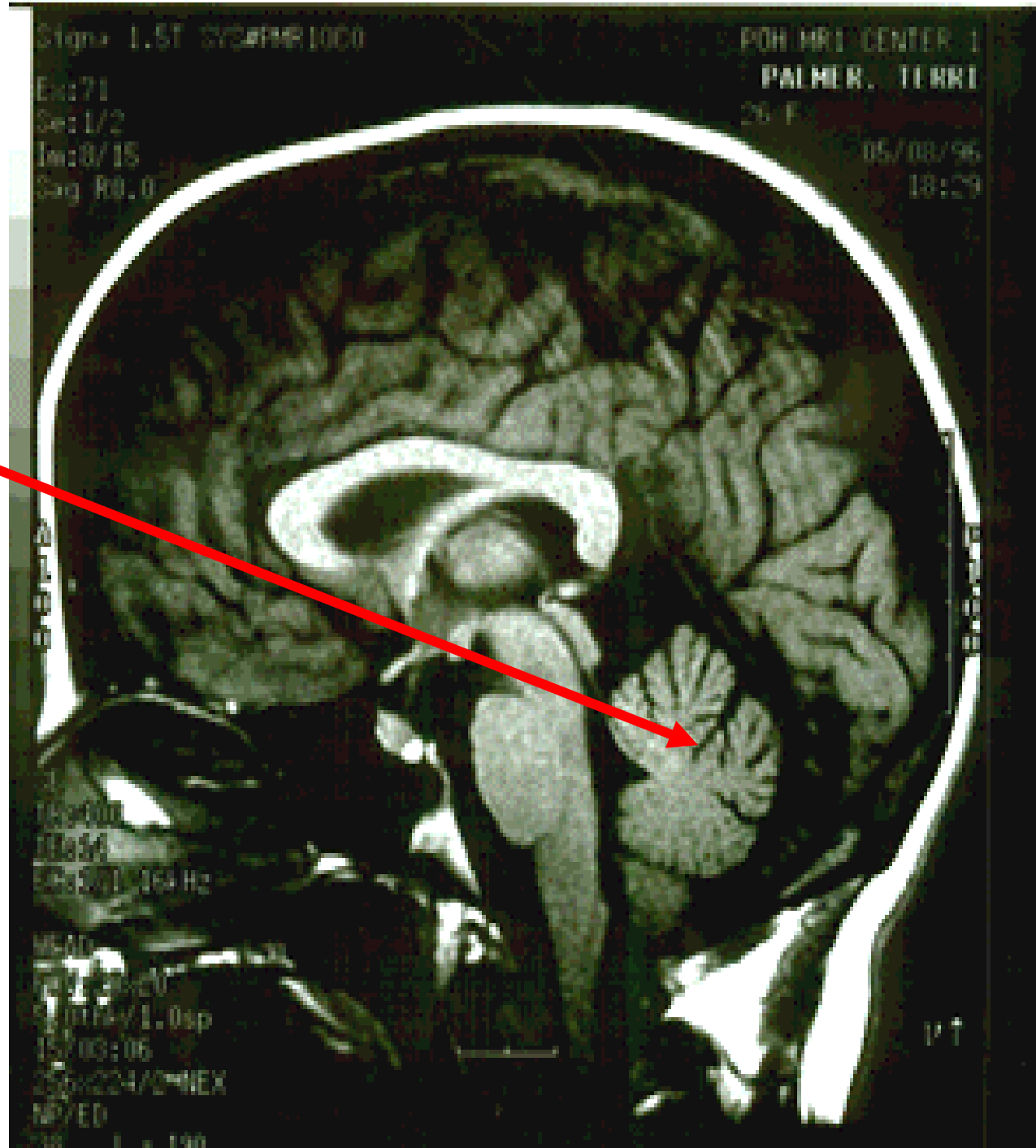
- **Identify the area of the brain stem marked with an arrow in the picture to the right.**
  - ***Answer:*** ***Pons***



- **Identify the area of the brain marked with an arrow in the picture to the right.**

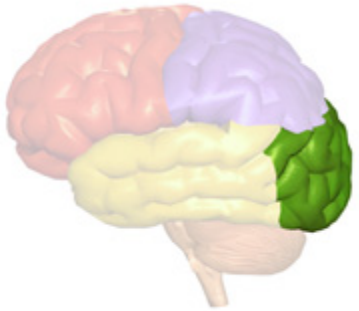


- **Identify the area of the brain marked with an arrow in the picture to the right.**
  - ***Answer:***
    Cerebellum



- **Identify the 4 lobes of the brain?**
  - ***Which lobe is missing?***

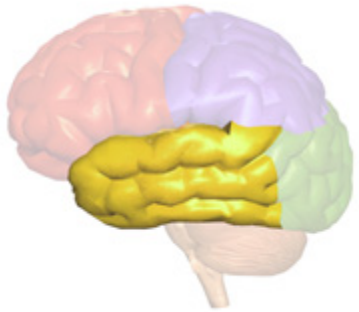
1



2

3

4



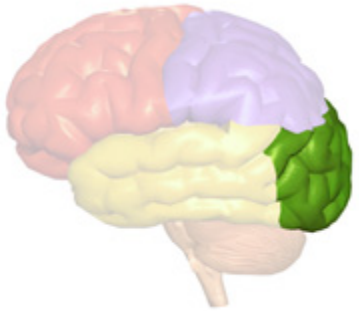
- **Identify the 4 lobes of the brain.**

Answer:

1. ***Occiptal***
2. ***Parietal***
3. ***Frontal***
4. ***Temporal***

The insula is missing

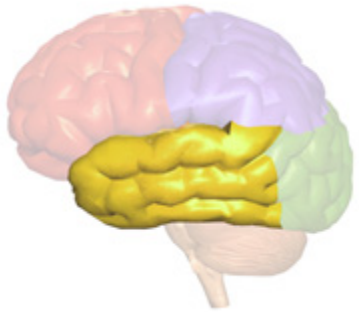
1



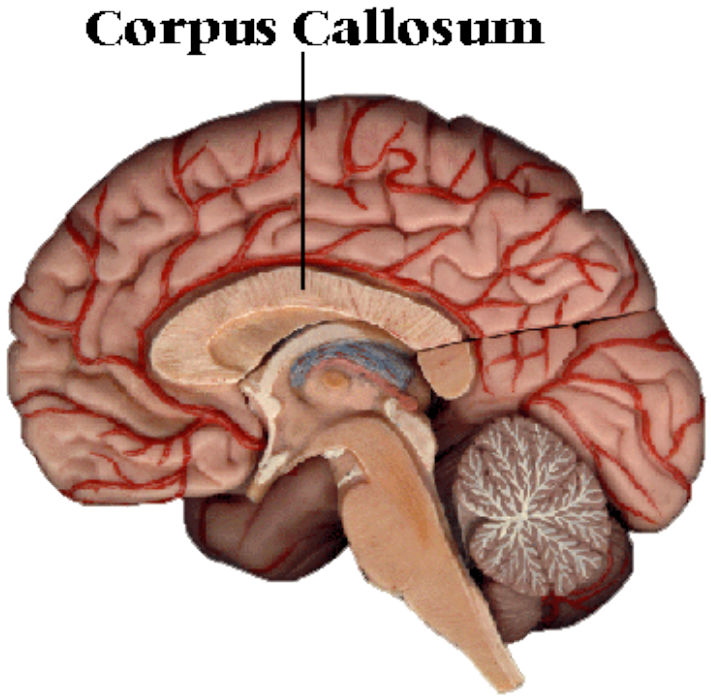
2

3

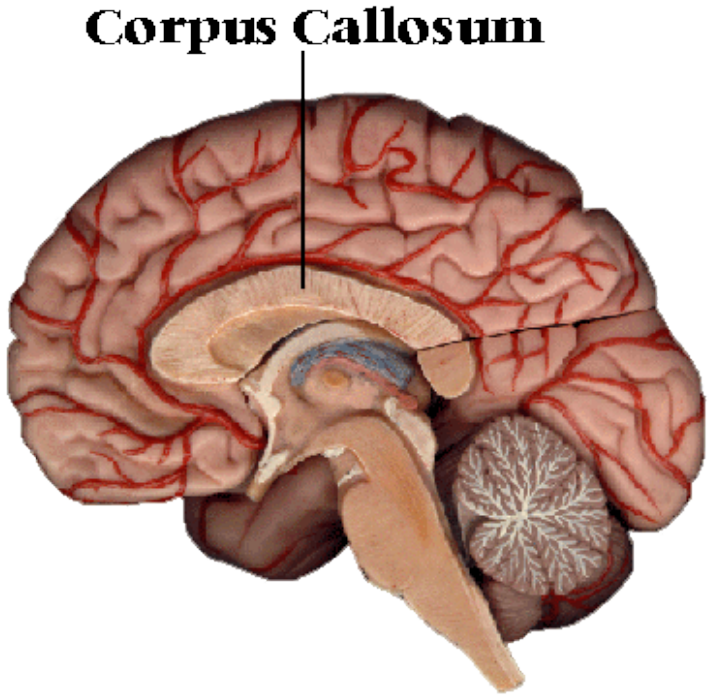
4



- **What is the function of the corpus callosum?**

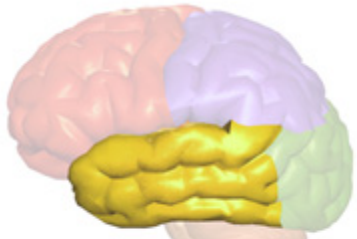


- **What is the function of the corpus callosum?**
  - ***Answer: connects right & left hemispheres of brain***



- **Name the lobe & match the function:**
  - **Hearing**
  - **Vision**
  - **Concentration**
  - **Understanding speech**

1

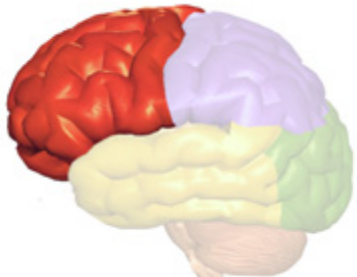


Temporal:?

2

Parietal: ?

3

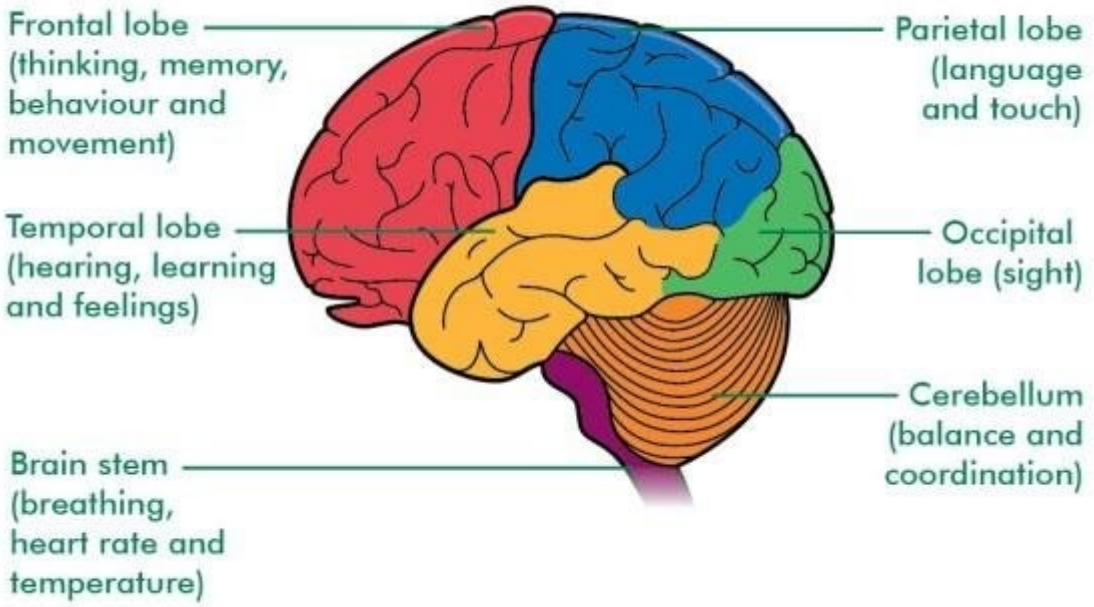


Frontal:?

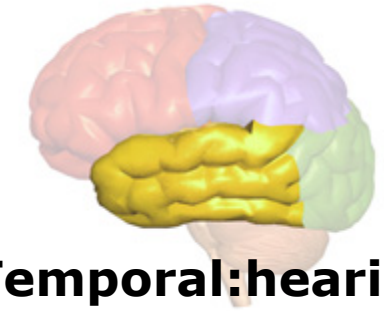
4

Occiptal: ?

- **Name the lobe & match the function:**
  - **Hearing**
  - **Vision**
  - **Concentration**
  - **Understanding speech**

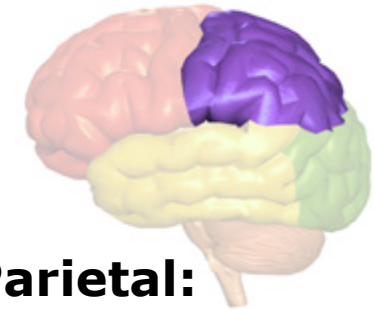


1



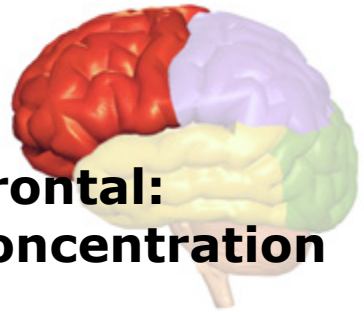
Temporal:hearing

2



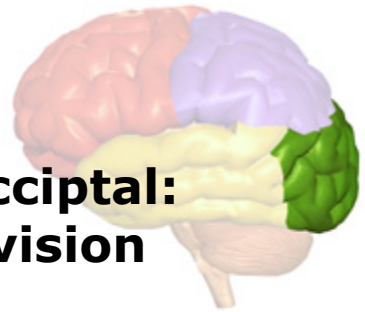
Parietal: understanding speech

3



Frontal: concentration

4



Occiptal: vision

Features of localised cerebral lesions

2 Parietal lobe

Dominant side

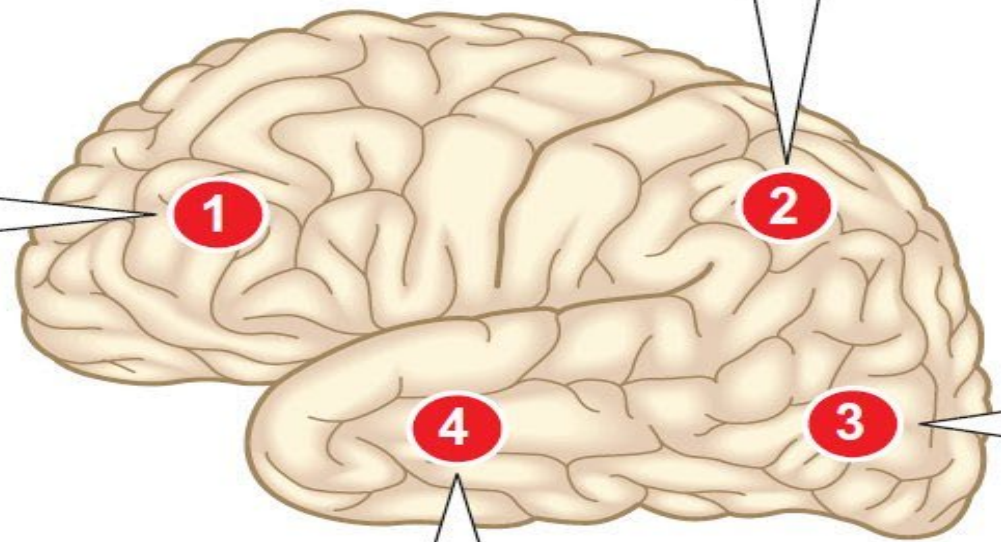
FUNCTION	LESIONS
Calculation	Dyscalculia
Language	Dysphasia
Planned movement	Dyslexia
Appreciation of size, shape, weight and texture	Apraxia
	Agnosia
	Homonymous hemianopia

Non-dominant side

FUNCTION	LESIONS
Spatial orientation	Neglect of non-dominant side
Constructional skills	Spatial disorientation
	Constructional apraxia
	Dressing apraxia
	Homonymous hemianopia

1 Frontal lobe

FUNCTION	LESIONS
Personality	Disinhibition
Emotional response	Lack of initiative
Social behaviour	Antisocial behaviour
	Impaired memory
	Incontinence
	Grasp reflexes
	Anosmia



3 Occipital lobe

FUNCTION	LESIONS
Analysis of vision	Homonymous hemianopia
	Hemianopic scotomas
	Visual agnosia
	Impaired face recognition (prosopagnosia)
	Visual hallucinations (lights, lines and zig-zags)

4 Temporal lobe

Dominant side

FUNCTION	LESIONS
Auditory perception	Dysphasia
Speech, language	Dyslexia
Verbal memory	Poor memory
Smell	Complex hallucinations (smell, sound, vision)
	Homonymous hemianopia

Non-dominant side

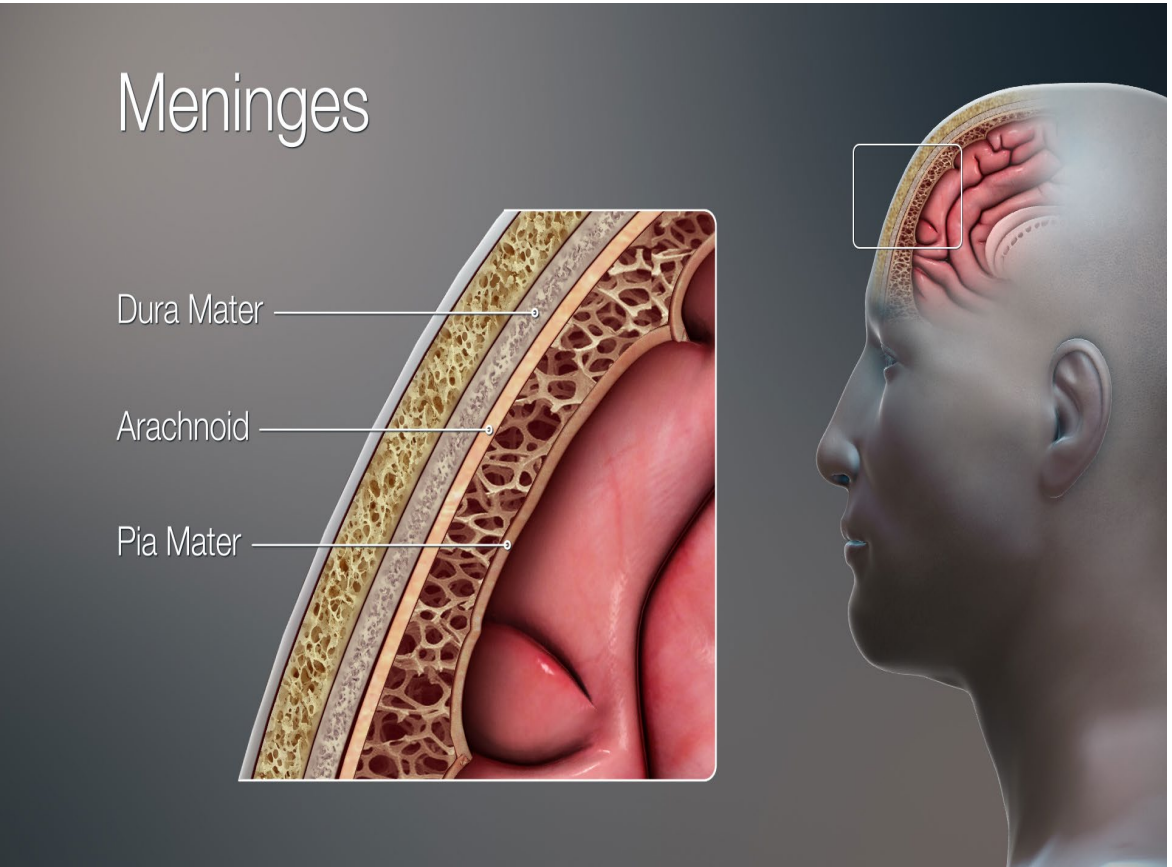
FUNCTION	LESIONS
Auditory perception	Poor non-verbal memory
Music, tone sequences	Loss of musical skills
Non-verbal memory (faces, shapes, music)	Complex hallucinations
Smell	Homonymous hemianopia

Source : Macleods Clinical Examination 13th Ed (2013)

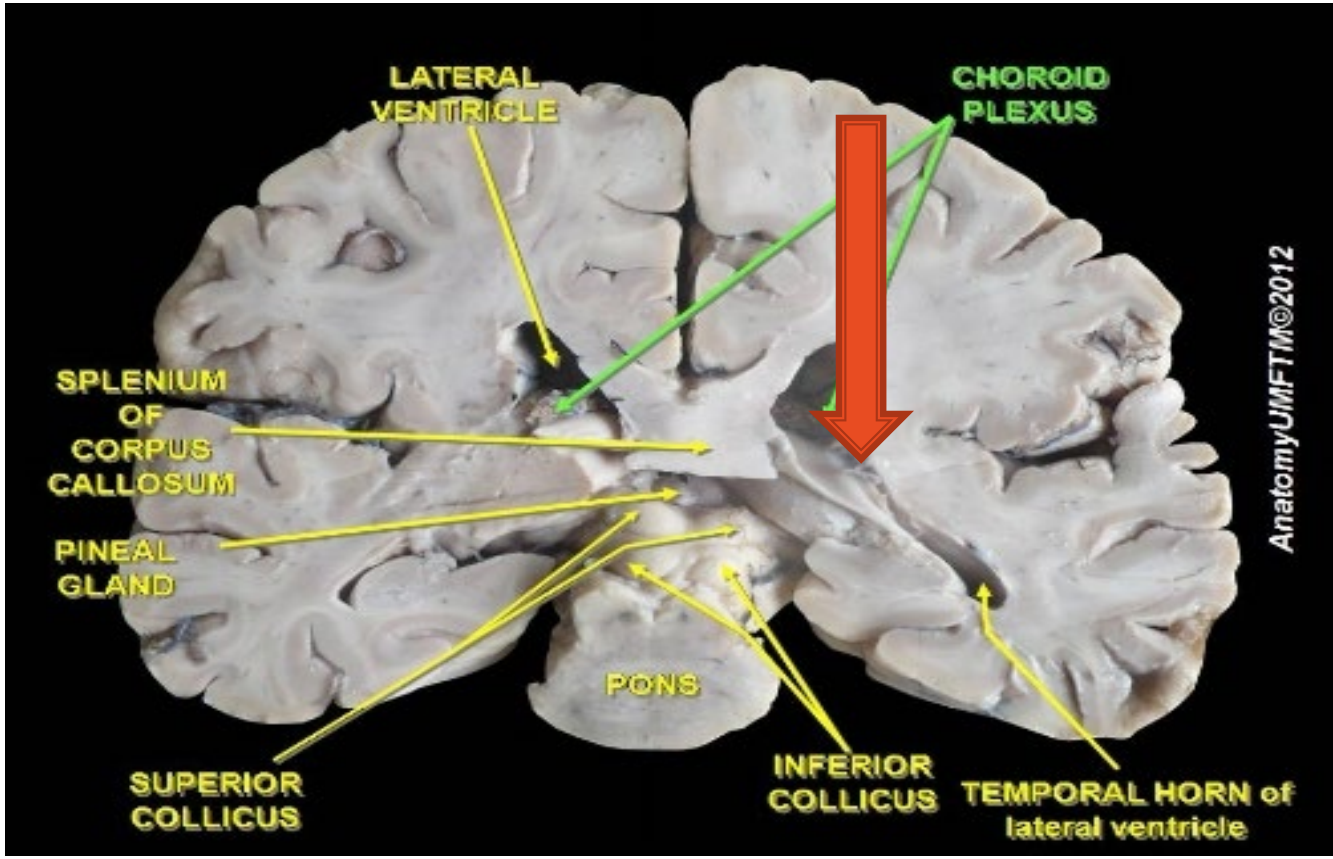
- What are the layers of the meninges from innermost to outermost.

- **What area forms cerebrospinal fluid?**

- **What are the layers of the meninges from innermost to outermost.**
  - ***Answer: Pia, Arachnoid, Dura***



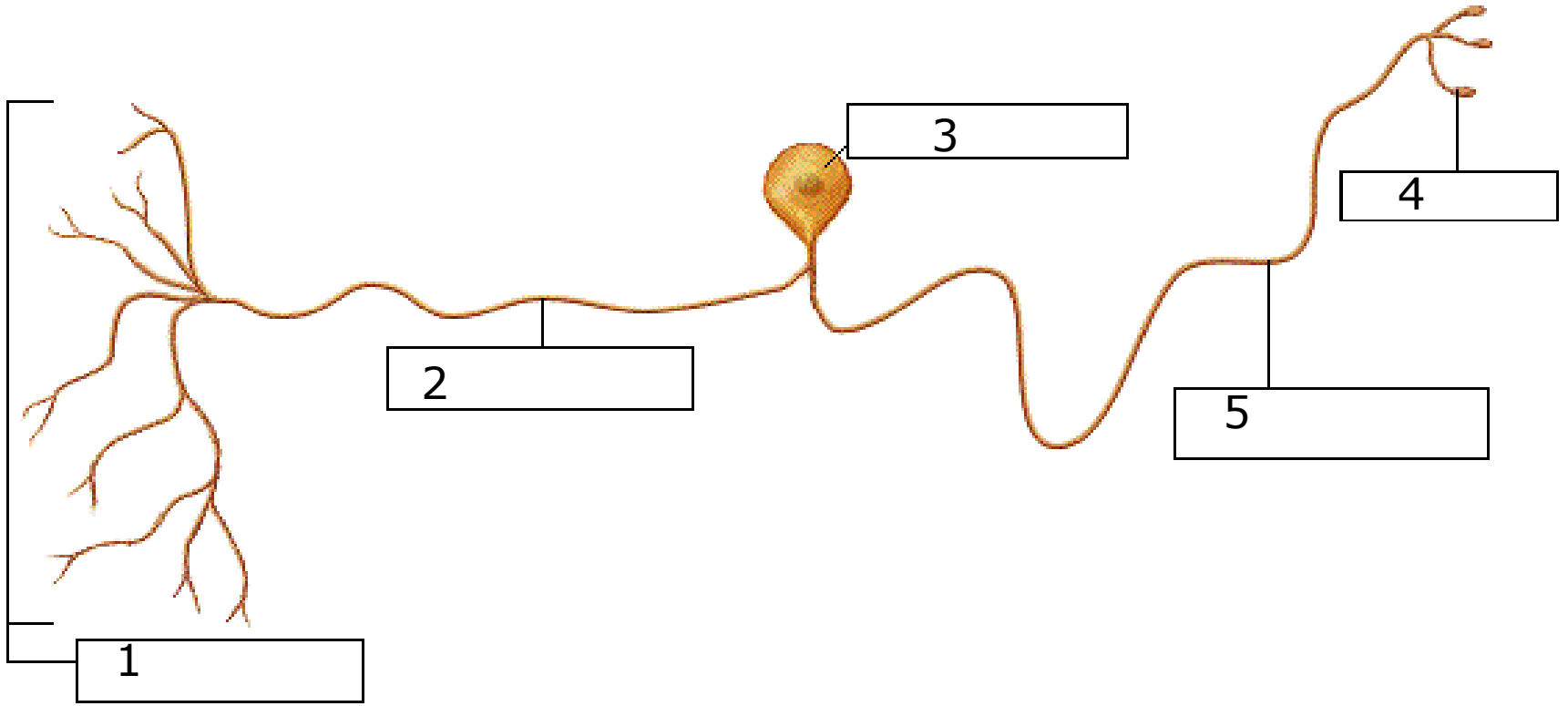
- **What area forms cerebrospinal fluid?**
  - **Answer: Choroid Plexus**



#	Name	Nerve type	Function
I	Olfactory	Sensory	Smell
II	Optic	Sensory	Vision
III	Oculomotor	Motor	Most eye movement
IV	Trochlear	Motor	Moves eye to look at nose
V	Trigeminal	Both	Face sensation, mastication
VI	Abducens	Motor	Abducts the eye
VII	Facial	Both	Facial expression, taste
VII	Vestibulocochlear	Sensory	Hearing, balance
IX	Glossopharyngeal	Both	Taste, gag reflex
X	Vagus	Both	Gag reflex, parasympathetic innervation
XI	Accessory	Motor	Shoulder shrug
XII	Hypoglossal	Motor	Swallowing, speech

Spinal Cord Word Bank	
Cell body	?
Effector	?
Spinal nerve	?
Central canal	?
Dorsal root	?
Interneuron	?
Motor neuron	?
Sensory neuron	?

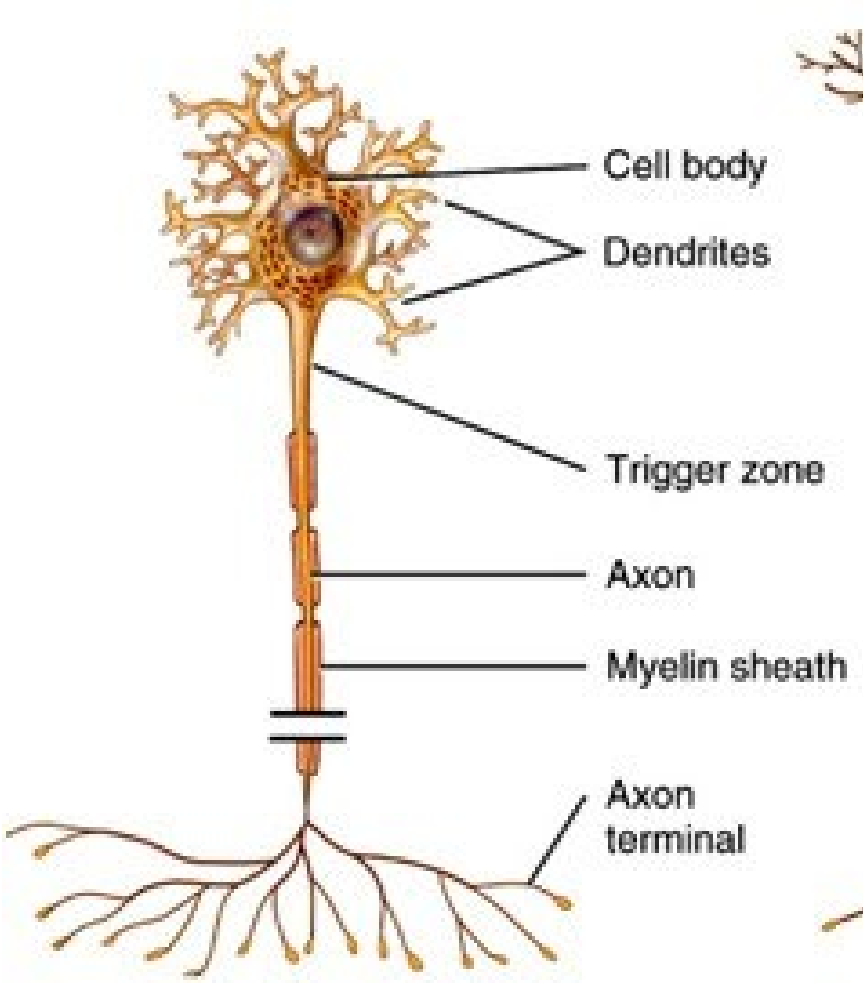
Spinal Cord Word Bank	
Cell body	Dorsal Horn
Effector	Ventral Horn
Spinal nerve	White matter
Central canal	Ventral root
Dorsal root	Gray Matter
Interneuron	Dorsal root ganglion
Motor neuron	Receptor
Sensory neuron	dorsal root ganglia

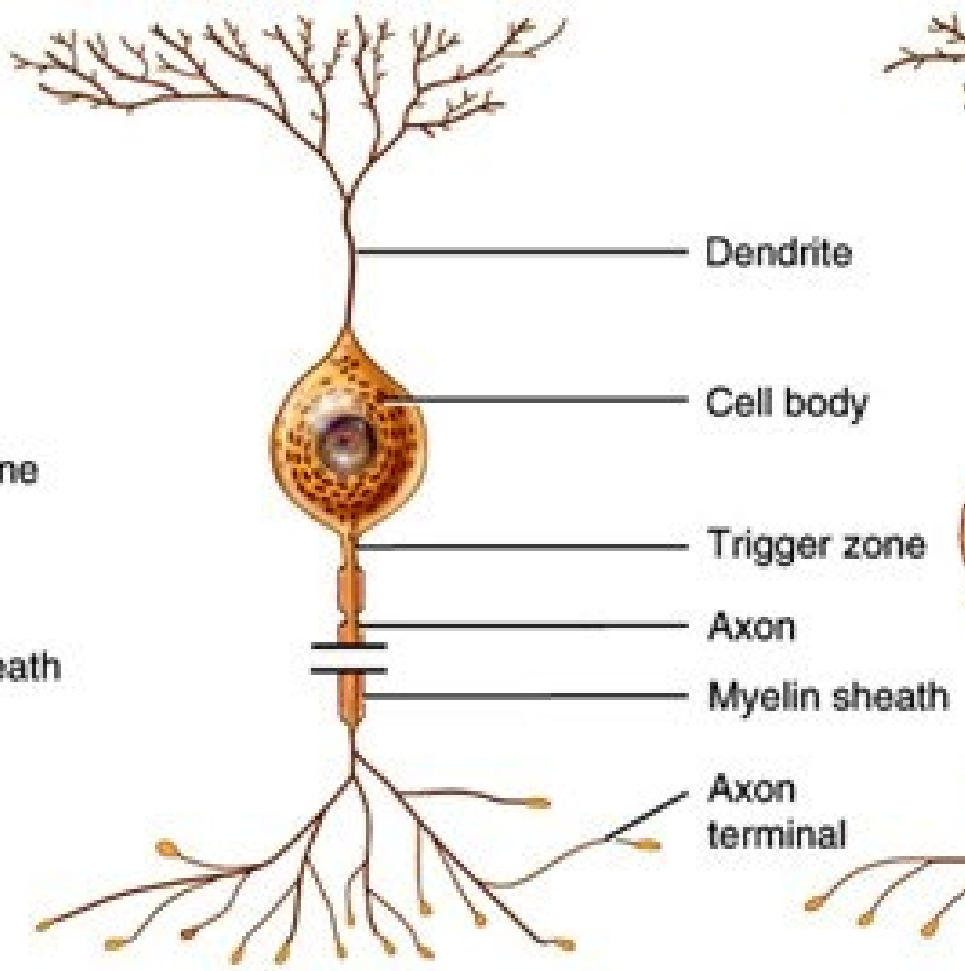


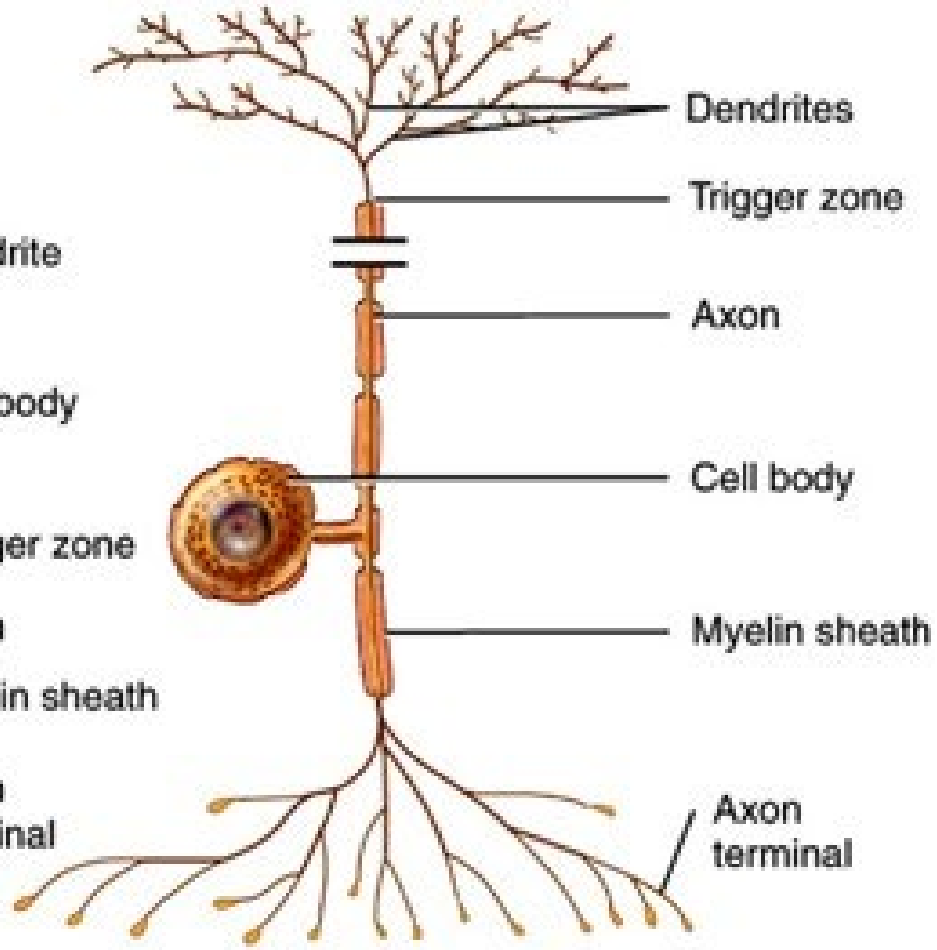
17./What structure of this cell are label #1,2,3,4,5

18./What type of cell is this one be specific?

19./Function of this cell?







Name these 3 neurons?

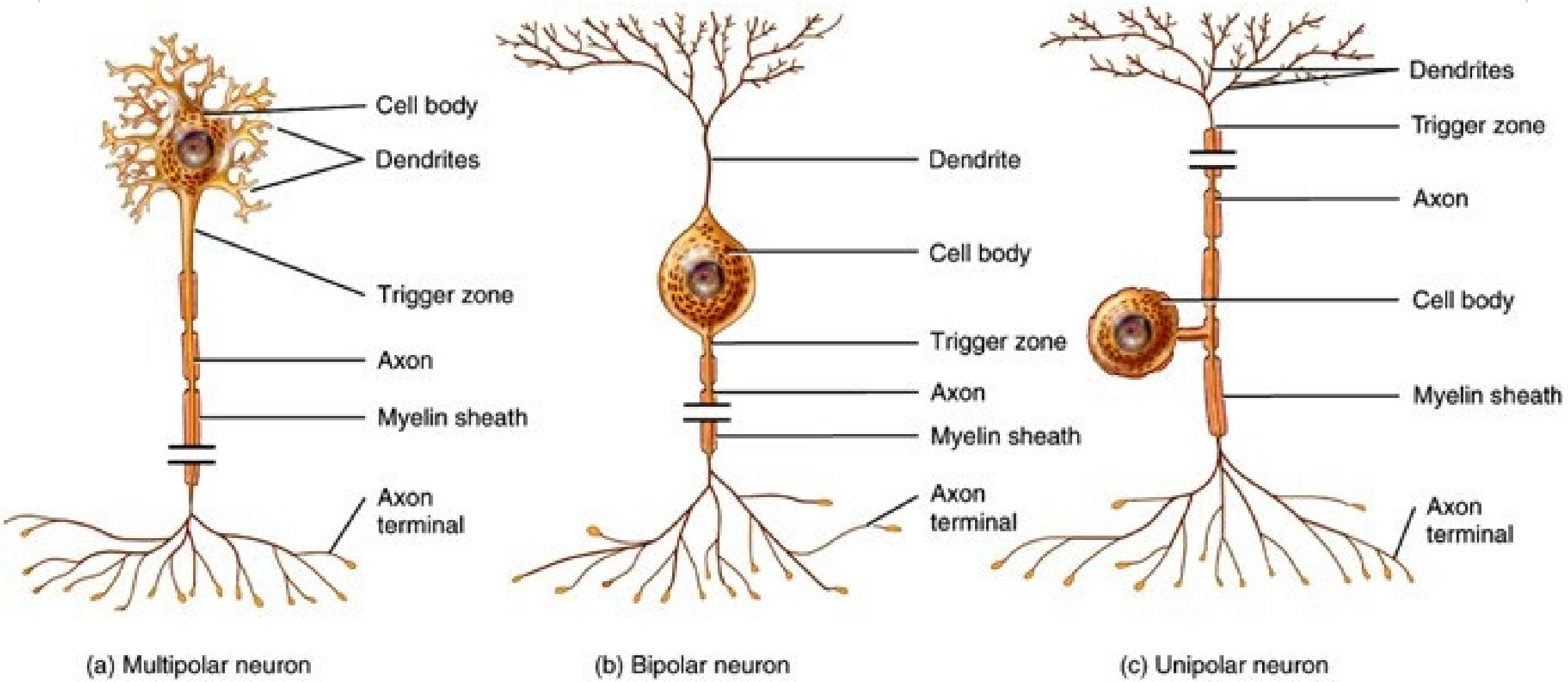


Figure 12.03 Tortora - PAP 12/e

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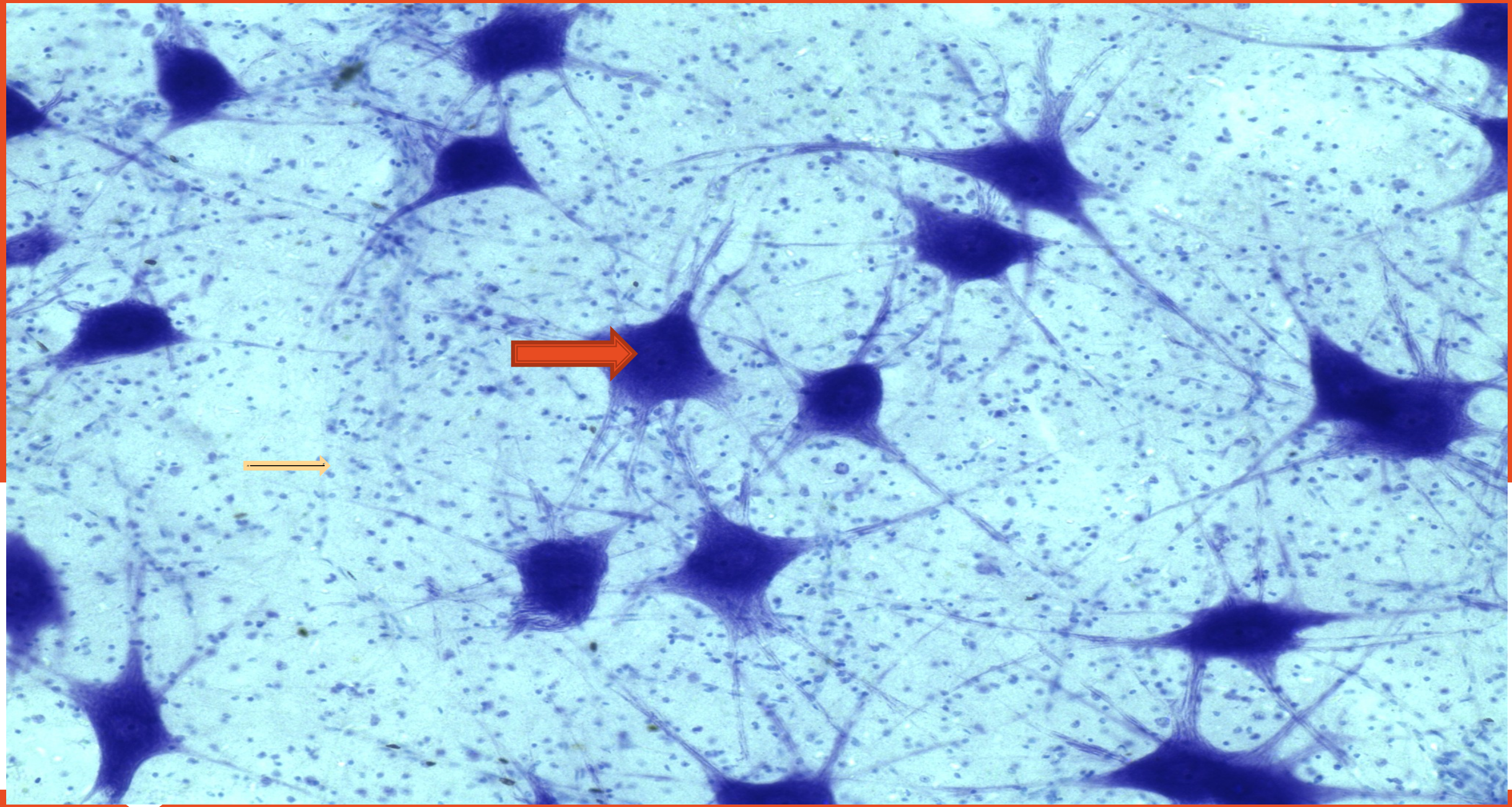
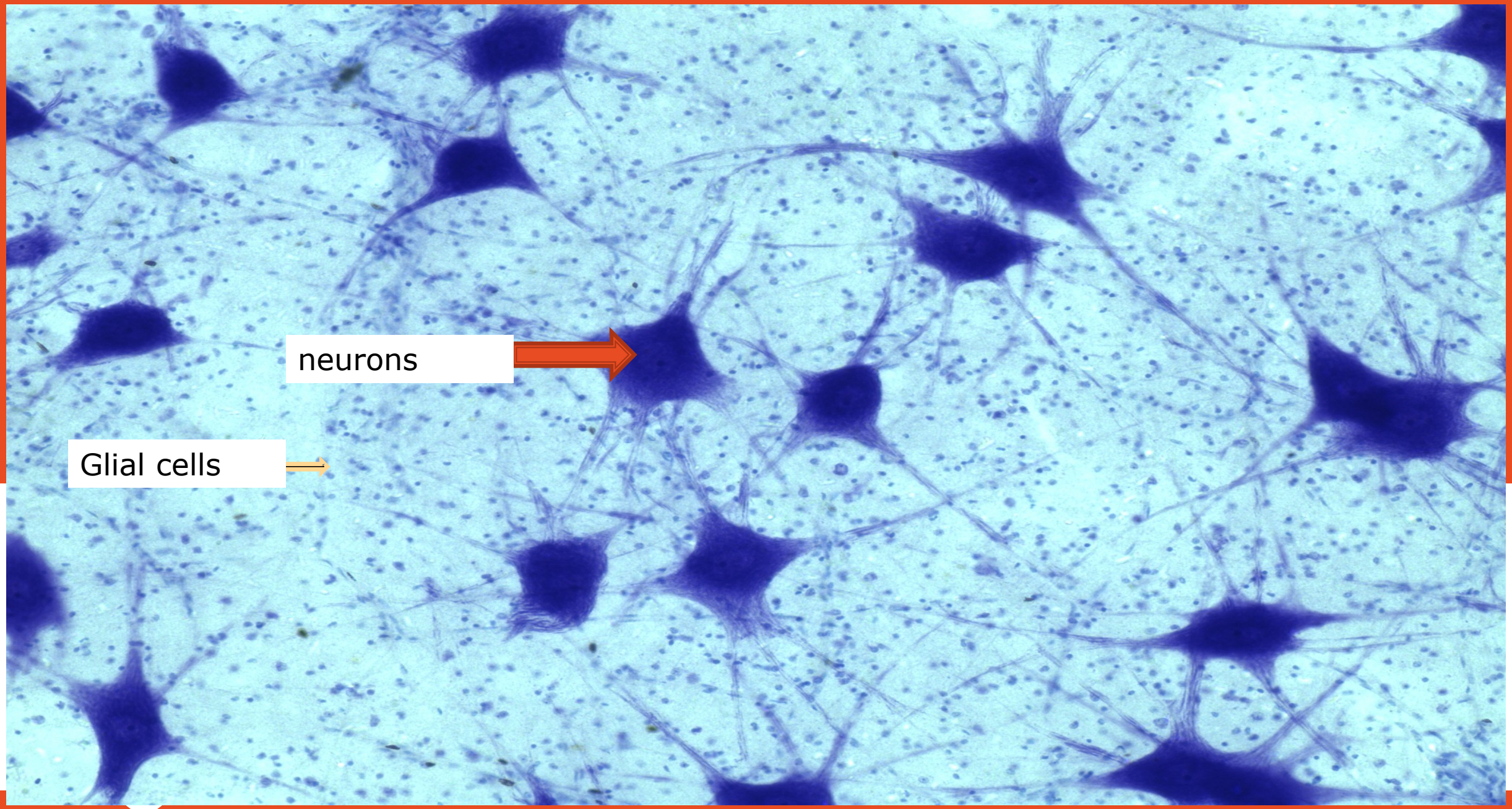
Identify blue arrow cell?

A. Motor neuron
B. Interneurons
C. Pyramidal neurons
D. Baskett's neurons
E. Sensory neuron

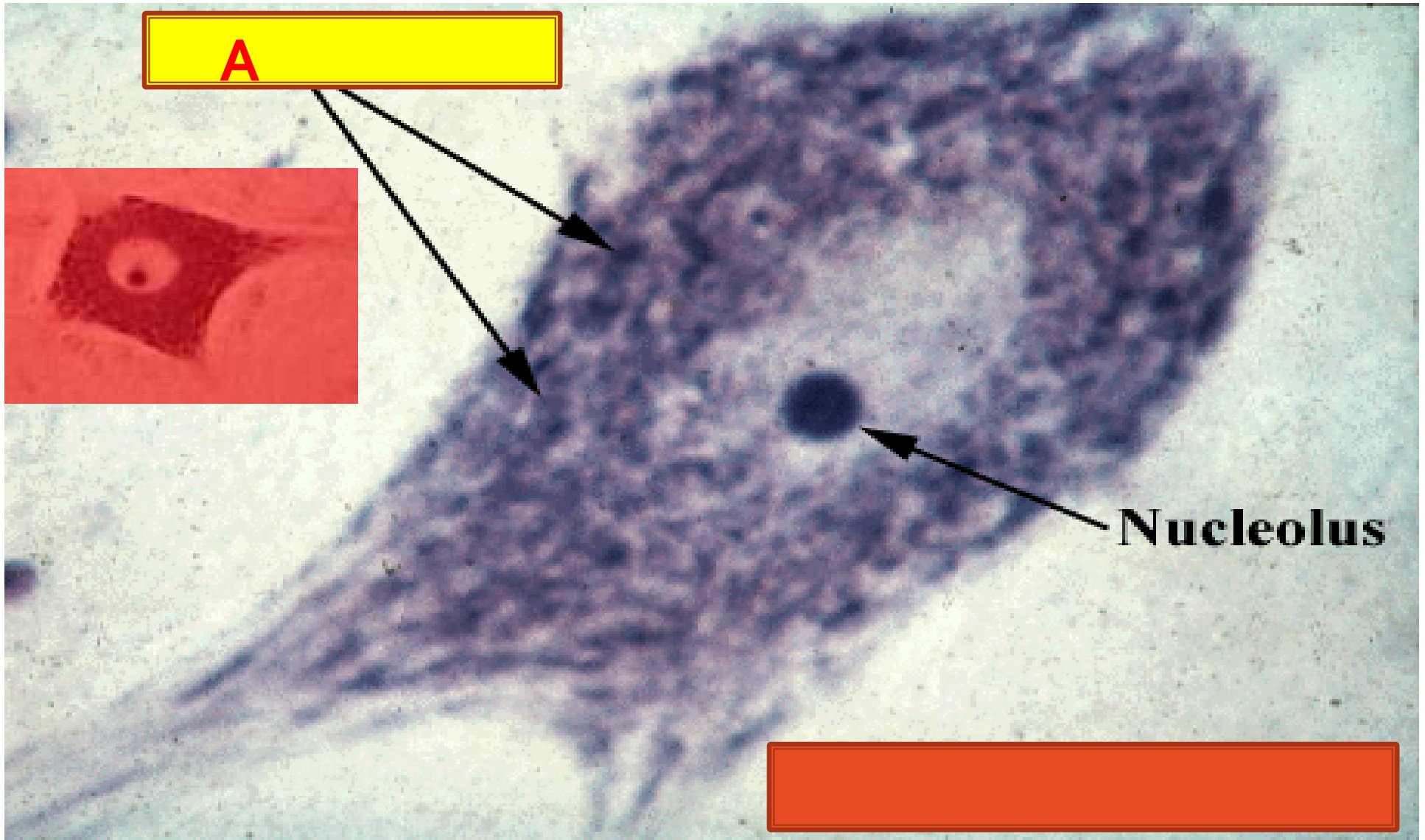
6. Identify blue arrow cell?

A. Motor neuron
B. Interneurons
C. Pyramidal neurons
D. Baskett's neurons
E. Sensory neuron

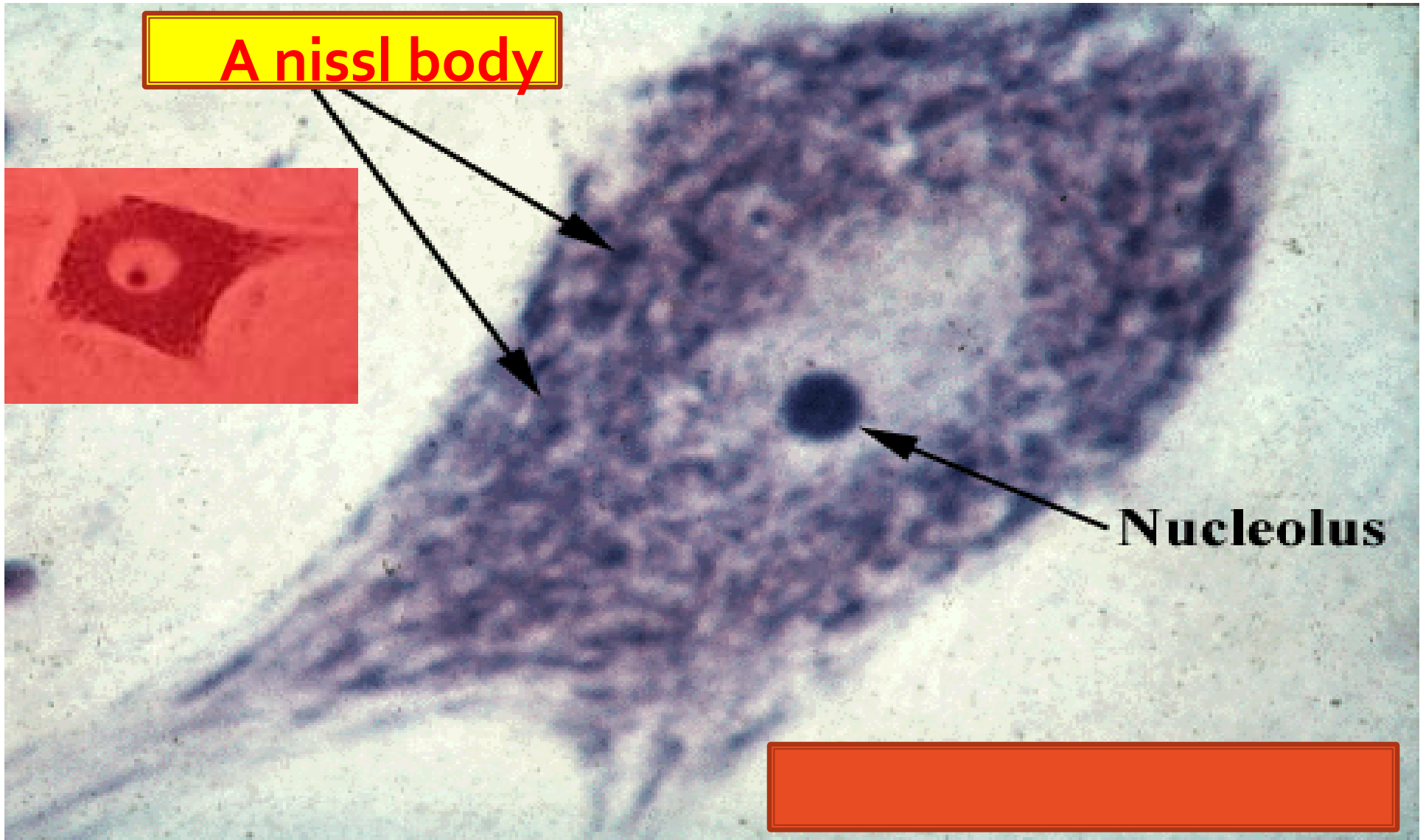



neurons
Glial cells

33/ IDENTIFY A



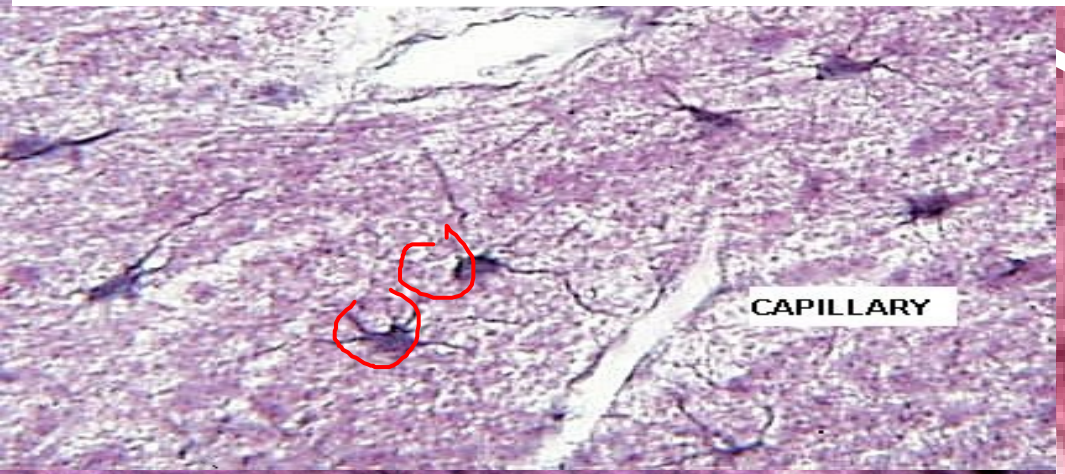
33/ IDENTIFY A

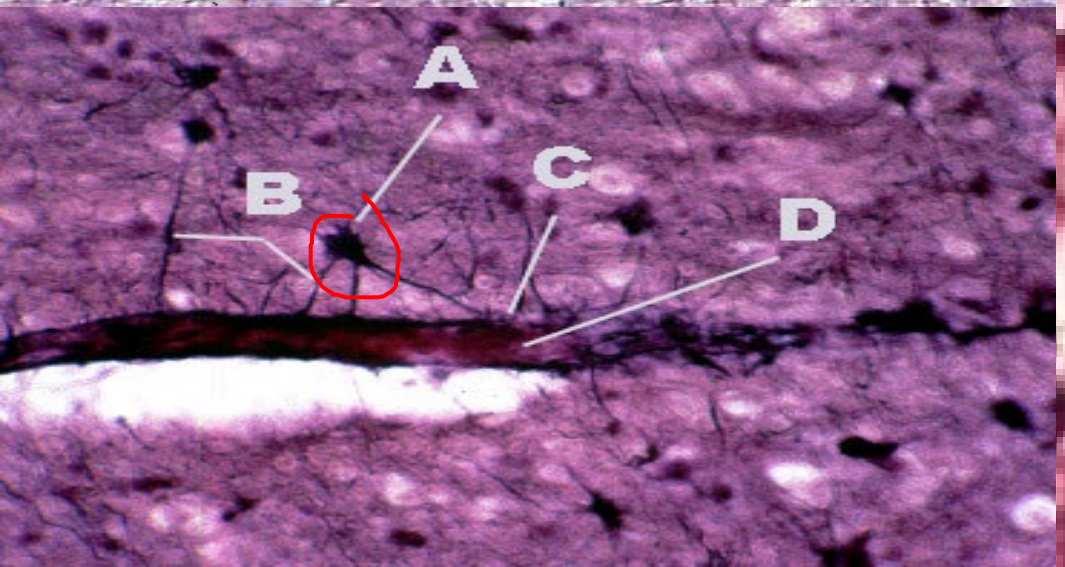


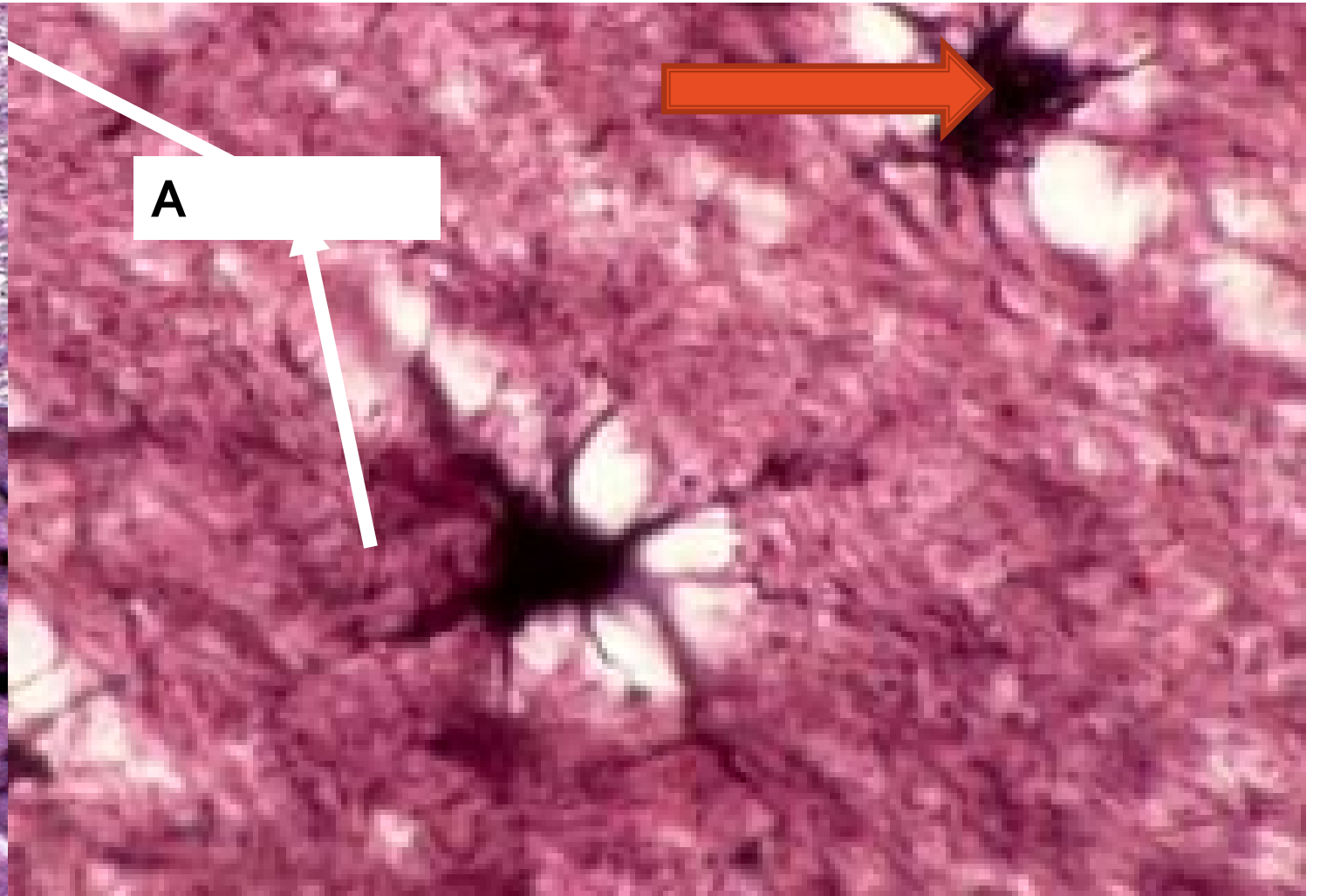
34/ IDENTIFY A Astrocytes

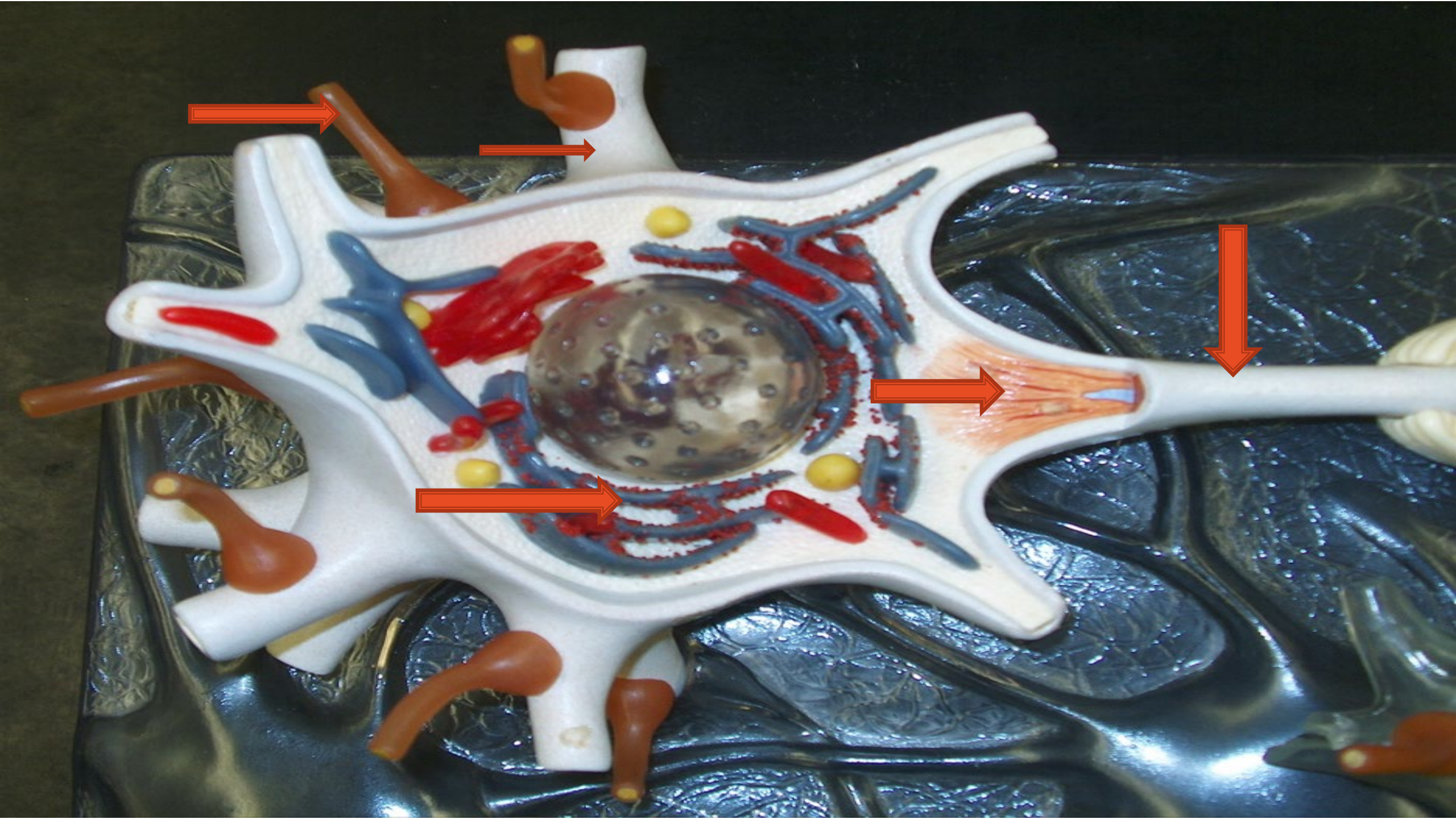
35/ WHAT A WILL FORM AS A STRUCTURE? Blood brain barrier

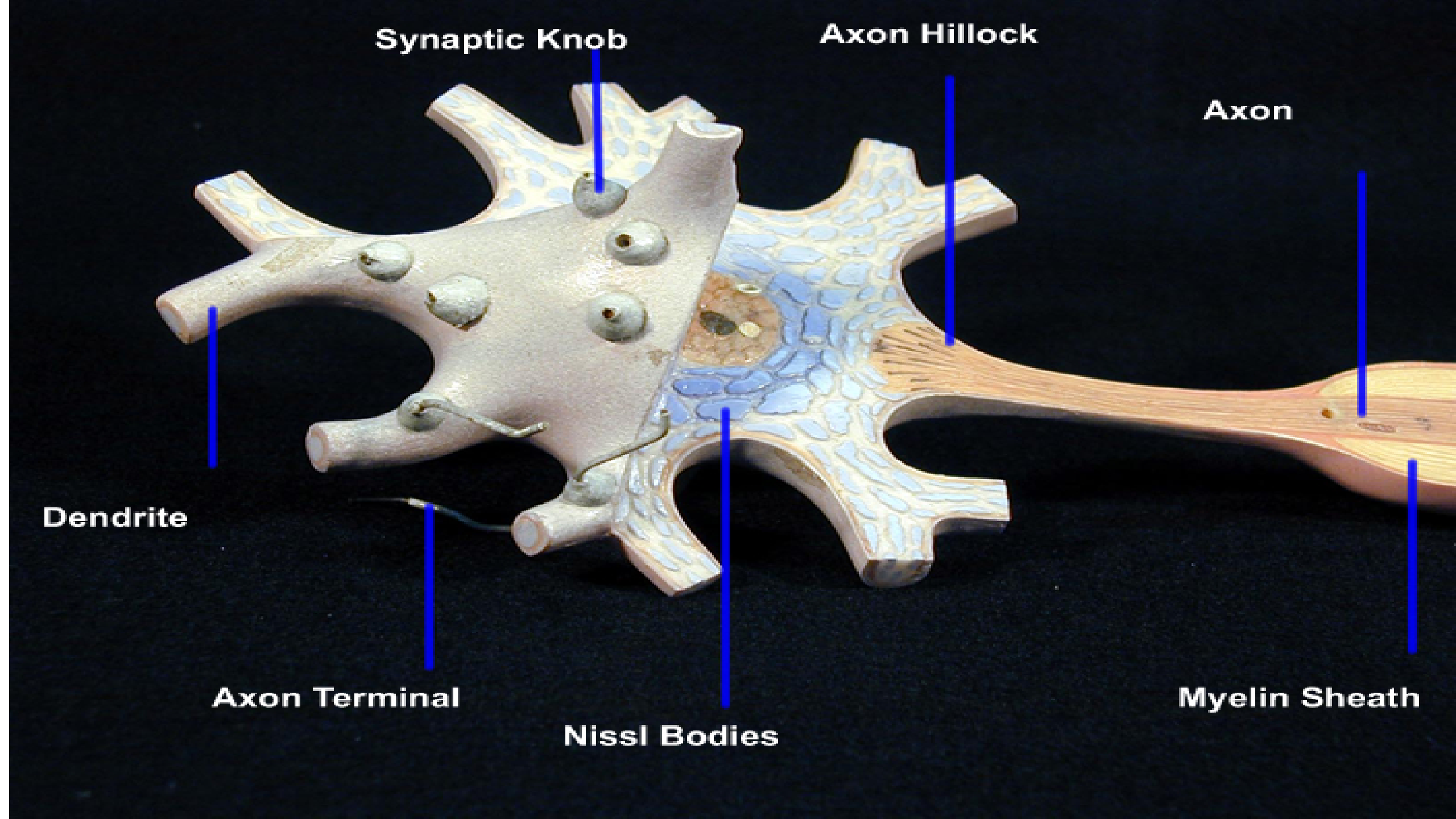
The blood–brain barrier (BBB) is a **highly selective semipermeable border of endothelial cells** that prevents solutes in the circulating blood from non-selectively crossing into the extracellular fluid of the central nervous system where neurons reside.

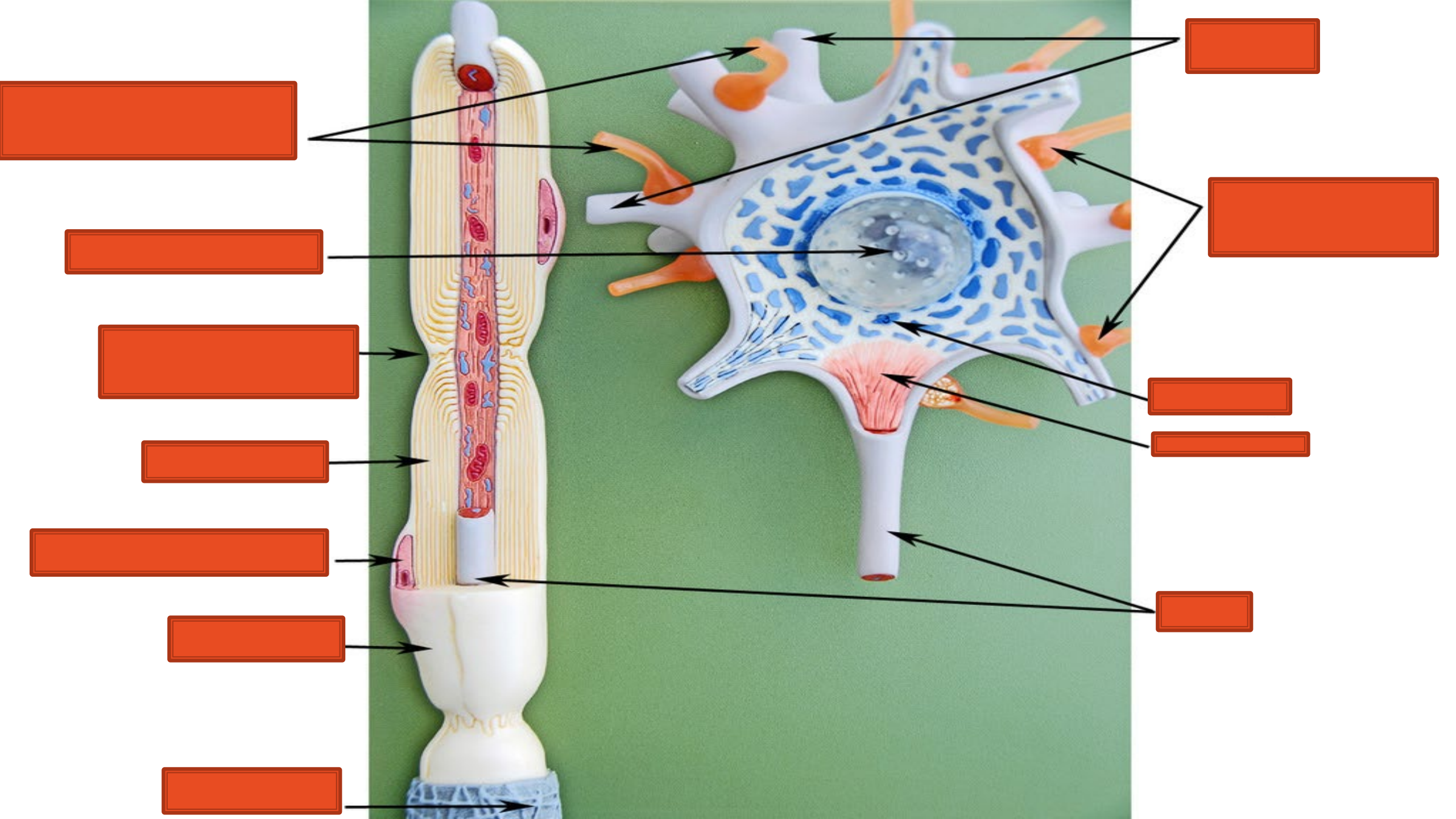


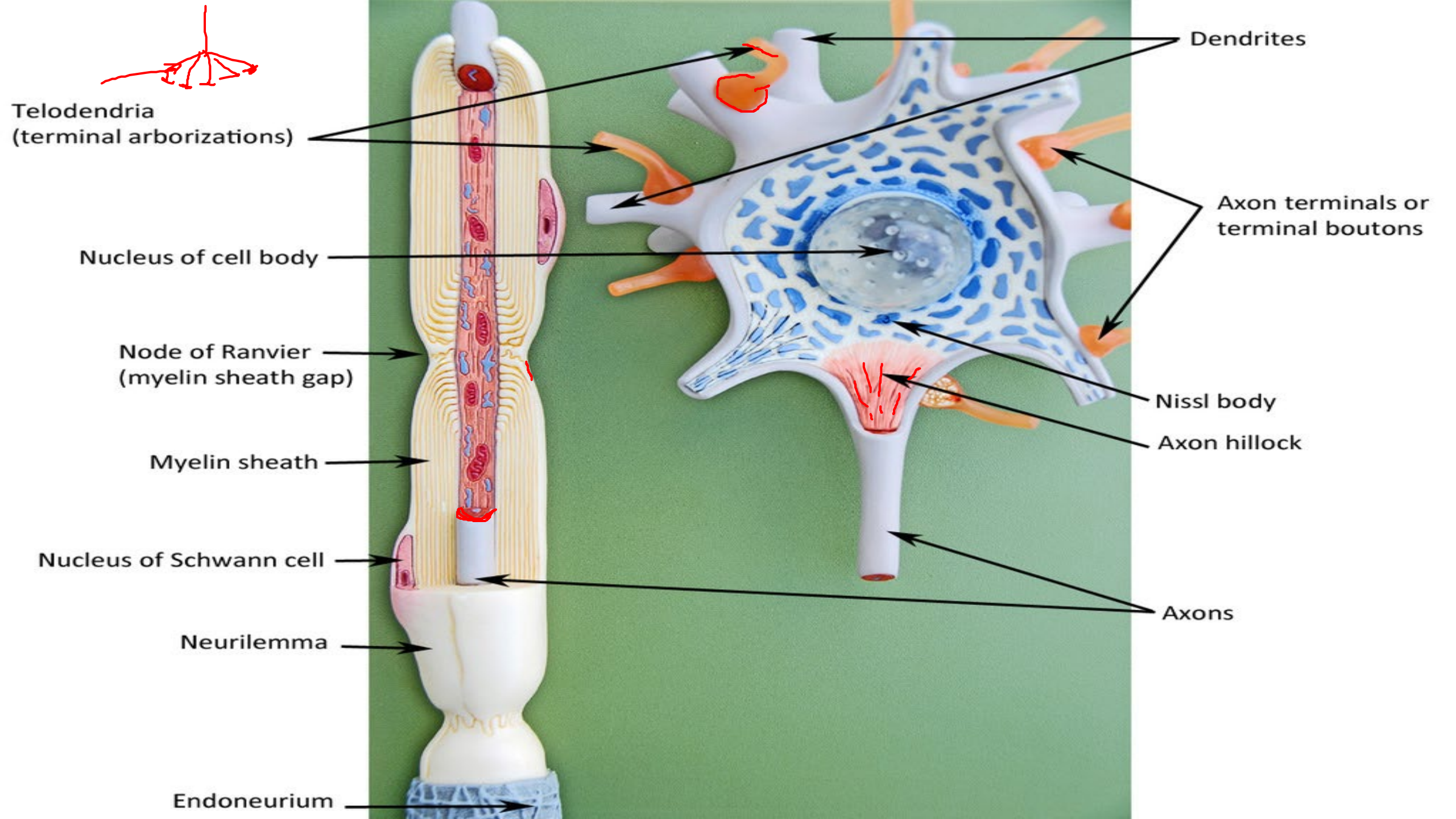




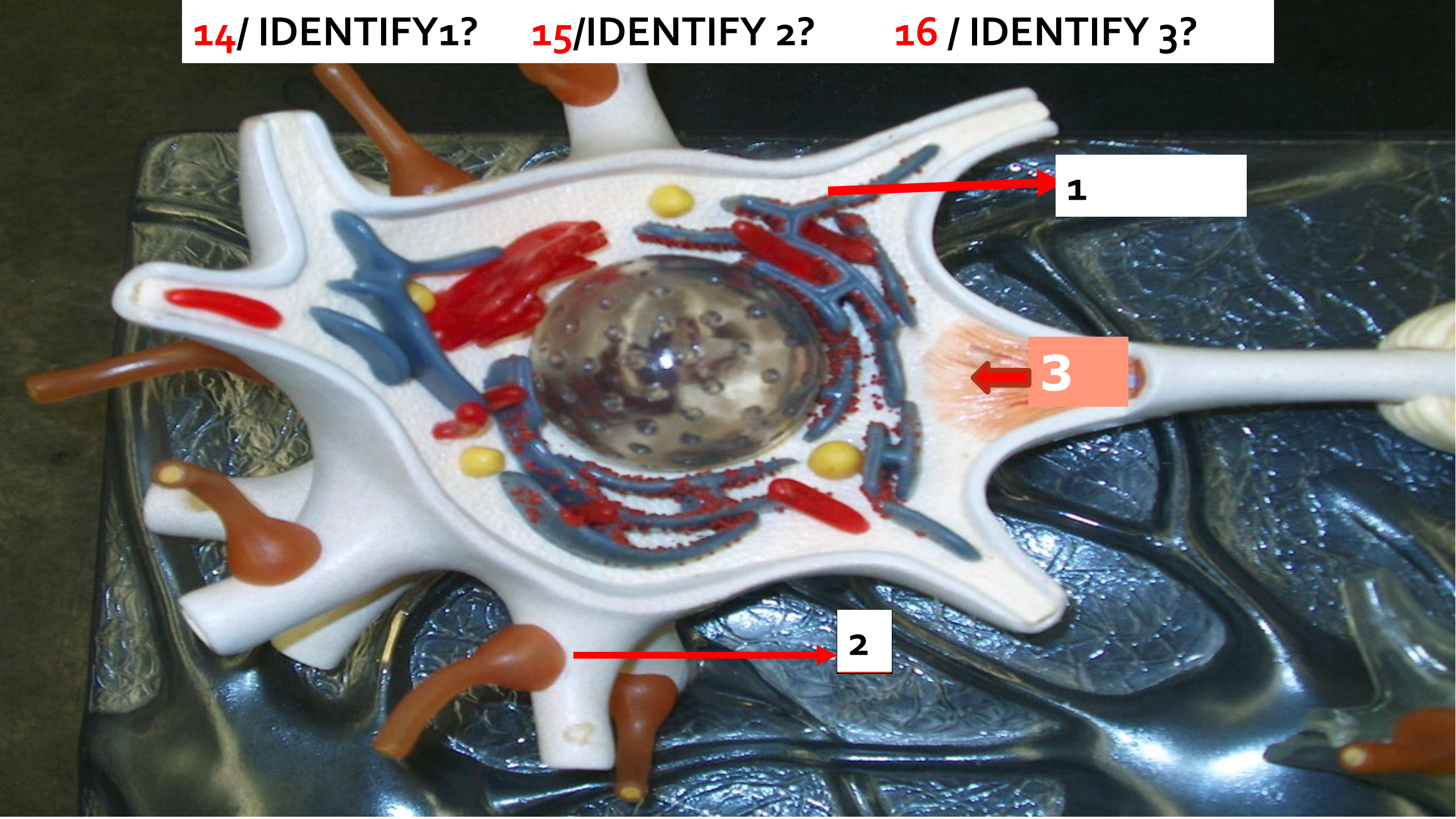



Synaptic Knob
Axon Hillock
Axon
Dendrite
Axon Terminal
Nissl Bodies
Myelin Sheath

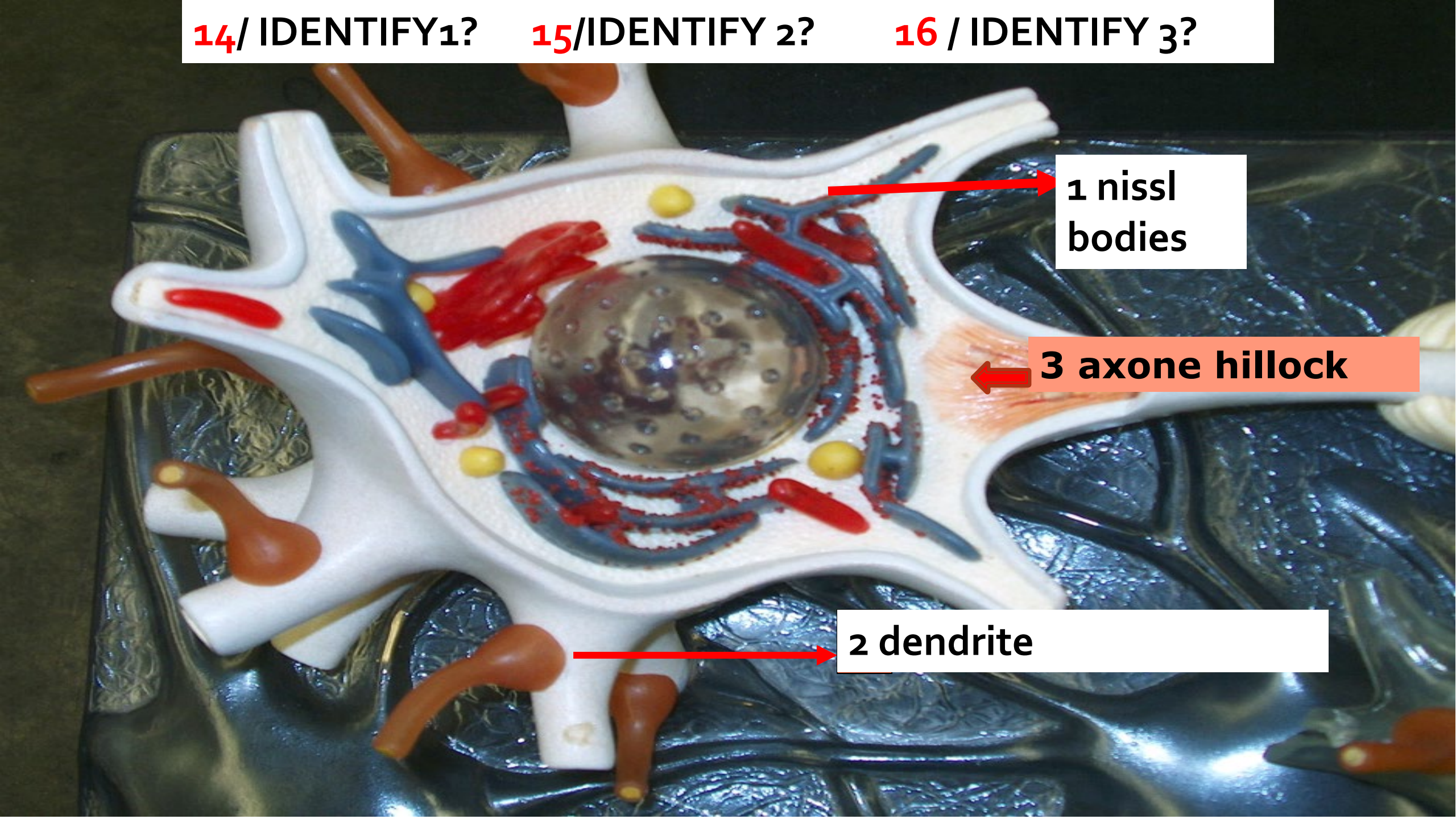


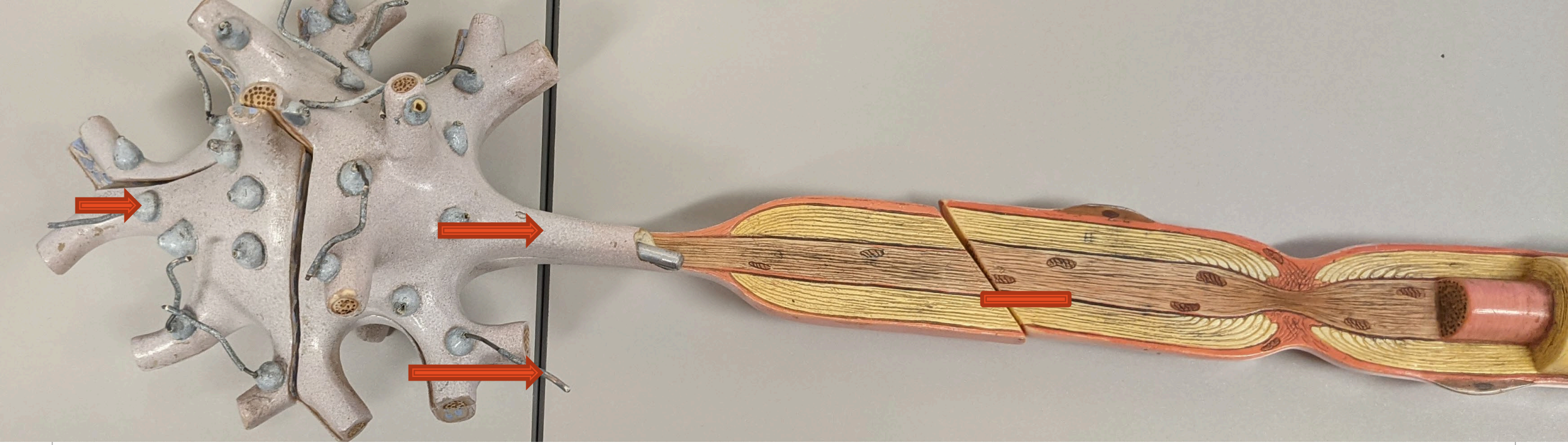

Telodendria
(terminal arborizations)
Dendrites
Axon terminals or
terminal boutons
Nucleus of cell body
Node of Ranvier
(myelin sheath gap)
Nissl body
Axon hillock
Myelin sheath
Nucleus of Schwann cell
Axons
Neurilemma
Endoneurium

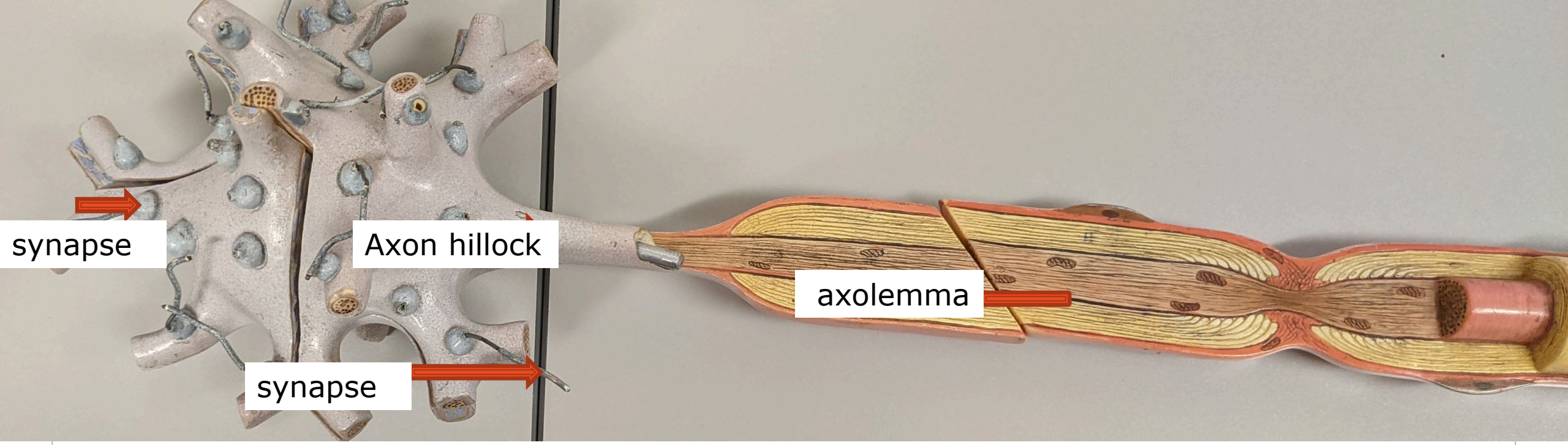
14/ IDENTIFY1? 15/IDENTIFY 2? 16 / IDENTIFY 3?



14/ IDENTIFY1? 15/IDENTIFY 2? 16 / IDENTIFY 3?



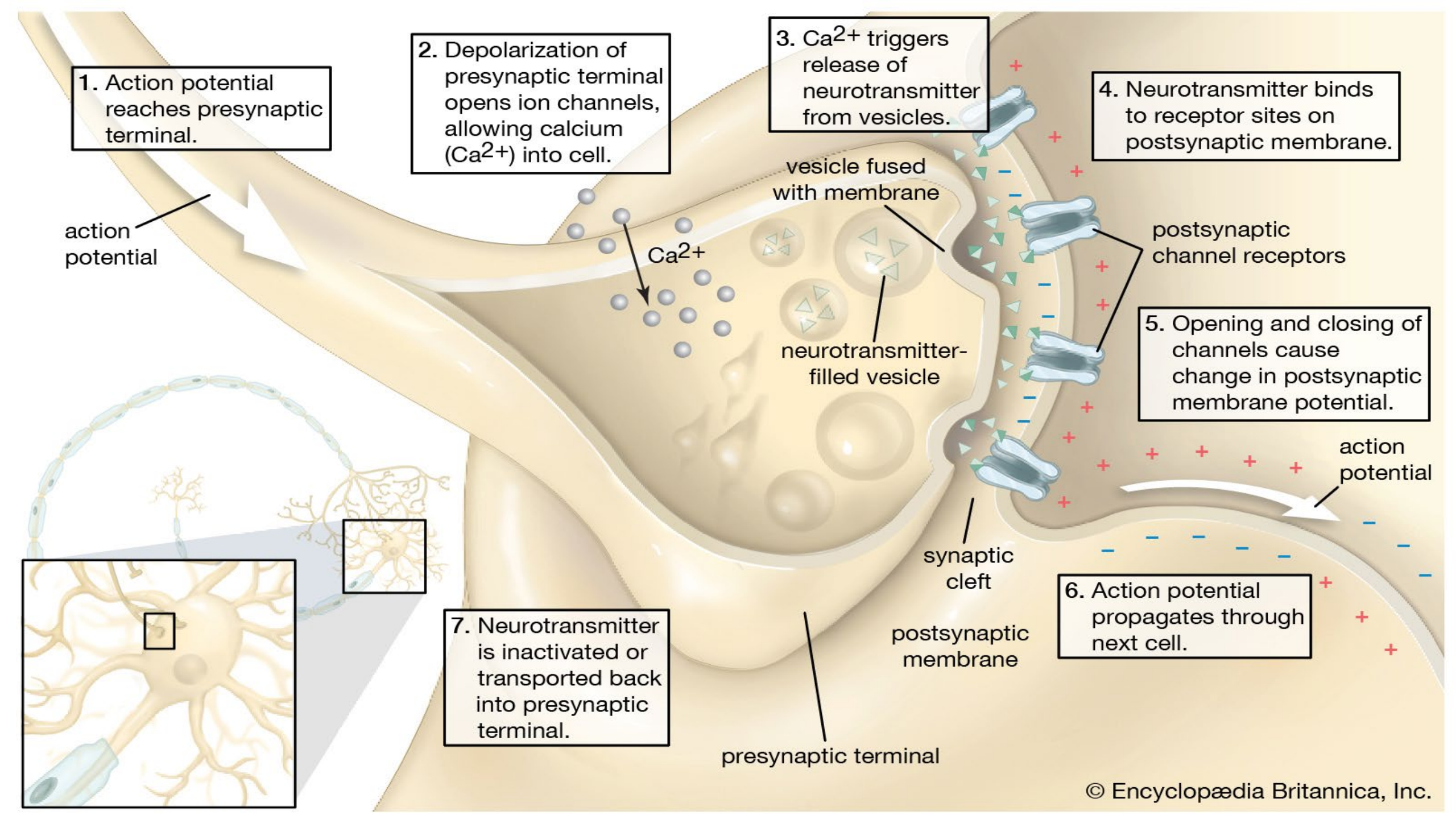




Axolemma
: the plasma membrane of an axon For a short time after the passage of a nerve impulse along a nerve fiber, while the axolemma is still depolarized, a second stimulus, however strong, is unable to excite the nerve

The axon hillock is **a specialized part of the cell body (or soma) of a neuron that connects to the axon**. It can be identified using light microscopy from its appearance and location in a neuron and from its sparse distribution of Nissl substance.

synapse is **a structure that permits a neuron (or nerve cell) to pass an electrical or chemical signal to another neuron** or to the target effector cell. ... In many synapses, the presynaptic part is located on an axon and the postsynaptic part is located on a dendrite or soma.


1. Action potential reaches presynaptic terminal.
2. Depolarization of presynaptic terminal opens ion channels, allowing calcium (Ca^{2+}) into cell.
3. Ca^{2+} triggers release of neurotransmitter from vesicles.
4. Neurotransmitter binds to receptor sites on postsynaptic membrane.
5. Opening and closing of channels cause change in postsynaptic membrane potential.
6. Action potential propagates through next cell.
7. Neurotransmitter is inactivated or transported back into presynaptic terminal.
action potential
Ca^{2+}
vesicle fused with membrane
neurotransmitter-filled vesicle
postsynaptic channel receptors
synaptic cleft
postsynaptic membrane
presynaptic terminal
action potential
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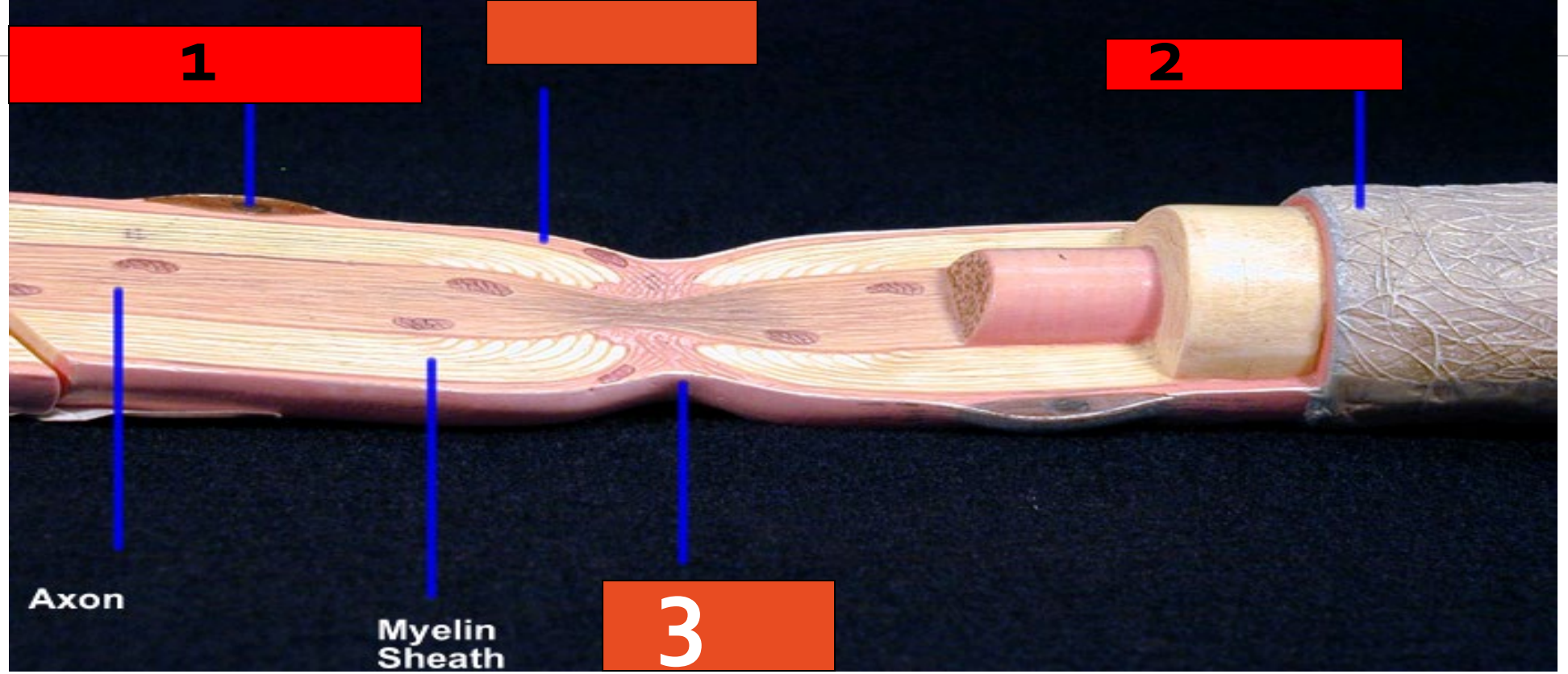
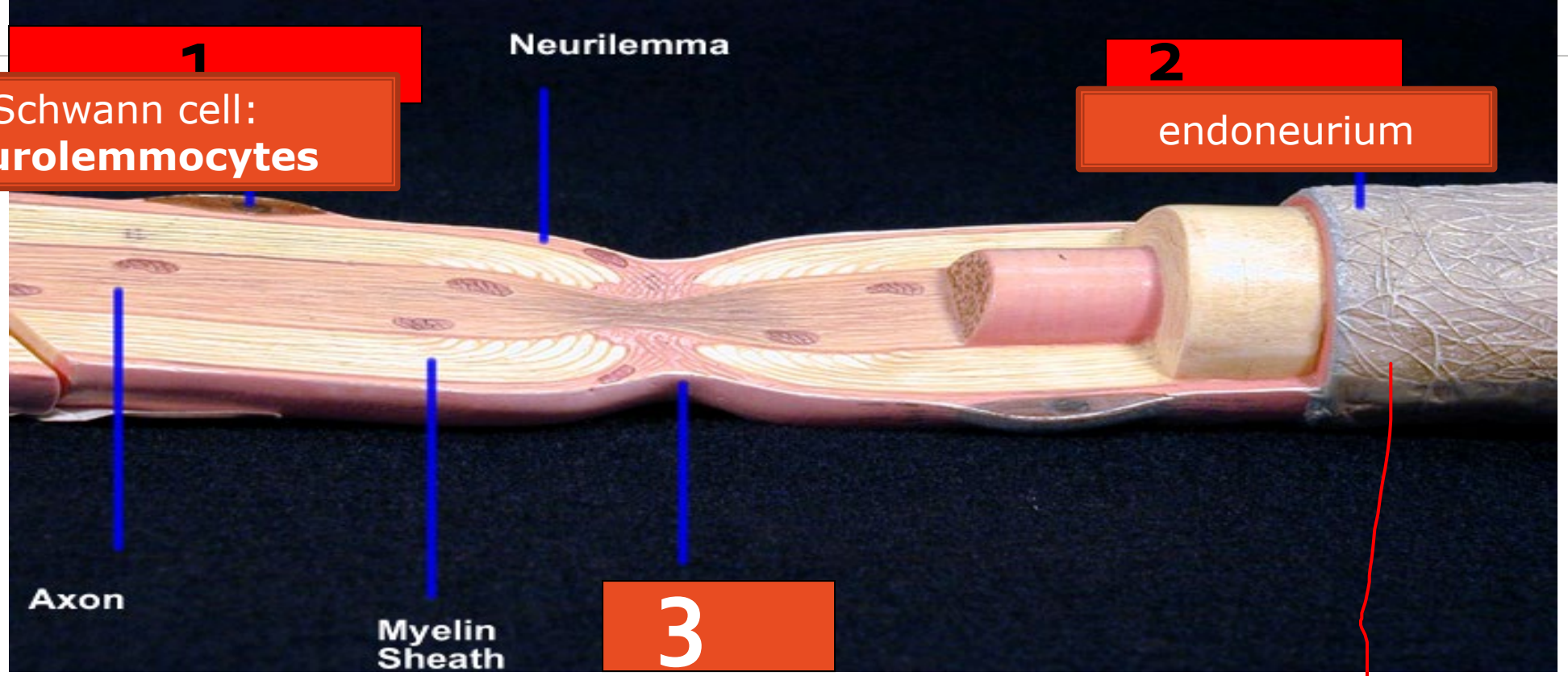


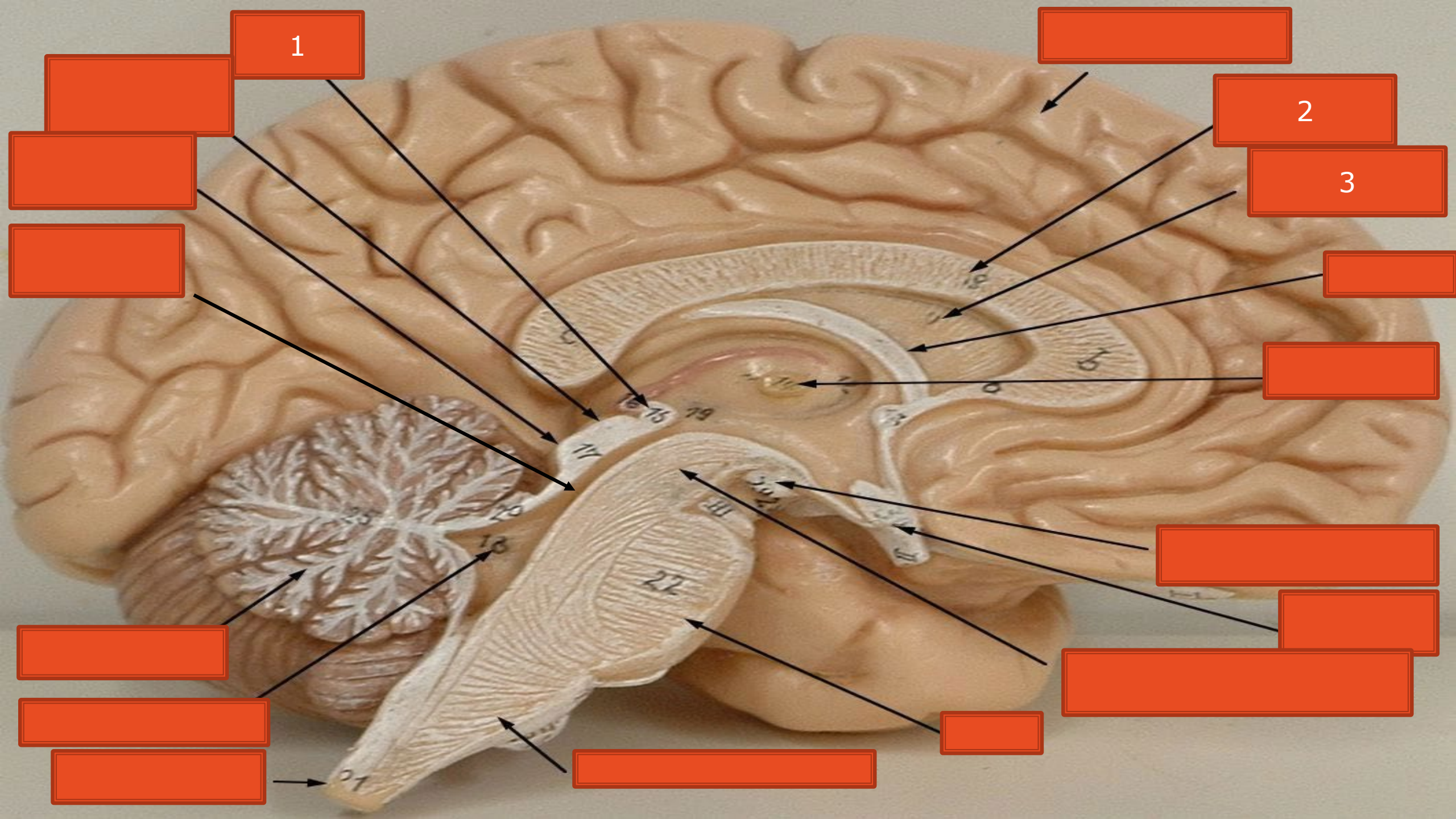
- 17/ 1
- 18/ 2
- 19/ 3

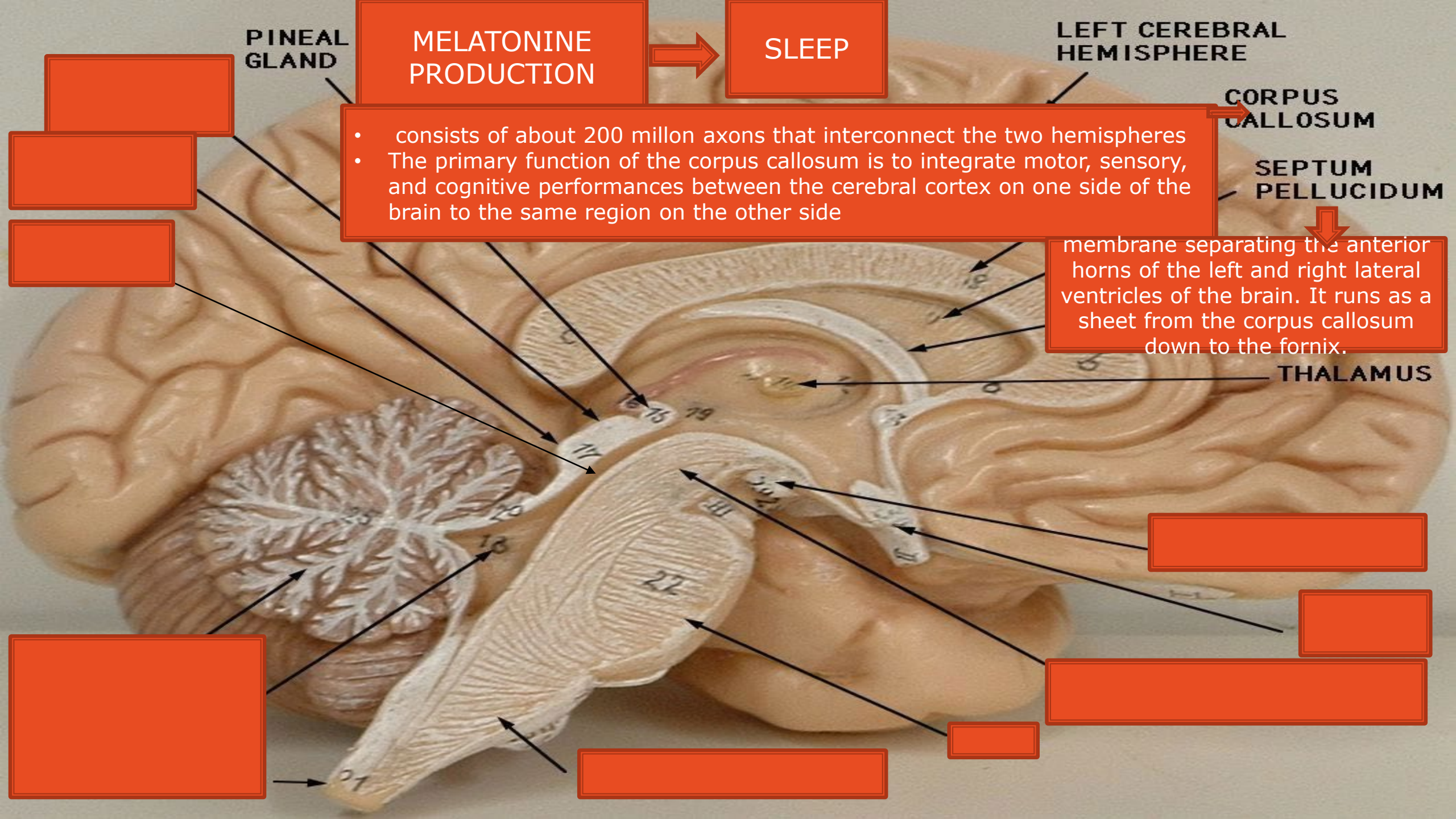


- 17/ 1
- 18/ 2
- 19/ 3

Neurilm
Myelin

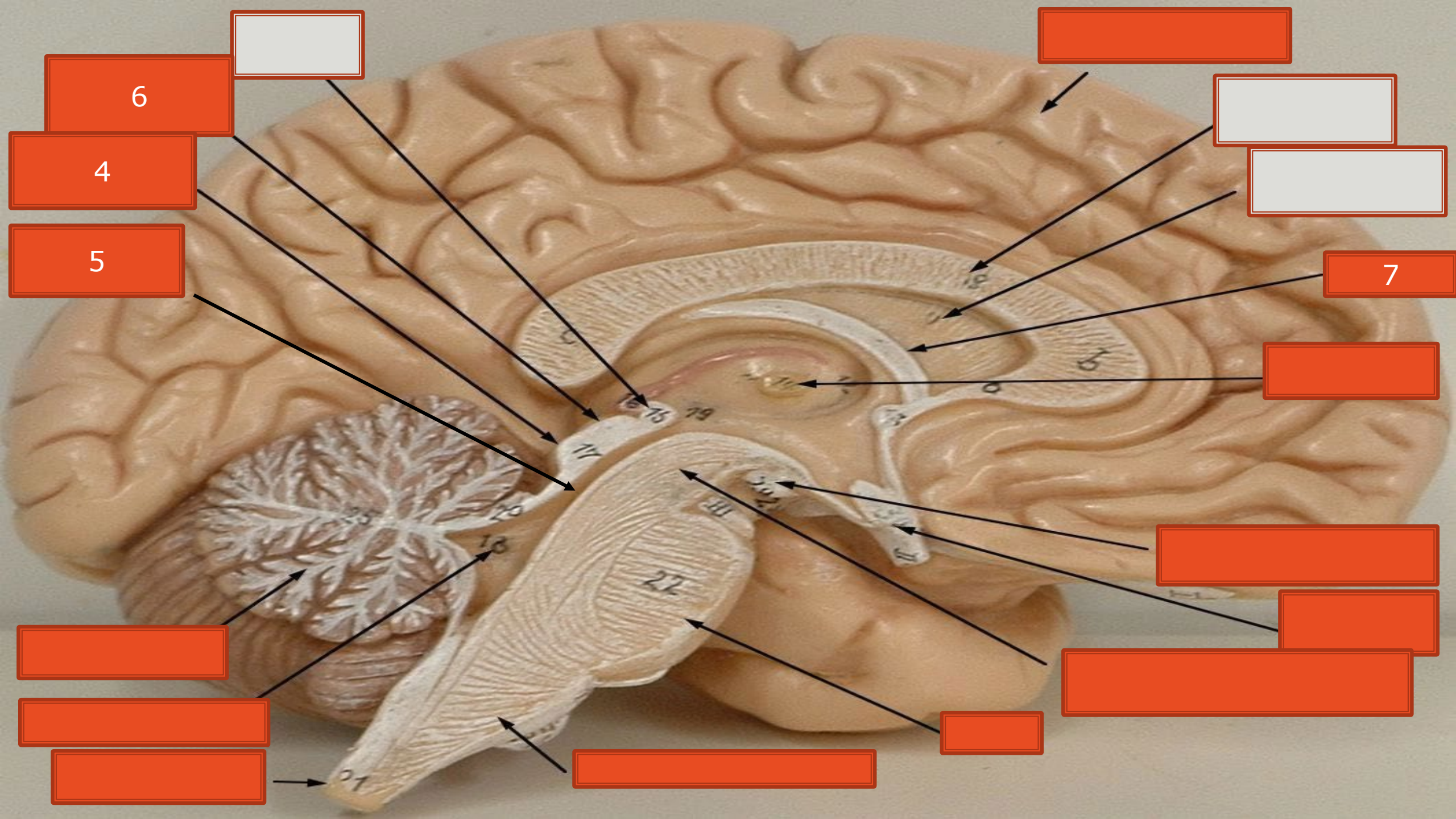
Endo


1
2
3



- consists of about 200 millon axons that interconnect the two hemispheres
- The primary function of the corpus callosum is to integrate motor, sensory, and cognitive performances between the cerebral cortex on one side of the brain to the same region on the other side

membrane separating the anterior horns of the left and right lateral ventricles of the brain. It runs as a sheet from the corpus callosum down to the fornix.


6
4
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7

SUPERIOR COLLICULUS

primary integrating center for eye movements vision reflexe.

INFERIOR COLLICULUS

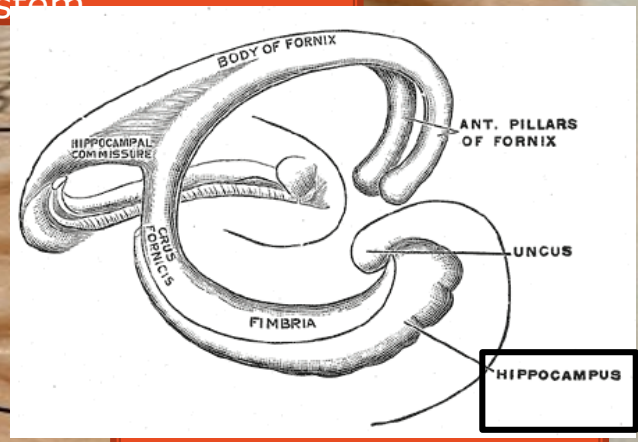
principal midbrain nucleus of the auditory pathway and receives input from several peripheral brainstem nuclei in the auditory pathway, as well as inputs from the auditory cortex.

CEREBRAL AQUEDUCT

the aqueduct of Sylvius is within the mesencephalon (or midbrain), contains cerebrospinal fluid (CSF), and connects the third ventricle in the diencephalon to the fourth 4rd ventricle

fornix joins the hippocampus and mammillary bodies, structures in the base of the brain that are involved in memory formation and recall. It is part of the limbic system

FORNIX



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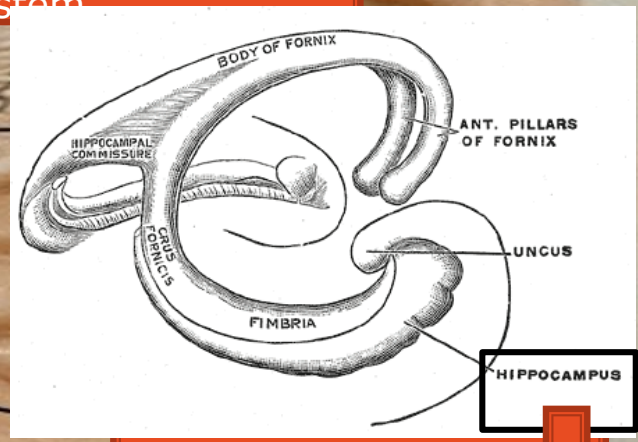
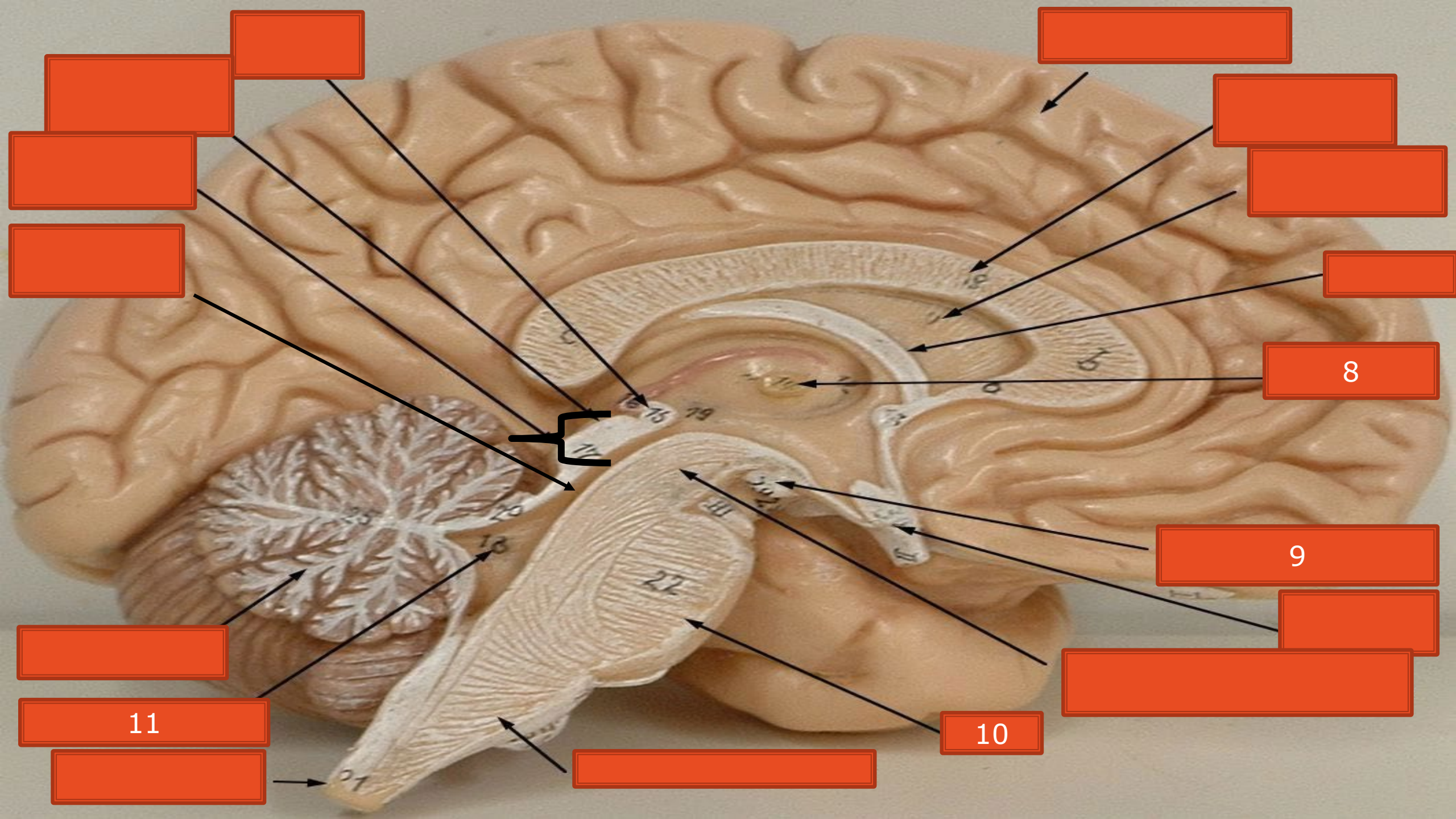


plays important roles in the consolidation of information from short-term memory to long-term memory, and in spatial memory that enables navigation.
The hippocampus belongs to the limbic system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9
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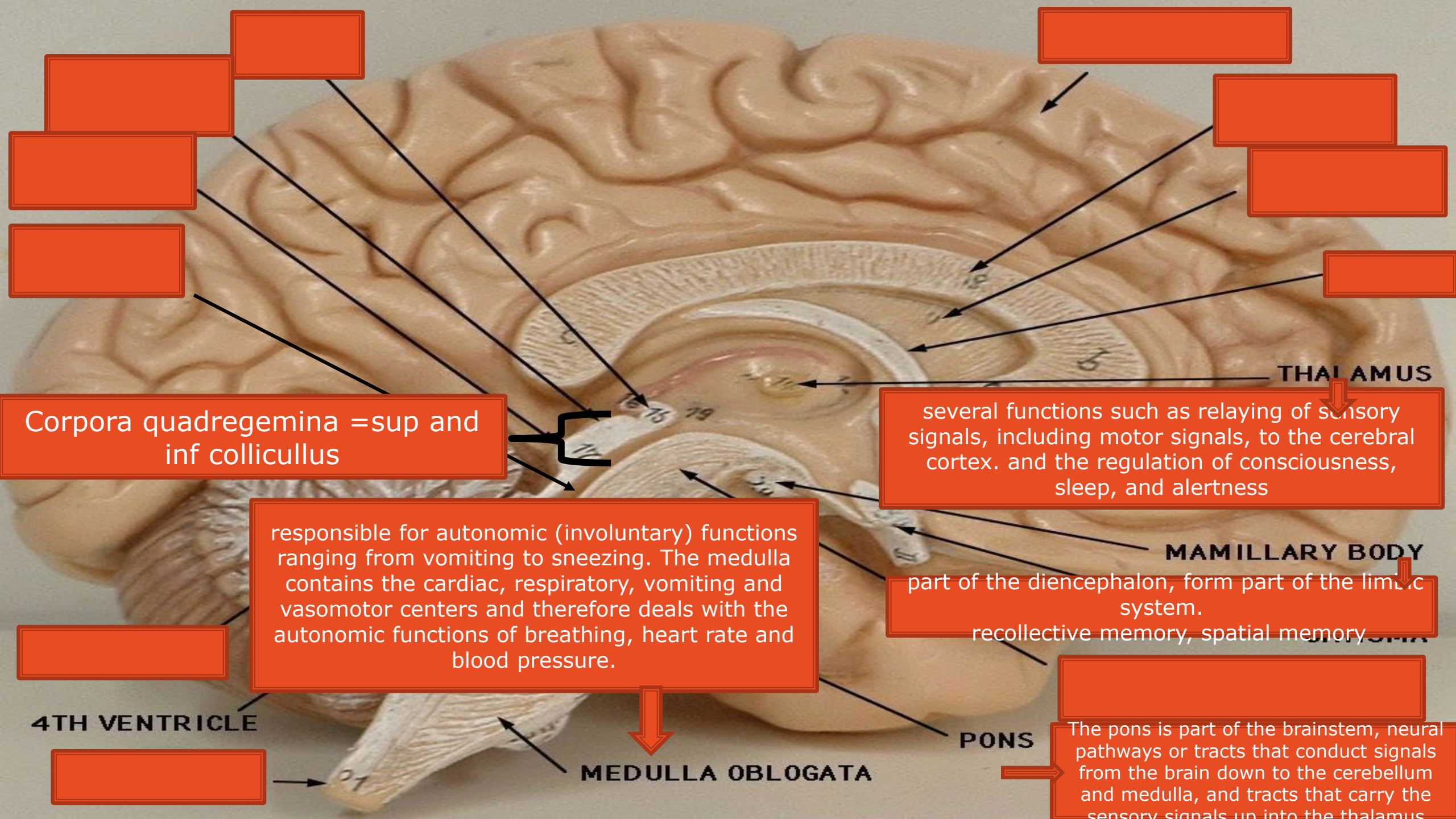


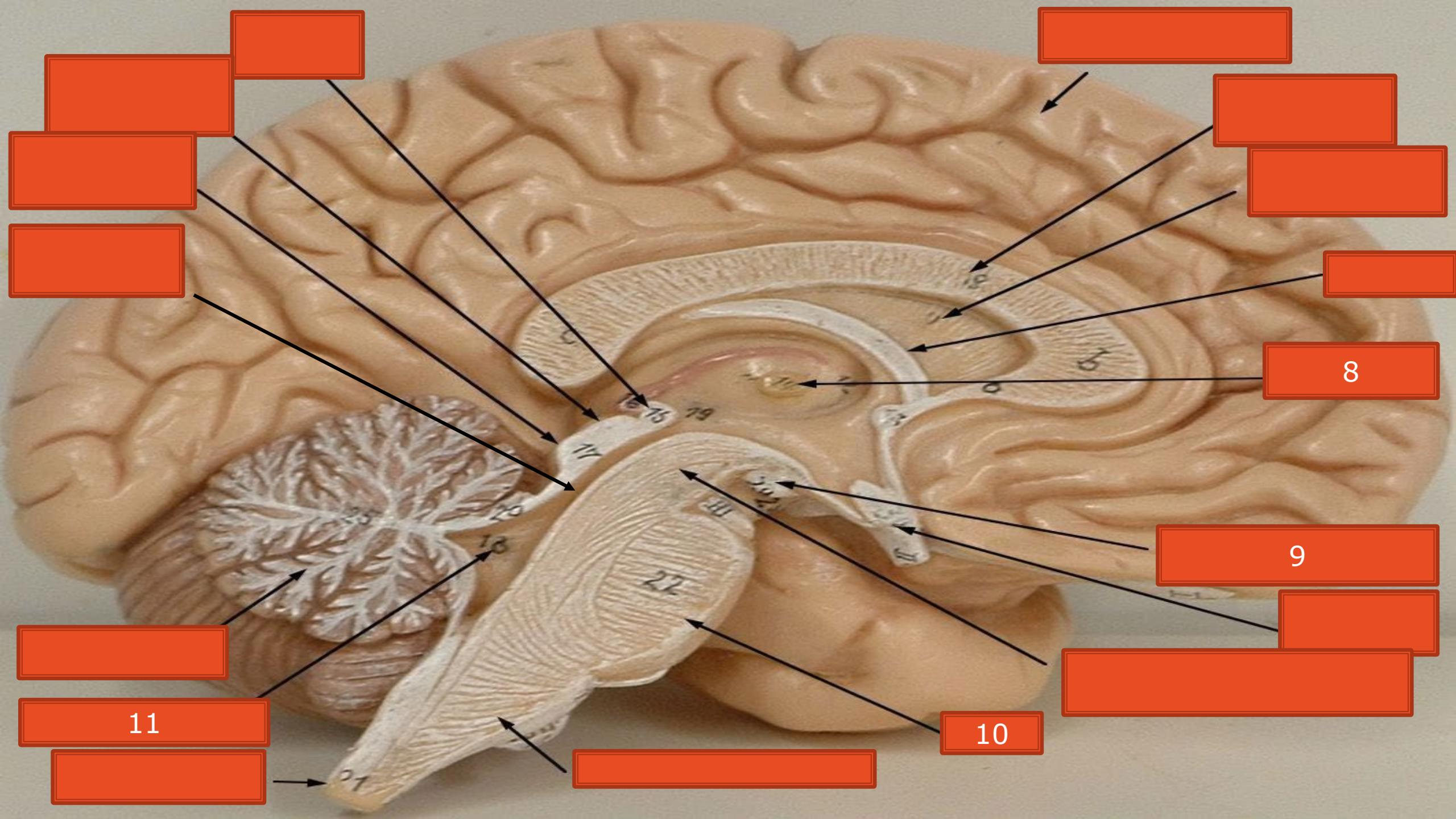
Corpora quadregemina =sup and inf collicullus

several functions such as relaying of sensory signals, including motor signals, to the cerebral cortex. and the regulation of consciousness, sleep, and alertness

responsible for autonomic (involuntary) functions ranging from vomiting to sneezing. The medulla contains the cardiac, respiratory, vomiting and vasomotor centers and therefore deals with the autonomic functions of breathing, heart rate and blood pressure.

part of the diencephalon, form part of the limbic system.
recollective memory, spatial memory

The pons is part of the brainstem, neural pathways or tracts that conduct signals from the brain down to the cerebellum and medulla, and tracts that carry the sensory signals up into the thalamus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PINEAL GLAND

LEFT CEREBRAL HEMISPHERE

SUPERIOR COLLICULUS

CORPUS CALLOSUM

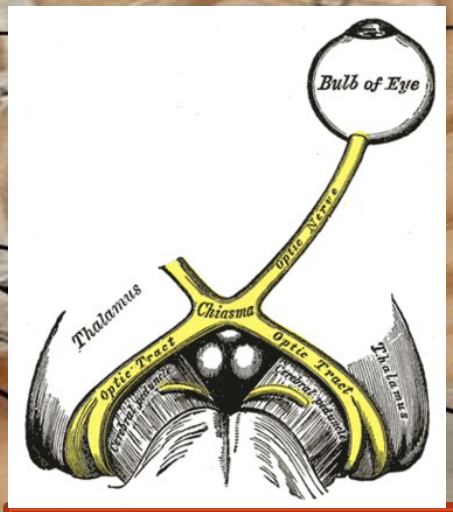
INFERIOR COLLICULUS

SEPTUM PELLUCIDUM

CEREBRAL AQUEDUCT

FORNIX

THALAMUS

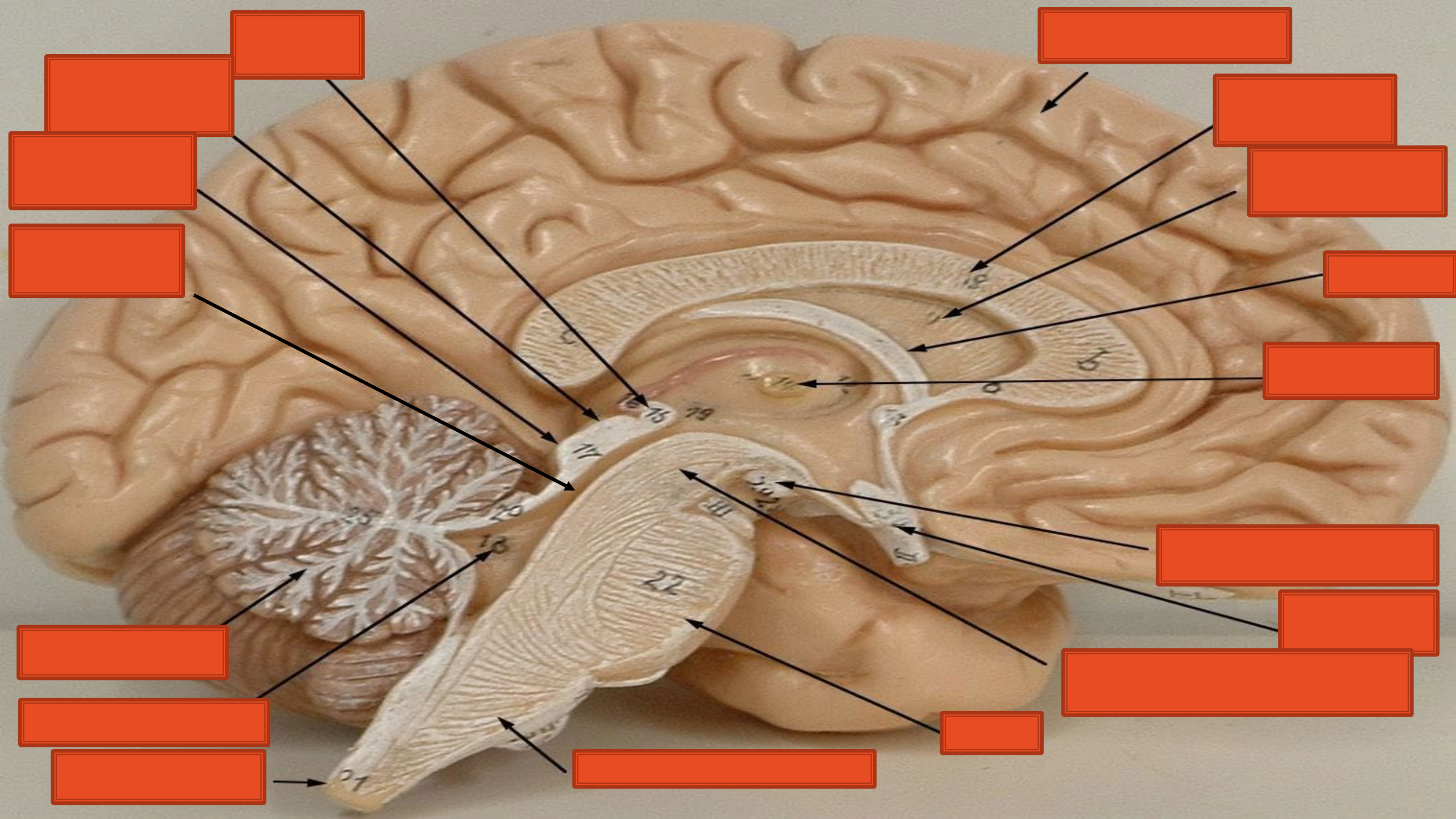


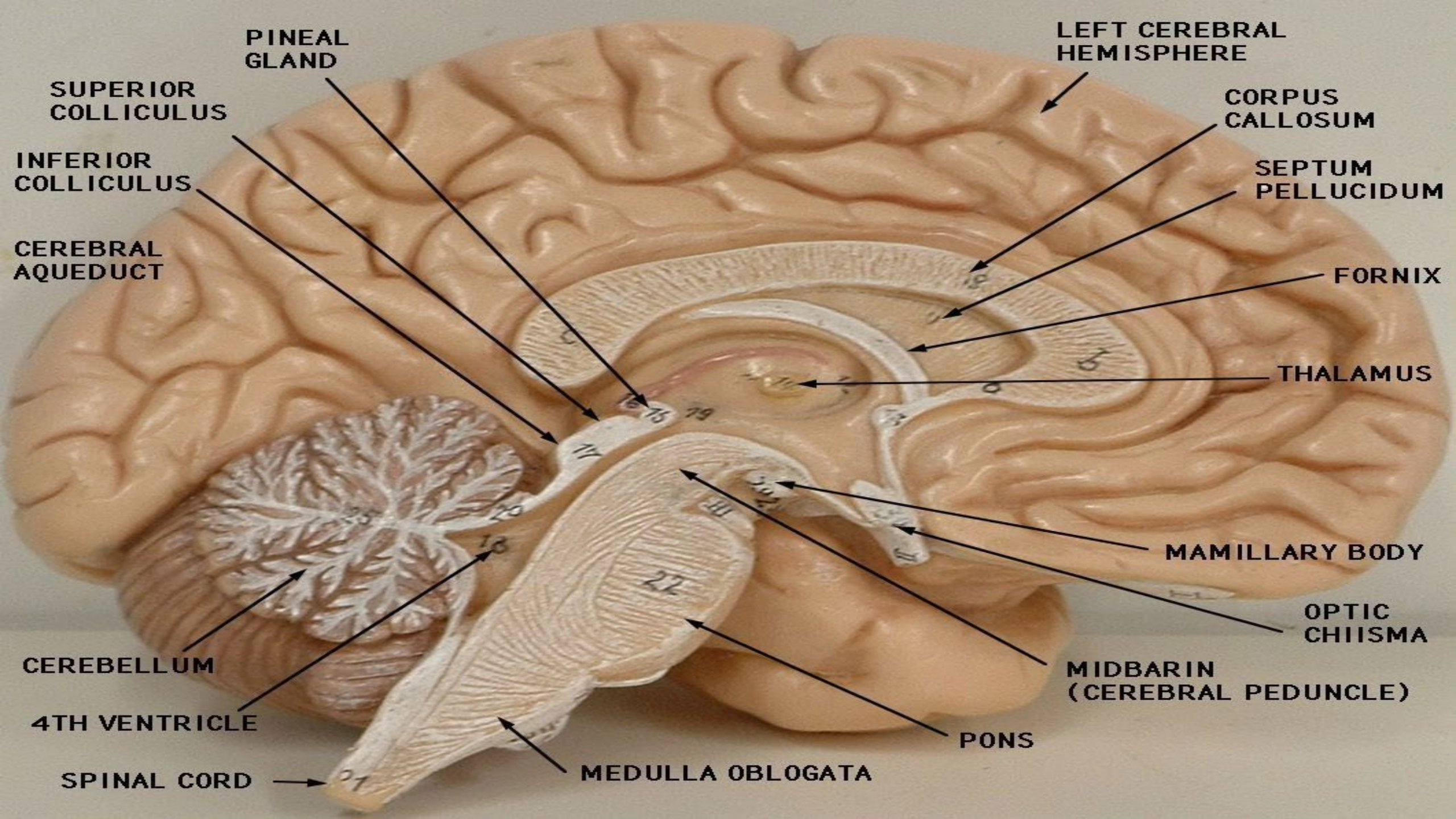
MAMILLARY BODY

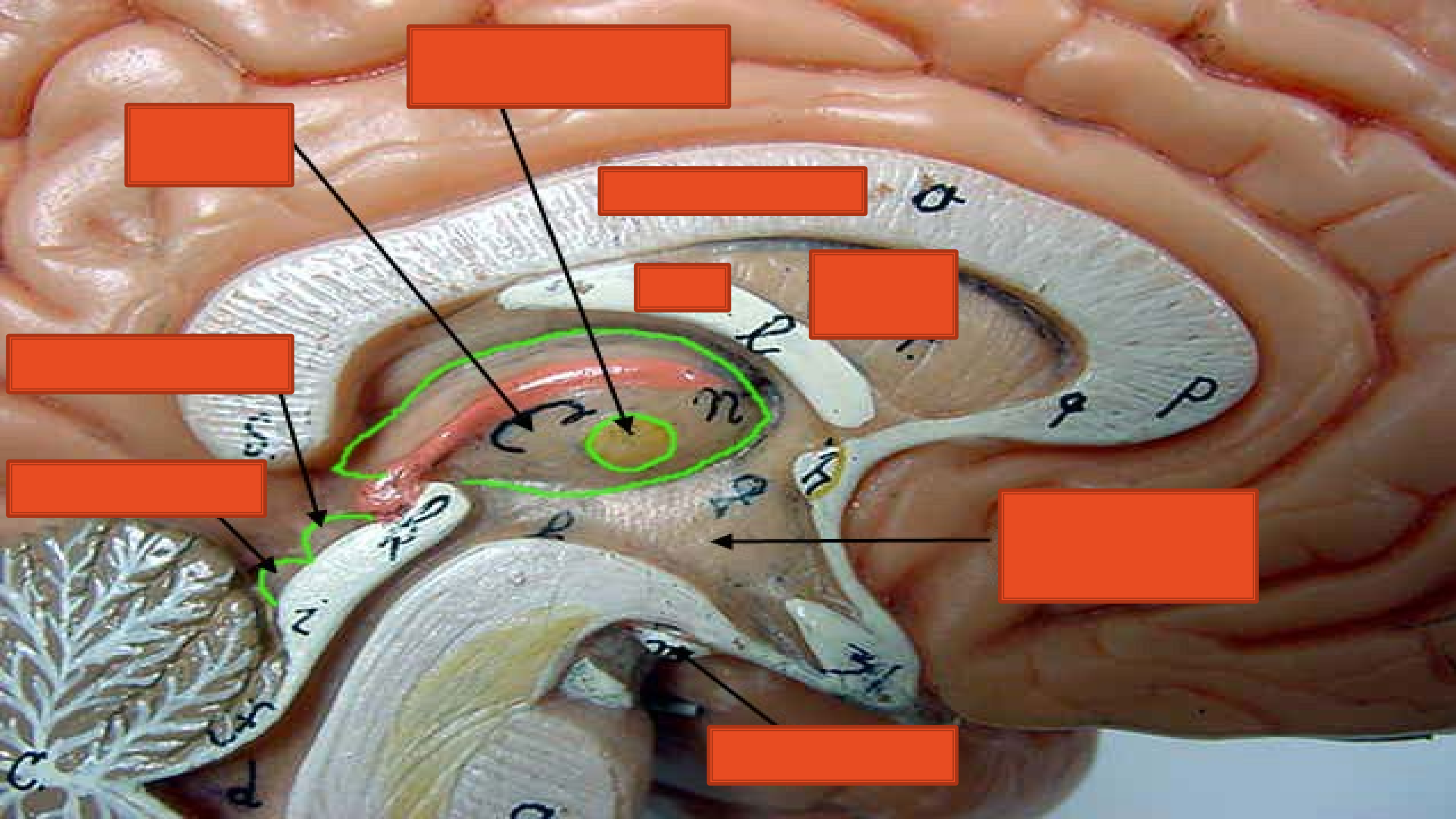
OPTIC CHIISMA

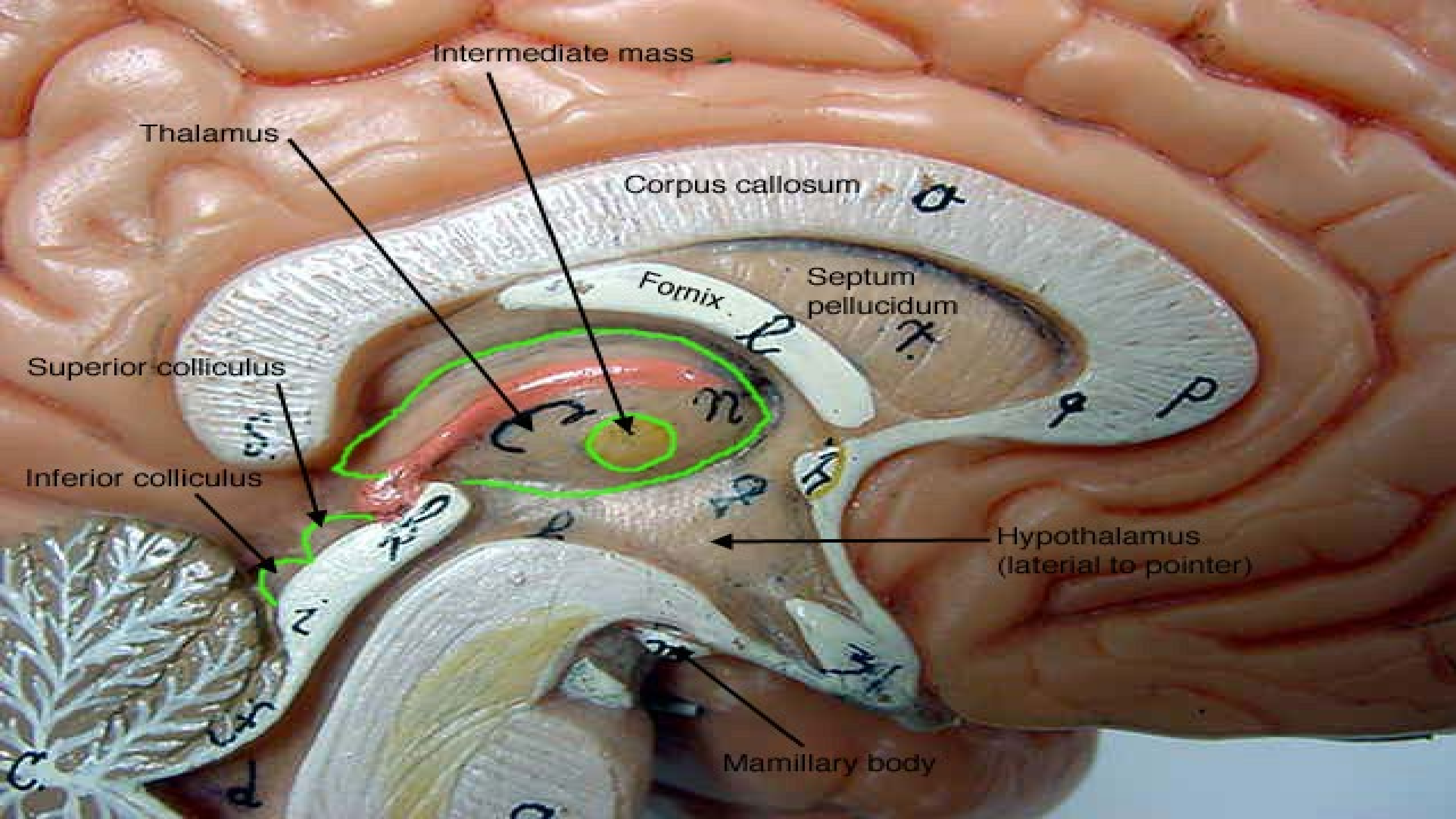
MEDULLA OBLOGATA

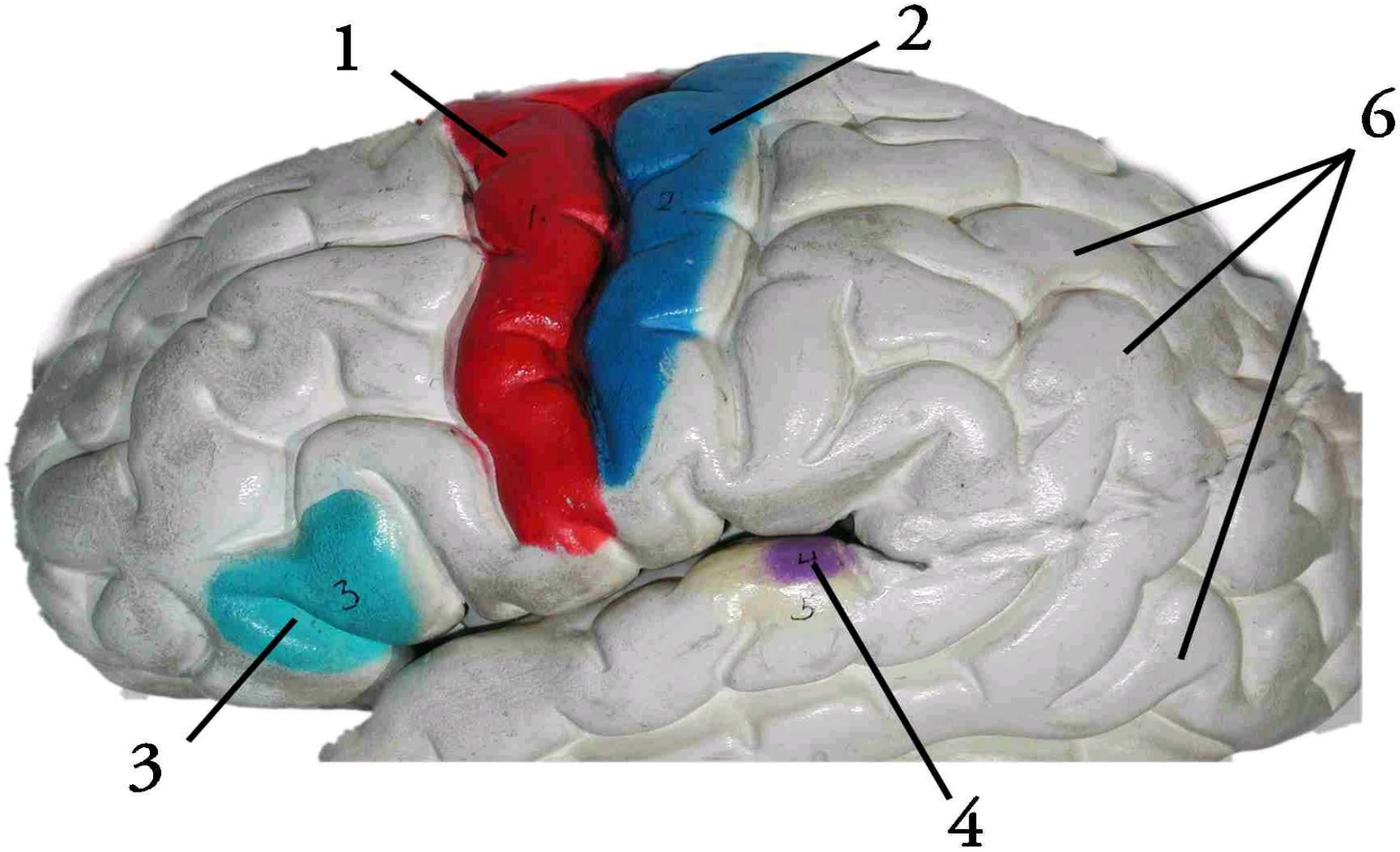
optic chiasm or optic chiasma
where the optic nerves partially cross. The optic chiasm is located at the bottom of the brain immediately below the hypothalamus




PINEAL GLAND
LEFT CEREBRAL HEMISPHERE
SUPERIOR COLLICULUS
CORPUS CALLOSUM
INFERIOR COLLICULUS
SEPTUM PELLUCIDUM
CEREBRAL AQUEDUCT
FORNIX
THALAMUS
MAMILLARY BODY
OPTIC CHIISMA
CEREBELLUM
MIDBARIN (CEREBRAL PEDUNCLE)
4TH VENTRICLE
PONS
SPINAL CORD
MEDULLA OBLOGATA

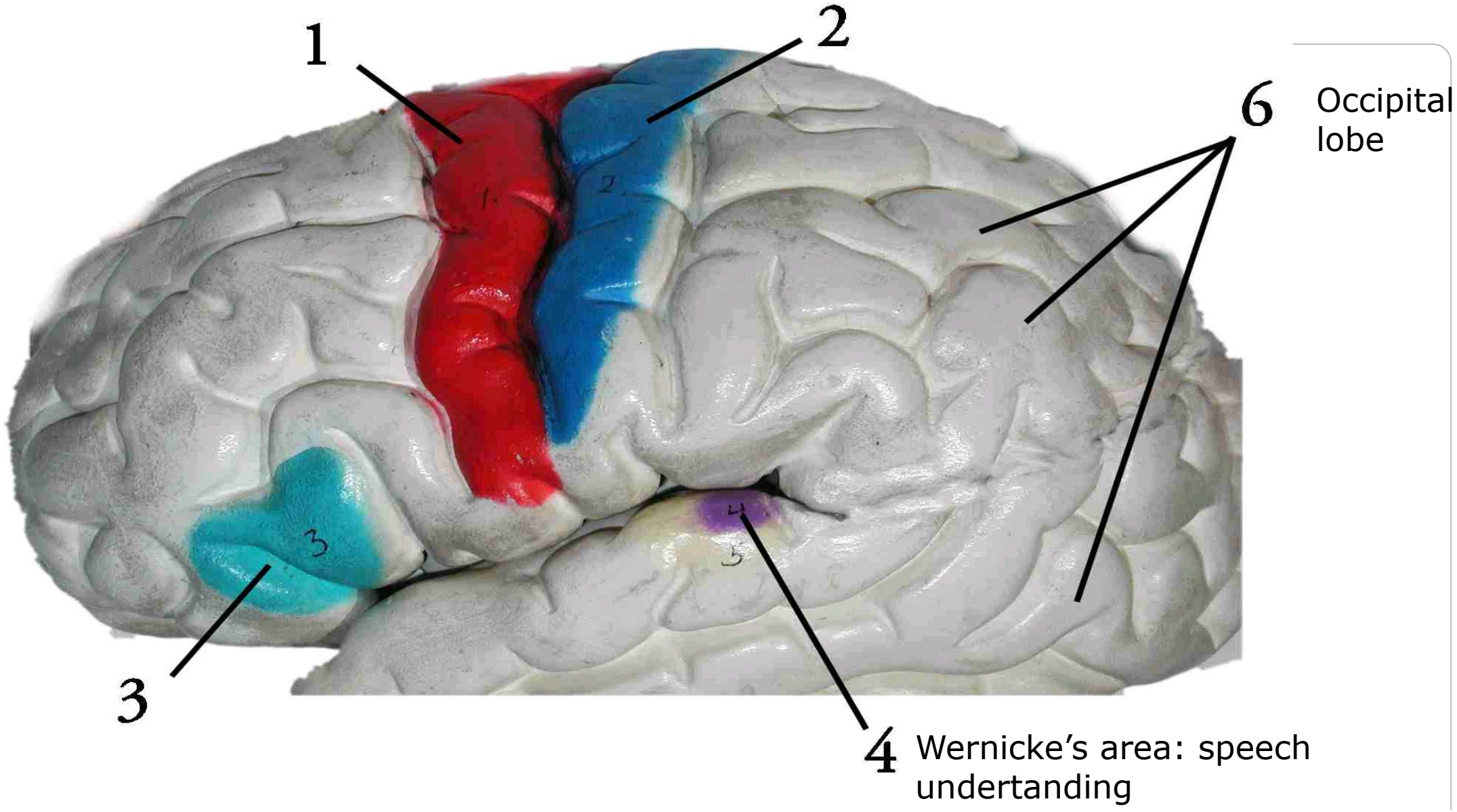



Intermediate mass
Thalamus
Corpus callosum
Fornix
Septum pellucidum
Superior colliculus
Inferior colliculus
Hypothalamus (laterial to pointer)
Mamillary body



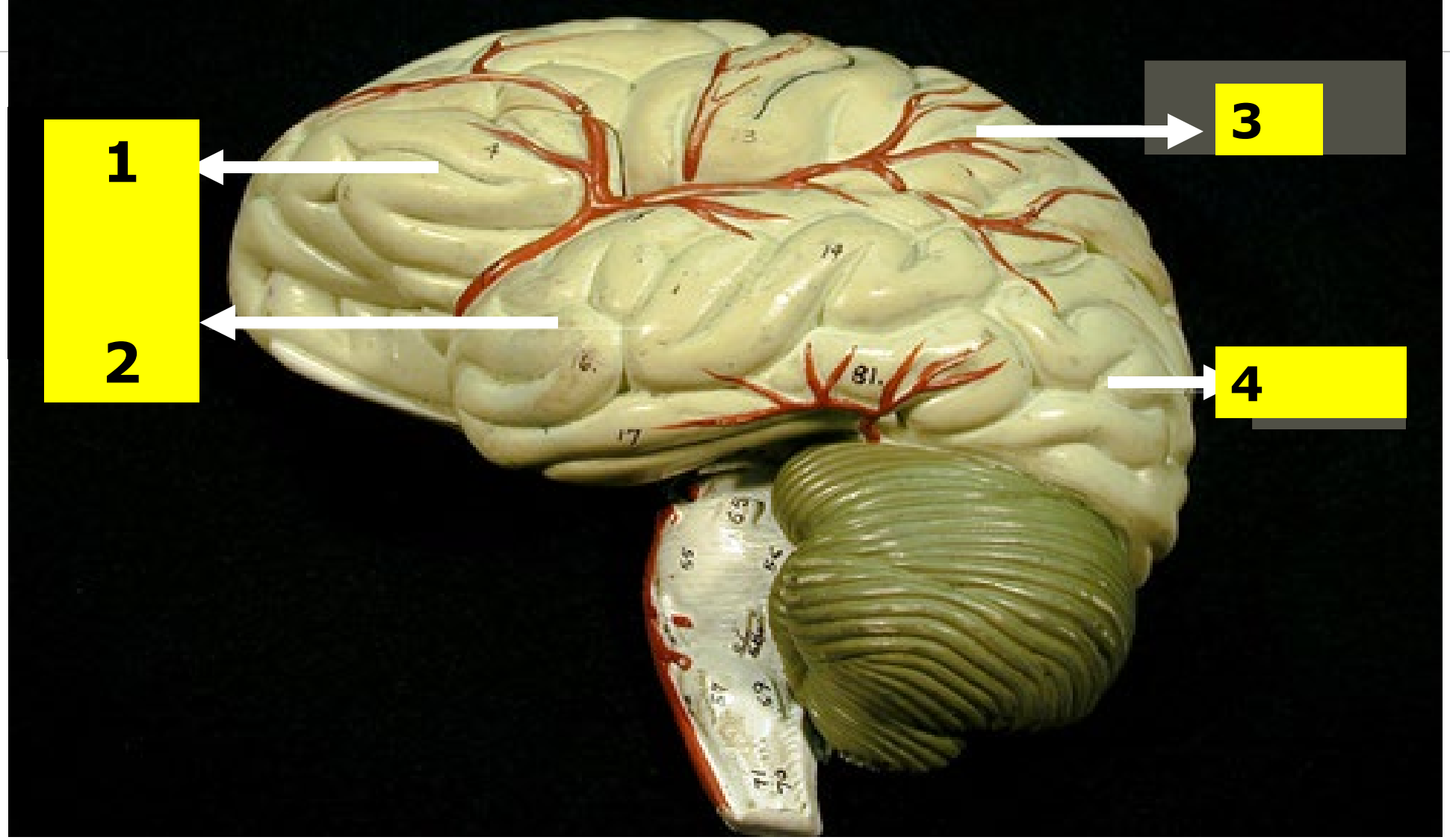
43/ Identify 1, 2,

44/ Identify 3 [be specific?broca’s area

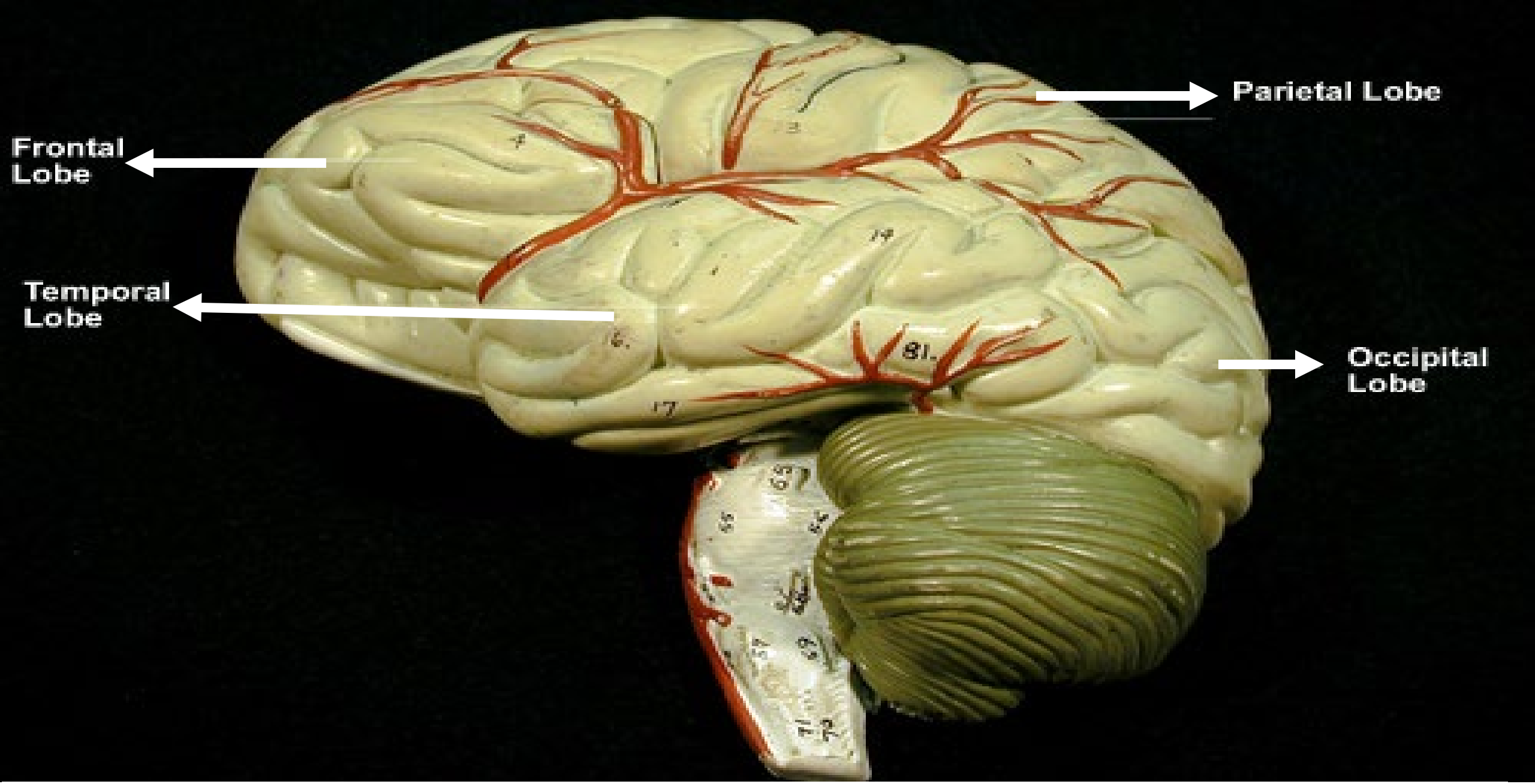


43/ Identify 1, 2: **Precentral Gyrus, Post central Gyrus:Primary motor cortex, primary sensory cortex**

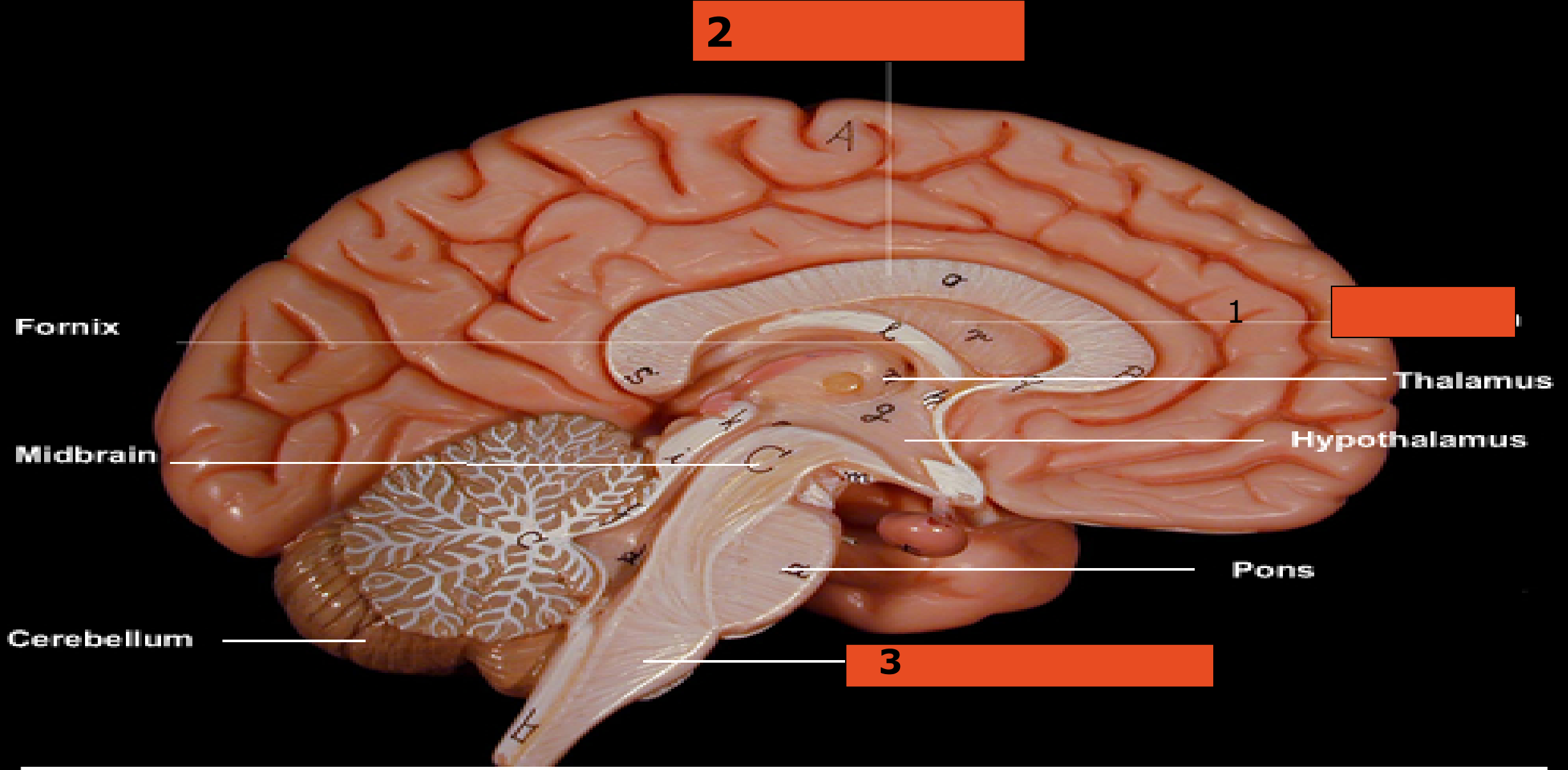
44/ Identify 3 [be specific? **Broca’s area:** region in the frontal lobe of the dominant hemisphere, usually the left, of the brain with functions linked to speech production



45/ Identify the brain region 1,2,3,4



45/ Identify the brain region 1,2,3,4: Frontal lobe, temporal lobe, parietal lobe, occipital lobe

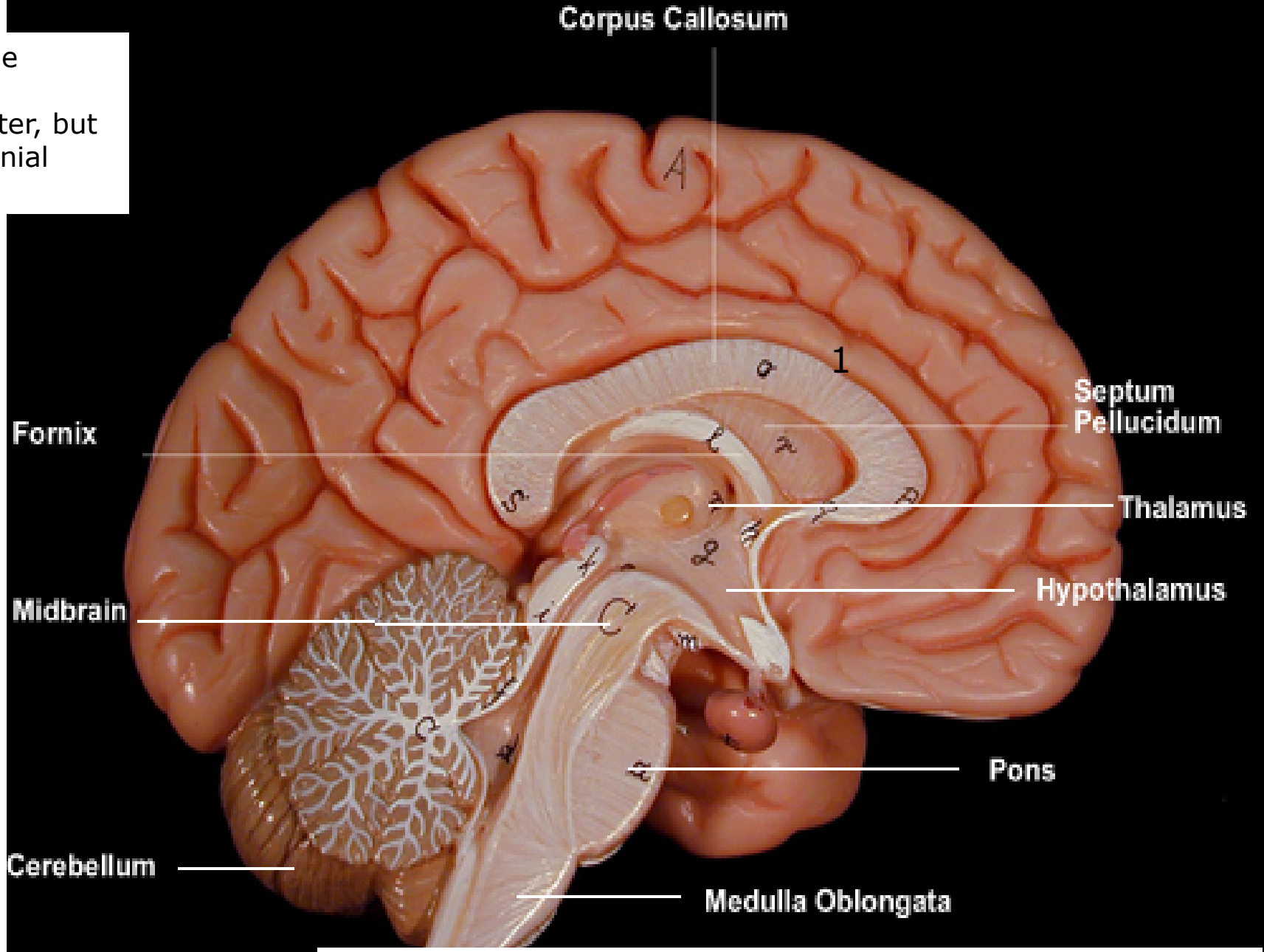

2
Fornix
1
Thalamus
Midbrain
Hypothalamus
Pons
Cerebellum
3

46/ 1 47/ 2 48/ 3

Pons is very important part of brain for the regulation and control of a number of vital functions. It not only acts as a control center, but also contains nuclei of some important cranial nerves.

Fornix, a white matter bundle located in the mesial aspect of the cerebral hemispheres, which connects various nodes of a limbic circuitry and is believed to play a key role in cognition and episodic memory recall.

The cerebellum ("little brain") is a structure that is located at the back of the brain, underlying the occipital and temporal lobes of the cerebral cortex . Although the cerebellum accounts for approximately 10% of the brain's volume, it contains over 50% of the total number of neurons in the brain.



It plays an essential role in passing messages between your spinal cord and brain. It's also essential for regulating your cardiovascular and respiratory systems

The cerebellum ("little brain")
is a structure that is located at the back of the brain, underlying the occipital and temporal lobes of the cerebral cortex . Although the cerebellum accounts for approximately 10% of the brain's volume, it contains over 50% of the total number of neurons in the brain. Historically, the cerebellum has been considered a motor structure, because cerebellar damage leads to impairments in motor control and posture and because the majority of the cerebellum's outputs are to parts of the motor system. Motor commands are not initiated in the cerebellum; rather, the cerebellum modifies the motor commands of the descending pathways to make movements more adaptive and accurate.

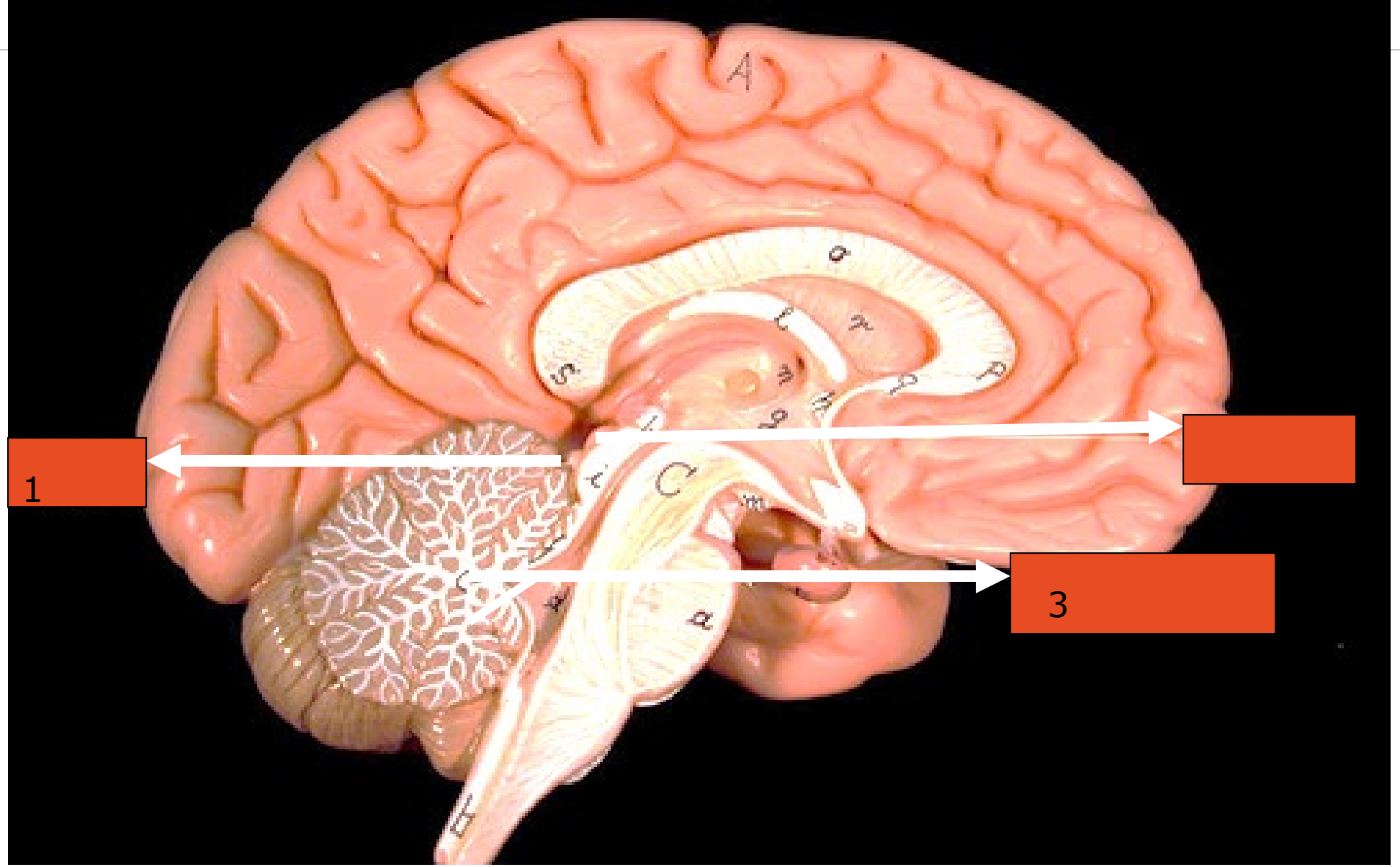
The cerebellum is involved in the following functions:

Maintenance of balance and posture. The cerebellum is important for making postural adjustments in order to maintain balance. Through its input from vestibular receptors and proprioceptors, it modulates commands to motor neurons to compensate for shifts in body position or changes in load upon muscles. Patients with cerebellar damage suffer from balance disorders, and they often develop stereotyped postural strategies to compensate for this problem (e.g., a wide-based stance).

Coordination of voluntary movements. Most movements are composed of a number of different muscle groups acting together in a temporally coordinated fashion. One major function of the cerebellum is to coordinate the timing and force of these different muscle groups to produce fluid limb or body movements.

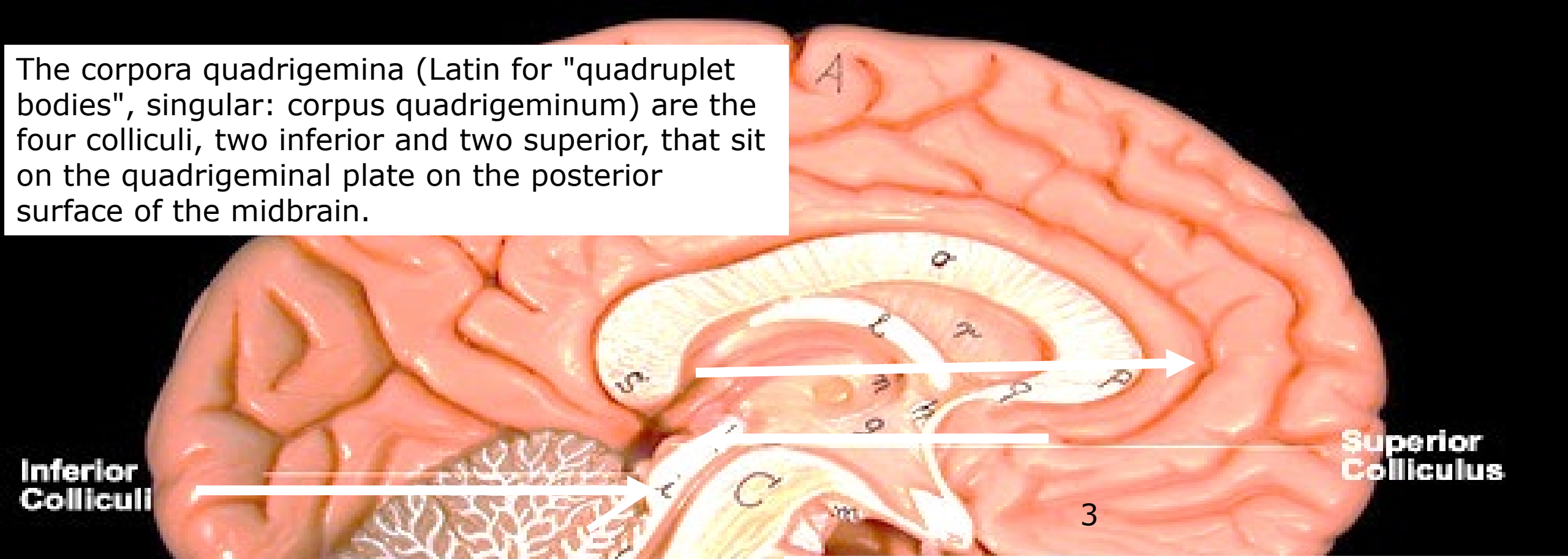
Motor learning. The cerebellum is important for motor learning. The cerebellum plays a major role in adapting and fine-tuning motor programs to make accurate movements through a trial-and-error process (e.g., learning to hit a baseball).

Cognitive functions. Although the cerebellum is most understood in terms of its contributions to motor control, it is also involved in certain cognitive functions, such as language. Thus, like the basal ganglia, the cerebellum is historically considered as part of the motor system, but its functions extend beyond motor control in ways that are not yet well understood.



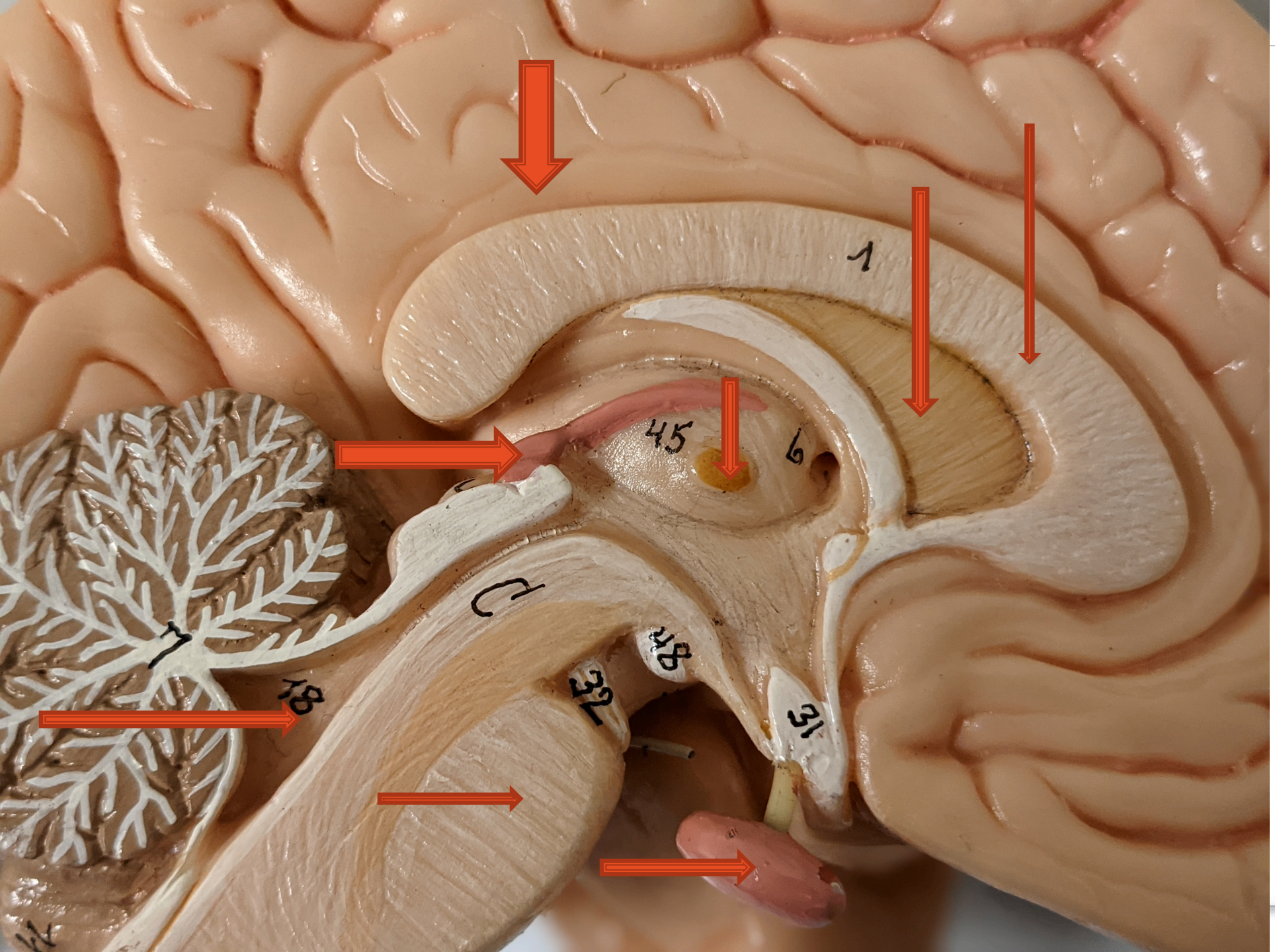
49./ 1 50./ 2 51./ 3

The corpora quadrigemina (Latin for "quadruplet bodies", singular: corpus quadrigeminum) are the four colliculi, two inferior and two superior, that sit on the quadrigeminal plate on the posterior surface of the midbrain.



The corpora quadrigemina are reflex centers involving vision and hearing:

- superior colliculi: involved in preliminary visual processing and control of eye movements
- inferior colliculi: involved in auditory processing; they receive input from various brainstem nuclei and project to the medial geniculate nucleus of the thalamus, which relays auditory information to the primary auditory cortex


1
45
6
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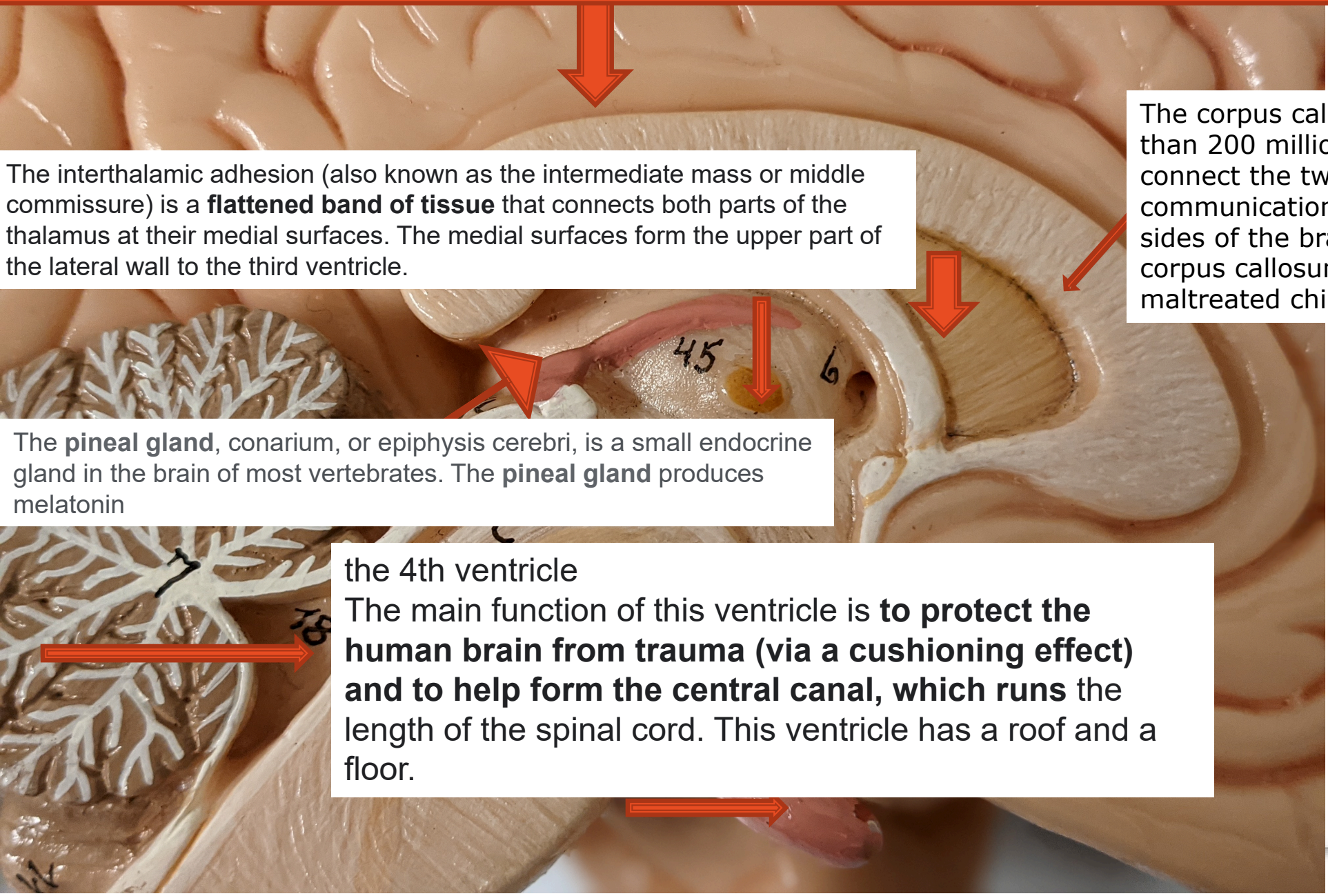
18
32
48
31

The Cingulate gyrus lies on the medial aspect of the cerebral hemisphere. It forms a major part of the limbic system which has functions in emotion and behaviour. ... A component of the limbic system, it is involved in processing emotions and behavior regulation. It also helps to regulate autonomic motor function.



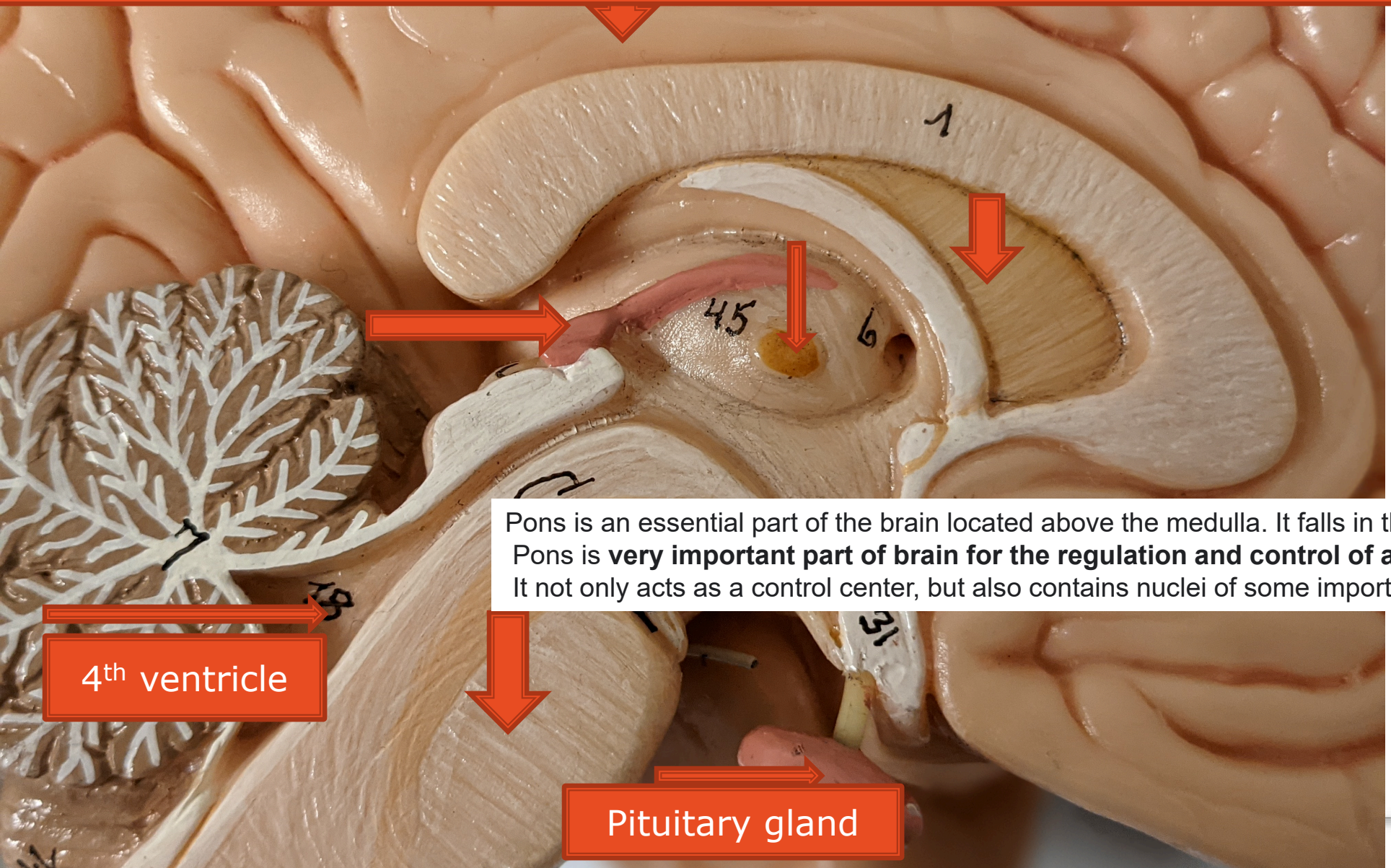
The interthalamic adhesion (also known as the intermediate mass or middle commissure) is a **flattened band of tissue** that connects both parts of the thalamus at their medial surfaces. The medial surfaces form the upper part of the lateral wall to the third ventricle.

The corpus callosum is a large bundle of more than 200 million myelinated nerve fibers that connect the two brain hemispheres, permitting communication between the right and left sides of the brain. Abnormalities within the corpus callosum have been identified in maltreated children.

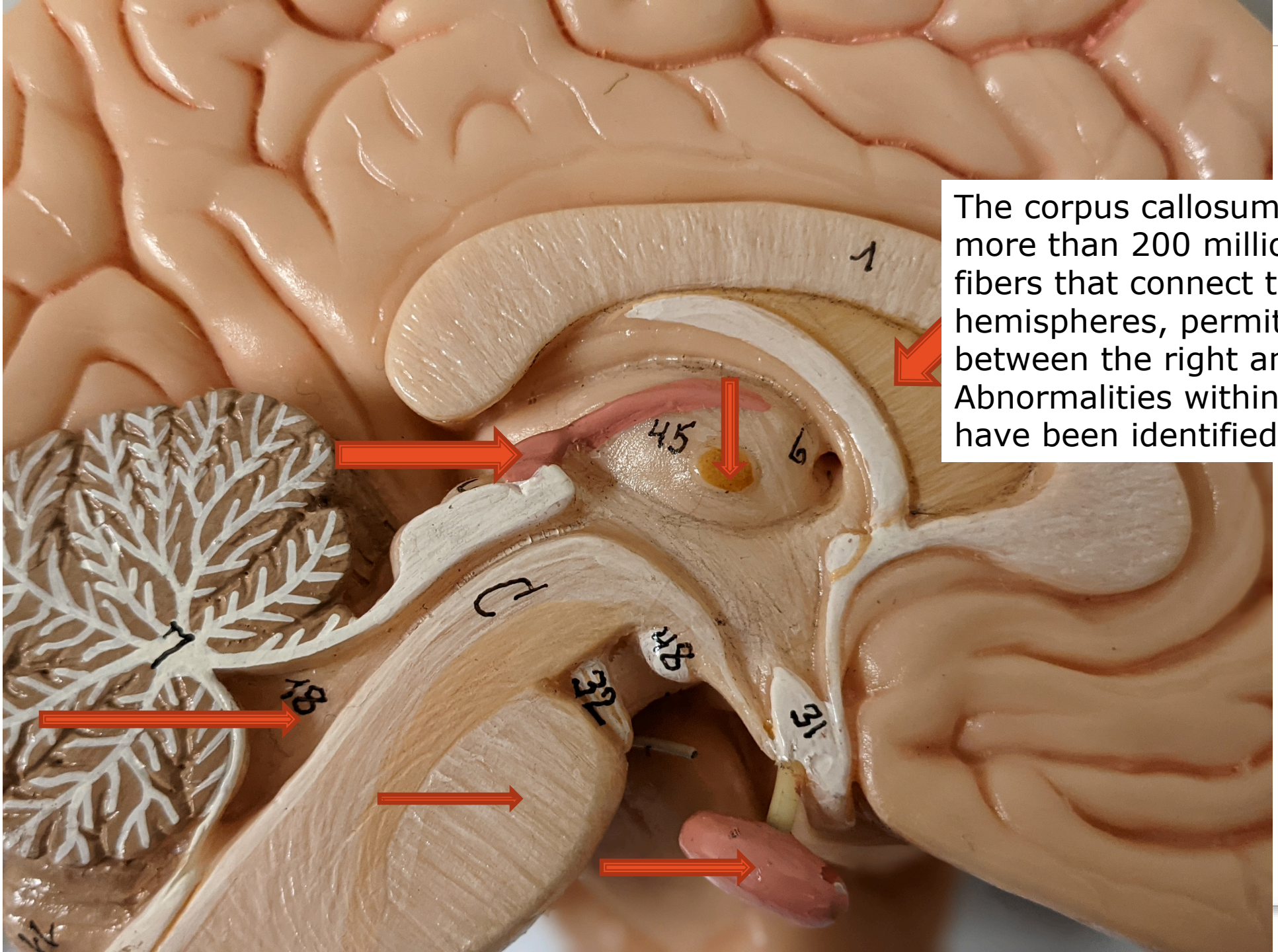
The **pineal gland**, conarium, or epiphysis cerebri, is a small endocrine gland in the brain of most vertebrates. The **pineal gland** produces melatonin

the 4th ventricle
The main function of this ventricle is **to protect the human brain from trauma (via a cushioning effect) and to help form the central canal, which runs** the length of the spinal cord. This ventricle has a roof and a floor.

The Cingulate gyrus lies on the medial aspect of the cerebral hemisphere. It forms a major part of the limbic system which has functions in emotion and behaviour. ... A component of the limbic system, it is involved in processing emotions and behavior regulation. It also helps to regulate autonomic motor function.



Pons is an essential part of the brain located above the medulla. It falls in the category of the hindbrain.
Pons is **very important part of brain for the regulation and control of a number of vital functions**.
It not only acts as a control center, but also contains nuclei of some important cranial nerves



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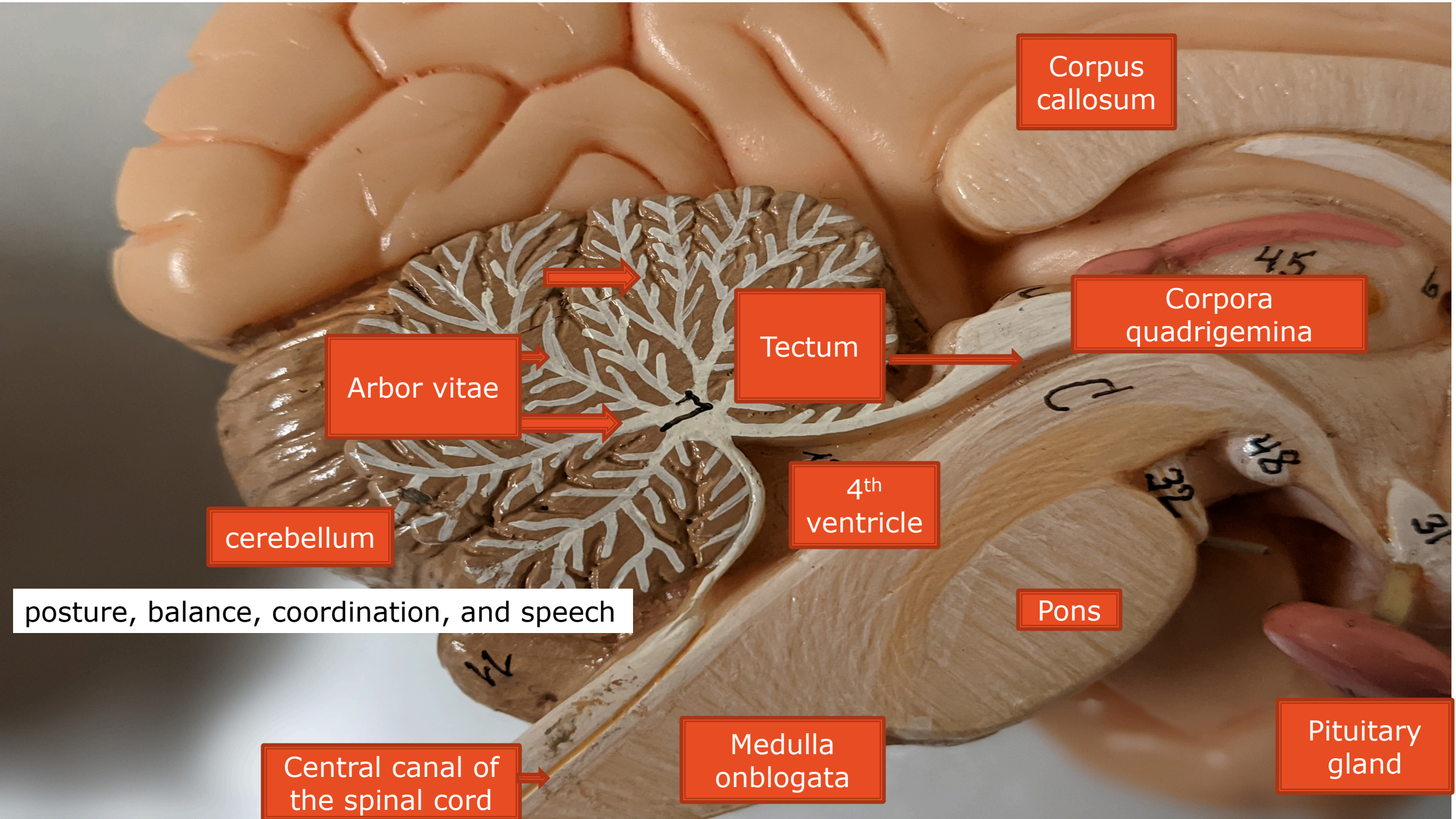
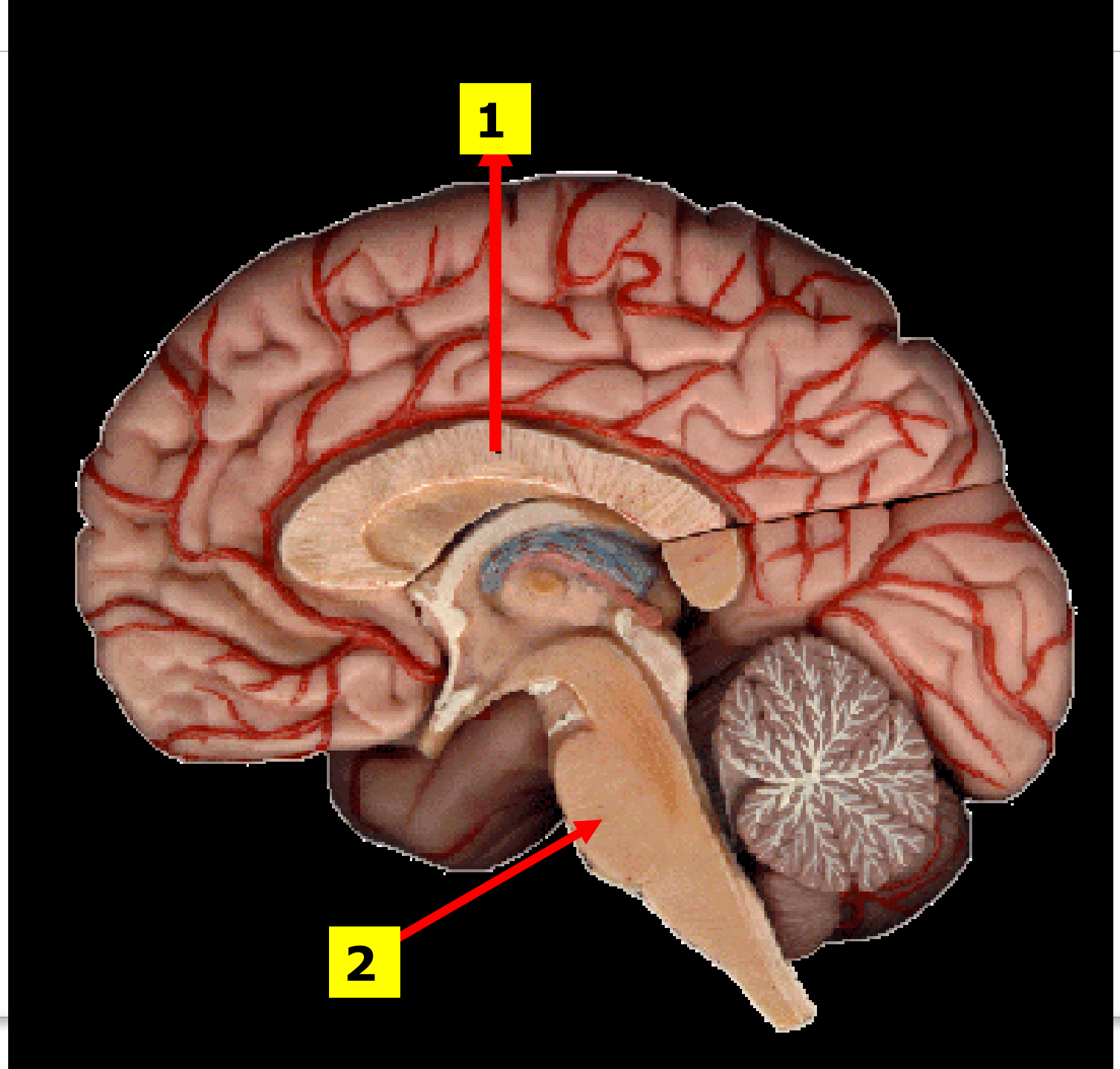
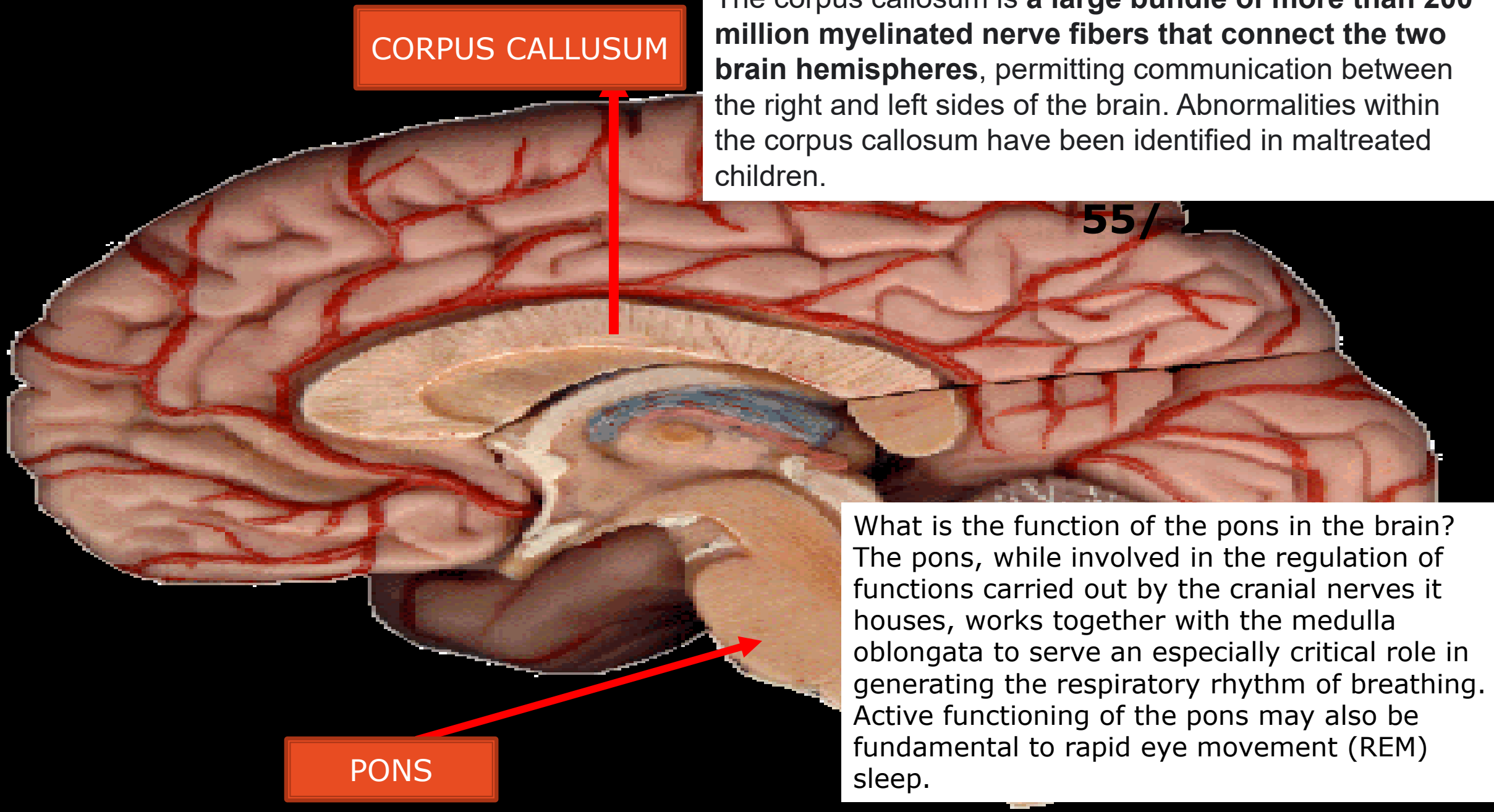

Corpus callosum
Tectum
Corpora quadrigemina
Arbor vitae
4th ventricle
cerebellum
posture, balance, coordination, and speech
Pons
Pituitary gland
Medulla onblogata
Central canal of the spinal cord



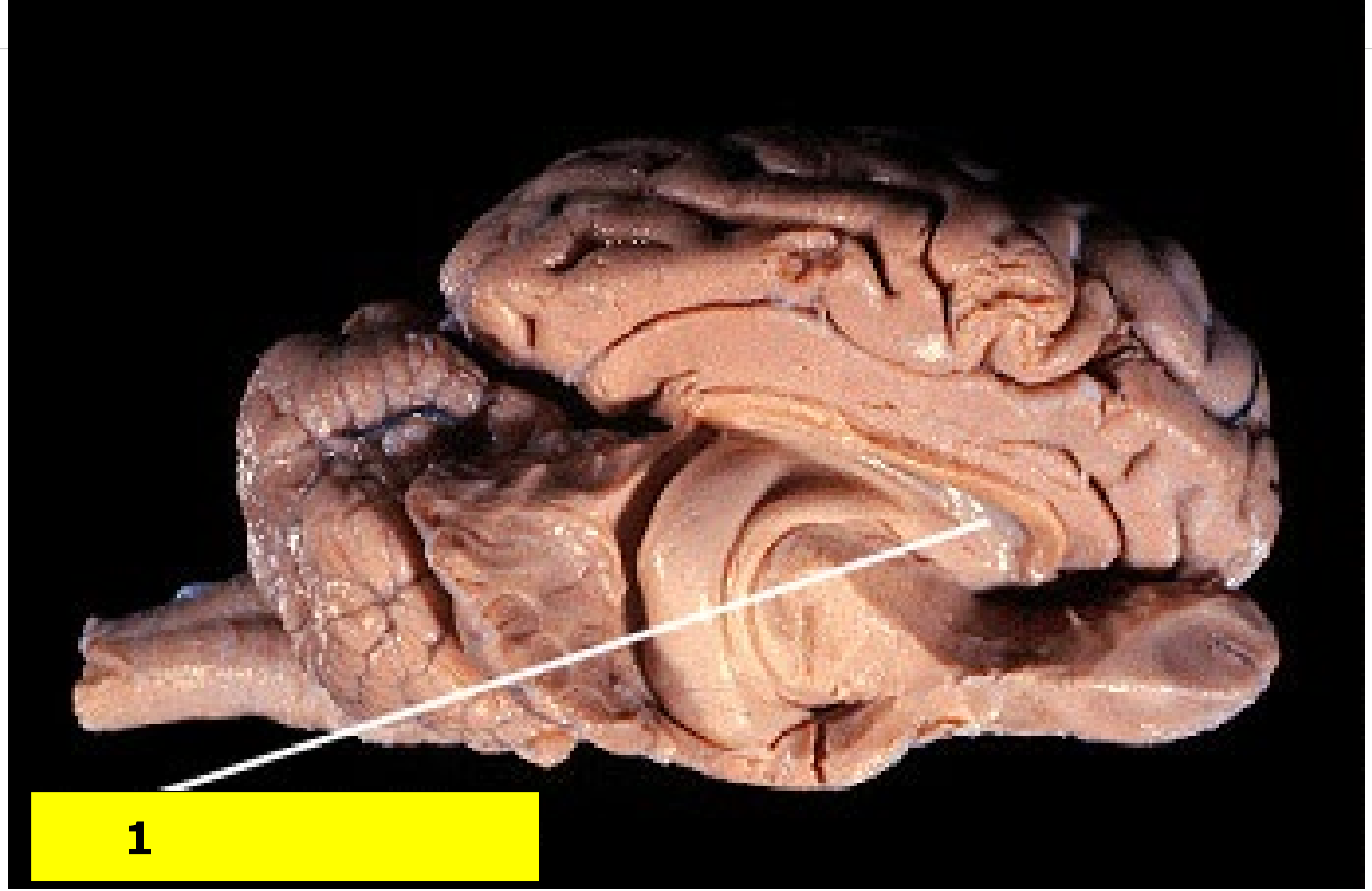
54/ 1

55/ 2



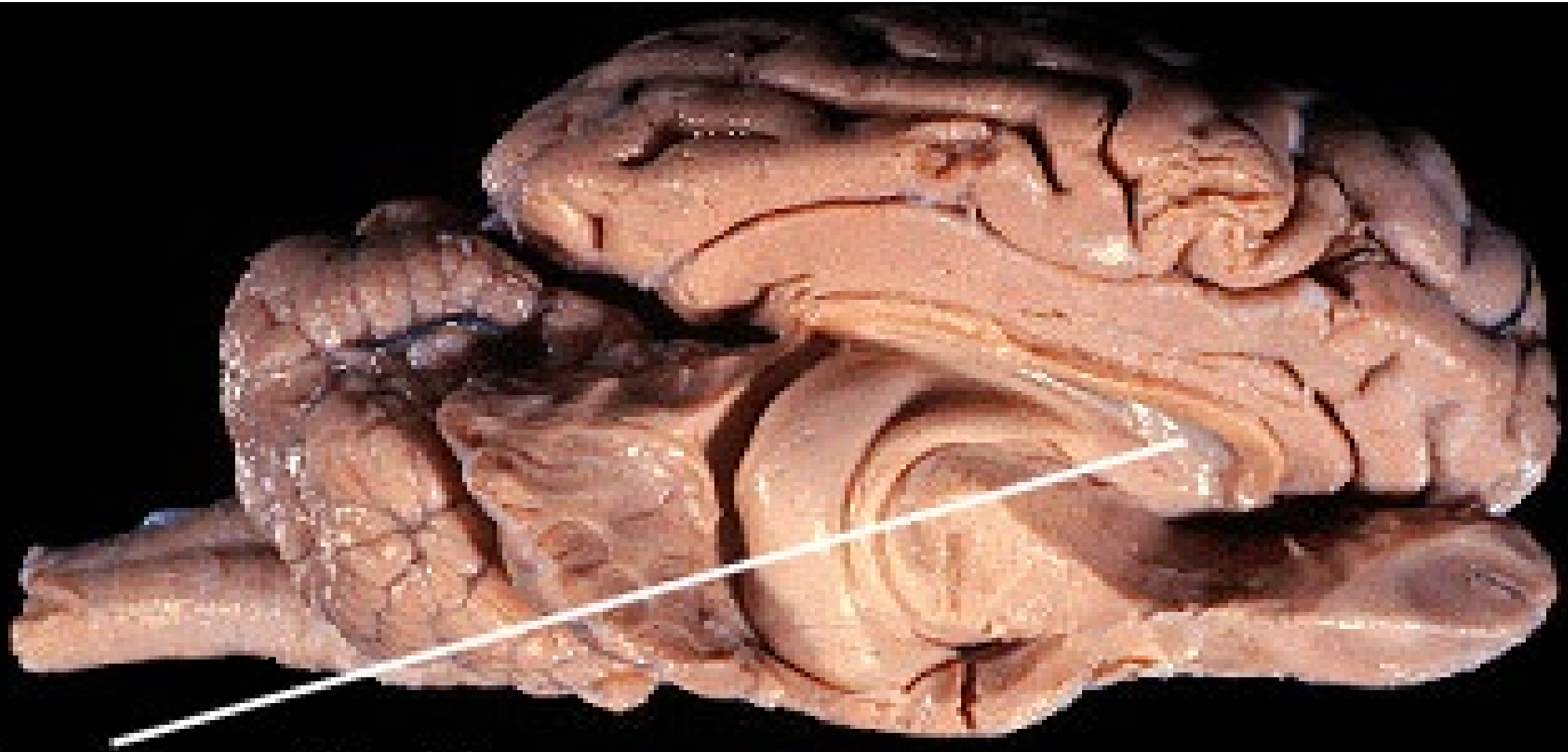
The corpus callosum is **a large bundle of more than 200 million myelinated nerve fibers that connect the two brain hemispheres**, permitting communication between the right and left sides of the brain. Abnormalities within the corpus callosum have been identified in maltreated children.

What is the function of the pons in the brain? The pons, while involved in the regulation of functions carried out by the cranial nerves it houses, works together with the medulla oblongata to serve an especially critical role in generating the respiratory rhythm of breathing. Active functioning of the pons may also be fundamental to rapid eye movement (REM) sleep.

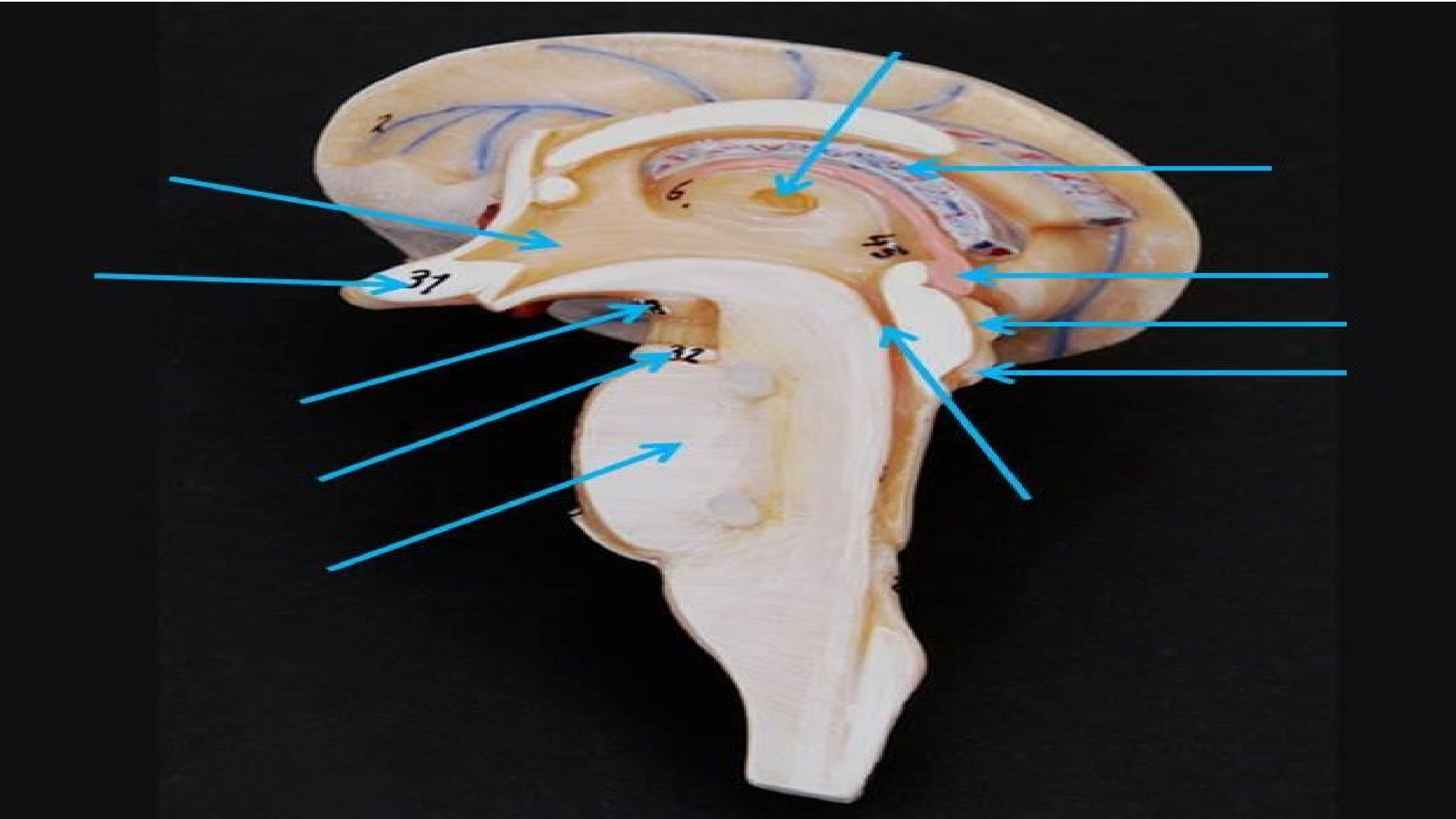


56/ 1

The septum pellucidum (SP) is a thin membrane located at the midline of the brain between the two cerebral hemispheres, or halves of the brain. ... The septum pellucidum (SP) is a thin membrane located at the midline of the brain between the two cerebral hemispheres, or halves of the brain.



Septum pellucidum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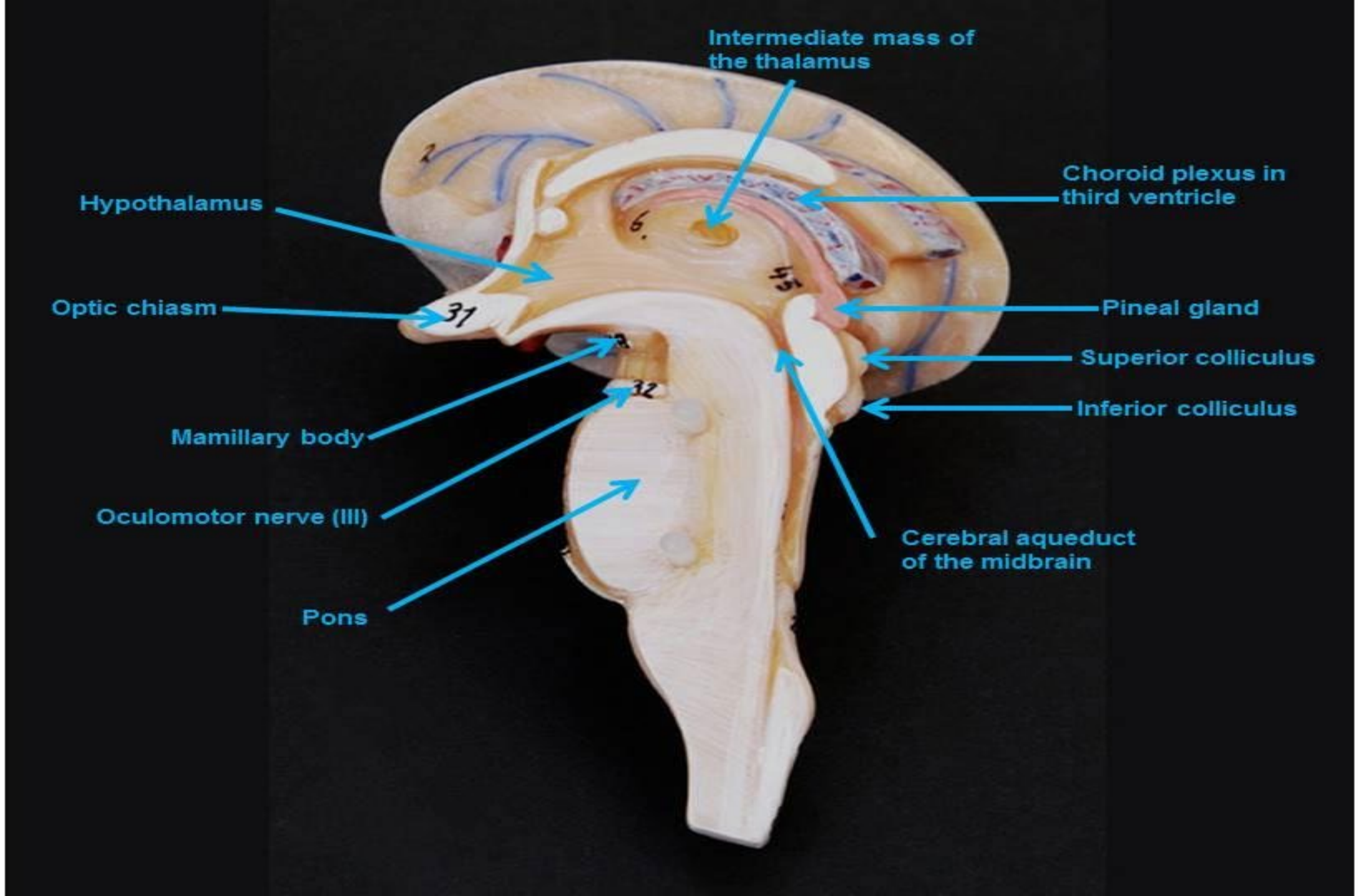
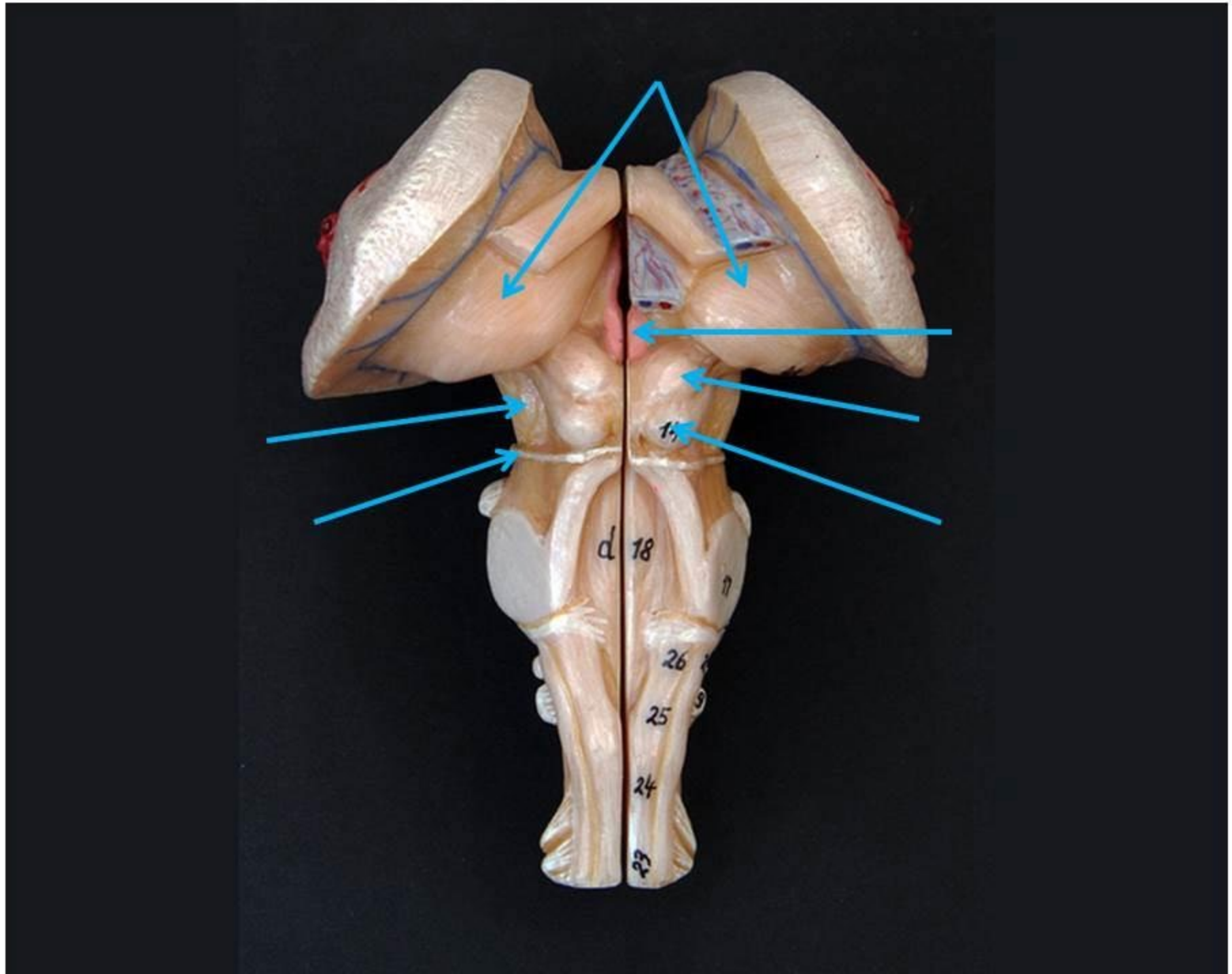

Intermediate mass of the thalamus
Choroid plexus in third ventricle
Hypothalamus
Optic chiasm
Pineal gland
Superior colliculus
Inferior colliculus
Mamillary body
Oculomotor nerve (III)
Cerebral aqueduct of the midbrain
Pons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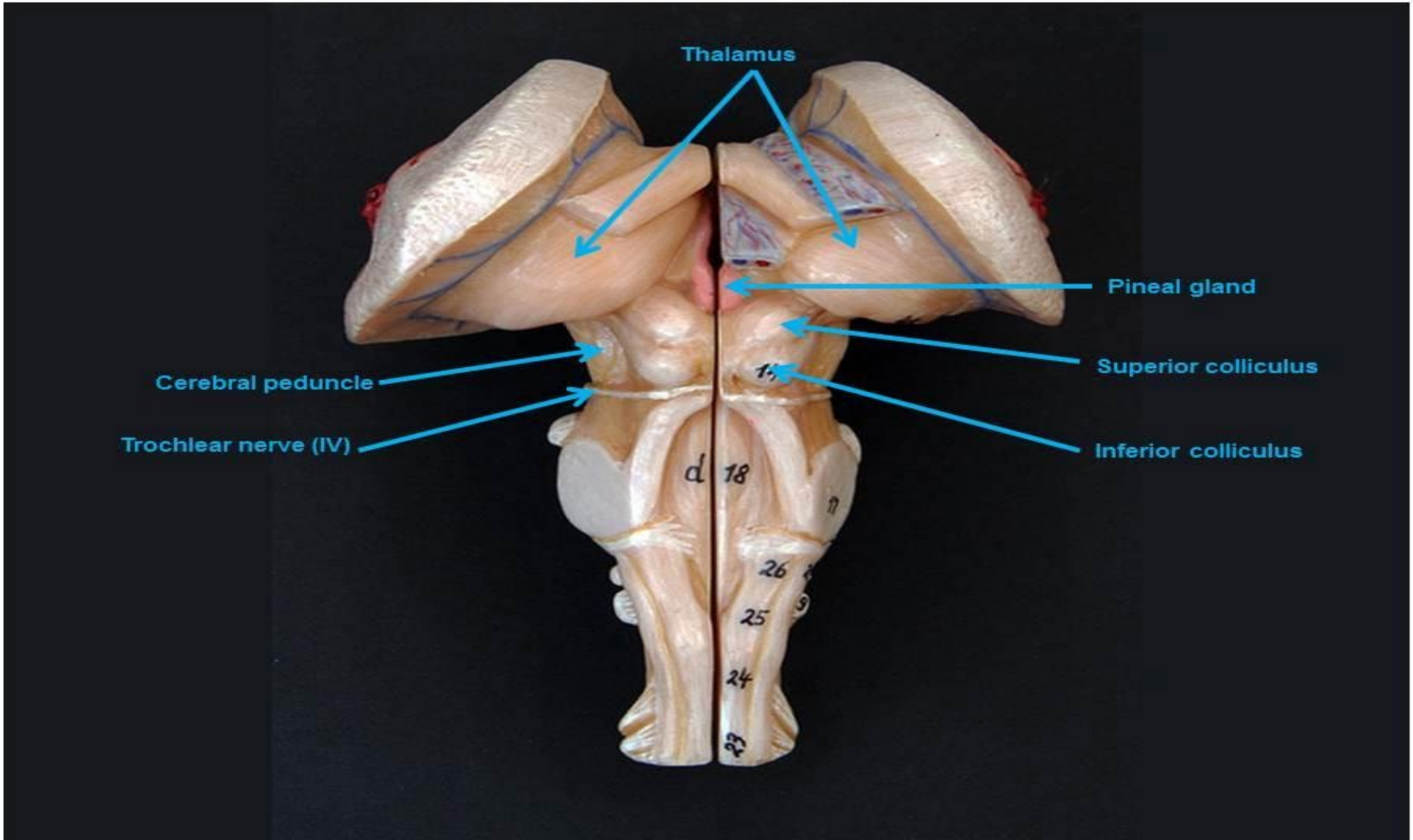
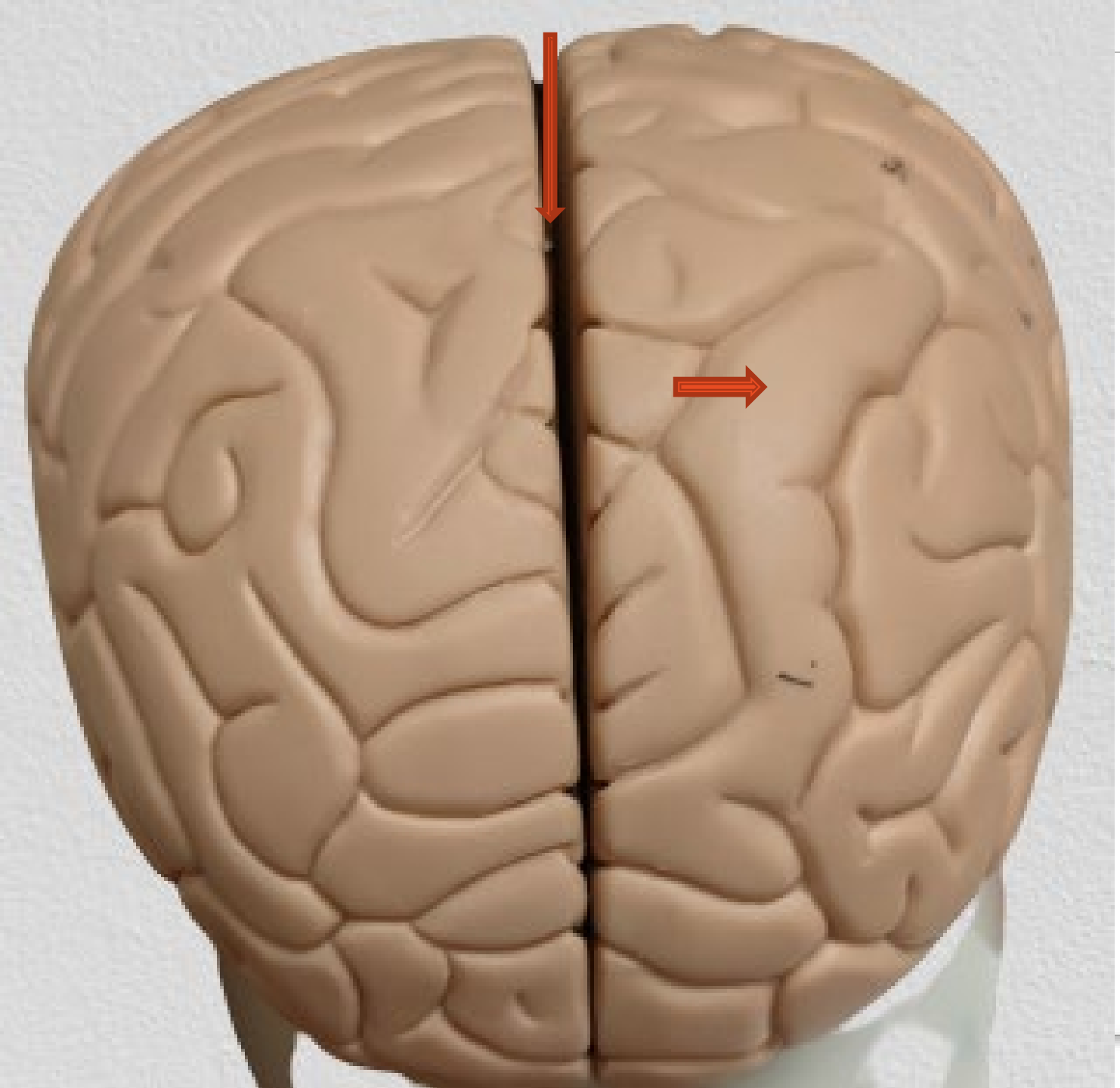

Thalamus
Pineal gland
Superior colliculus
Inferior colliculus
Cerebral peduncle
Trochlear nerve (IV)

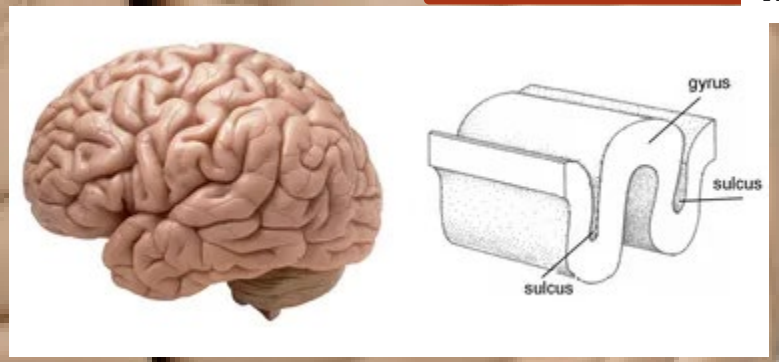


Longitudinal fissure

deep groove that marks the division between the left and right cerebral hemispheres of the brain. At the bottom of the groove, the hemispheres are connected by the corpus callosum. Also called interhemispheric fissure; sagittal fissure.

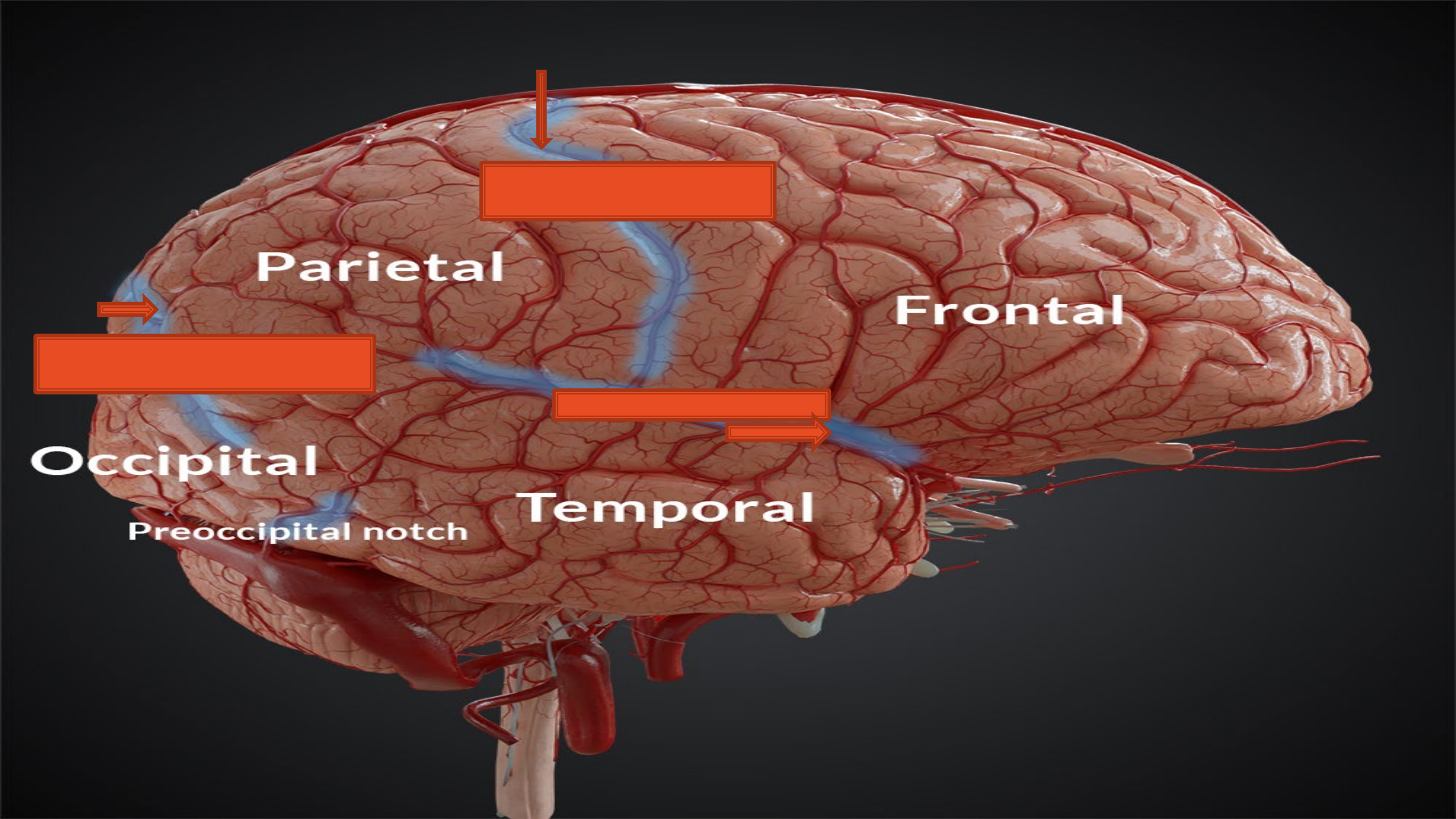
gyri

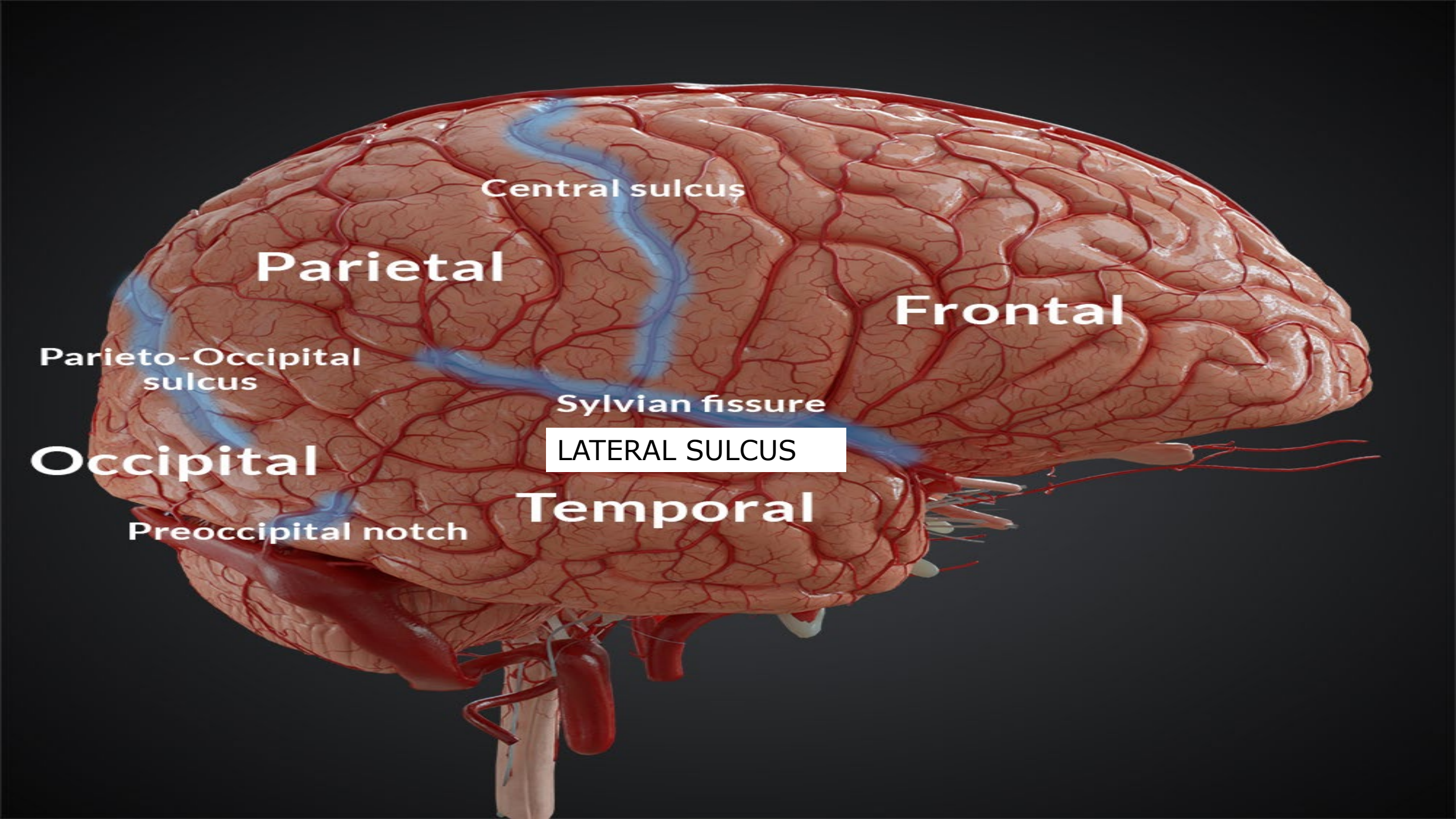
they increase the surface area of the brain up to an impressive 2000 centimeters squared.

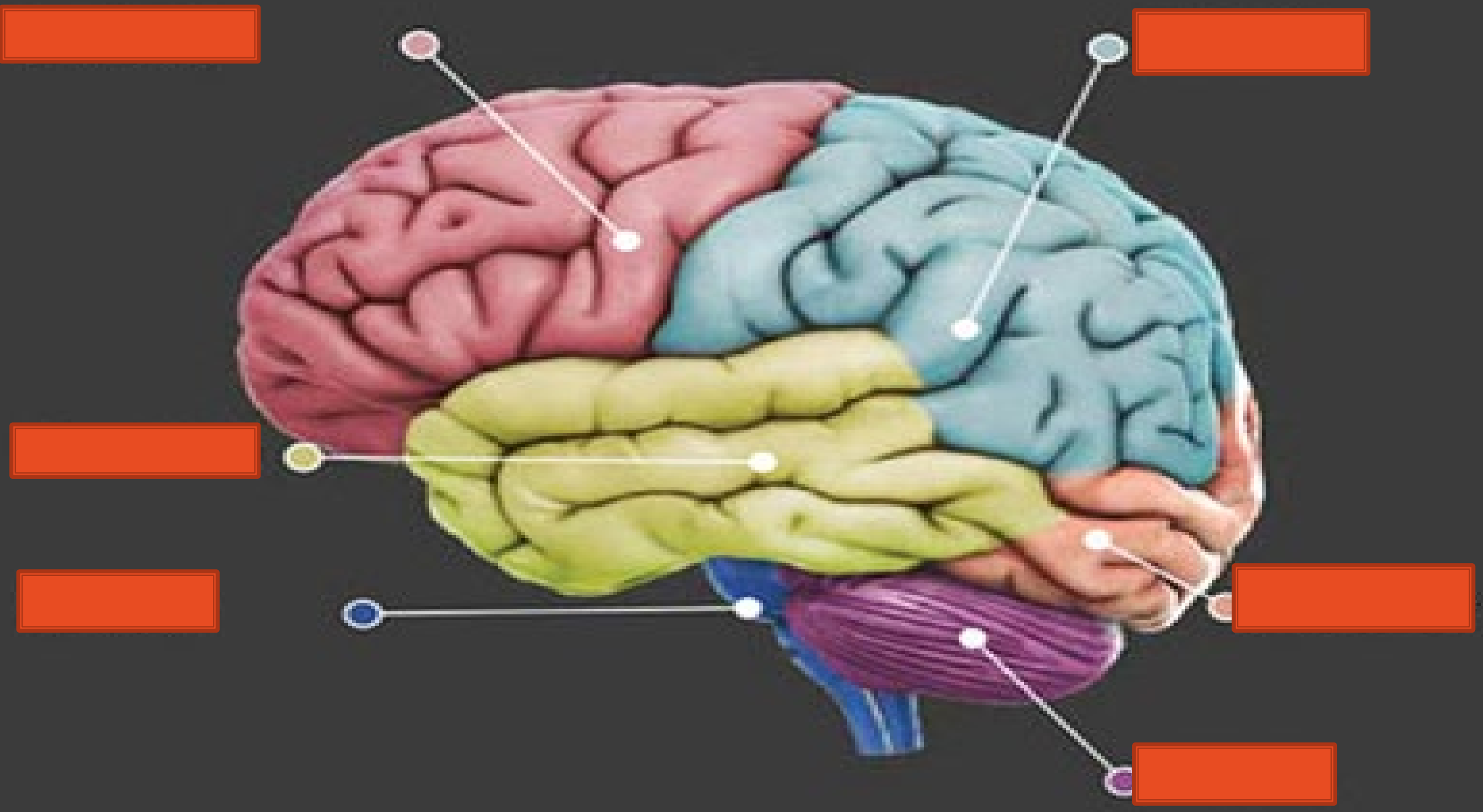


Gyri (singular: gyrus) are the folds or bumps in the brain and sulci (singular: sulcus) are the indentations or grooves.

Folding of the cerebral cortex
creates gyri and sulci which separate brain regions and increase the brain's surface area and cognitive ability.


Parietal
Frontal
Occipital
Temporal
Preoccipital notch


Central sulcus
Parietal
Frontal
Parieto-Occipital sulcus
Sylvian fissure
LATERAL SULCUS
Occipital
Temporal
Preoccipital notch



Frontal Lobe

- Problem solving
- Emotional traits
- Reasoning (judgment)
- Speaking
- Voluntary motor activity

Parietal Lobe

- Knowing right from left
- Sensation
- Reading
- Body orientation

Occipital Lobe

- Vision
- Color perception

Temporal Lobe

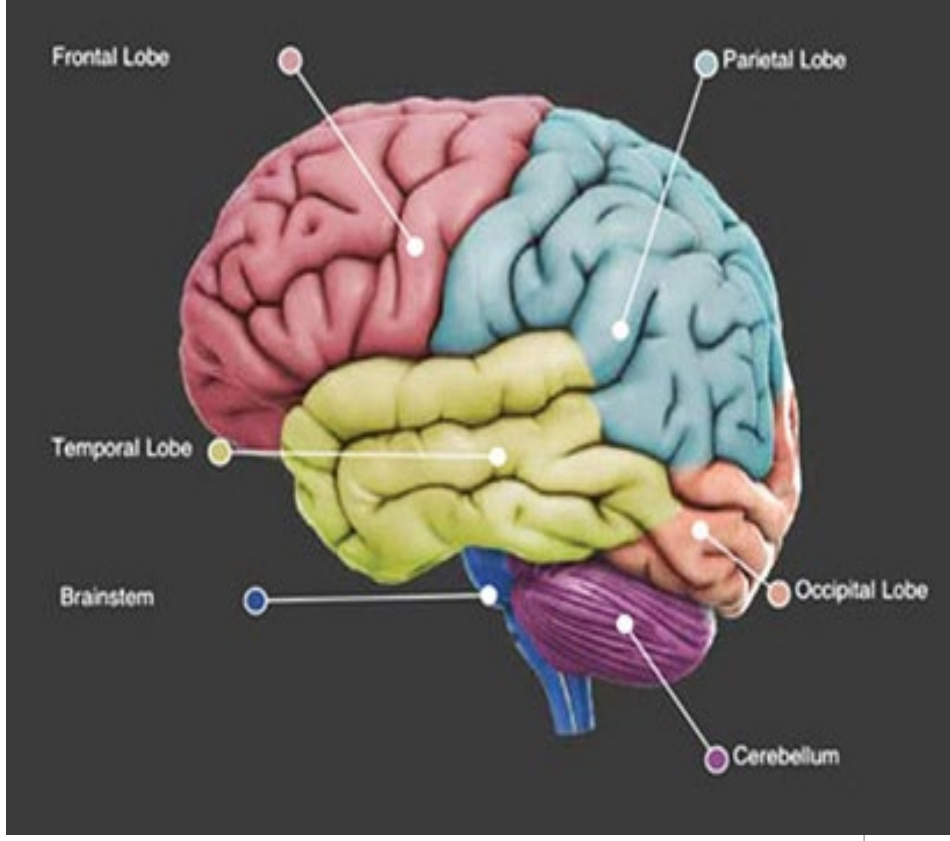
- Understanding language
- Behavior
- Memory
- Hearing

Cerebellum

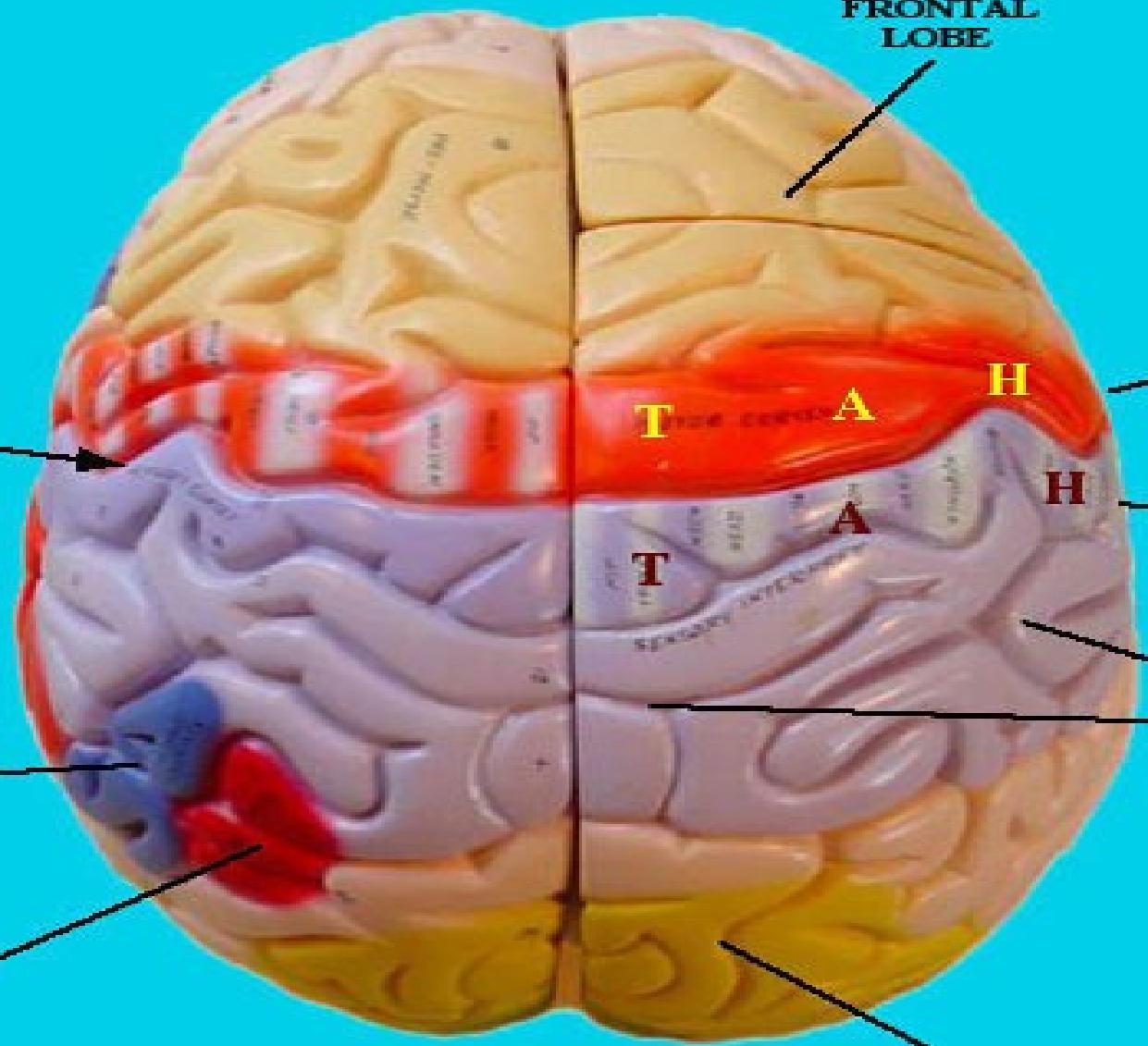
- Balance
- Coordination and control of voluntary movement
- Fine muscle control

Brain Stem

- Breathing
- Body temperature
- Digestion
- Alertness/sleep
- Swallowing



BRAIN - a VIEW from ABOVE



FRONTAL LOBE

PARIETAL LOBE

SUPRAMARGINAL GYRUS (40)

ANGULAR GYRUS (39)

OCCIPITAL LOBE

H = HEAD
A = ARM
T = TRUNK
L = LEG

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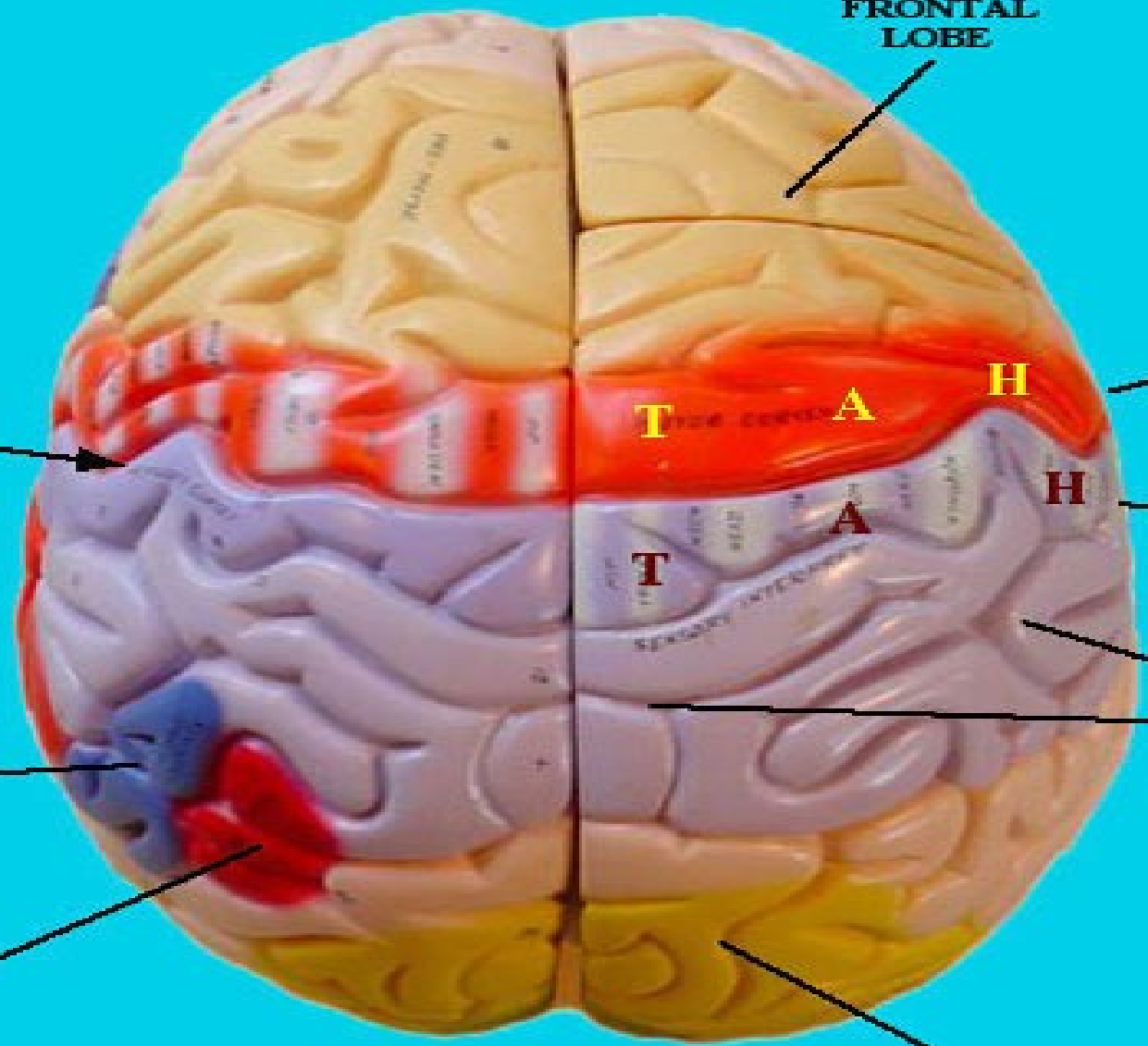
DENOYER-GEPPERT MODEL
www.denoyer.com

BRAIN - a VIEW from ABOVE



FRONTAL LOBE

PRECENTRAL GYRUS (4) (motor)

CENTRAL SULCUS

POSTCENTRAL GYRUS (3, 1, 2) (sensory)

PARIETAL LOBE

SUPRAMARGINAL GYRUS (40)

ANGULAR GYRUS (39)

OCCIPITAL LOBE

H = HEAD
A = ARM
T = TRUNK
L = LEG

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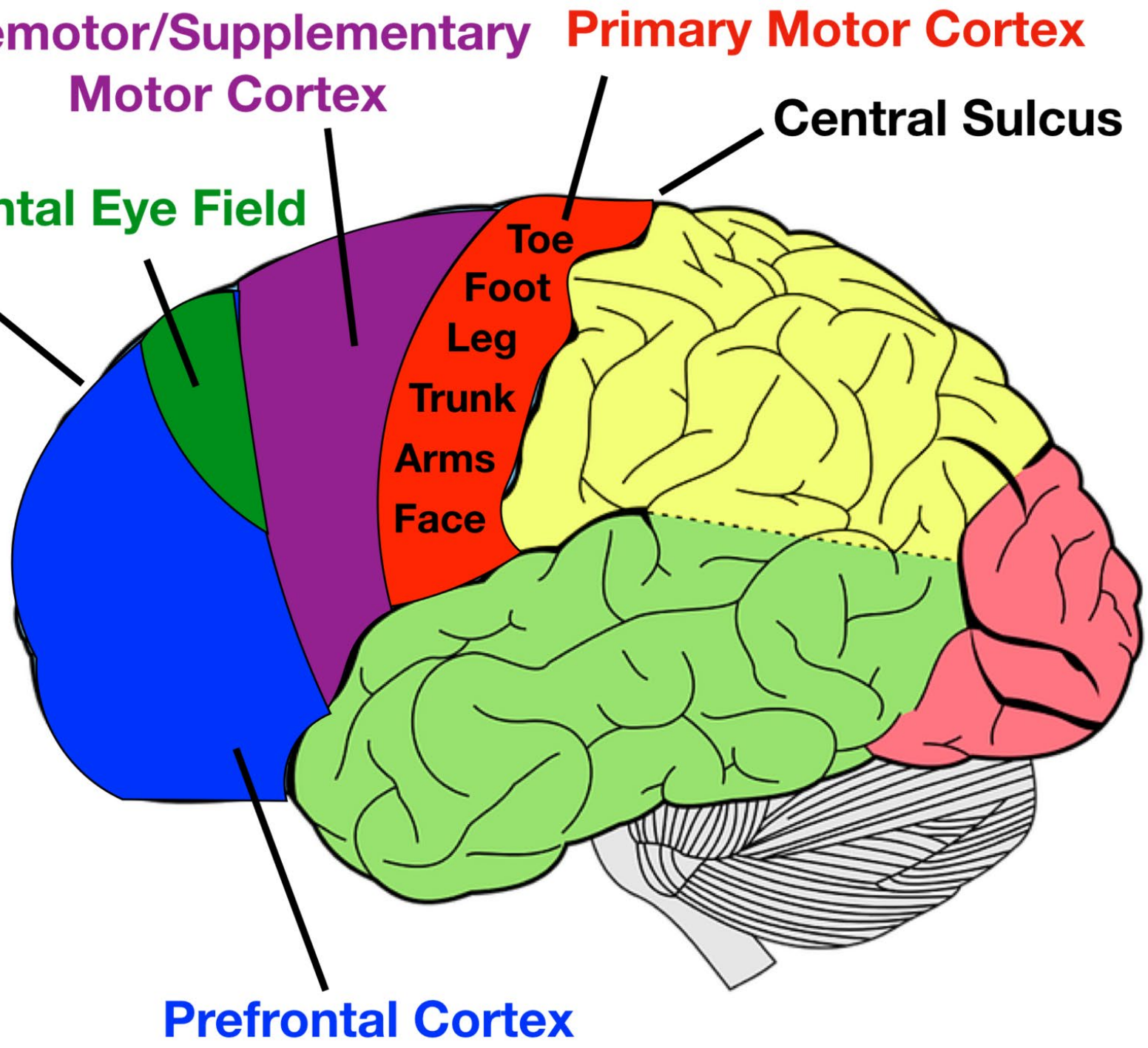
Frontal

Functional Areas

- Primary Motor Cortex
  - Voluntary Muscle Mvt.
- Premotor/S.M.C (MAC)
  - Planning/Coordination of Movement
- Frontal Eye Field
  - Voluntary Rapid Eye Mvt.
- Prefrontal Cortex
  - Executive Functions, Behavior, Personality



Functional Areas of the Cerebral Cortex

1 Visual Area:
- Sight
- Image recognition
- Image perception

2 Association Area
- Short-term memory
- Equilibrium
- Emotion

3 Motor Function Area
- Initiation of voluntary muscles

4 Broca's Area
- Muscles of speech

5 Auditory Area
- Hearing

6 Emotional Area
- Pain
- Hunger
- "Fight or flight" response

7 Sensory Association Area

8 Olfactory Area
- Smelling

9 Sensory Area
- Sensation from muscles and skin

10 Somatosensory Association Area
- Evaluation of weight, texture, temperature, etc. for object recognition

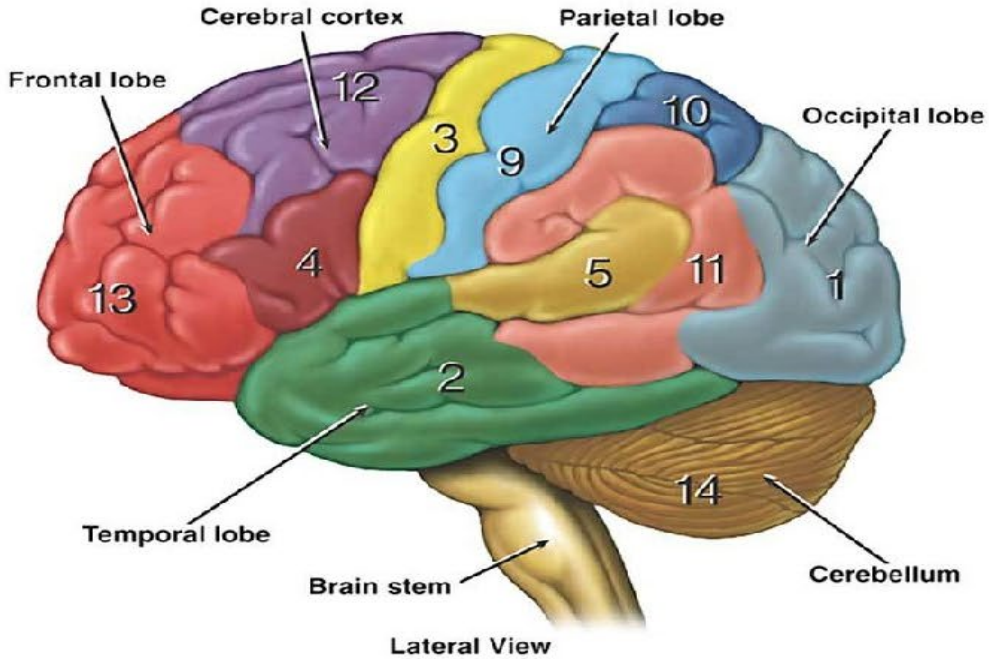
11 Wernicke's Area
- Written and spoken language comprehension

12 Motor Function Area
- Eye movement and orientation

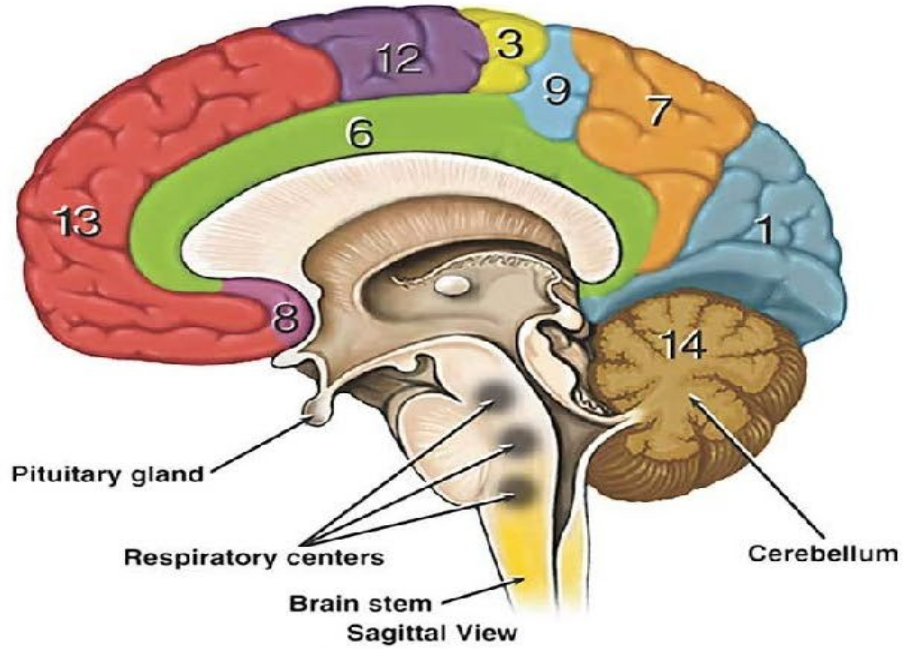
13 Higher Mental Functions
- Concentration
- Planning
- Judgment
- Emotional expression
- Creativity
- Inhibition

Functional Areas of the Cerebellum

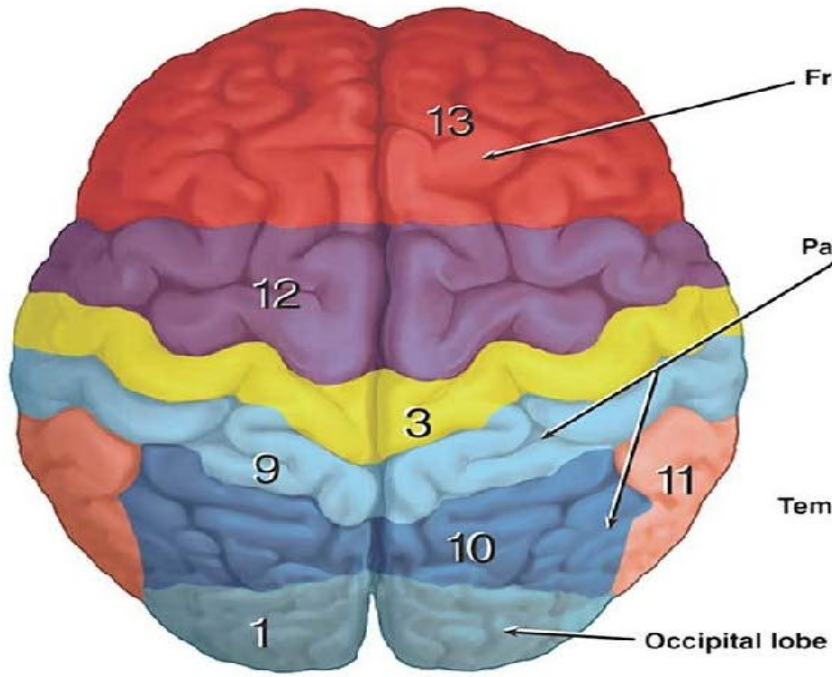
14 Motor Functions
- Coordination of movement
- Balance and equilibrium
- Posture



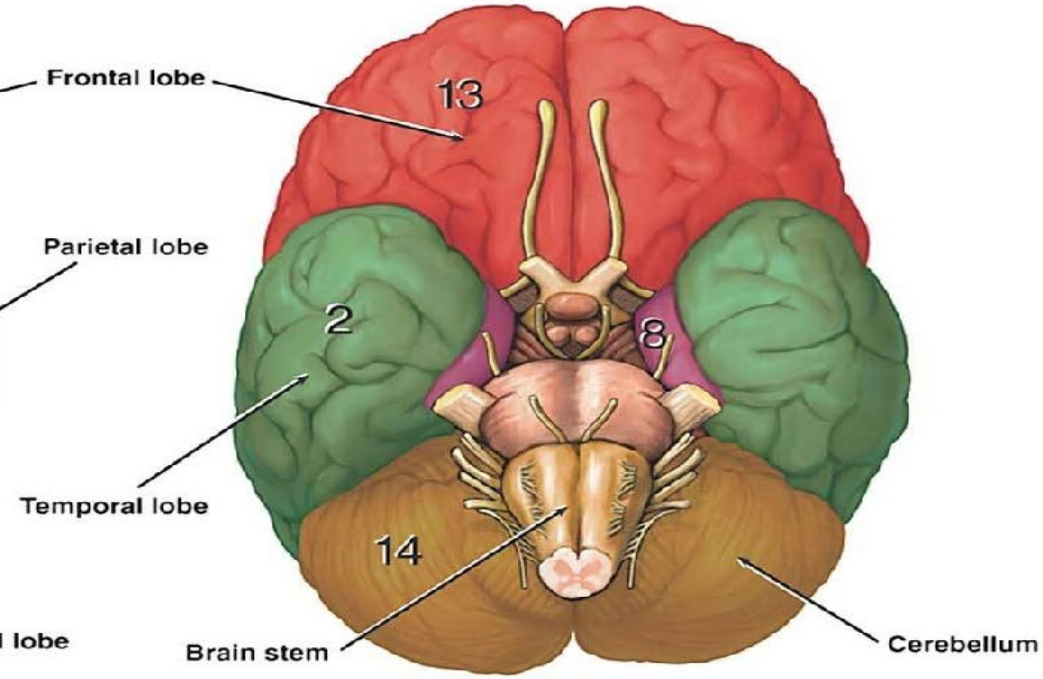
Lateral View



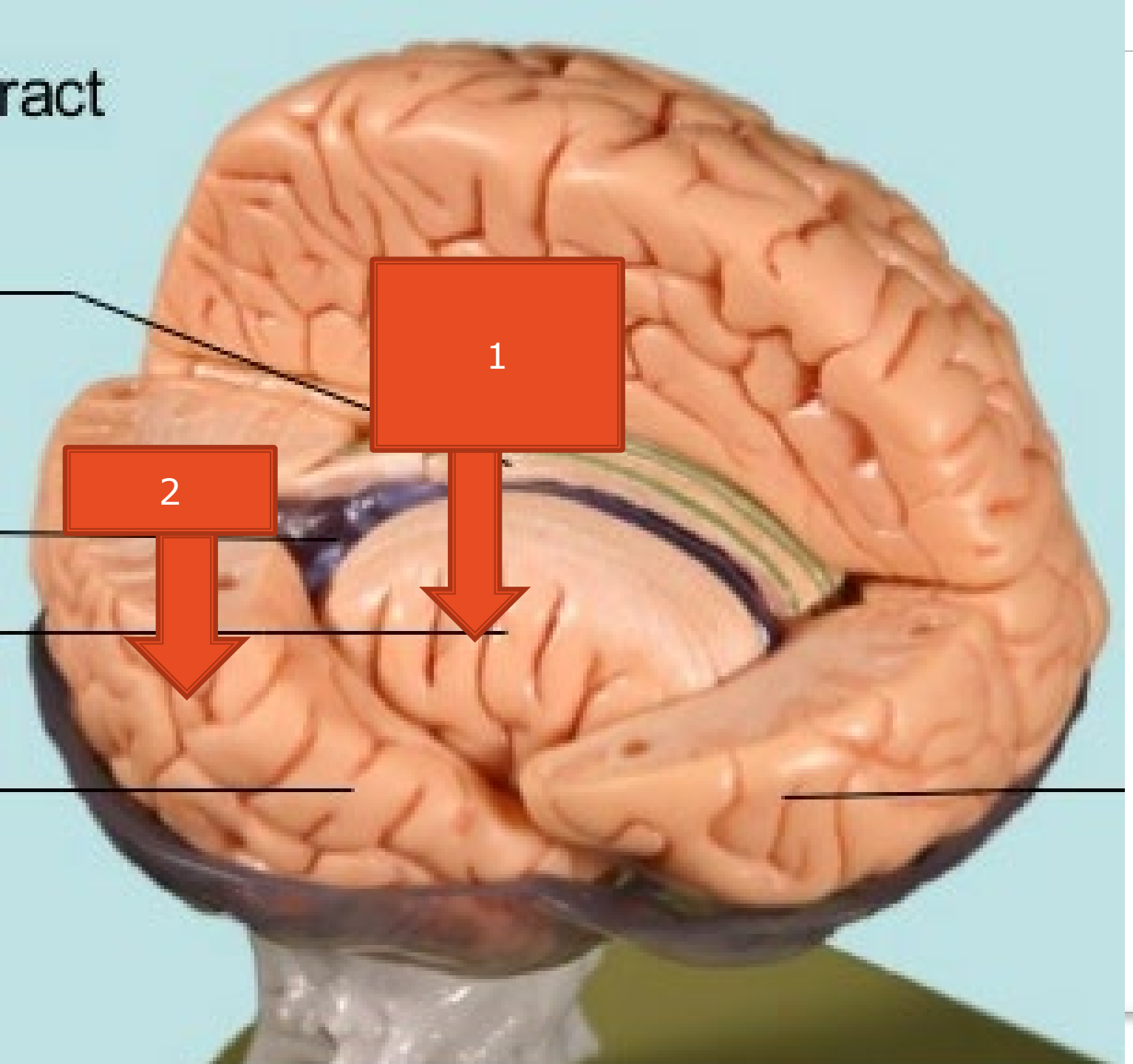
Sagittal View



Superior View



Inferior View

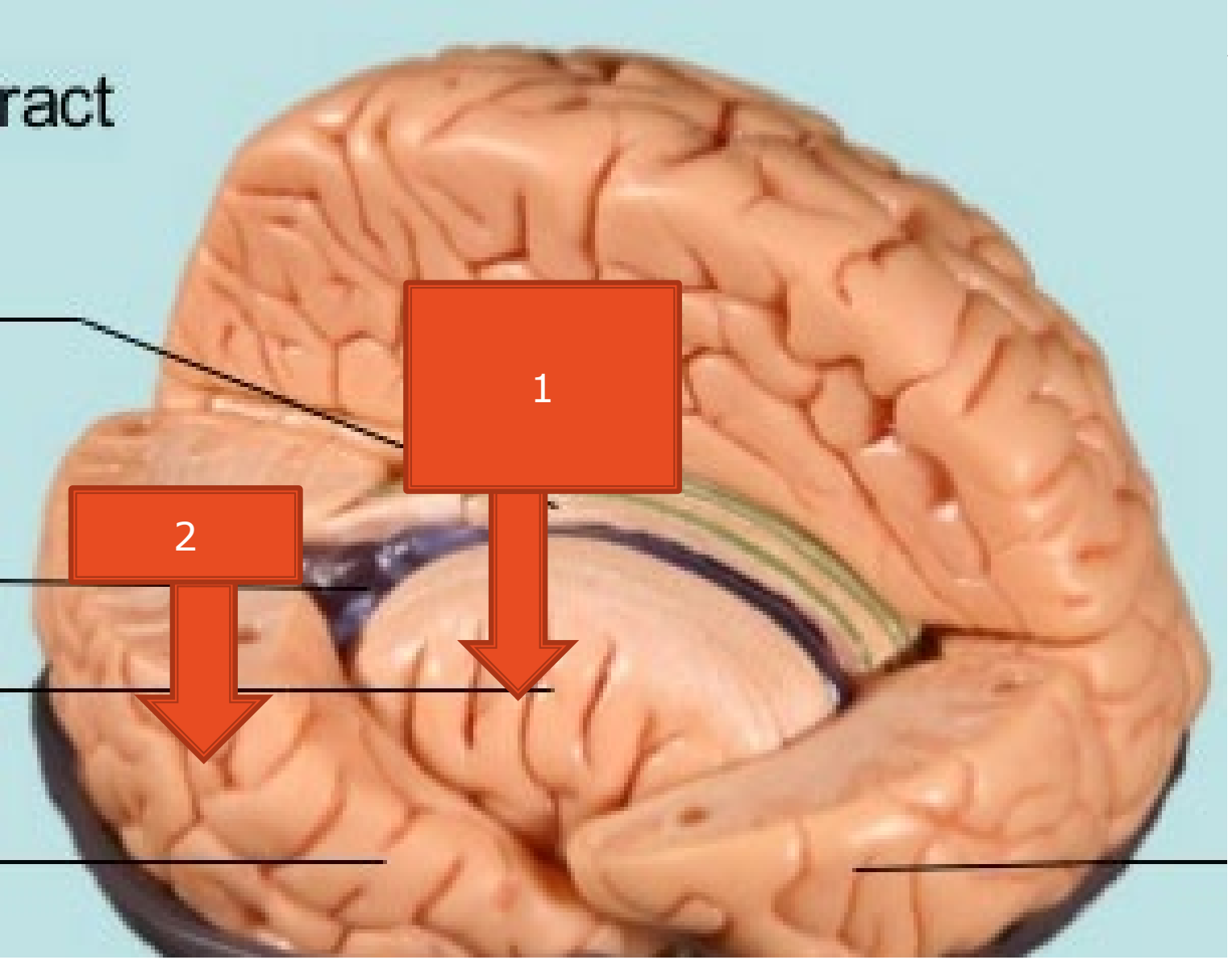


name structure 1?

A. Temporal lobe
B. Diencephalon
C. Insula
D. Hypothalamus
E. Thalamus

function of structure 2

A. Visual function only
B. retention of visual memory, language comprehension, and emotion association.
C. Broca’s area is in this region
D. smell, sound, vision, memory
E. B D correct
F. All correct



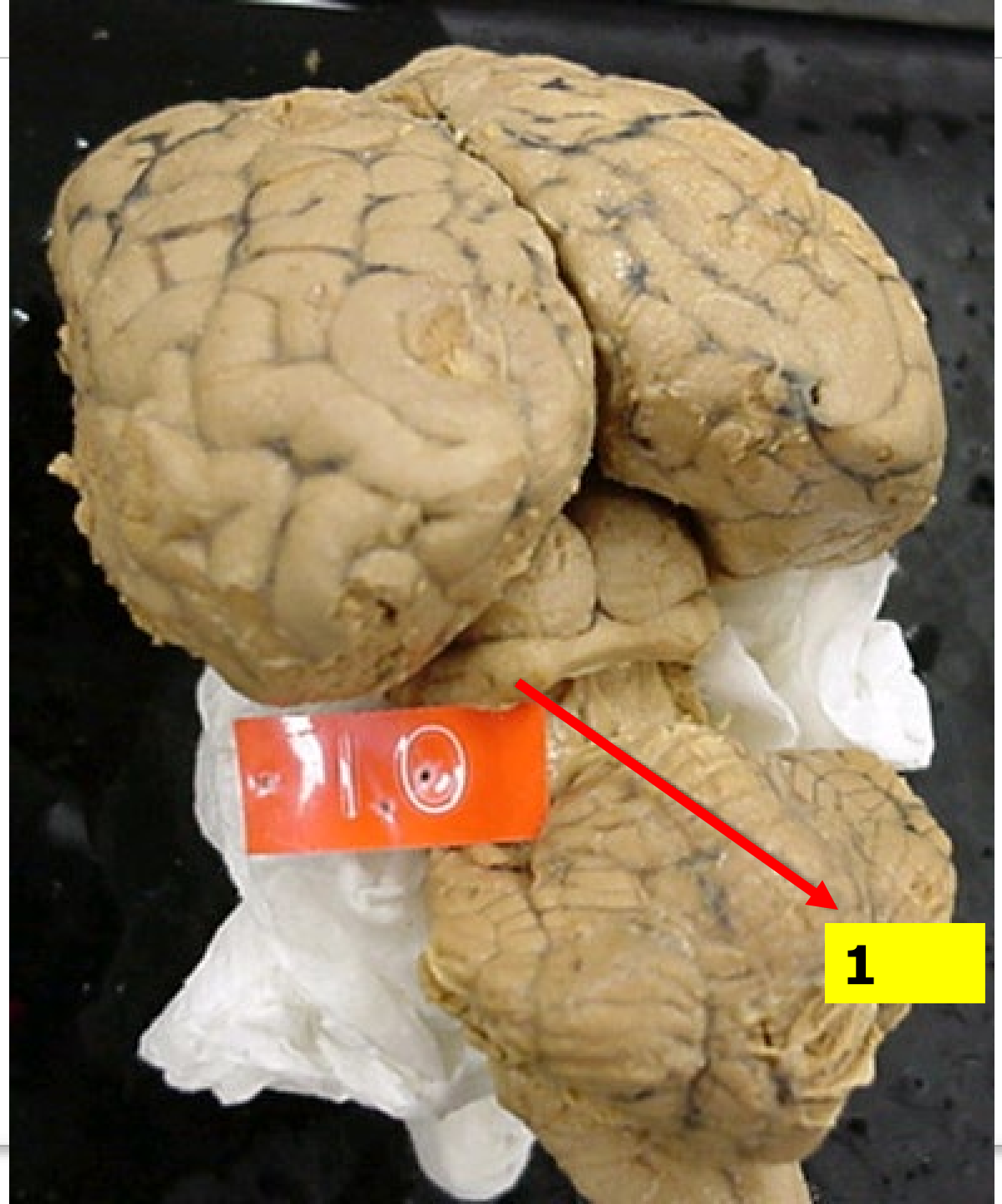
47/ name structure 1?

A. Temporal lobe
B. Diencephalon
C. Insula
D. Hypothalamus
E. Thalamus

48/function of structure 2

A. Visual function only
B. retention of visual memory, language comprehension, and emotion association.
C. Broca's area is in this region
D. smell, sound, vision, memory
E. B D correct
F. All correct

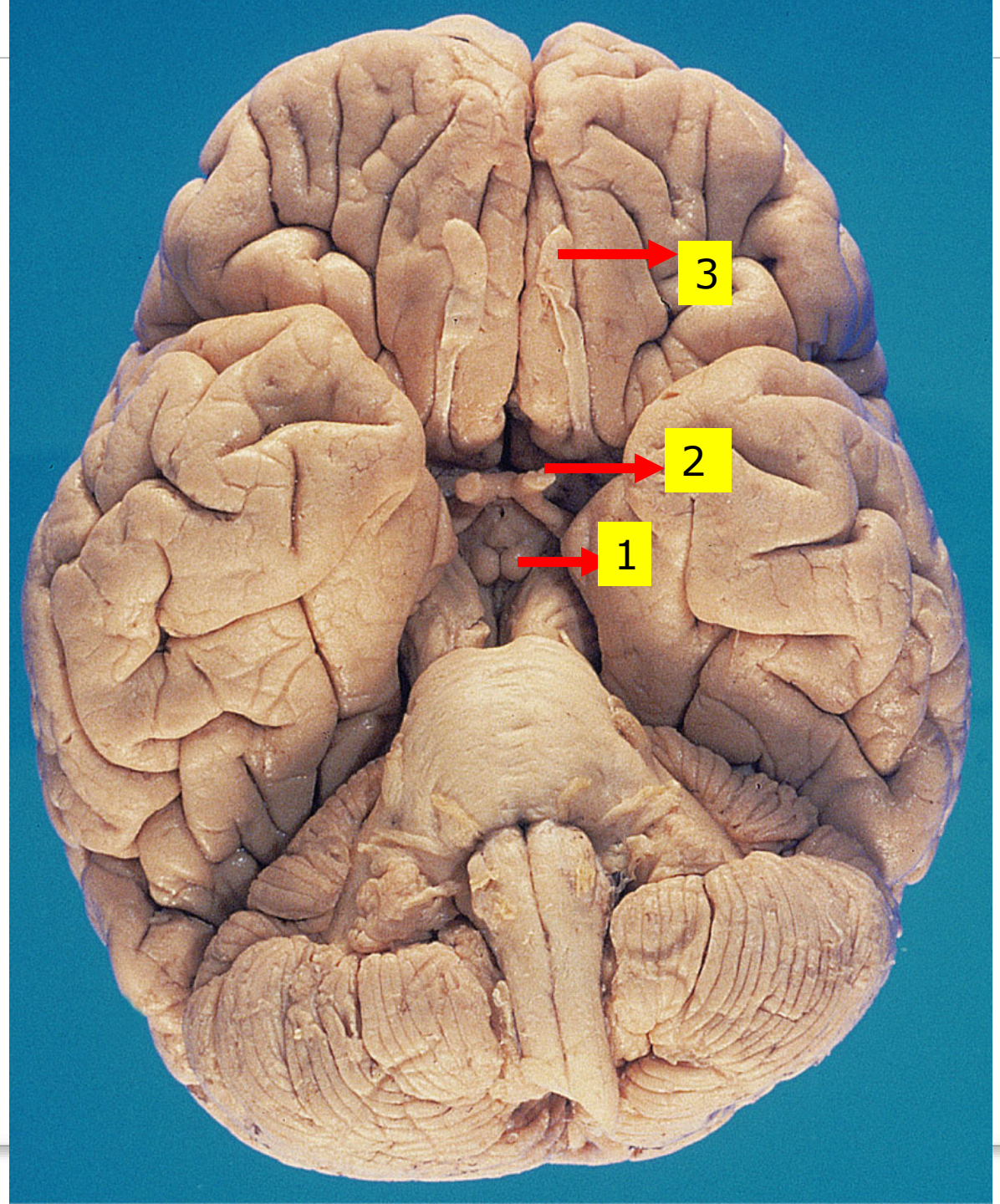
The insula is a cortical region linked with salience detection, self-awareness, interoception, pain processing, and addiction . The insula is a major hub for viscероceptive or interoceptive inputs, and an essential component of the pain matrix, being involved in the assessment of nociceptive stimulus intensity.



57/ 1

The inferior colliculus is a part of the midbrain that serves as a main auditory (sound) center for the body. It acts as the channel for almost all auditory signals in the human body.

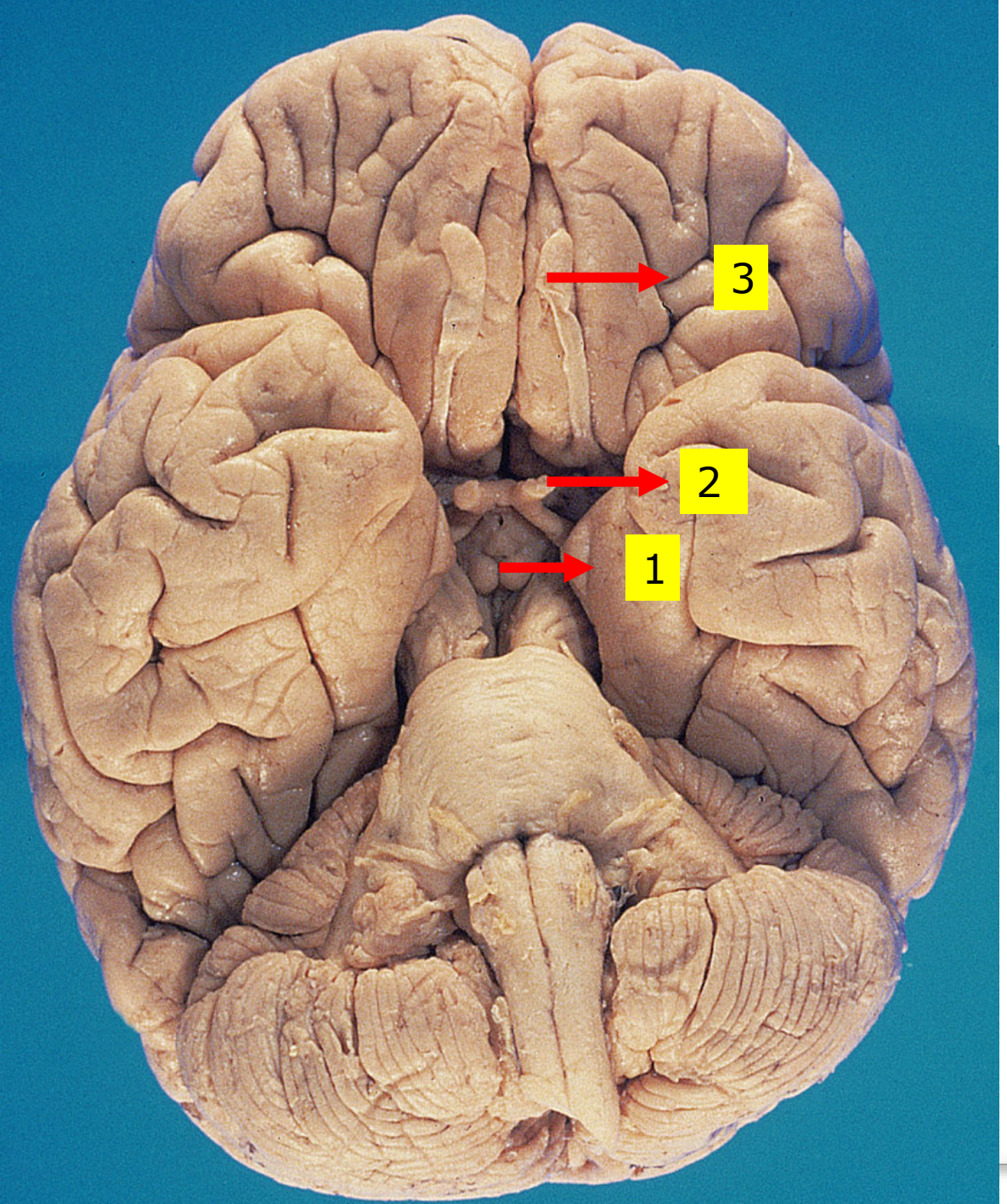
Its primary roles are signal integration, frequency recognition, and pitch discrimination.



61/Identify 1

62/Identify 2

63/Identify 3

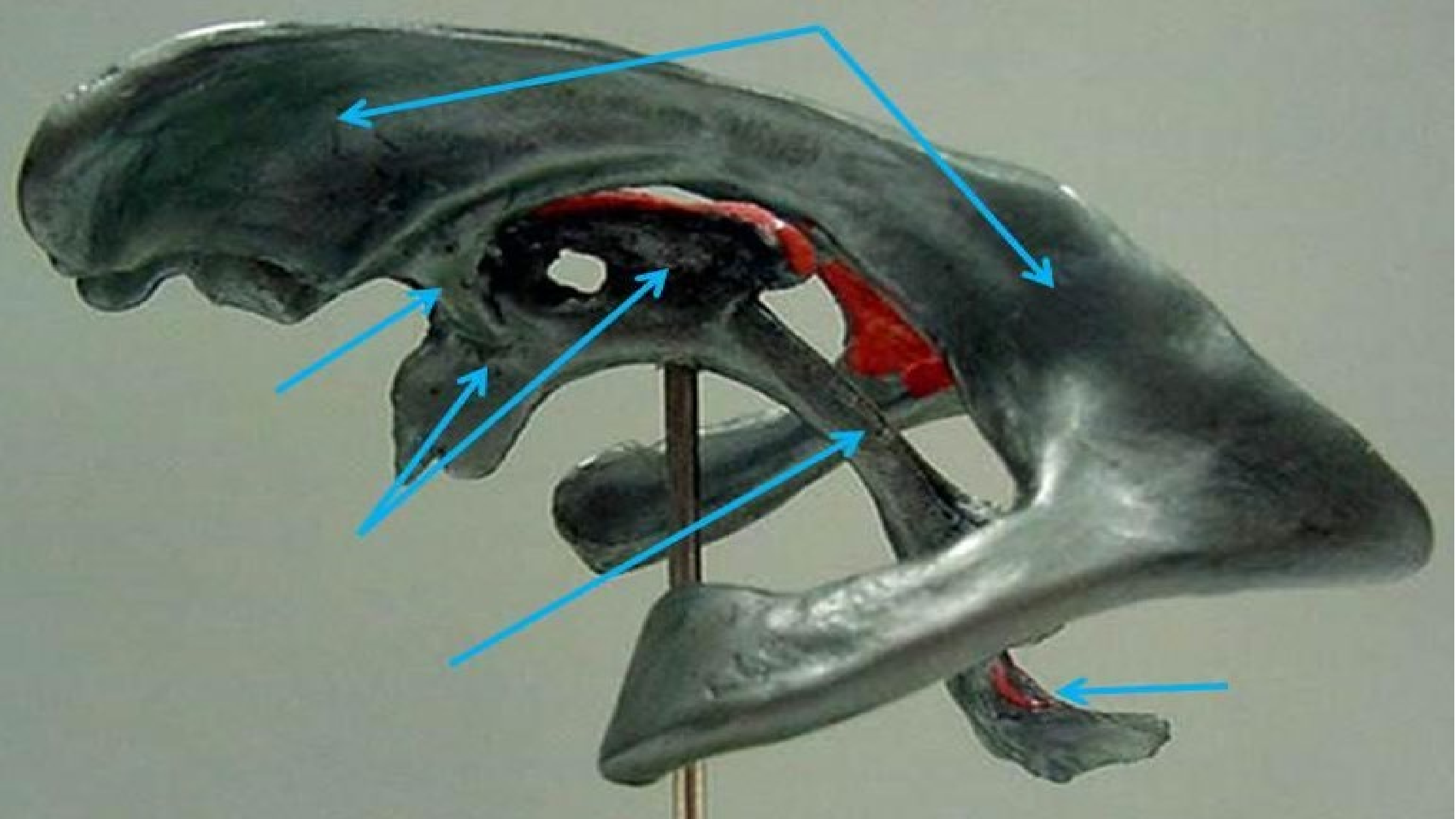


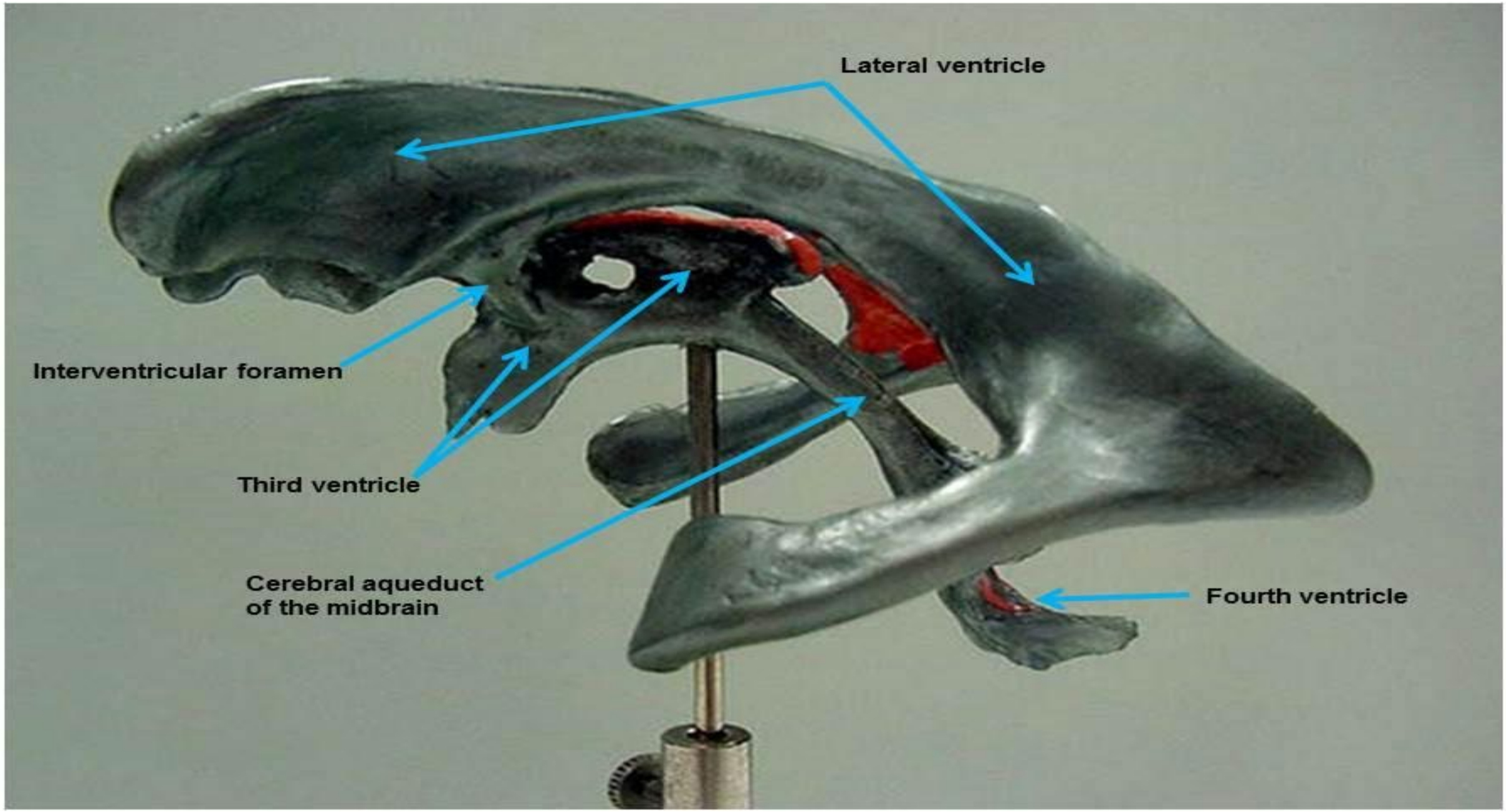
61/Identify 1: MAMMILLARY BODIES

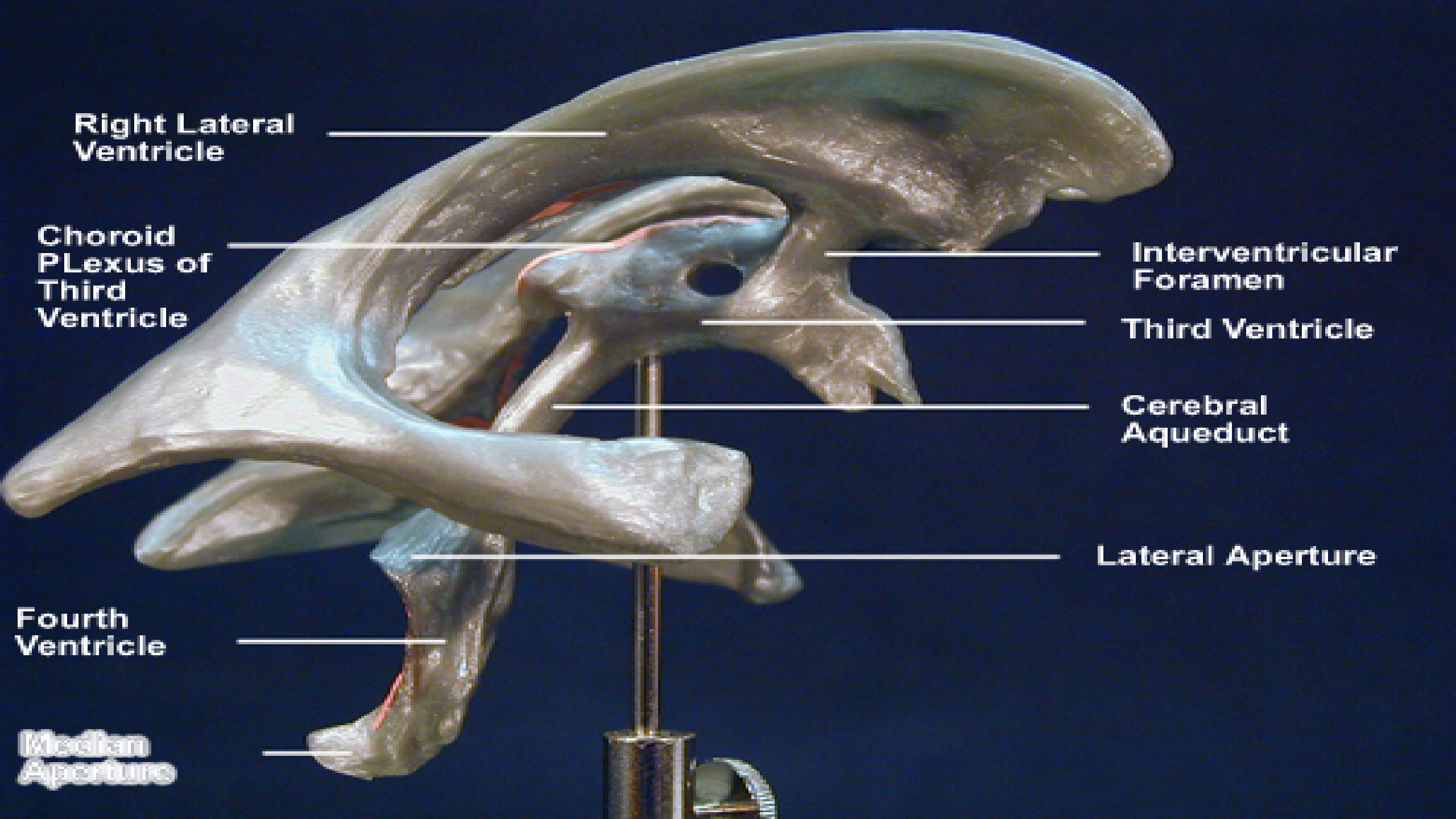
62/Identify 2: OPTIC NERVE

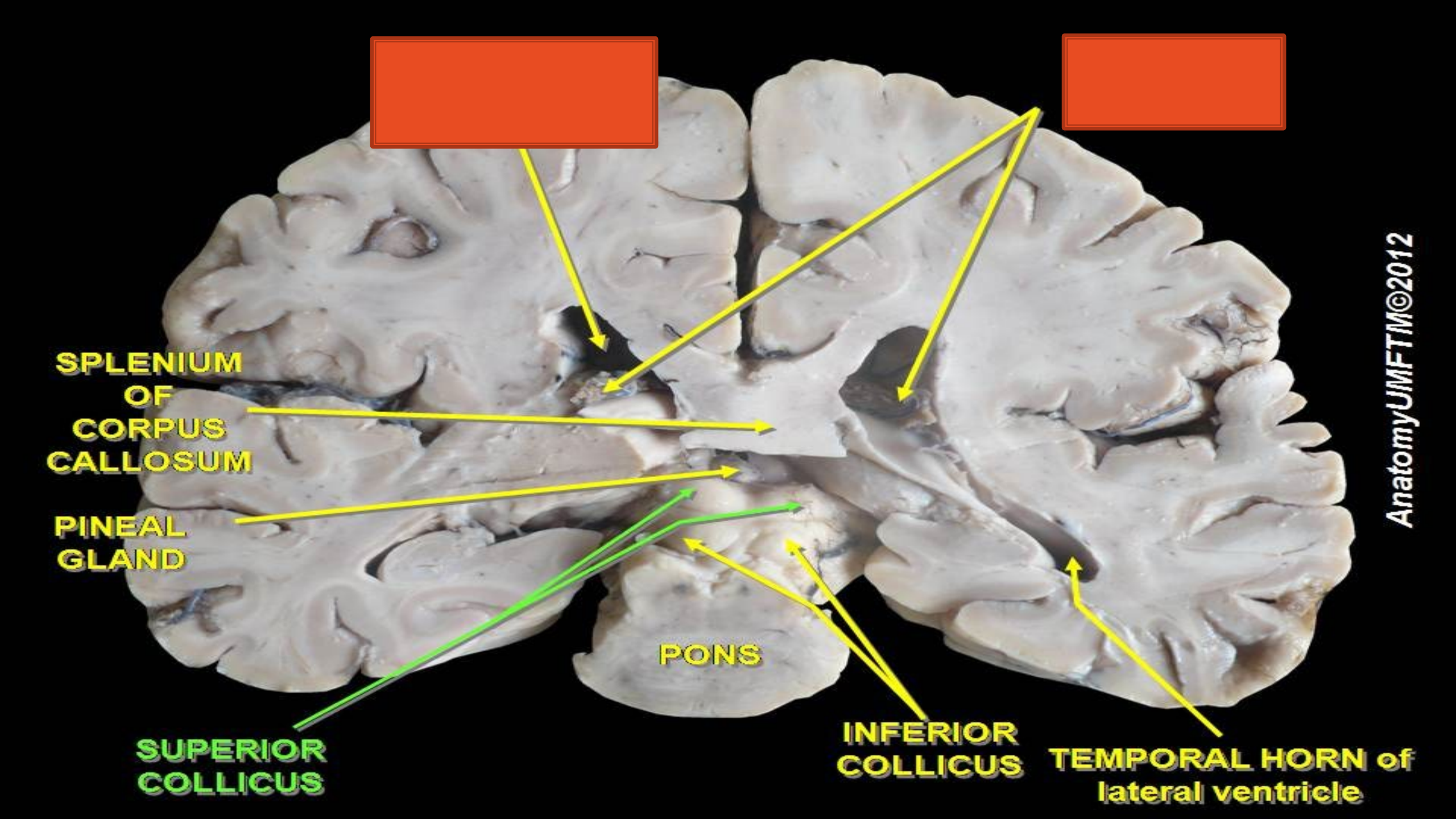
63/Identify 3: OLFACTORY BULB

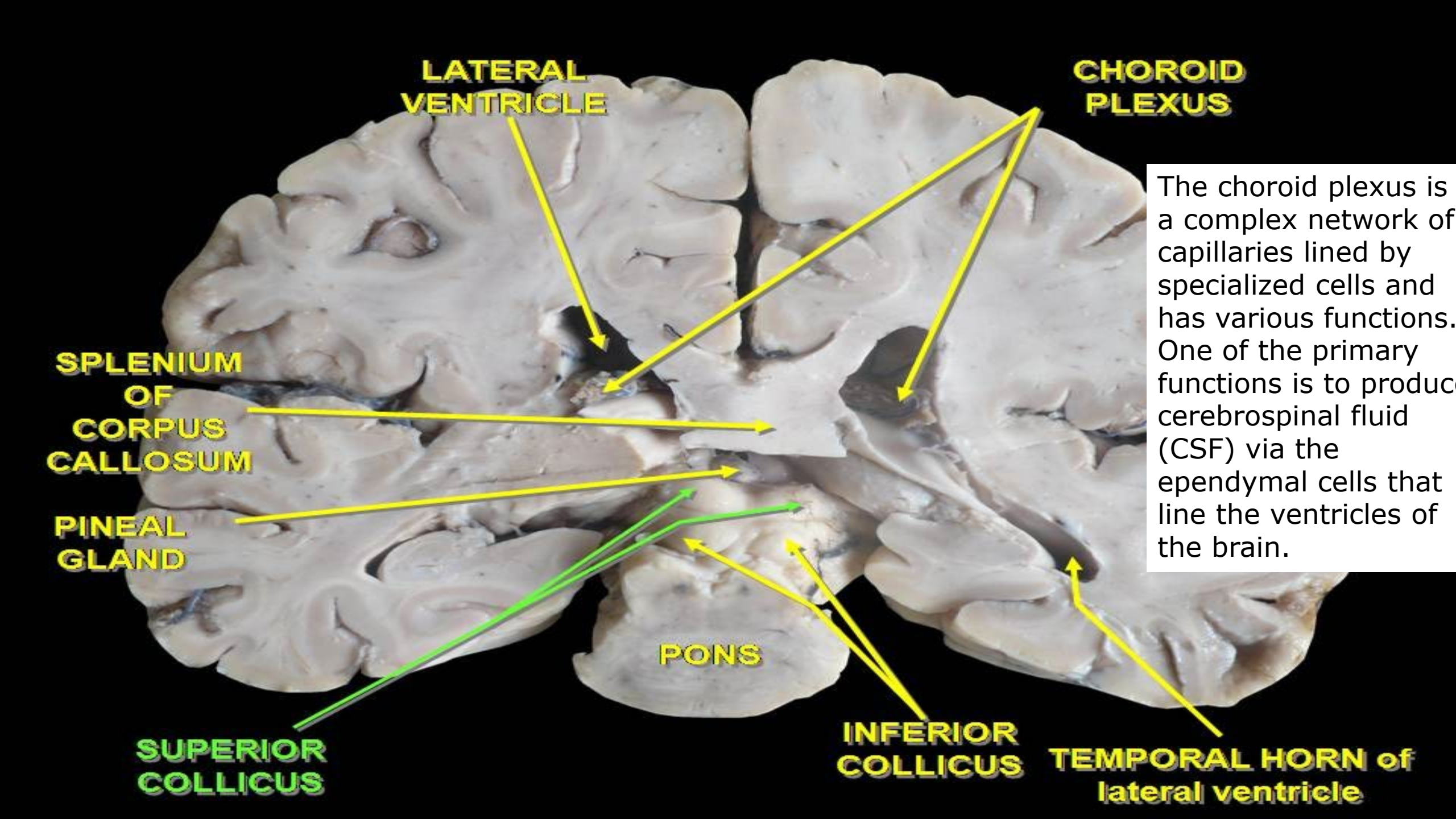
The mammillary bodies are part of the diencephalon, which is a collection of structures found between the brainstem and cerebrum.
The diencephalon includes the hypothalamus, and the mammillary bodies are found on the inferior surface of the hypothalamus (the side of the hypothalamus that is closer to the brainstem).



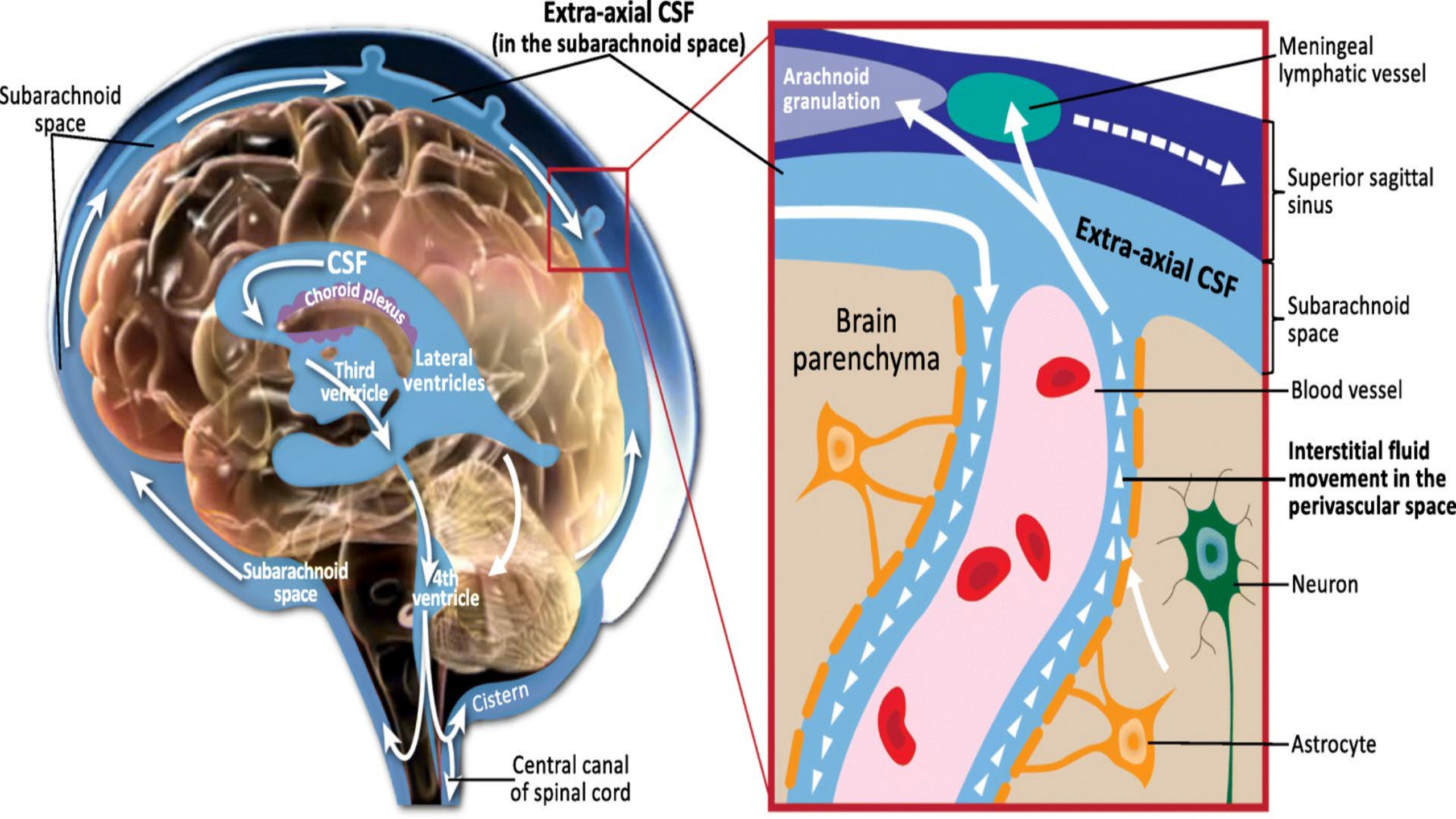

Lateral ventricle
Interventricular foramen
Third ventricle
Cerebral aqueduct
of the midbrain
Fourth ventricle

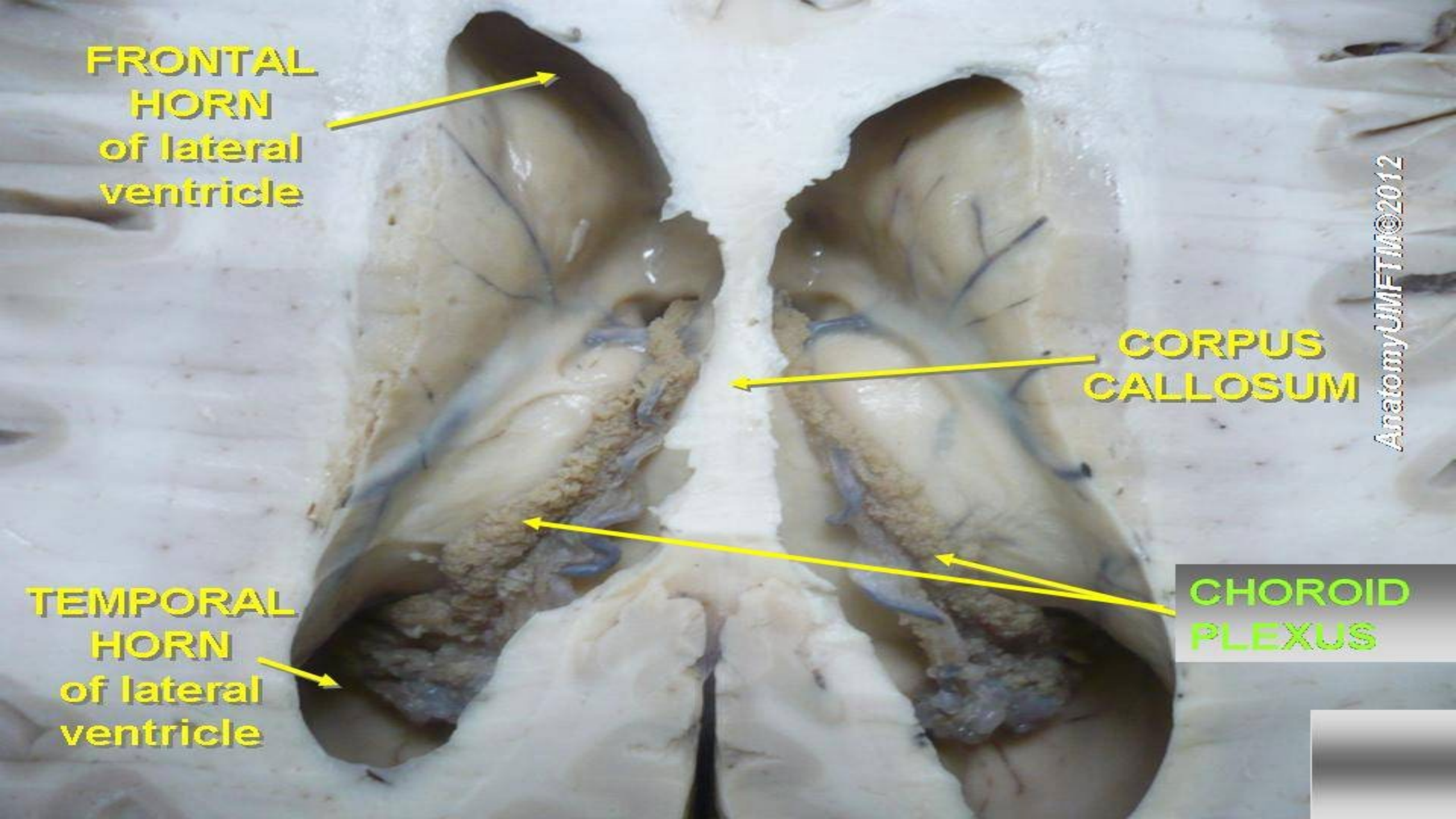

Right Lateral Ventricle
Choroid PLexus of Third Ventricle
Interventricular Foramen
Third Ventricle
Cerebral Aqueduct
Lateral Aperture
Fourth Ventricle
Median Aperture

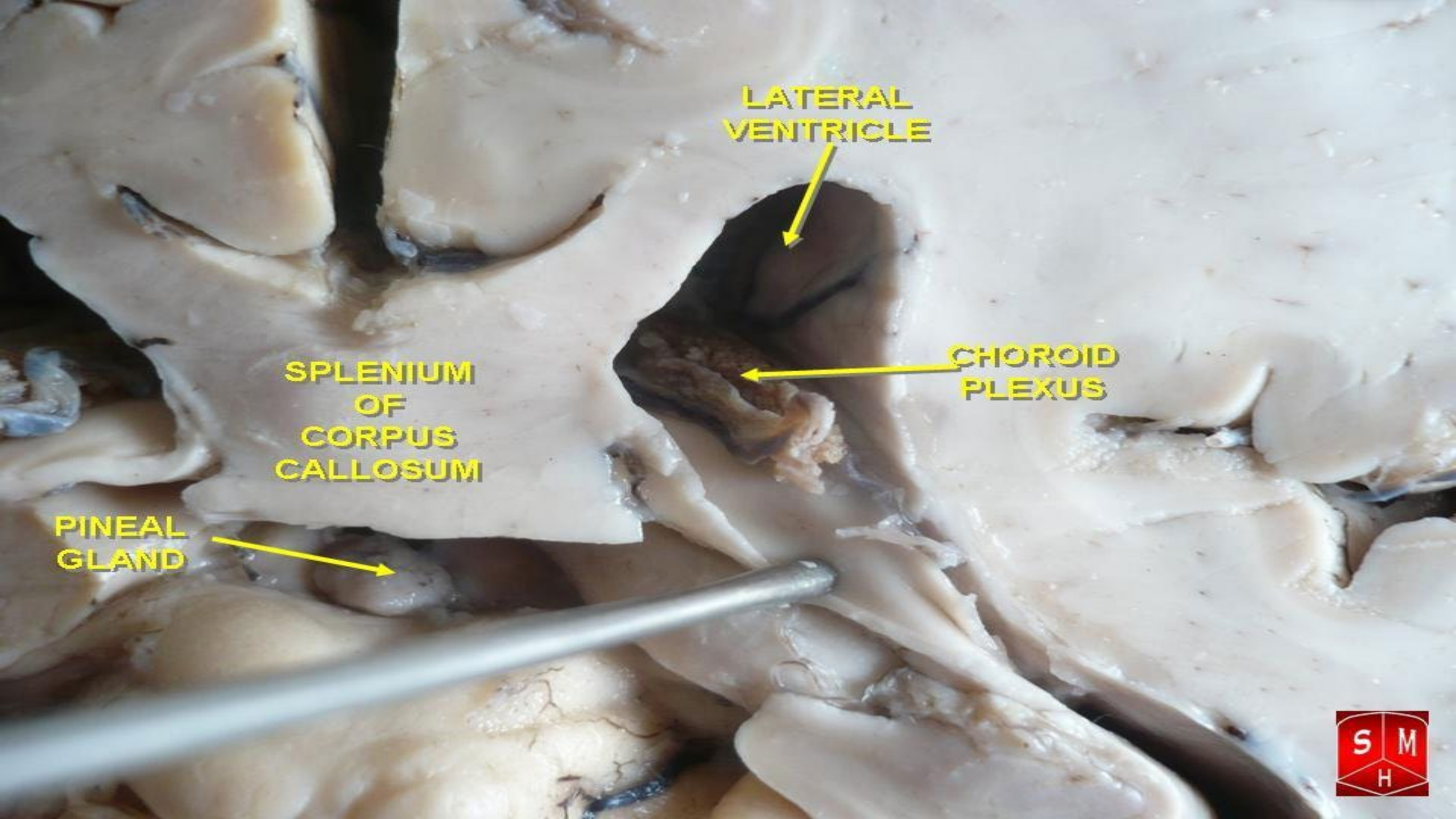

SPLENIUM OF CORPUS CALLOSUM
PINEAL GLAND
SUPERIOR COLLICUS
PONS
INFERIOR COLLICUS
TEMPORAL HORN of lateral ventricle
AnatomyUMFTM©2012



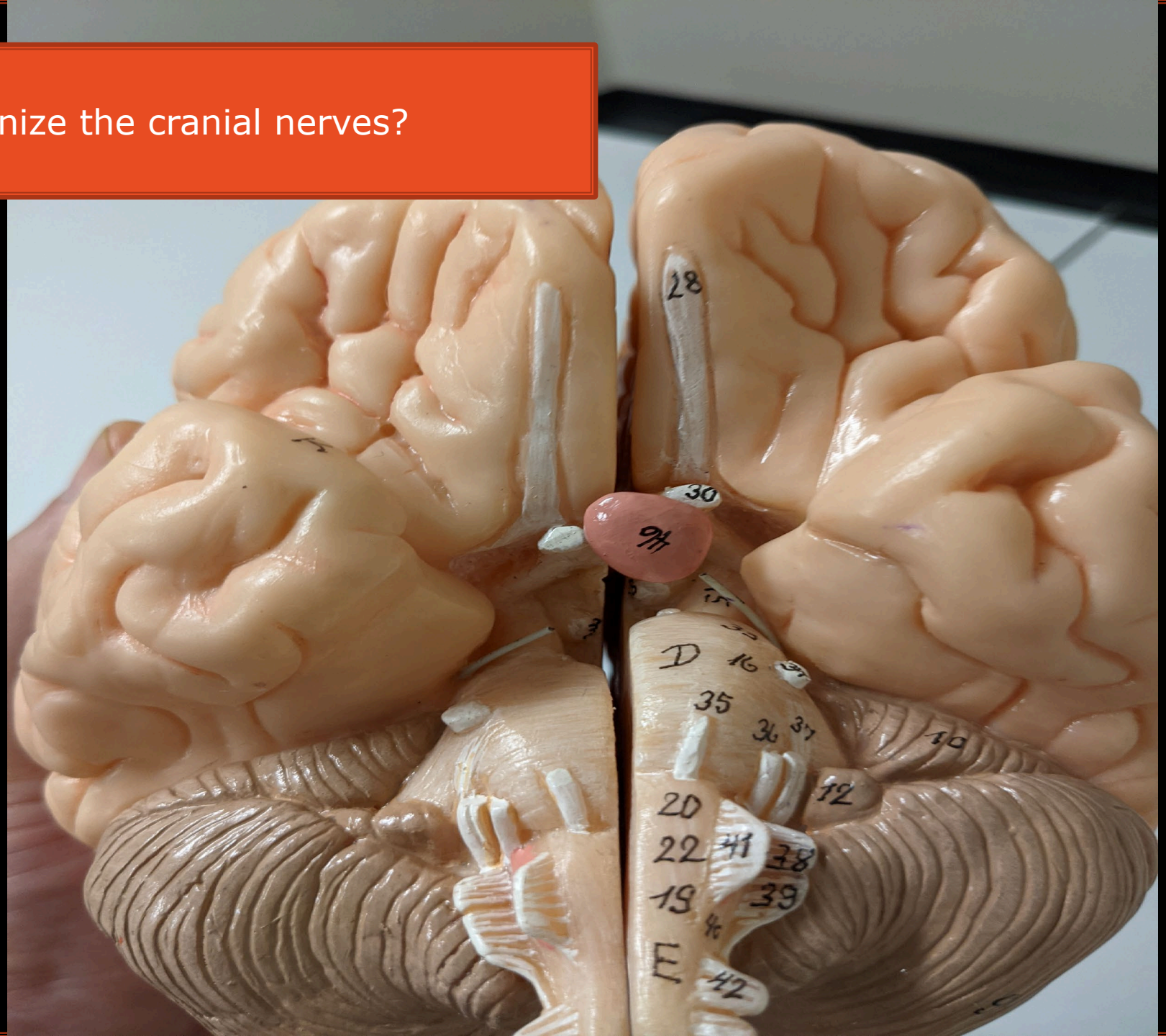
The choroid plexus is a complex network of capillaries lined by specialized cells and has various functions. One of the primary functions is to produc cerebrospinal fluid (CSF) via the ependymal cells that line the ventricles of the brain.

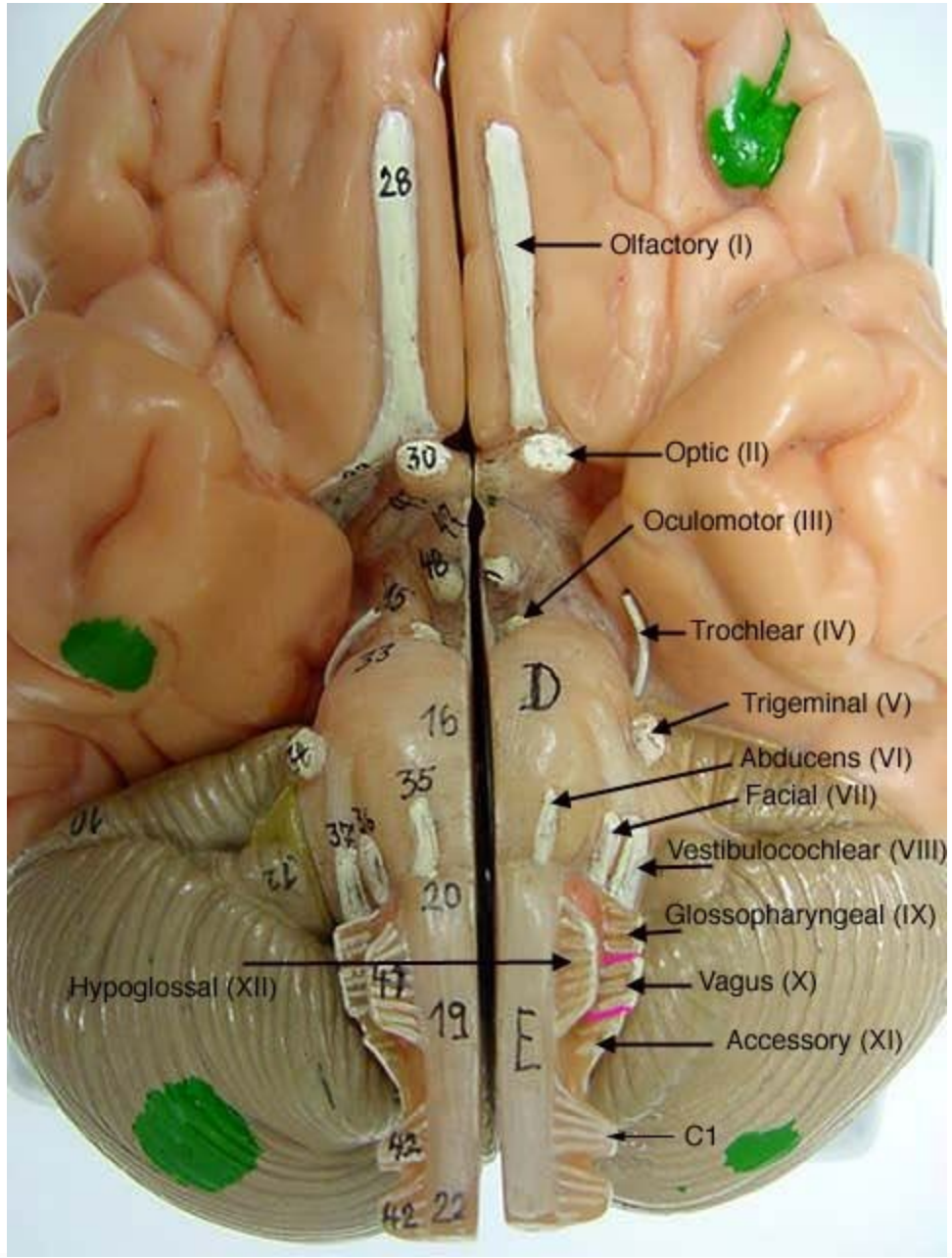

Extra-axial CSF
(in the subarachnoid space)
Subarachnoid space
CSF
Choroid plexus
Third ventricle
Lateral ventricles
Subarachnoid space
4th ventricle
Cistern
Central canal of spinal cord
Arachnoid granulation
Meningeal lymphatic vessel
Superior sagittal sinus
Extra-axial CSF
Subarachnoid space
Brain parenchyma
Blood vessel
Interstitial fluid movement in the perivascular space
Neuron
Astrocyte


FRONTAL HORN of lateral ventricle
CORPUS CALLOSUM
TEMPORAL HORN of lateral ventricle
CHOROID PLEXUS
AnatomyUMFTIM©2012

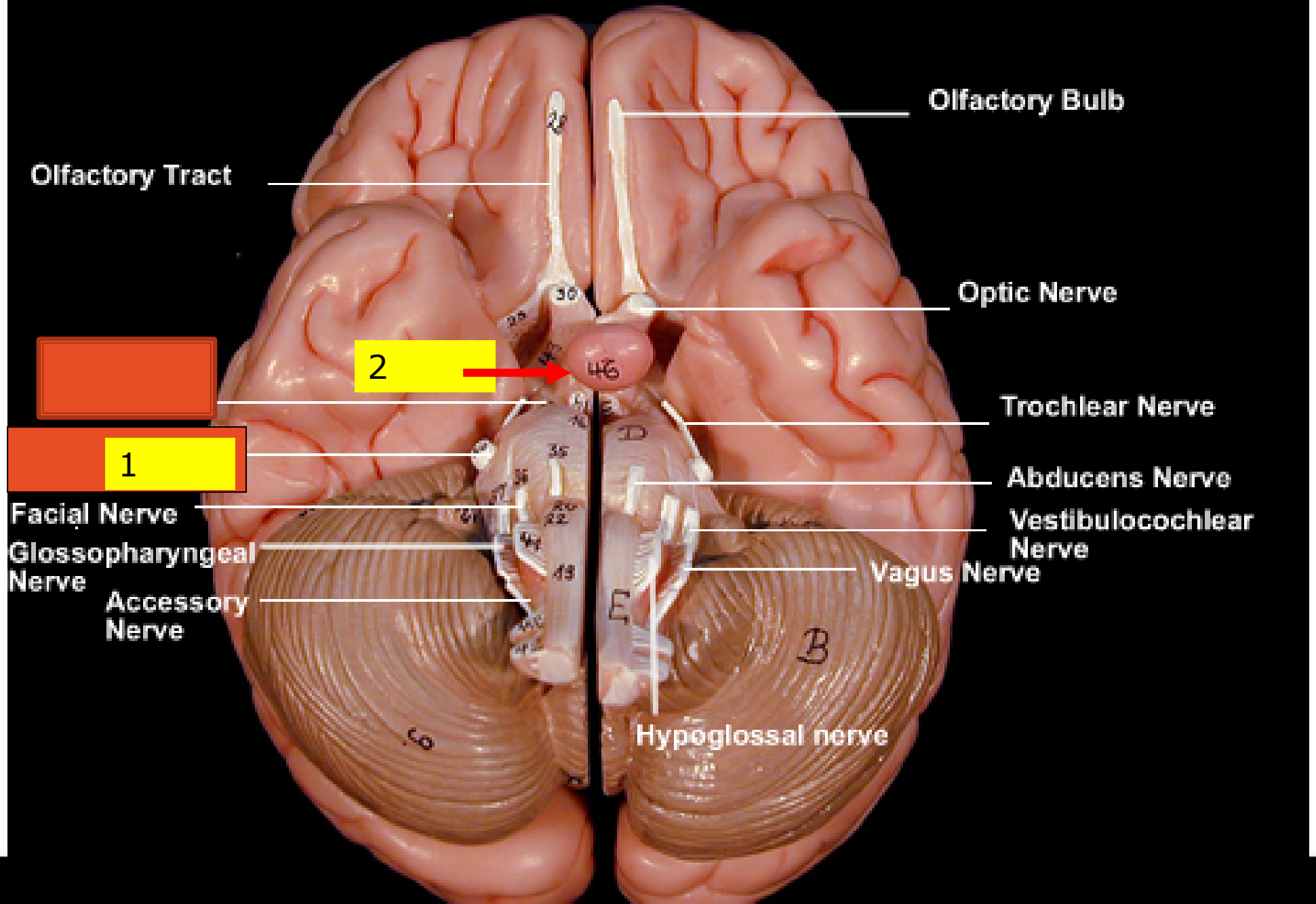

LATERAL
VENTRICLE
CHOROID
PLEXUS
SPLENIUM
OF
CORPUS
CALLOSUM
PINEAL
GLAND

Recognize the cranial nerves?

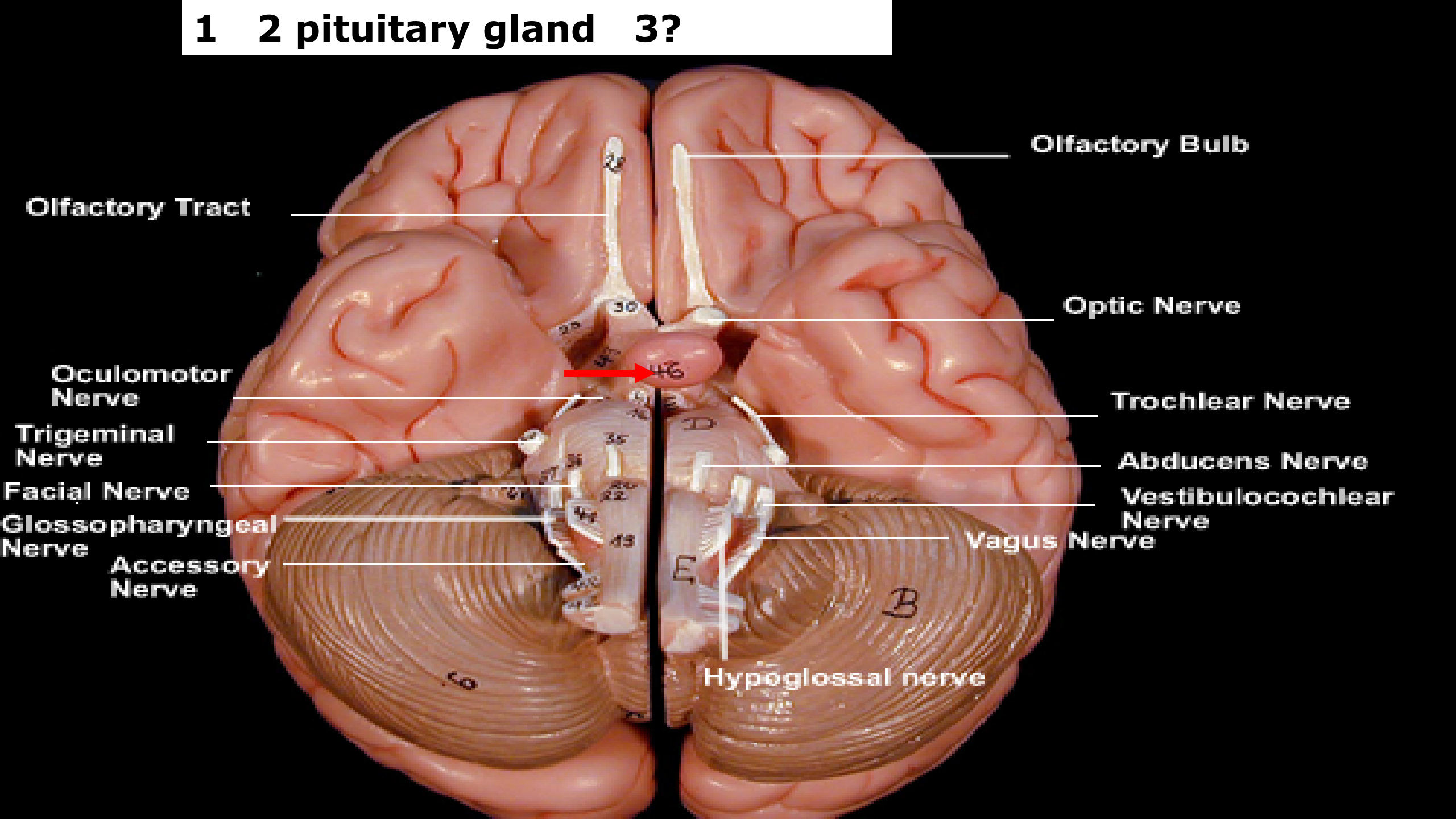


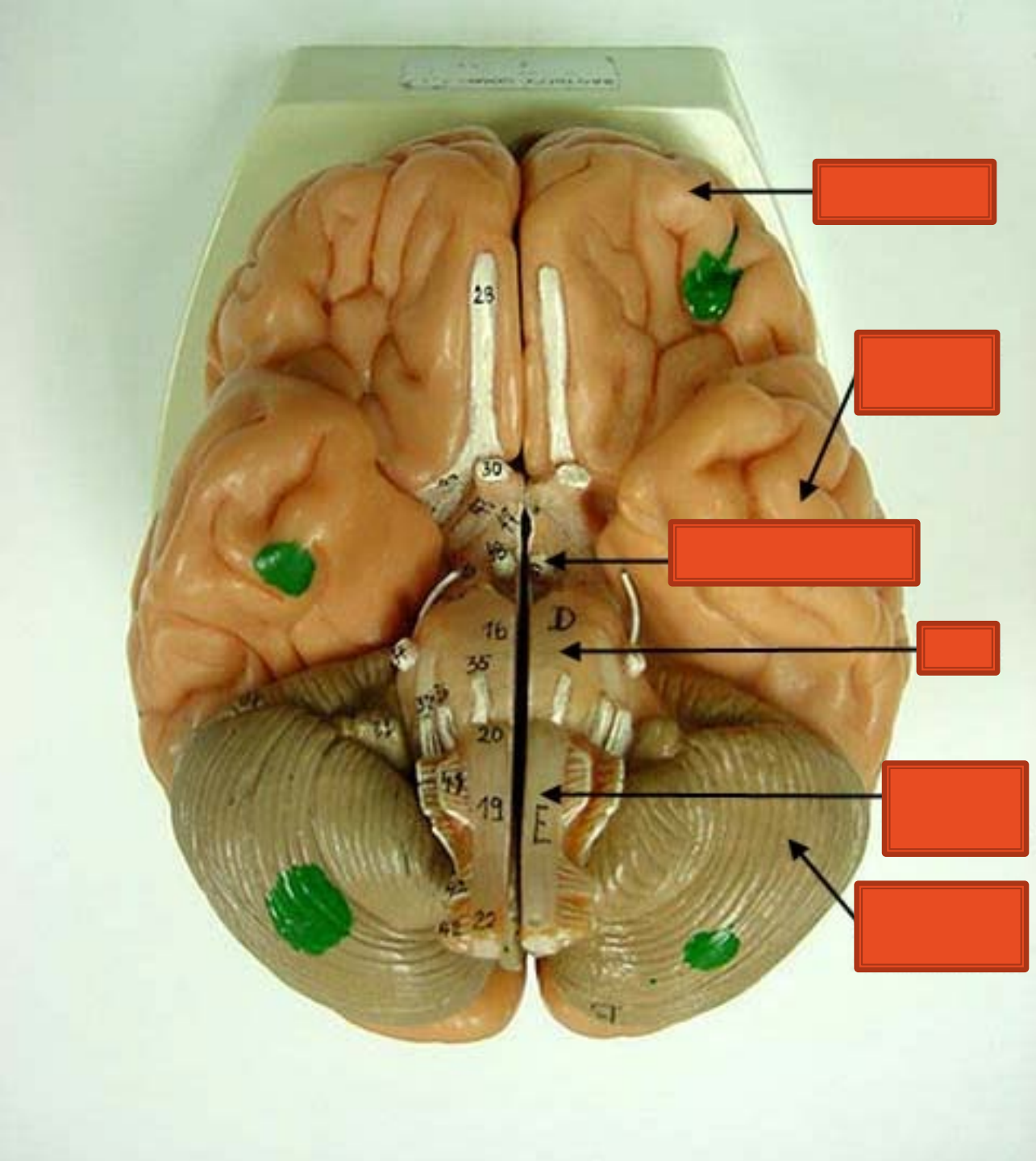

Olfactory (I)
Optic (II)
Oculomotor (III)
Trochlear (IV)
Trigeminal (V)
Abducens (VI)
Facial (VII)
Vestibulocochlear (VIII)
Glossopharyngeal (IX)
Vagus (X)
Accessory (XI)
C1
Hypoglossal (XII)
D
E

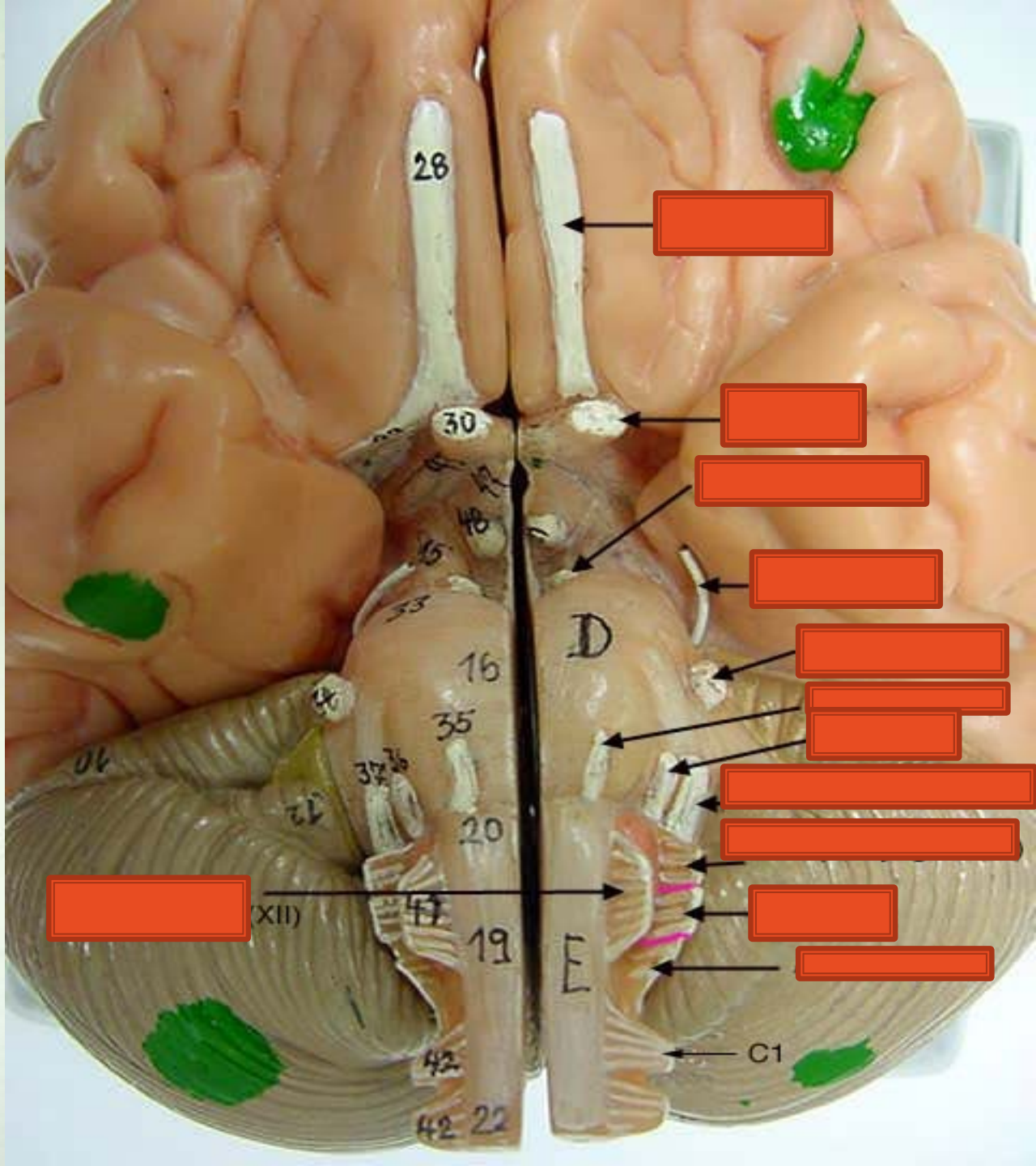
1 2 3?

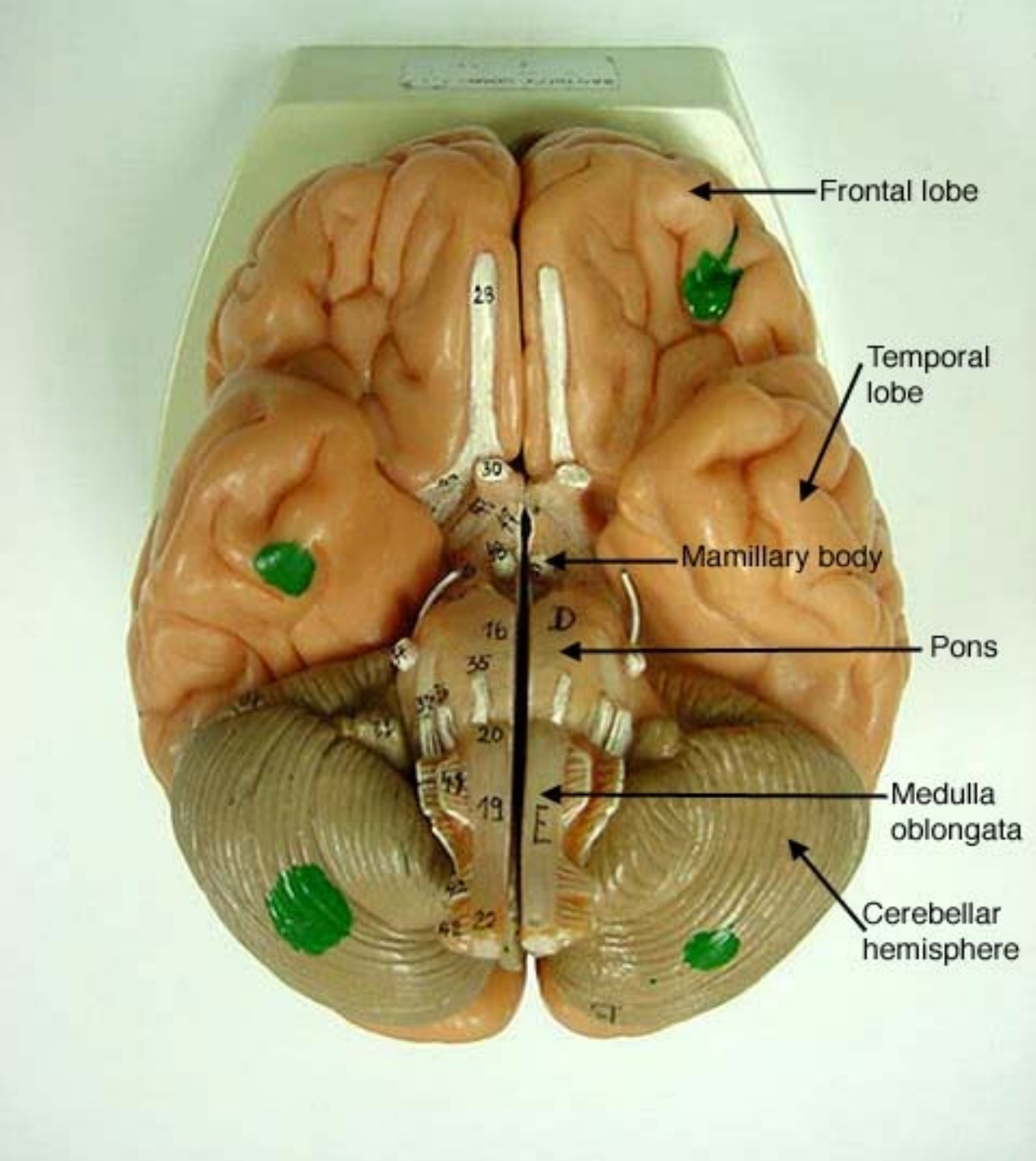

Olfactory Bulb
Olfactory Tract
Optic Nerve
2
Trochlear Nerve
1
Abducens Nerve
Facial Nerve
Vestibulocochlear Nerve
Glossopharyngeal Nerve
Vagus Nerve
Accessory Nerve
Hypoglossal nerve

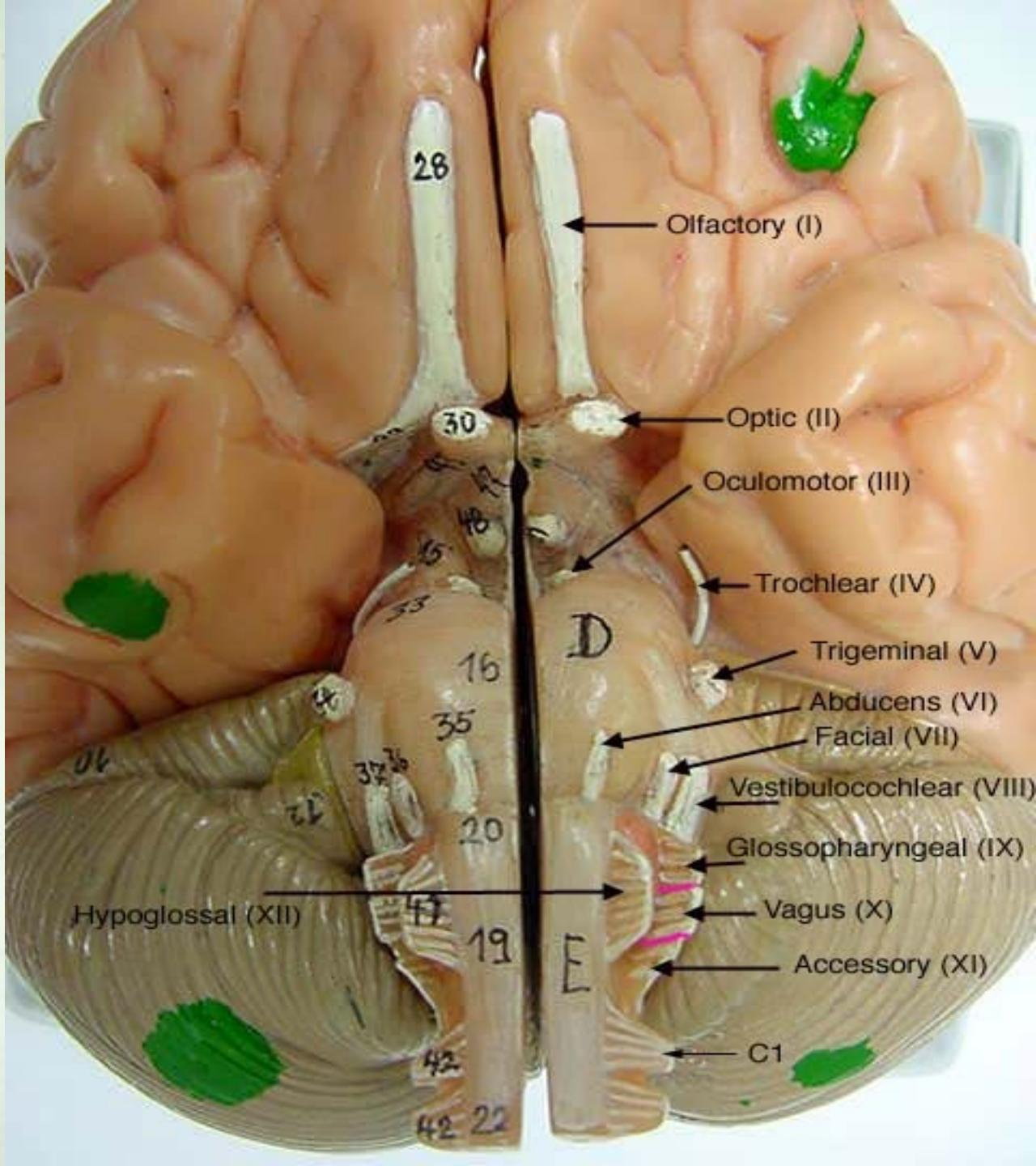
1 2 pituitary gland 3?




28
30
D
16
35
20
19
E
22
C1


28
30
D
16
35
20
(XII)
19
E
C1
42
22


Frontal lobe
Temporal lobe
Mamillary body
Pons
Medulla oblongata
Cerebellar hemisphere

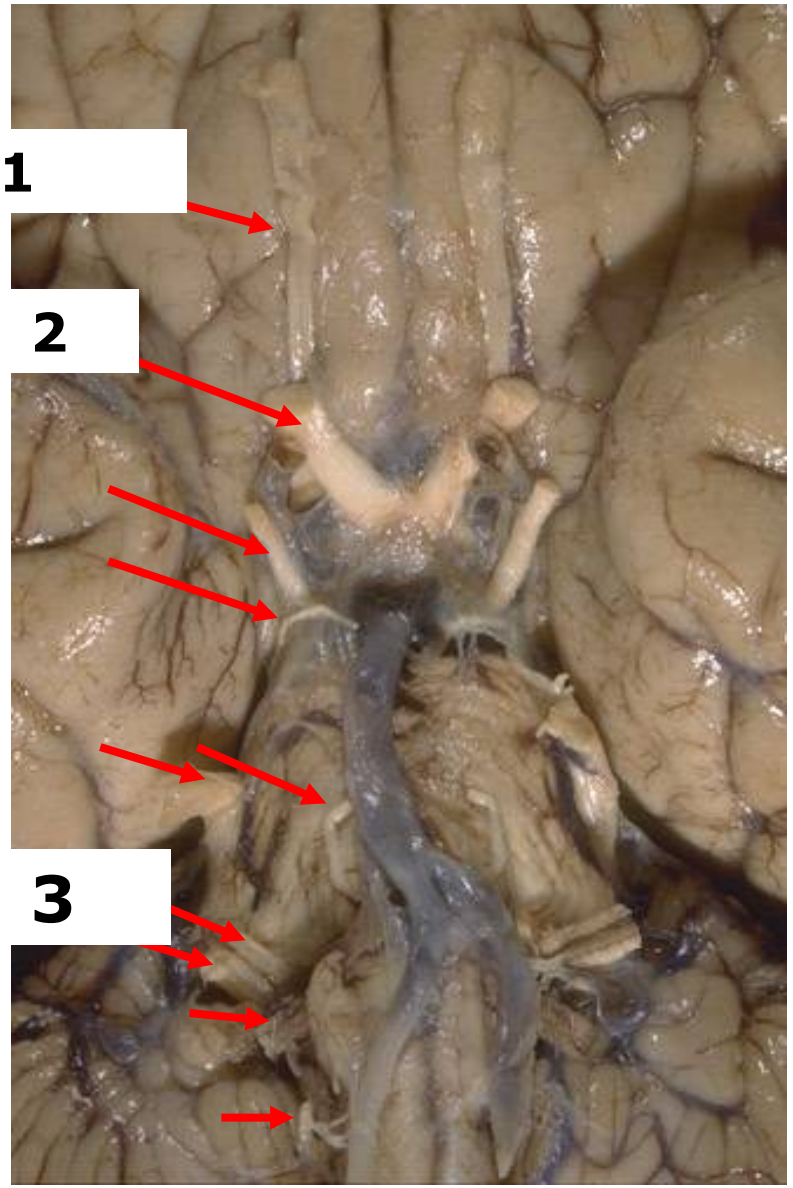

Olfactory (I)
Optic (II)
Oculomotor (III)
Trochlear (IV)
Trigeminal (V)
Abducens (VI)
Facial (VII)
Vestibulocochlear (VIII)
Glossopharyngeal (IX)
Vagus (X)
Accessory (XI)
Hypoglossal (XII)
C1

Name the Function!

68/1

69/2

70/ 3

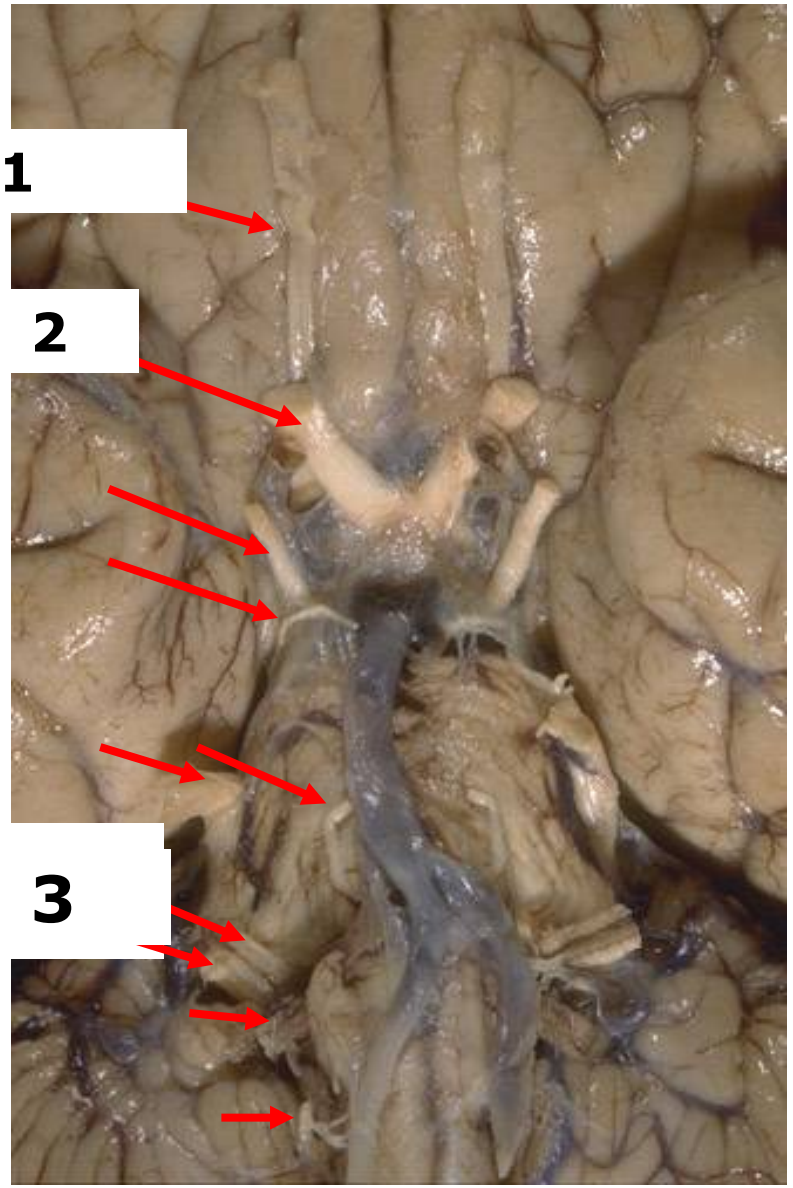


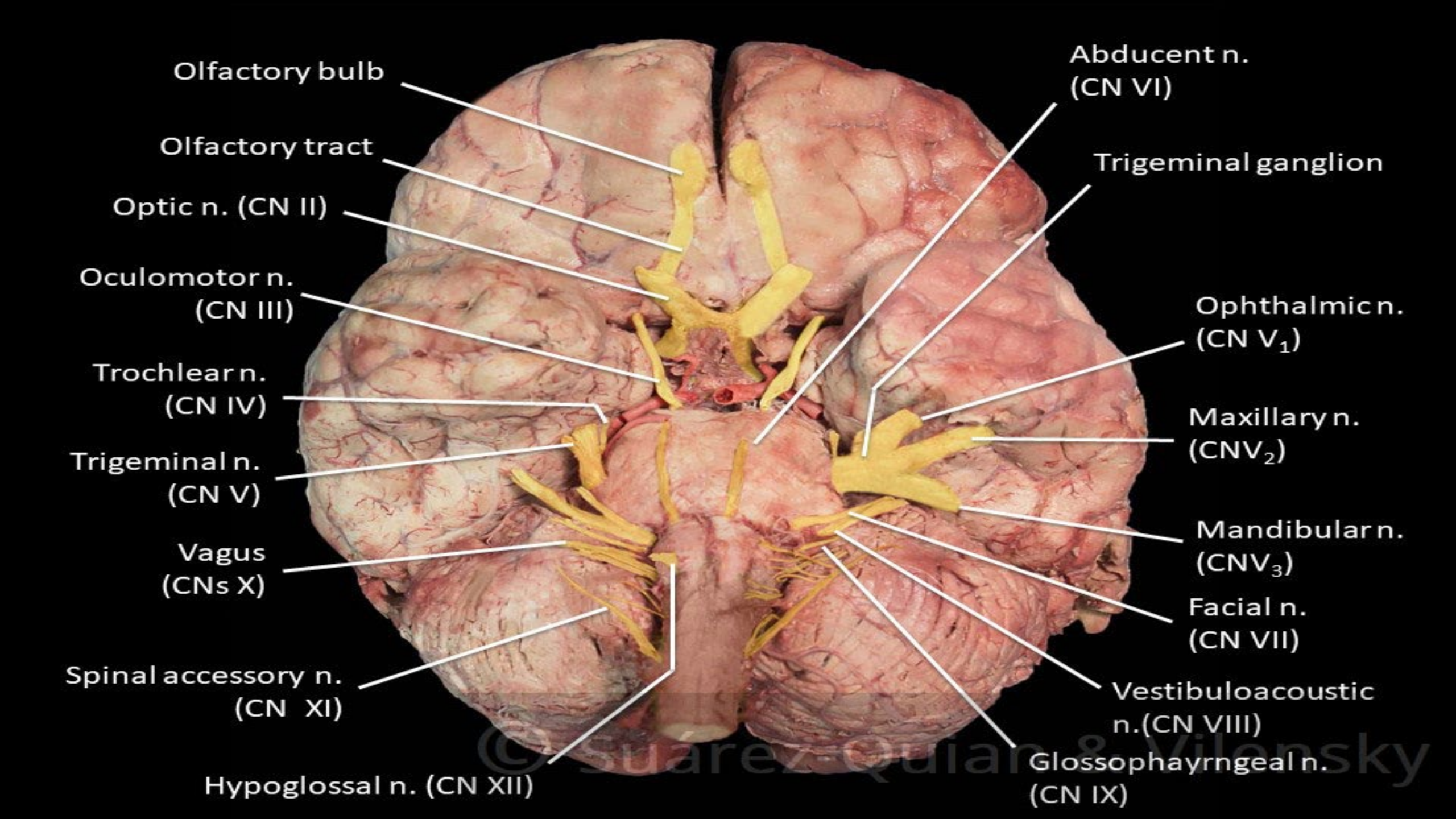
Name the Function!

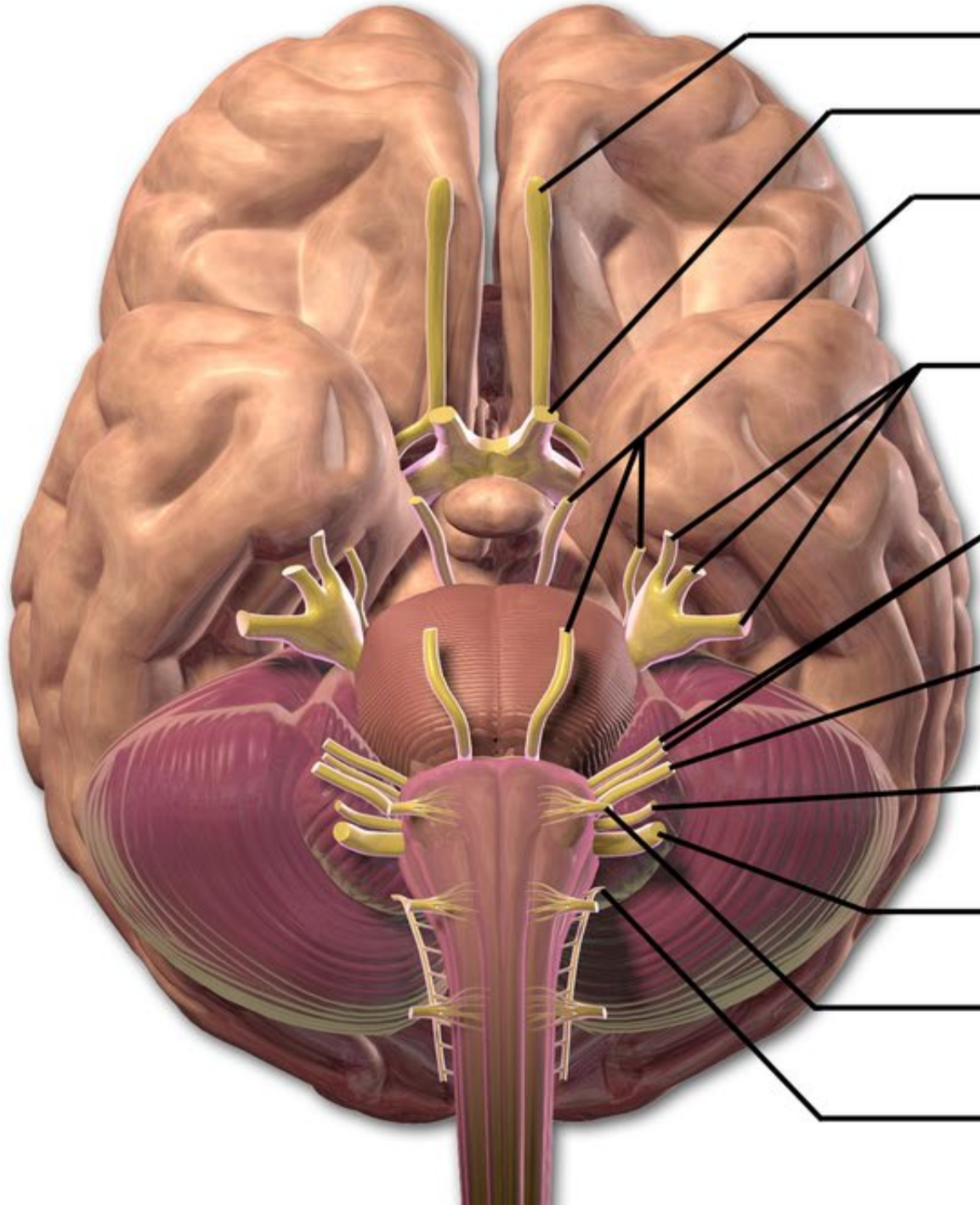
Olfactory (I)- smell

Optic (II)- sight

Facial (VII)- controls most facial expressions, tears and saliva, taste (ant. 2/3)




Olfactory bulb
Olfactory tract
Optic n. (CN II)
Oculomotor n. (CN III)
Trochlear n. (CN IV)
Trigeminal n. (CN V)
Vagus (CNs X)
Spinal accessory n. (CN XI)
Hypoglossal n. (CN XII)
Abducent n. (CN VI)
Trigeminal ganglion
Ophthalmic n. (CN V_1)
Maxillary n. (CNV_2)
Mandibular n. (CNV_3)
Facial n. (CN VII)
Vestibuloacoustic n.(CN VIII)
Glossophayrngeal n. (CN IX)
©Suárez-Quian & Vilensky



I. Olfactory
- smell

II. Optic
- vision

III. Occulomotor
IV. Trochlear
VI. Abducens
- eye movement

V. Trigeminal
- sensory - face
- sinuses, teeth
- jaw muscles

VII. Facial
- face muscles
- taste

VIII. Auditory
- hearing
- balance

IX. Glossopharyngeal
- muscle of throat and larynx
- taste

X. Vagus
- internal organs

XII. Hypoglossal
- tongue movements

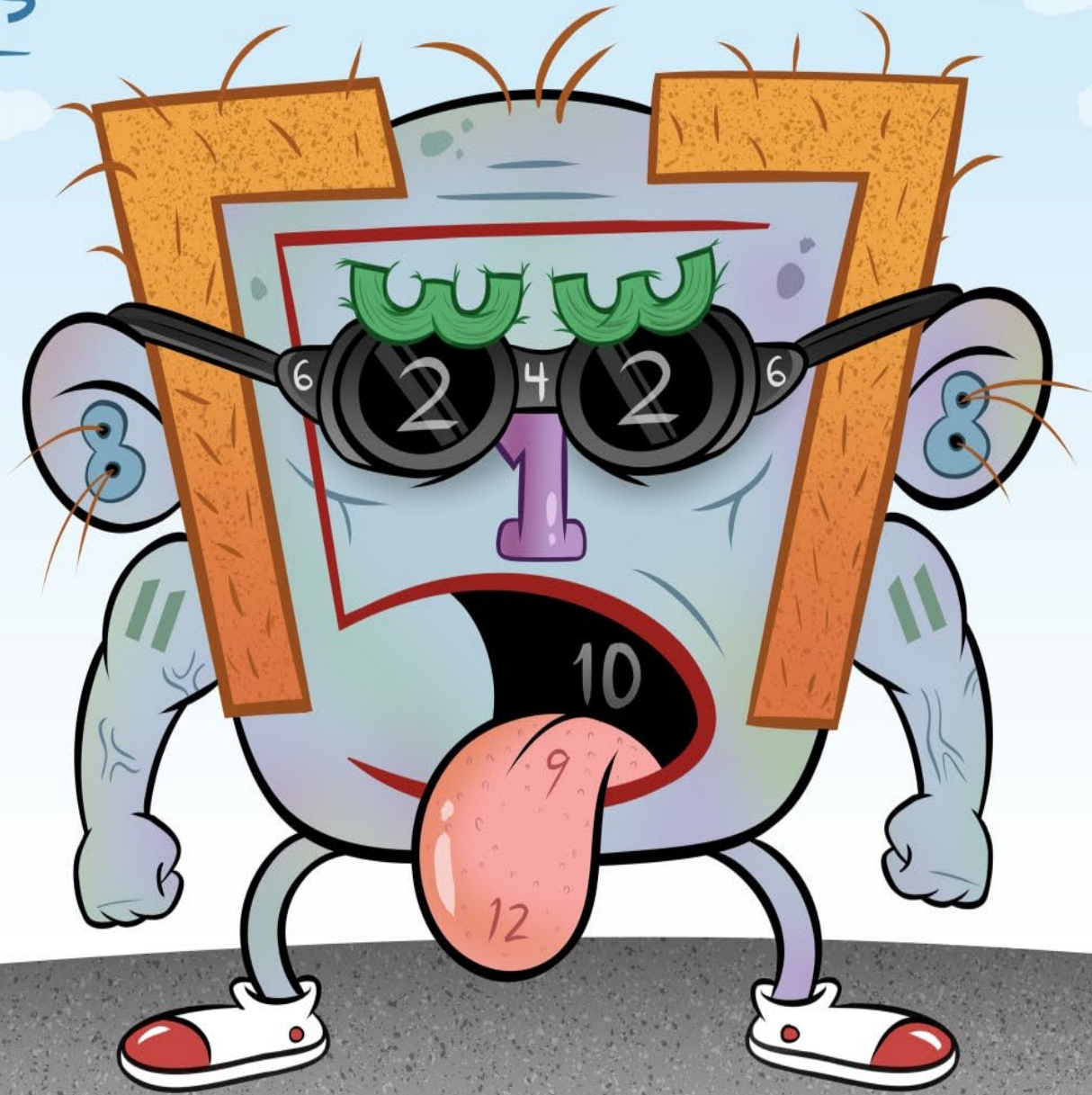
XI. Spinal accessory
- muscles of the neck and upper back

Cranial Nerve	Function	System	Function
CN 0 - Terminal		CNS	
CN 1 - Olfactory		CNS	
CN 2 - Optic		CNS	
CN 3 - Oculomotor		PNS	
CN 4 - Trochlear		PNS	
CN 5 - Trigeminal		PNS	
CN 6 - Abducens		PNS	
CN 7 - Facial		PNS	
CN 8 - Vestibulocochlear		PNS	
CN 9 - Glossopharyngeal		PNS	
CN 10 - Vagus		PNS	
CN 11 - Accessory		PNS	
CN 12 - Hypoglossal		PNS	

Cranial Nerve	Function	System	Function
CN 0 - Terminal	Pheromone	CNS	Sensory
CN 1 - Olfactory	Smell	CNS	Sensory
CN 2 - Optic	Vision	CNS	Sensory
CN 3 - Oculomotor	Eye Movement (A)	PNS	Sensorimotor + PSNS
CN 4 - Trochlear	Eye Movement (B)	PNS	Motor
CN 5 - Trigeminal	Chewing & Facial Sensation	PNS	Sensorimotor
CN 6 - Abducens	Eye Movement (C)	PNS	Motor
CN 7 - Facial	Facial Expression	PNS	Sensorimotor + PSNS
CN 8 - Vestibulocochlear	Hearing & Balance	PNS	Sensory
CN 9 - Glossopharyngeal	Taste	PNS	Sensorimotor + PSNS
CN 10 - Vagus	Internal Organs	PNS	Sensorimotor + PSNS
CN 11 - Accessory	Shoulder & Neck	PNS	Motor
CN 12 - Hypoglossal	Tongue	PNS	Motor

CRANIAL NERVES

1. OLFACTORY
2. OPTIC
3. OCULOMOTOR
4. TROCHLEAR
5. TRIGEMINAL
6. ABDUCENS



7. FACIAL
8. ACOUSTIC
9. GLOSSOPHARYNGEAL
10. VAGUS
11. ACCESSORY
12. HYPOGLOSSAL

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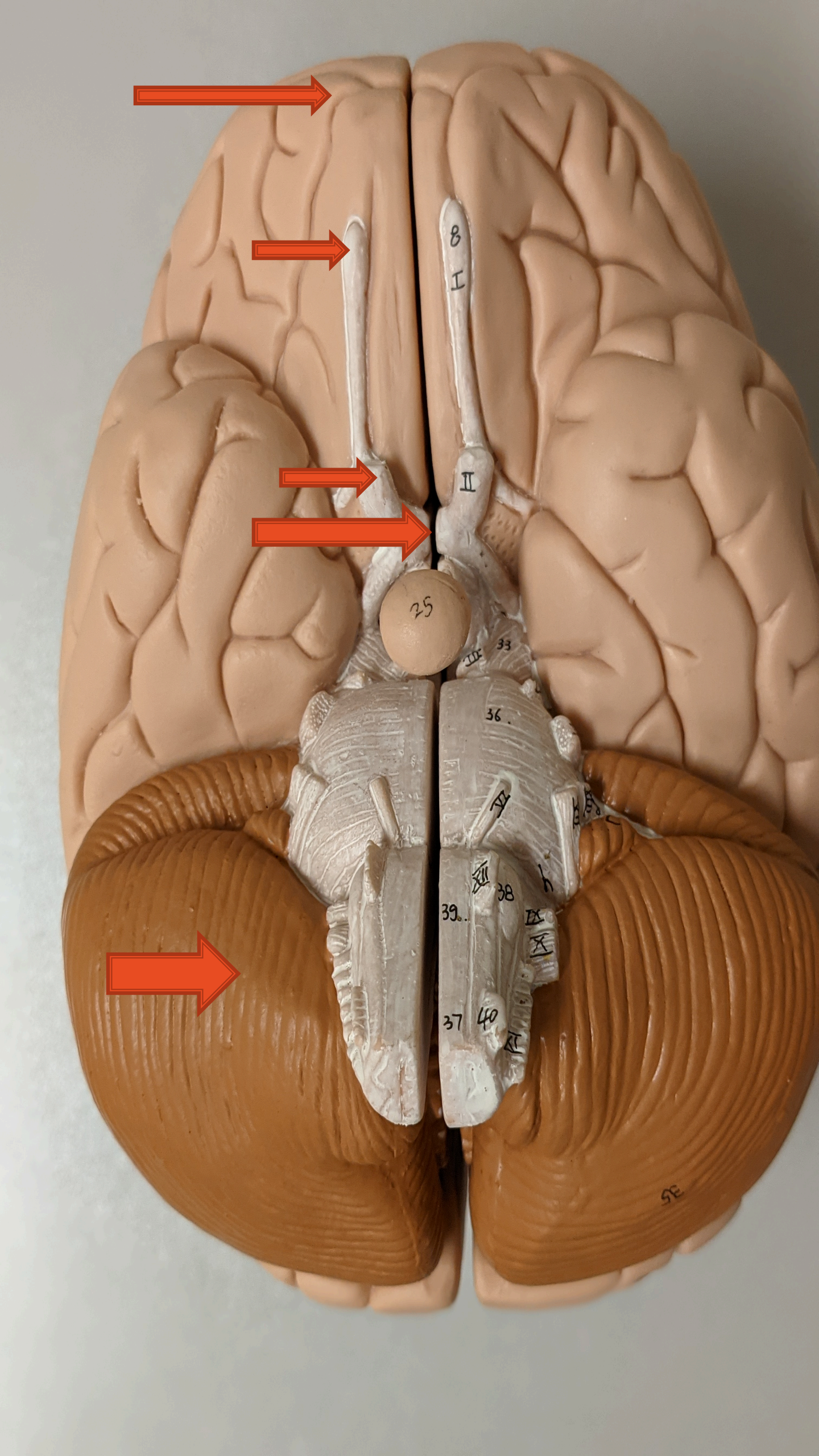
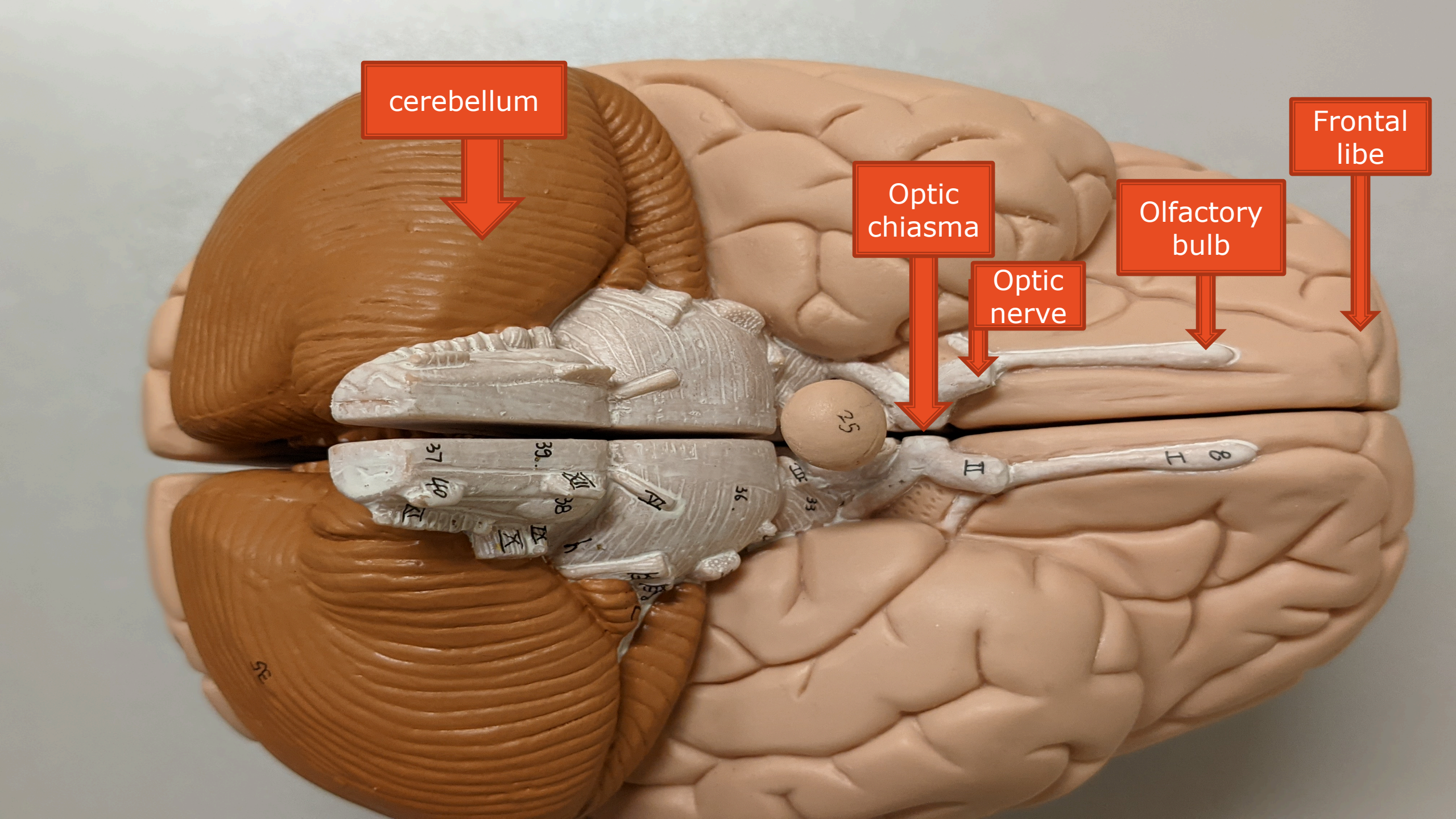
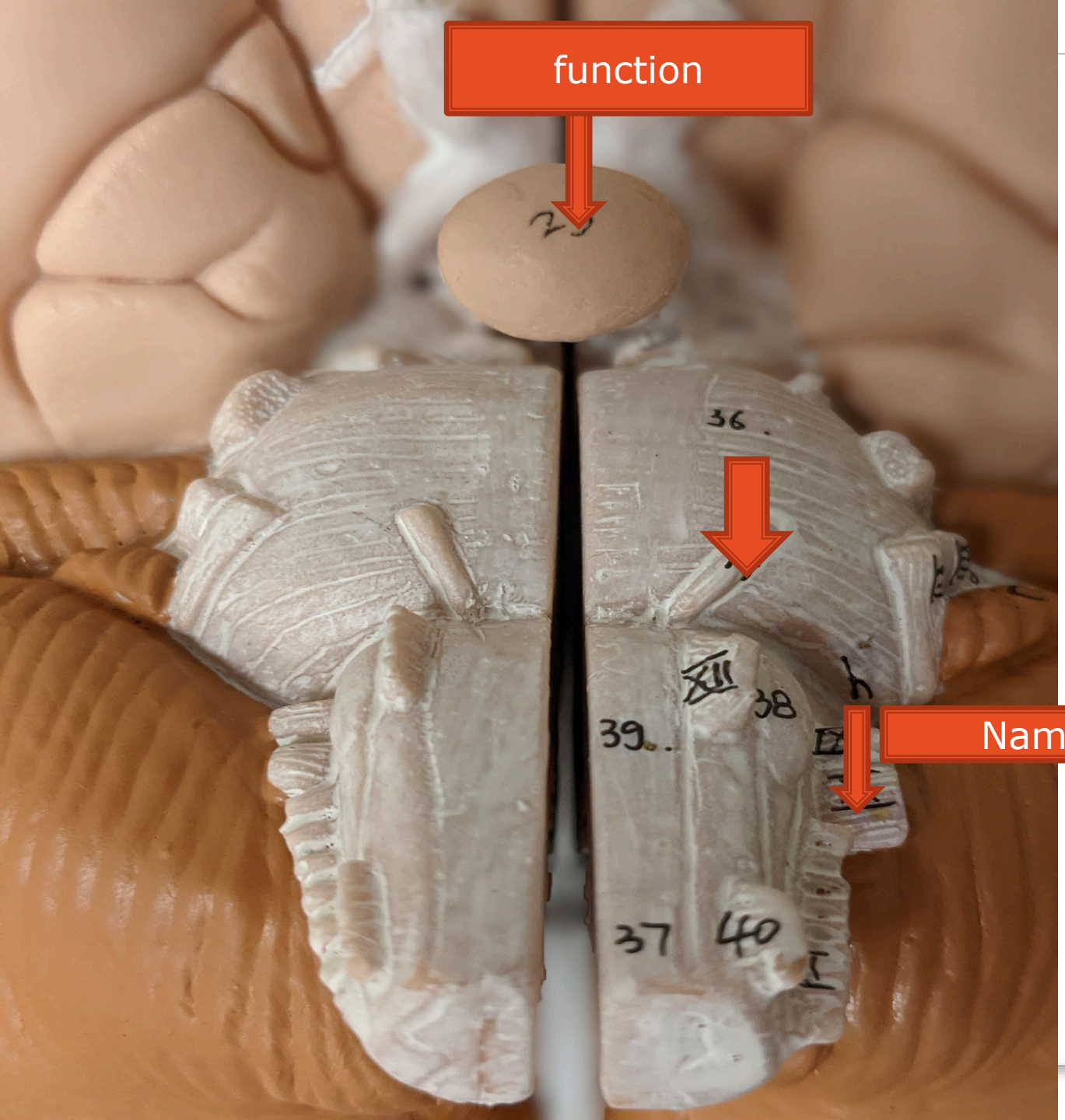
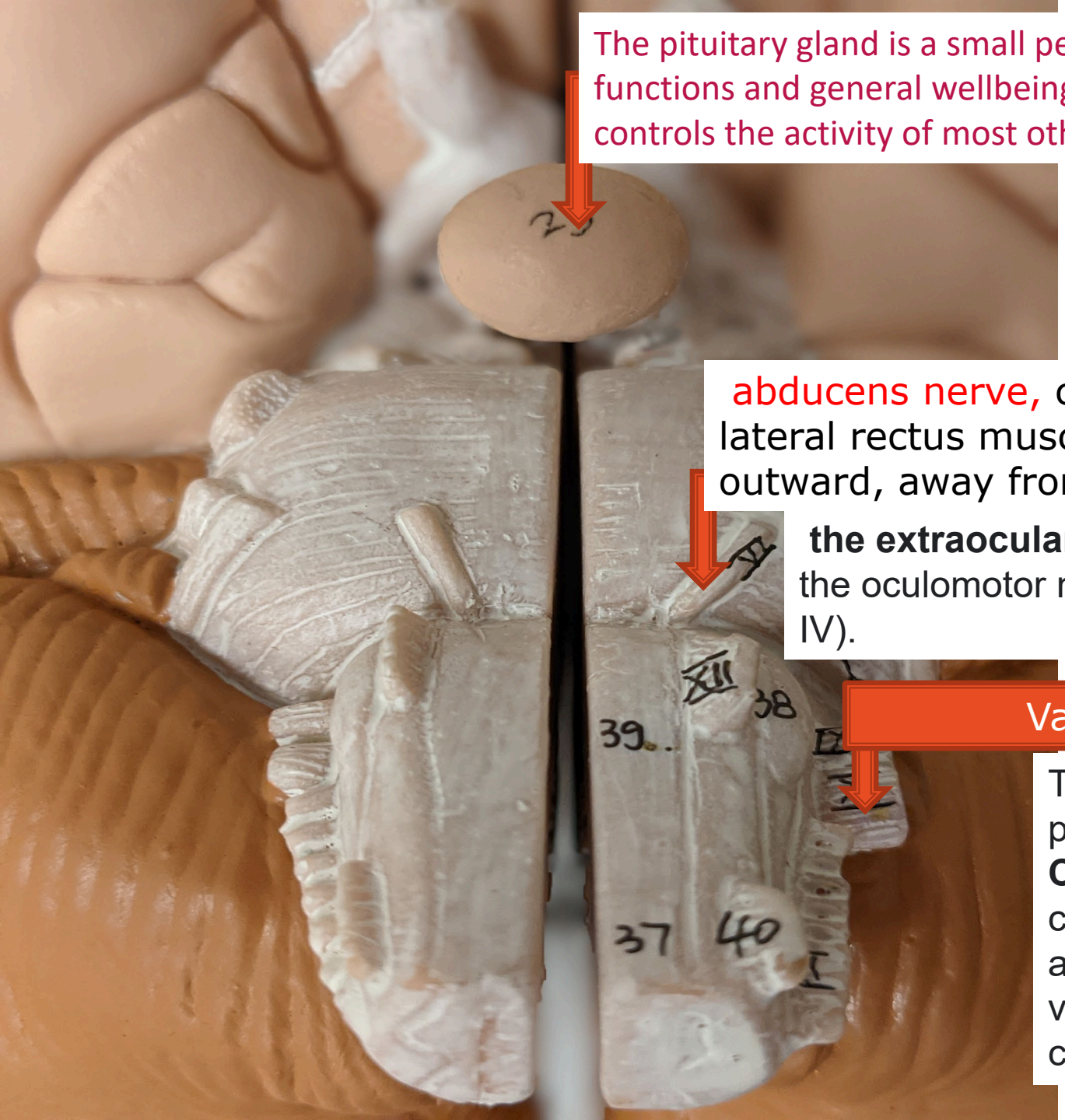

8
I
II
25
33
36
38
39
37
40


cerebellum
Optic chiasma
Optic nerve
Olfactory bulb
Frontal libe


function
Name?
36
38
39
37
40



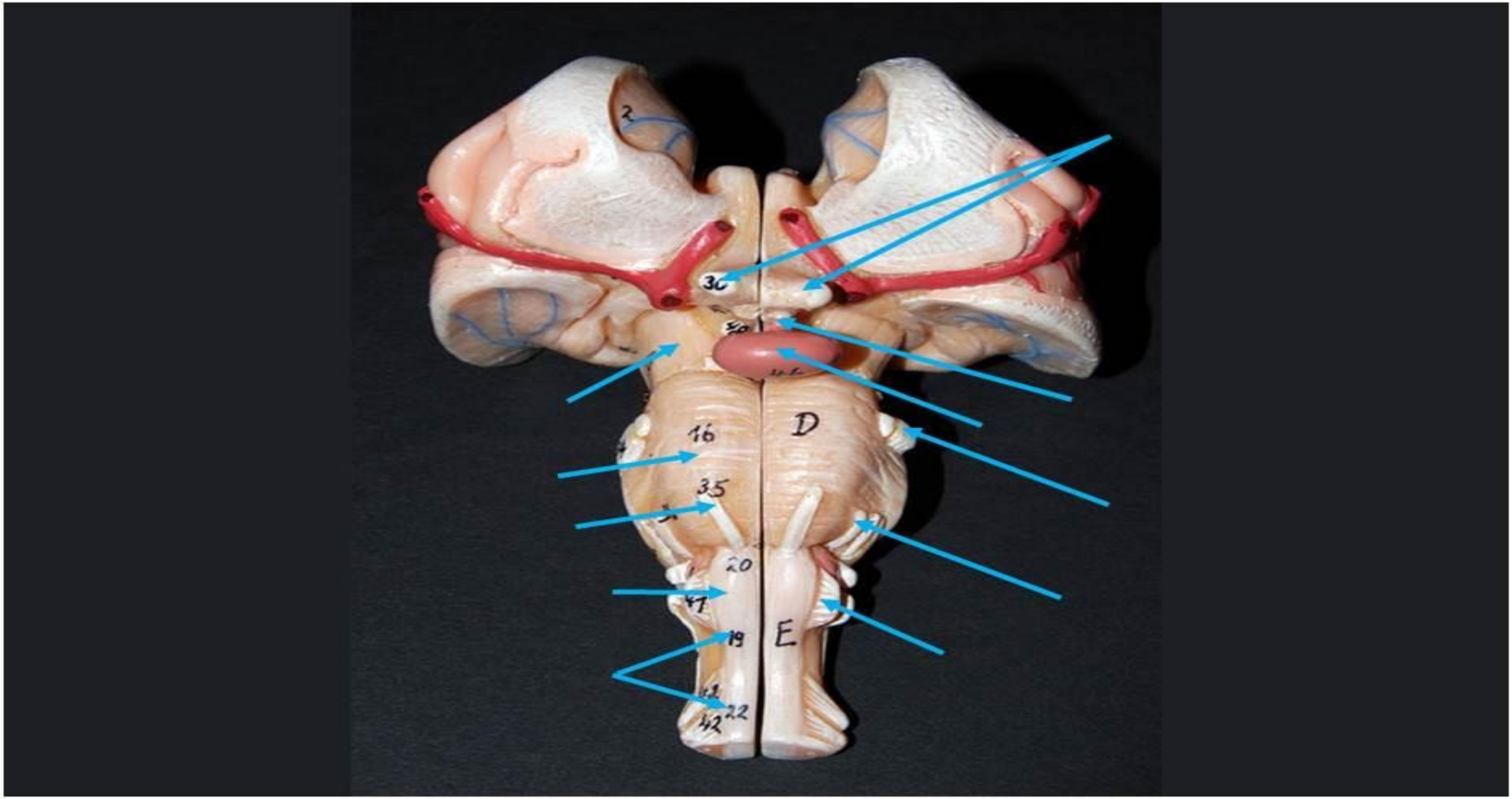
The pituitary gland is a small pea-sized gland that plays a major role in regulating vital body functions and general wellbeing. It is referred to as the body's 'master gland' because it controls the activity of most other hormone-secreting glands.

abducens nerve, controls the movement of the lateral rectus muscle. This muscle moves the eye outward, away from the nose.

the extraocular motor functions of the eye, along with the oculomotor nerve (CN III) and the trochlear nerve (CN IV).

Vagus nerve =

The vagus nerve, historically cited as the pneumogastric nerve, is **the tenth cranial nerve or CN X**, and interfaces with the parasympathetic control of the heart, lungs, and digestive tract. It actually comprises two nerves—the left and right vagus nerves—but they are typically referred to collectively in the singular.


2
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16
D
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E
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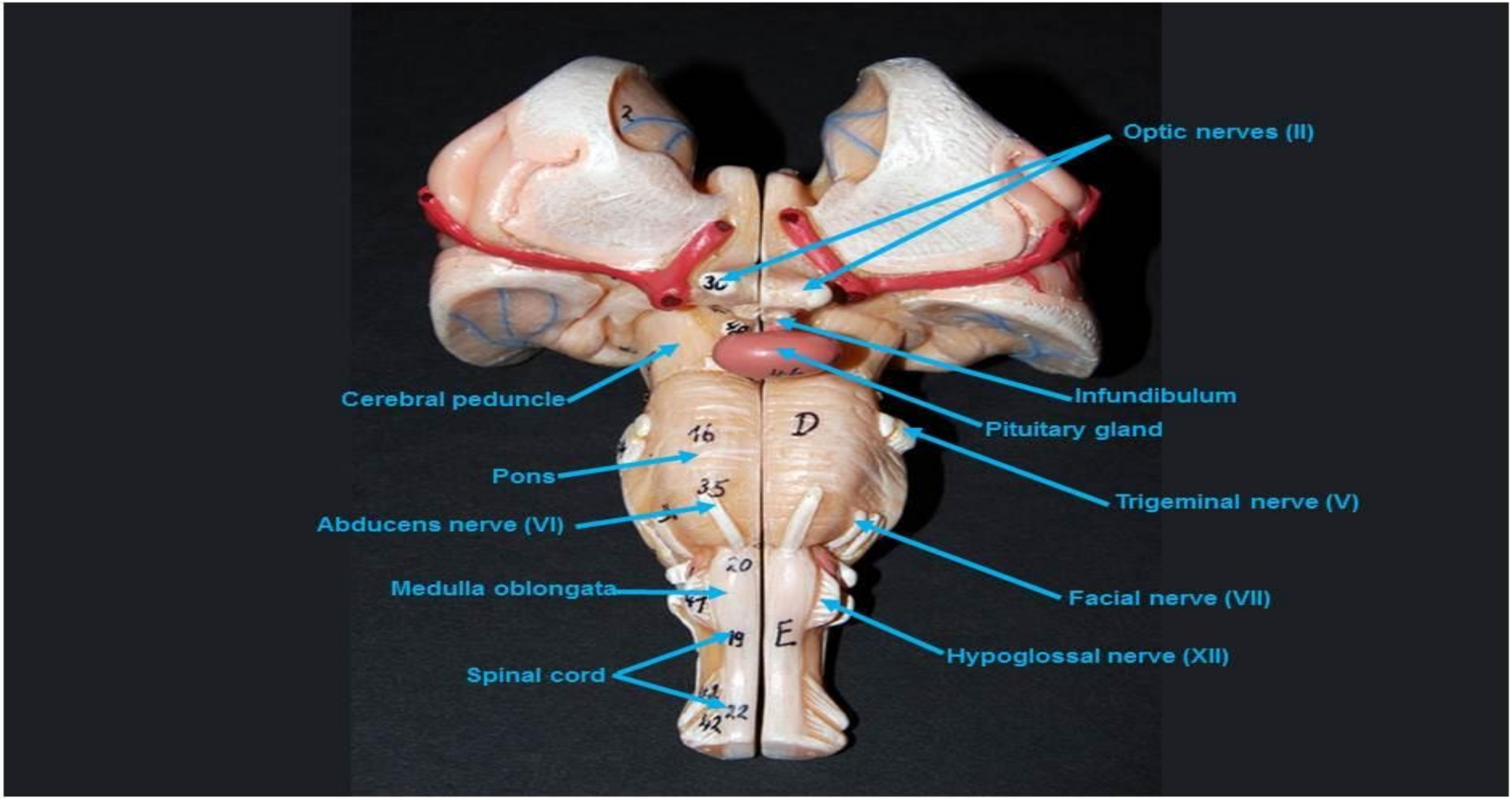
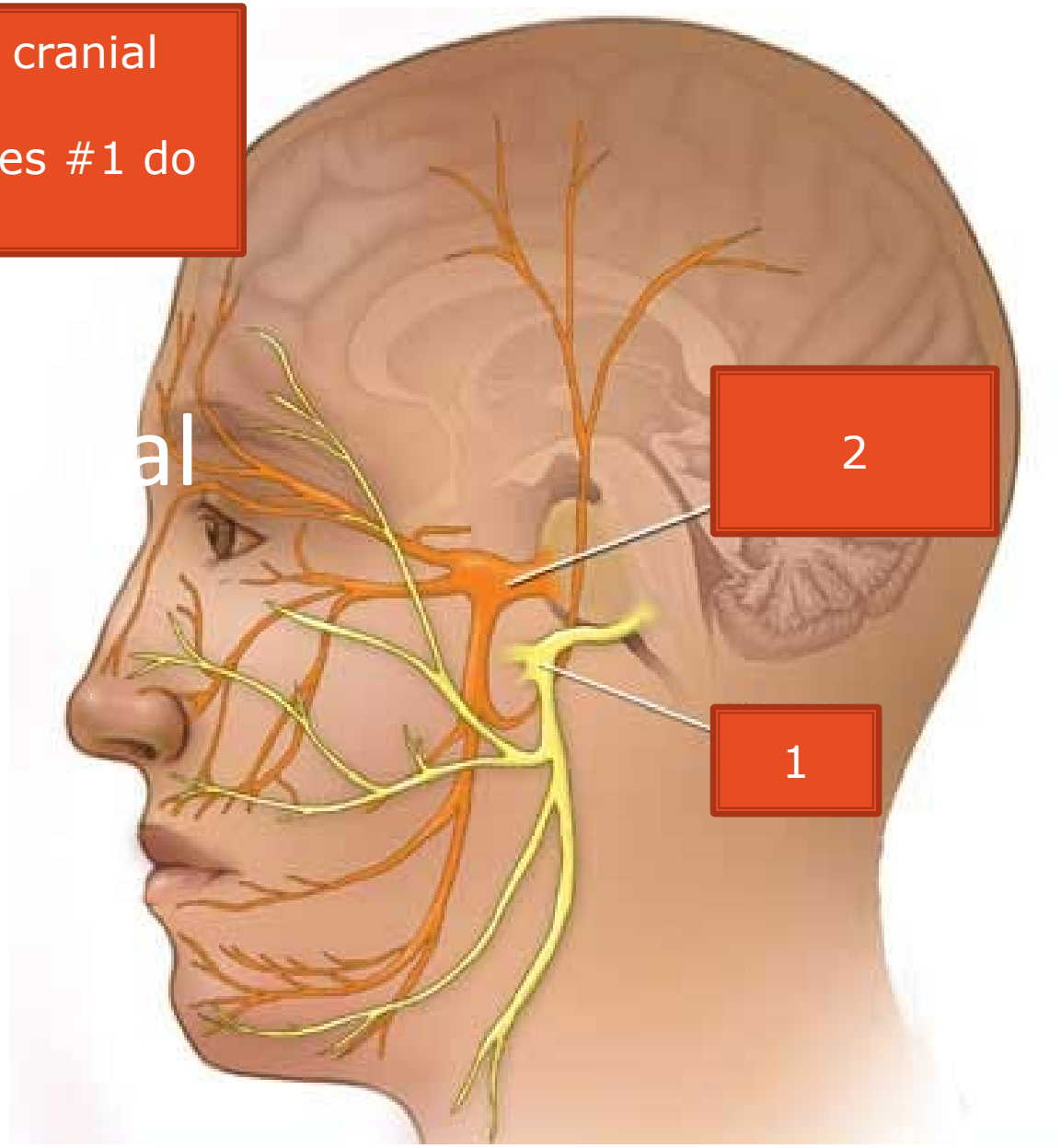
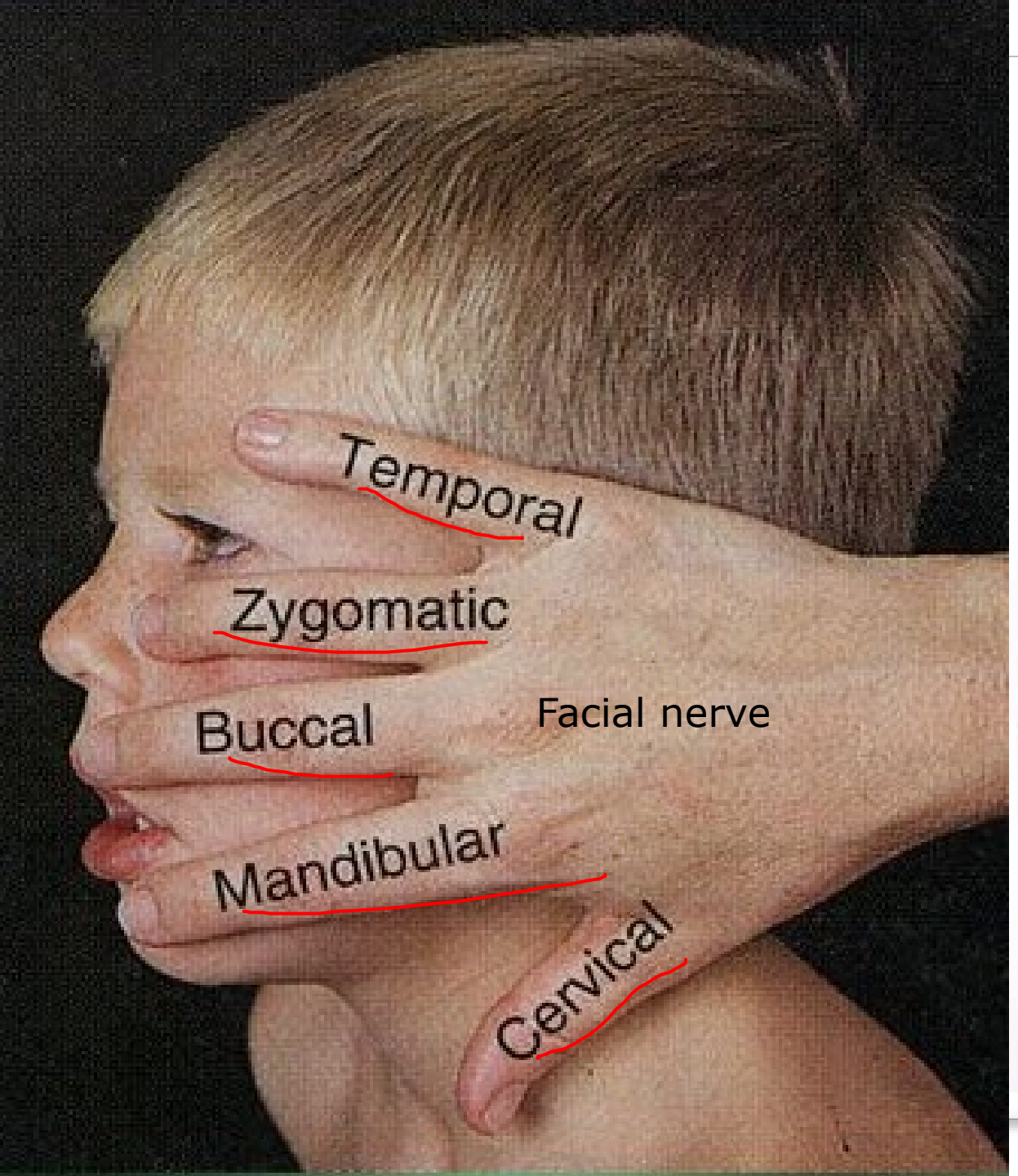
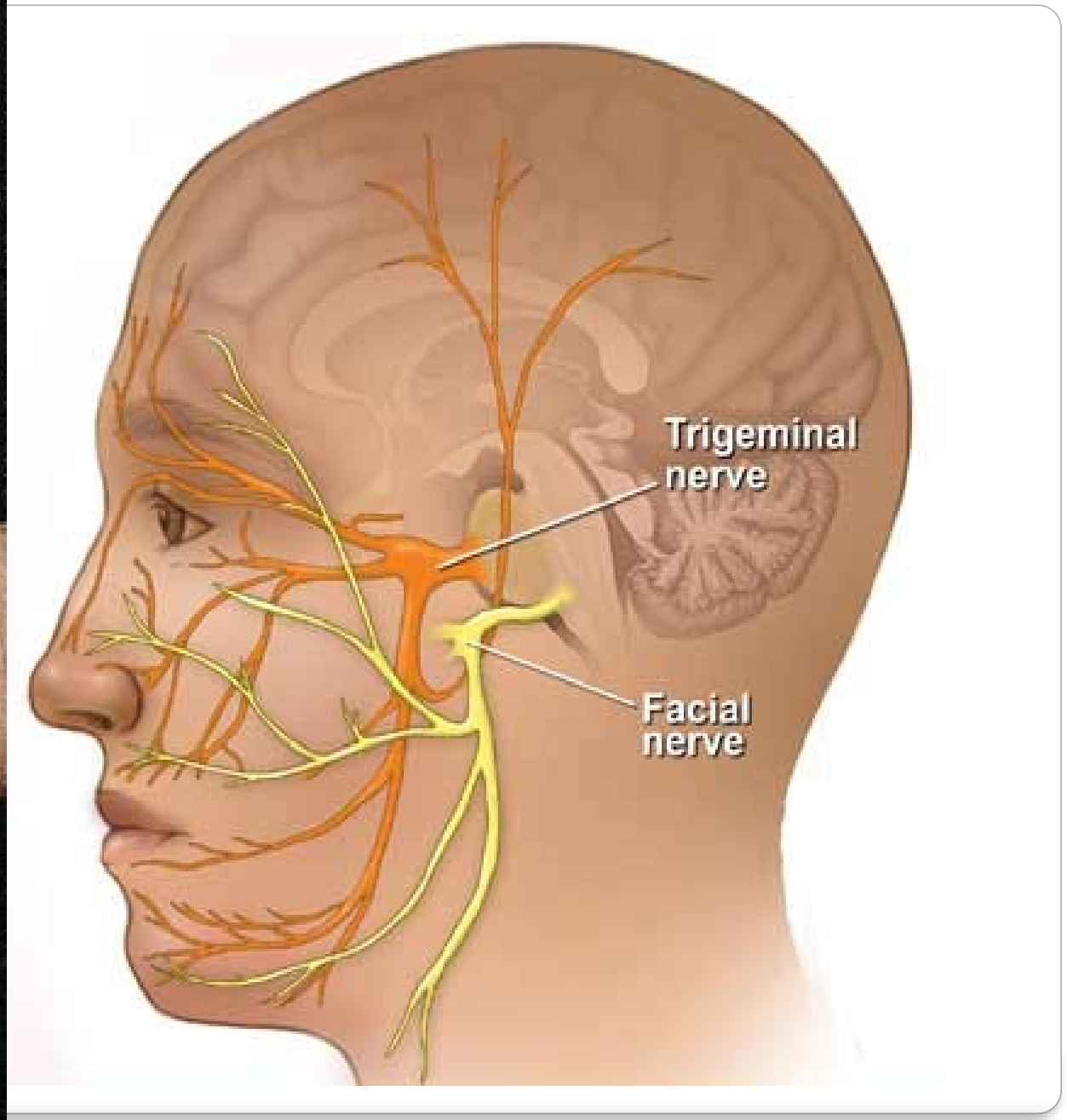

Optic nerves (II)
Cerebral peduncle
Infundibulum
Pituitary gland
Pons
Trigeminal nerve (V)
Abducens nerve (VI)
Facial nerve (VII)
Medulla oblongata
Hypoglossal nerve (XII)
Spinal cord

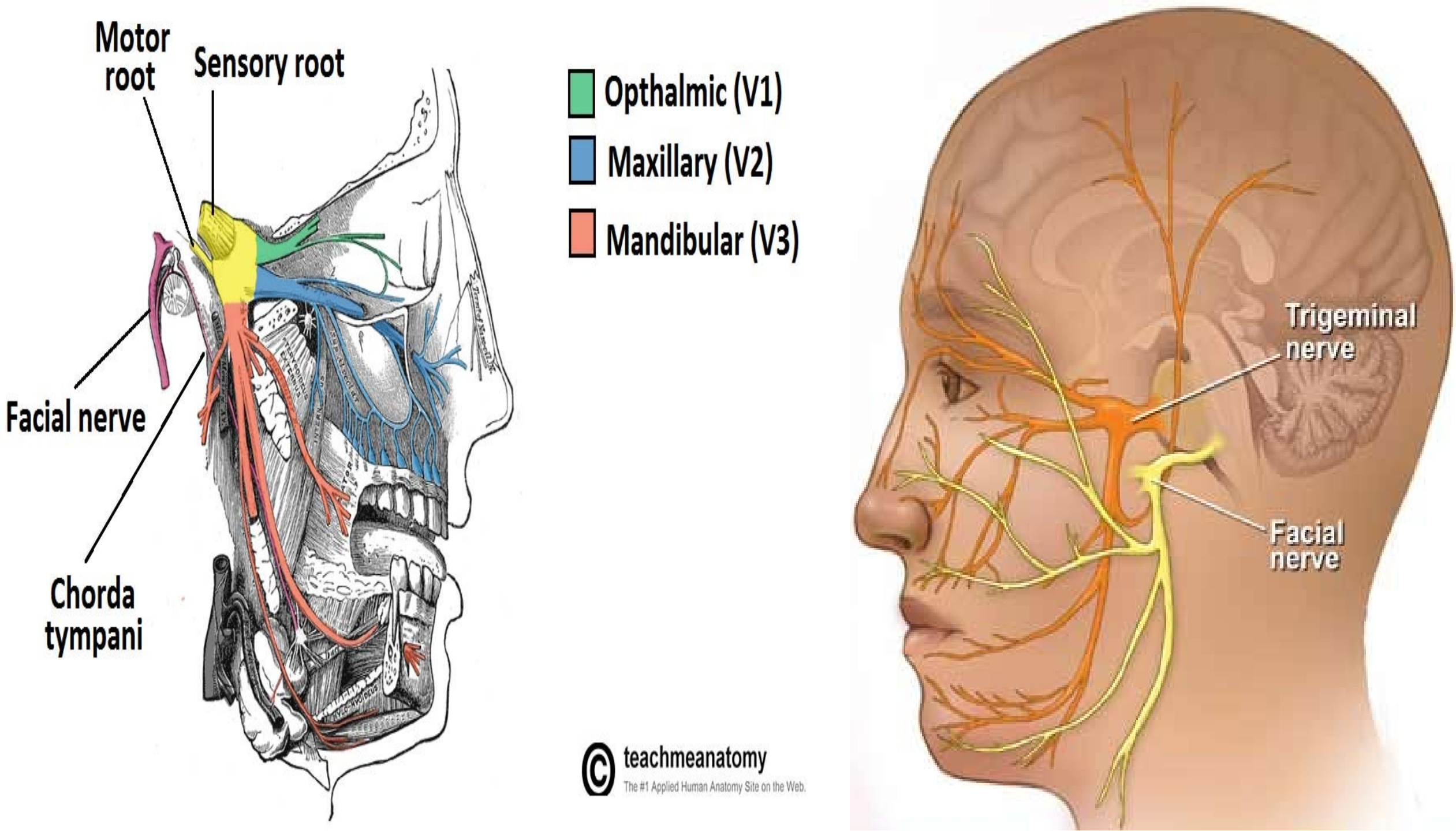
Name these two cranial nerves?
How many branches #1 do have?





Facial nerve




Motor root
Sensory root
Facial nerve
Chorda tympani
Opthalmic (V1)
Maxillary (V2)
Mandibular (V3)
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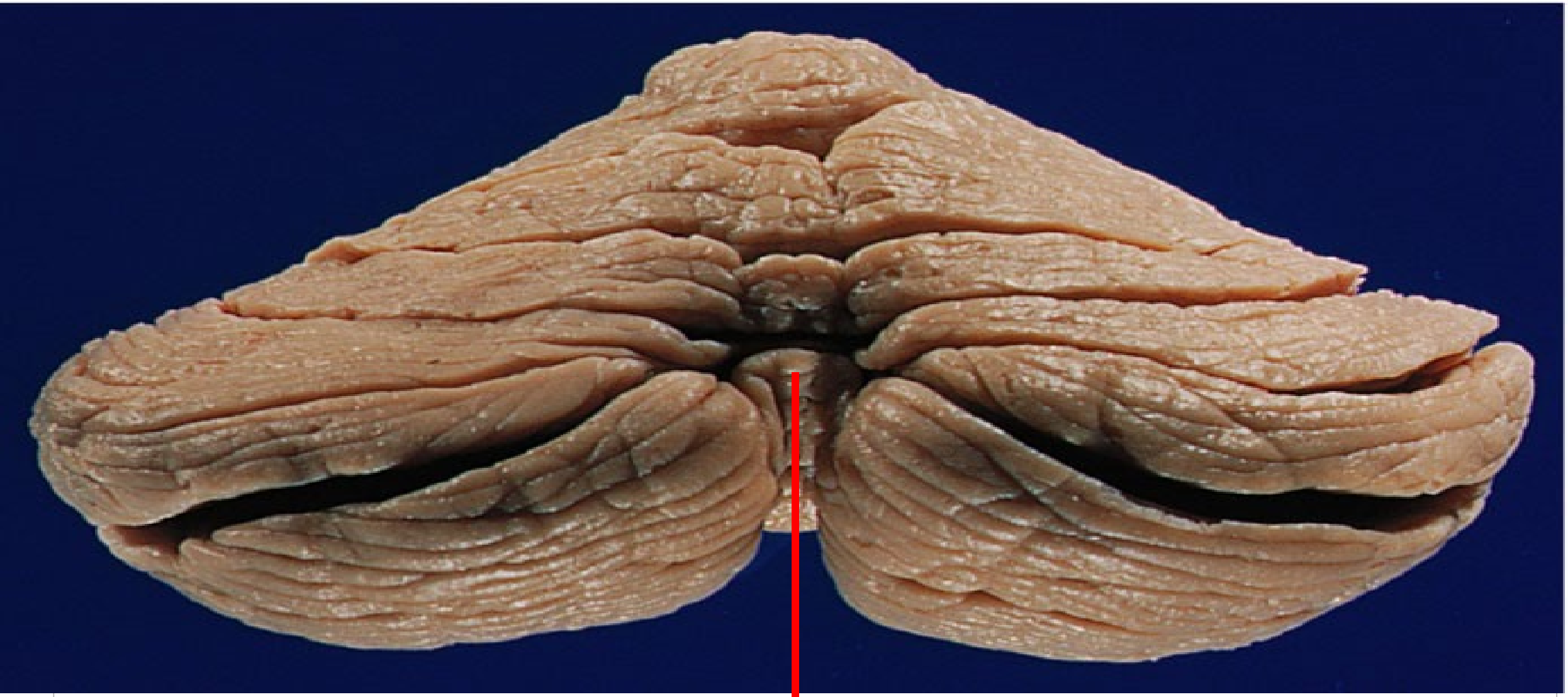
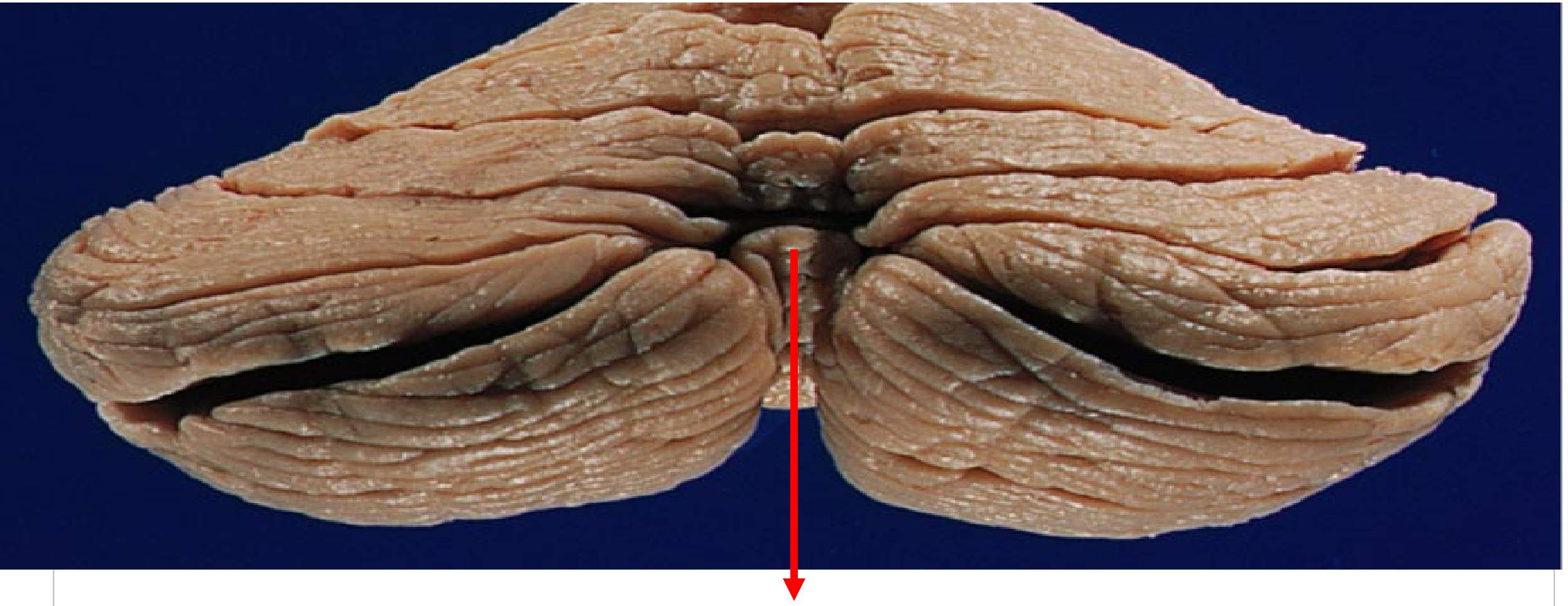
The #1 Applied Human Anatomy Site on the Web.
Trigeminal nerve
Facial nerve



64./ Idendify 1

The vermis is the unpaired, median portion of the cerebellum that connects the two hemispheres. Both the vermis and the hemispheres are composed of lobules formed by groups of folia. There are nine lobules of the vermis: lingula, central lobule, culmen, clivus, folium of the vermis, tuber, pyramid, uvula and nodule



64./ Idendify 1:VERMIS

67/Which lobe of the cerebrum sites in the region of the skull shown?

A. Frontal
B. Parietal
C. Temporal
D. Occipital

67/Which lobe of the cerebrum sites in the region of the skull shown?

A. Frontal

B. Parietal

C. Temporal

D. Occipital

20/IDENTIFY 1

21/WHAT CELLS DO YOU FIND IN THE STRUCTURE 1

22/ WHAT FUNCTION DO THESE CELLS HAVE?

20/IDENTIFY 1

Central canal of the spinal cord

21/WHAT CELLS DO YOU FIND IN THE STRUCTURE 1

Ependymal cells

22/ WHAT FUNCTION DO THESE CELLS HAVE?

Csf movement in central canal. Producing csf in the choroid plexus

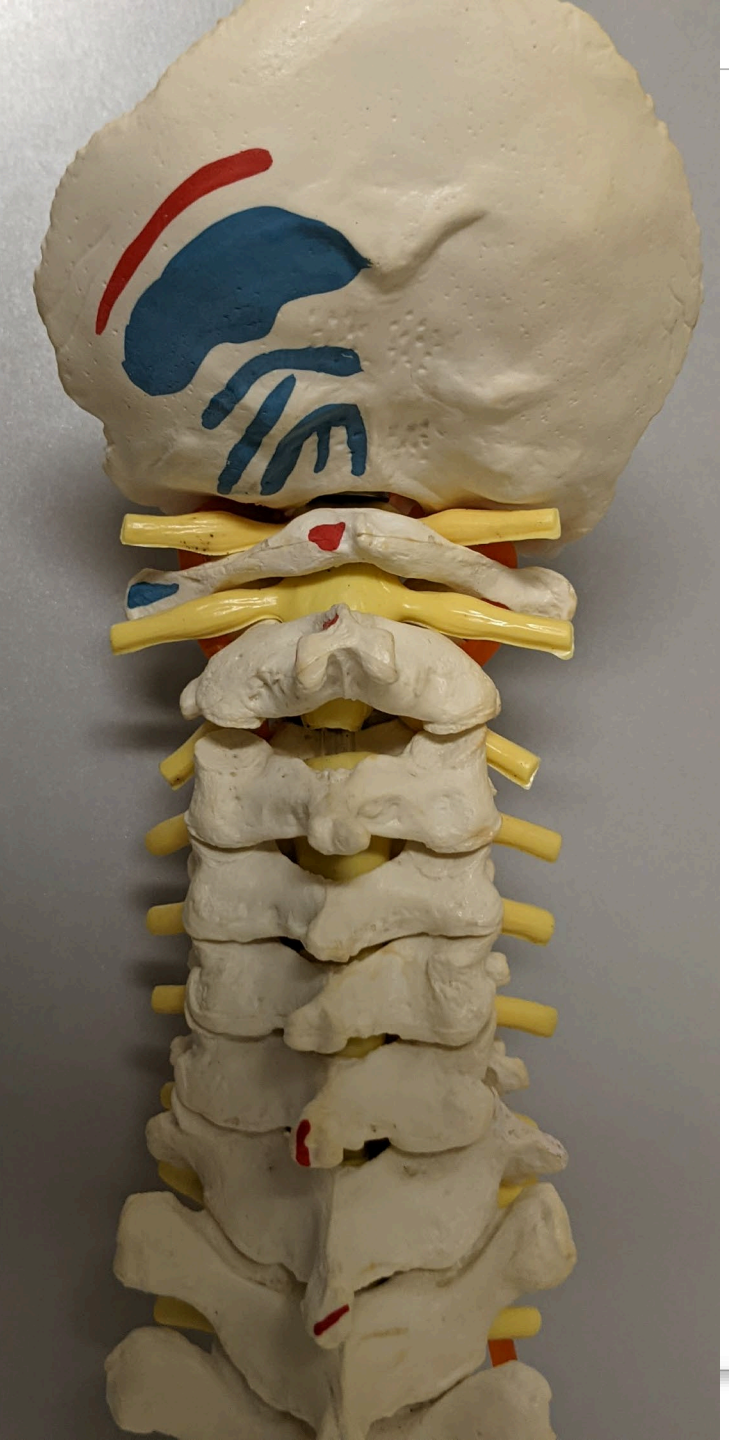
What do you call the opening for the nerve going through the vertebra?

What do you call the opening for the nerve going through the vertebra?

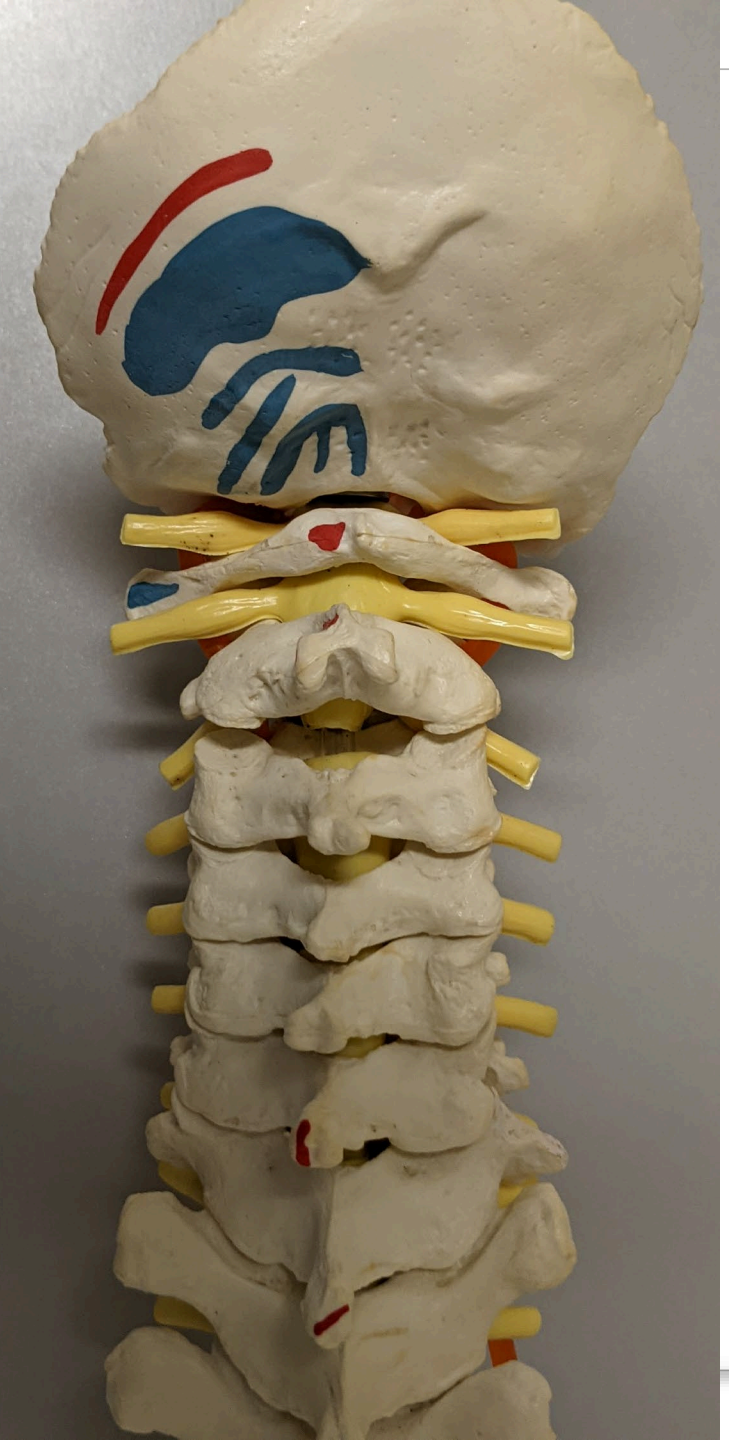
The intervertebral foramen is the opening between every two vertebrae where the nerve roots exit the spine.

The nerve roots travel through the foramen to reach the rest of the body.

There are two neural foramina between each pair of vertebrae—one on each side.



How many nerves in this region, how many vertebra?

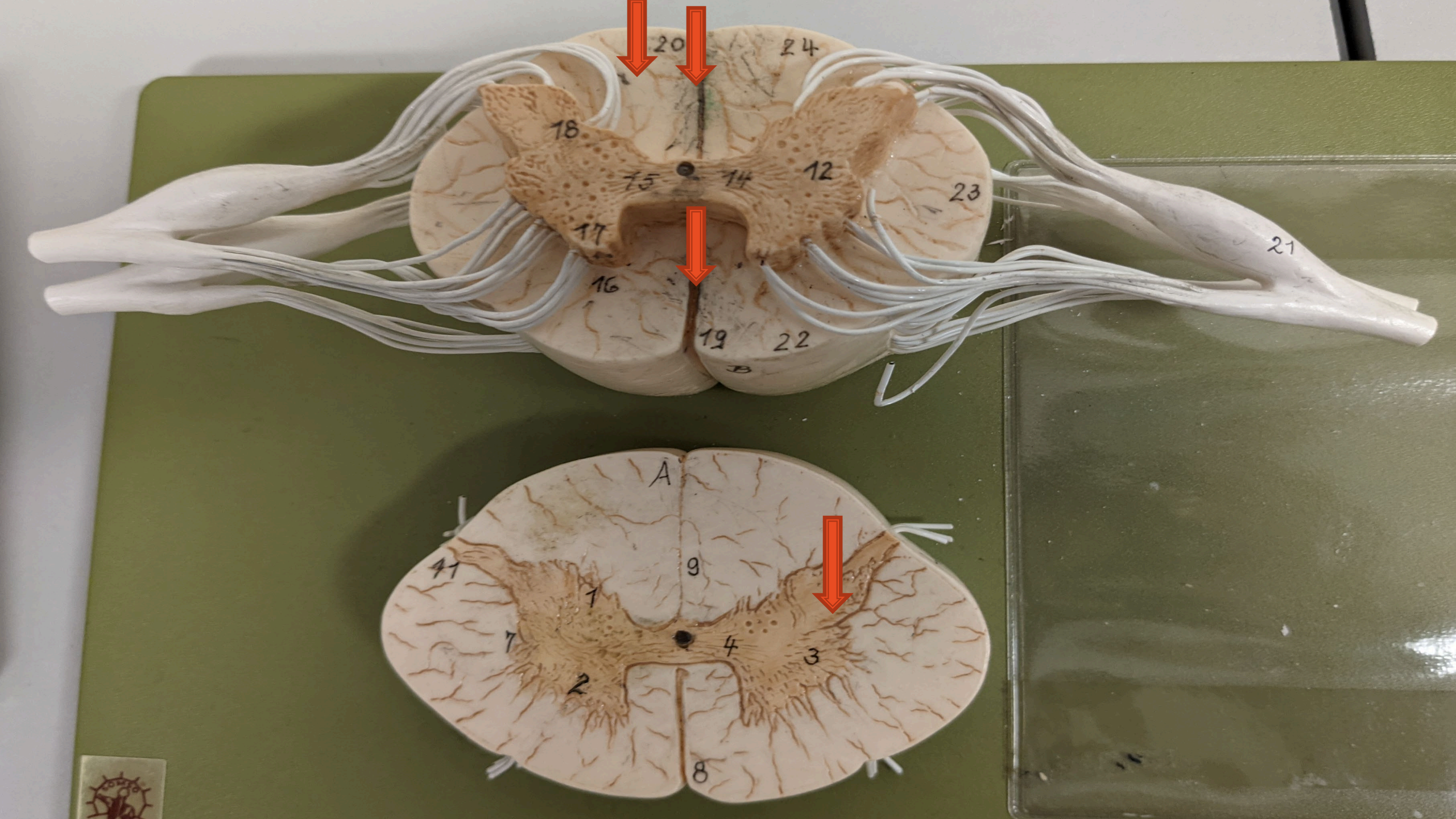


7 vertebra for 8 pair of nerves

Name and numbers?

5 sacral pairs (S1–S5),

The sacral plexus is derived from the anterior rami of spinal nerves **L4, L5, S1, S2, S3, and S4**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A
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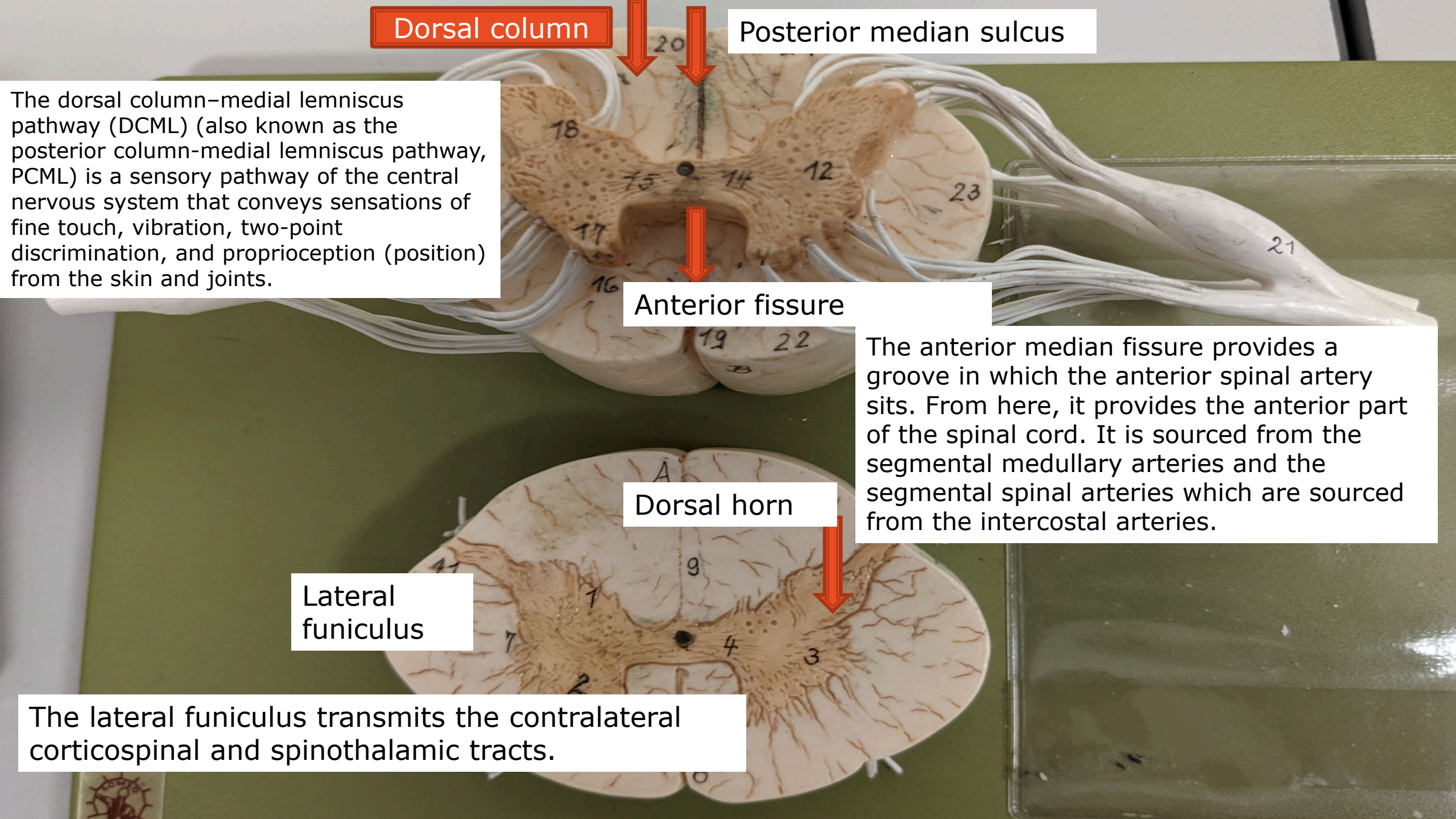
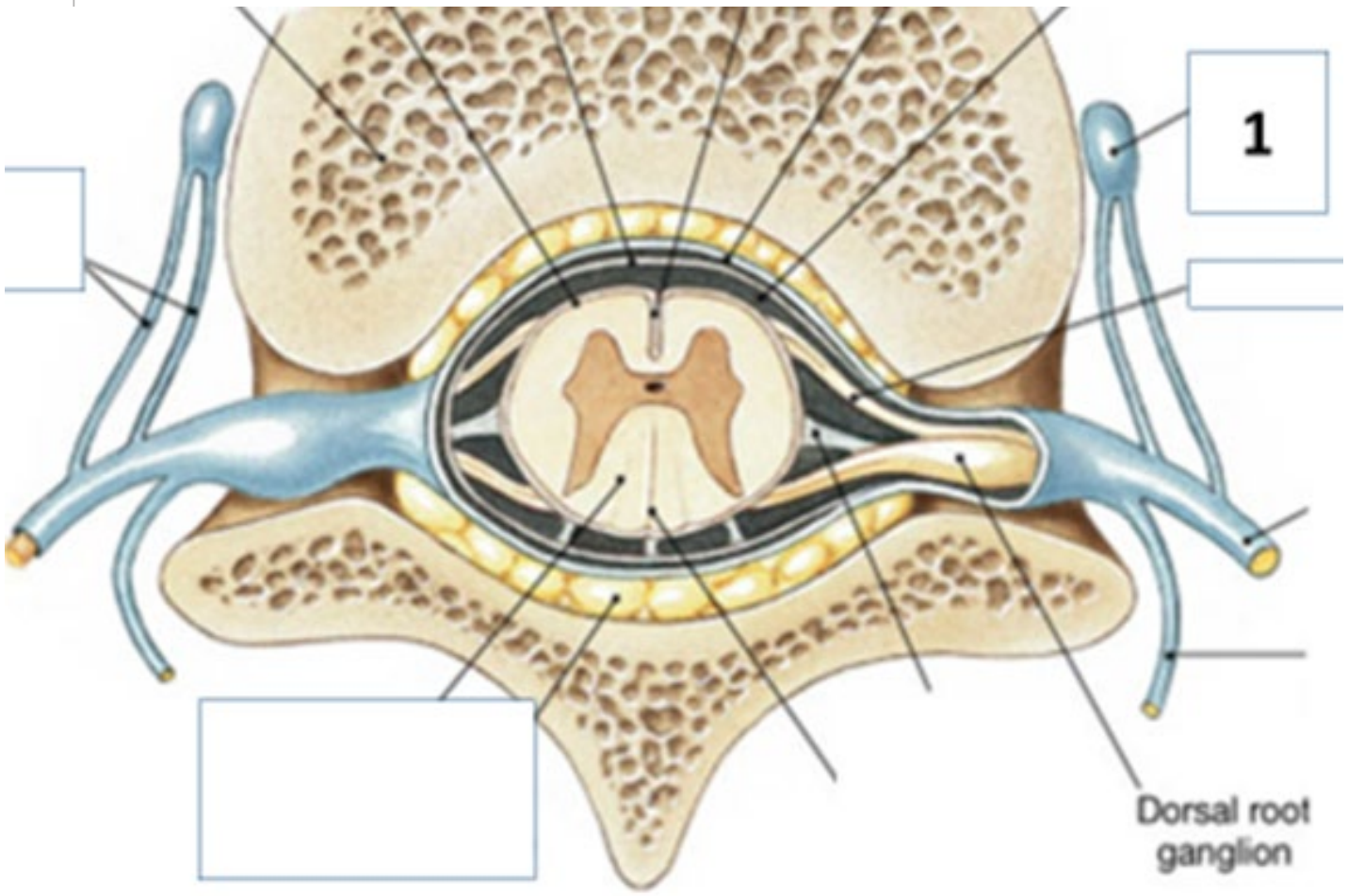
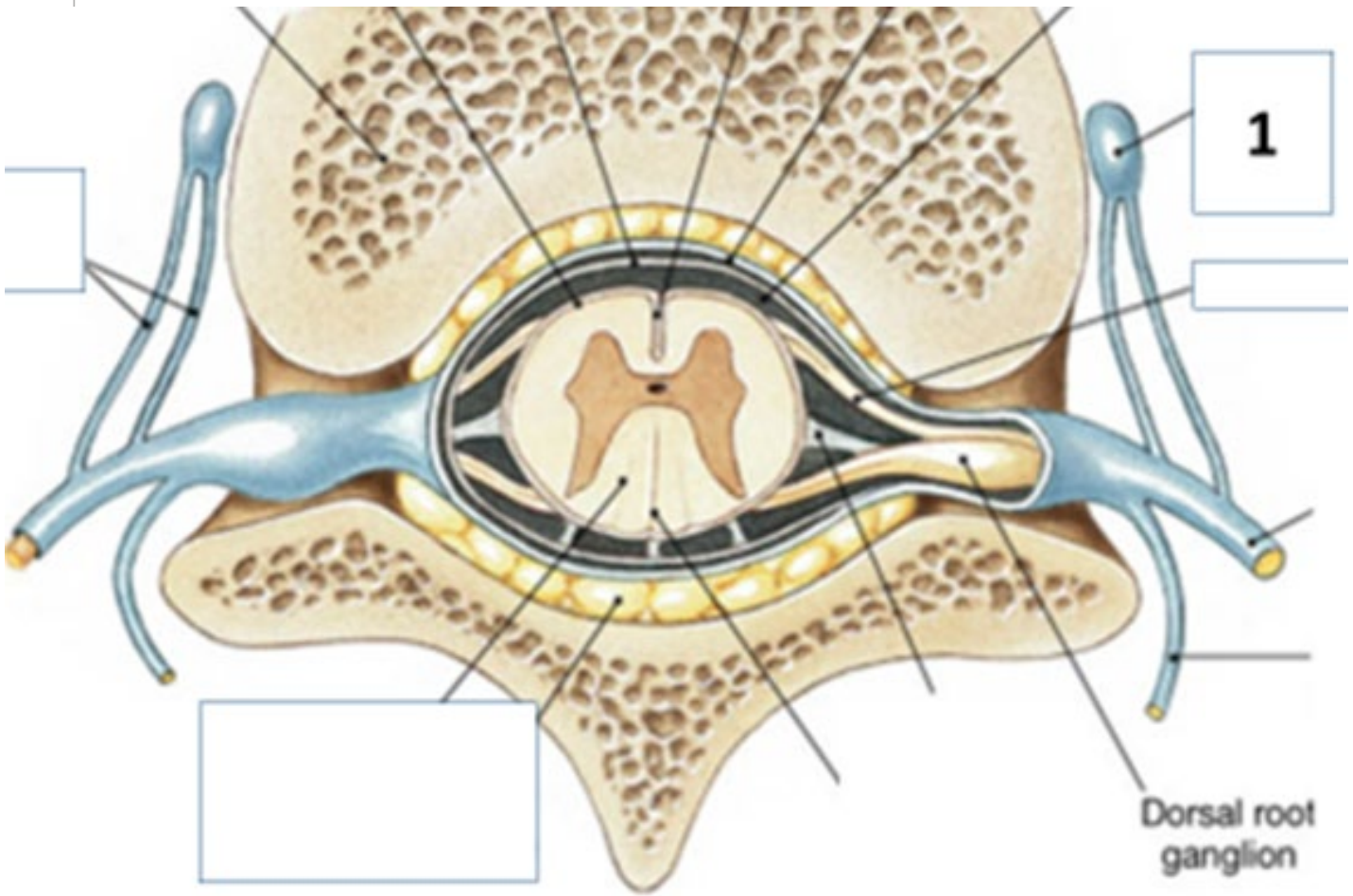

Dorsal column
Posterior median sulcus
The dorsal column–medial lemniscus pathway (DCML) (also known as the posterior column-medial lemniscus pathway, PCML) is a sensory pathway of the central nervous system that conveys sensations of fine touch, vibration, two-point discrimination, and proprioception (position) from the skin and joints.
Anterior fissure
The anterior median fissure provides a groove in which the anterior spinal artery sits. From here, it provides the anterior part of the spinal cord. It is sourced from the segmental medullary arteries and the segmental spinal arteries which are sourced from the intercostal arteries.
Dorsal horn
Lateral funiculus
The lateral funiculus transmits the contralateral corticospinal and spinothalamic tracts.



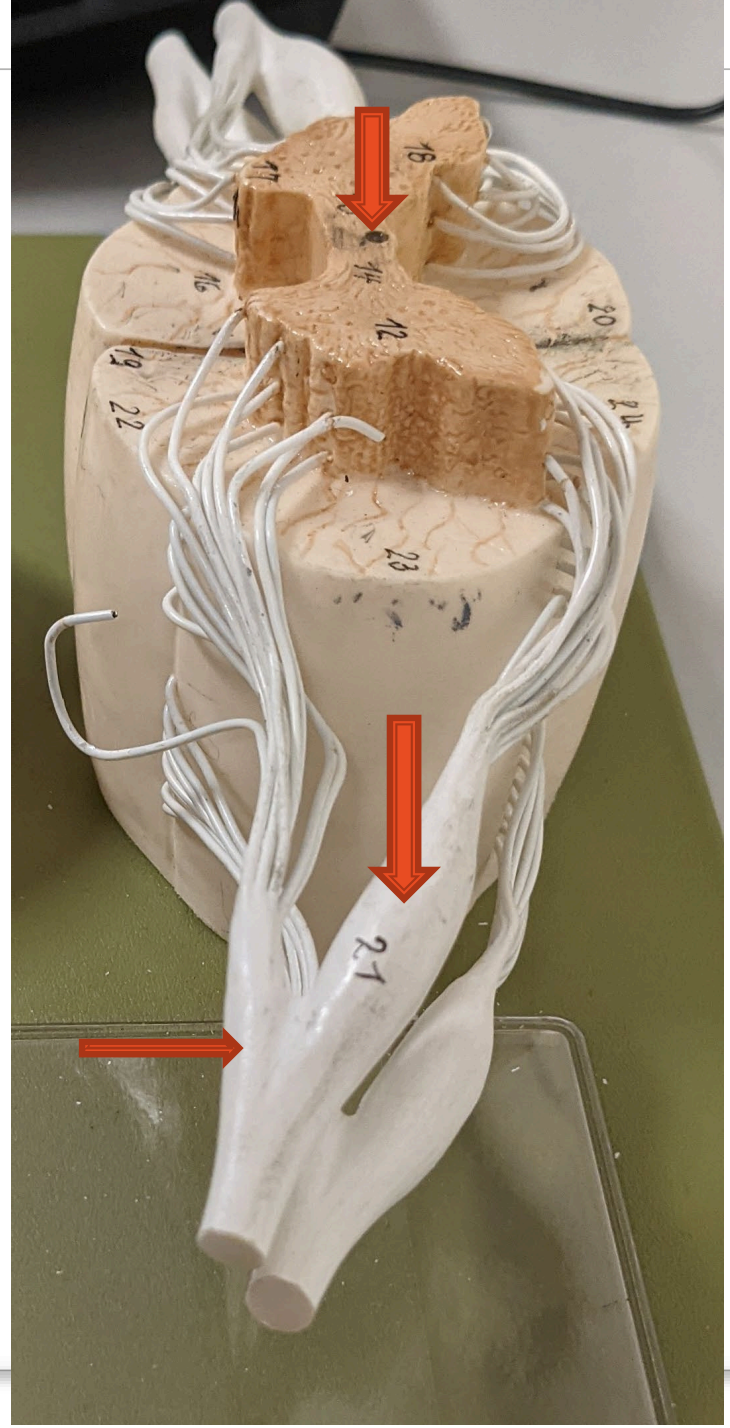
WHAT STRUCTURE 1 REPRESENTS?

A. DORSAL ROOT GANGLIA
B. AUTONOMIC SYMPATHETIC GANGLIA
C. VENTRAL ROOT GANGLIA
D. LYMPHATIC GANGLIA
E. COMUNICATION RAMI



WHAT STRUCTURE 1 REPRESENTS?

A. DORSAL ROOT GANGLIA
B. AUTONOMIC SYMPATHETIC GANGLIA
C. VENTRAL ROOT GANGLIA
D. LYMPHATIC GANGLIA
E. COMUNICATION RAMI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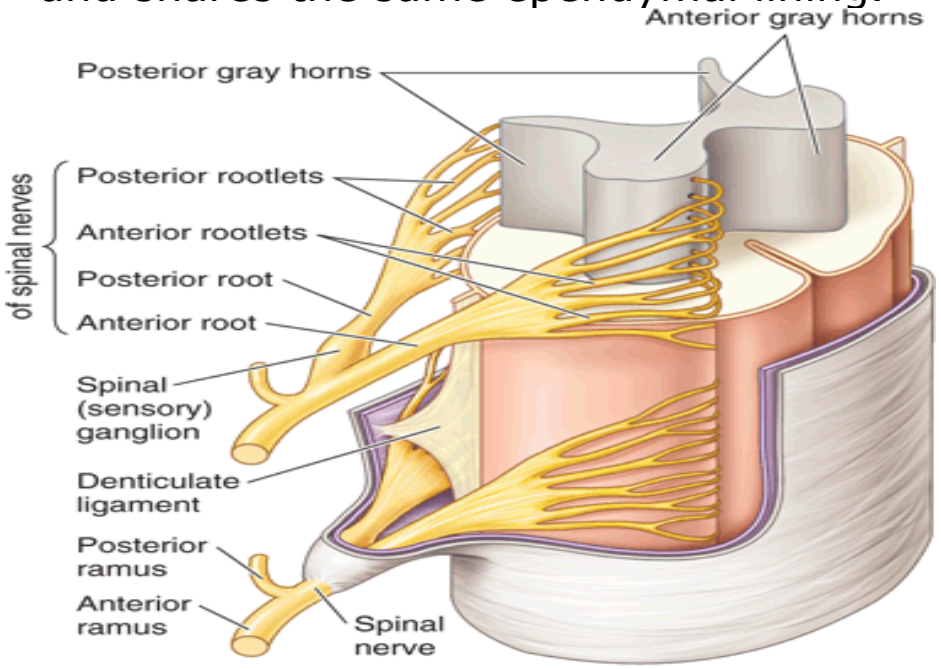
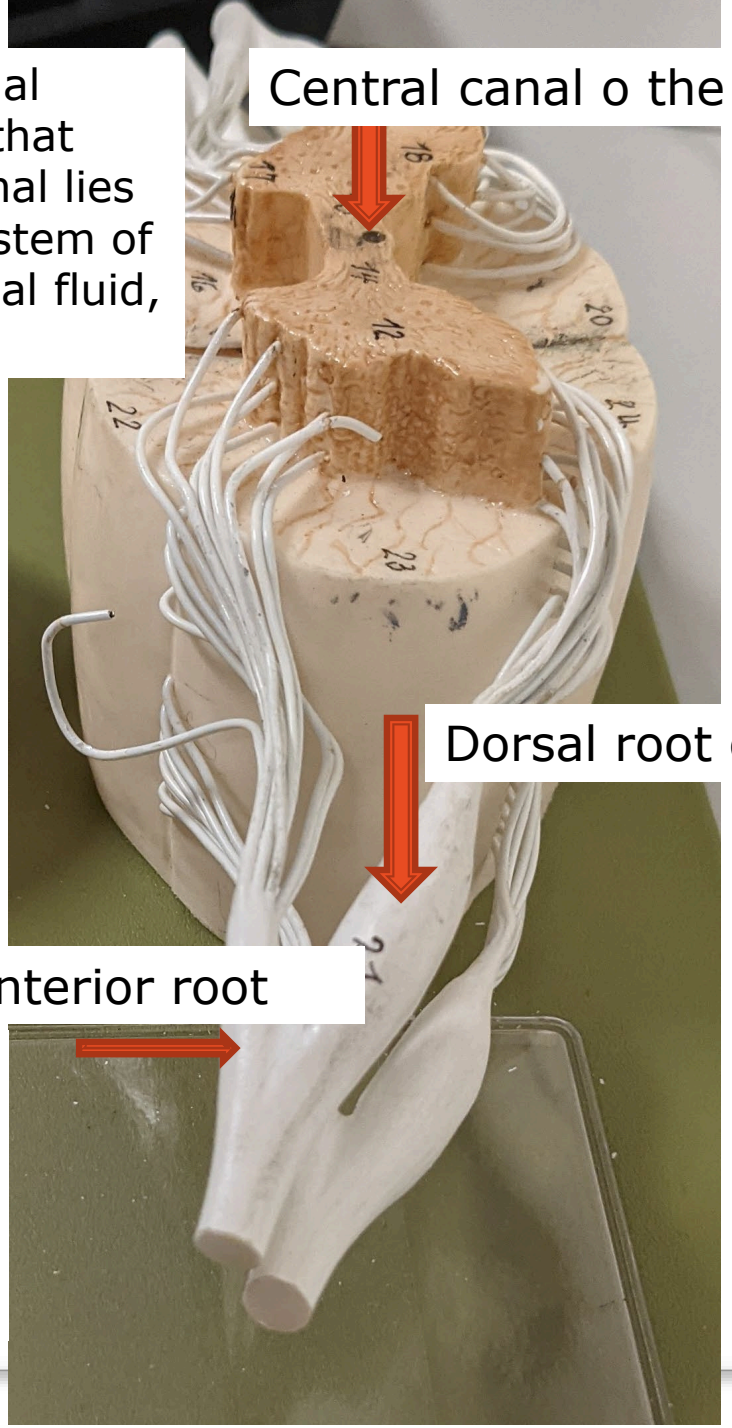
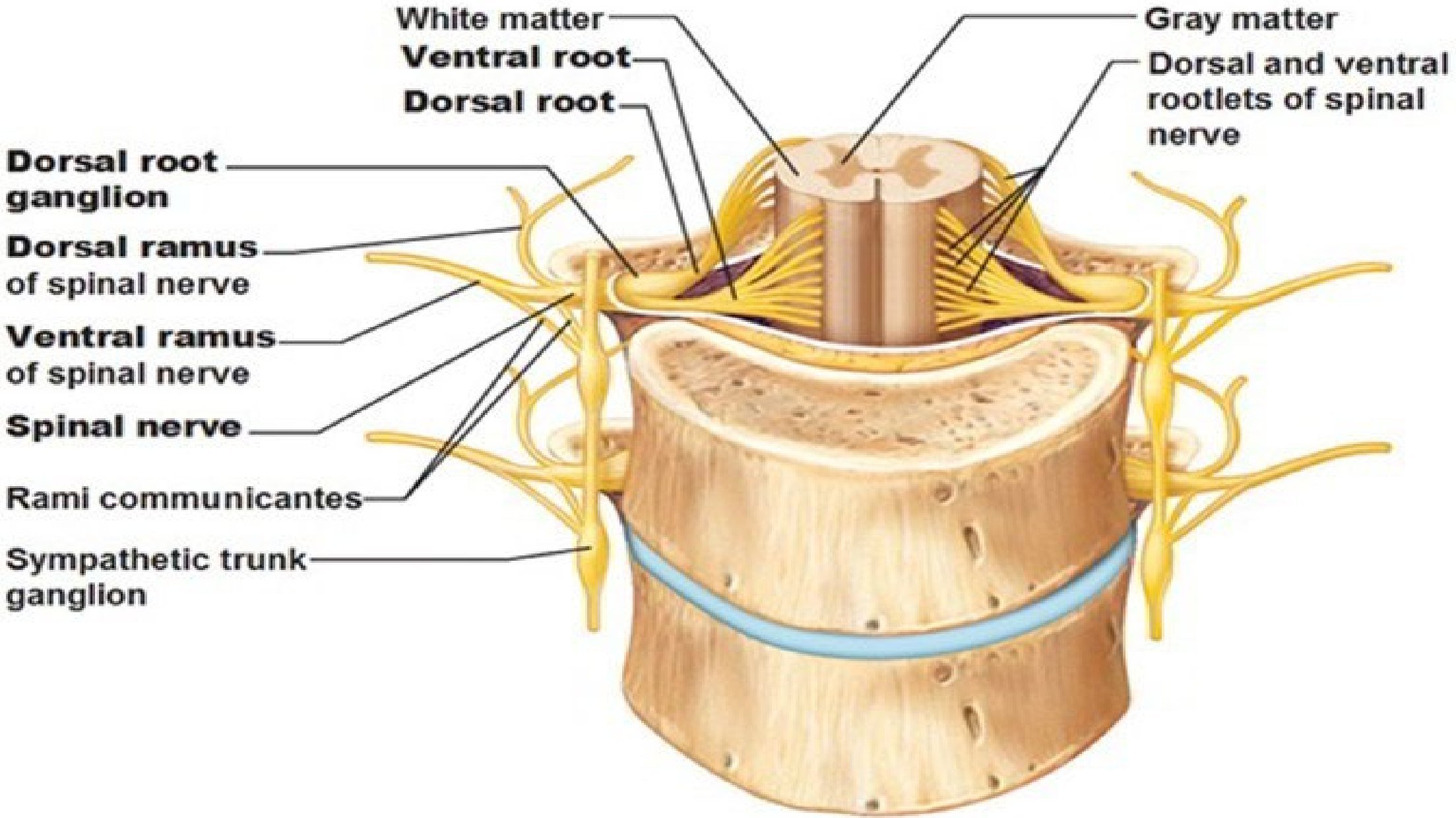
The central canal (also known as ependymal canal) is the cerebrospinal fluid-filled space that runs through the spinal cord. The central canal lies below and is connected to the ventricular system of the brain, from which it receives cerebrospinal fluid, and shares the same ependymal lining.

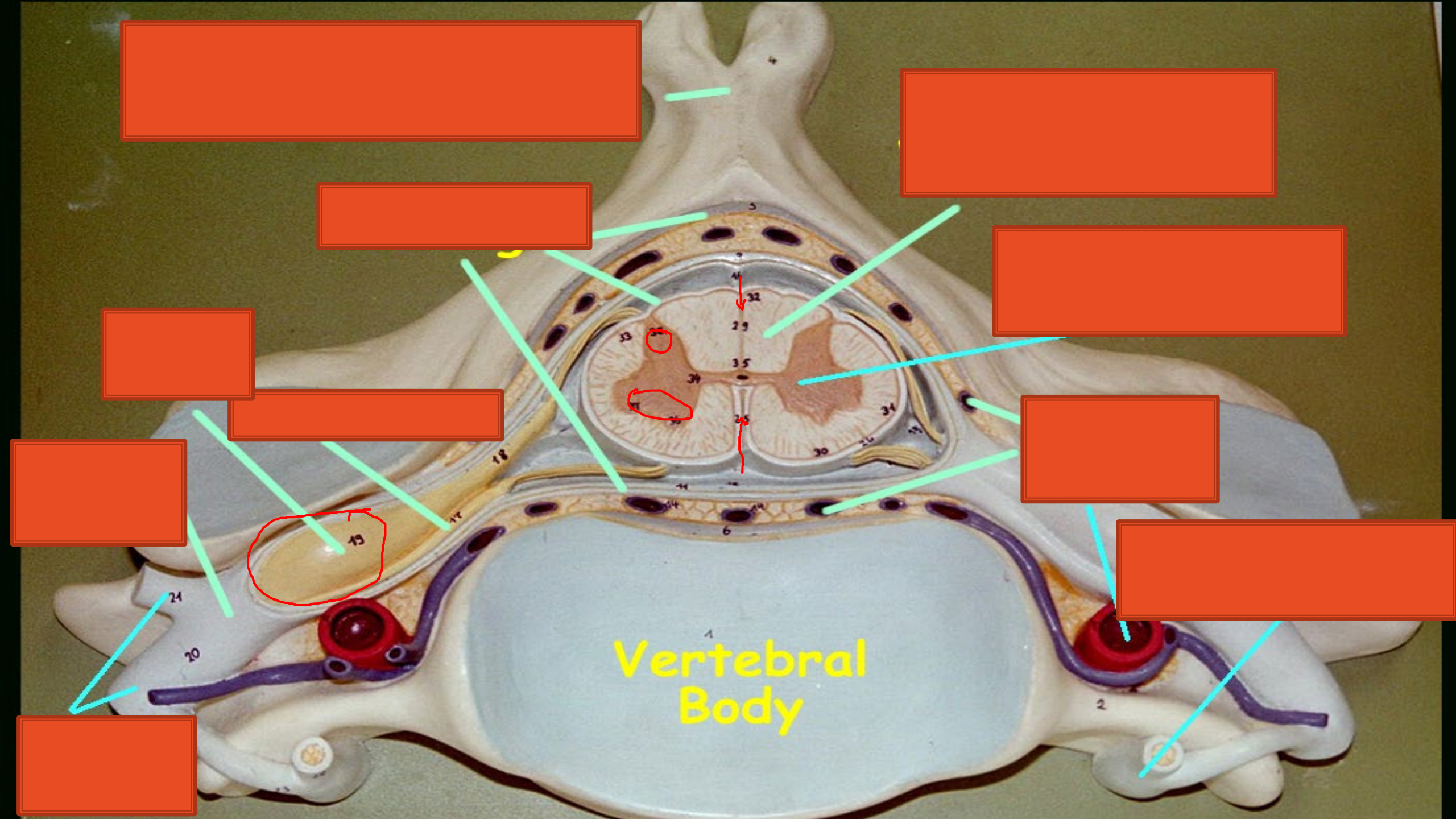


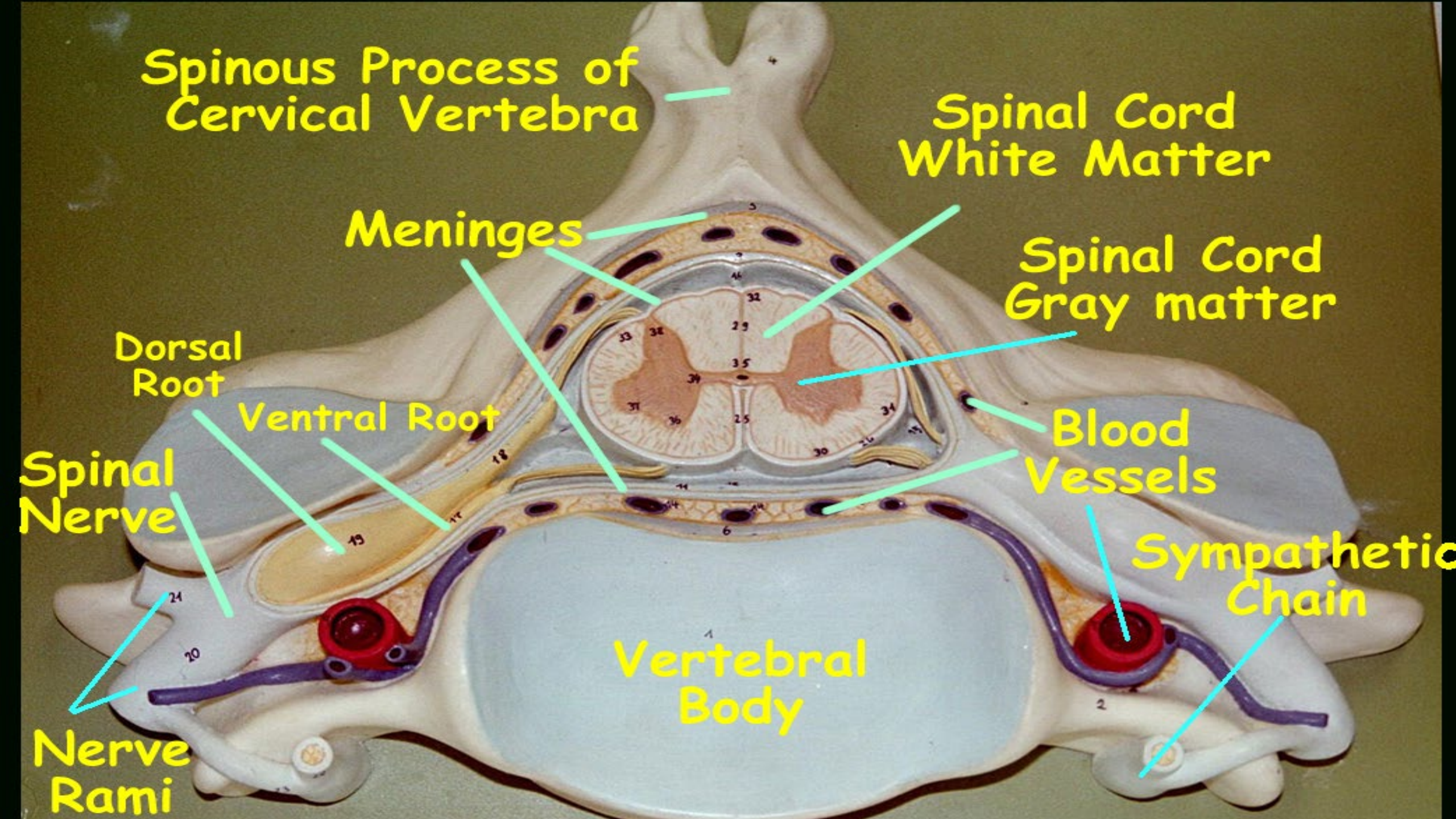
the ventral root, motor root or anterior root is **the efferent motor root of a spinal nerve**. At its distal end, the ventral root joins with the dorsal root to form a mixed spinal nerve.

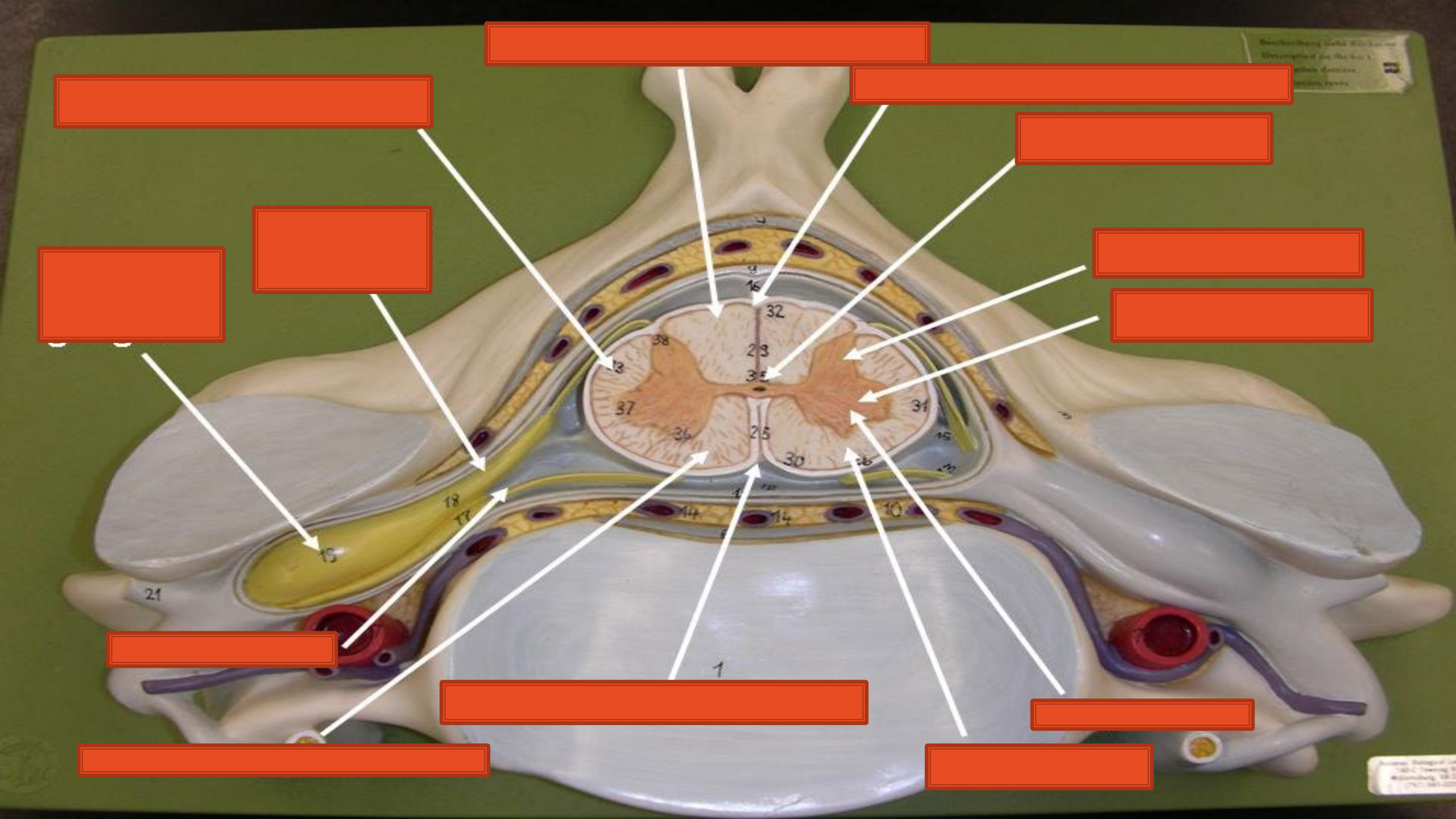


Dorsal root ganglion (or spinal ganglion; also known as a posterior root ganglion) is **a cluster of neurons (a ganglion) in a dorsal root of a spinal nerve**. The cell bodies of sensory neurons known as first-order neurons are located in the dorsal root ganglia.


White matter
Ventral root
Dorsal root
Gray matter
Dorsal and ventral rootlets of spinal nerve
Dorsal root ganglion
Dorsal ramus of spinal nerve
Ventral ramus of spinal nerve
Spinal nerve
Rami communicantes
Sympathetic trunk ganglion


Vertebral Body


Spinous Process of Cervical Vertebra
Spinal Cord White Matter
Meninges
Spinal Cord Gray matter
Dorsal Root
Ventral Root
Spinal Nerve
Blood Vessels
Sympathetic Chain
Vertebral Body
Nerve Rami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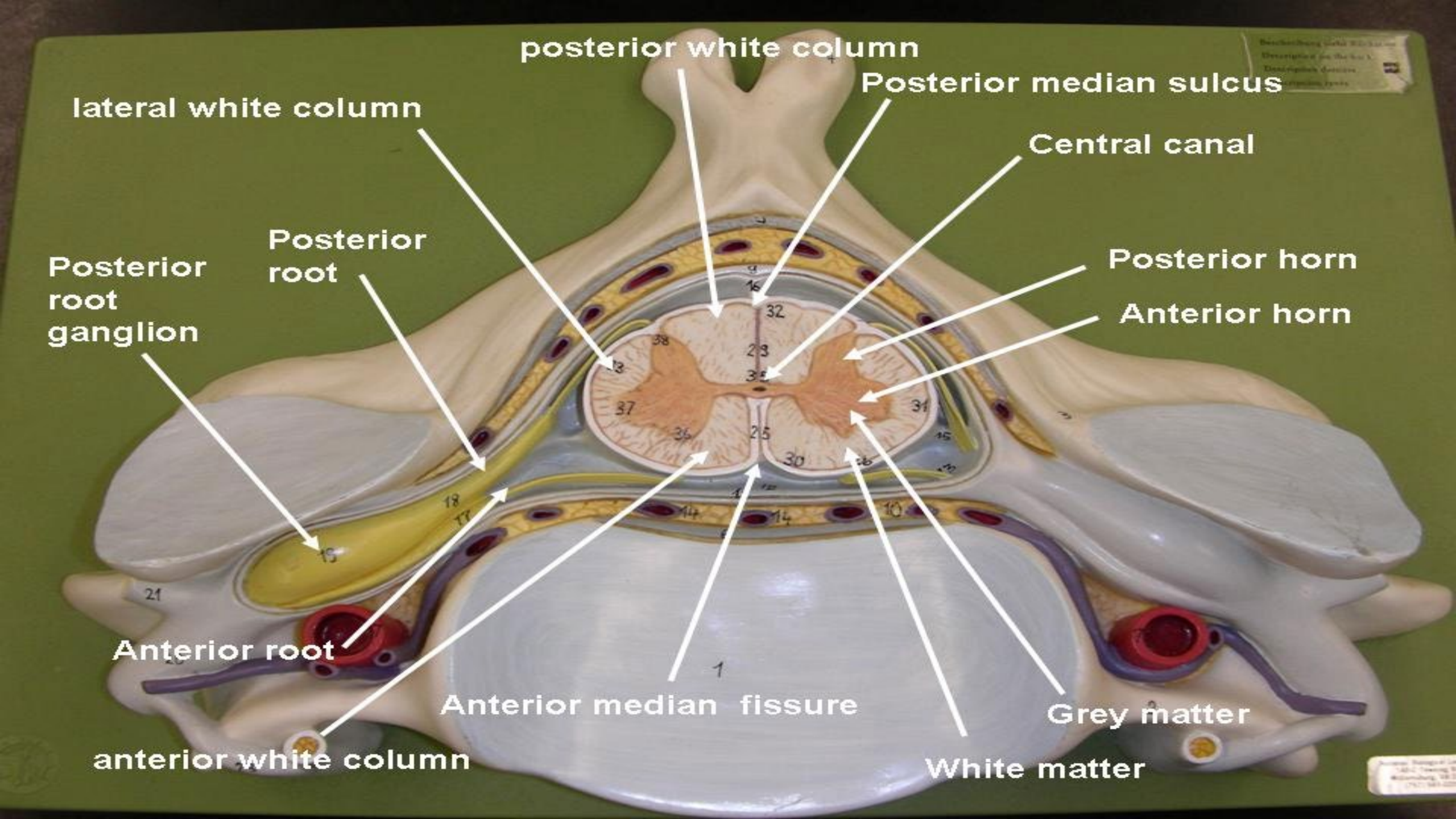
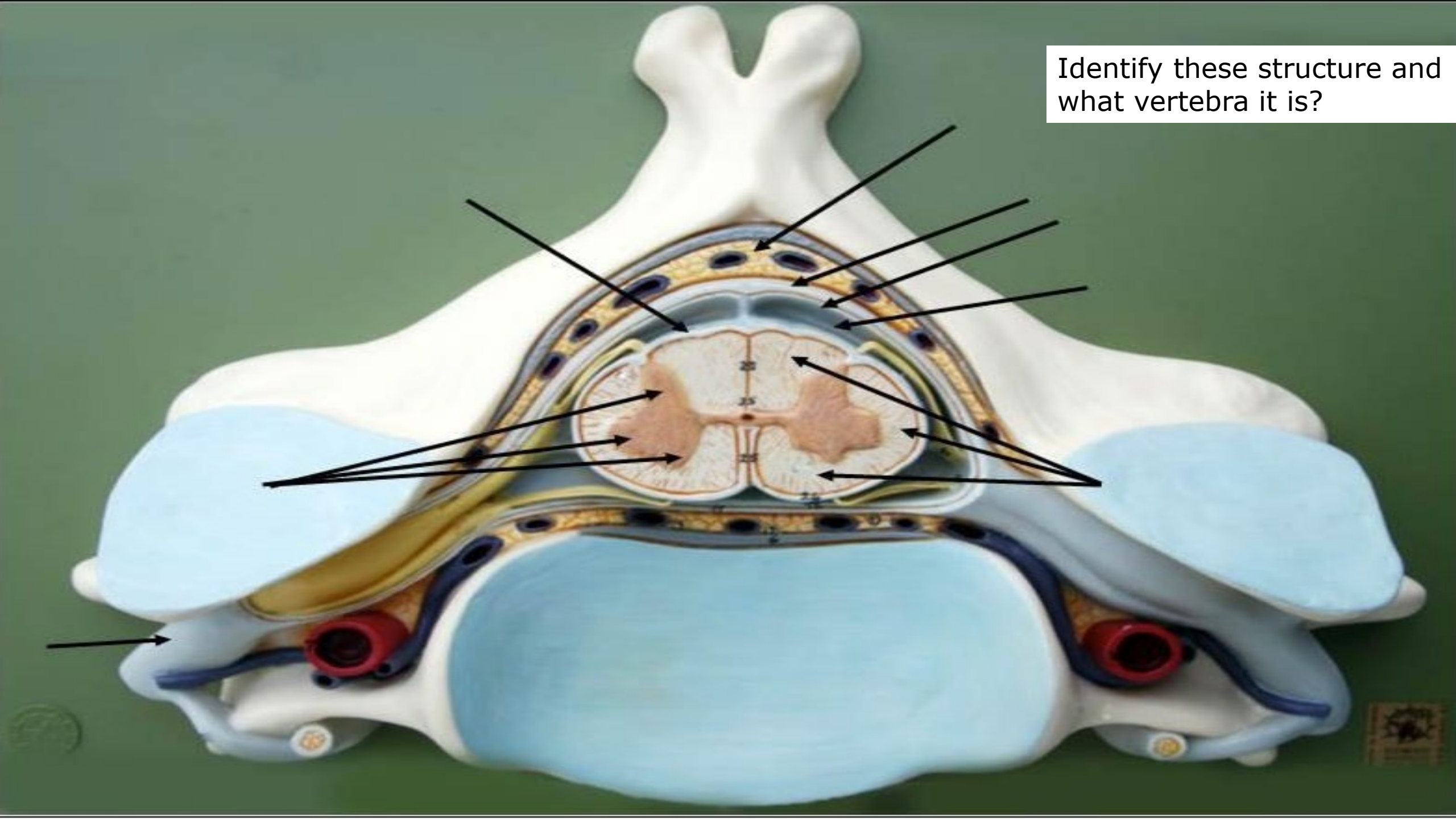
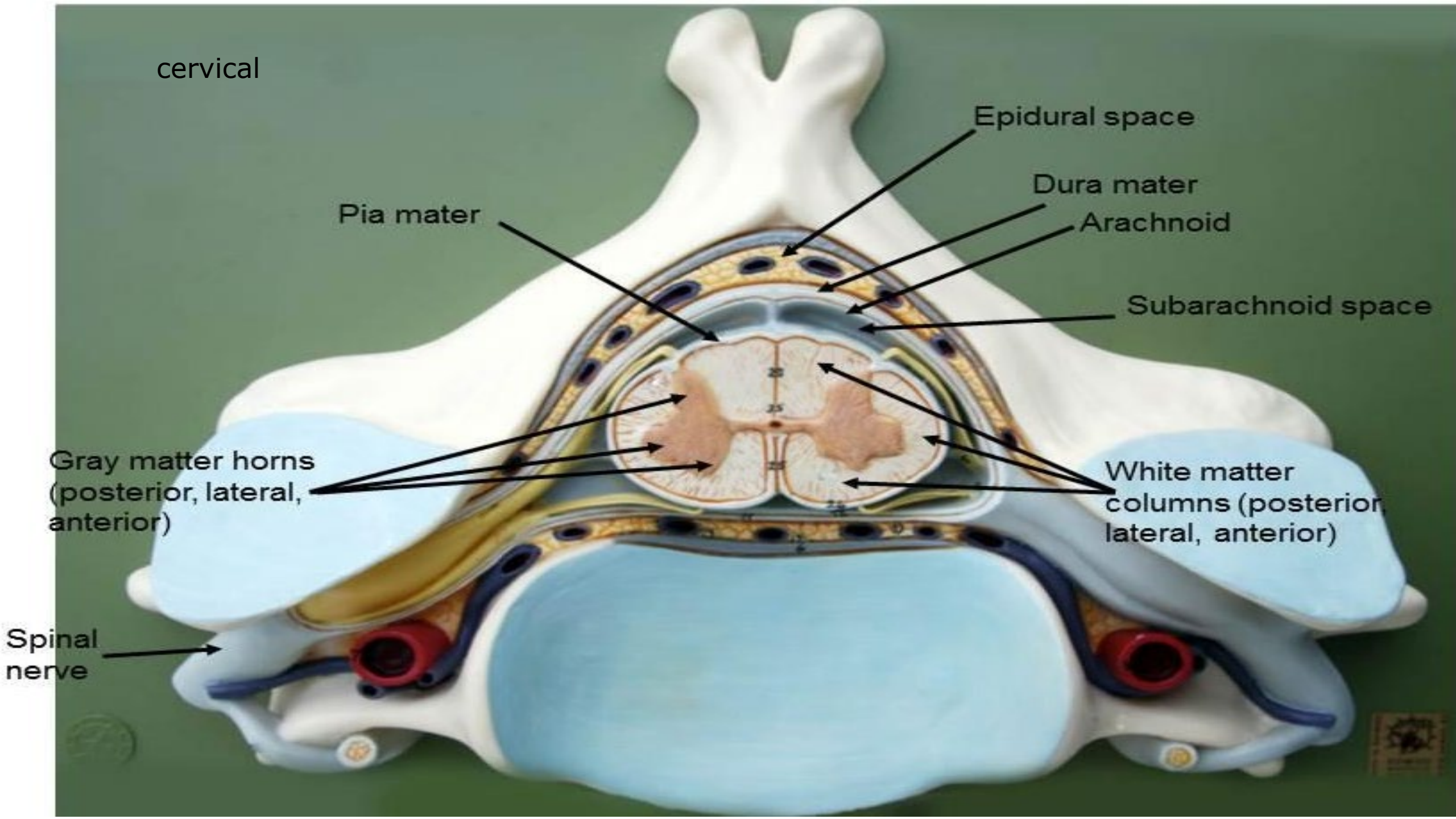
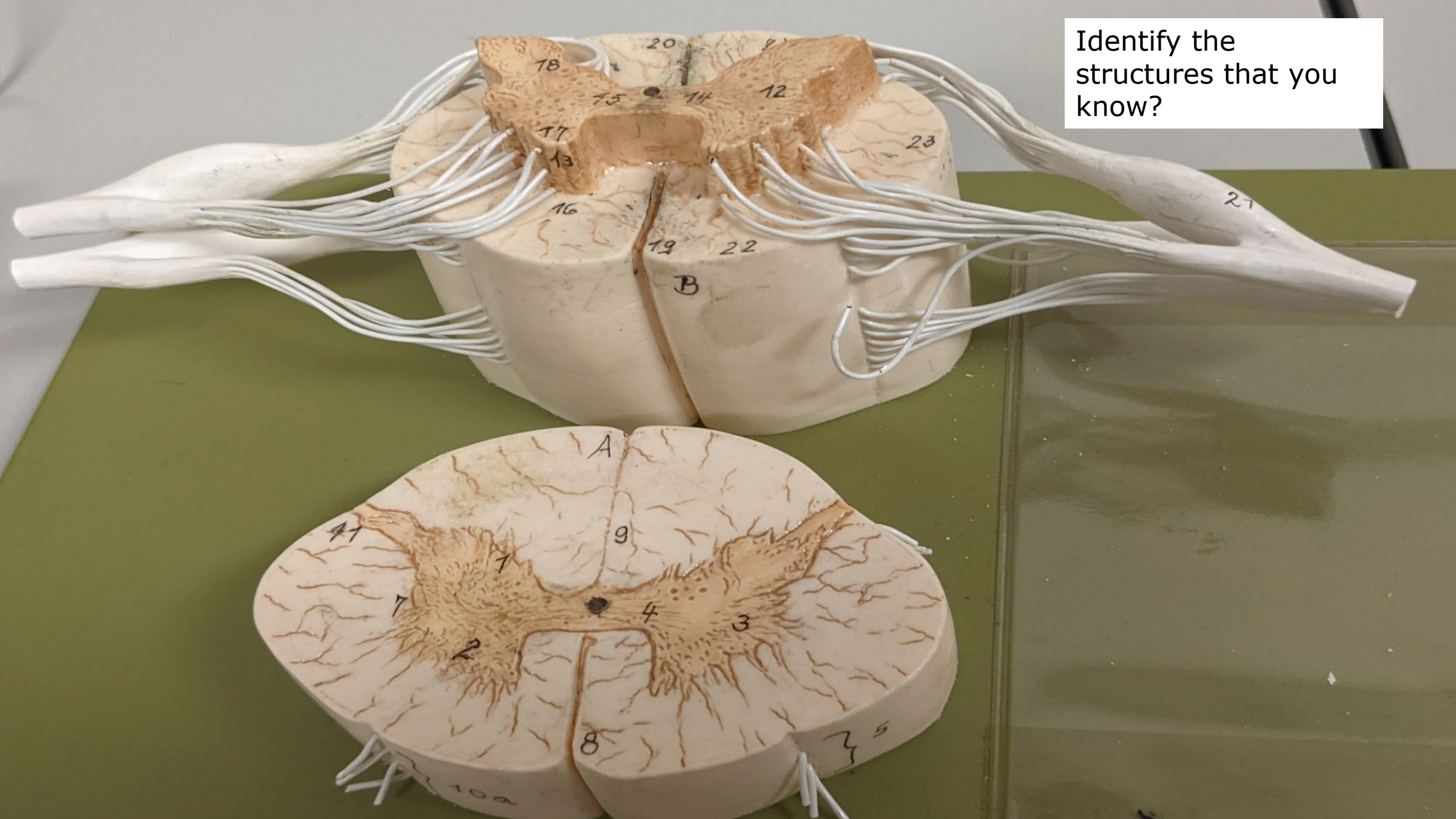
21
1


posterior white column
Posterior median sulcus
lateral white column
Central canal
Posterior root
Posterior root ganglion
Posterior horn
Anterior horn
Anterior root
Anterior median fissure
Grey matter
anterior white column
White matter


Identify these structure and what vertebra it is?


cervical
Epidural space
Dura mater
Arachnoid
Pia mater
Subarachnoid space
Gray matter horns (posterior, lateral, anterior)
White matter columns (posterior, lateral, anterior)
Spinal nerve


Identify the structures that you know?
A
B
1
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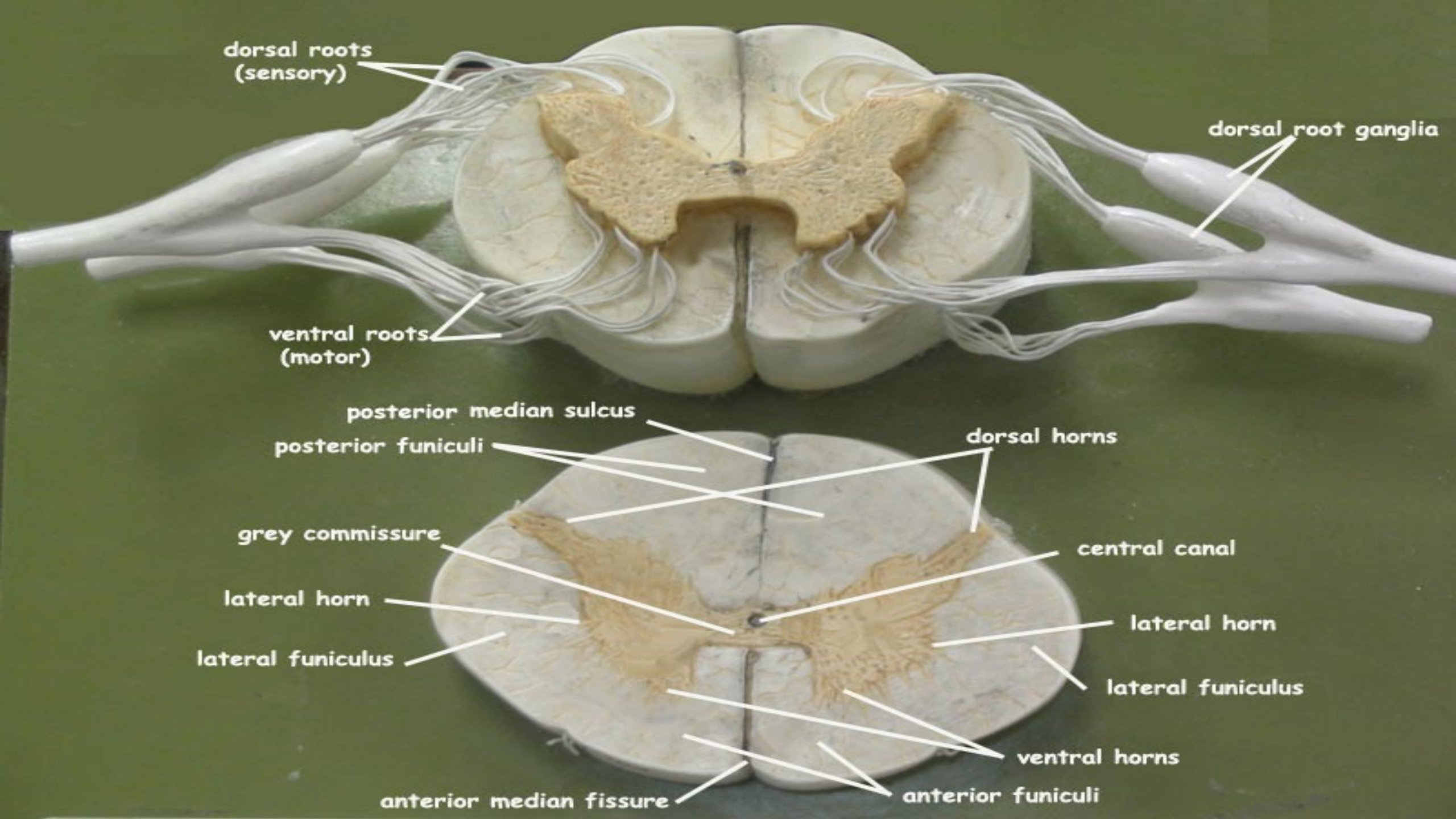
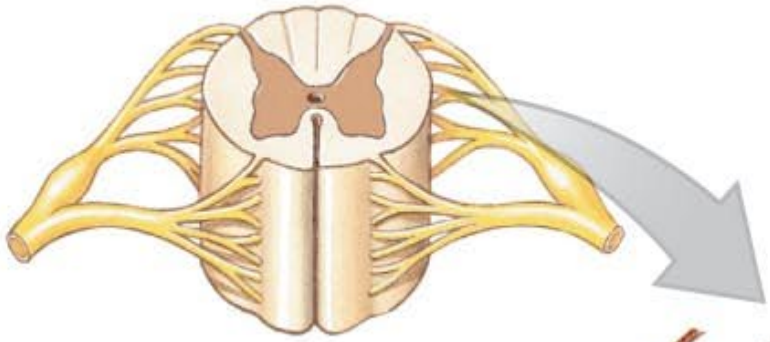
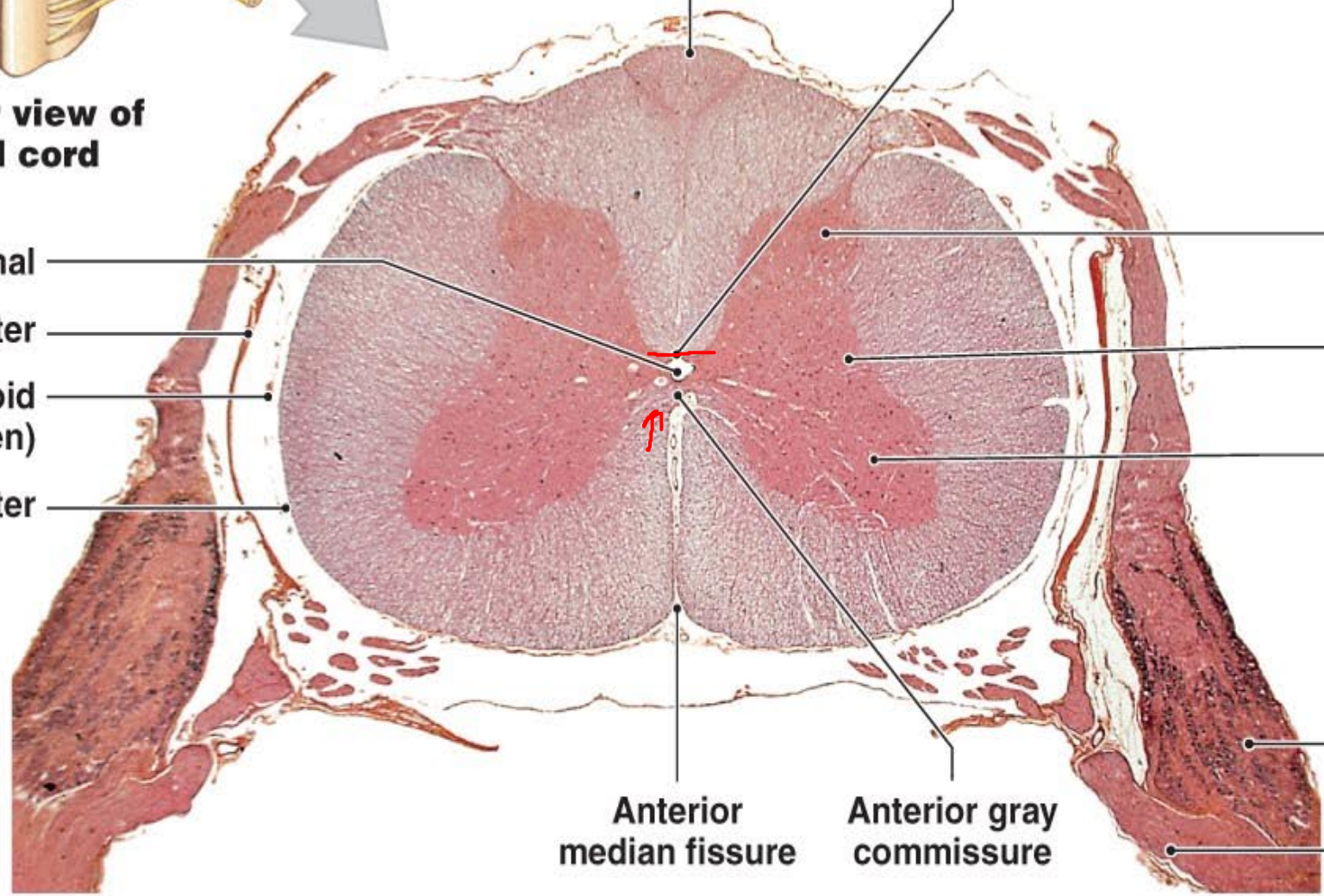

dorsal roots
(sensory)
dorsal root ganglia
ventral roots
(motor)
posterior median sulcus
posterior funiculi
dorsal horns
grey commissure
central canal
lateral horn
lateral horn
lateral funiculus
lateral funiculus
ventral horns
anterior median fissure
anterior funiculi

A cross section showing most of the anatomical landmarks of the spinal cord



Anterior view of spinal cord



Posterior median sulcus

Posterior gray commissure

Central canal

Dura mater

Arachnoid mater (broken)

Pia mater

Anterior median fissure

Anterior gray commissure

Dorsal root ganglion

Ventral root

Structural Organization of Gray Matter

The projections of gray matter toward the outer surface of the spinal cord are called **horns.**

- Posterior gray horn
- Lateral gray horn
- Anterior gray horn

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Cervical nerves

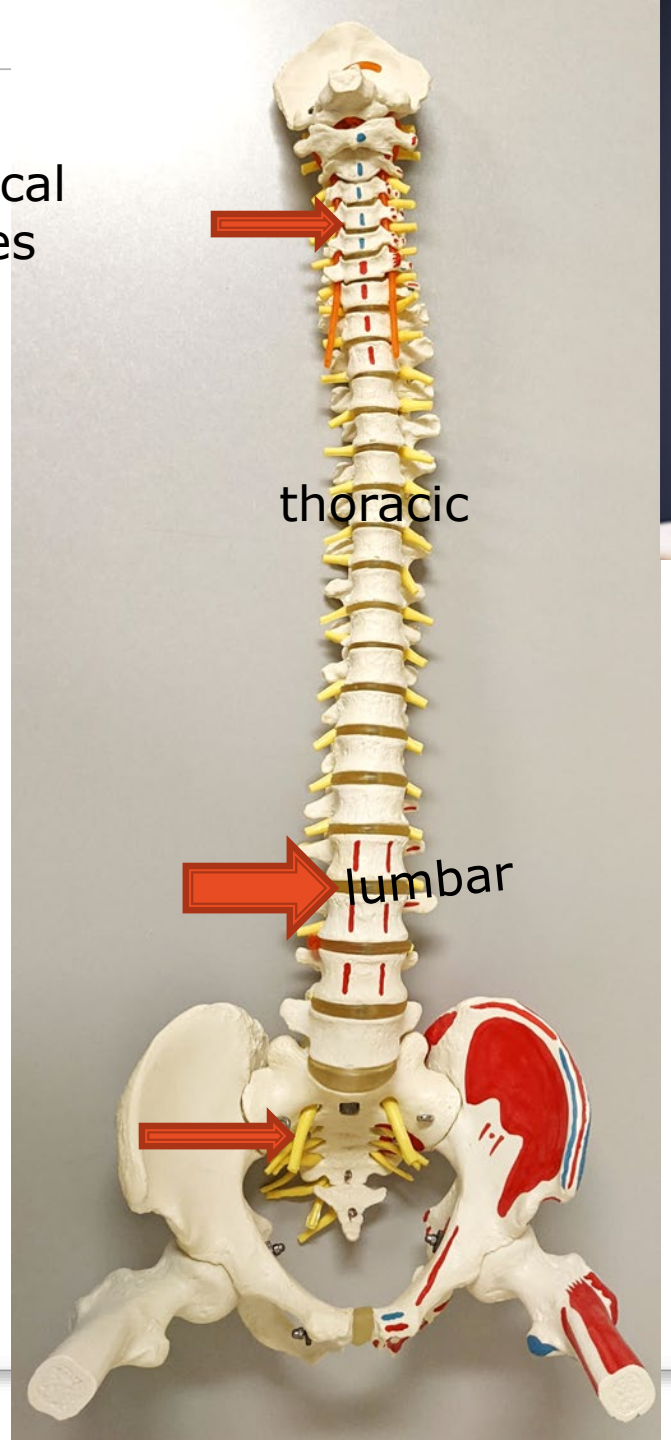
What are the 8 pairs of cervical nerves?
Each pair of spinal nerves roughly correspond to a segment of the vertebral column: 8 cervical spinal nerve pairs (C1–C8),

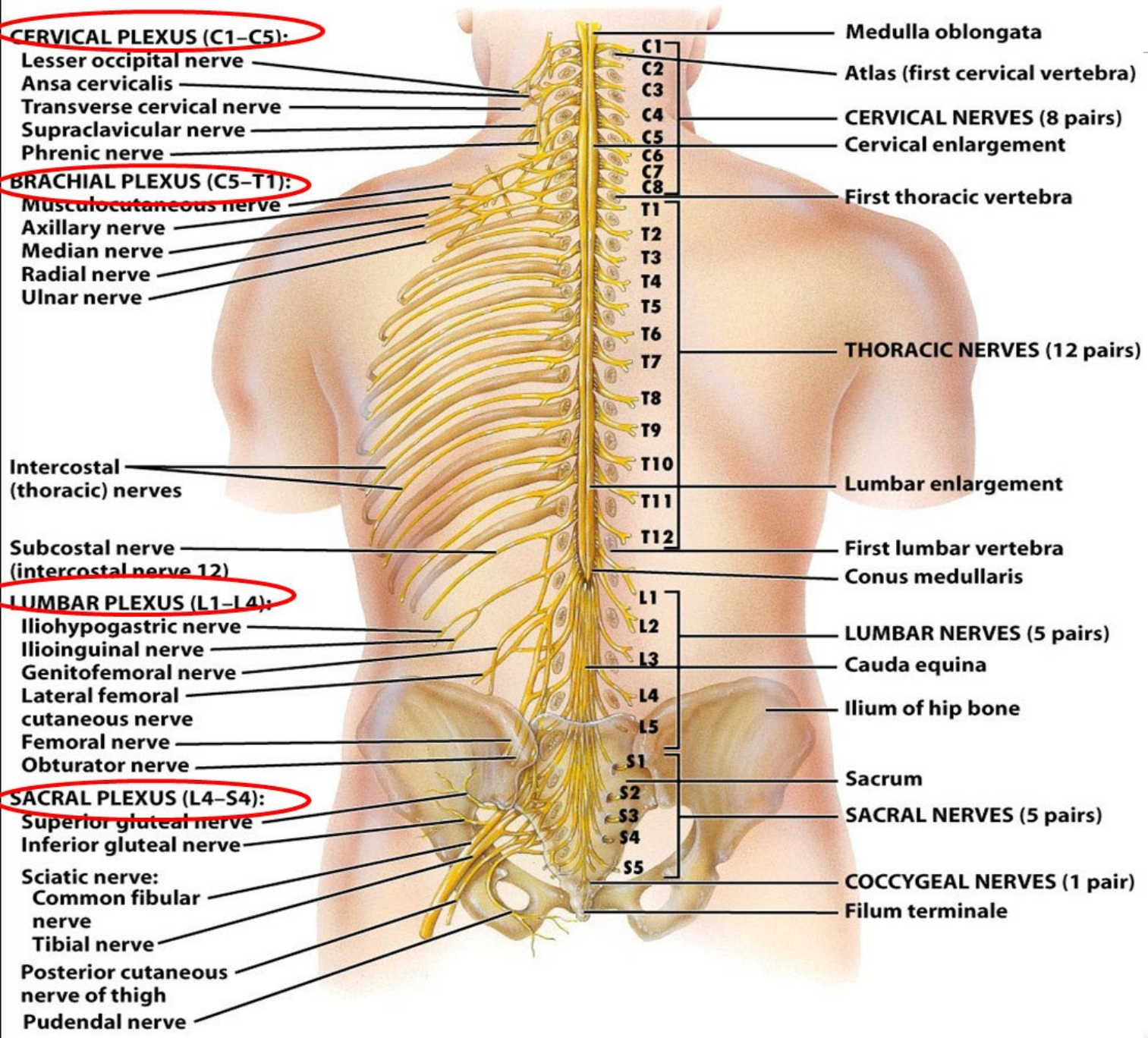
12 thoracic pairs (T1–T12),

5 lumbar pairs (L1–L5),

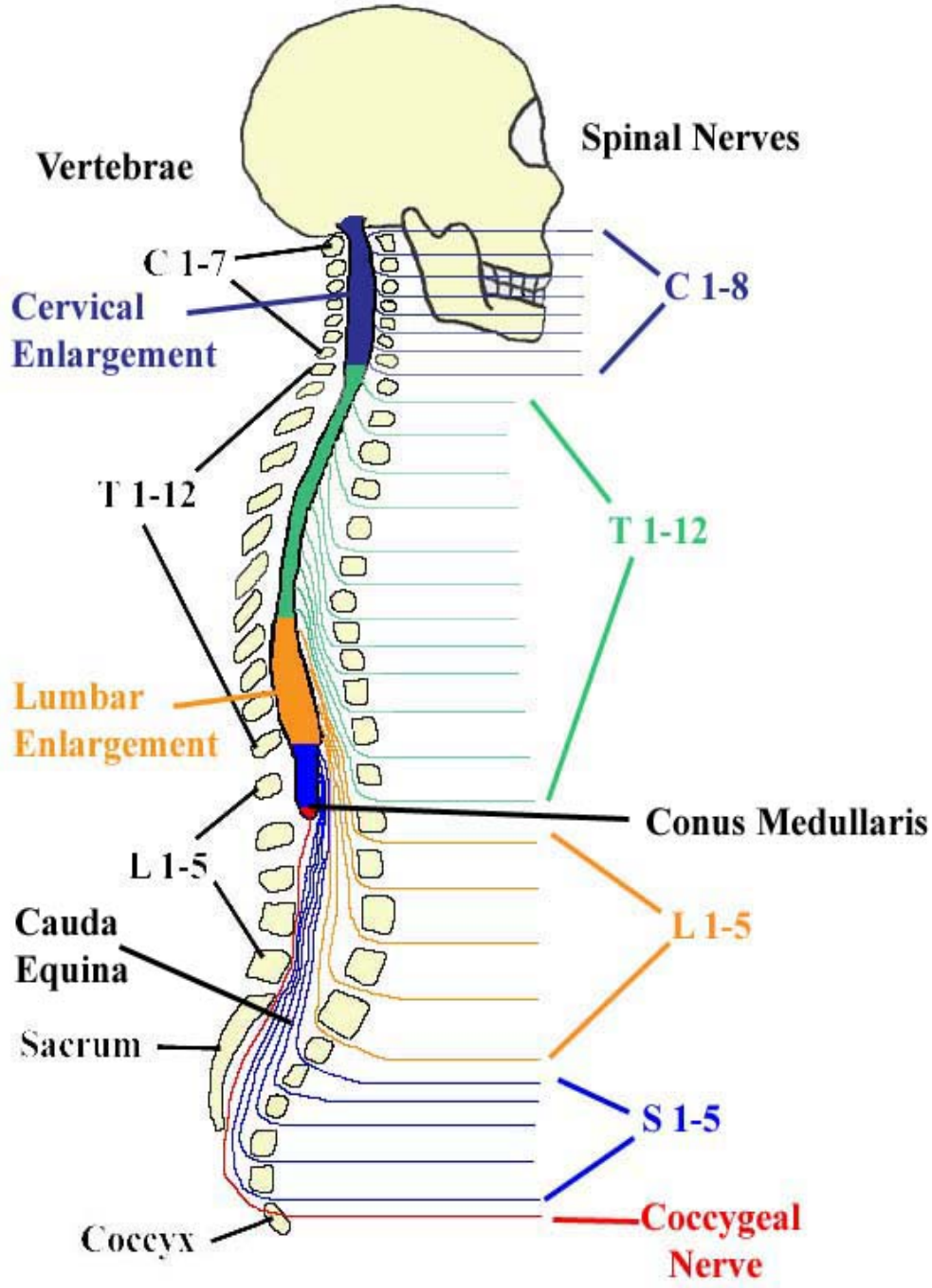
5 sacral pairs (S1–S5),

1 coccygeal pair.





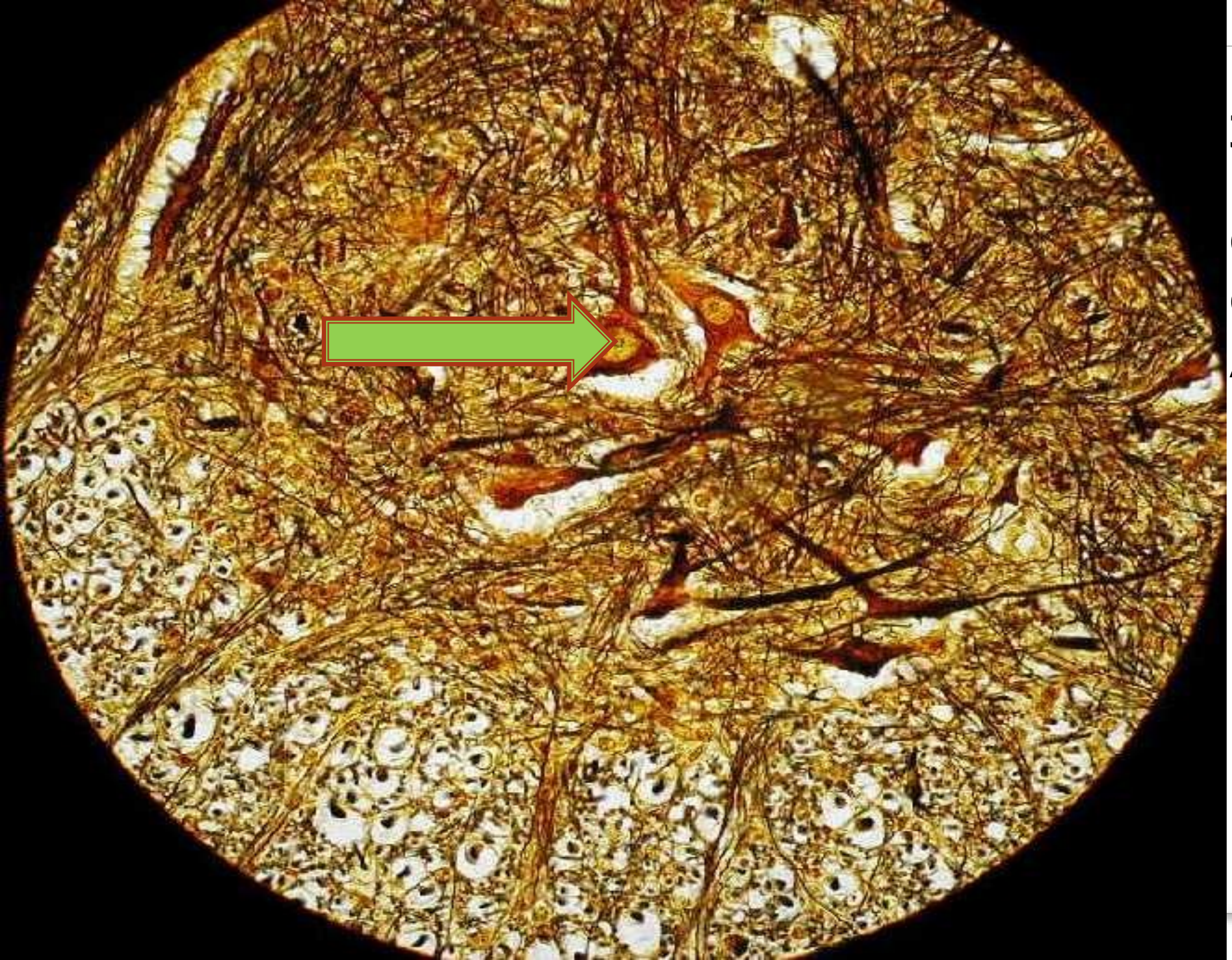
Posterior view of entire spinal cord and portions of spinal nerves



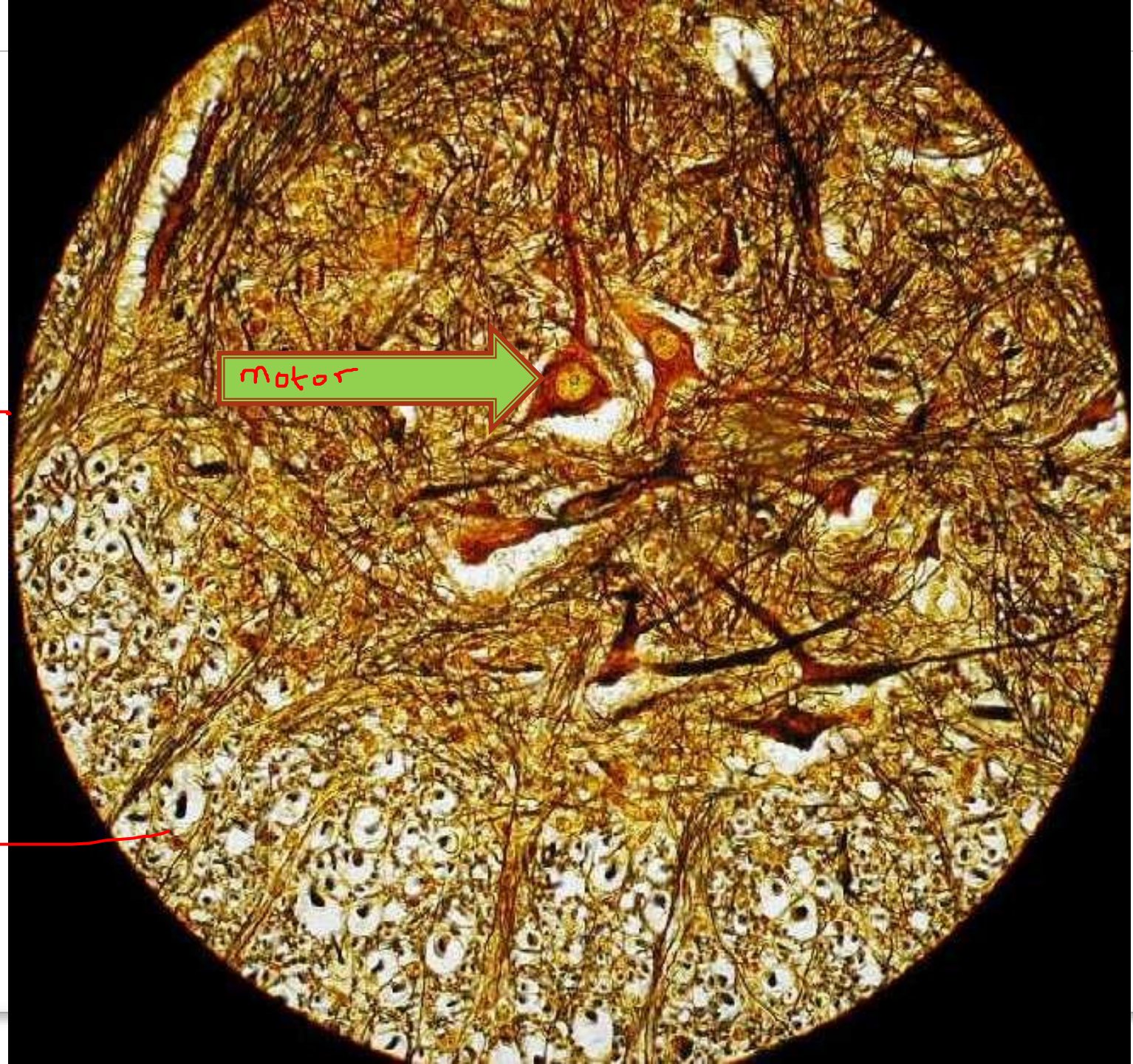
29/IDENTIFY STRUCTURE 1

29/IDENTIFY STRUCTURE 1

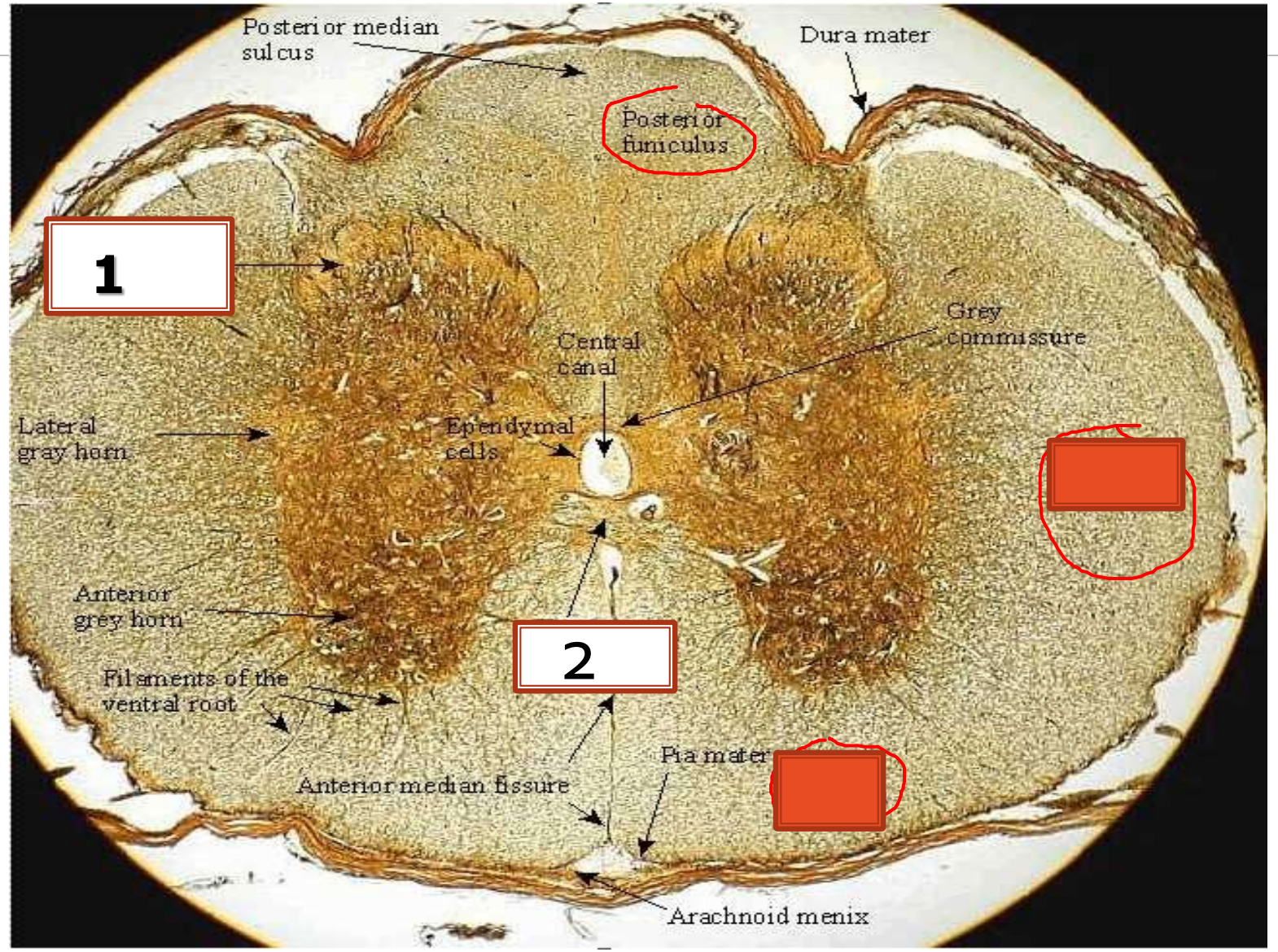
Dorsal root ganglia



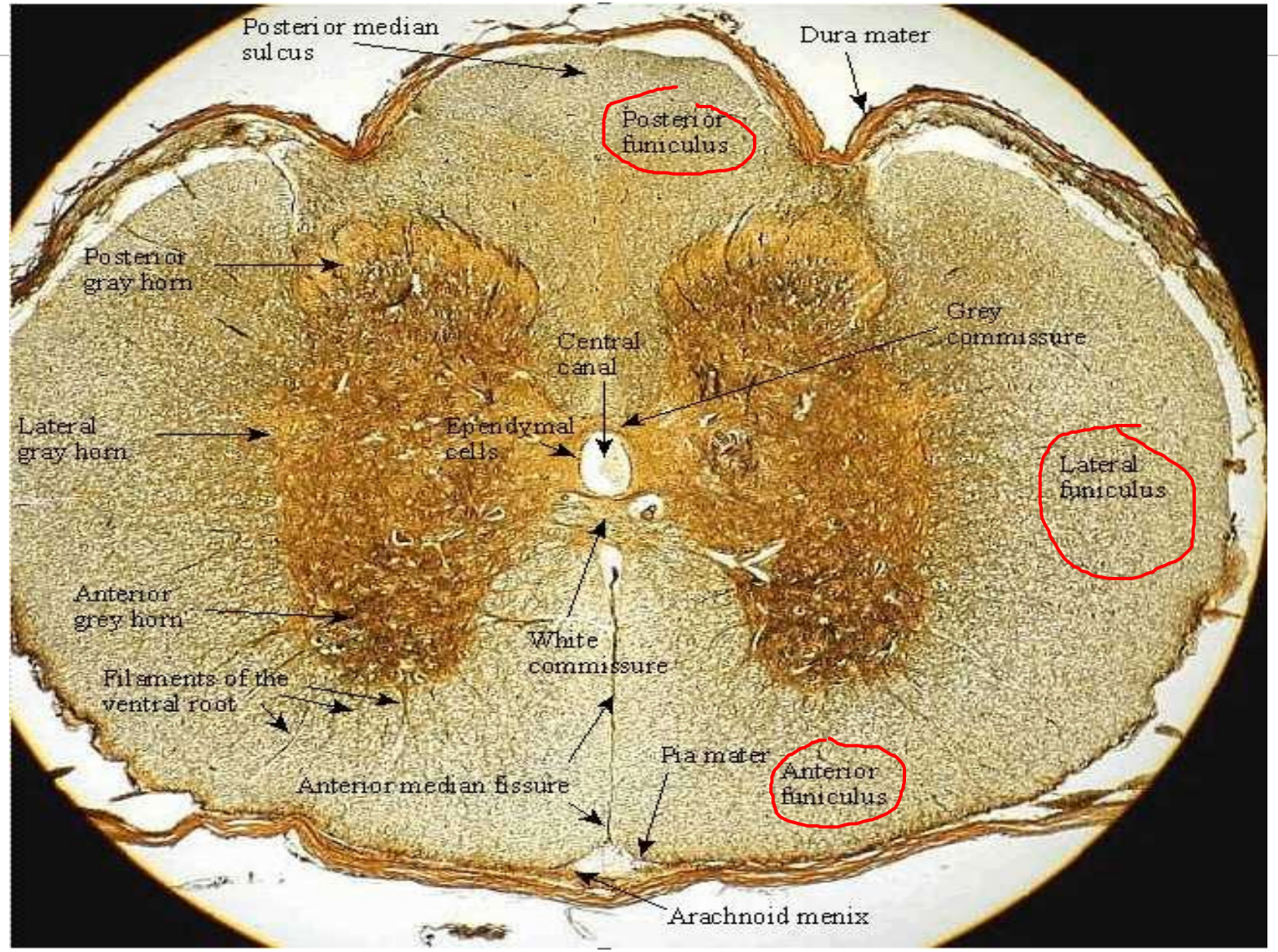
30/IDENTIFY THE CELL IN GREEN ARROW?



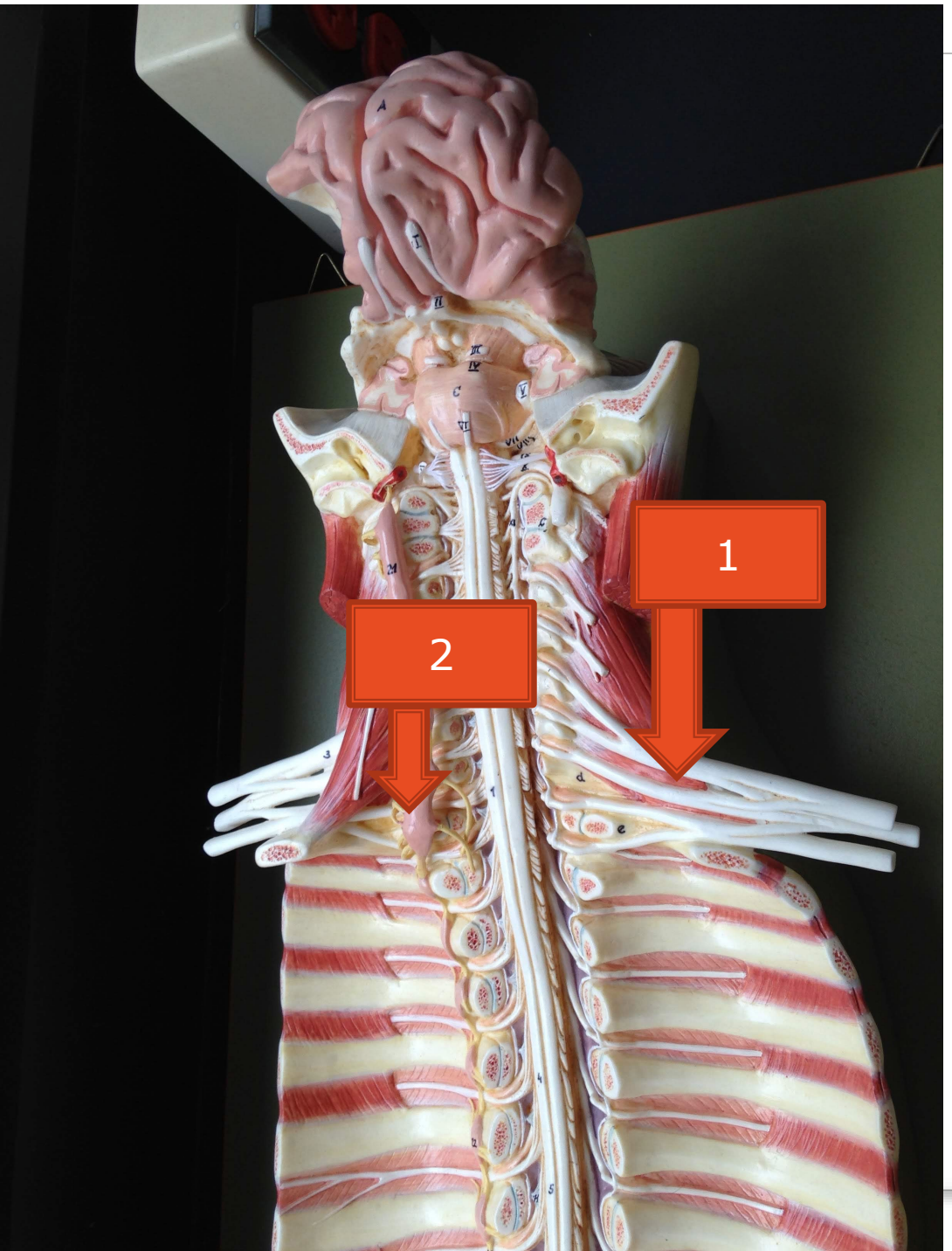
30/IDENTIFY THE CELL IN GREEN ARROW?



31/ I DENTIFY 1
32/ IDENTIFY 2



31/ I DENTIFY 1
32/ IDENTIFY 2

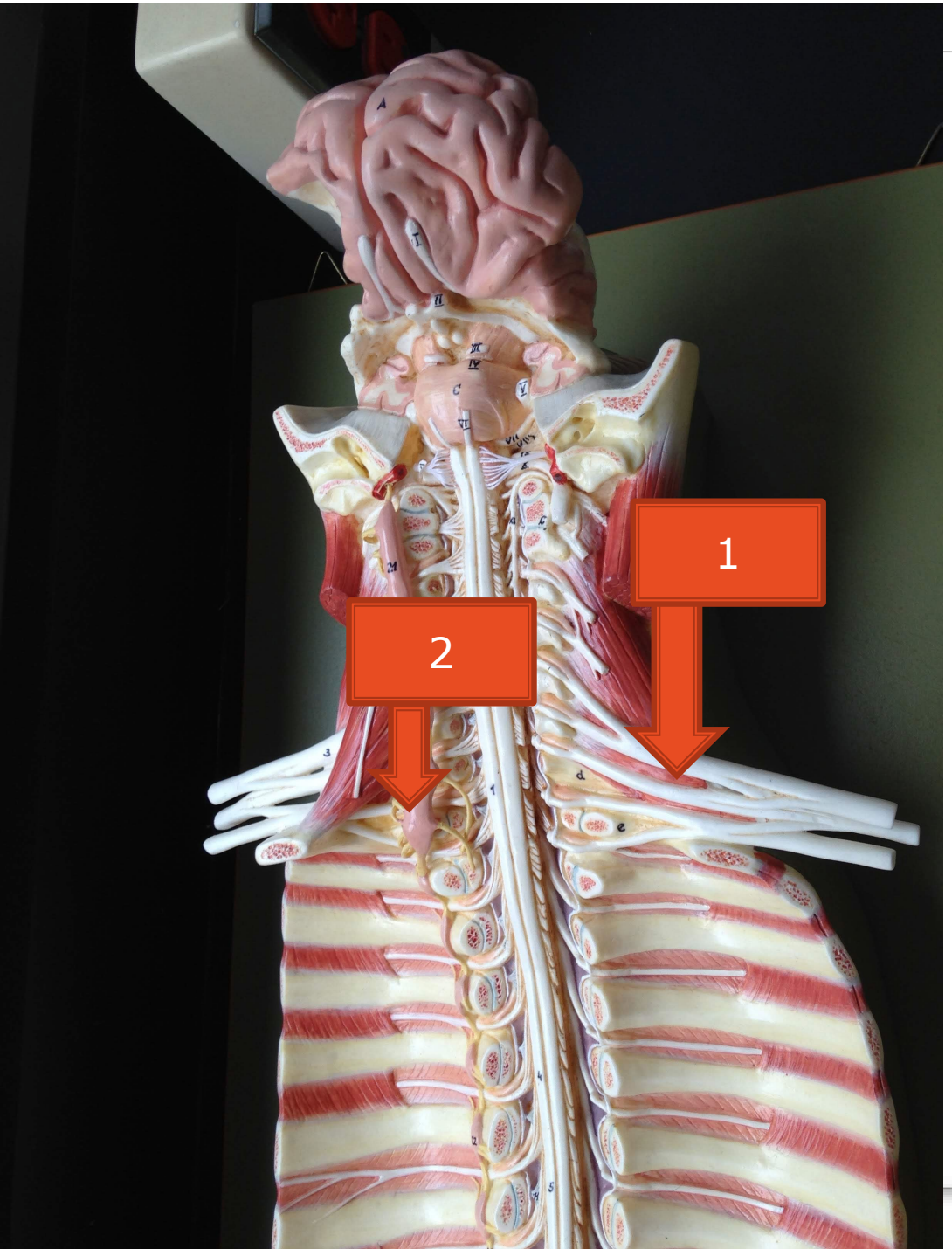


identify 1

A. BRACHIAL PLEXUS
B. THORACIC PLEXUS
C. CERVICAL PLEXUS
D. THORACOCERVICAL PLEXUS
E. SOLAR PLEXUS

.Identify 2

A. VAGUS NERVE
B. PHRENIC NERVE
C. PARAVERTEBRAL SYMPATHETIC GANGLIA CHAIN
D. PARAVERTEBRAL PARASYMPATHETIC GANGLIA CHAIN
E. THORACIC DUCT

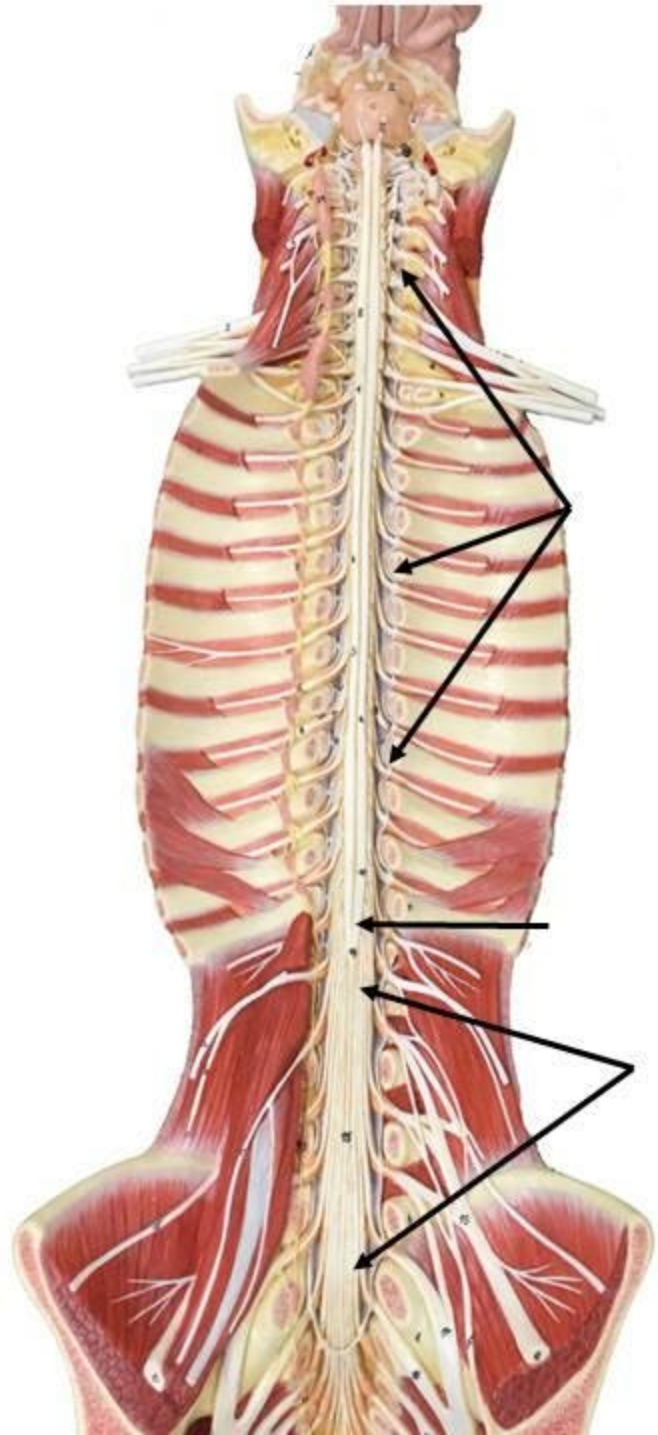


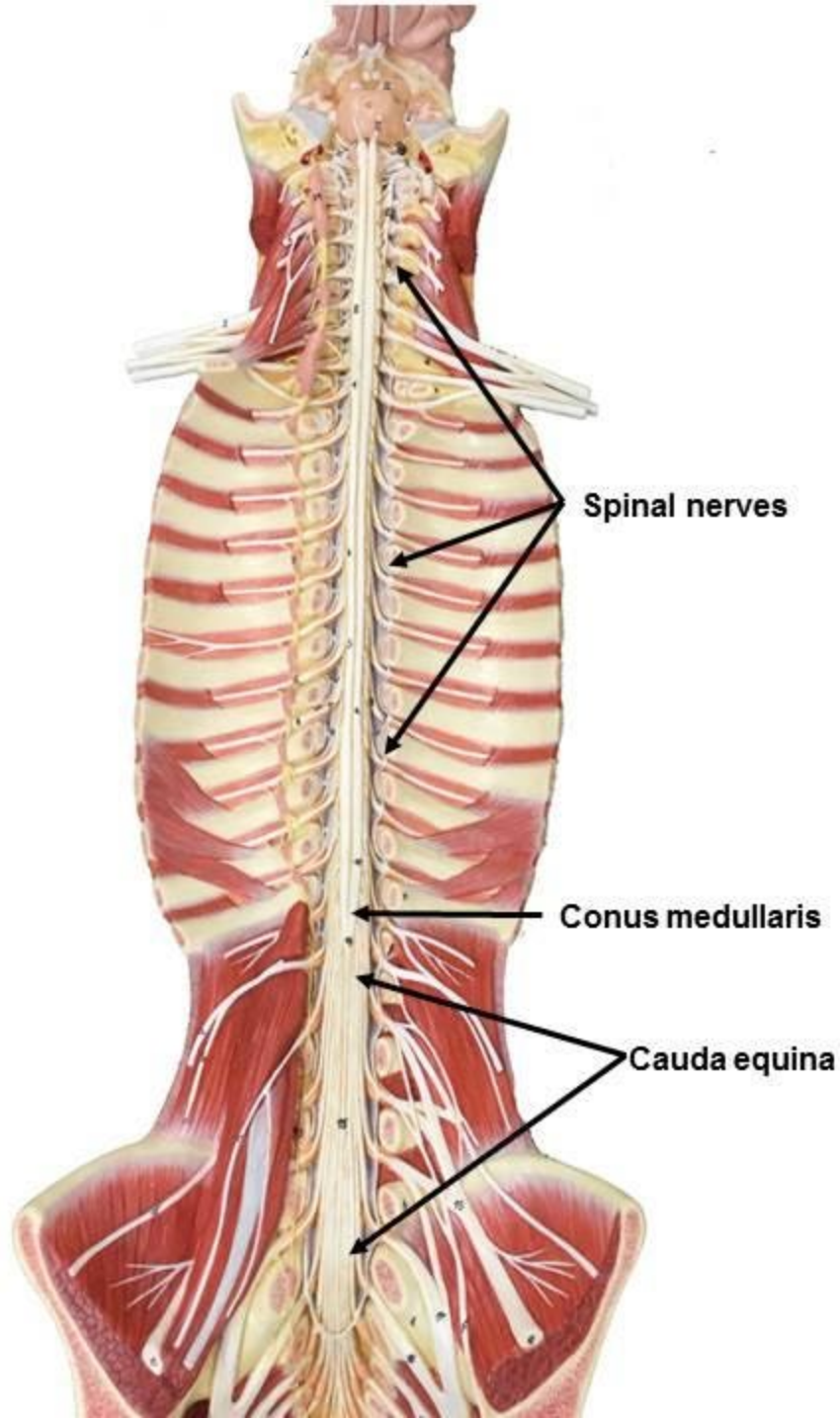
68. identify 1

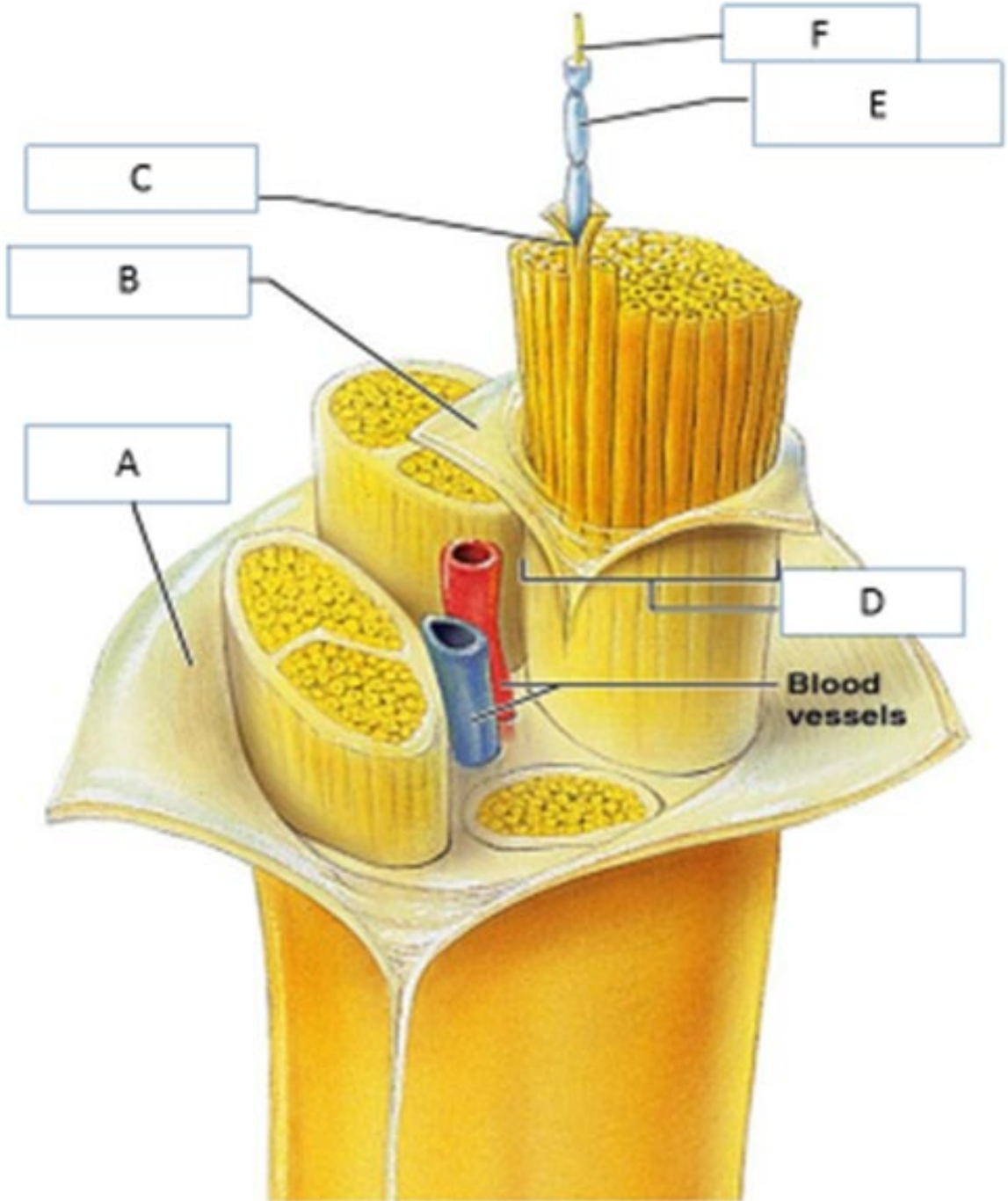
A. BRACHIAL PLEXUS
B. THORACIC PLEXUS
C. CERVICAL PLEXUS
D. THORACOCERVICAL PLEXUS
E. SOLAR PLEXUS

69.Identify 2

A. VAGUS NERVE
B. PHRENIC NERVE
C. PARAVERTEBRAL SYMPATHETIC GANGLIA CHAIN
D. PARAVERTEBRAL PARASYMPATHETIC GANGLIA CHAIN
E. THORACIC DUCT

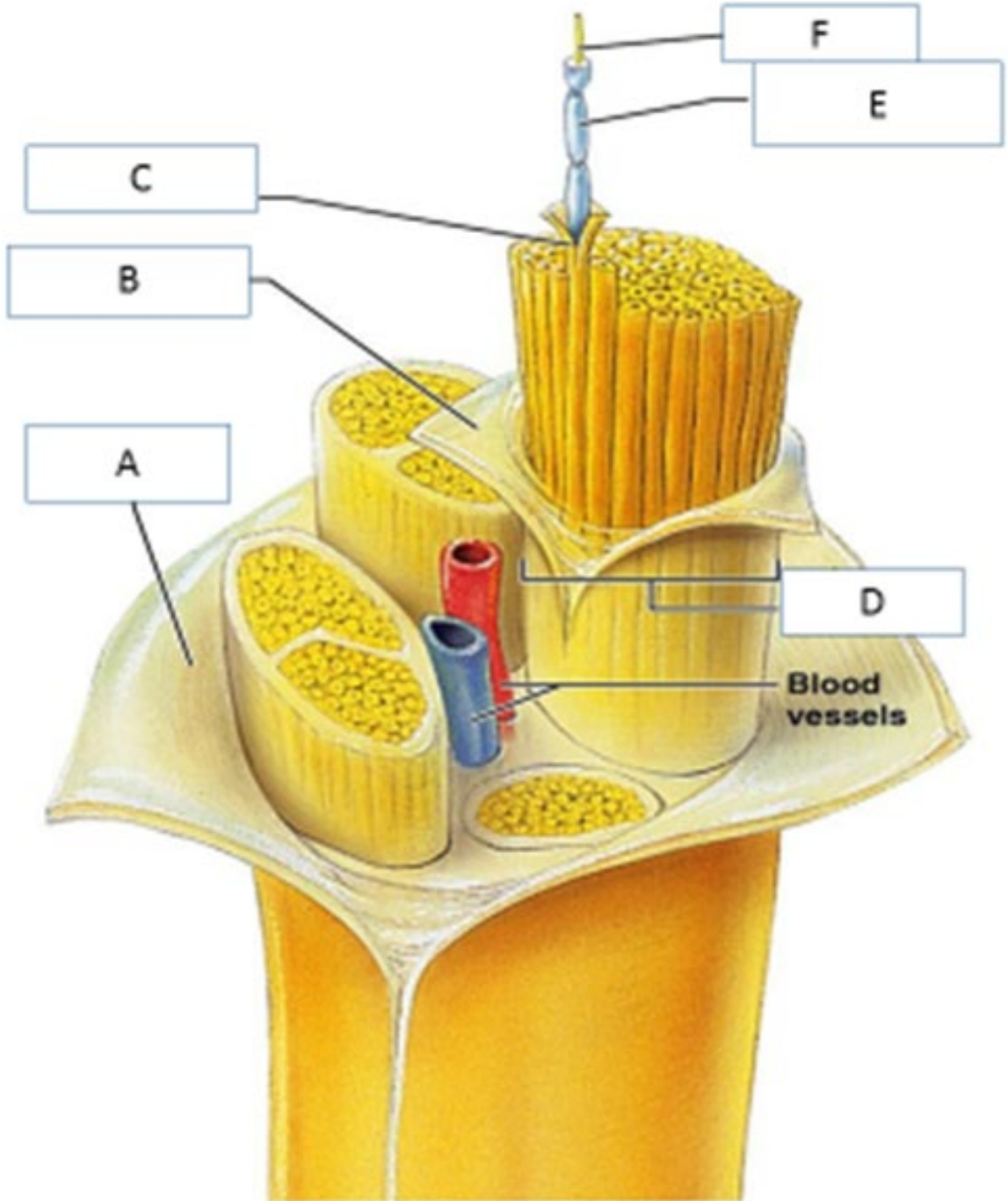



Spinal nerves
Conus medullaris
Cauda equina



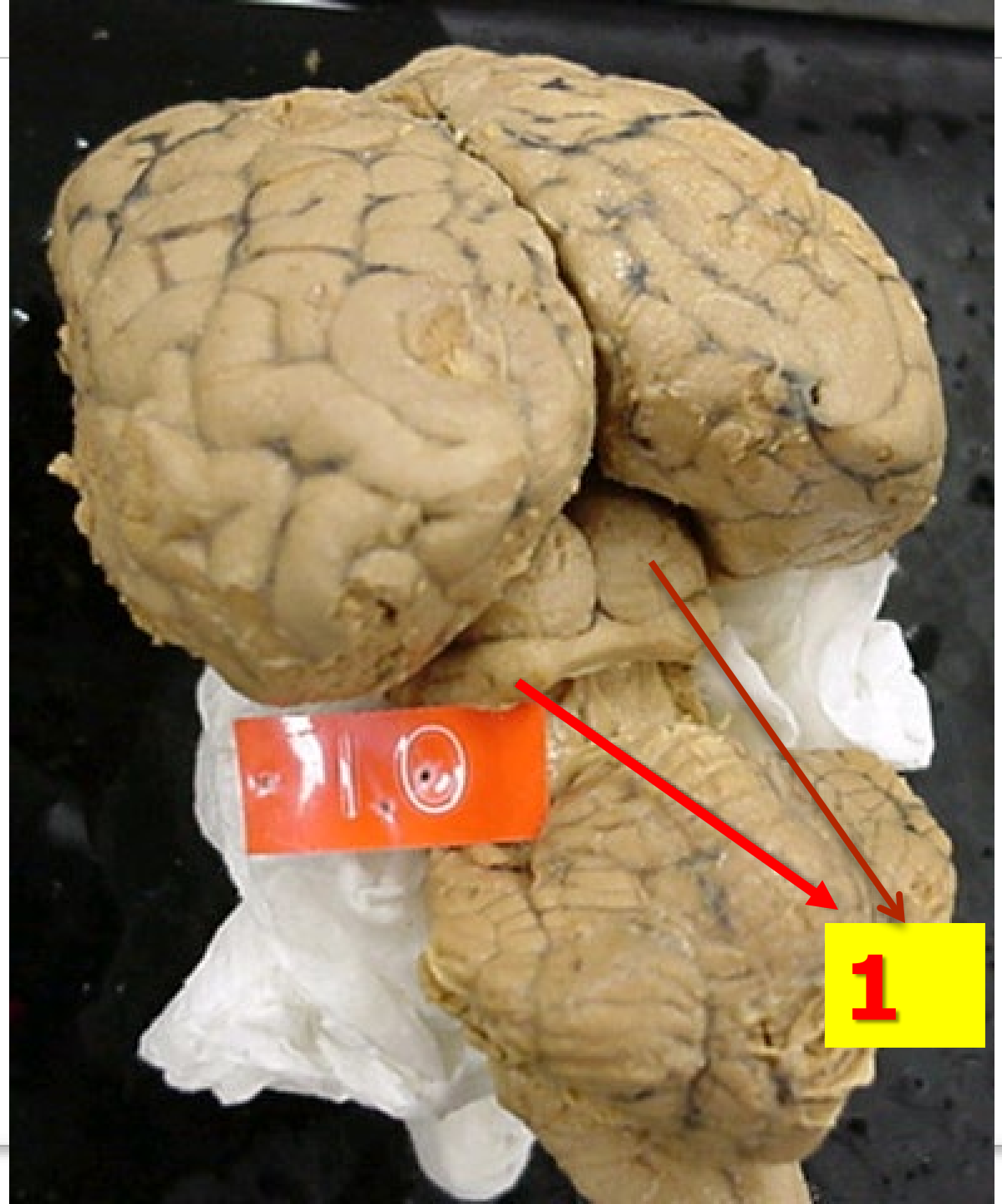
Identify the Endoneurium

A. A
B. B
C. C
D. D
E. E
F. F

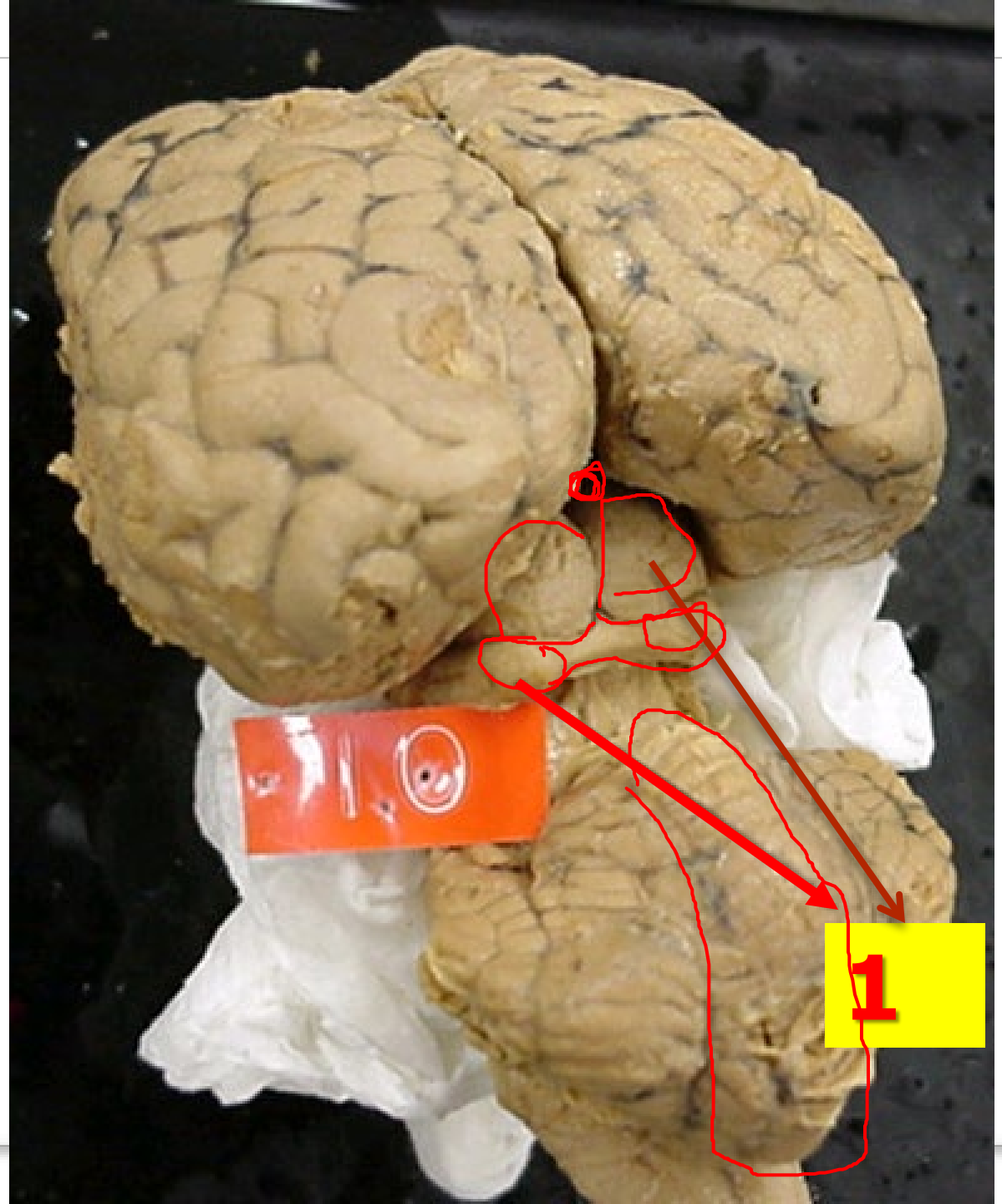


55/ Identify the Endoneurium

A. A
B. B
C. C
D. D
E. E
F. F



36/ 1?

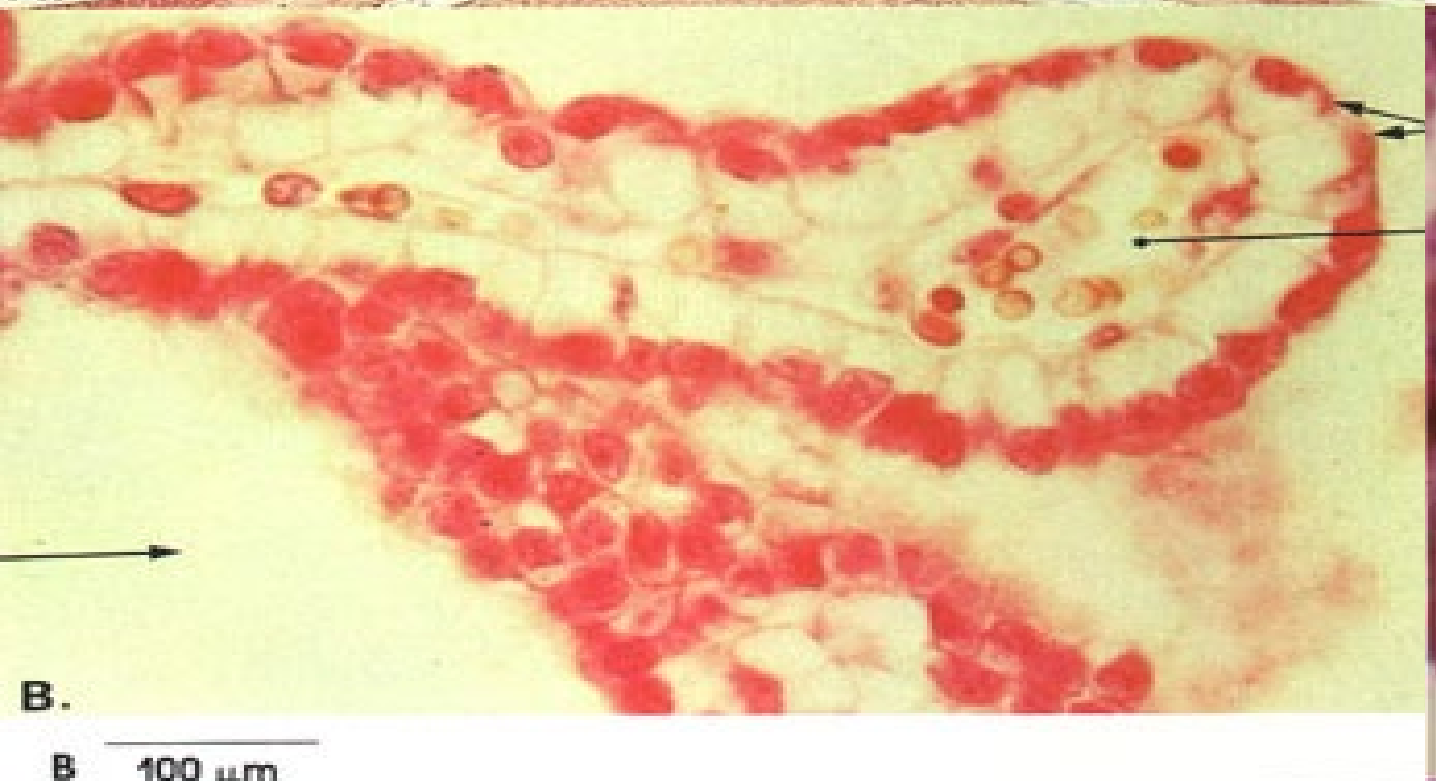


36/ 1?

Corpora quadrigeminal

4 / LOCATE THESE STRUCTURES

5/ WHAT CELLS THIS TISSUE IS COMPOSED OF?



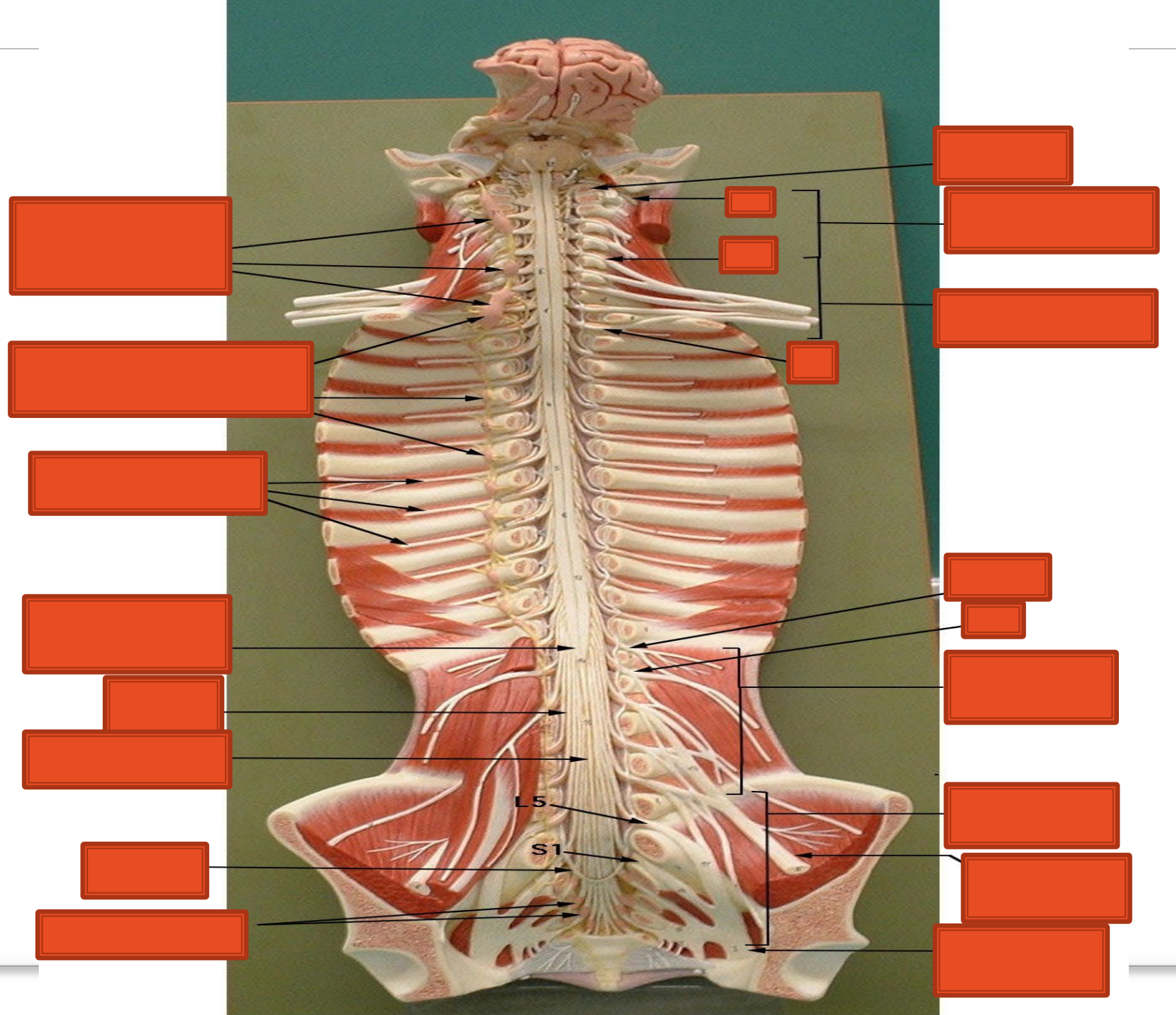
4 / LOCATE THESE STRUCTURES

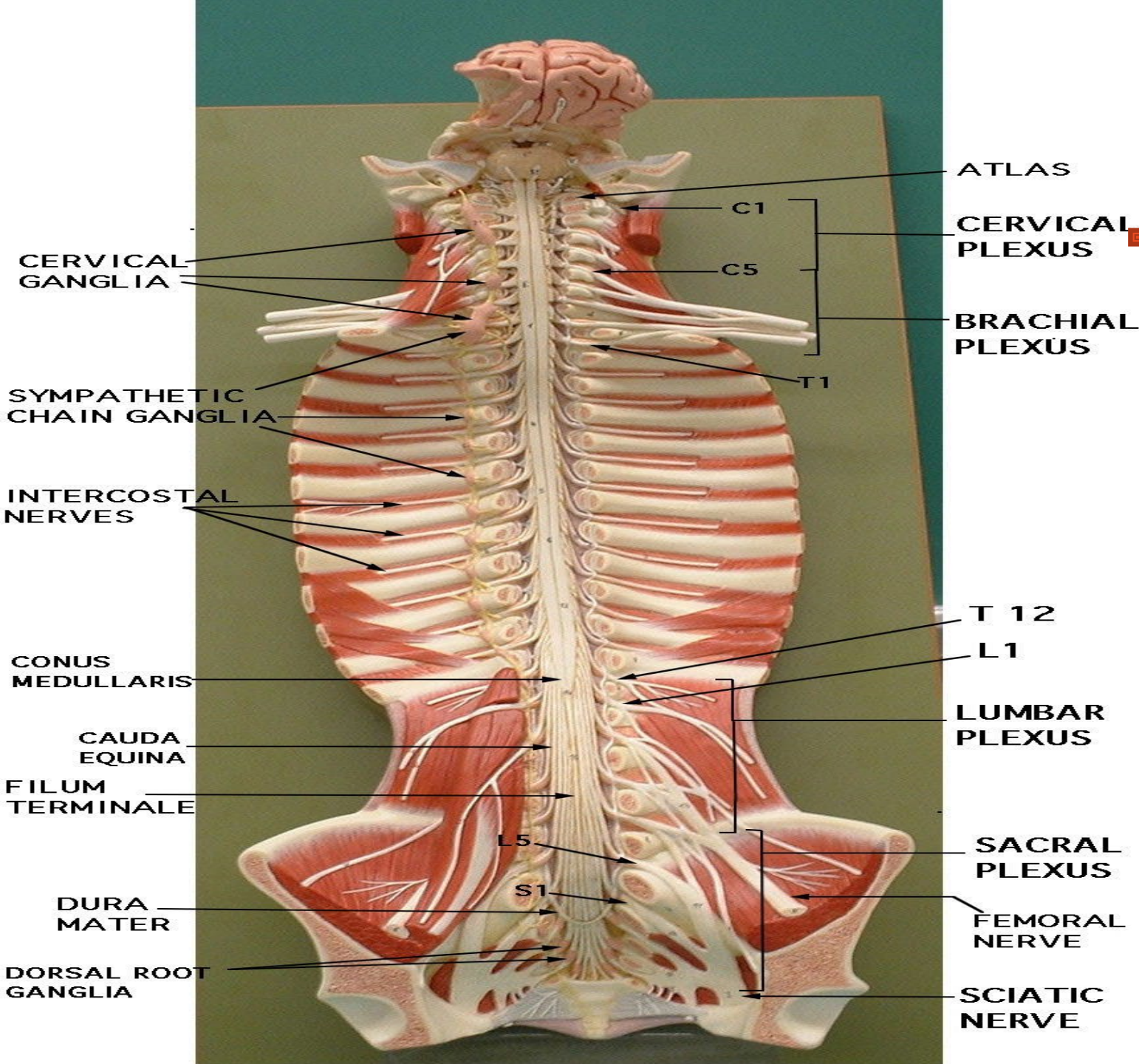
5/ WHAT CELLS THIS TISSUE IS COMPOSED OF?

Choroid Plexus

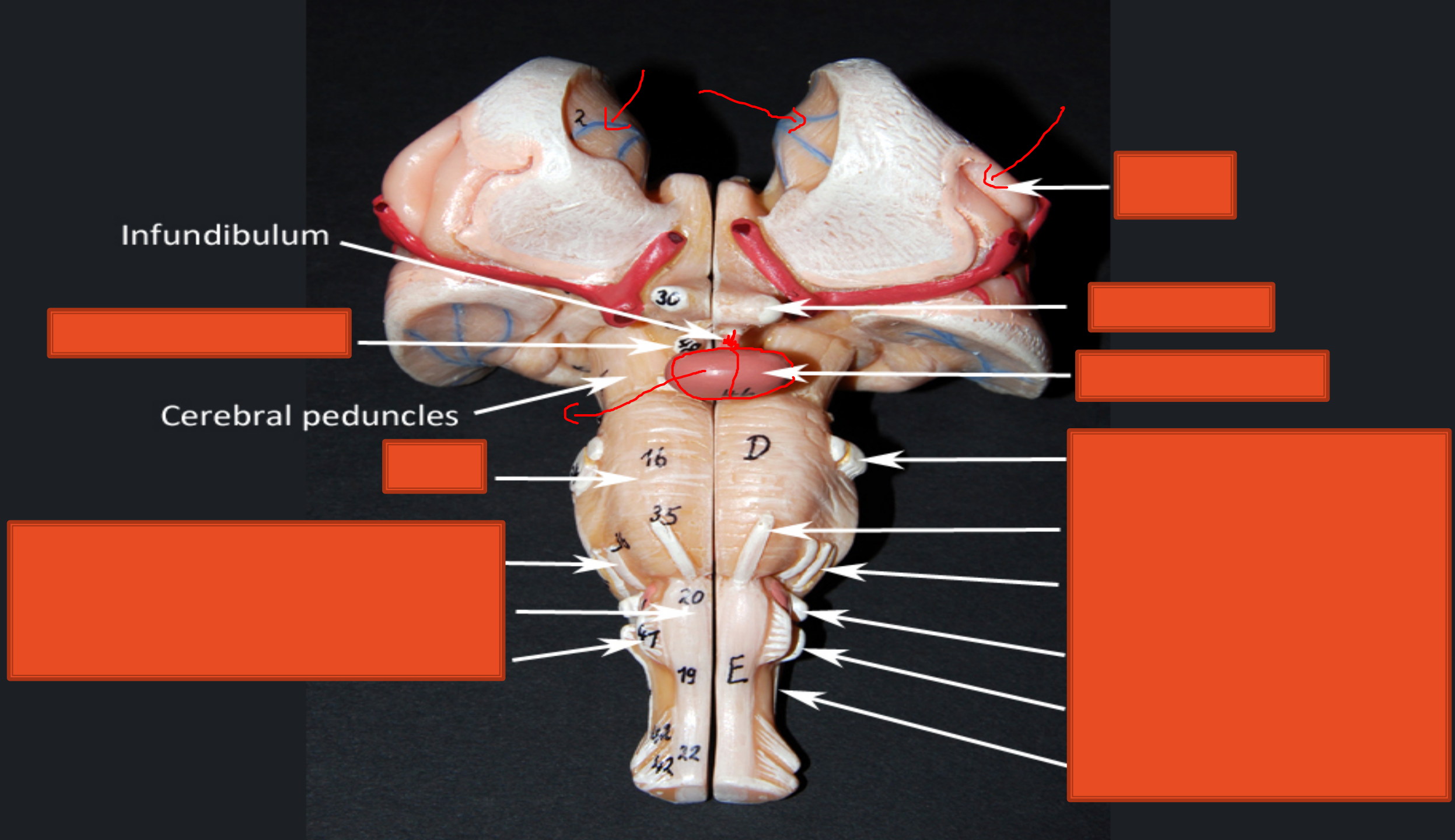
Ependymal

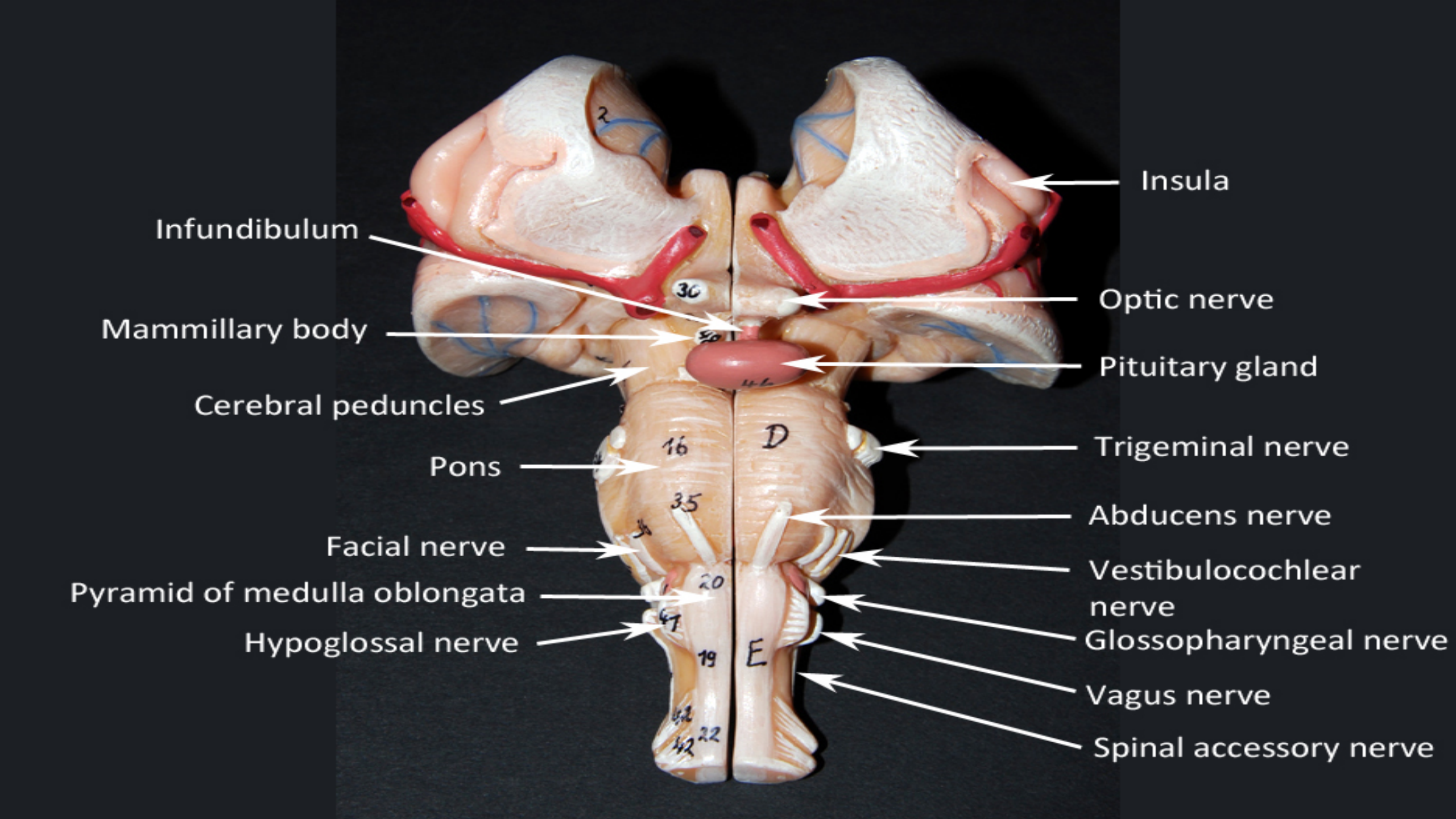
The choroid plexus is a complex network of capillaries lined by specialized cells and has various functions. One of the primary functions is to produce cerebrospinal fluid (CSF) via the ependymal cells that line the ventricles of the brain

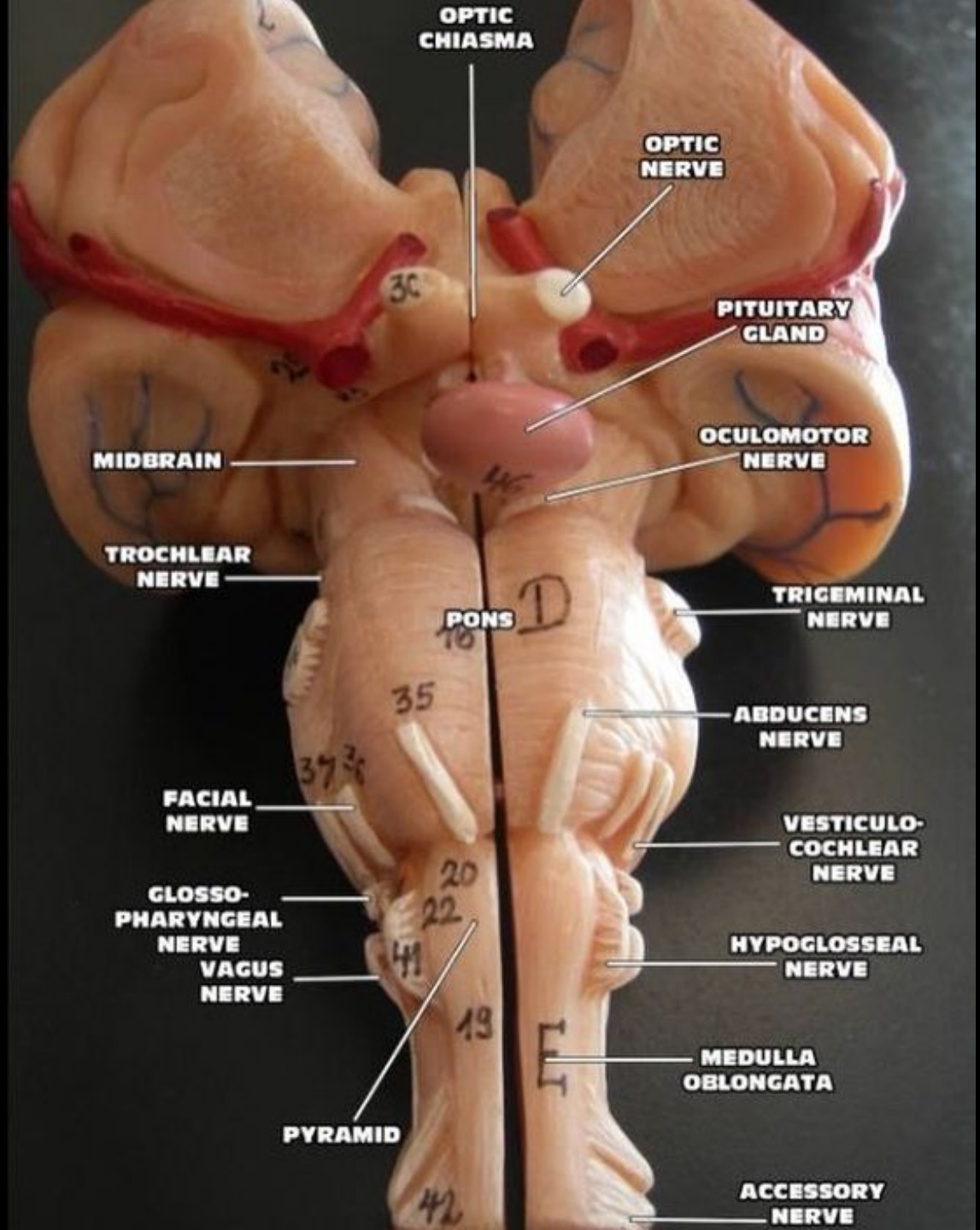

L5
S1



The cervical plexus is a plexus of the anterior rami of the first four cervical spinal nerves which arise from C1 to C4 cervical segment in the neck.


Infundibulum
Cerebral peduncles
2
30
16
D
35
20
19
E
22


Insula
Infundibulum
Optic nerve
Mammillary body
Pituitary gland
Cerebral peduncles
Trigeminal nerve
Pons
Abducens nerve
Facial nerve
Vestibulocochlear nerve
Pyramid of medulla oblongata
Glossopharyngeal nerve
Hypoglossal nerve
Vagus nerve
Spinal accessory nerve


OPTIC CHIASMA
OPTIC NERVE
PITUITARY GLAND
OCULOMOTOR NERVE
MIDBRAIN
TROCHLEAR NERVE
PONS
TRIGEMINAL NERVE
ABDUCENS NERVE
FACIAL NERVE
VESTICULO-COCHLEAR NERVE
GLOSSO-PHARYNGEAL NERVE
VAGUS NERVE
HYPOGLOSSEAL NERVE
MEDULLA OBLONGATA
PYRAMID
ACCESSORY NERVE

This patient suffer from a partial left side paralysis of her face:

11/what do you call this condition?

12/what nerve is involved?

13/how many branches this nerve has?

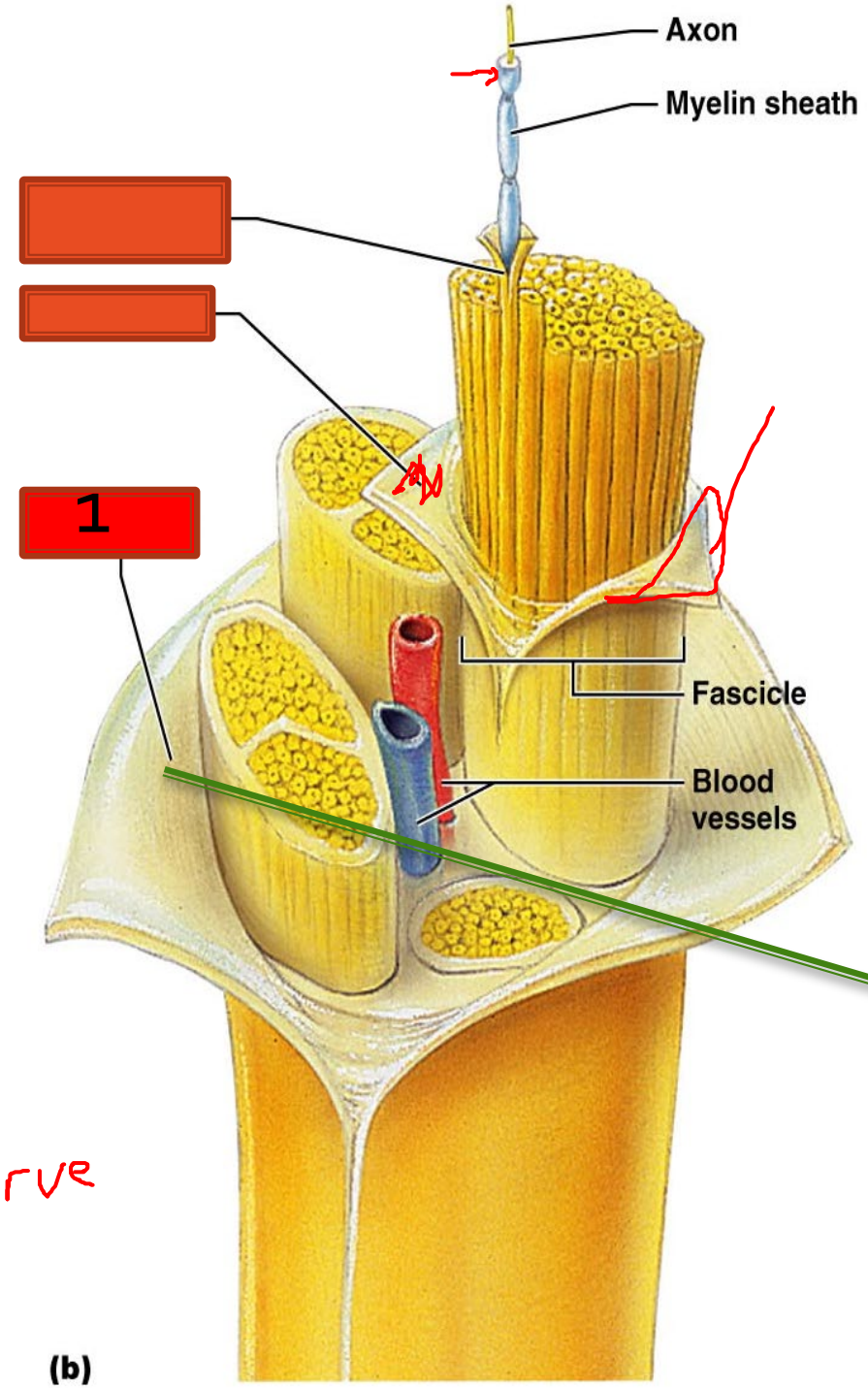
This patient suffer from a partial left side paralysis of her face:

11/what do you call this condition? Bell's palsy

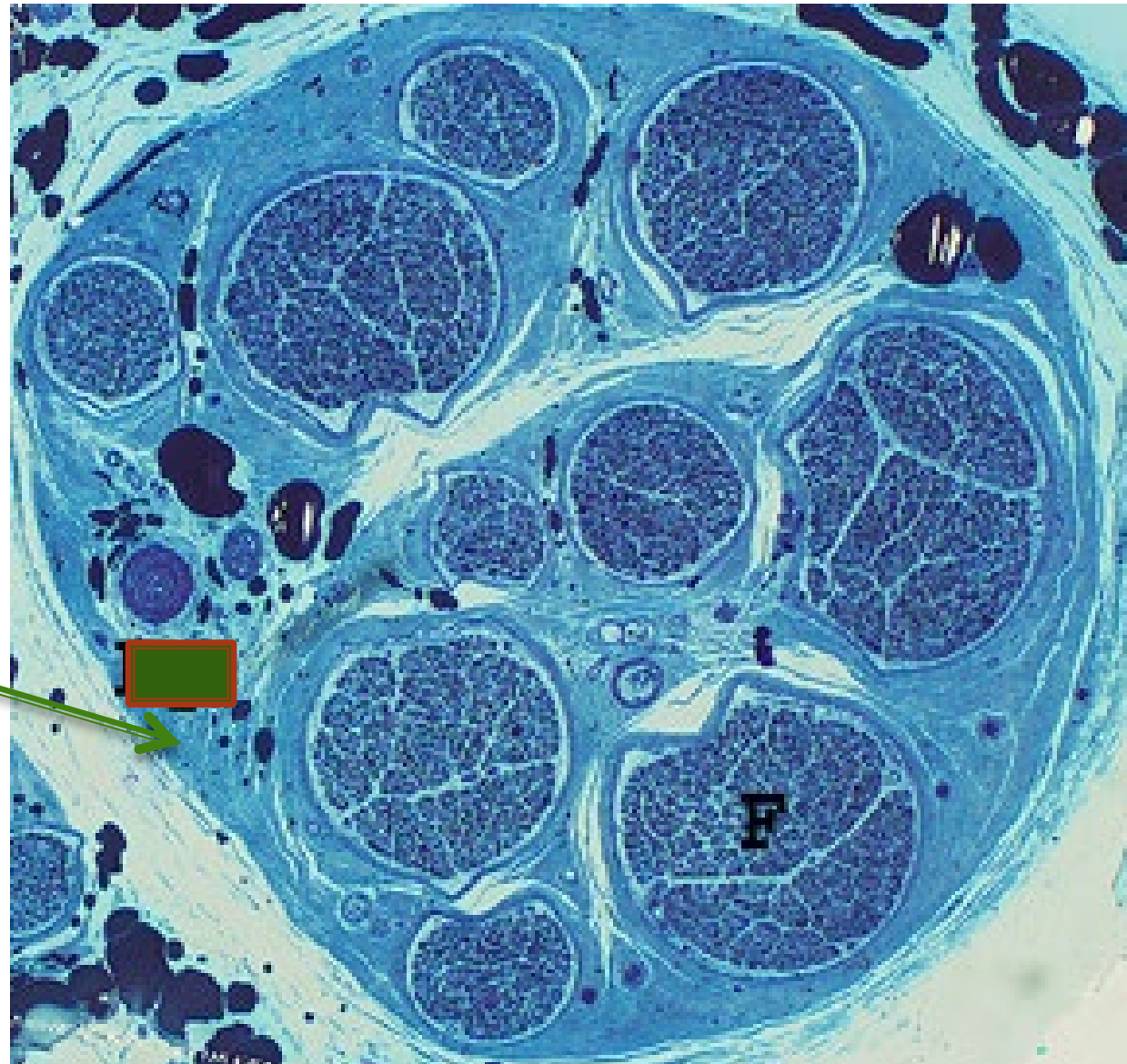
12/what nerve is involved? VII

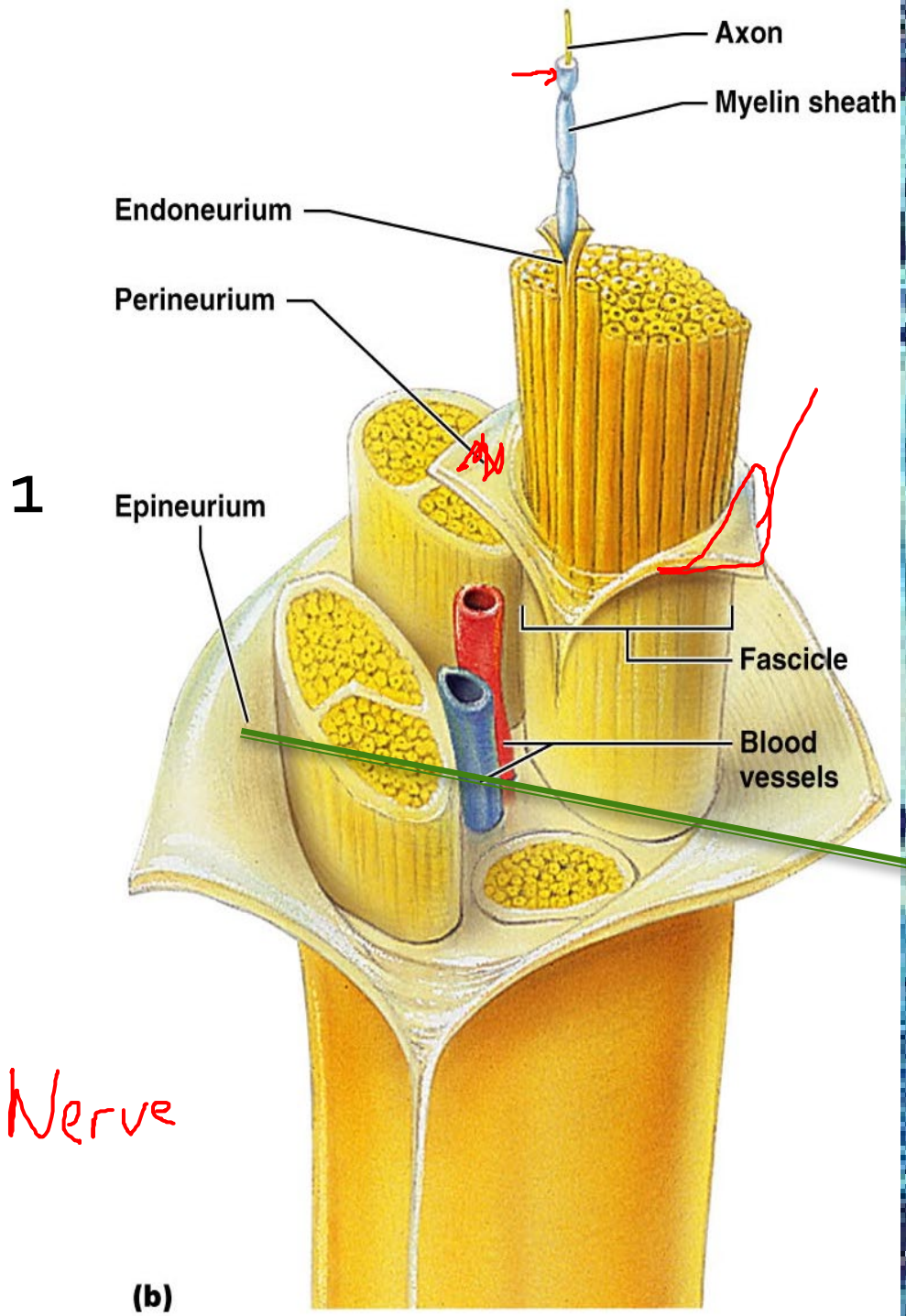
13/how many branches this nerve has? 5

21/IDENTIFY 1



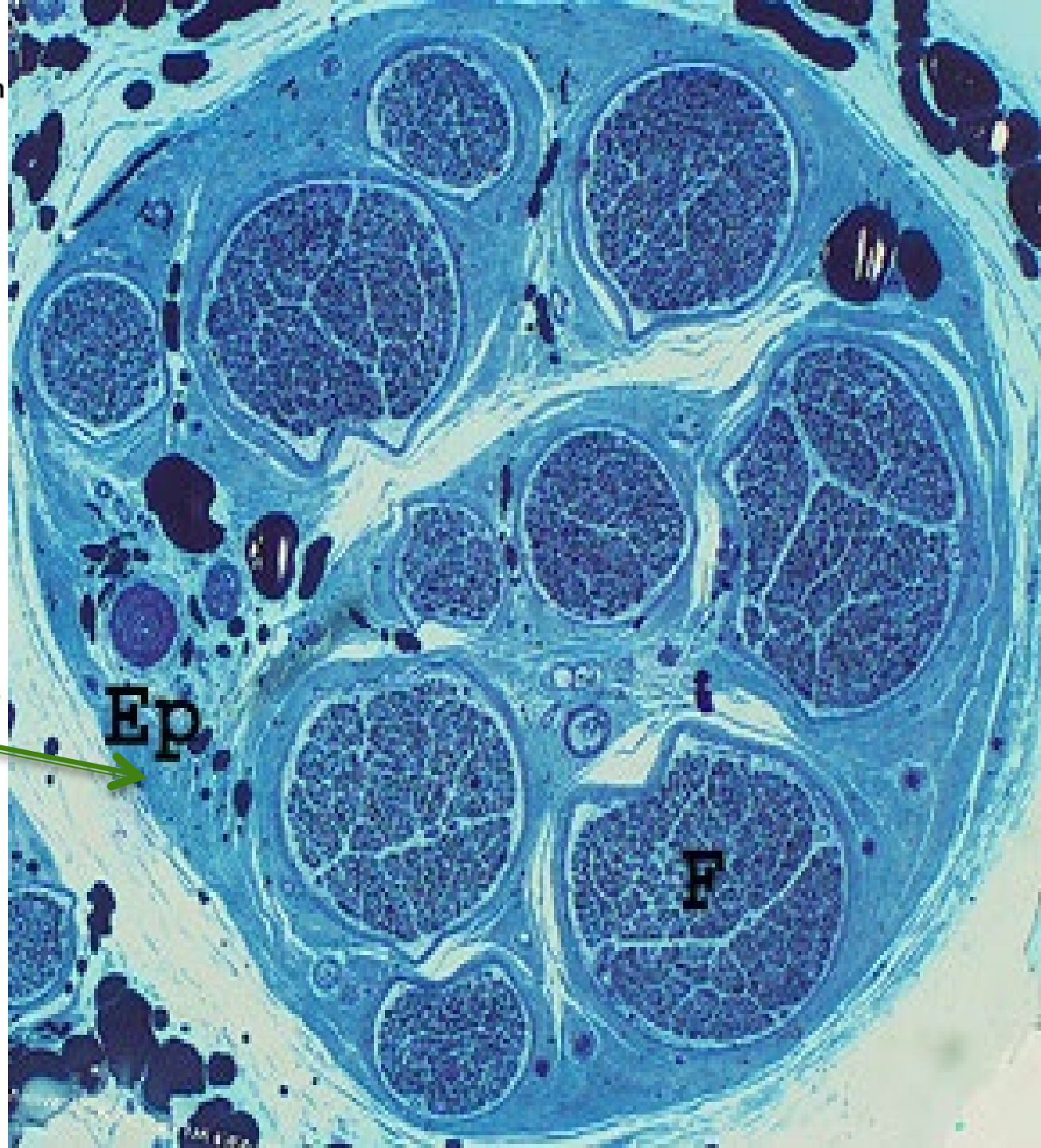
Nerve

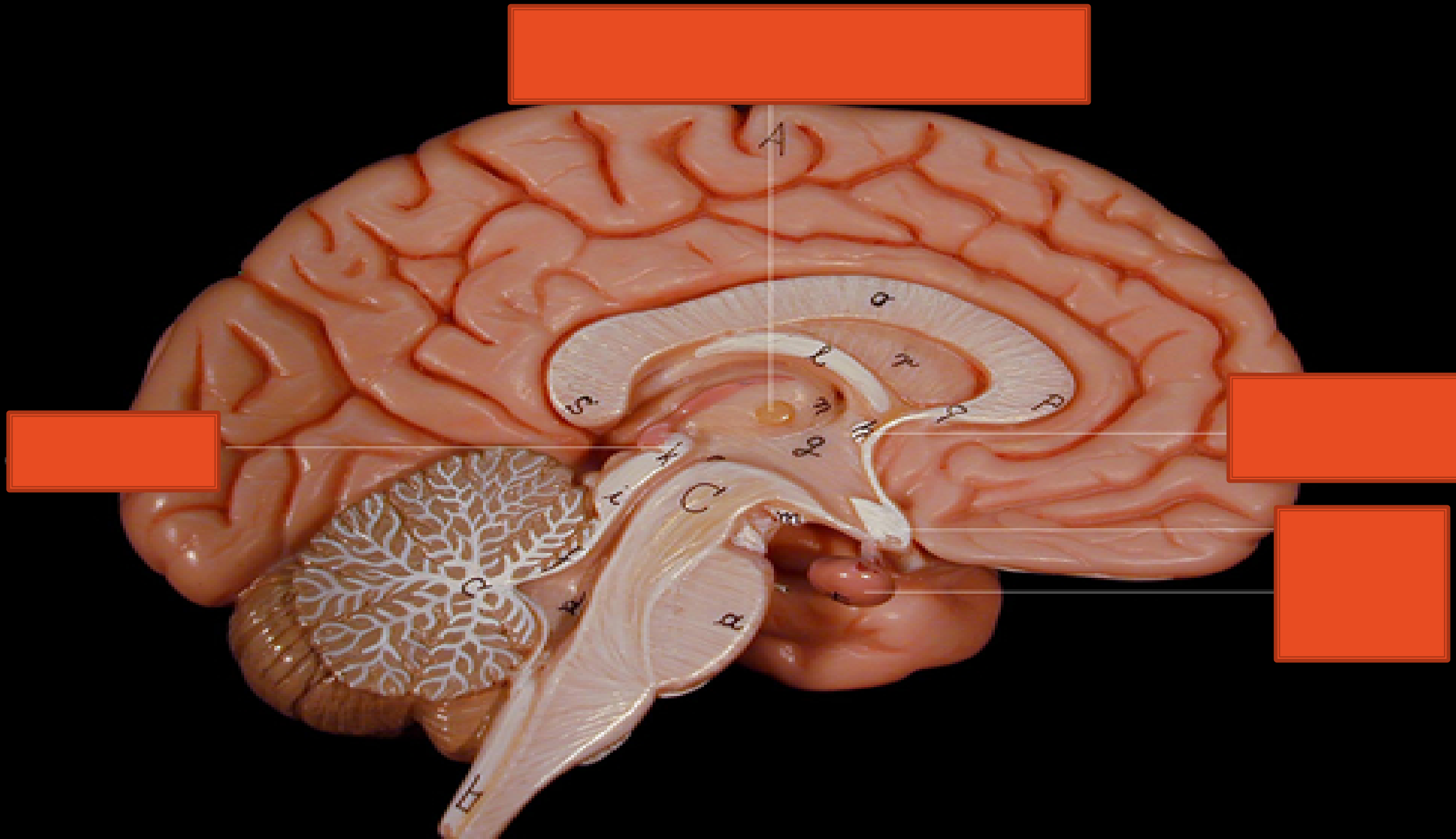


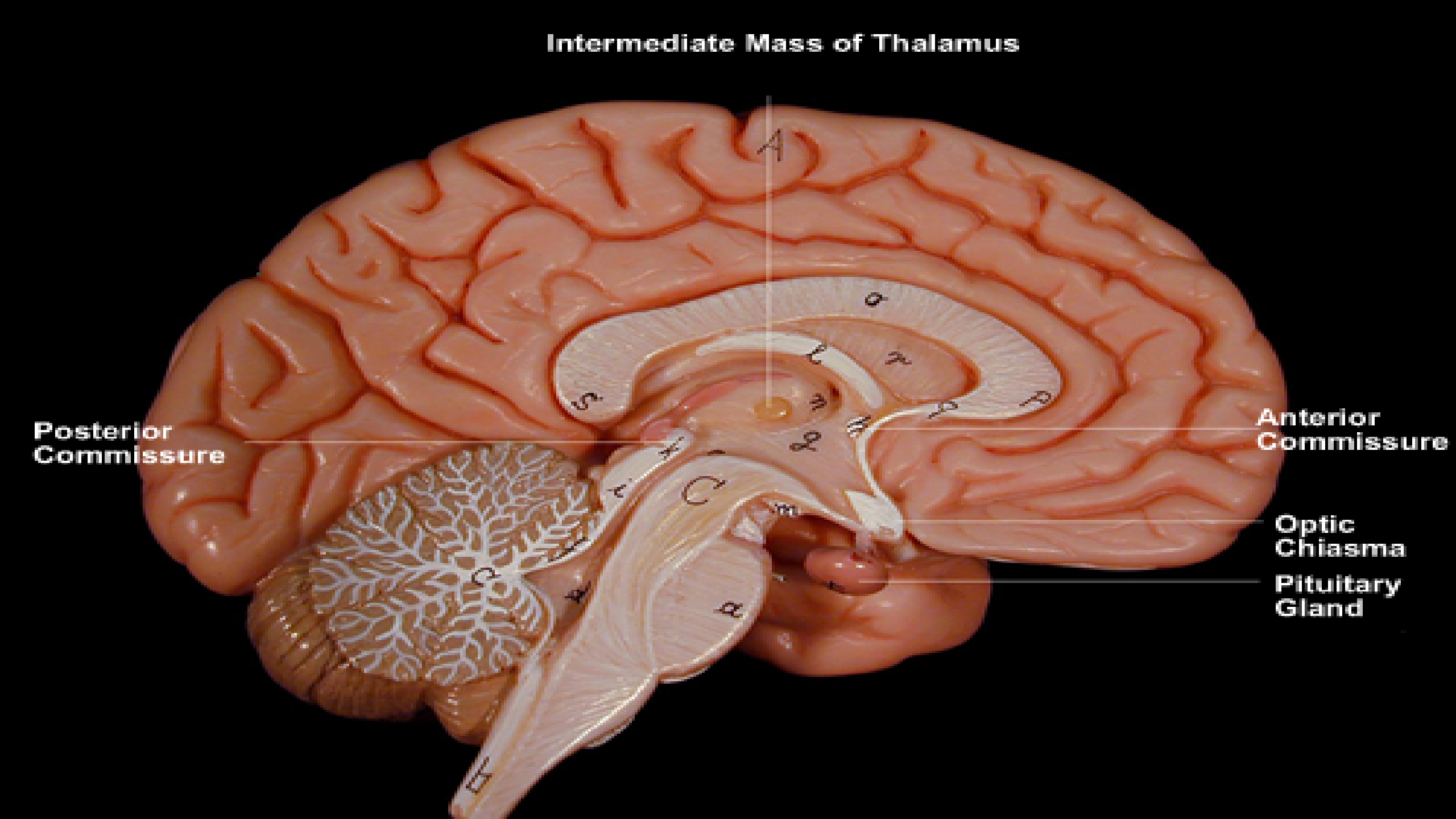

Axon
Myelin sheath
Endoneurium
Perineurium
Epineurium
Fascicle
Blood vessels
(b)

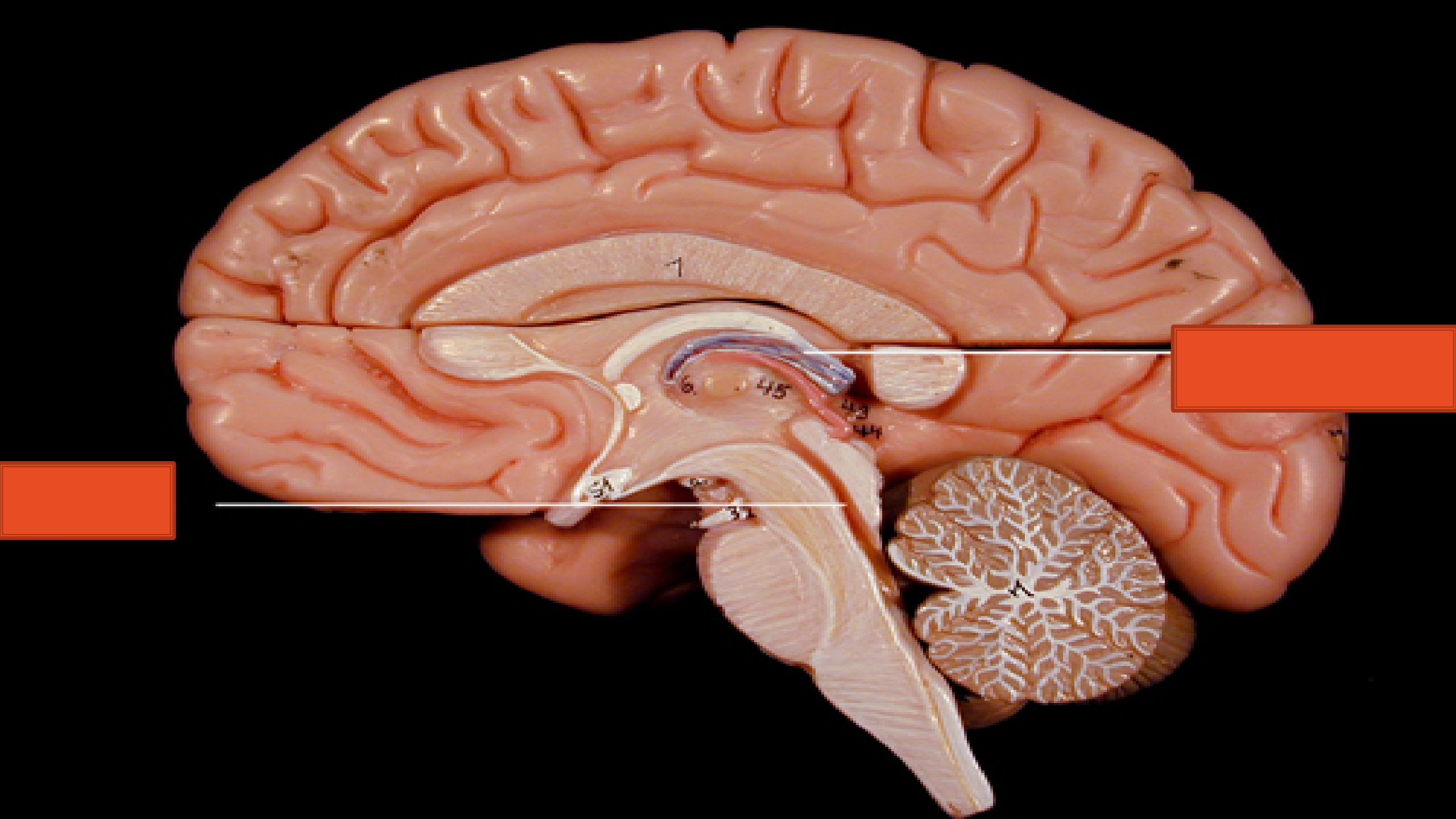
1

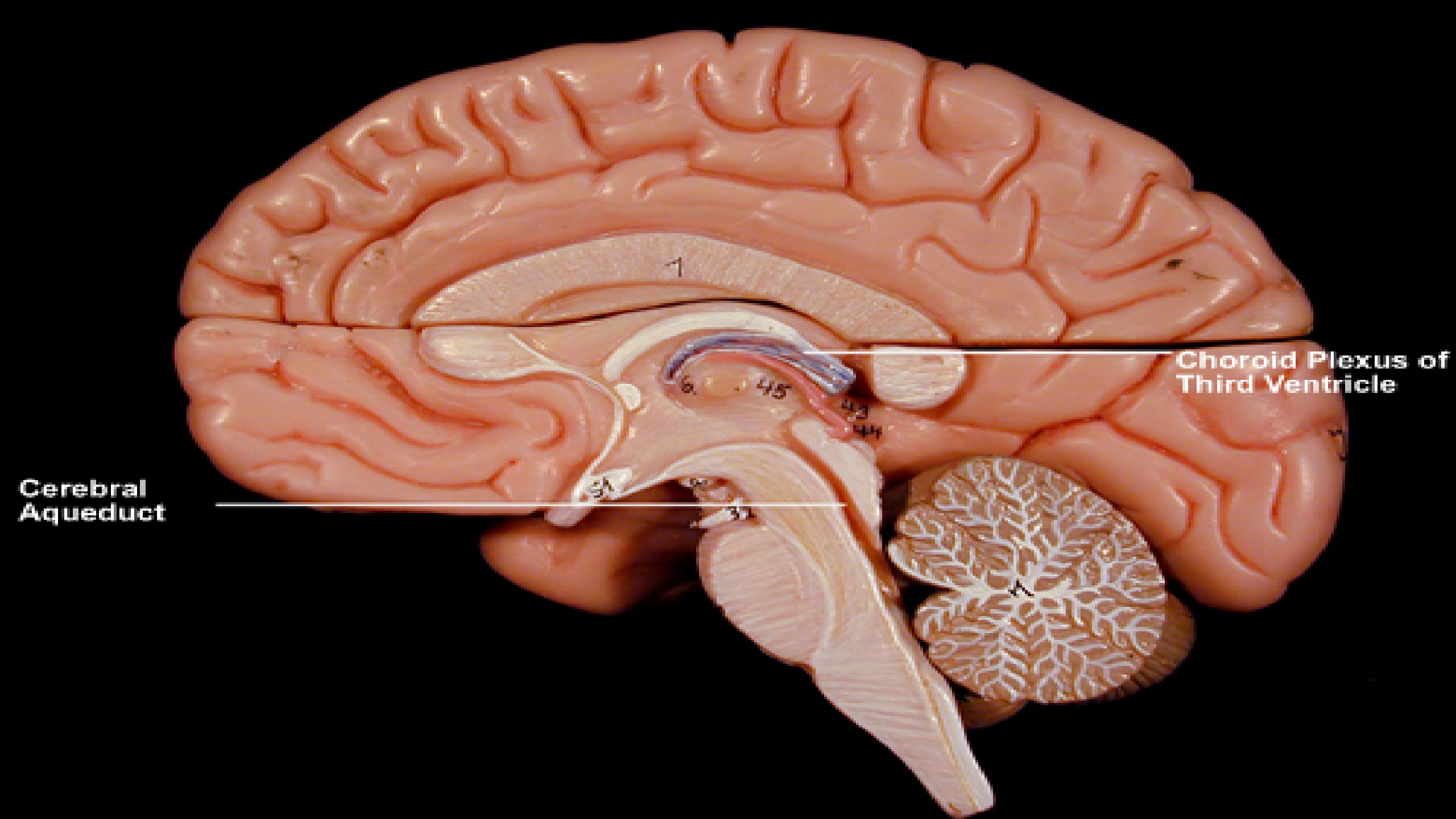
Nerve

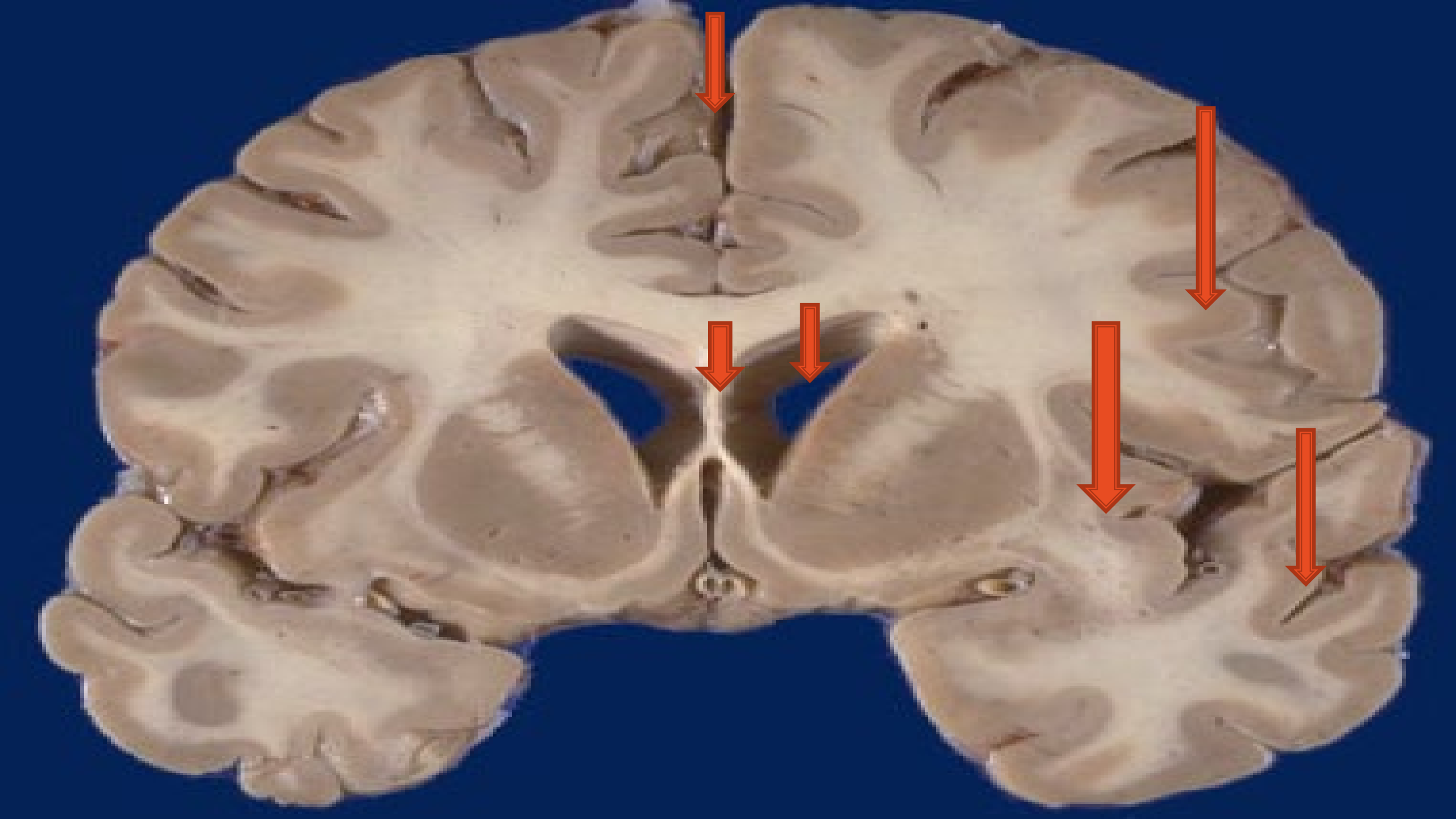

Ep
F

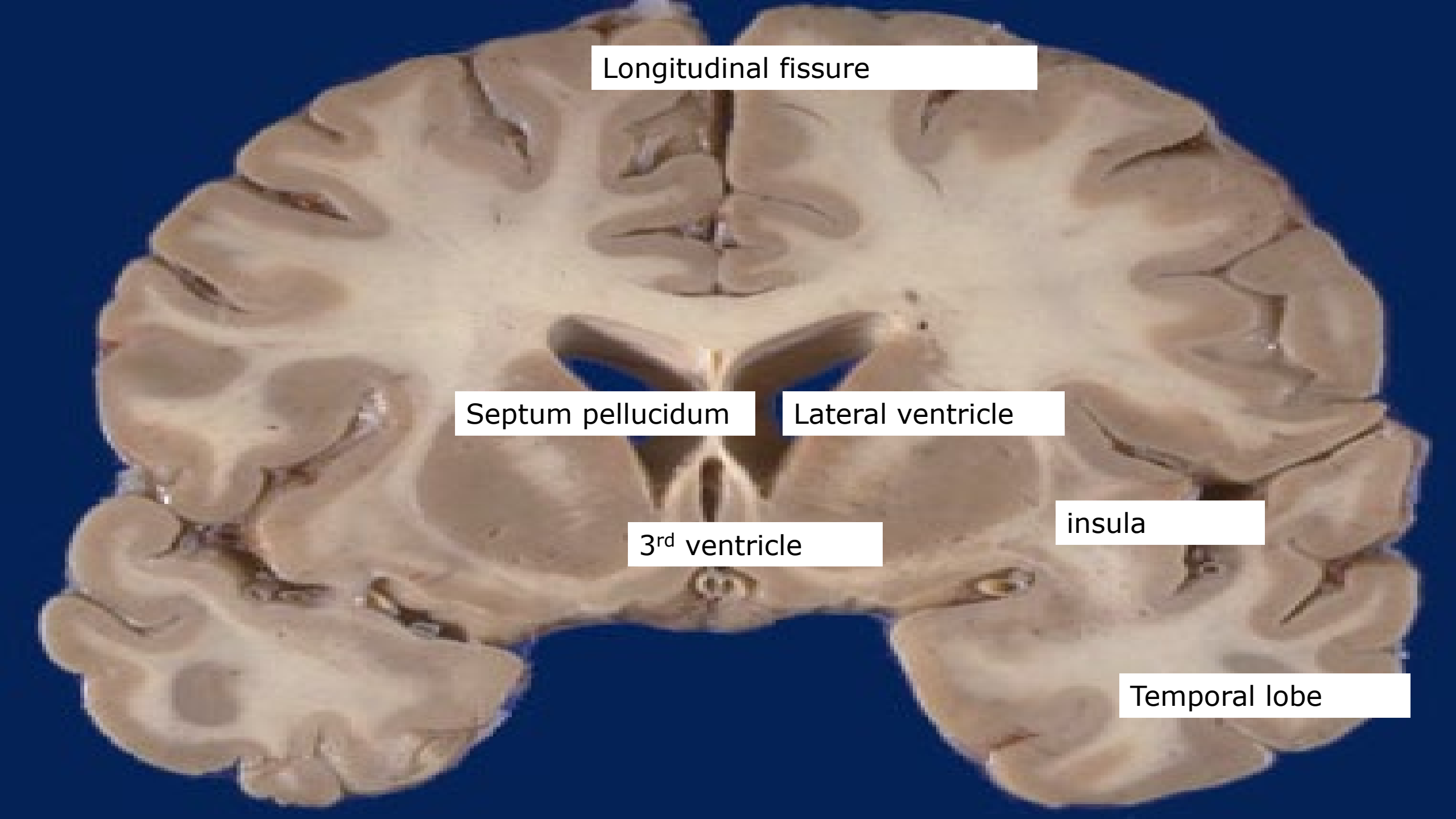


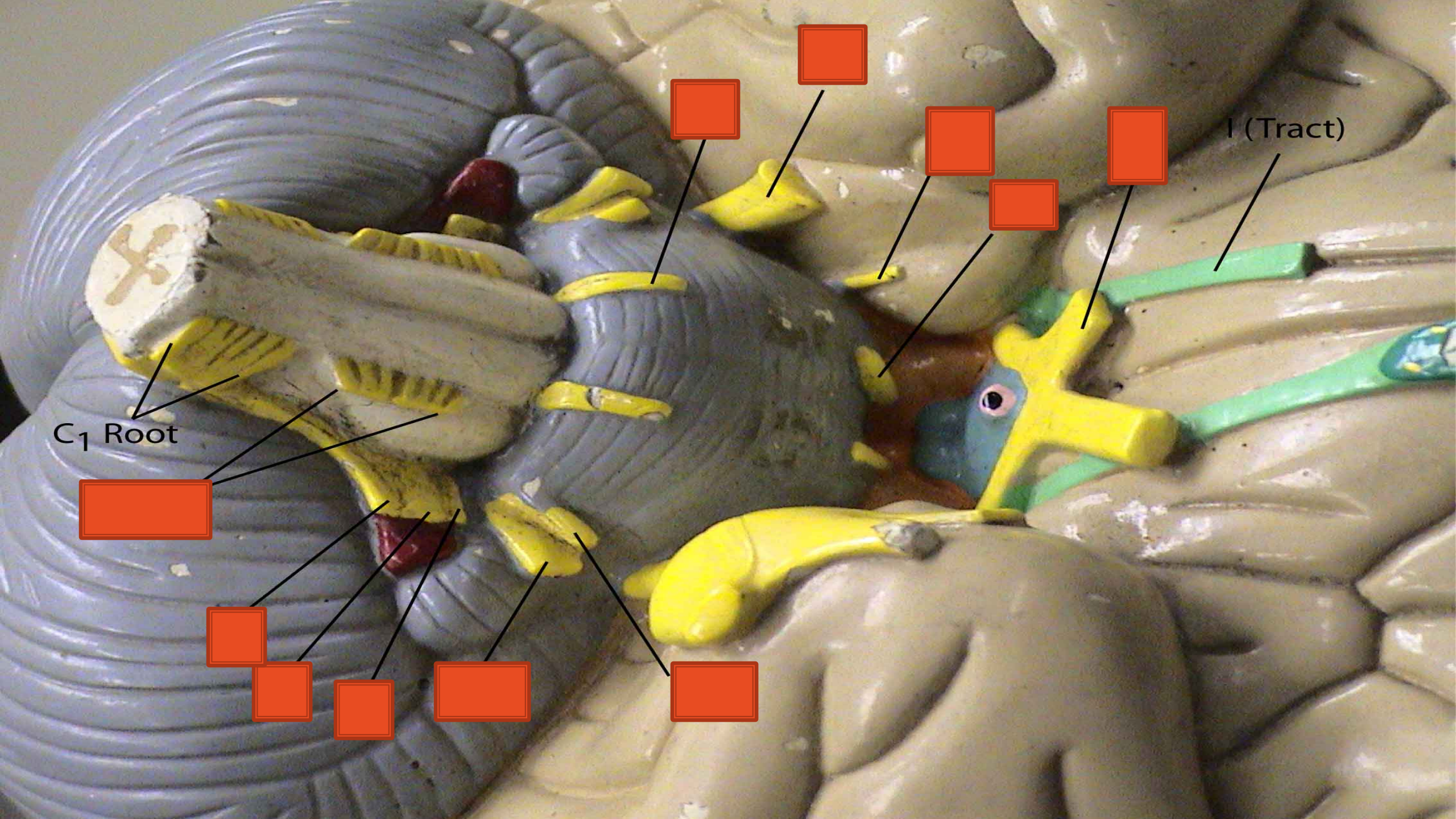

Intermediate Mass of Thalamus
Posterior Commissure
Anterior Commissure
Optic Chiasma
Pituitary Gland

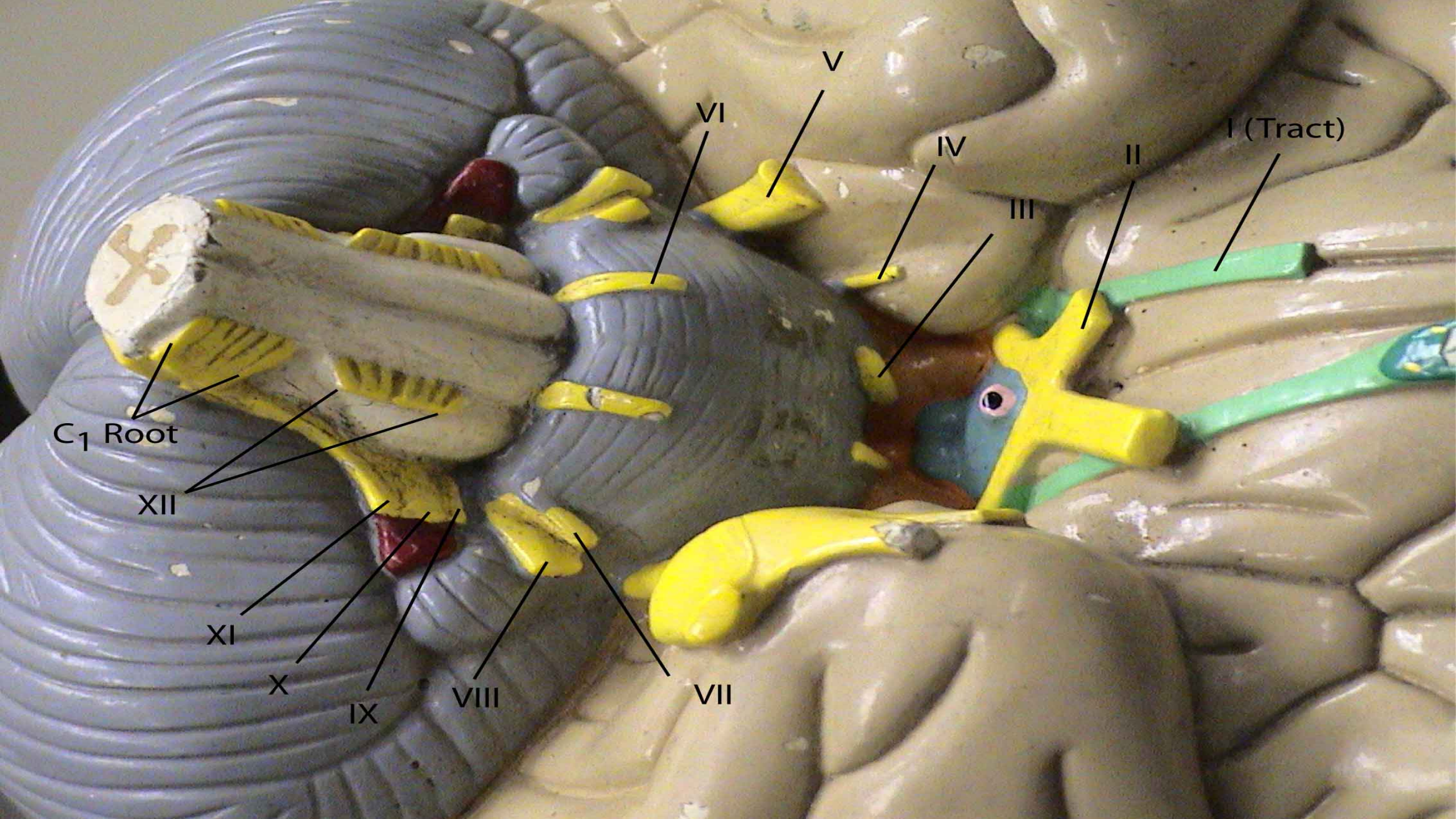

7
6
45
44
31
32
4

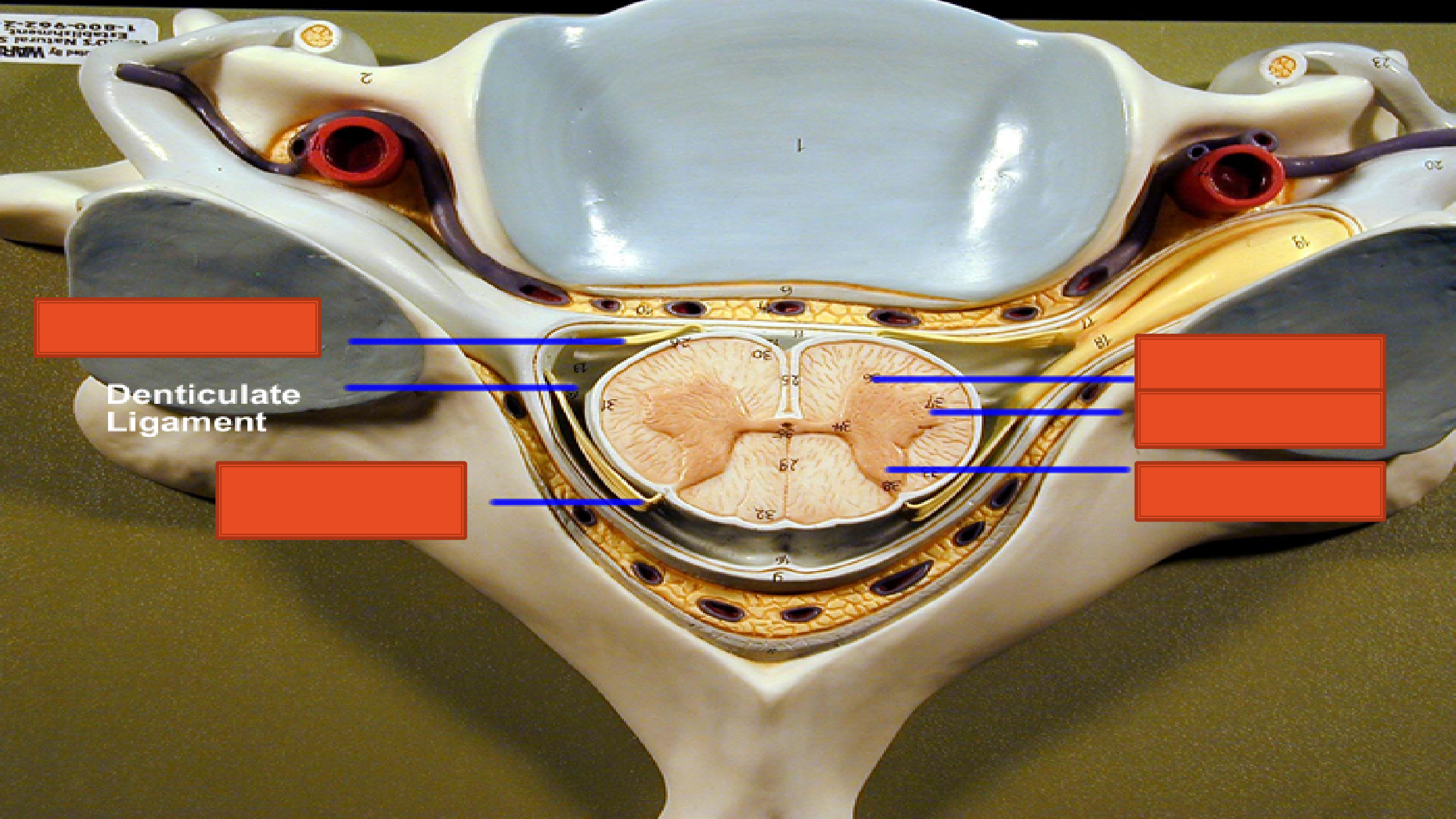

Choroid Plexus of
Third Ventricle
Cerebral
Aqueduct

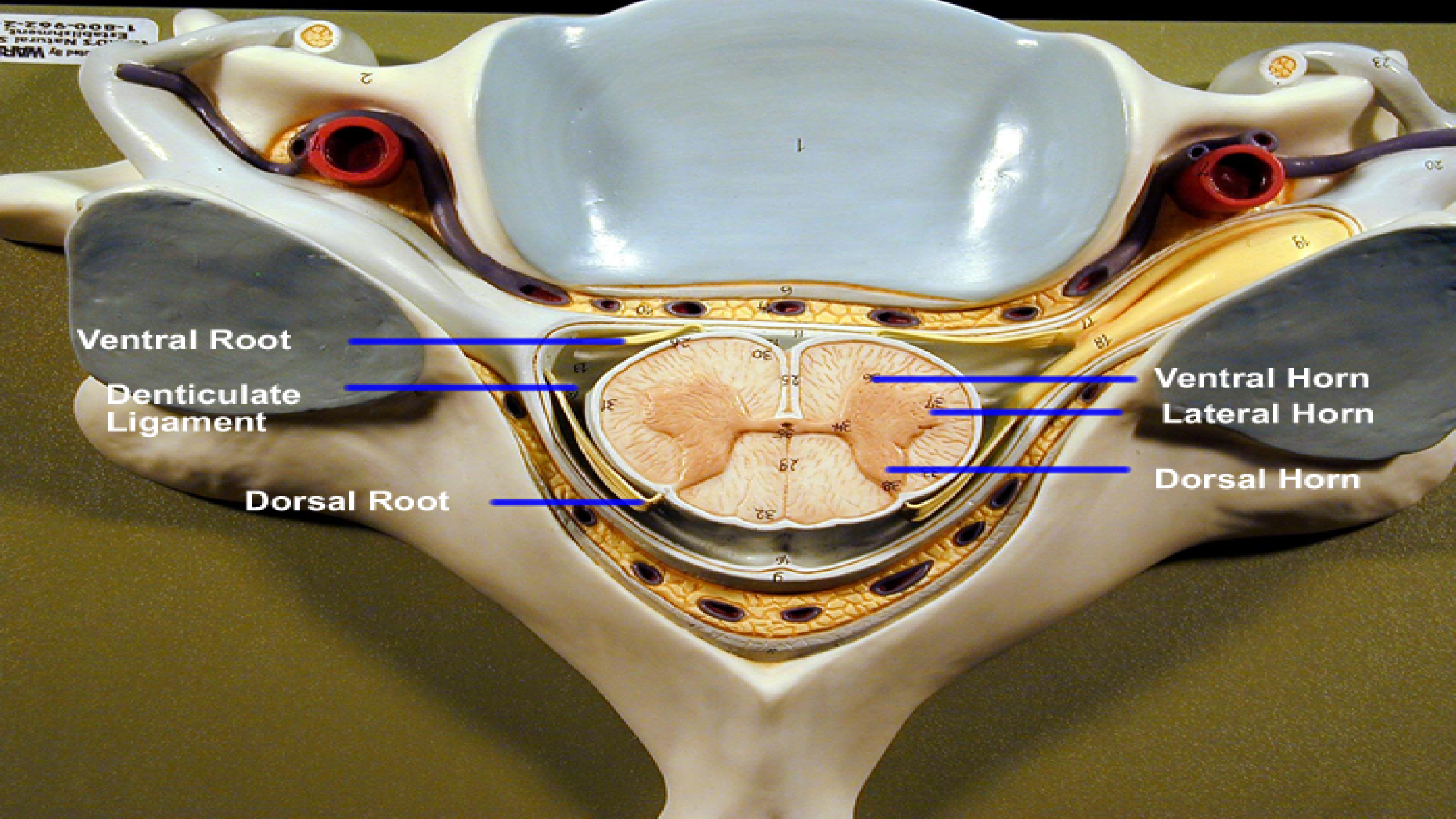


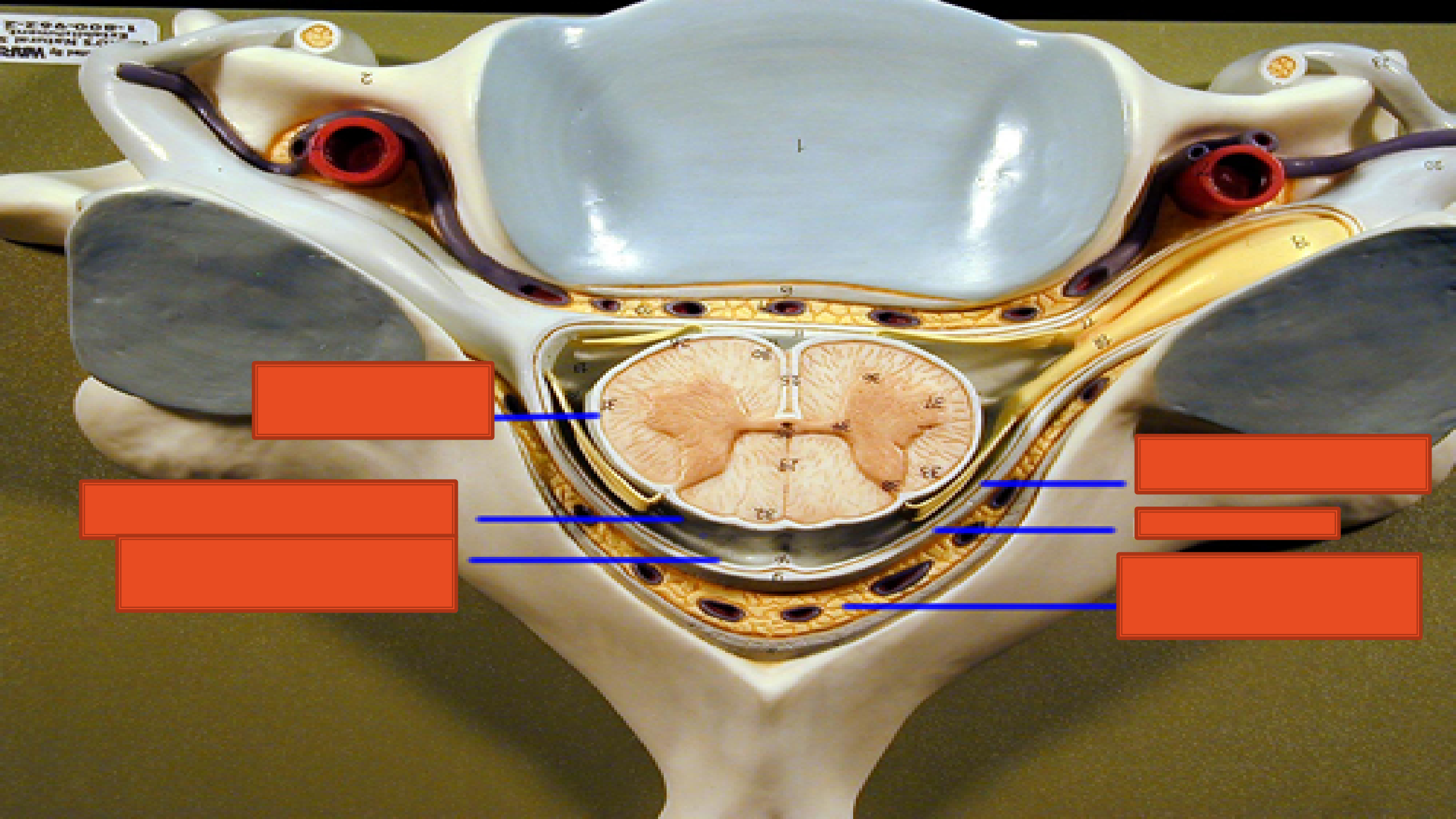

Longitudinal fissure
Septum pellucidum
Lateral ventricle
insula
3rd ventricle
Temporal lobe

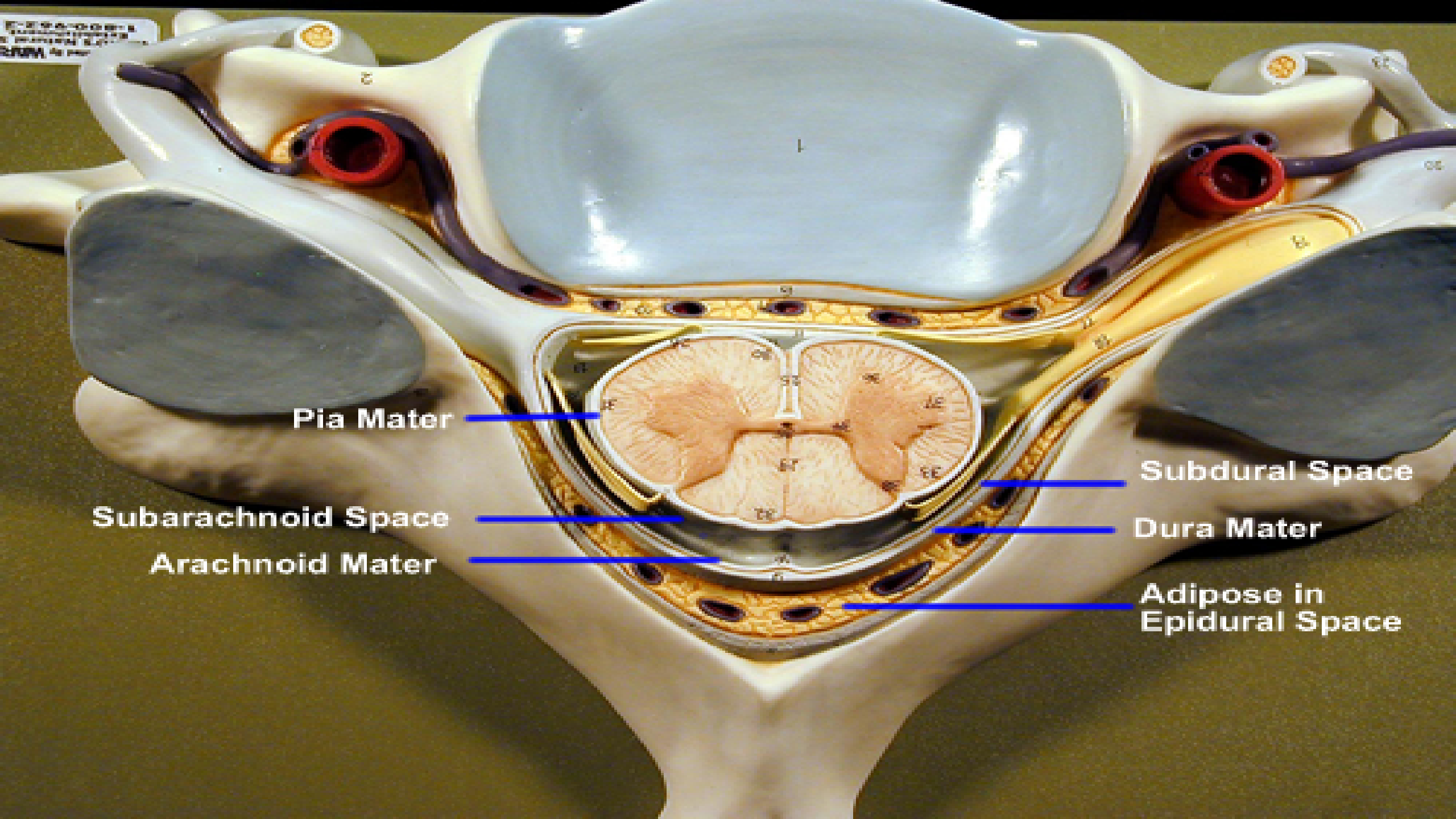

C1 Root
I (Tract)

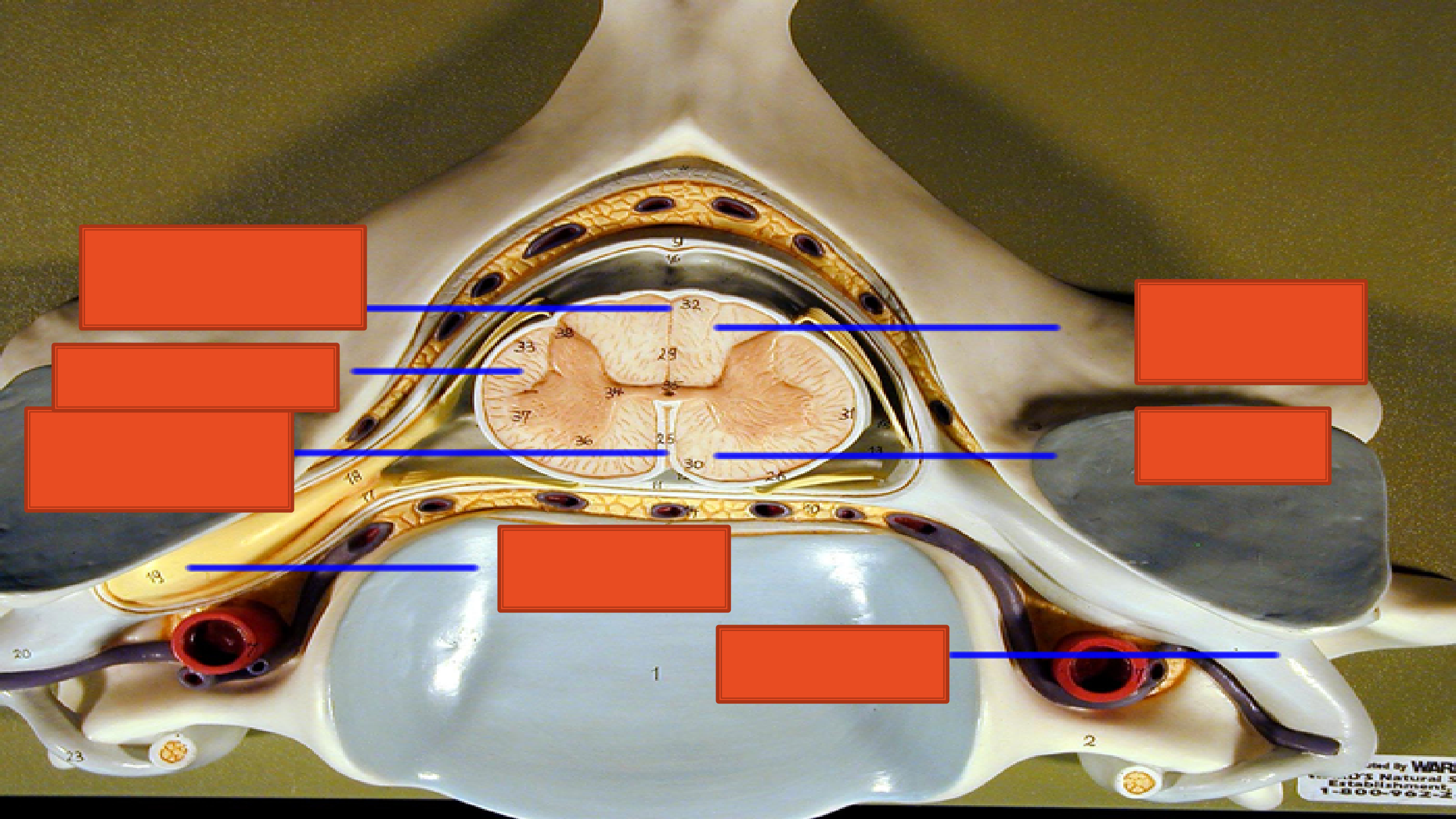

V
VI
IV
II
I (Tract)
III
C1 Root
XII
XI
X
IX
VIII
VII

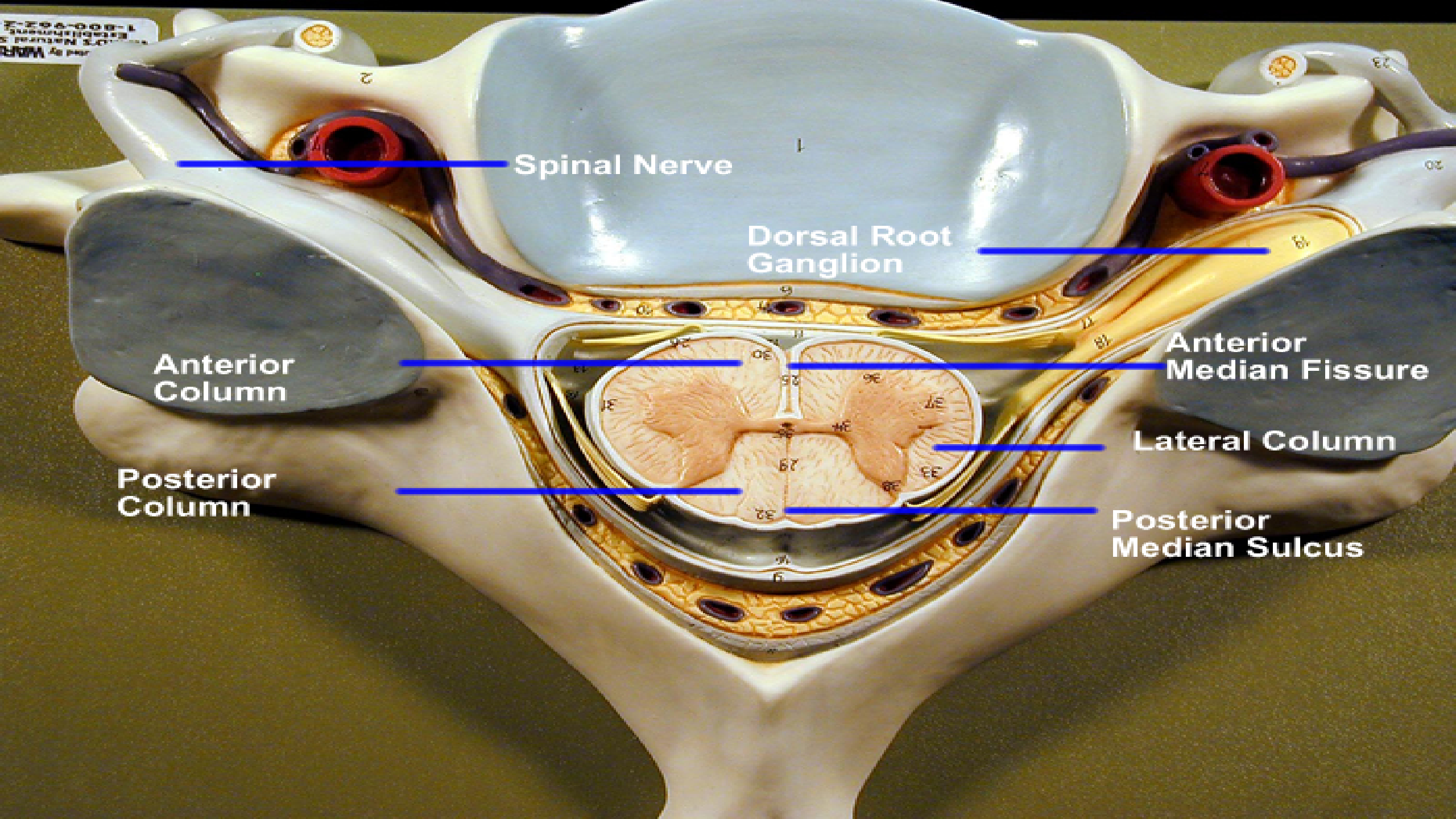

Denticulate Ligament

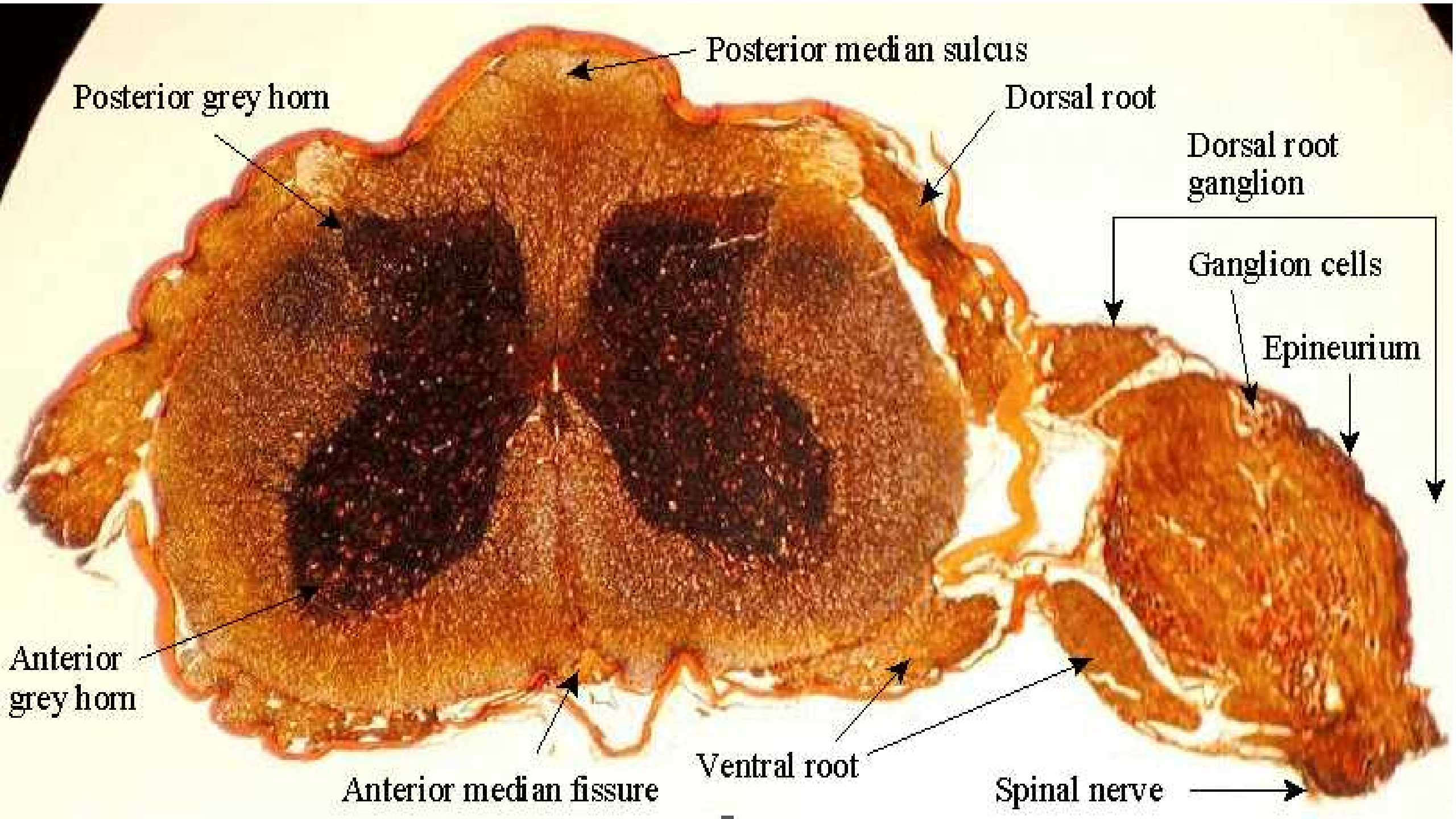

Ventral Root
Denticulate Ligament
Dorsal Root
Ventral Horn
Lateral Horn
Dorsal Horn

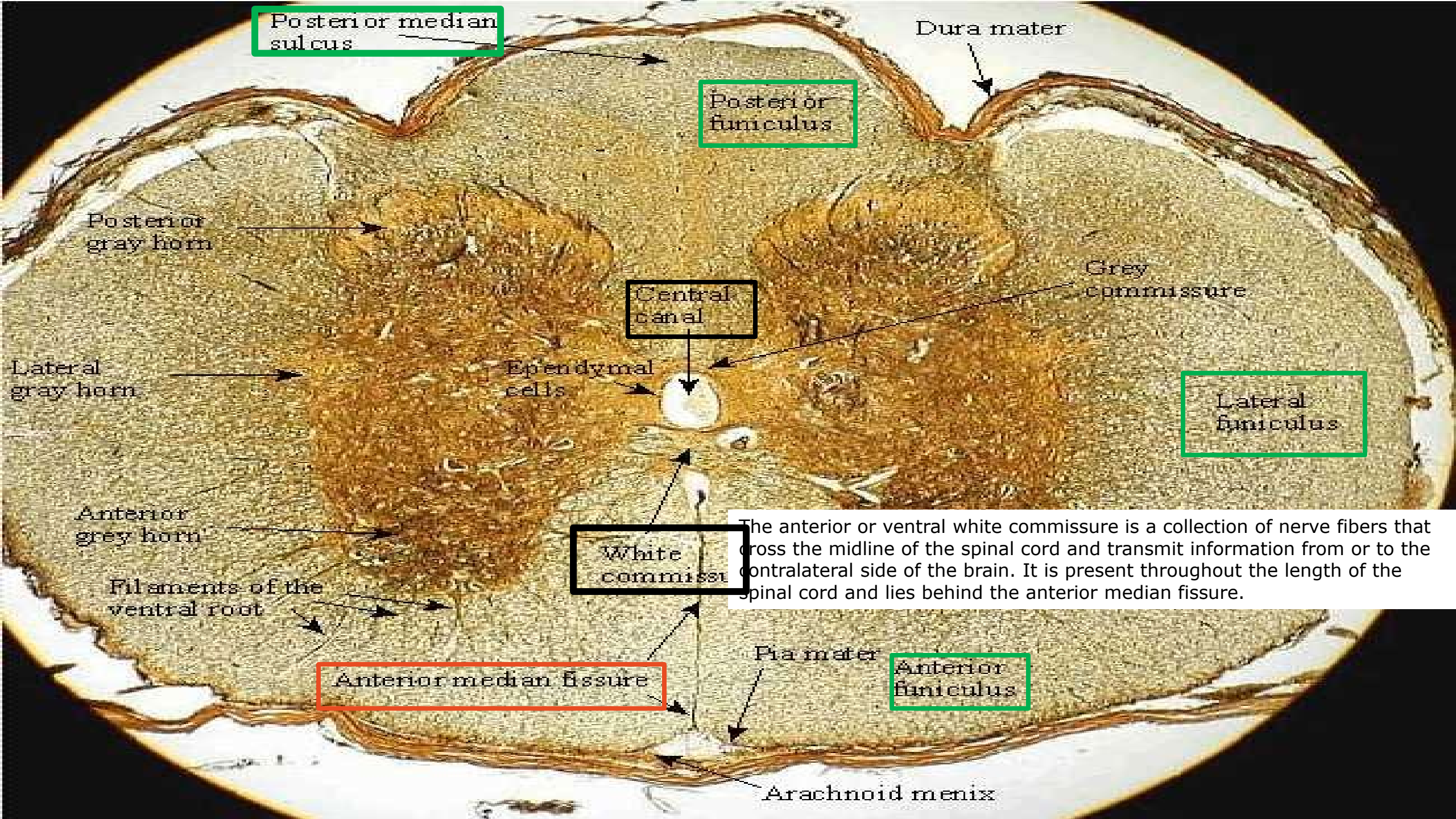



Pia Mater
Subarachnoid Space
Arachnoid Mater
Subdural Space
Dura Mater
Adipose in
Epidural Space

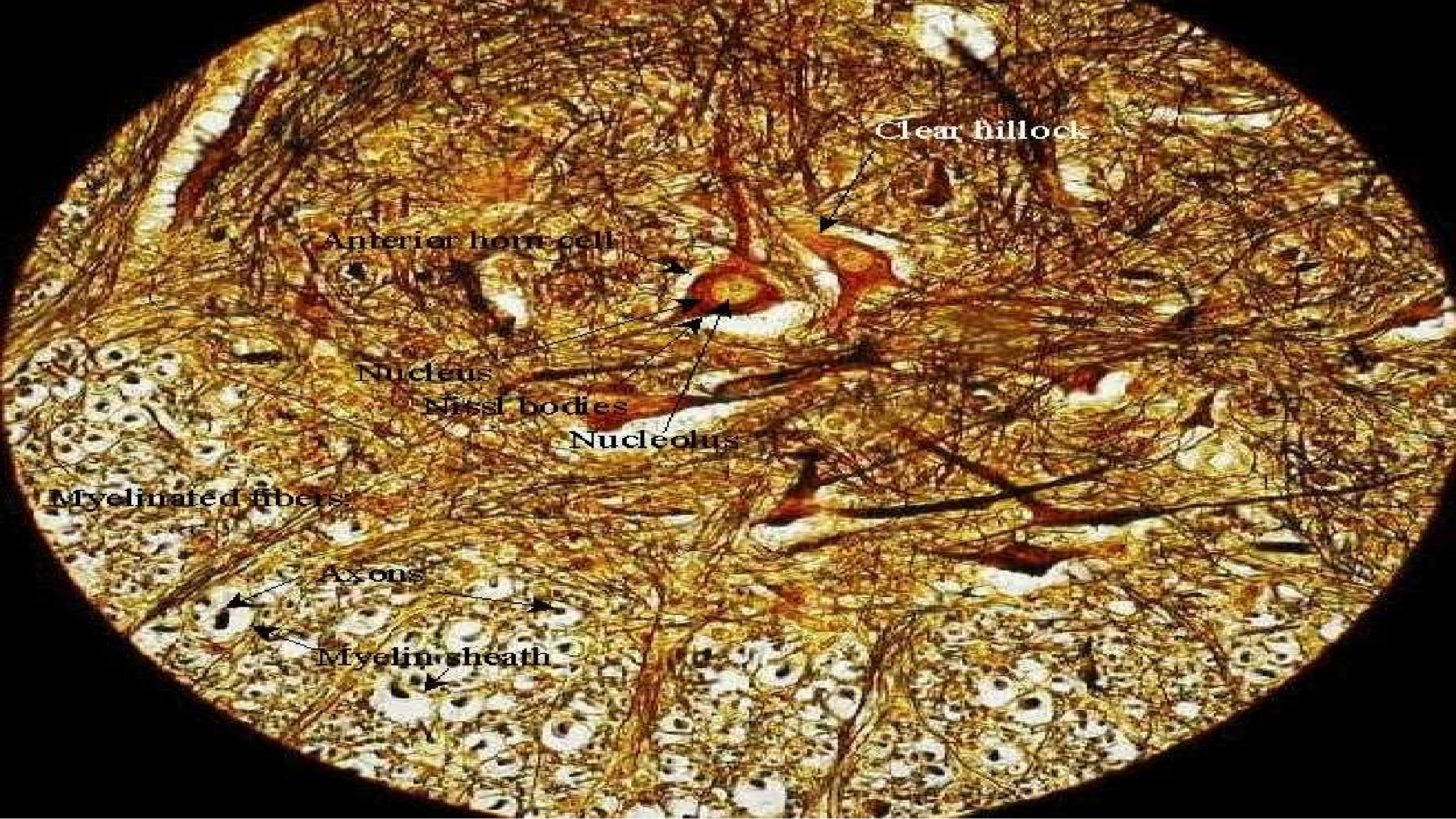

32
33
29
34
37
36
25
30
18
17
19
20
1
2
23

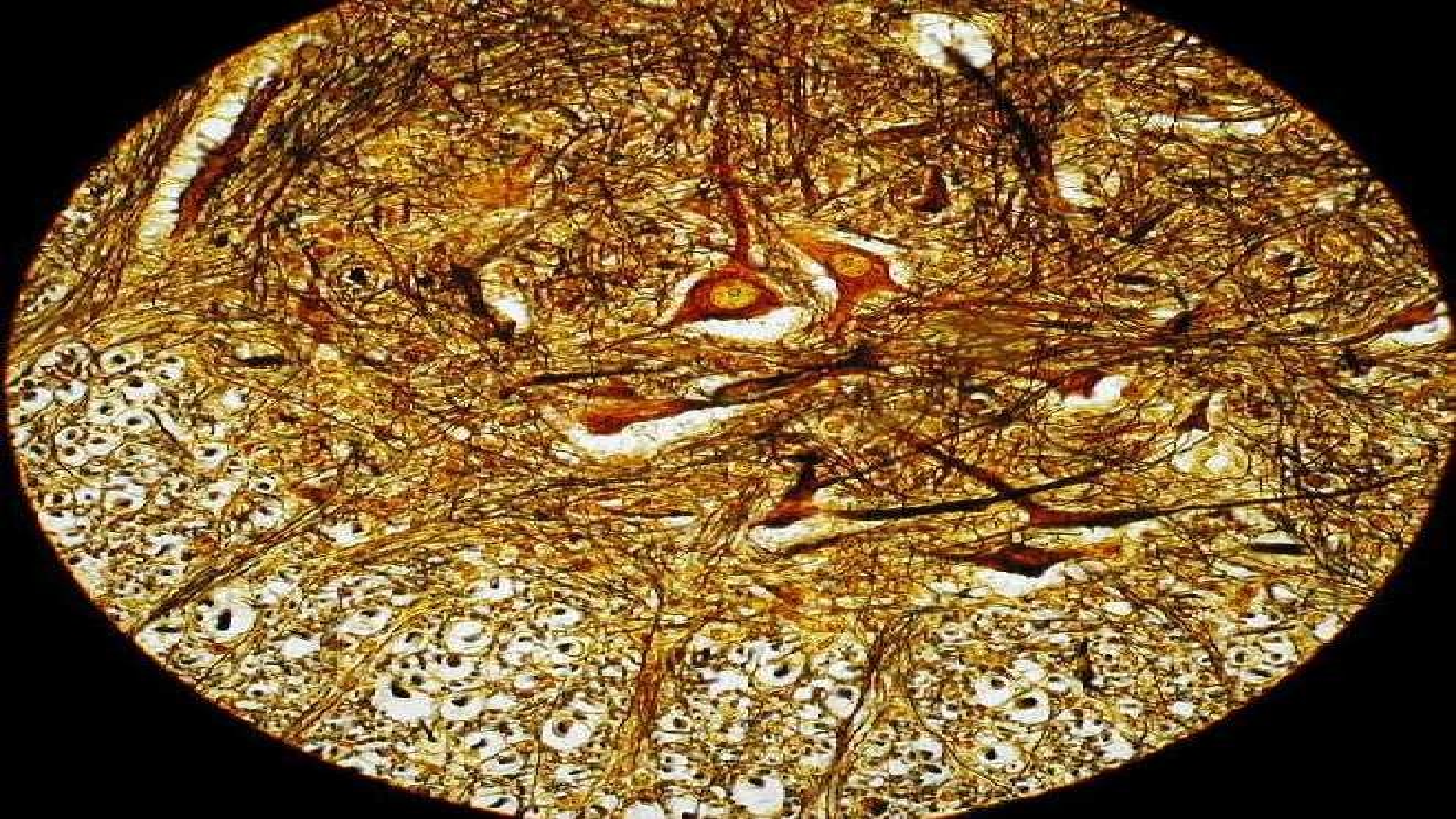

Spinal Nerve
Dorsal Root Ganglion
Anterior Column
Anterior Median Fissure
Lateral Column
Posterior Column
Posterior Median Sulcus

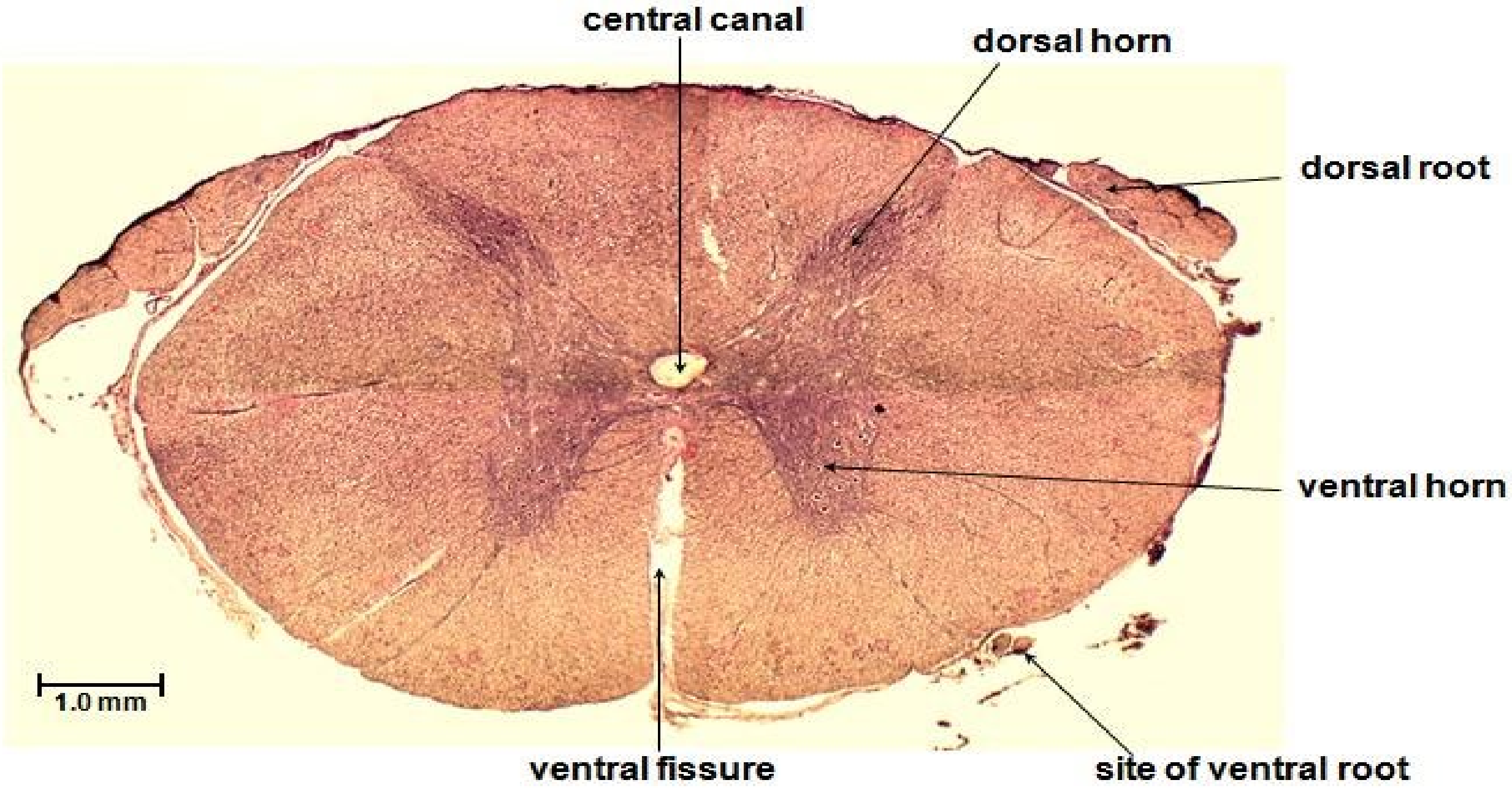

Posterior median sulcus
Posterior grey horn
Dorsal root
Dorsal root ganglion
Ganglion cells
Epineurium
Anterior grey horn
Anterior median fissure
Ventral root
Spinal nerve

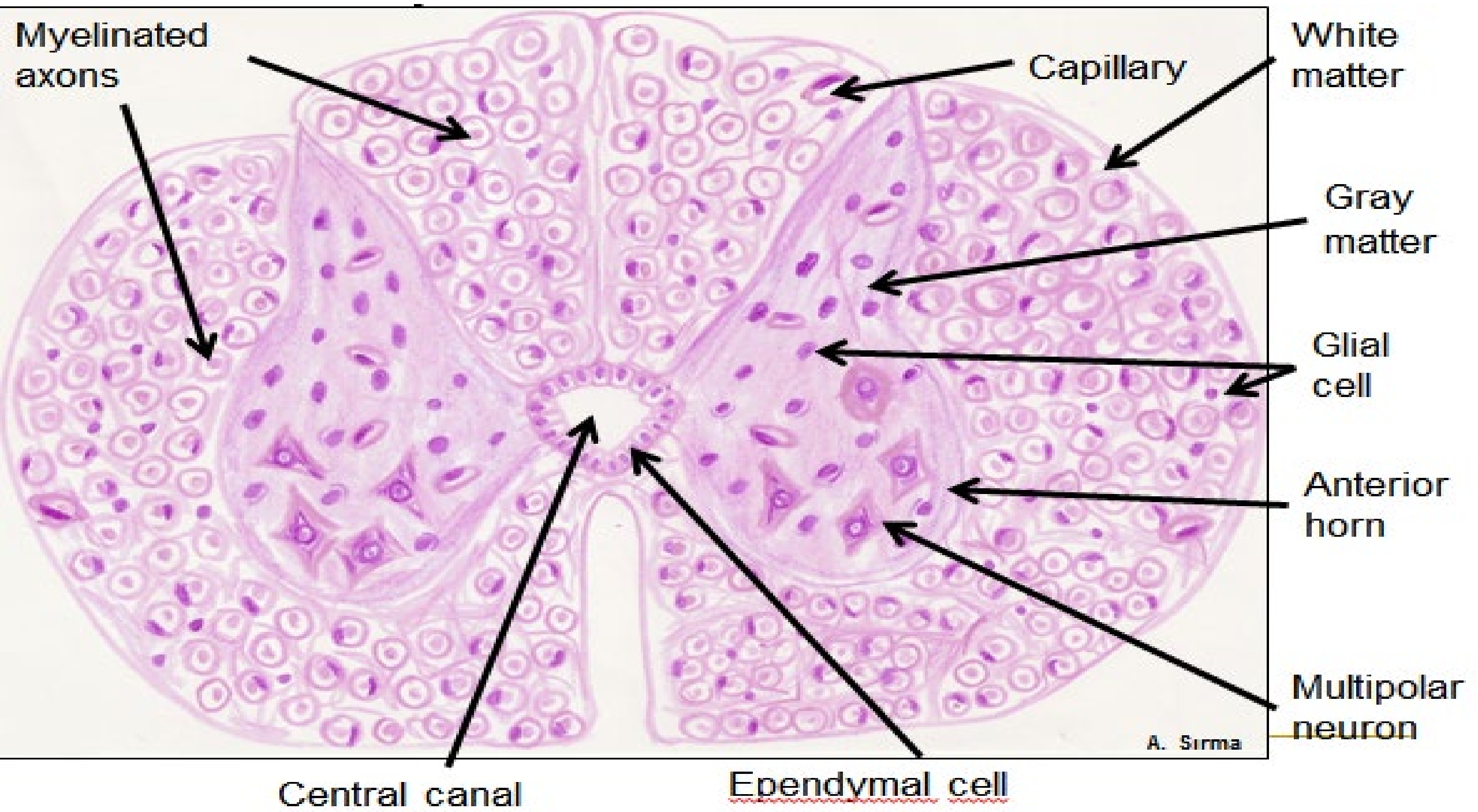


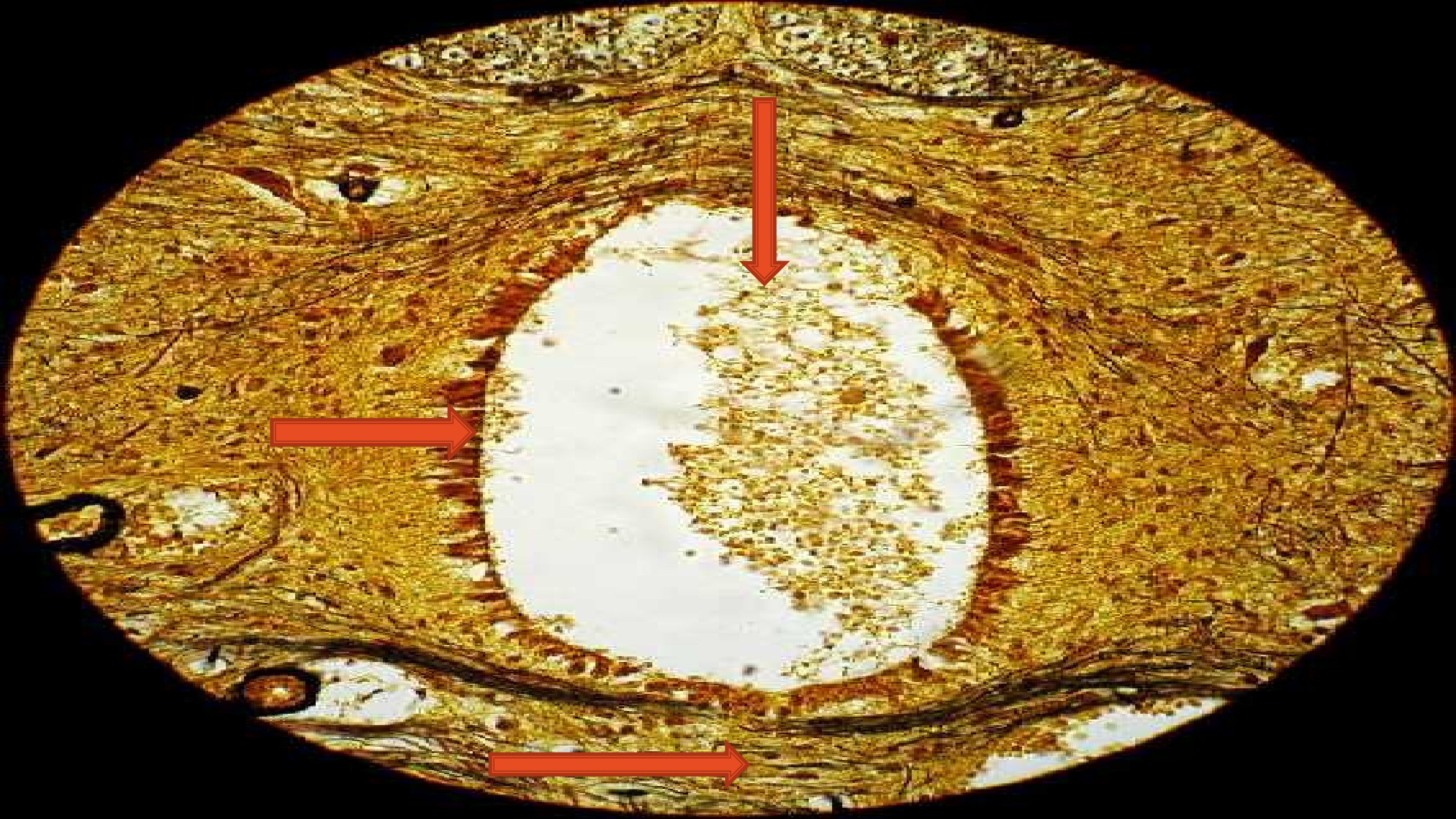
The anterior or ventral white commissure is a collection of nerve fibers that cross the midline of the spinal cord and transmit information from or to the contralateral side of the brain. It is present throughout the length of the spinal cord and lies behind the anterior median fissure.

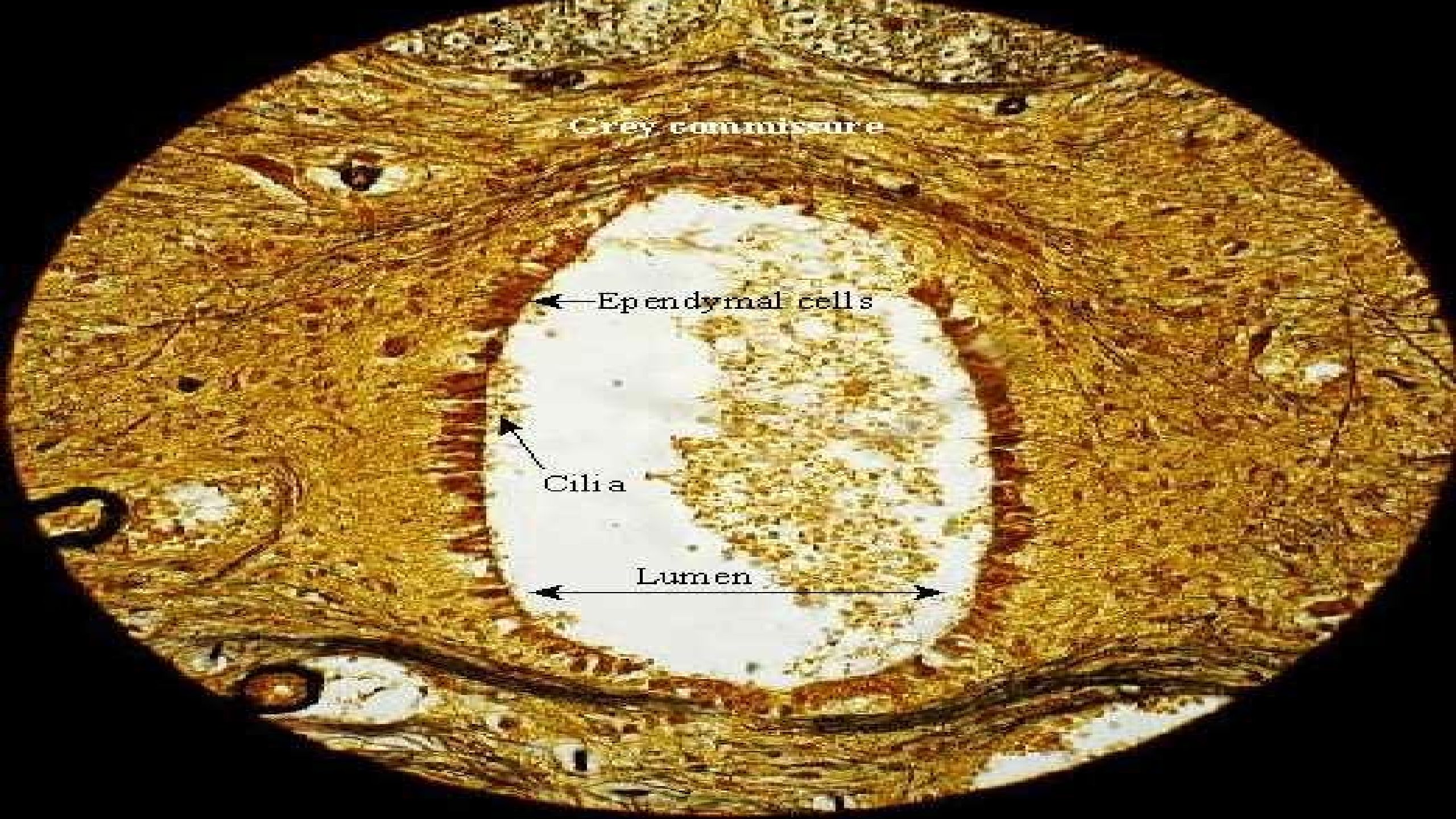

Clear hillock
Anterior horn cell
Nucleus
Nissl bodies
Nucleolus
Myelinated fibers
Axons
Myelin sheath



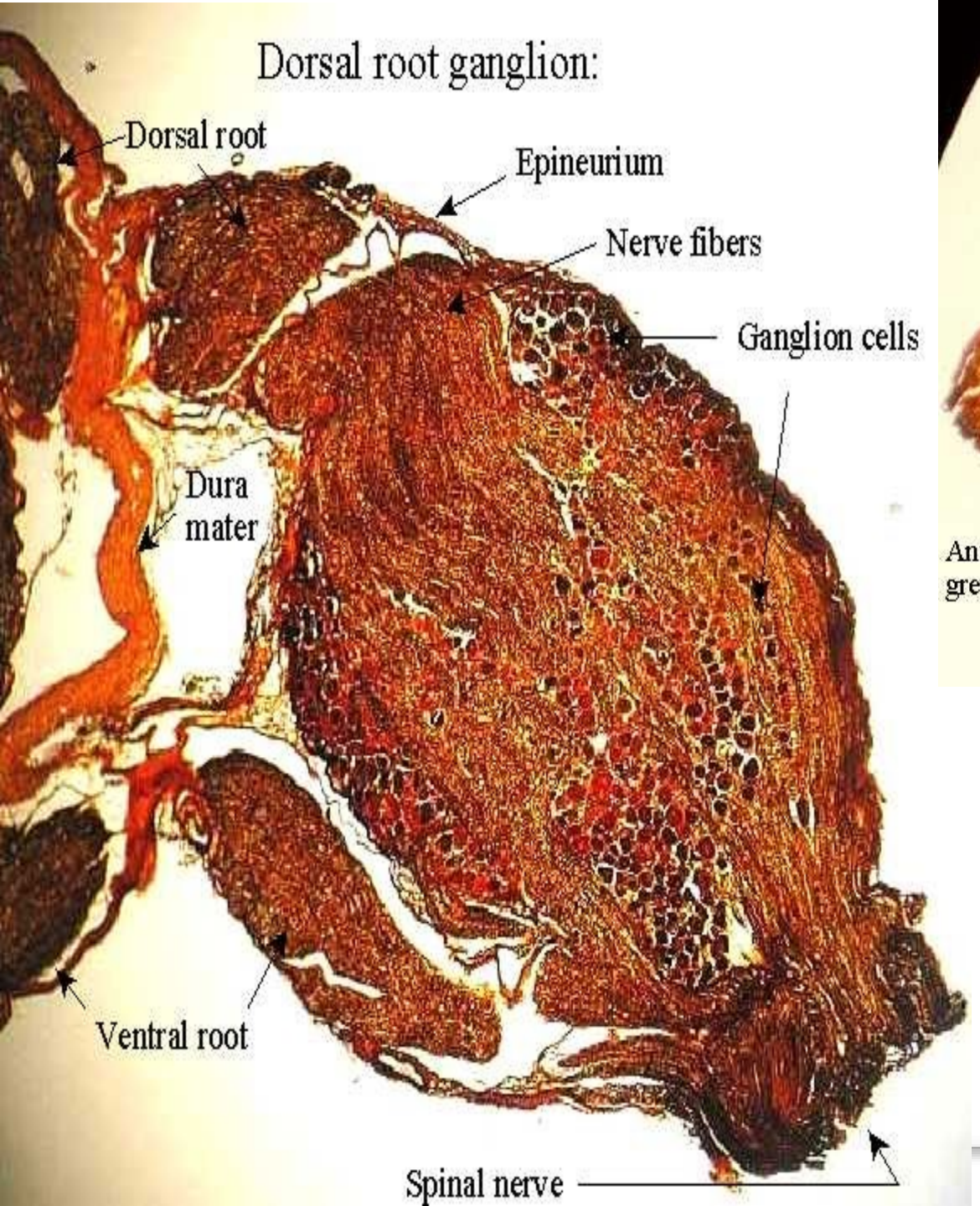

central canal
dorsal horn
dorsal root
ventral horn
1.0 mm
ventral fissure
site of ventral root

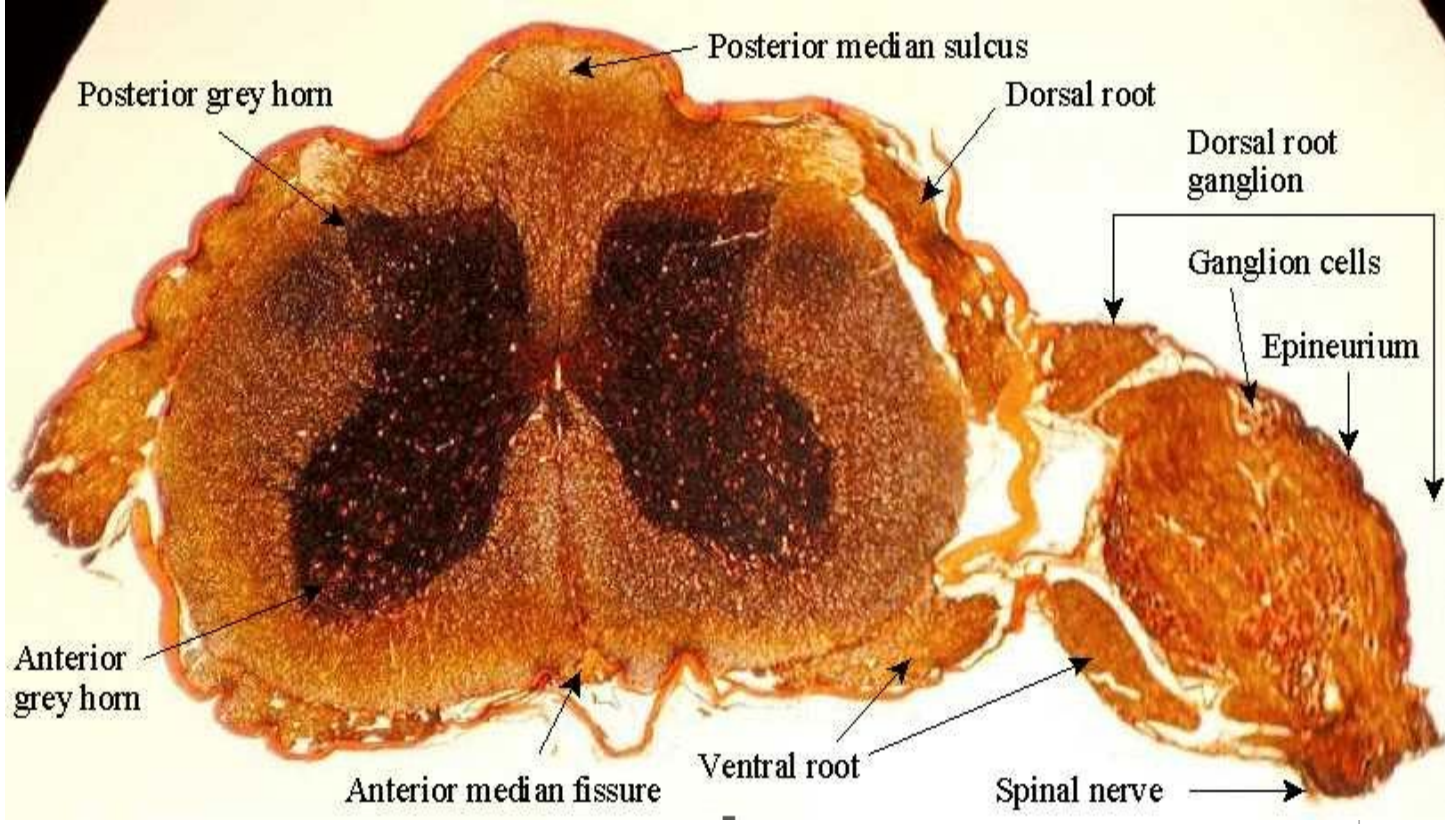

Myelinated axons
Capillary
White matter
Gray matter
Glial cell
Anterior horn
Multipolar neuron
A. Sirma
Central canal
Ependymal cell

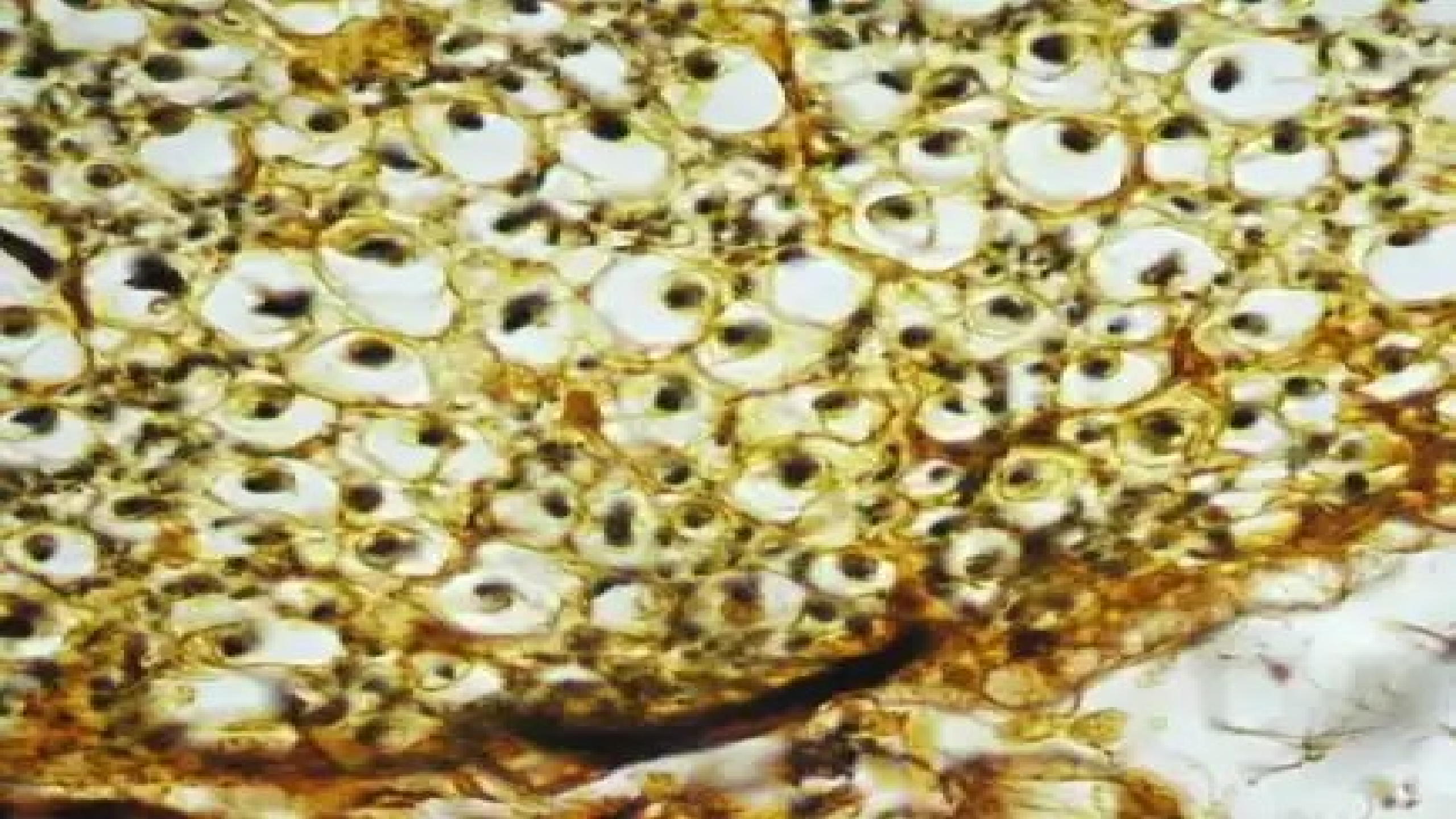


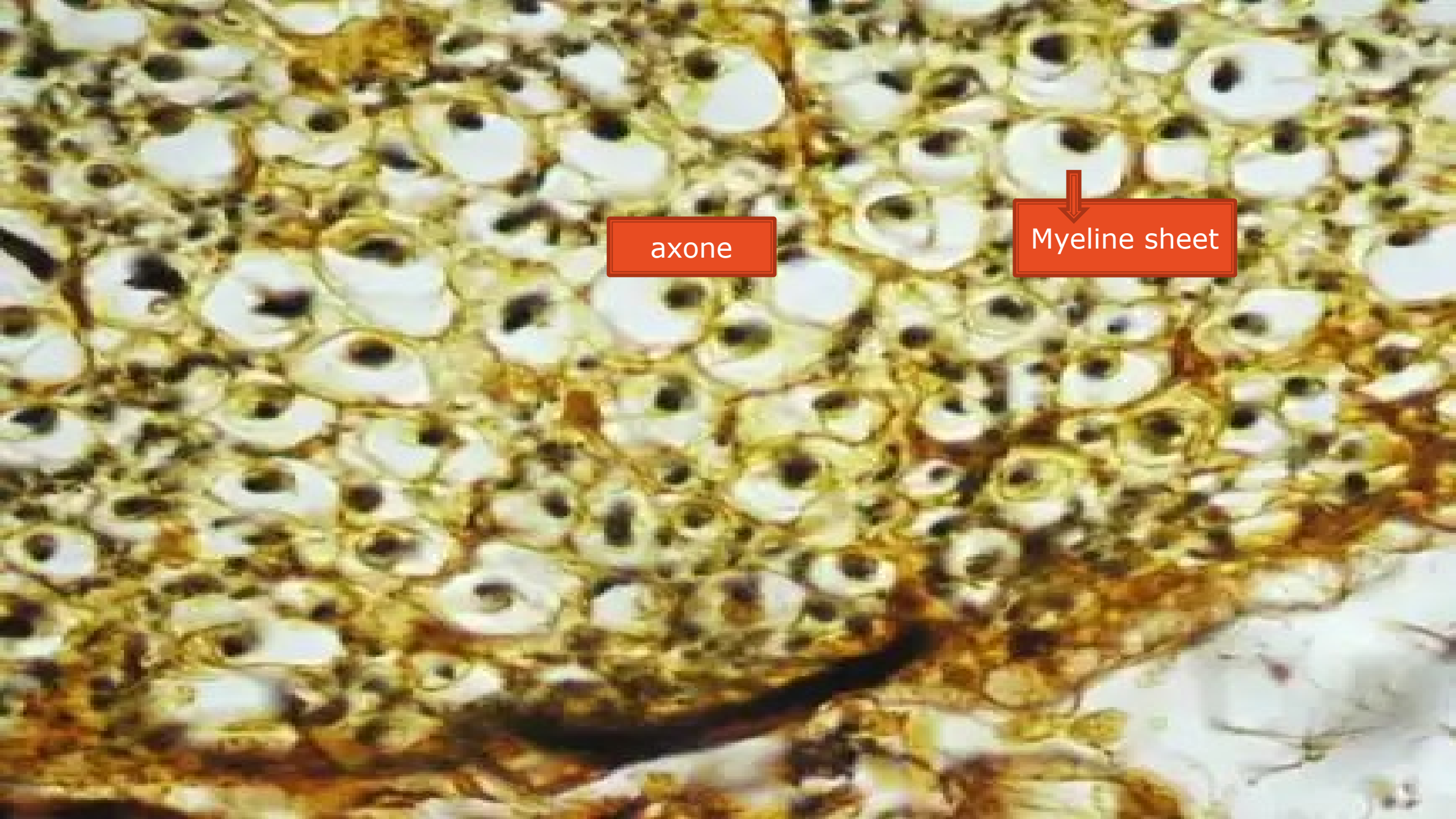

Grey commissure
Ependymal cells
Cilia
Lumen

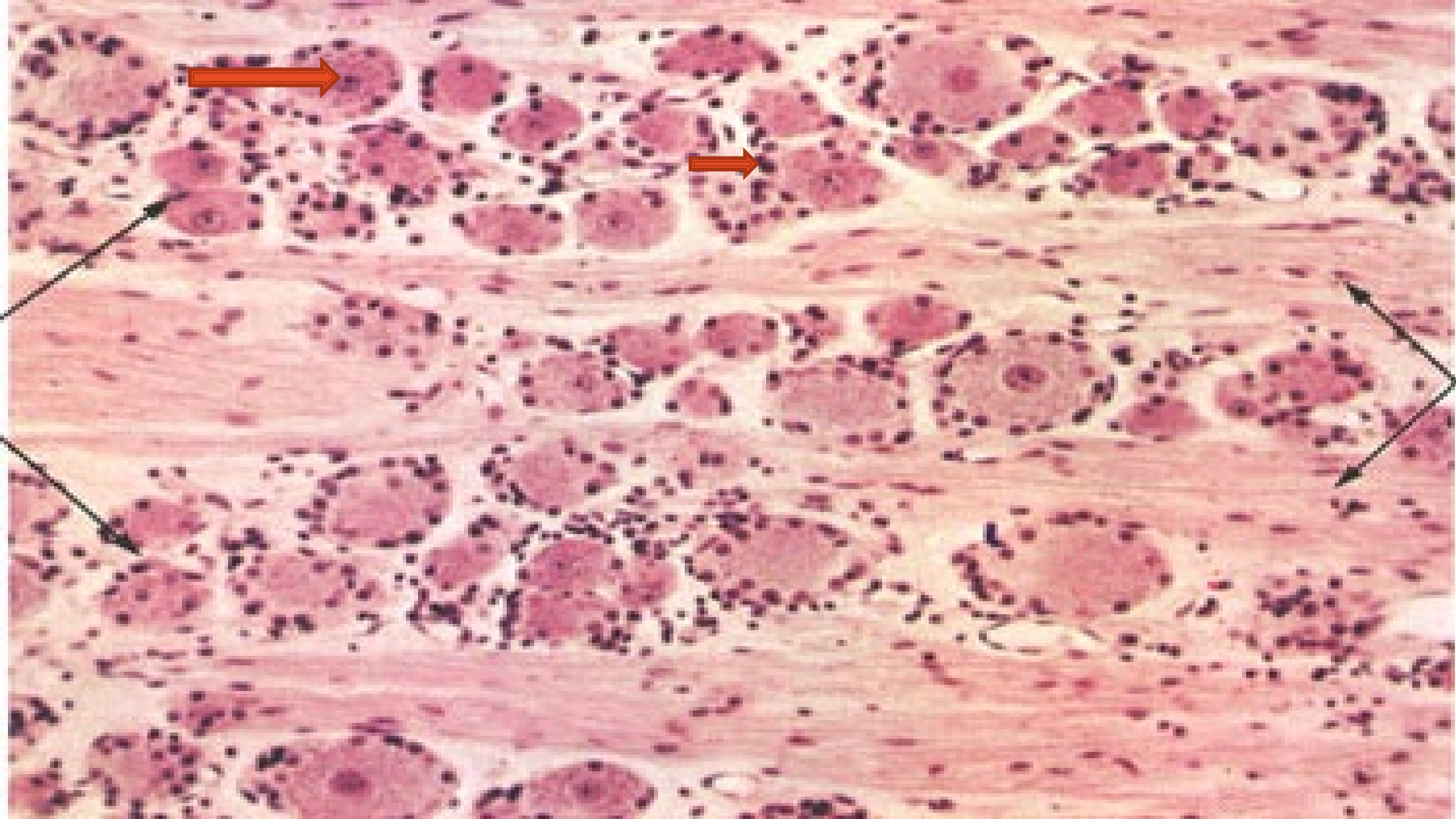
Dorsal root ganglion:

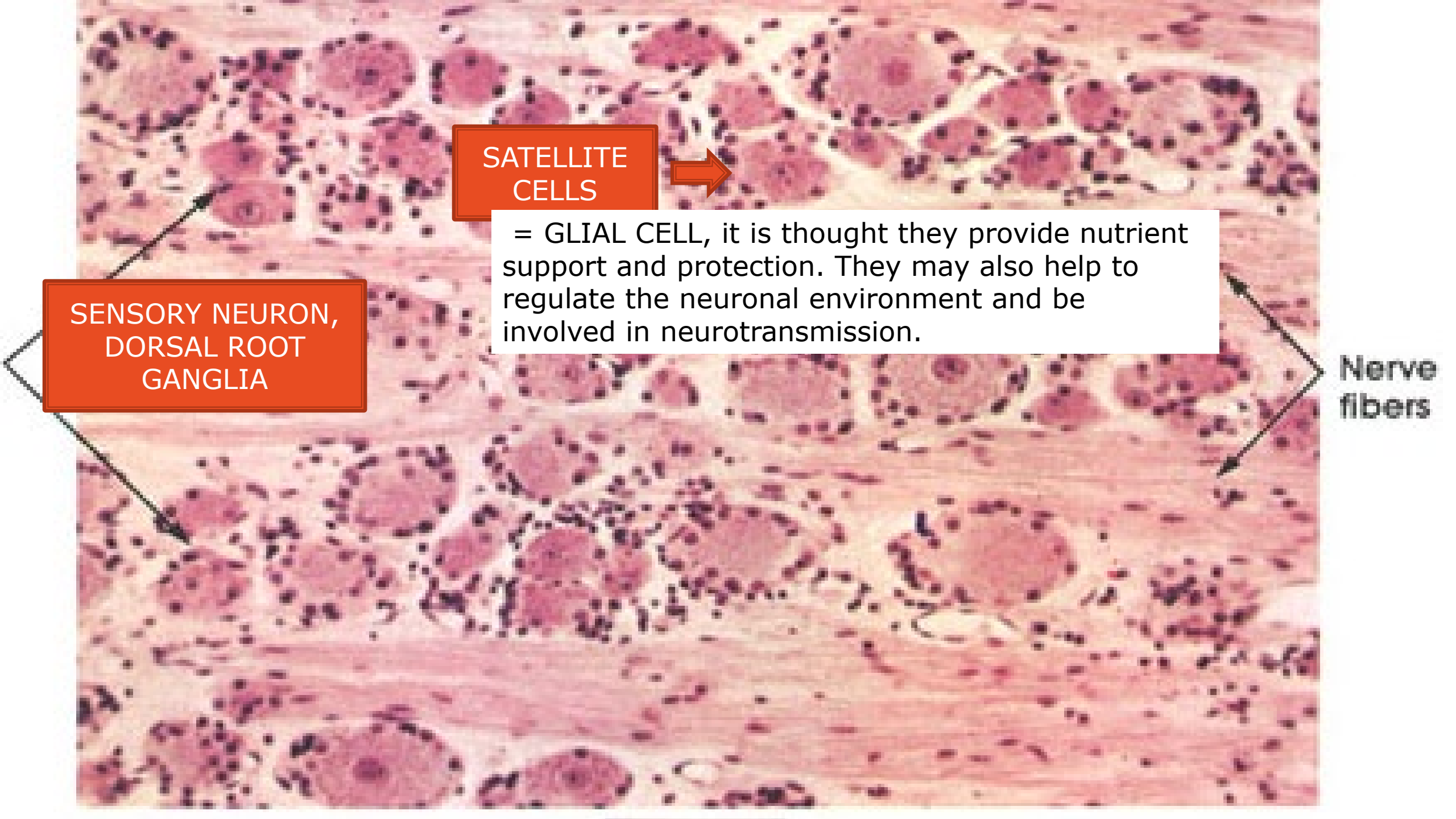







axone
Myeline sheet

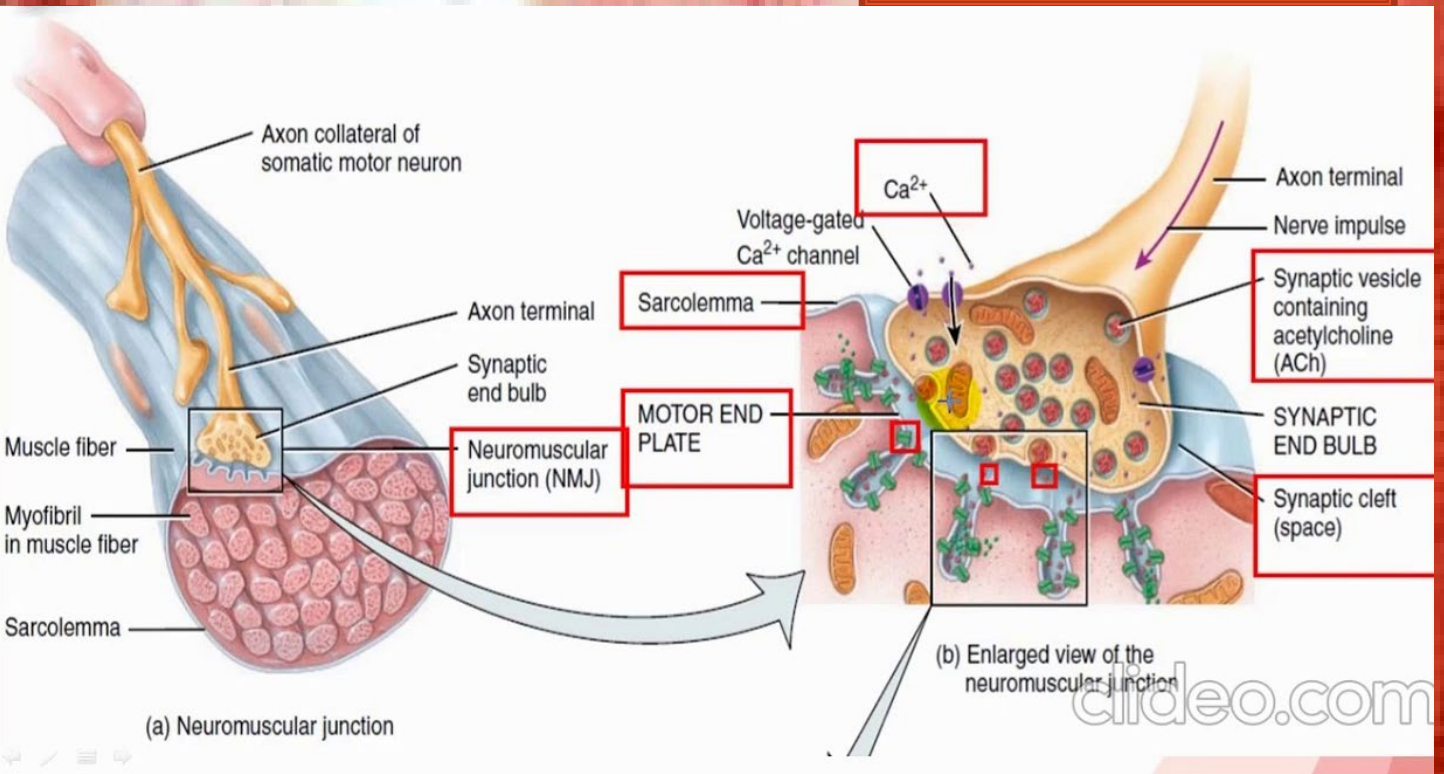


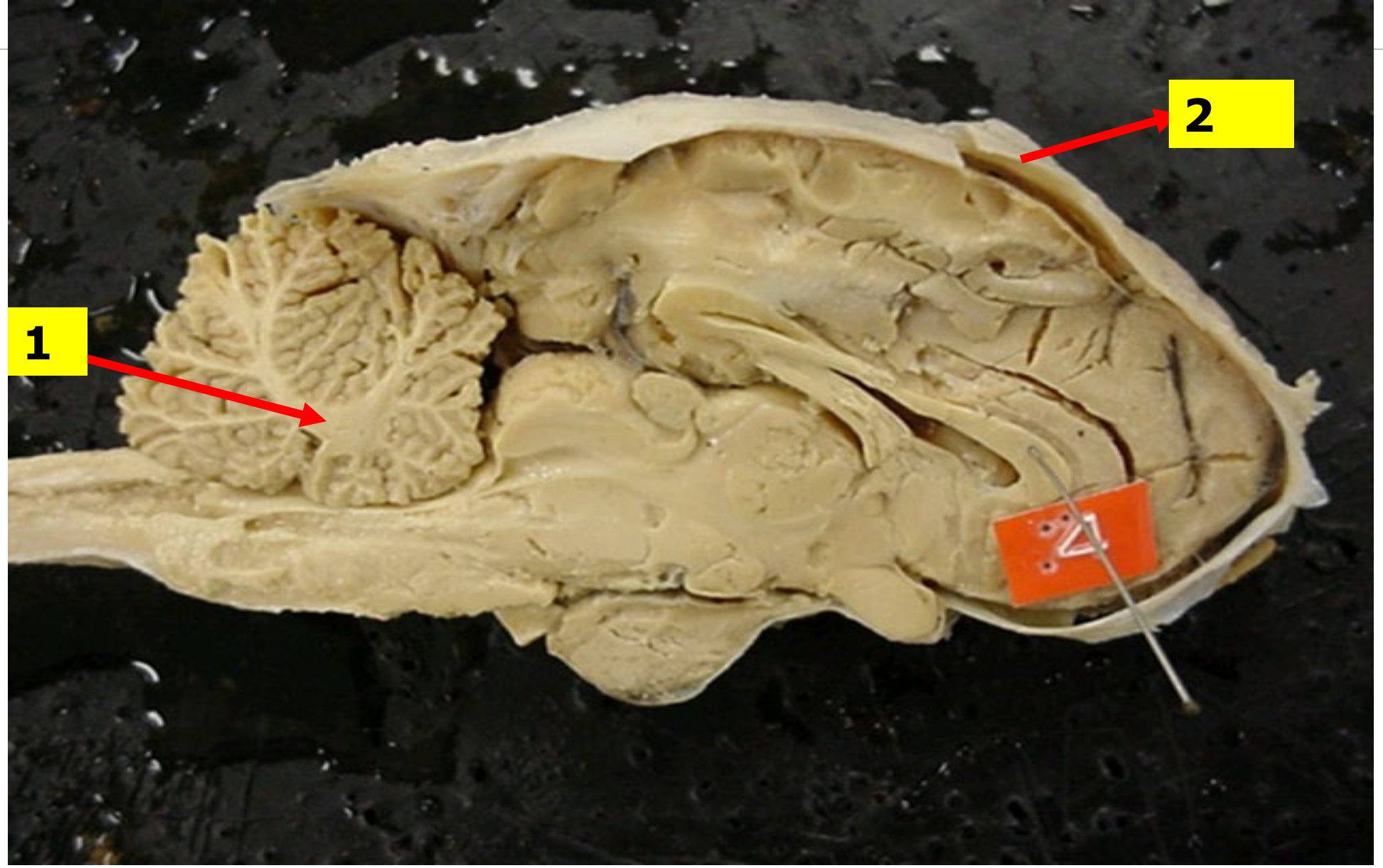

SATELLITE CELLS
= GLIAL CELL, it is thought they provide nutrient support and protection. They may also help to regulate the neuronal environment and be involved in neurotransmission.
SENSORY NEURON, DORSAL ROOT GANGLIA
Nerve fibers


LUMEN

The neuromuscular junction (NMJ) is **a highly specialized synapse between a motor neuron nerve terminal and its muscle fiber** that are responsible for converting electrical impulses generated by the motor neuron into electrical activity in the muscle fibers

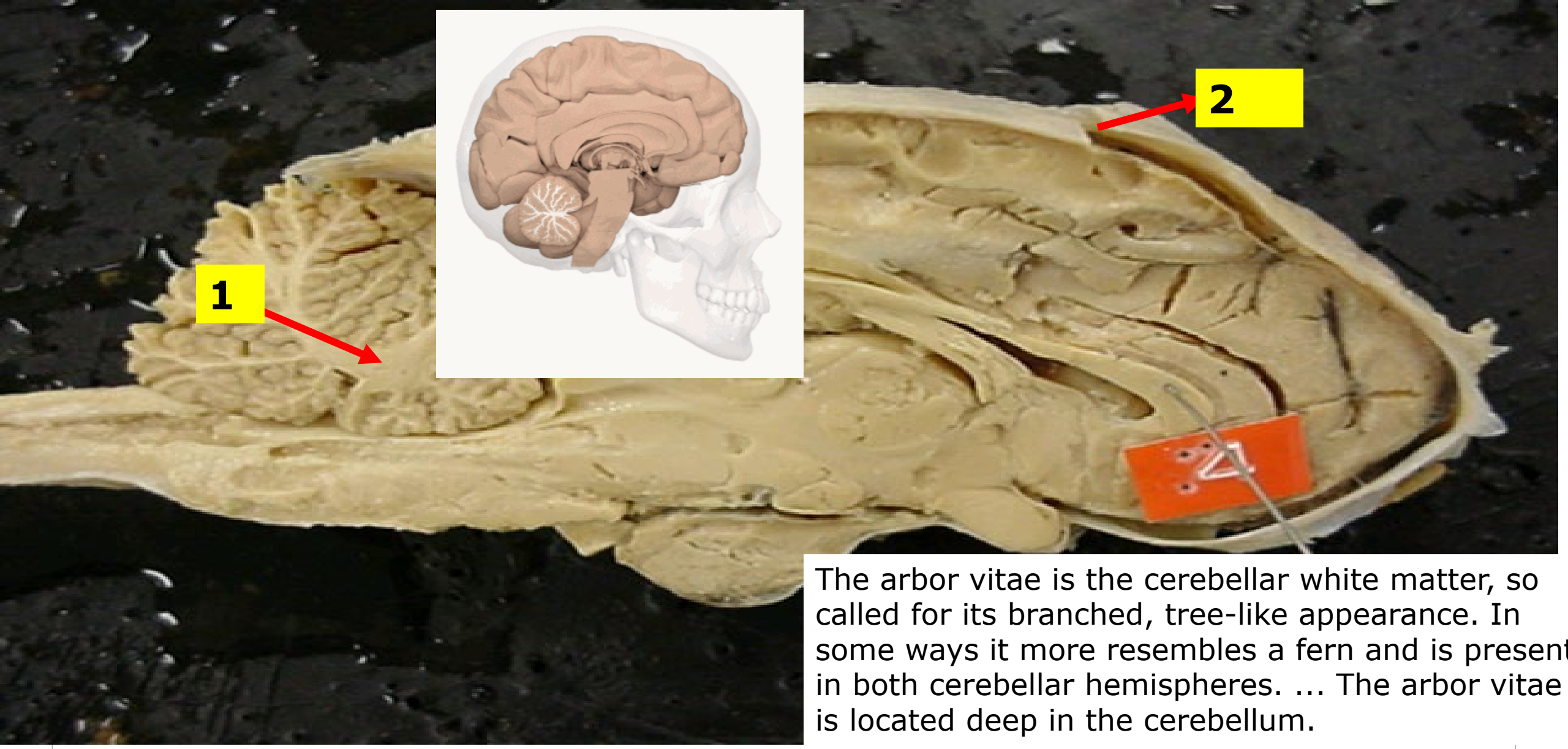
NEUROMUSCULAR JUNCTION





65/ Identify 1 [be specific]

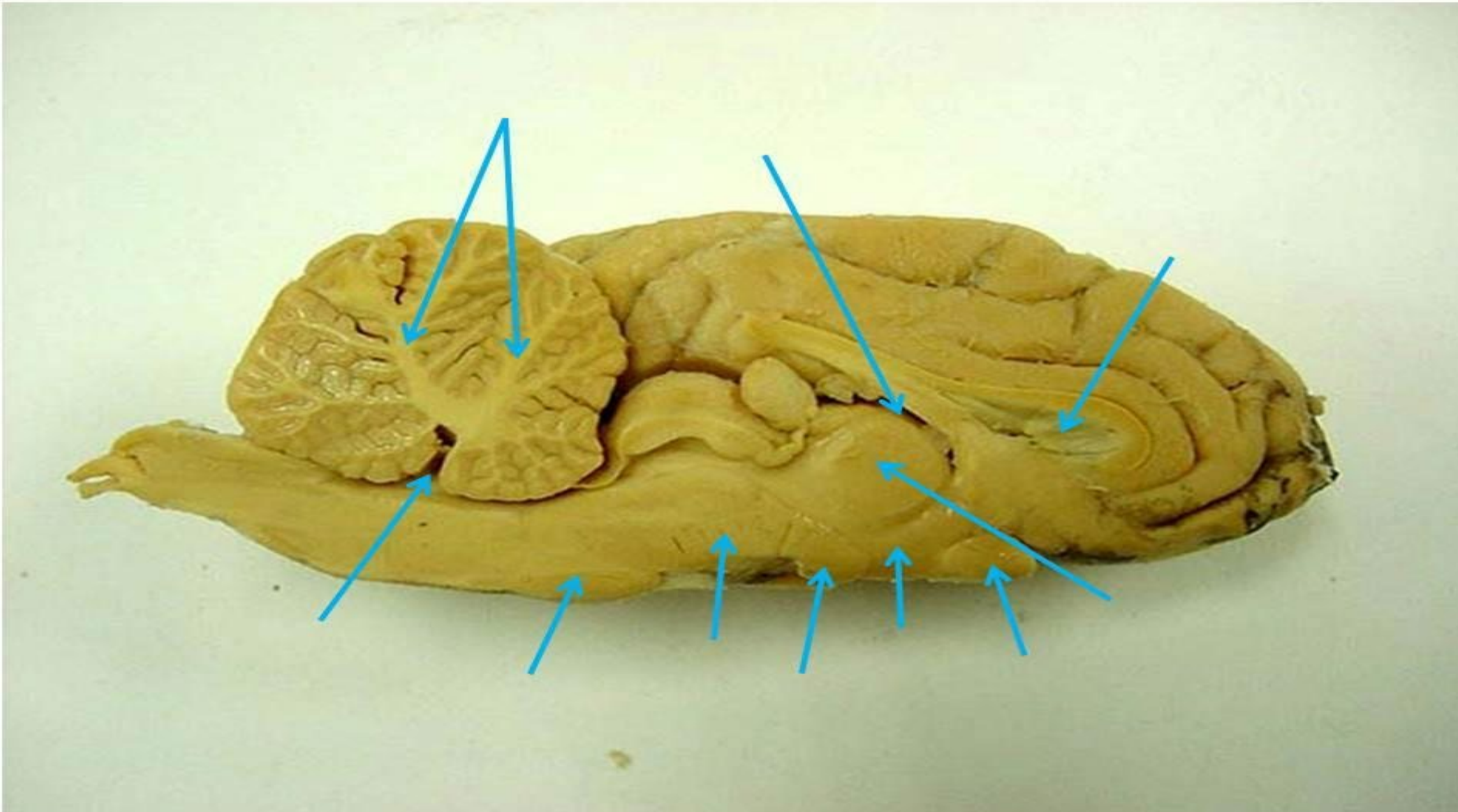
66/ Identify 2

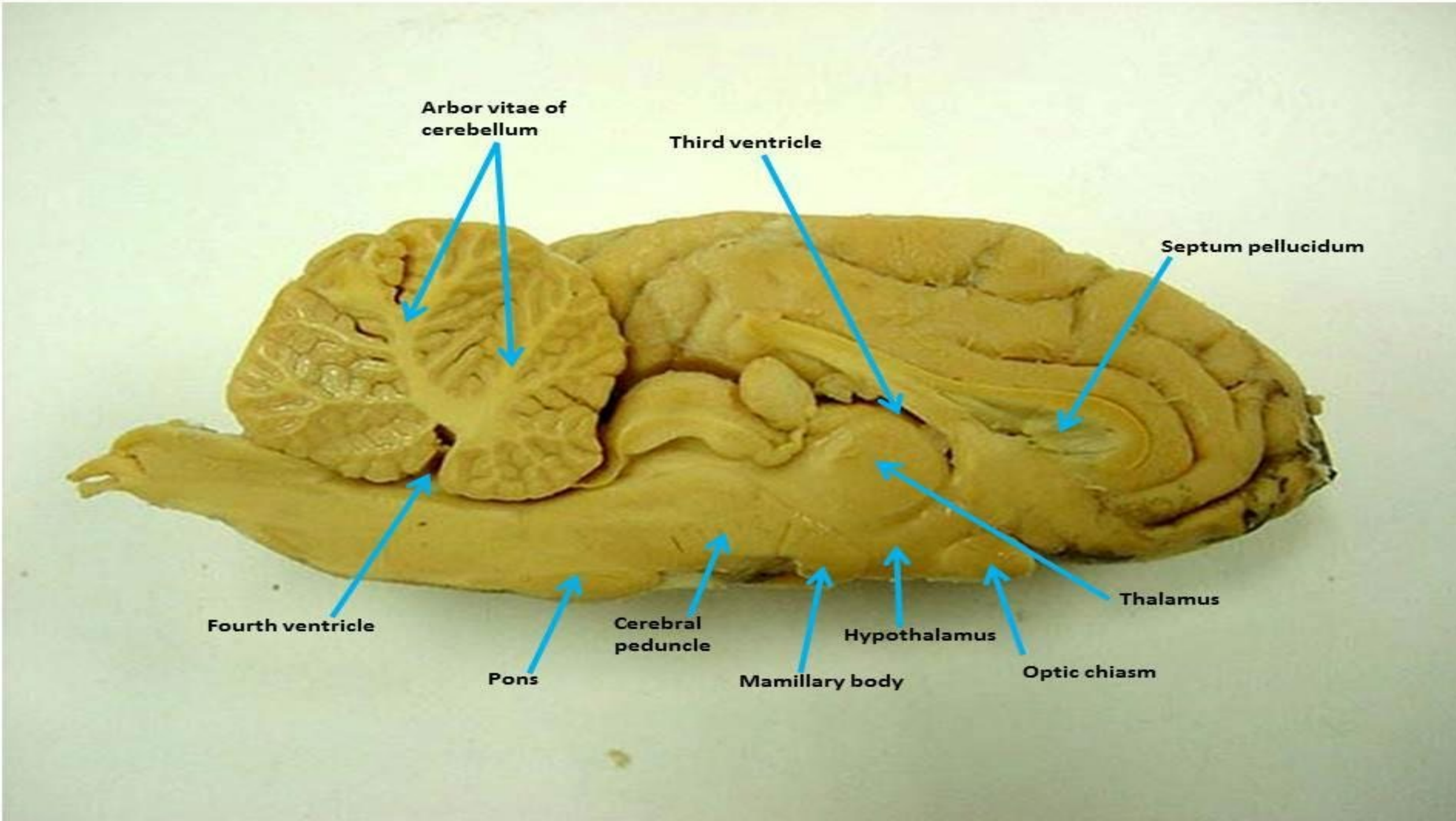


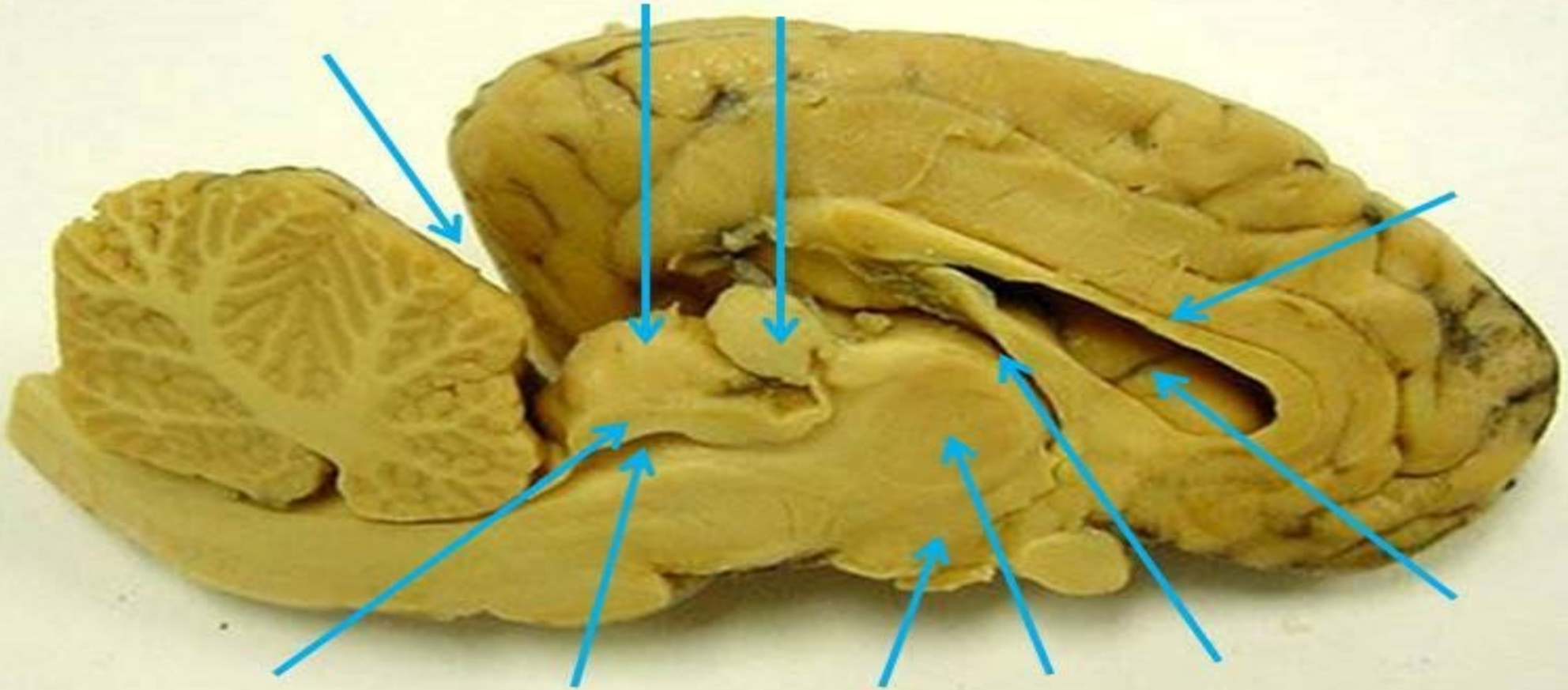
The arbor vitae is the cerebellar white matter, so called for its branched, tree-like appearance. In some ways it more resembles a fern and is present in both cerebellar hemispheres. ... The arbor vitae is located deep in the cerebellum.

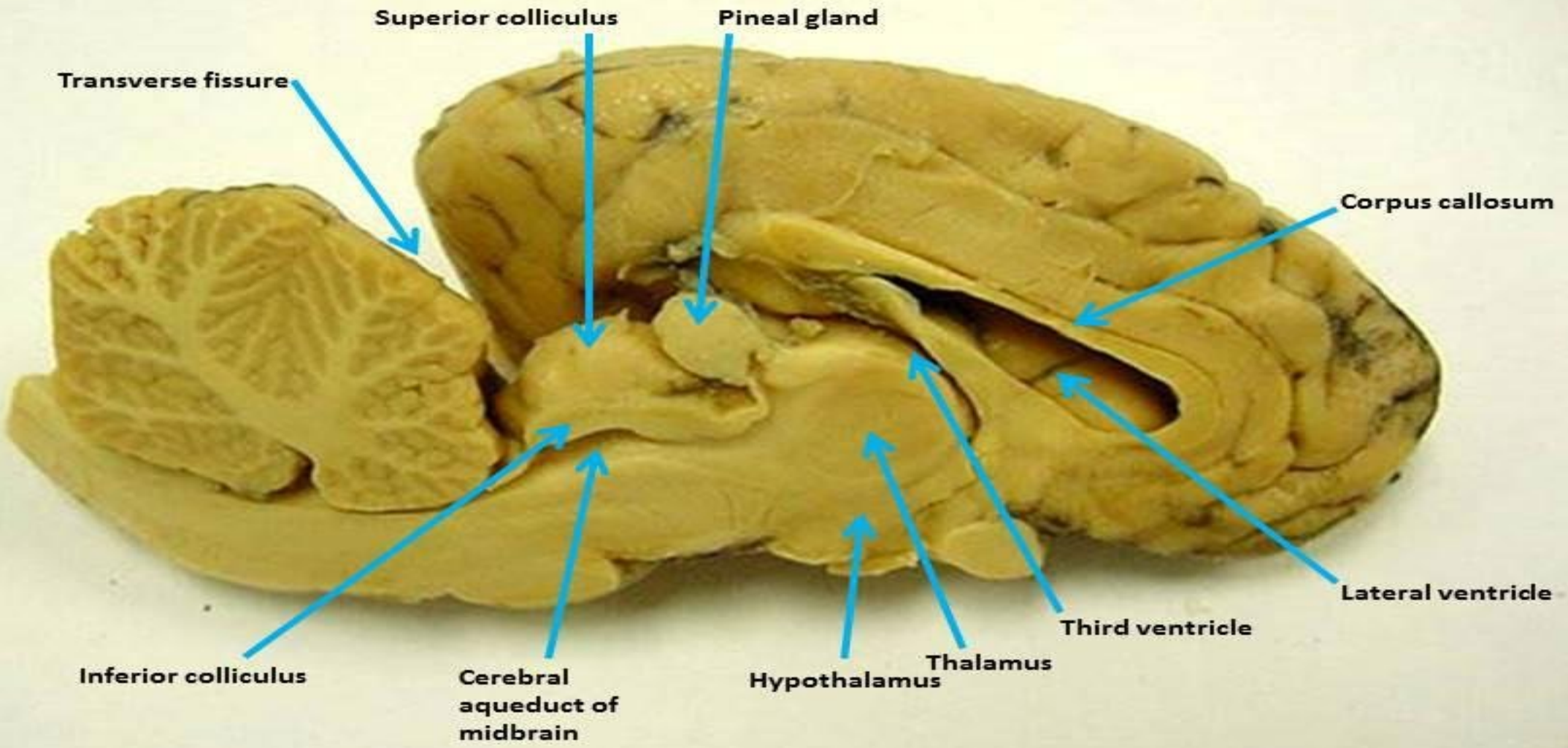
65/ Identify 1 [be specific]: ARBOR VITAE

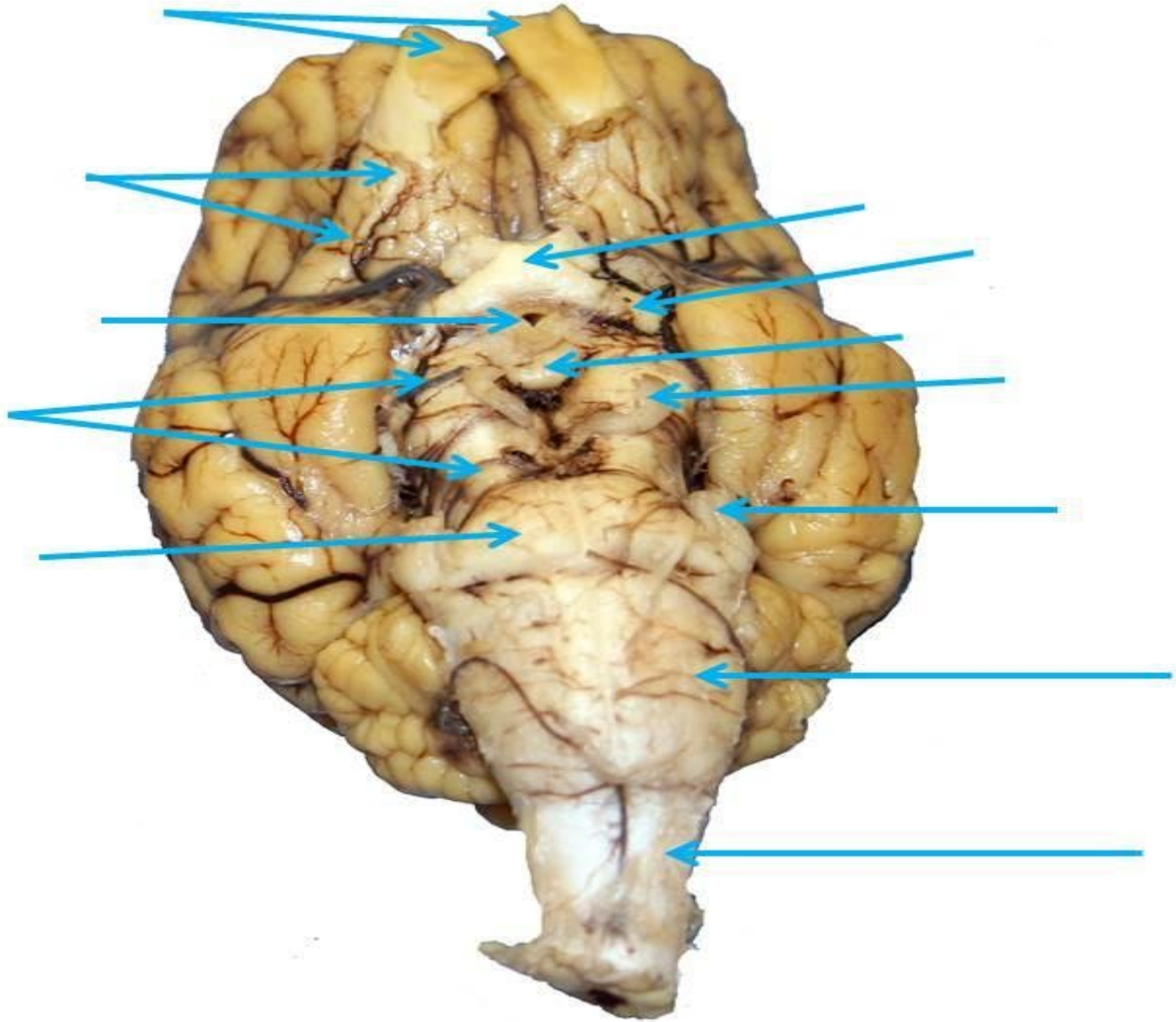
66/ Identify 2: MENINGES

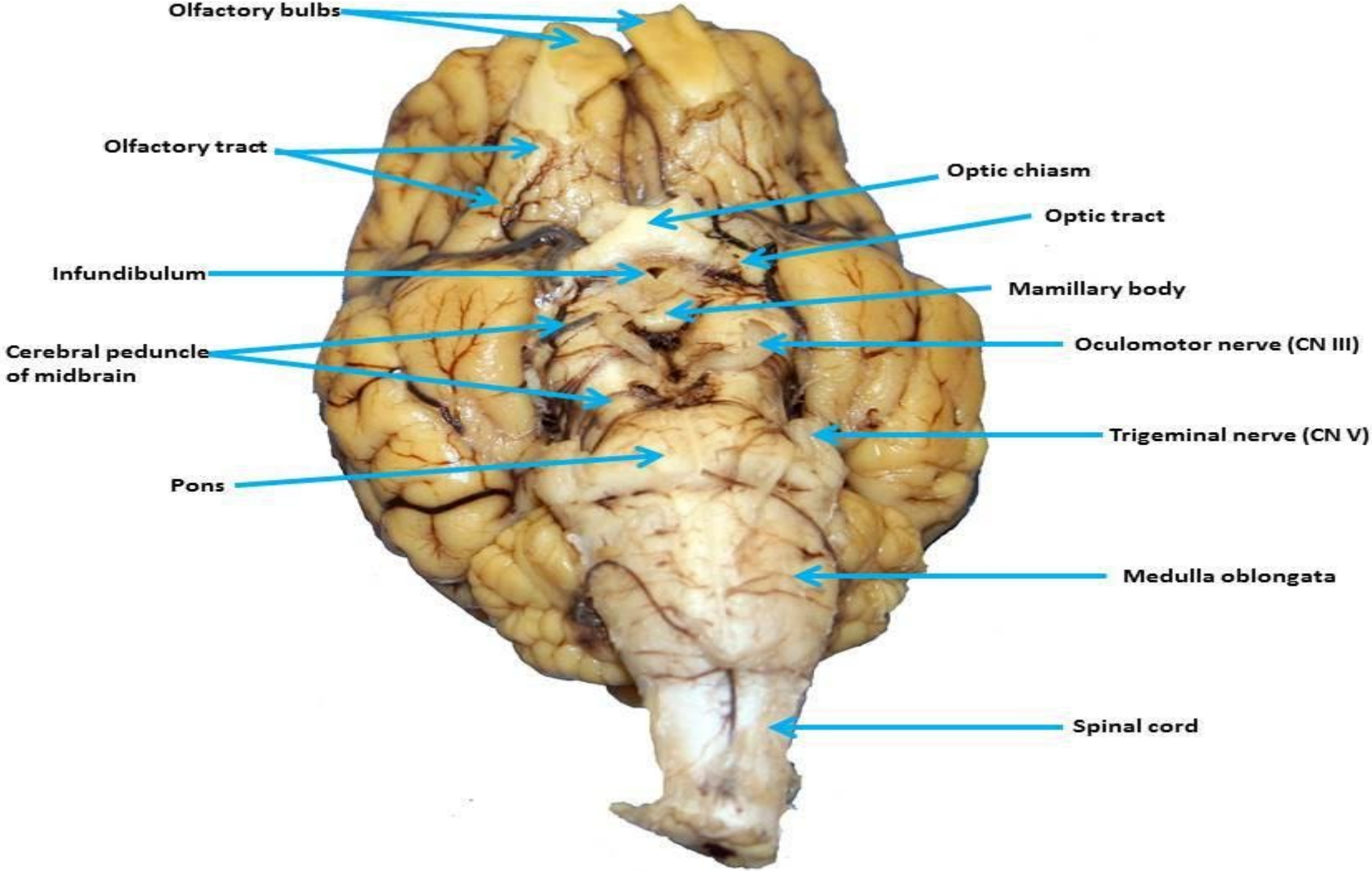


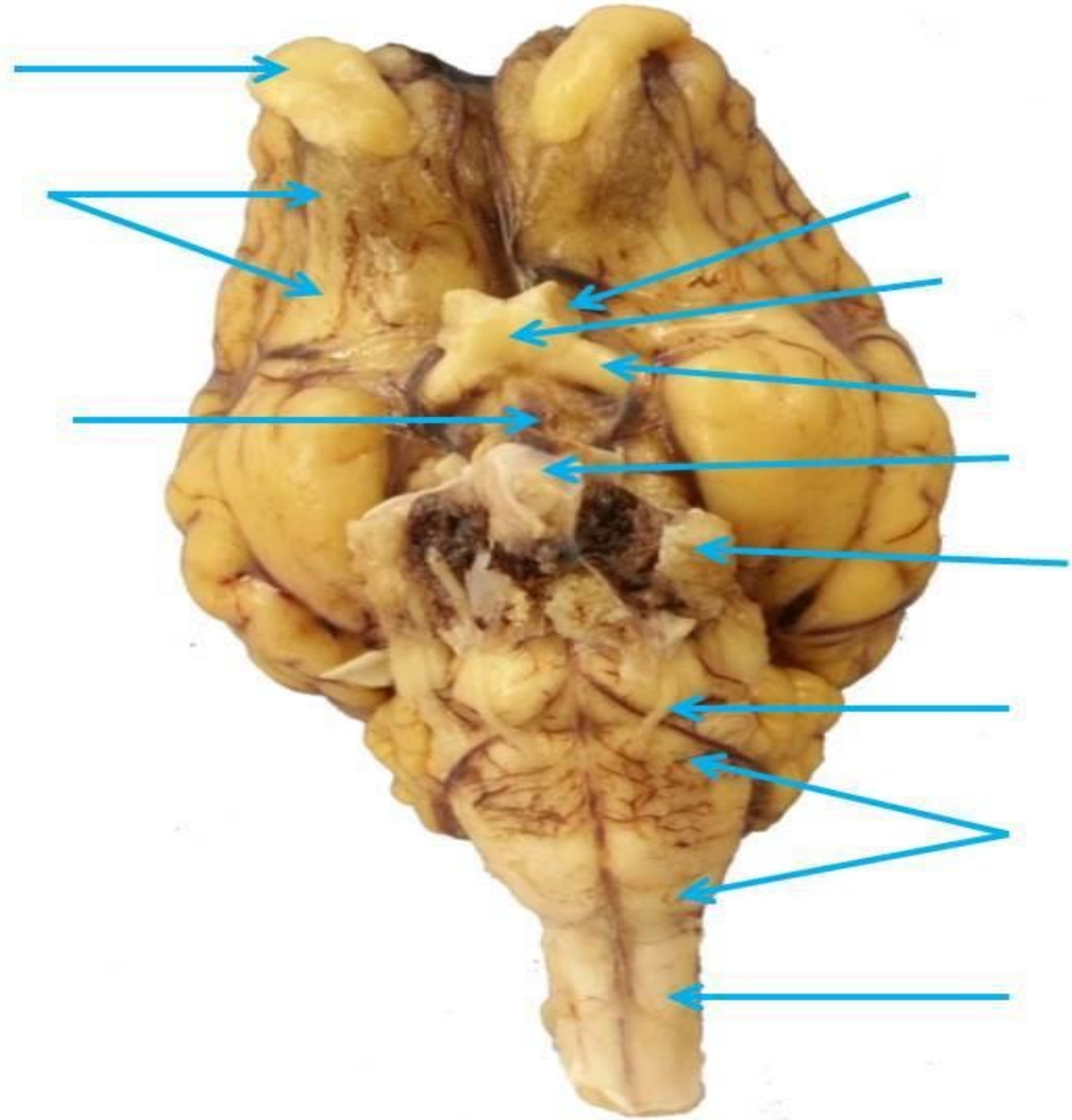

Arbor vitae of cerebellum
Third ventricle
Septum pellucidum
Thalamus
Fourth ventricle
Cerebral peduncle
Hypothalamus
Pons
Mamillary body
Optic chiasm

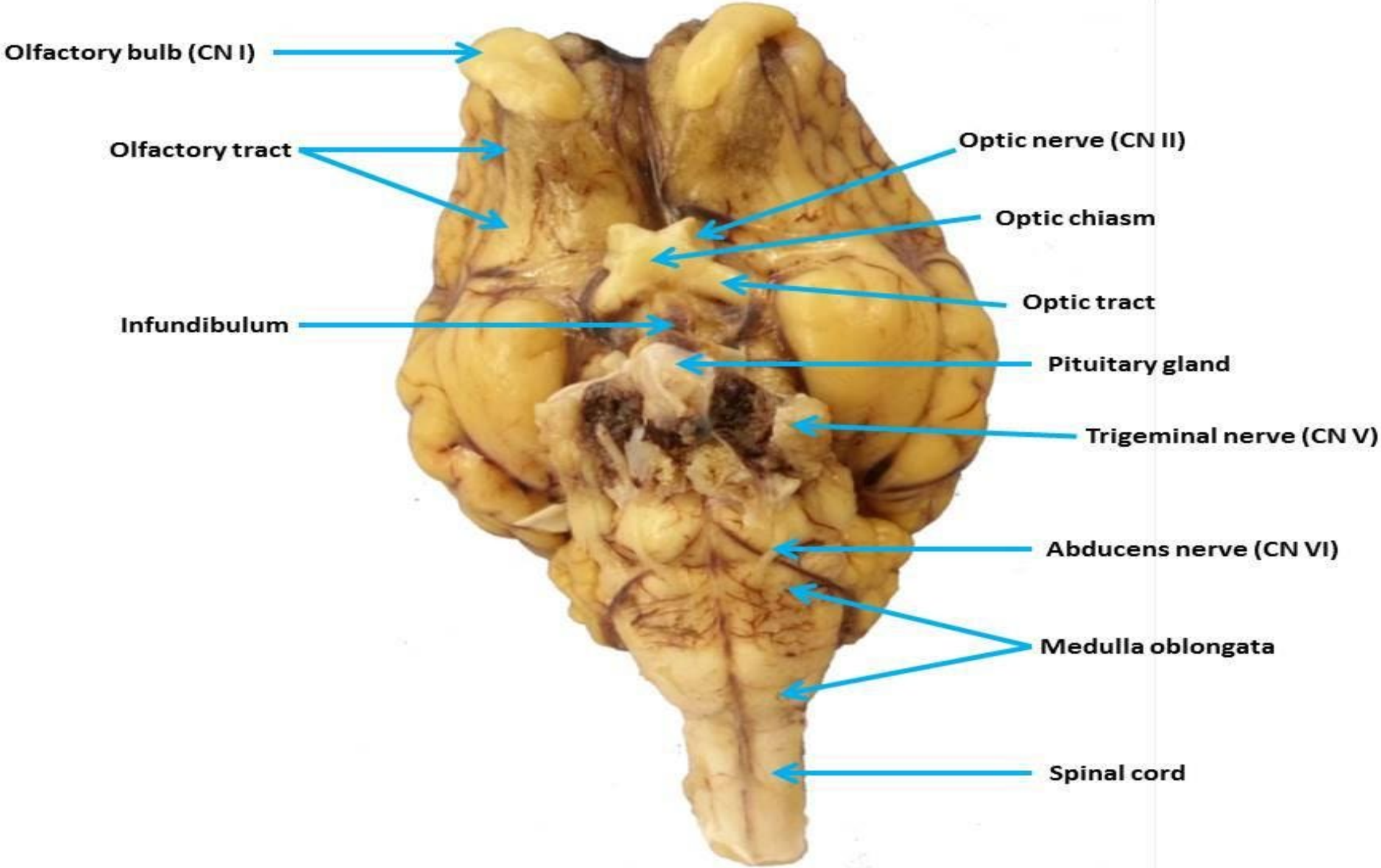


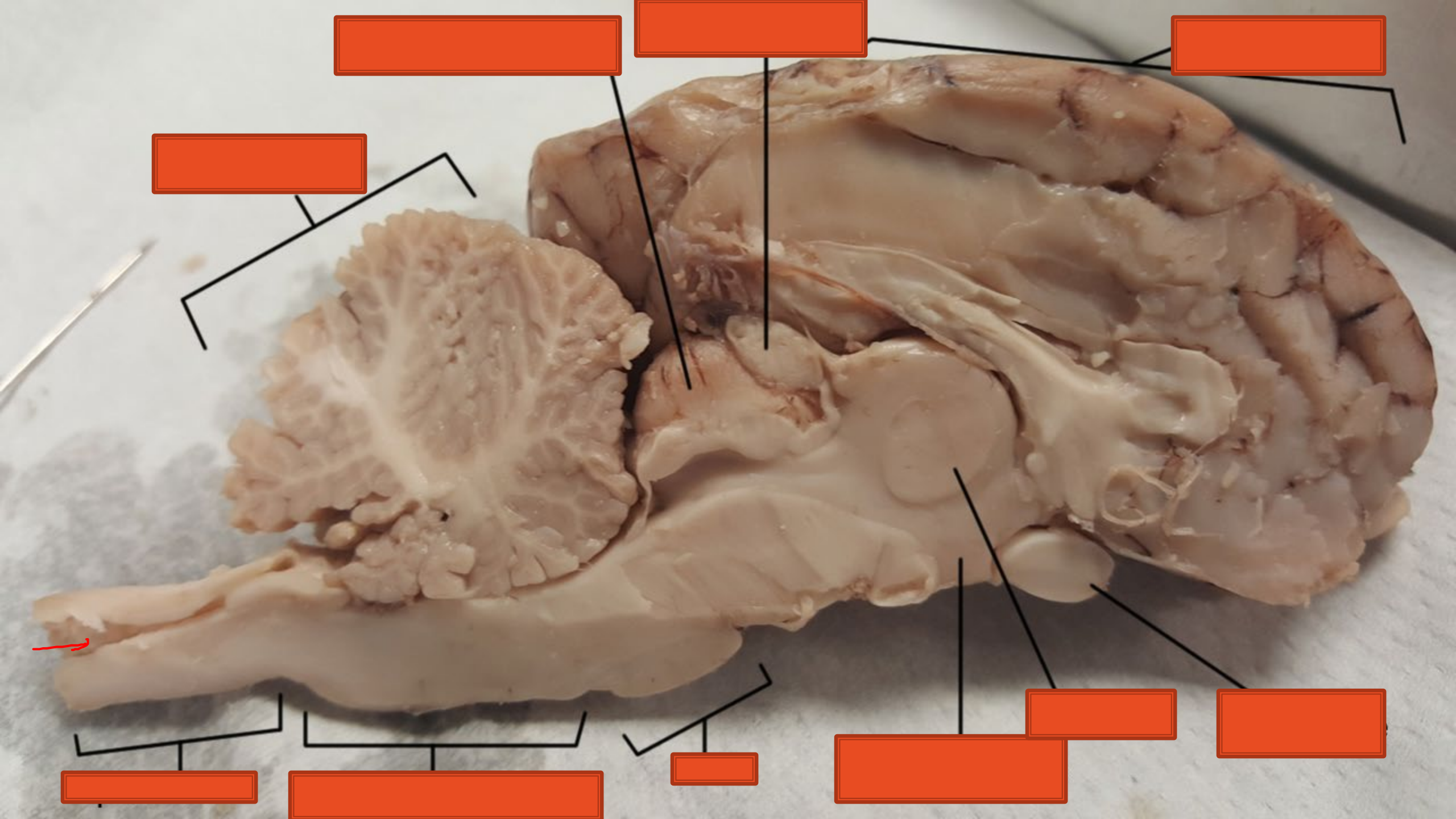

Superior colliculus
Pineal gland
Transverse fissure
Corpus callosum
Lateral ventricle
Third ventricle
Thalamus
Hypothalamus
Inferior colliculus
Cerebral aqueduct of midbrain

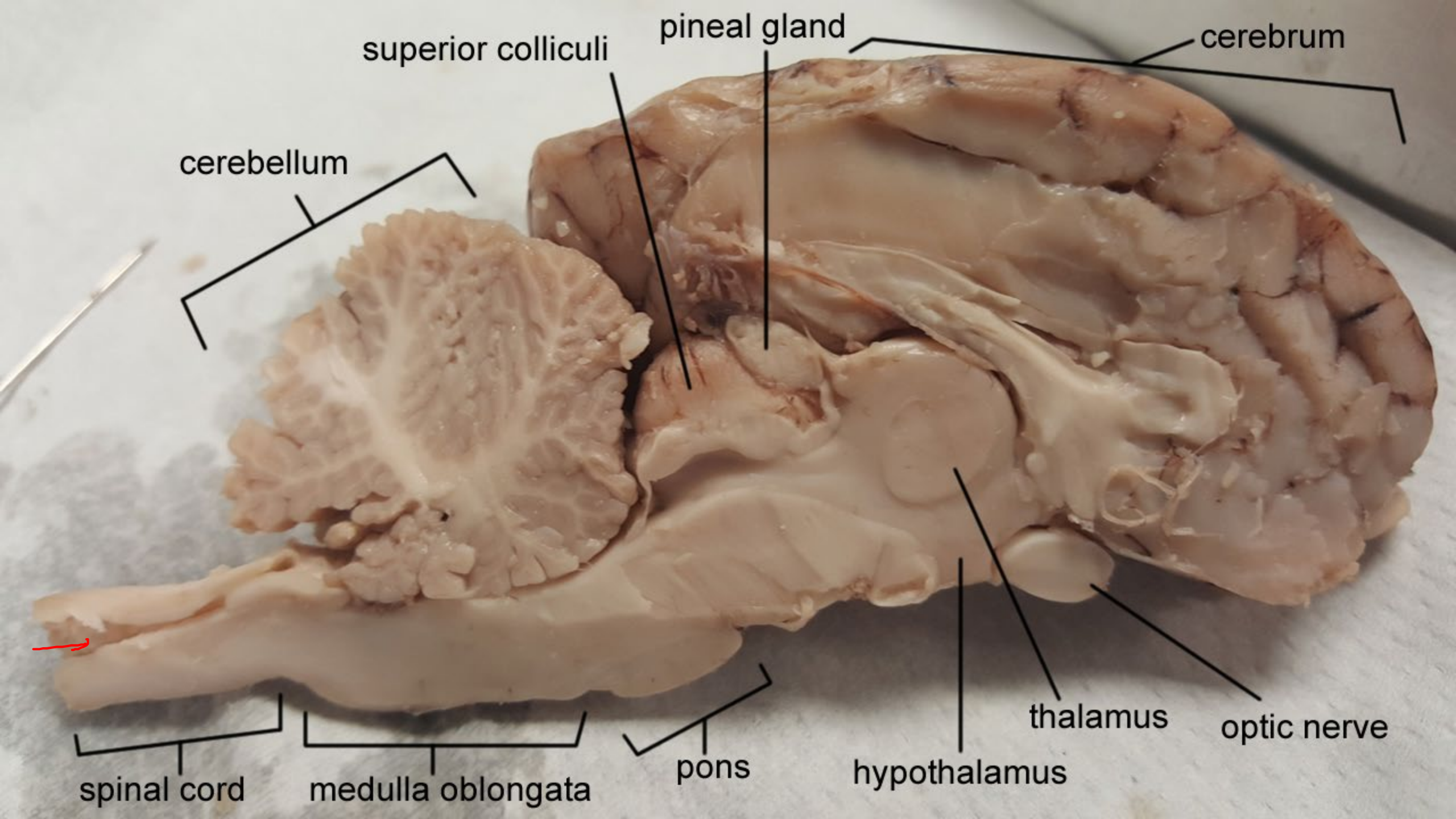


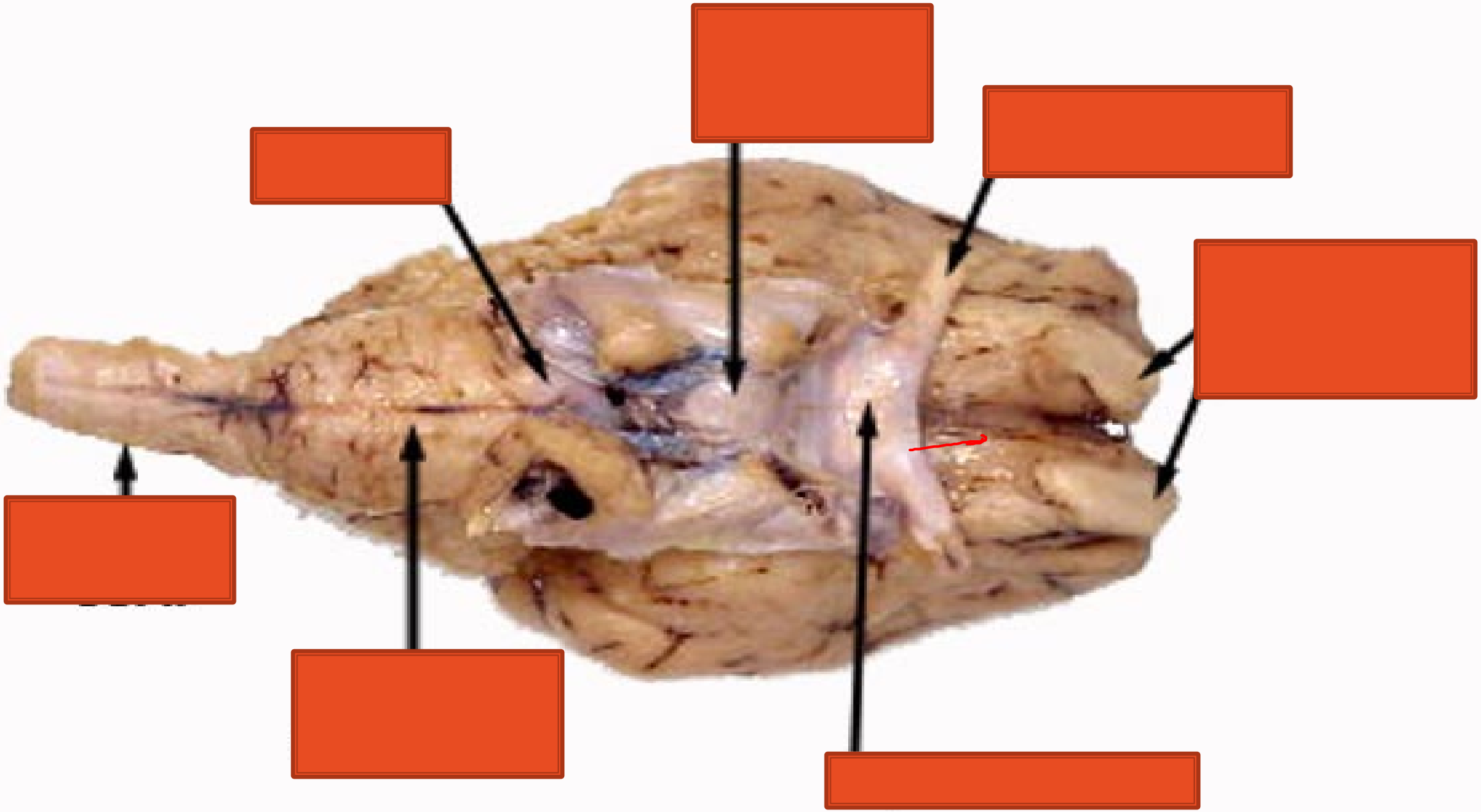

Olfactory bulbs
Olfactory tract
Infundibulum
Cerebral peduncle of midbrain
Pons
Optic chiasm
Optic tract
Mamillary body
Oculomotor nerve (CN III)
Trigeminal nerve (CN V)
Medulla oblongata
Spinal cord

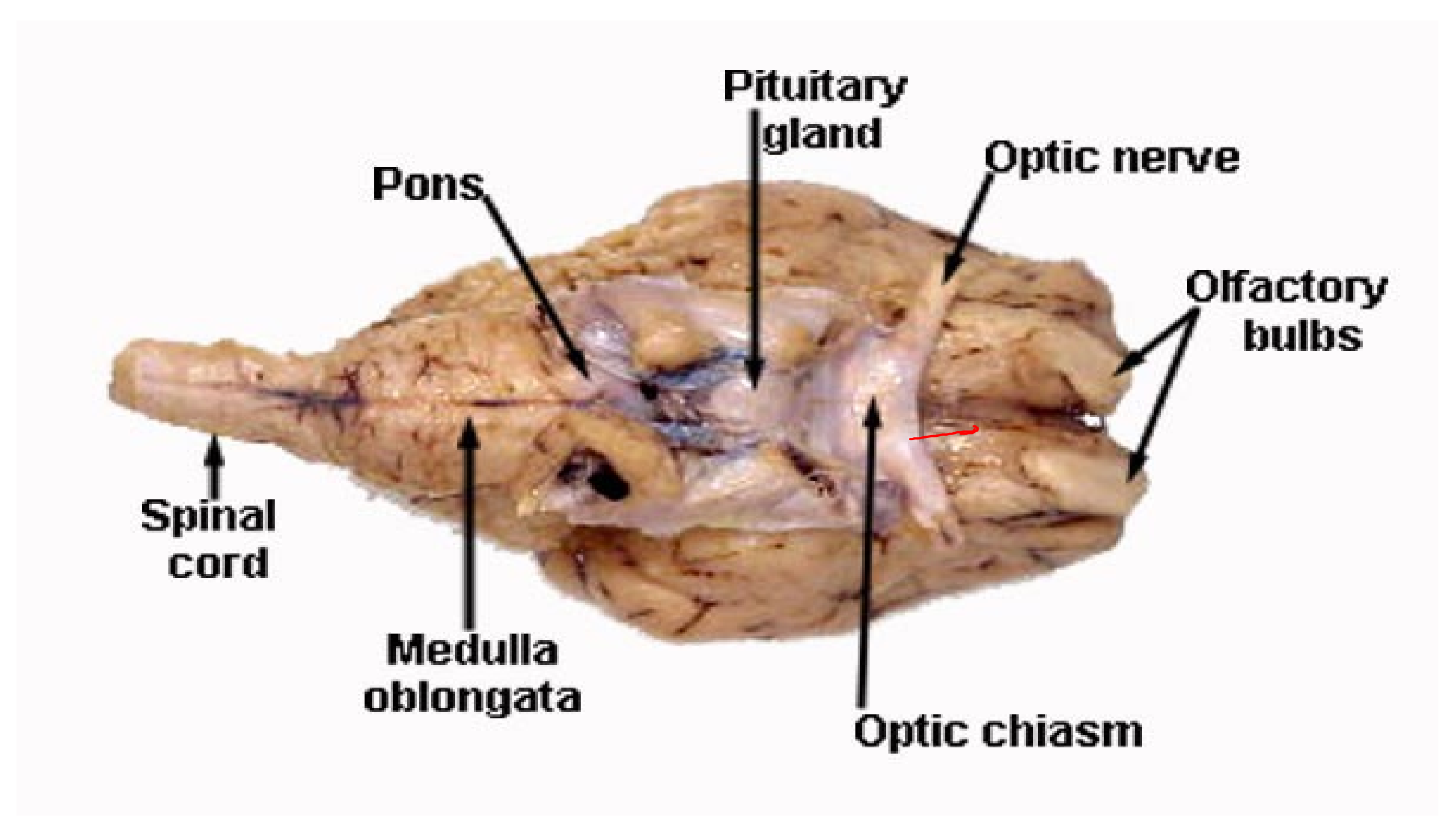


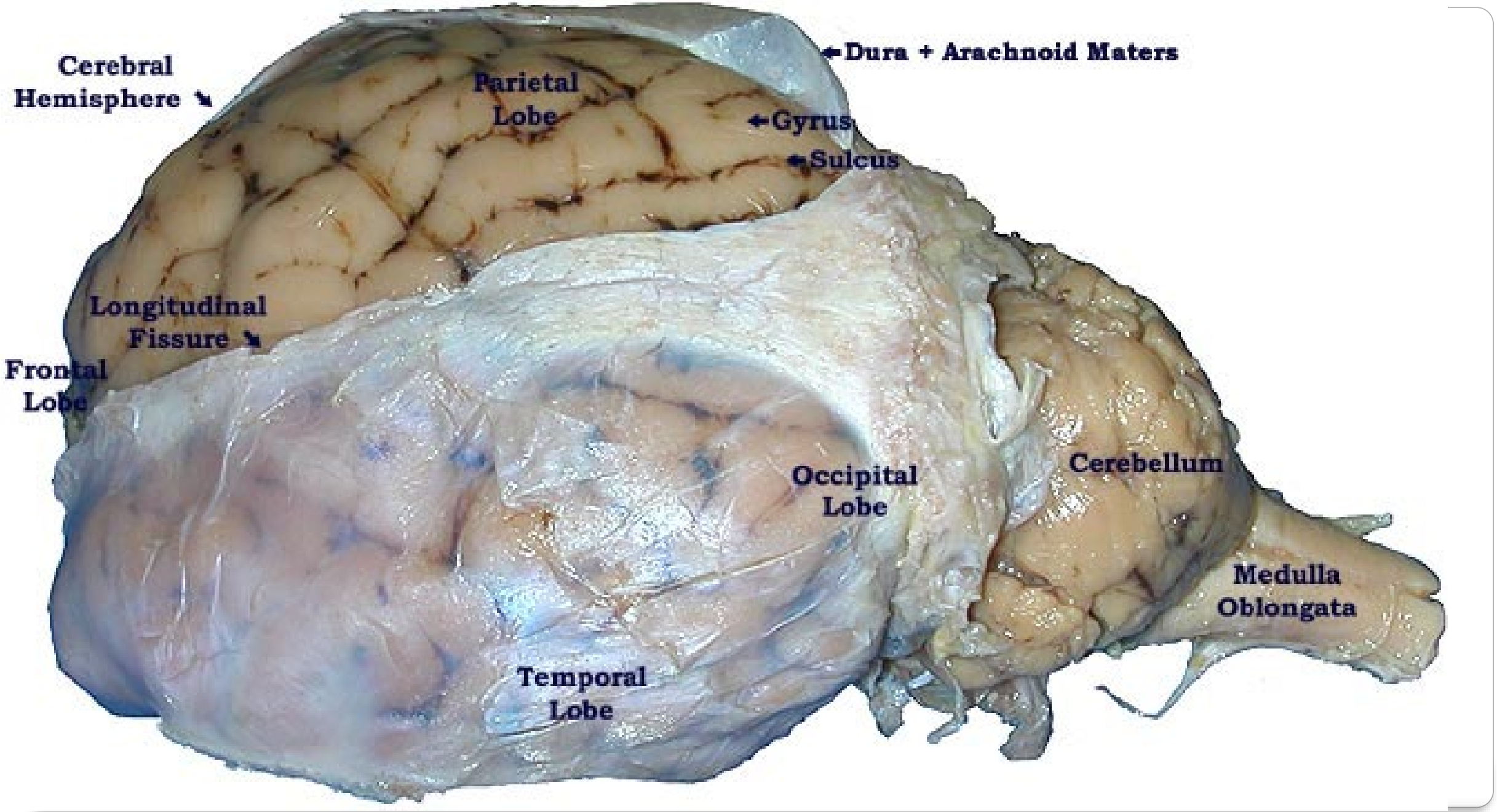

Olfactory bulb (CN I)
Olfactory tract
Infundibulum
Optic nerve (CN II)
Optic chiasm
Optic tract
Pituitary gland
Trigeminal nerve (CN V)
Abducens nerve (CN VI)
Medulla oblongata
Spinal cord

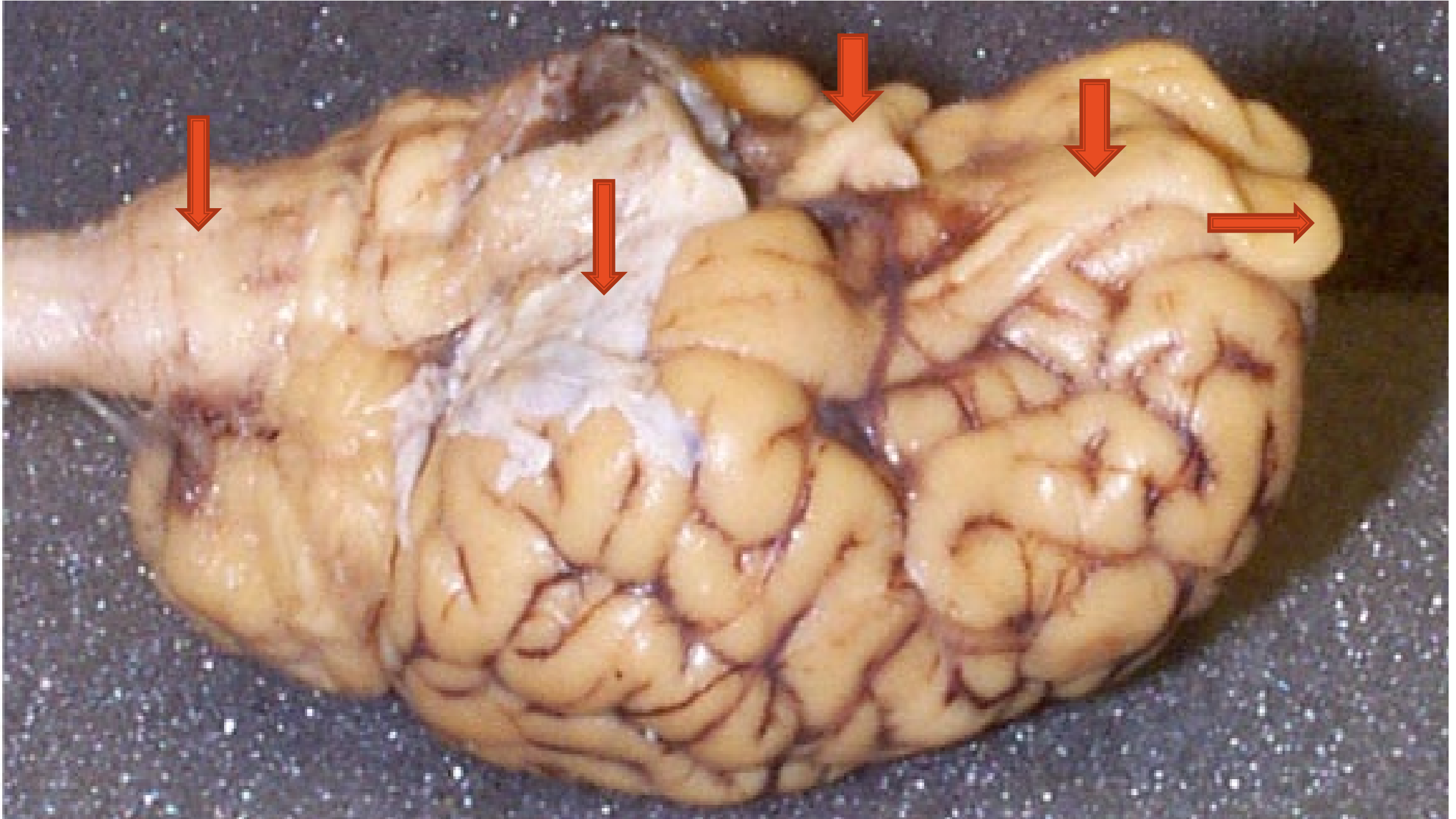


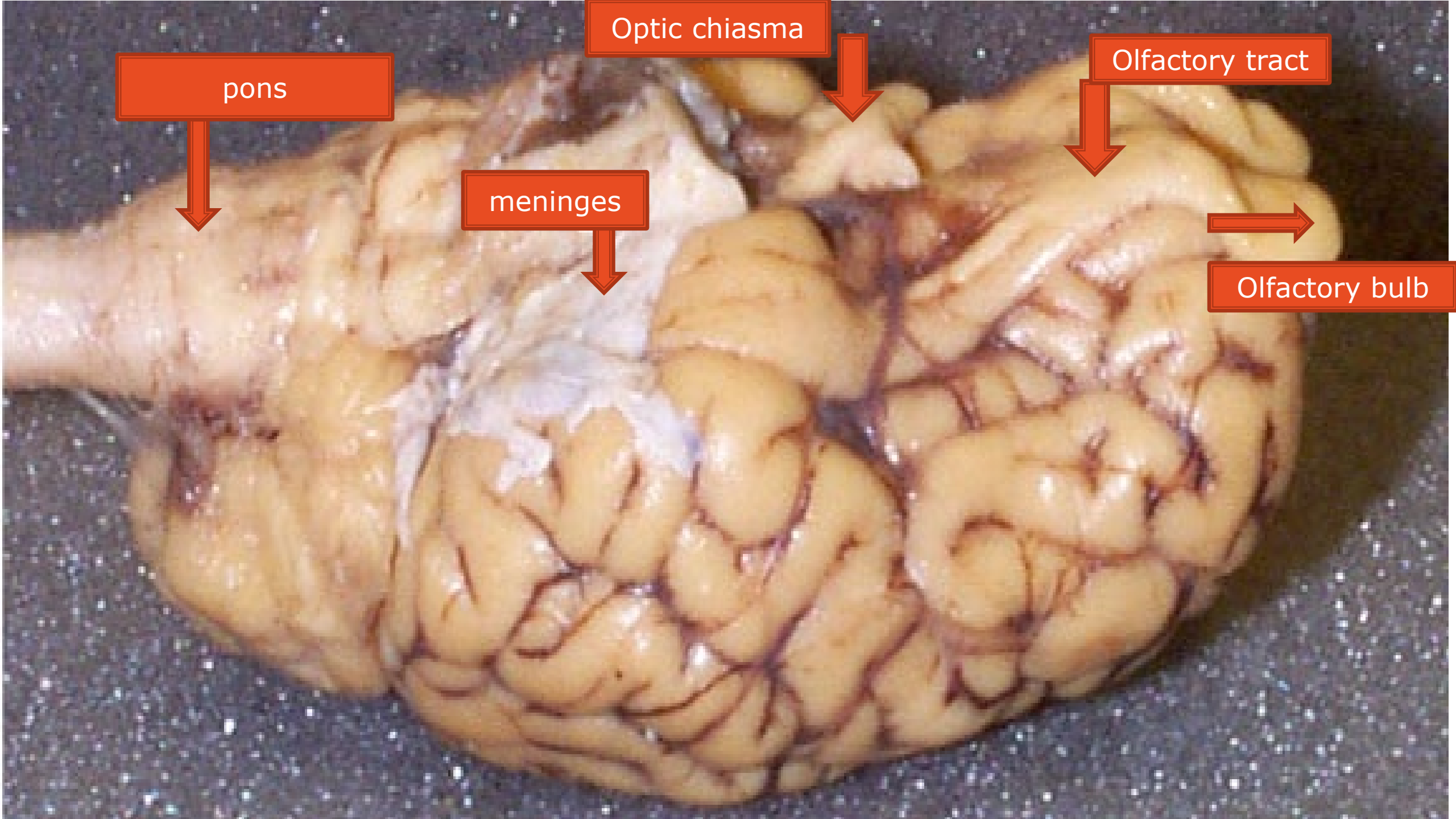

superior colliculi
pineal gland
cerebrum
cerebellum
thalamus
optic nerve
hypothalamus
pons
spinal cord
medulla oblongata

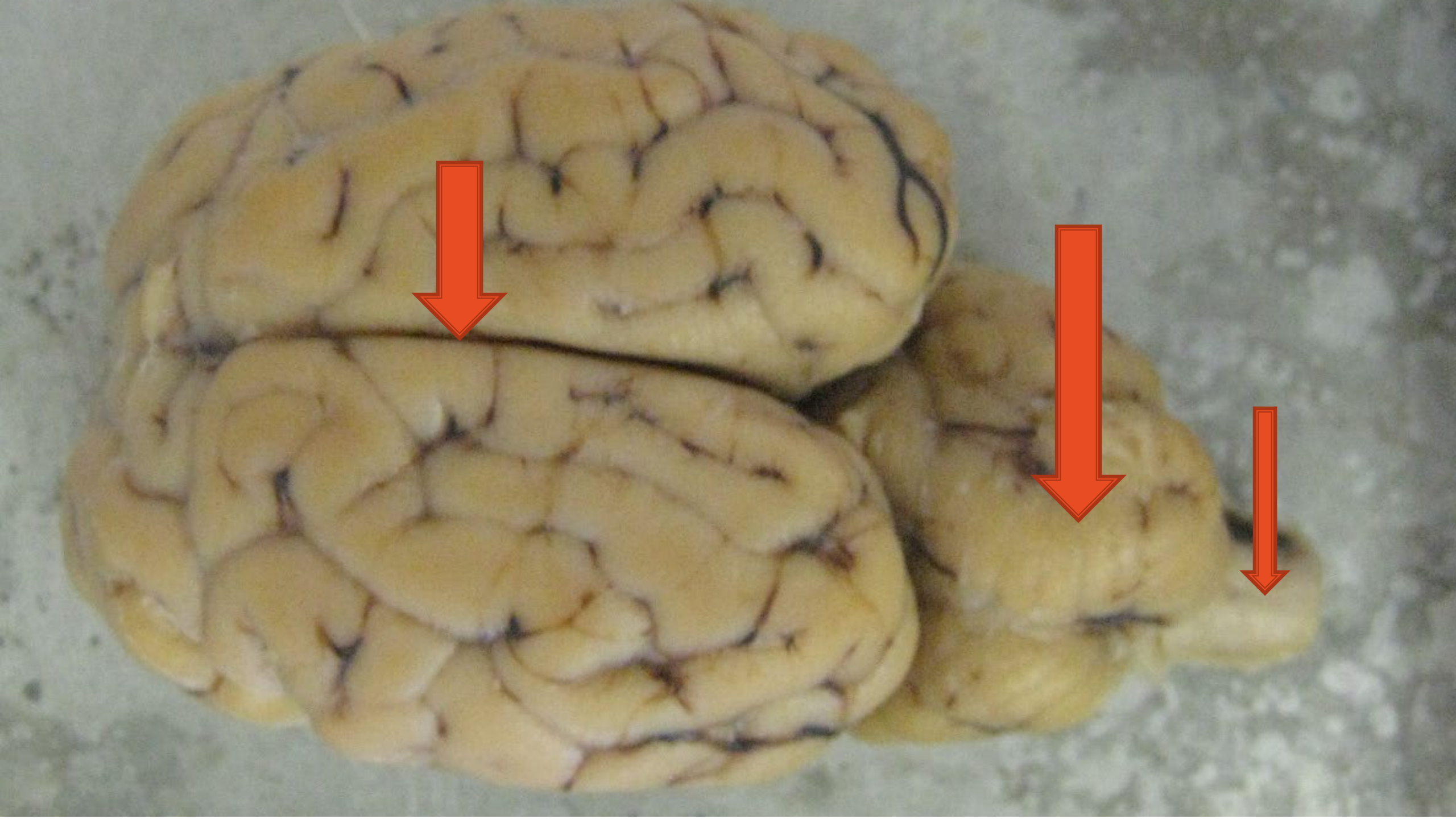


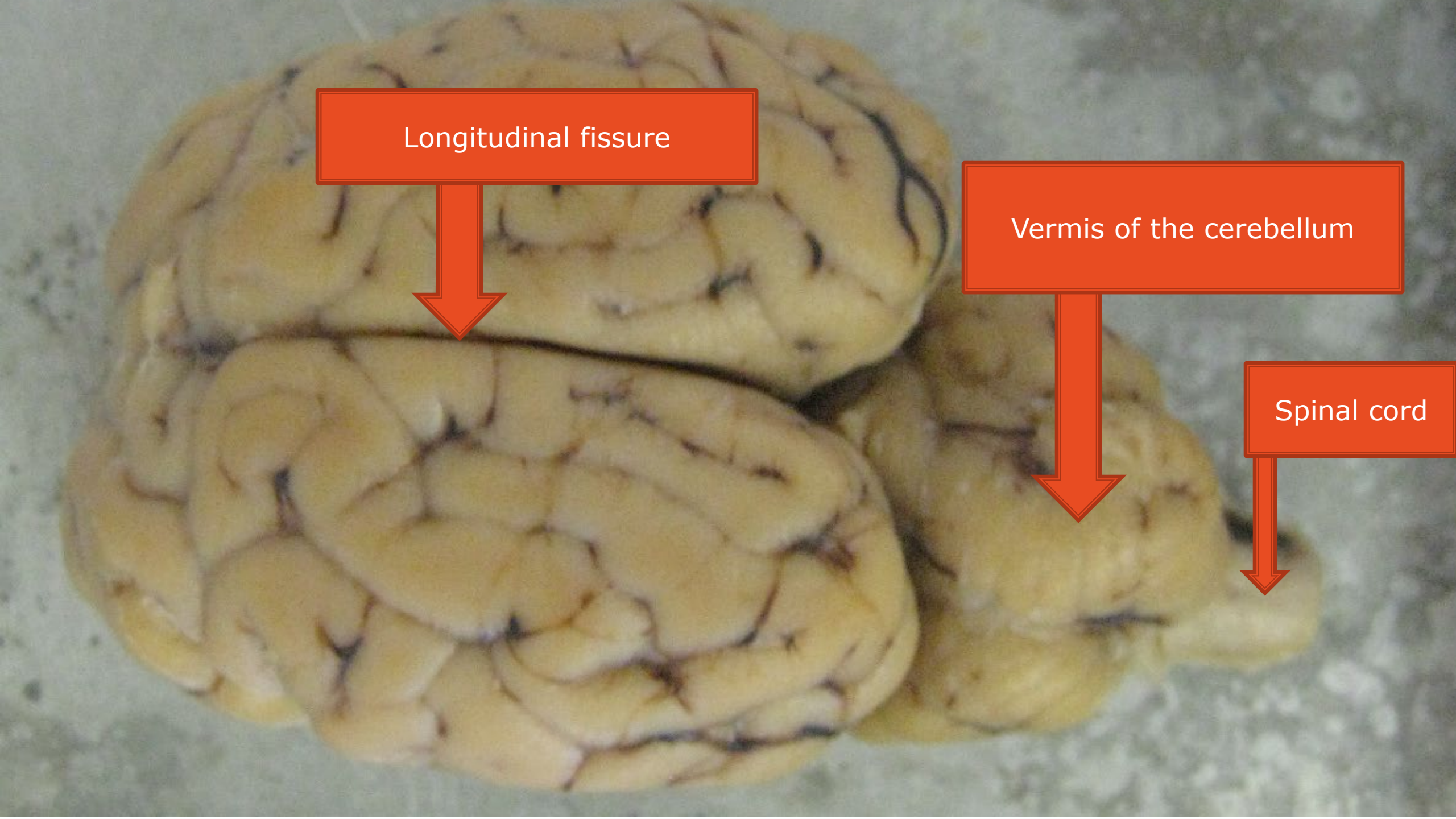

Pituitary gland
Optic nerve
Pons
Olfactory bulbs
Spinal cord
Medulla oblongata
Optic chiasm

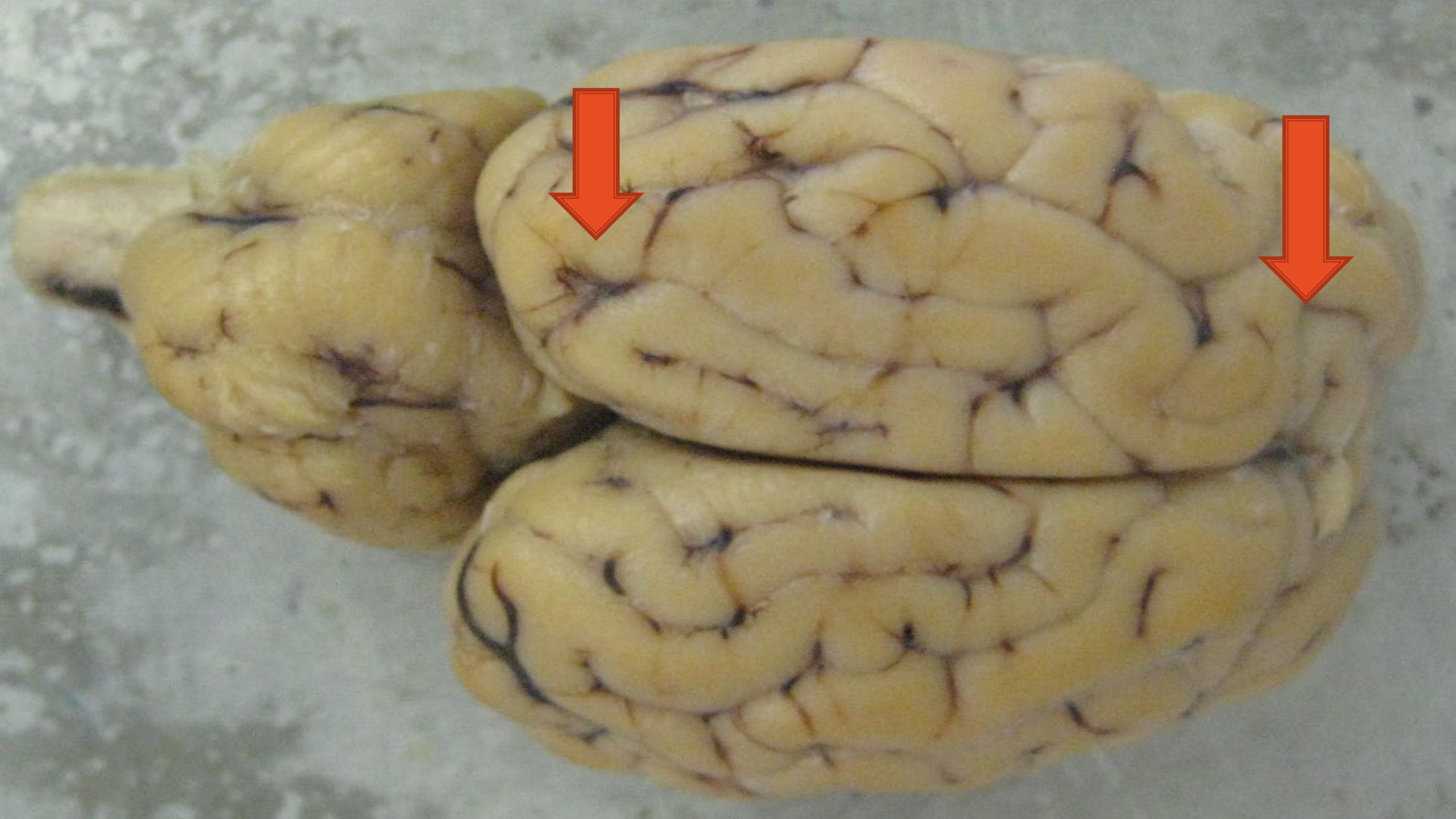

Cerebral Hemisphere
Parietal Lobe
Dura + Arachnoid Maters
Gyrus
Sulcus
Longitudinal Fissure
Frontal Lobe
Occipital Lobe
Cerebellum
Medulla Oblongata
Temporal Lobe



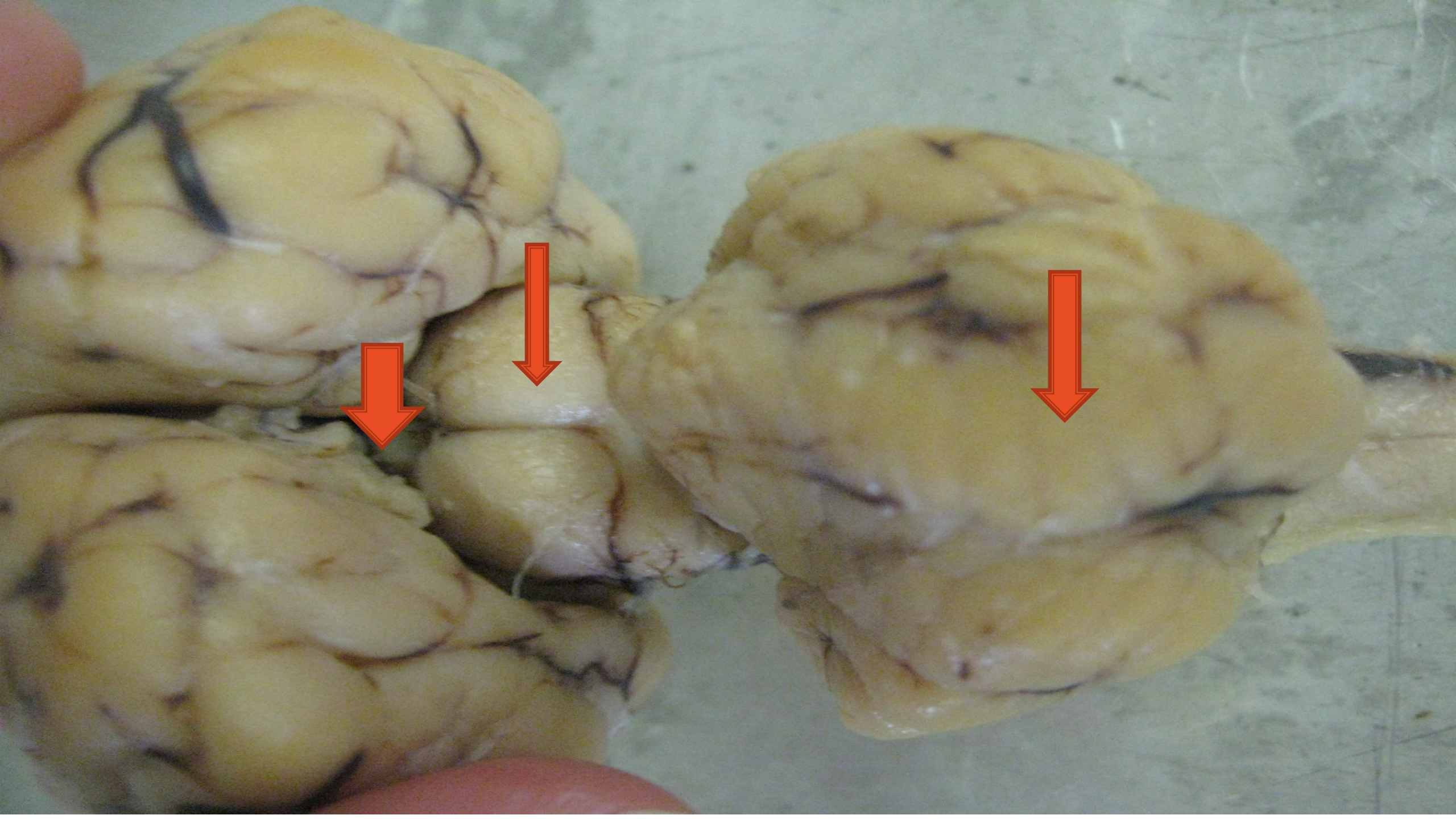

Optic chiasma
pons
Olfactory tract
meninges
Olfactory bulb

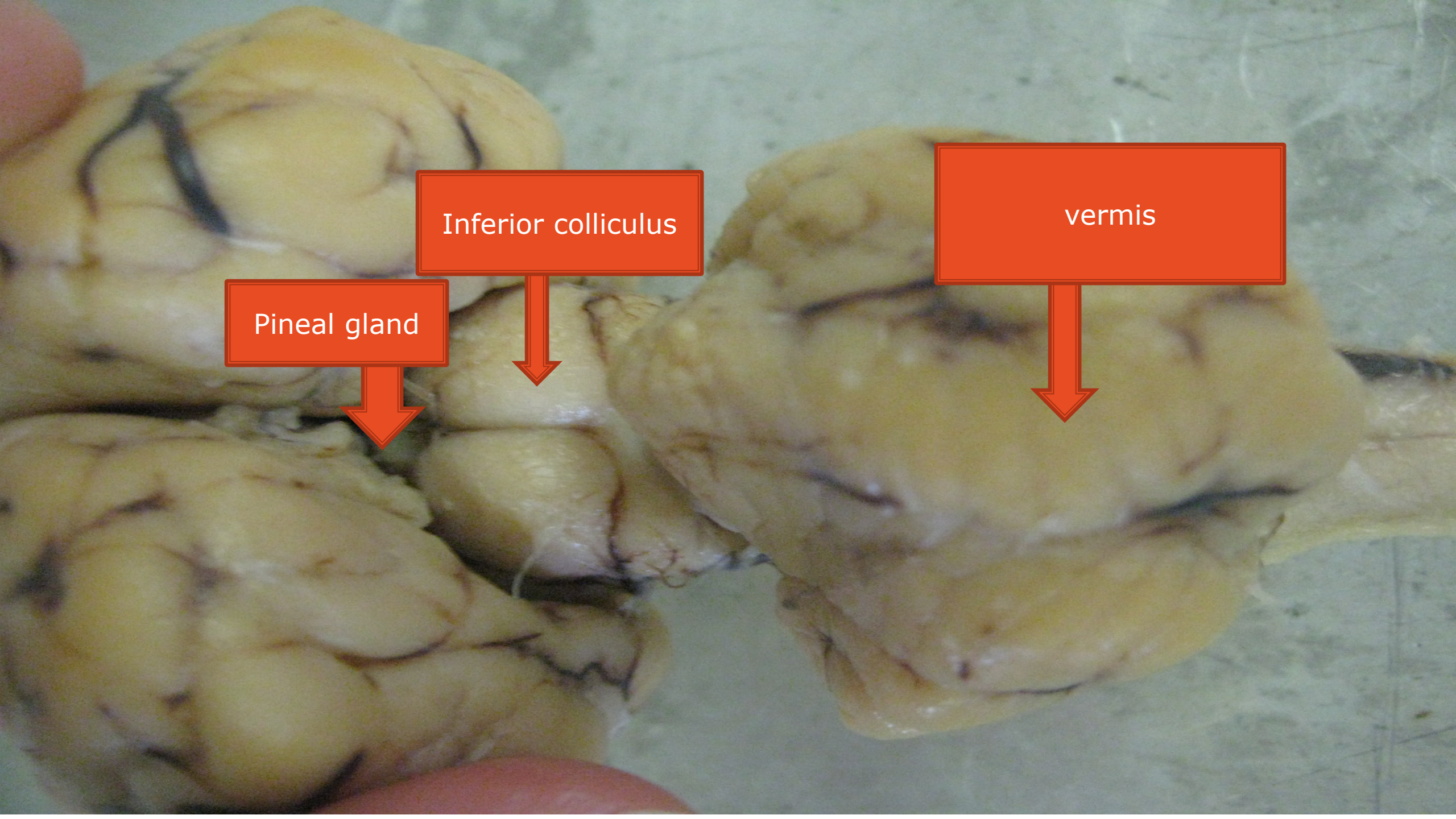


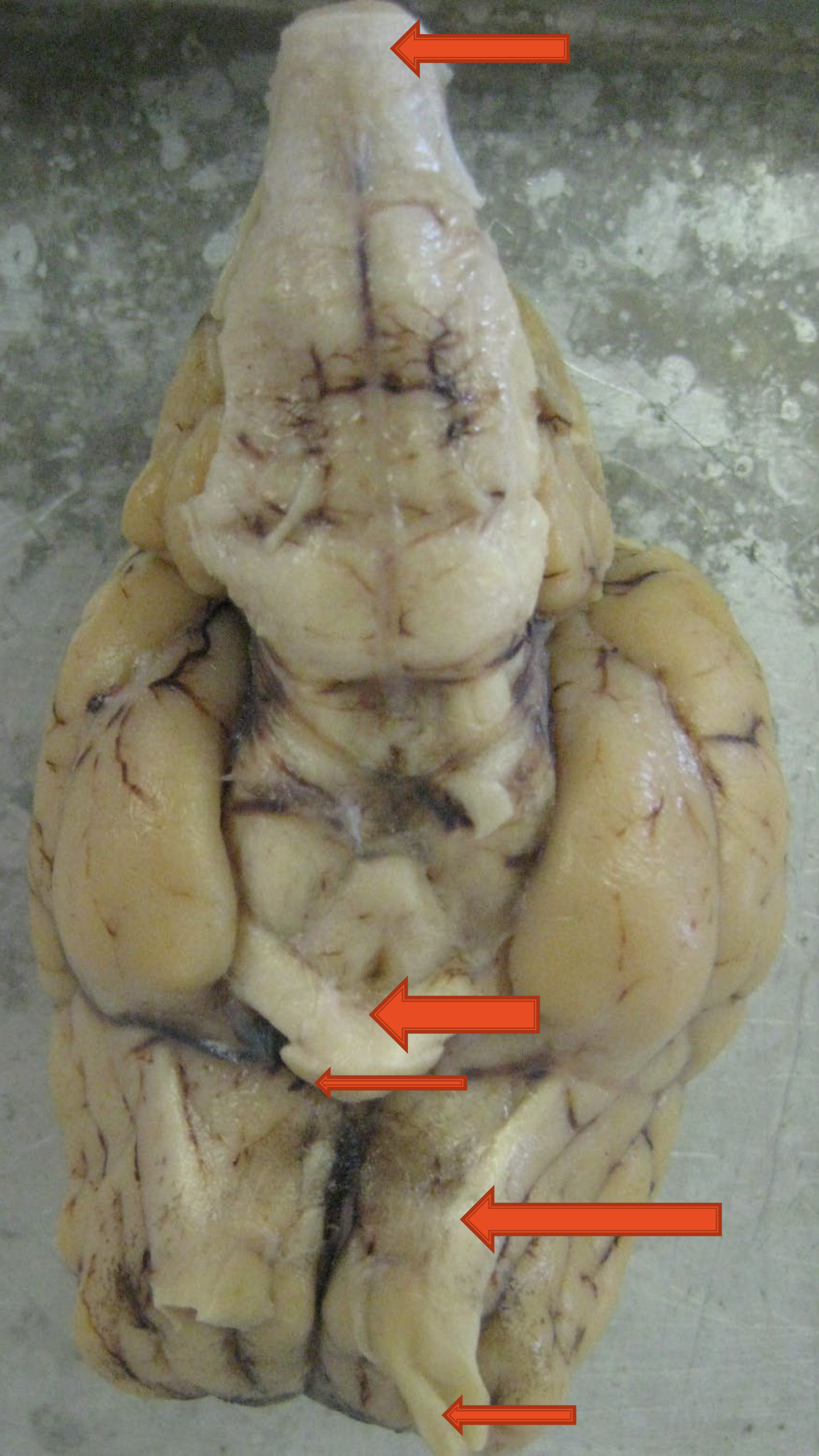

Longitudinal fissure
Vermis of the cerebellum
Spinal cord

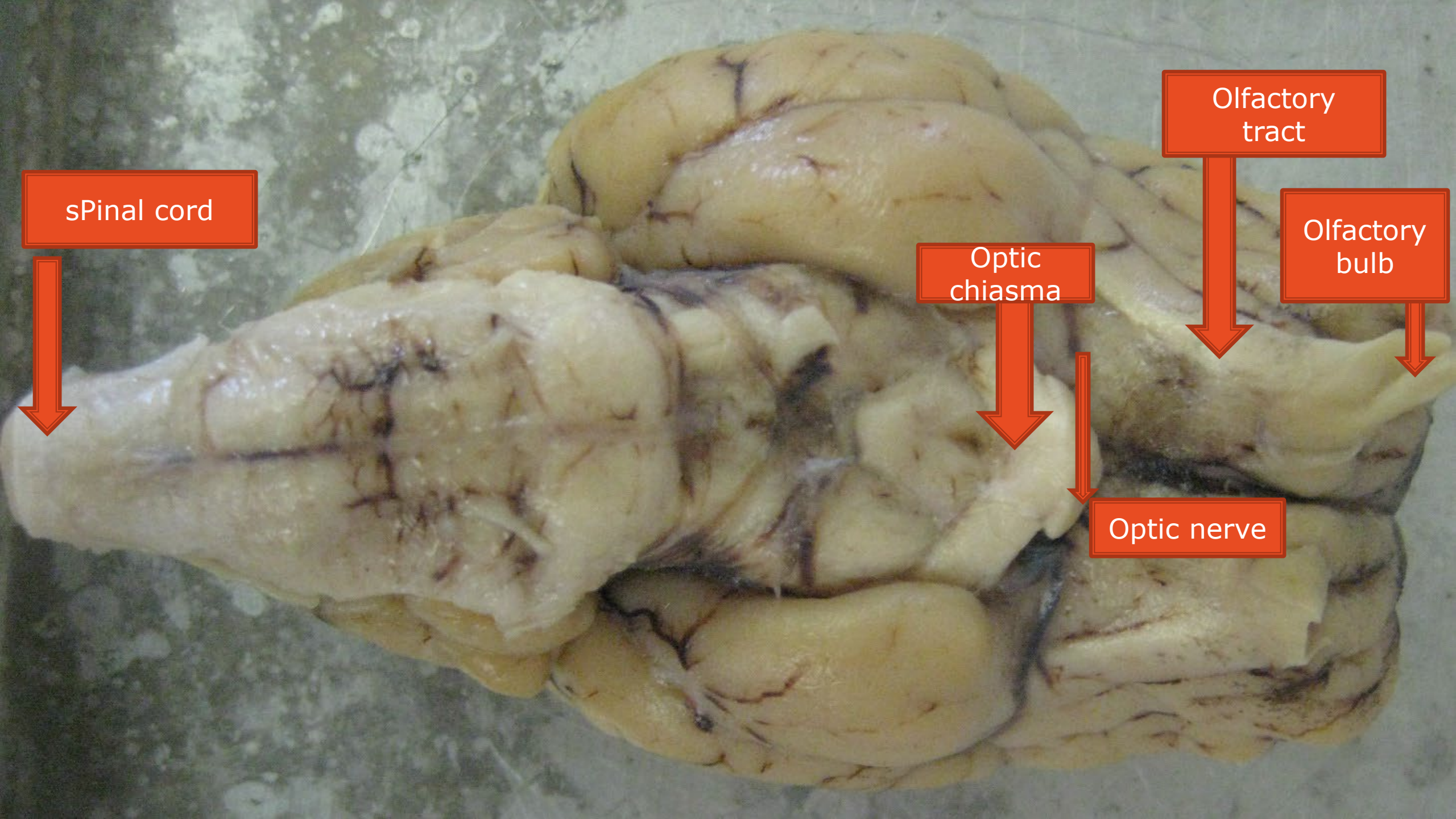


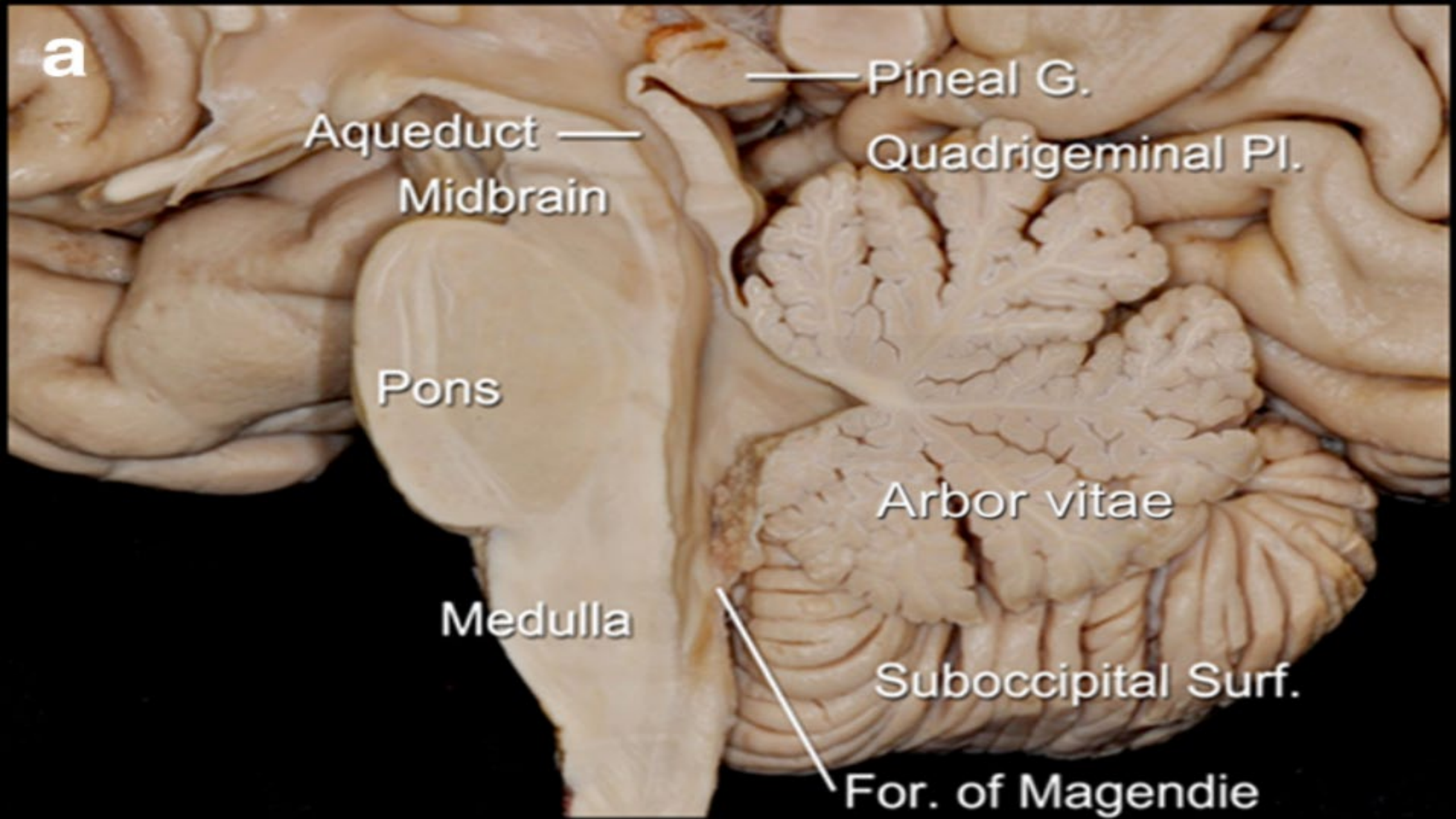

Occipital lobe
Frontal lobe




Inferior colliculus
vermis
Pineal gland



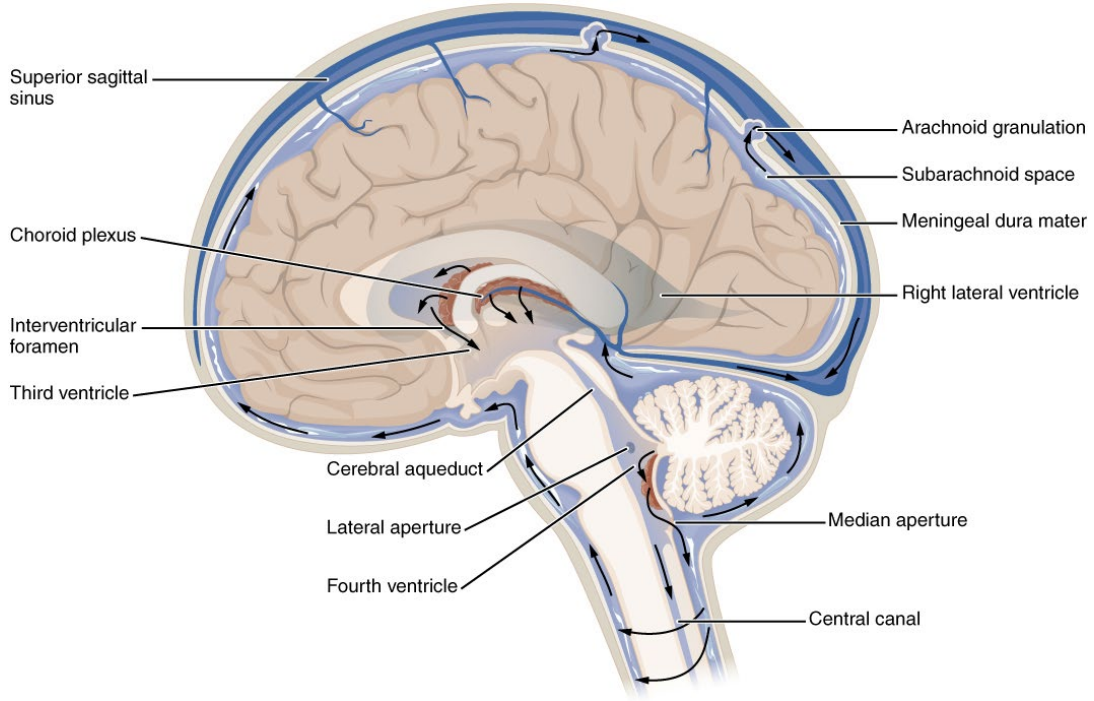

sPinal cord
Optic chiasma
Optic nerve
Olfactory tract
Olfactory bulb


a
Pineal G.
Aqueduct
Midbrain
Quadrigeminal Pl.
Pons
Arbor vitae
Medulla
Suboccipital Surf.
For. of Magendie

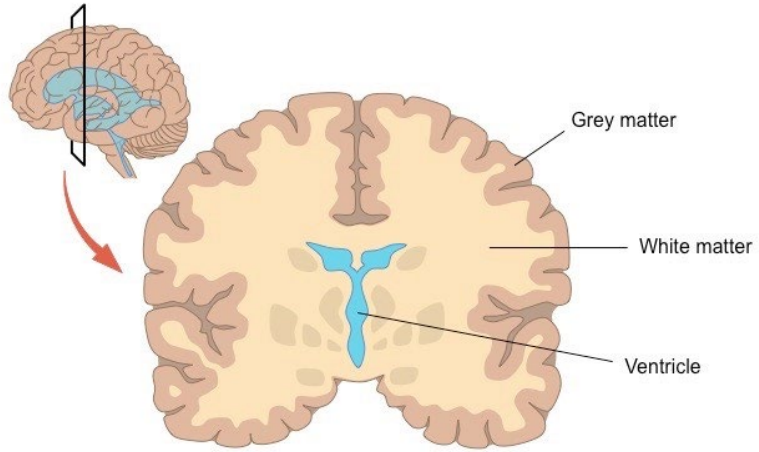
- **Between which layers of the meninges is CSF found?**

- **Which has a lower conductivity for impulses, grey or white matter?**

- Between which layers of the meninges is CSF found?
  - *Arachnoid and Pia*



- **Which has a lower conductivity for impulses, grey or white matter?**
  - ***Grey***



List, in order, structures of the nervous system that are involved in the transmitting and processing of vision.

A. Optic nerve, optic chiasm, optic tract, occipital lobe
B. Optic nerve, optic tract, gasser ganglia, occipital lobe
C. Optic nerve, optic chiasm, thalamus, temporal lobe, occipital lobe
D. Optic nerve, optic chiasm, optic tract, thalamus, occipital lobe
E. Optic nerve, optic chiasm, optic tract, thalamus, temporal lobe

21

List, in order, structures of the nervous system that are involved in the transmitting and processing of vision.

A. Optic nerve, optic chiasm, optic tract, occipital lobe
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D. Optic nerve, optic chiasm, optic tract, thalamus, occipital lobe
E. Optic nerve, optic chiasm, optic tract, thalamus, temporal lobe

- **Name the type of fast conduction when impulses jump from node to node (Ranvier)**

- **Where is the greatest concentration of Na+, inside or outside axon?**

- **Name the type of fast conduction when impulses jump from node to node (Ranvier)**
  - ***Saltatory***

- **Where is the greatest concentration of Na+, inside or outside axon?**
  - ***Outside***

1./What visible structure separates the frontal lobe from the parietal lobe?

2./What visible structure separates the parietal lobe from the temporal lobe?

3./Between the corpus callosum and the fornix is a thin membrane,what is the name of this membrane?

1./What visible structure separates the frontal lobe from the parietal lobe? At the top of each hemisphere is a parietal lobe, which is separated from the frontal lobe by the central sulcus.

2./What visible structure separates the parietal lobe from the temporal lobe? Lateral fissure or the Sylvian fissure.

3./Between the corpus callosum and the fornix is a thin membrane,what is the name of this membrane? septum pellucidum,

5./Function of the choroid plexus?

6./The third ventricle is associated with the diencephalon. What are the first and second ventricles, and where are they?

7./On the dorsal surface of the midbrain, called the tectum, are four lumps. The four lumps make up a structure called the----------?

8./The cerebellum is separated from the cerebrum by a deep groove, called the----------?

5./Function of the choroid plexus?
csf secretion

6./The third ventricle is associated with the diencephalon. What are the first and second ventricles, and where are they?
lateral ventricle

7./On the dorsal surface of the midbrain, called the tectum, are four lumps. The four lumps make up a structure called the----------?
corpora quadrigemina

8./The cerebellum is separated from the cerebrum by a deep groove, called the----------?
transverse fissure.

For each of the following nerves, indicate whether it carries sensory information only, motor information only, or both sensory and motor information.:

9./olfactory nerve: ?

10./optic nerve: ?

11./oculomotor nerve:?

12./trigeminal nerve:?

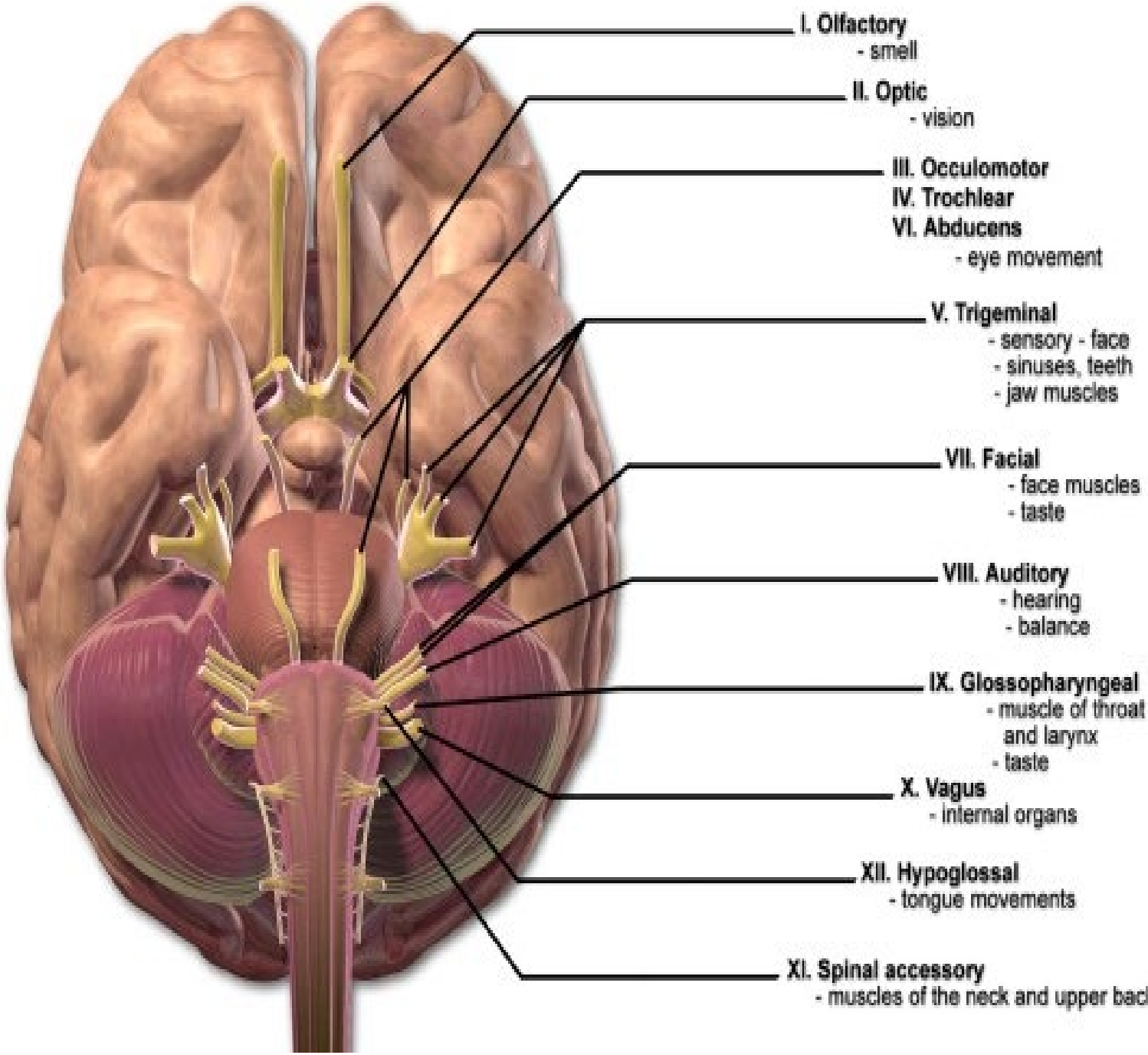
For each of the following nerves, indicate whether it carries sensory information only, motor information only, or both sensory and motor information.:

9./olfactory nerve: ? s

10./optic nerve: ? s

11./oculomotor nerve:?mixed

12./trigeminal nerve:?mixed



- **What are the two major divisions of the nervous system?**

- **What cells are the structural & functional unit of the nervous system?**

- **What are the two major divisions of the nervous system?**
  - ***Answer: Central & Peripheral***

- **What cells are the structural & functional unit of the nervous system?**
  - ***Answer: Neurons***

- **The central nervous system is composed of what organs?**

- **What composes the peripheral nervous system?**

- **The central nervous system is composed of what organs?**
  - ***Answer: Brain & Spinal Cord***

- **What composes the peripheral nervous system?**
  - ***Answer: Spinal and Cranial Nerves***

- **What are the specialized cells that aid neurons (by producing myelin & helping communication)?**

- **What part of the neuron is the "receptive surface"?**

- **What are the specialized cells that aid neurons (by producing myelin & helping communication)?**
  - ***Answer: Neuroglia***

- **What part of the neuron is the "receptive surface"?**
  - ***Answer: Dendrite***

- **Where is the nucleus located in the neuron?**

- **Where is the nucleus located in the neuron?**

Answer: ***Cell Body***

What is the name of a collection of nerve cell bodies located:

a/ Within the CNS

b/ Outside of the CNS?

What is the name of a collection of nerve cell bodies located:

a/ Within the CNS — Neuron

b/ Outside of the CNS? — Ganglion

What are the two type of cell found in the central nervous system?

What are the two type of cell found in the central nervous system?

Neurons, glial cell
neurons: sensory, motor , interneurons

Reflex definition?

Reflex arc?

Reflex definition?

involuntary, unplanned sequence or action and nearly instantaneous movement in response to a stimulus.

Reflex arc? neural pathway that controls a reflex. (a.) carry sensory information from the receptor to the spinal cord, and then (b.) carry the response generated by the spinal cord to effector organs during a reflex action. The pathway taken by the nerve impulse to accomplish a reflex action is called the reflex arc.

autonomic reflex arc (affecting inner organs)

somatic reflex arc (affecting muscles).

Autonomic reflexes sometimes involve the spinal cord

somatic reflexes are mediated more by the brain than the spinal cord

During a somatic reflex, nerve signals travel along the following pathway:[1]

Somatic receptors in the skin, muscles and tendons

Afferent nerve fibers carry signals from the somatic receptors to the posterior horn of the spinal cord or to the brainstem

An integrating center, the point at which the neurons that compose the gray matter of the spinal cord or brainstem synapse

Efferent nerve fibers carry motor nerve signals from the anterior horn to the muscles

Effector muscle innervated by the efferent nerve fiber carries out the response.

Monosynaptic vs. polysynaptic?

only one sensory neuron and one motor neuron, it is defined as monosynaptic, referring to the presence of a single chemical synapse.

In the case of peripheral muscle reflexes (patellar reflex, achilles reflex), brief stimulation to the muscle spindle results in contraction of the agonist or effector muscle.

By contrast, in polysynaptic reflex pathways, one or more interneurons connect afferent (sensory) and efferent (motor) signals. All but the most simple reflexes are polysynaptic, allowing processing or inhibition of polysynaptic reflexes within the brain

On the cerebral cortex, which region is concerned with:

Sensory information?

Motor signals?

On the cerebral cortex, which region is concerned with:

Sensory information?

The **postcentral gyrus** (i.e., the part of the parietal lobe immediately adjacent to the central sulcus)

Motor signals?

The **precentral gyrus** (i.e., the part of the frontal lobe immediately adjacent to the central sulcus)

What is the distribution of the 31 pairs of spinal nerves that leave the spinal cord via the intervertebral foramina?

Where does spinal nerve C5 exit the vertebral column relative to vertebra C5?

15/ **What is the distribution of the 31 pairs of spinal nerves that leave the spinal cord via the intervertebral foramina?**

Cervical: 8
Thoracic: 12
Lumbar: 5
Sacral: 5
Coccygeal: 1

16/ **Where does spinal nerve C5 exit the vertebral column relative to vertebra C5?**

Above it

. The human nervous system is capable of a wide range of functions. What is the basic unit of the nervous system?
A. Glial cell B. Meninges C. Neuron D. Cerebrospinal fluid

The neuron cell is made up of which of the following parts?
A. Axon B. Dendrite C. Nucleus D. All of the Above

3. Neurons come in which different type(s)?
A. Sensory B. Motor C. Skeletal D. A and B

4. How do neurons communicate with one another?
A. Electrically B. Chemically C. Through weak, radio-wave-like impulses D. A and B

6. Acetylcholine is a neurotransmitter that provides for communication between muscles and nerves. When there is a problem with the interaction between acetylcholine and the acetylcholine receptor sites on the muscles, which condition(s) can occur?
A. Myasthenia gravis B. Botulism C. Multiple sclerosis D. A and B

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To Practice


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10c
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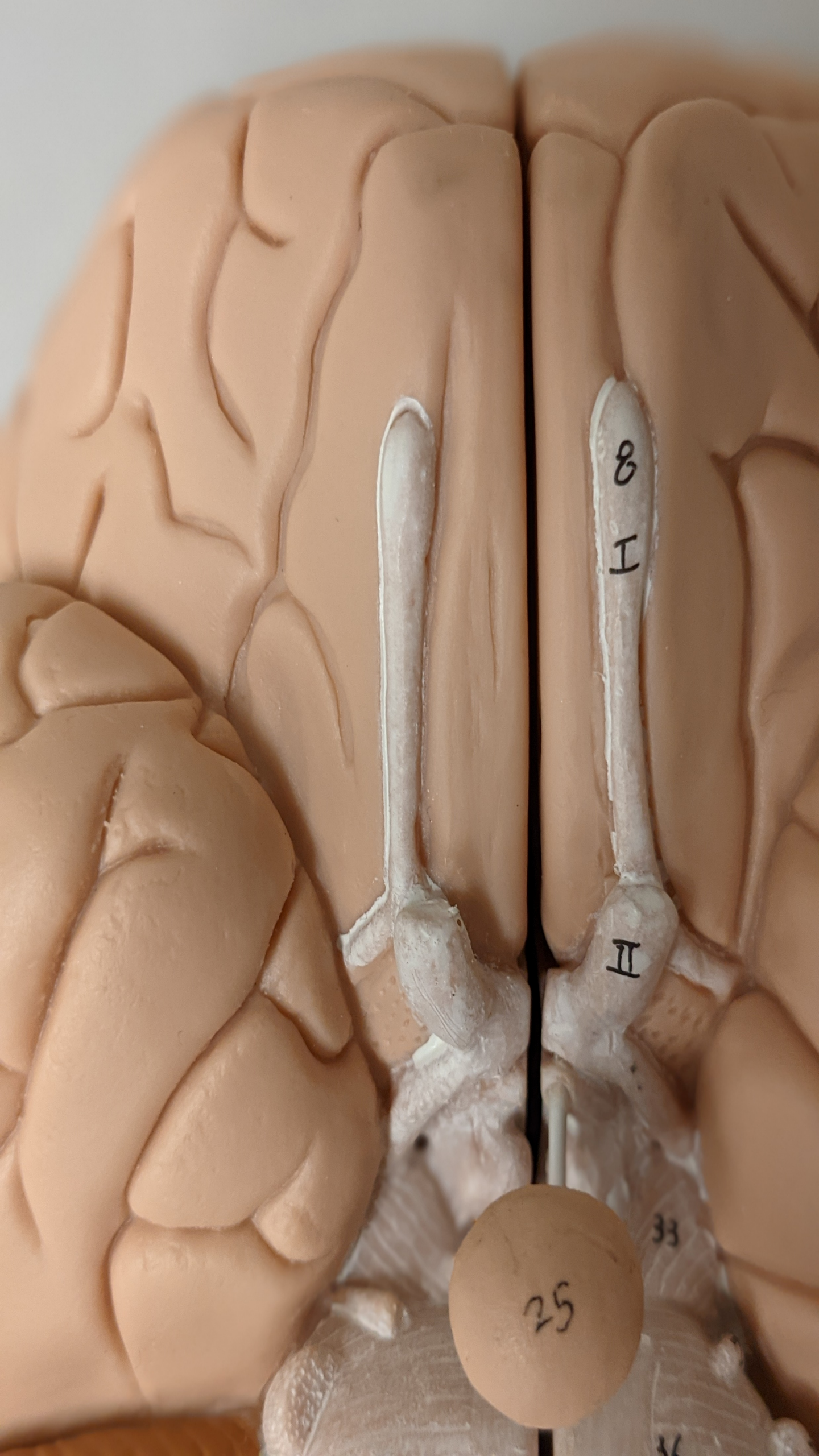
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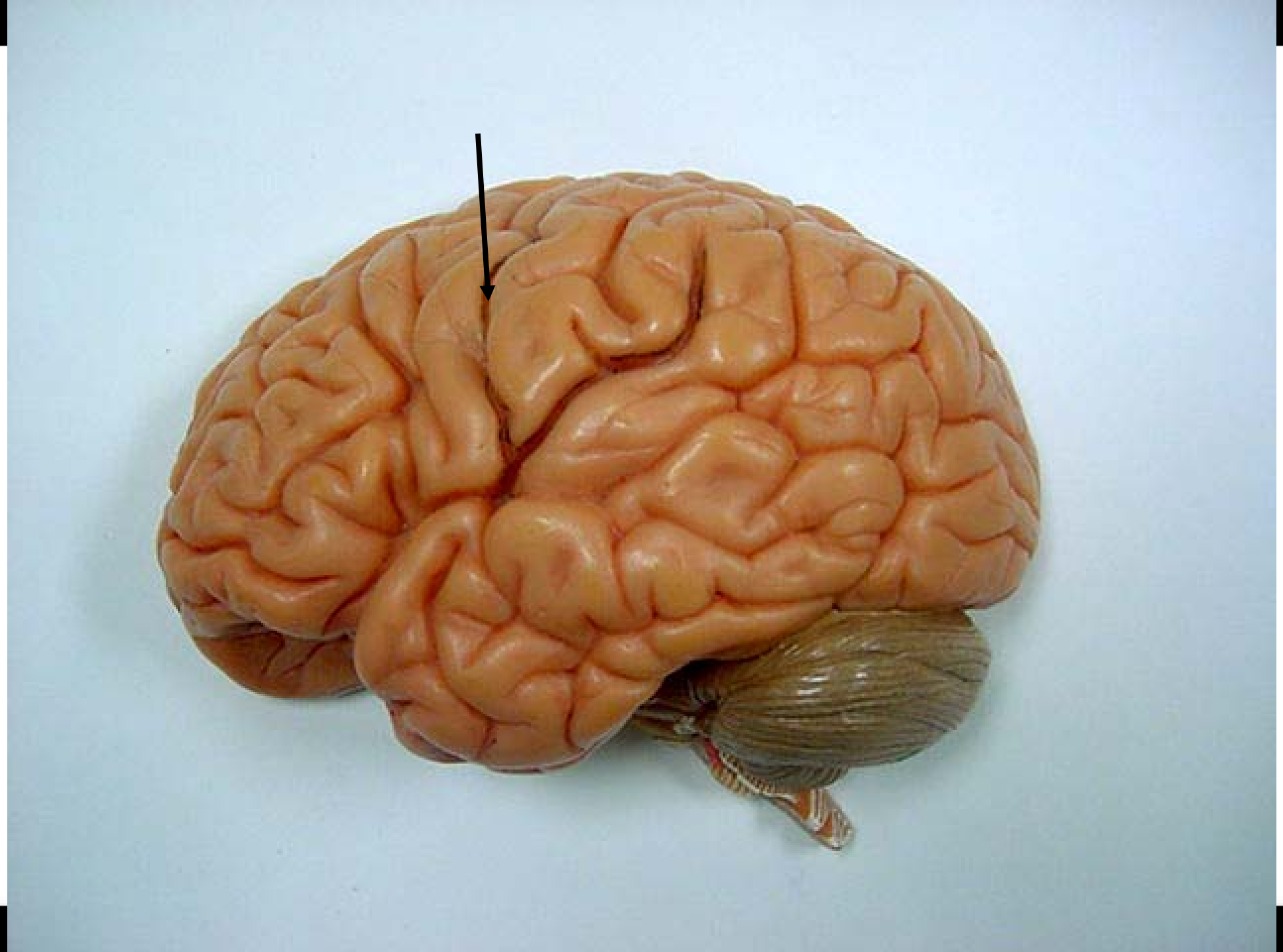
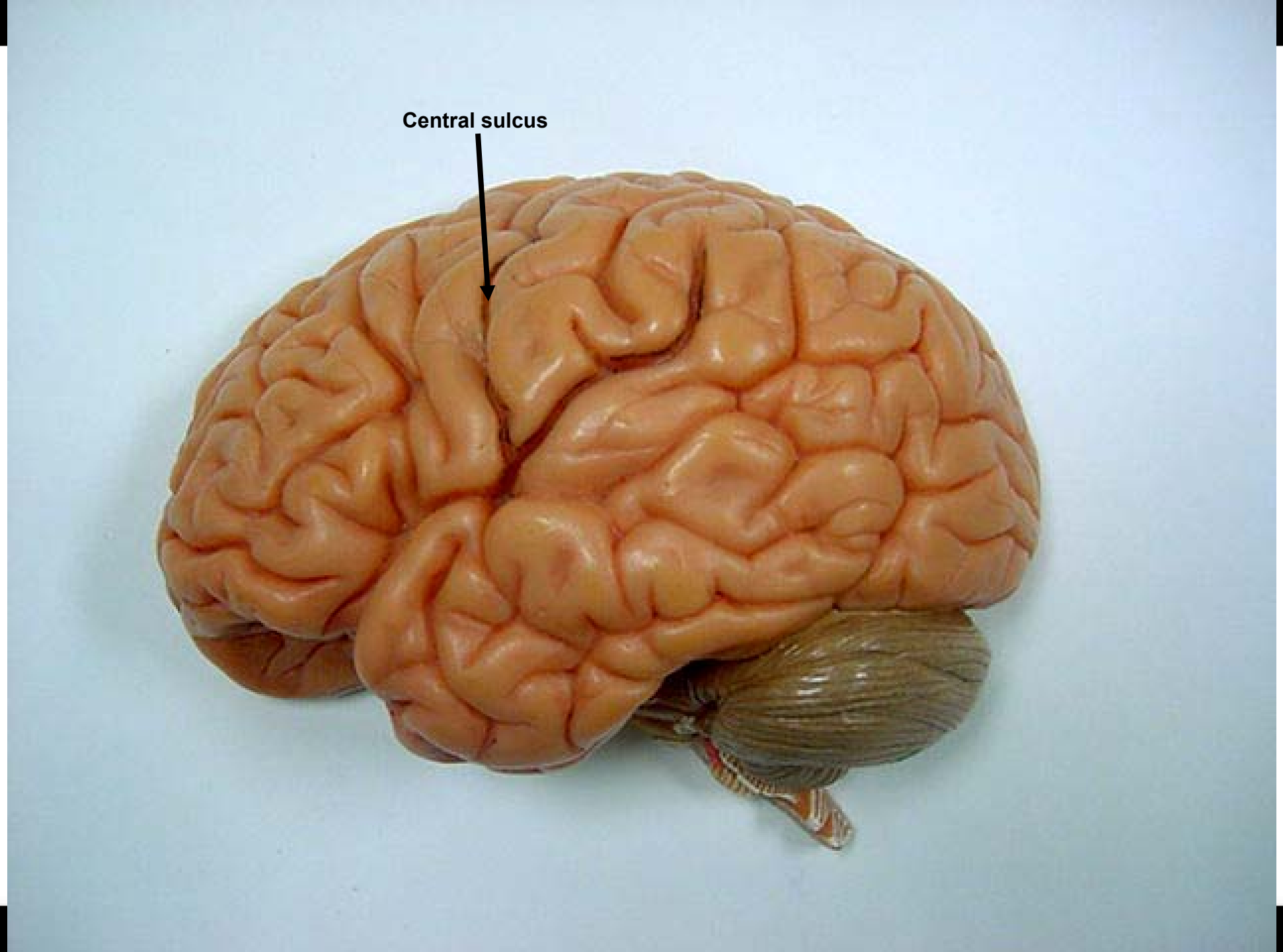
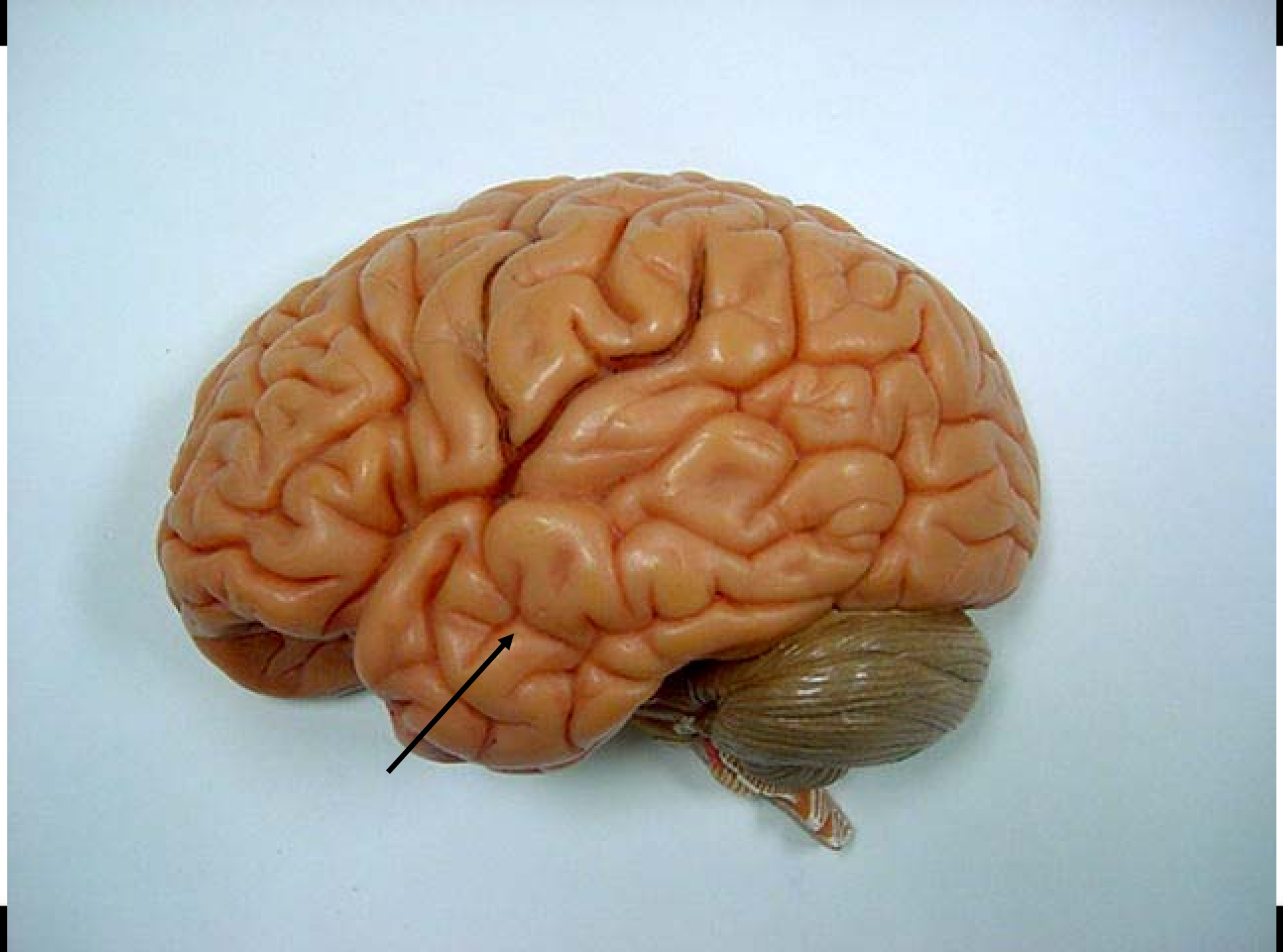
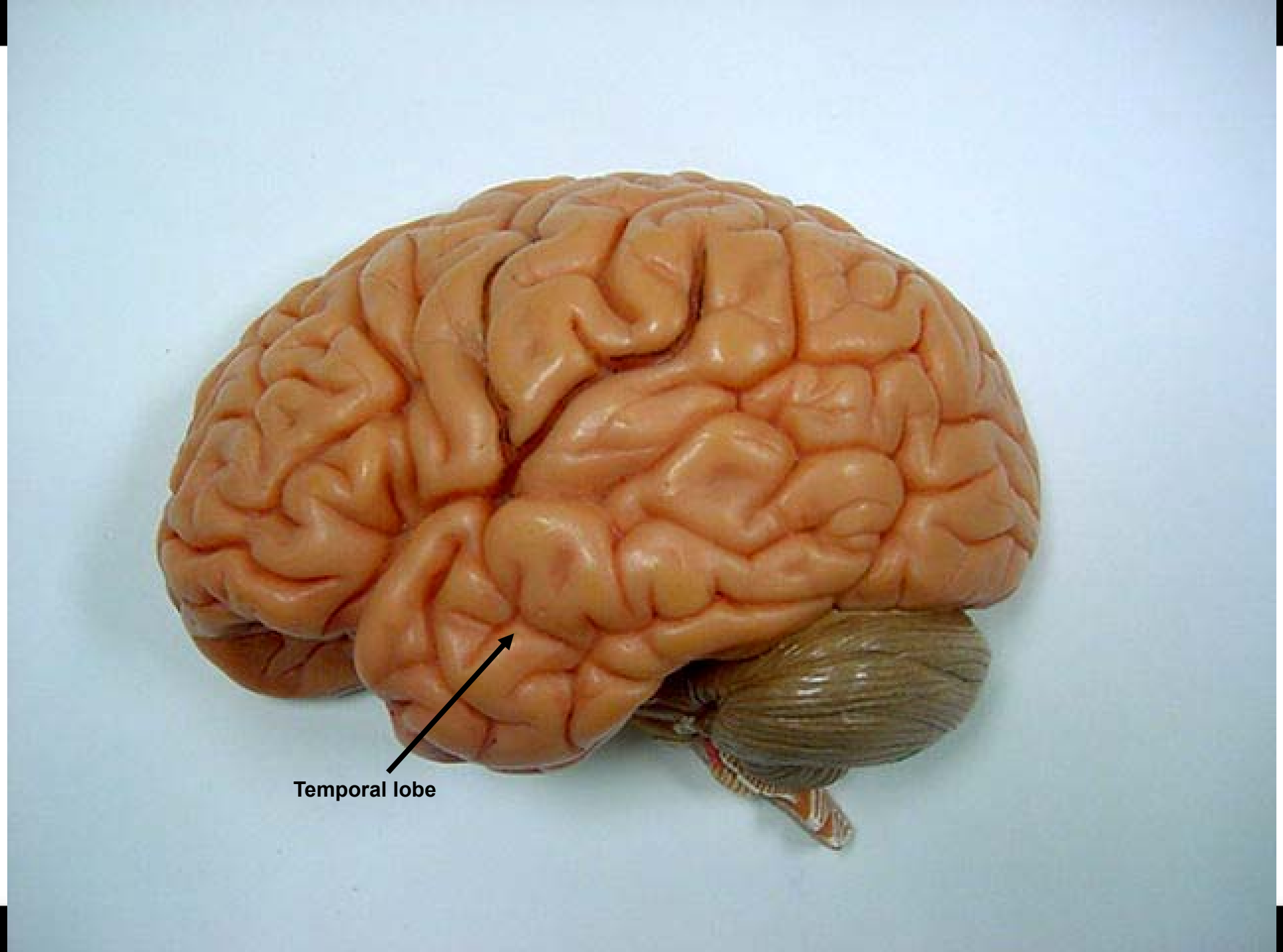
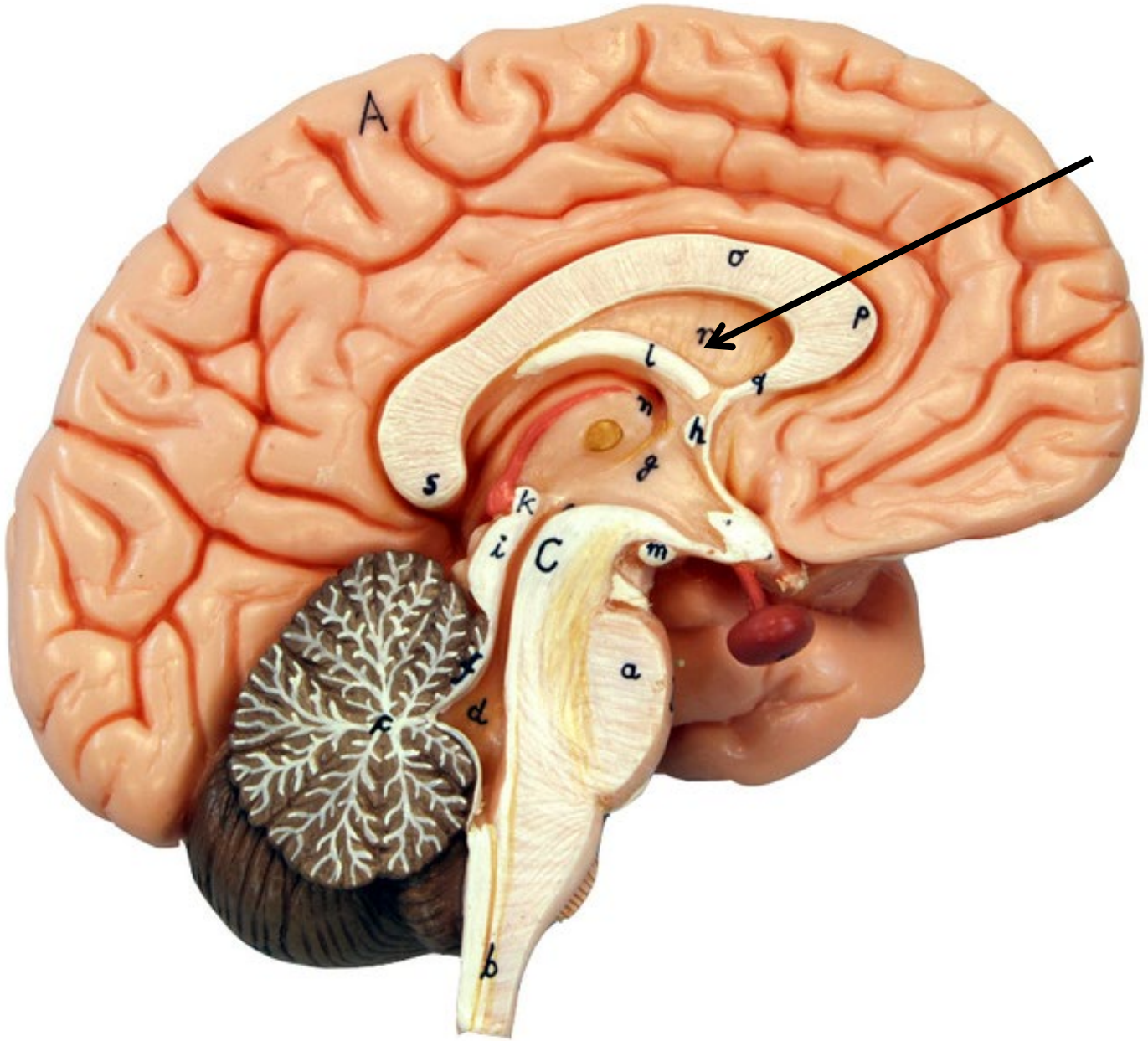



Central sulcus




Temporal lobe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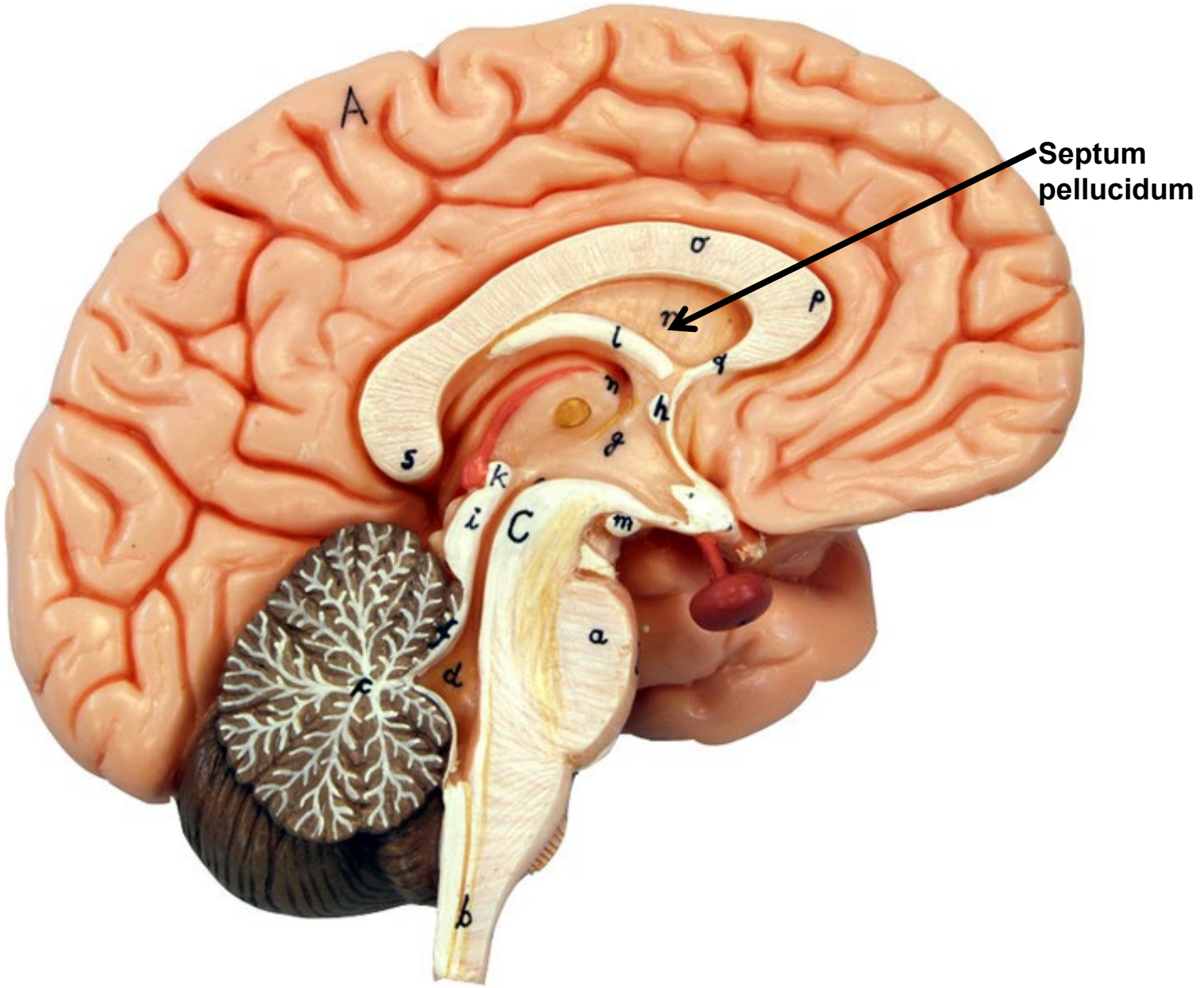
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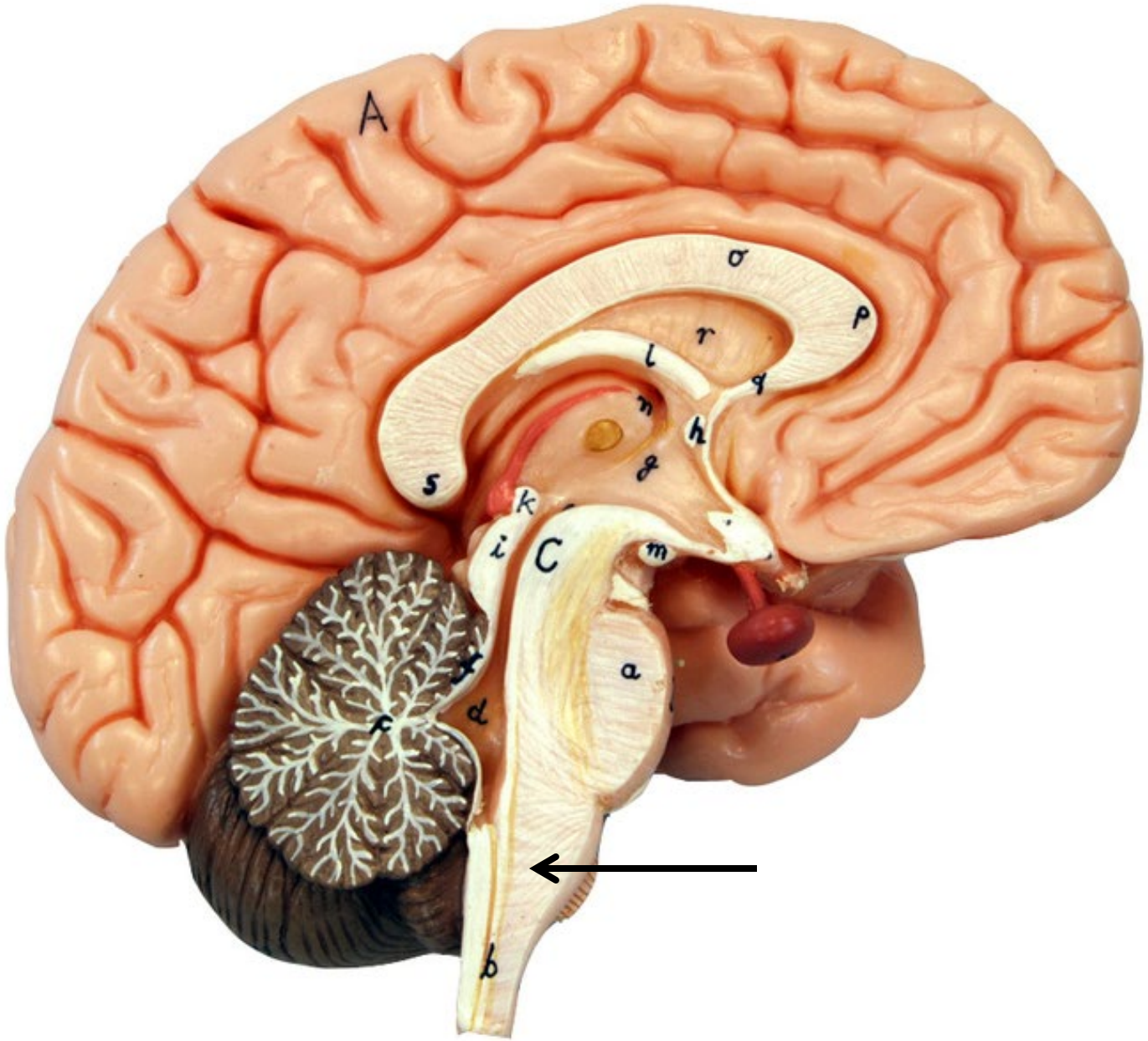
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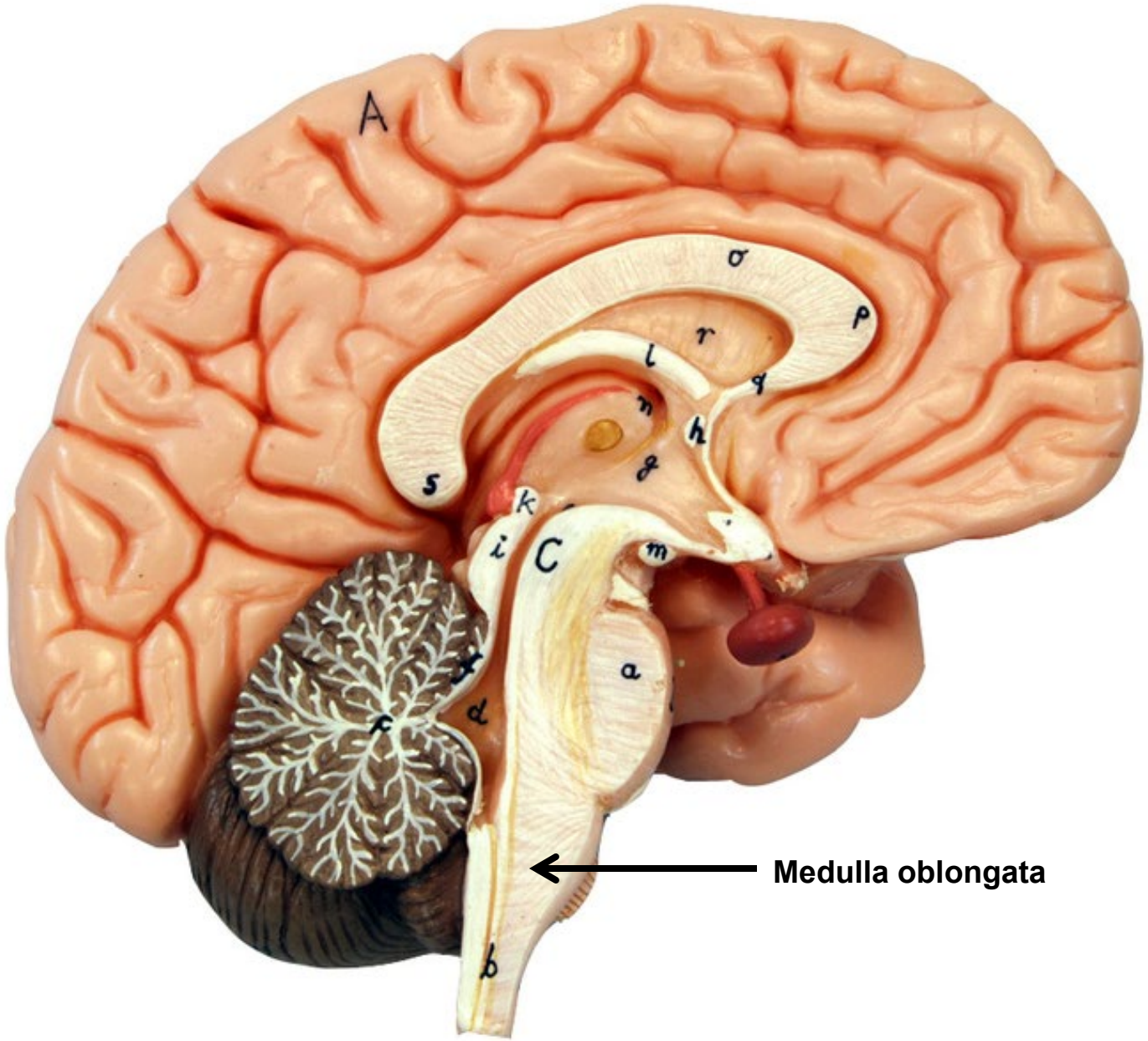
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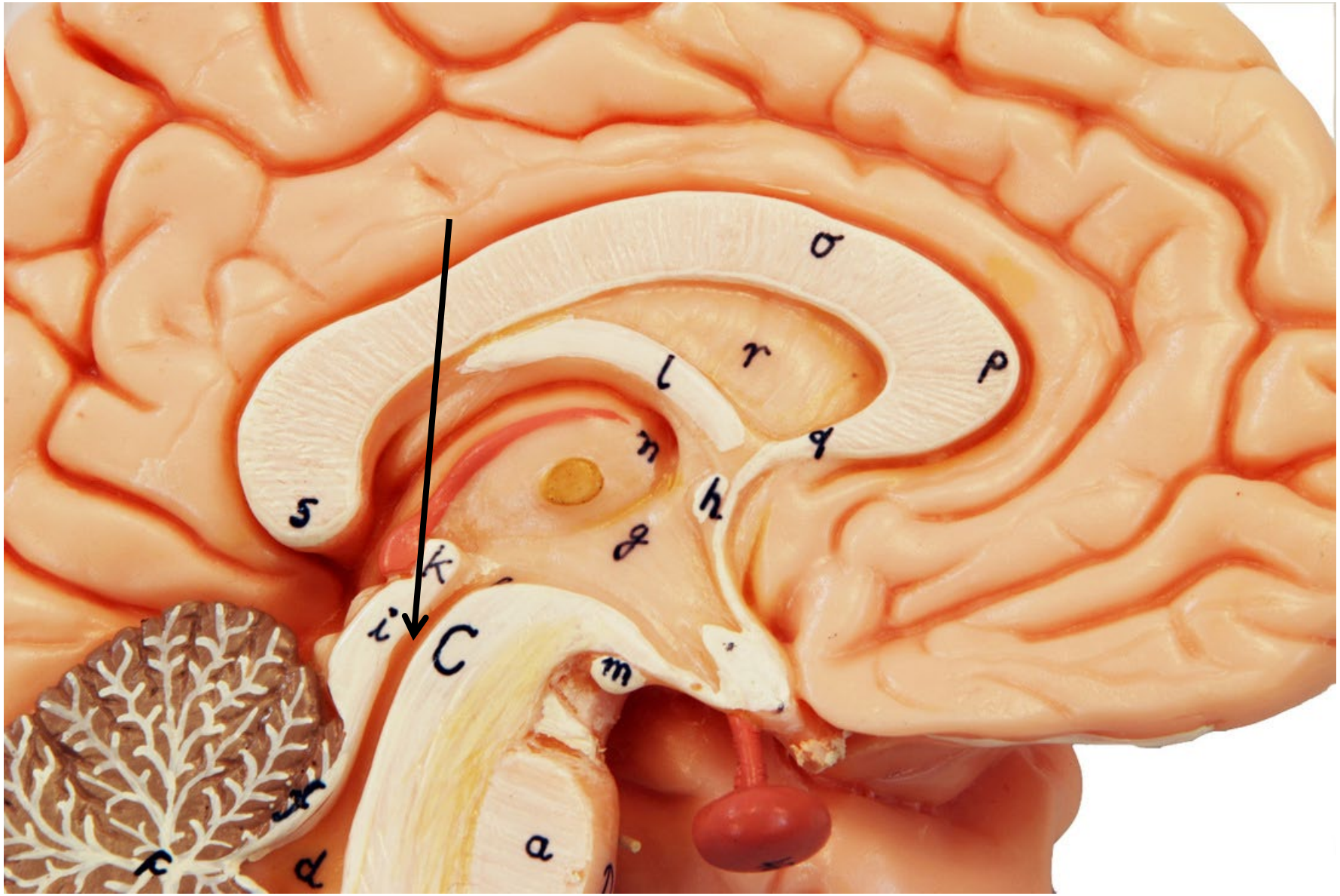
Medulla oblongata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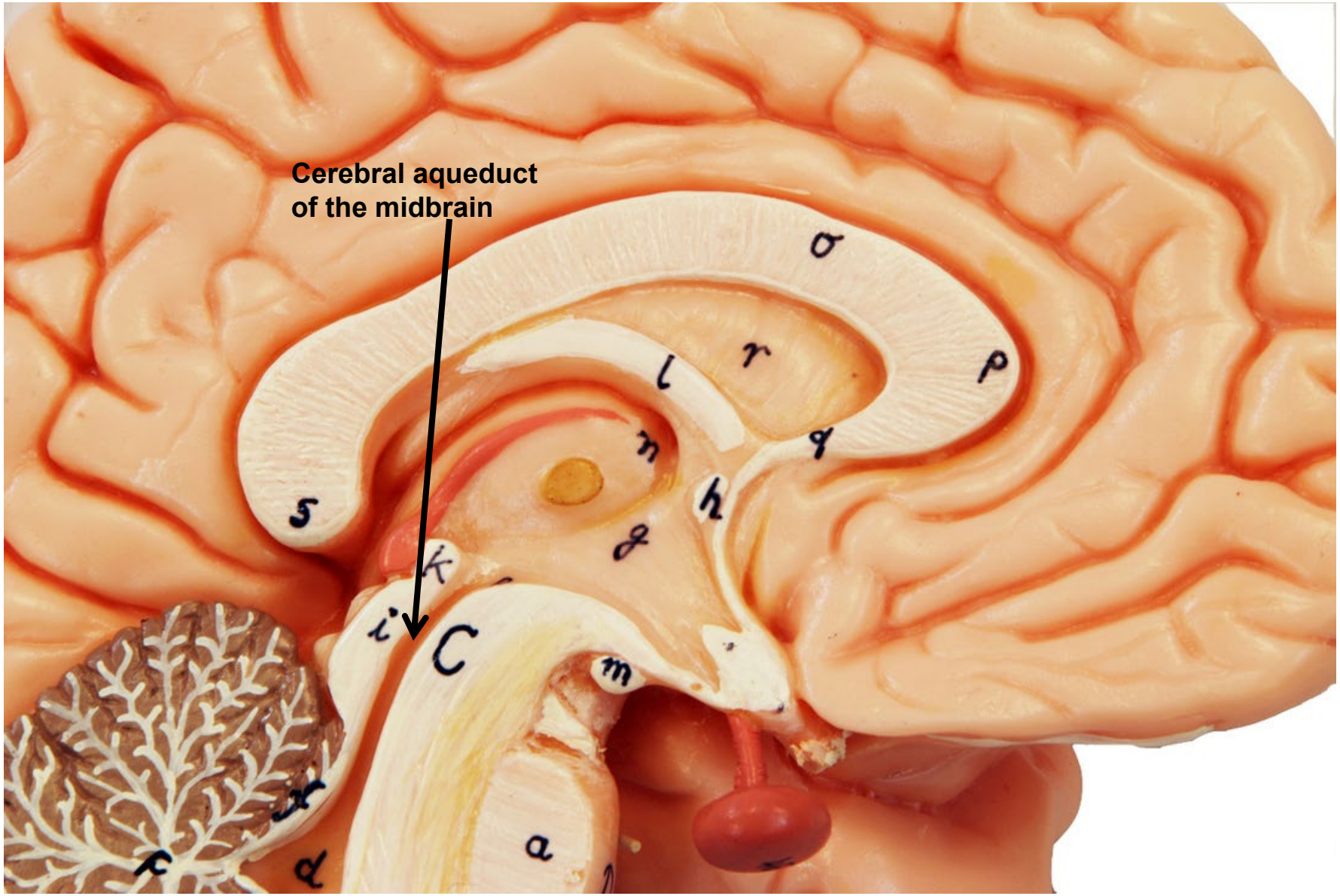
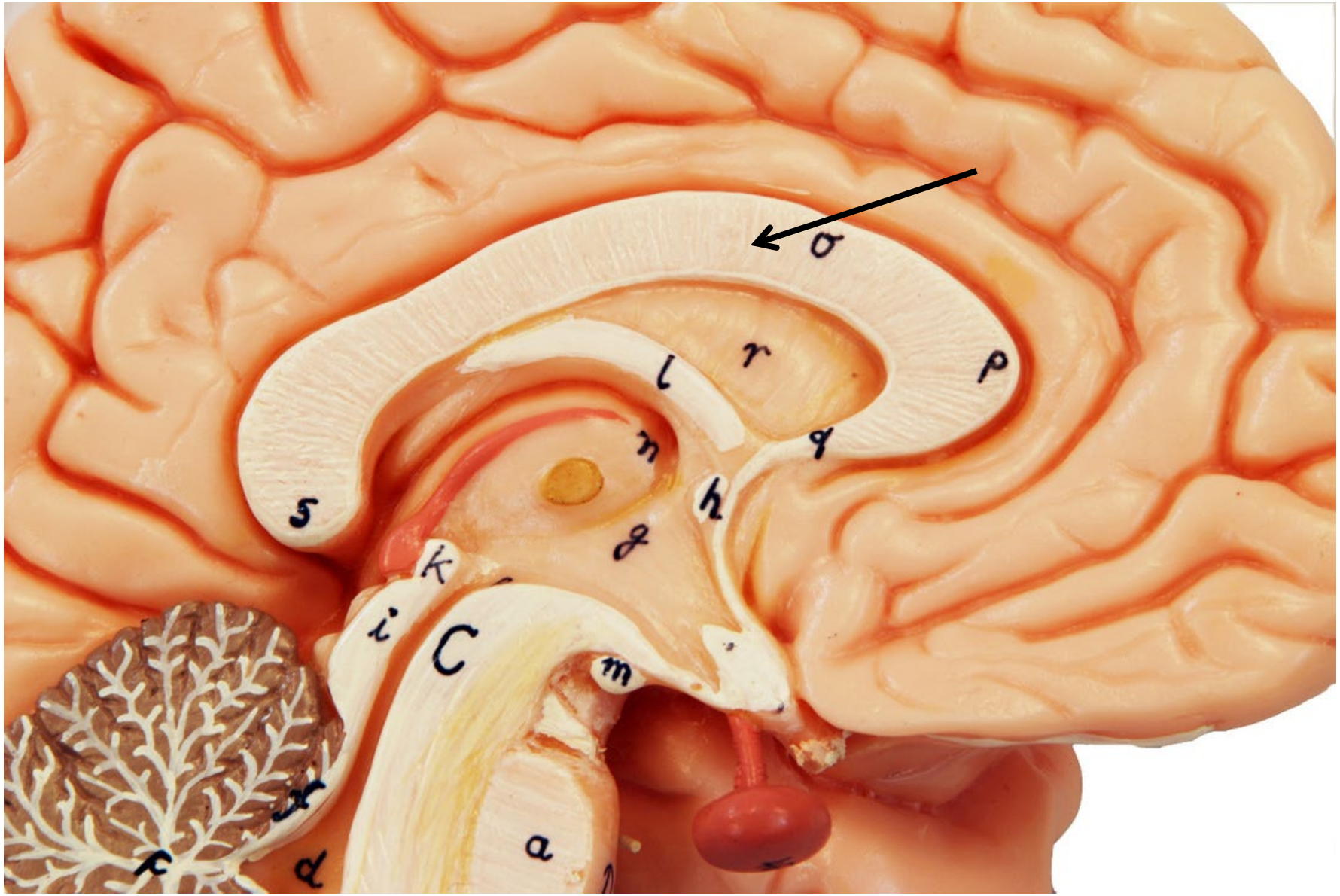

Cerebral aqueduct
of the midbrain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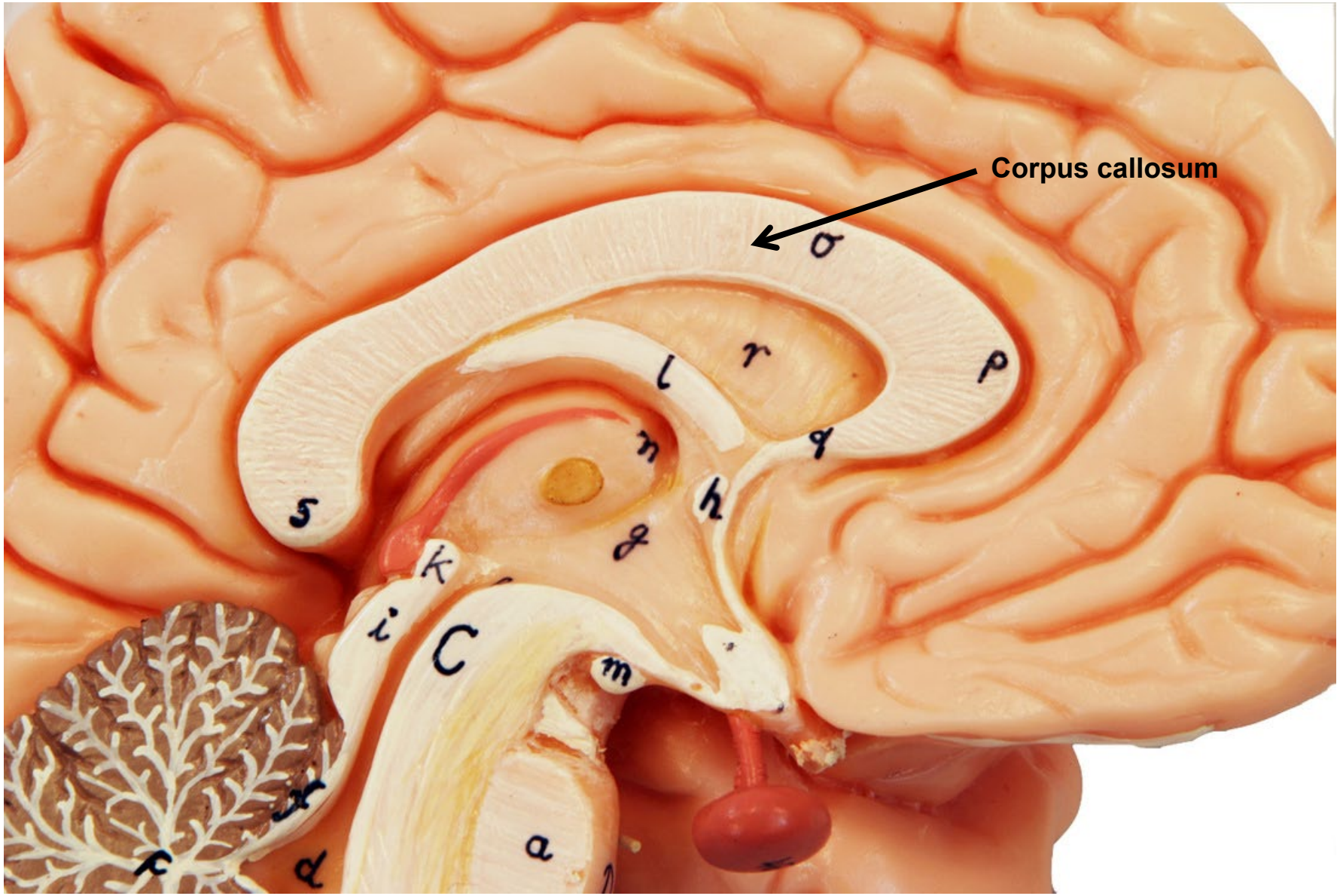
Corpus callosum
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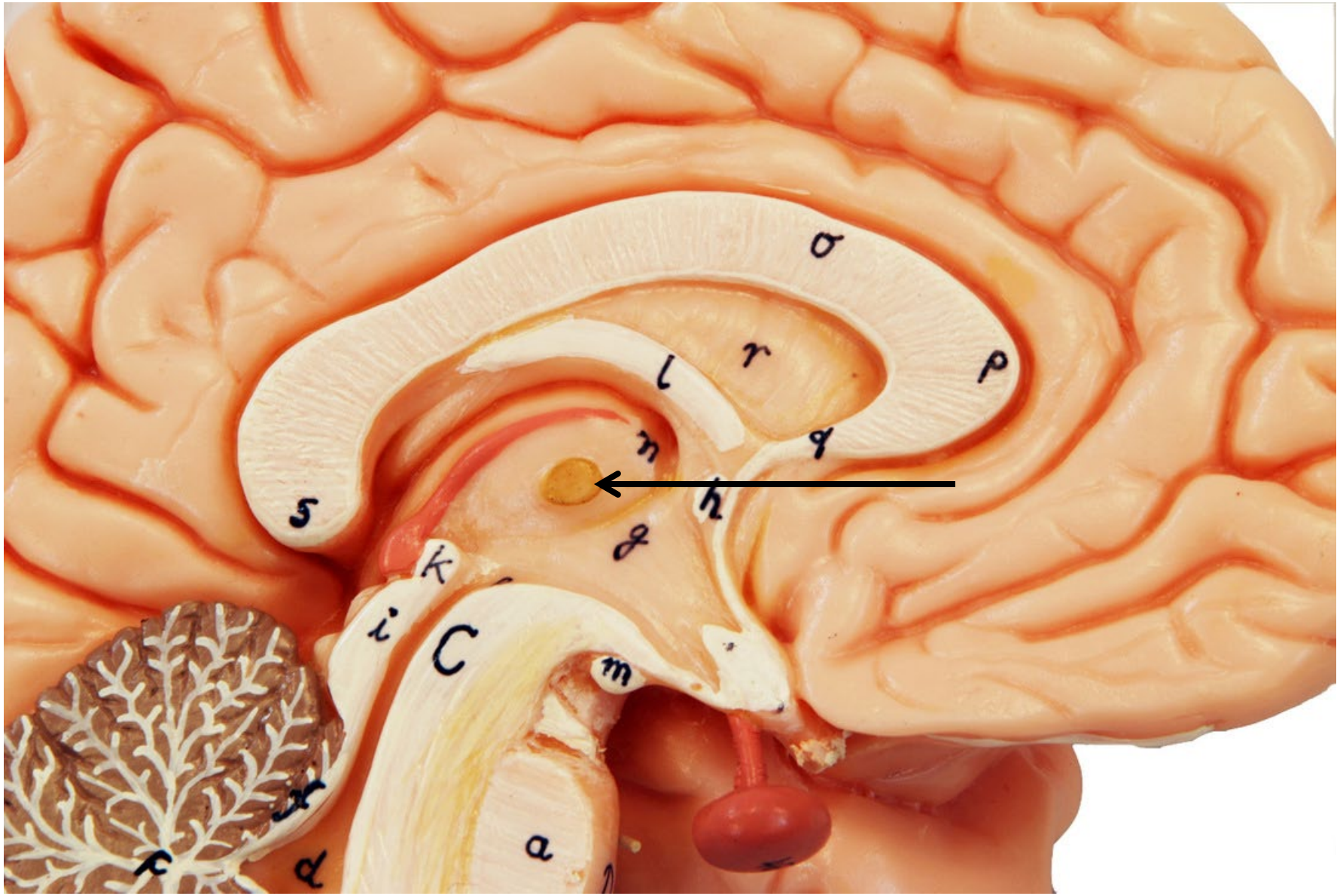
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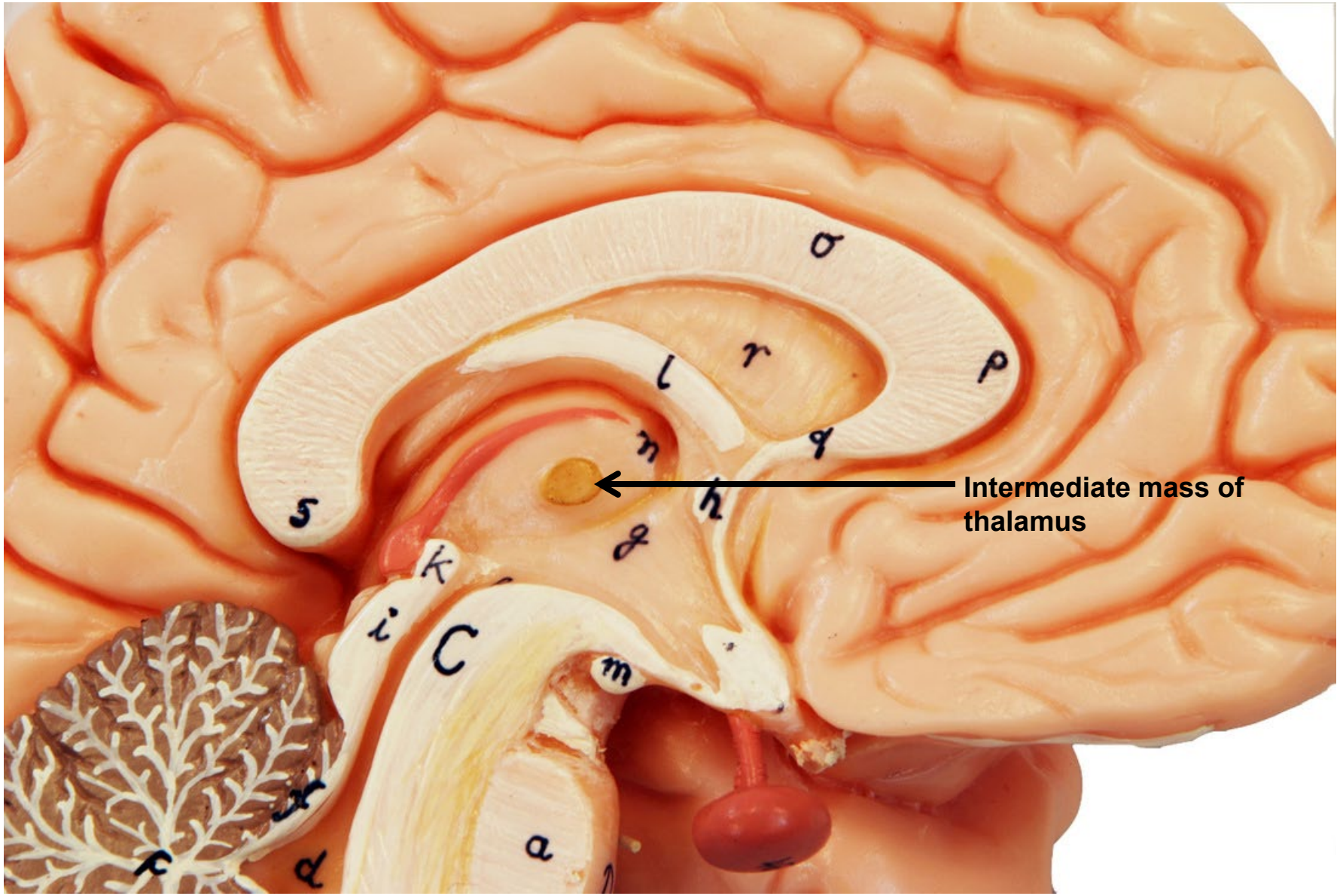
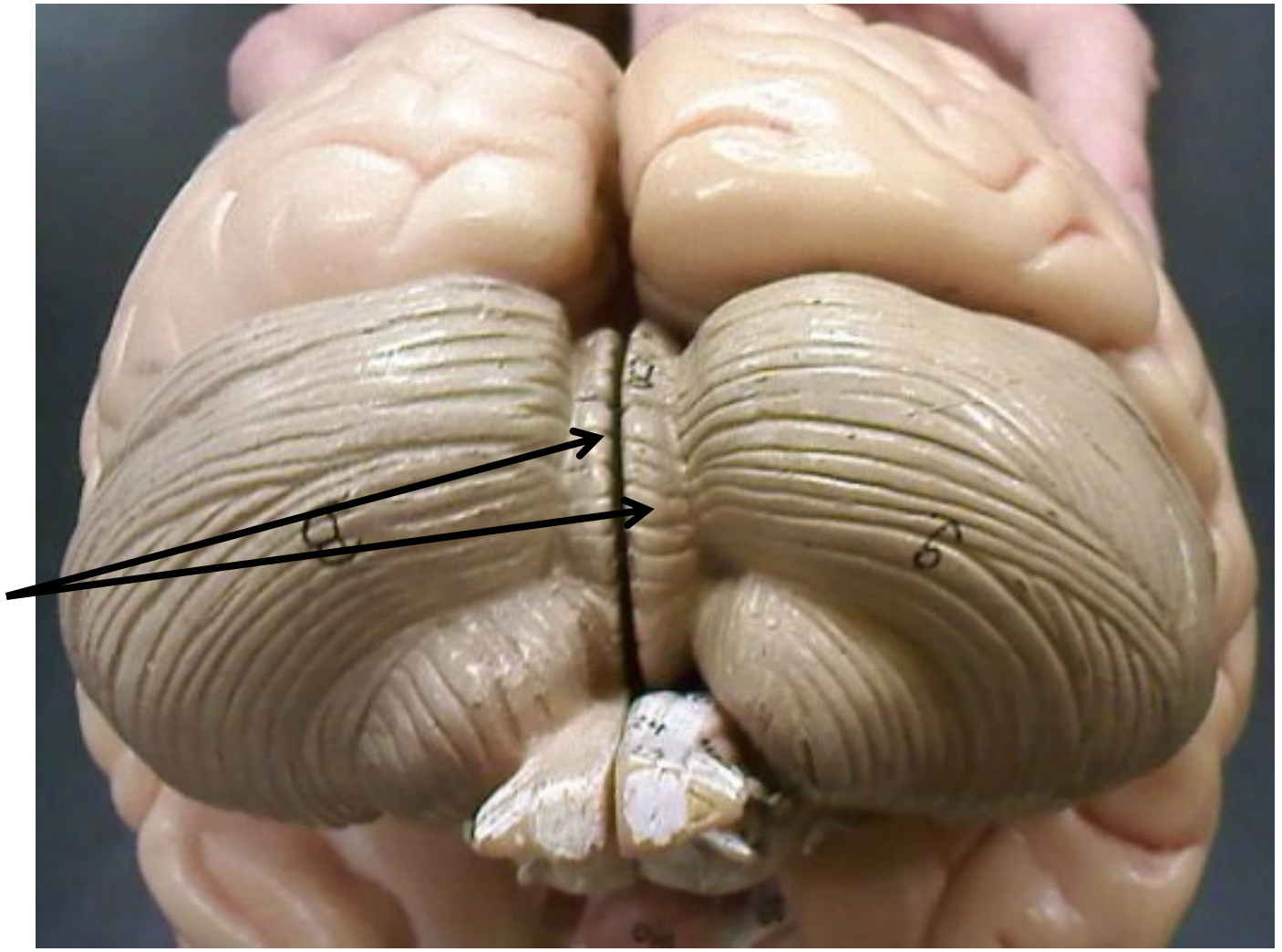
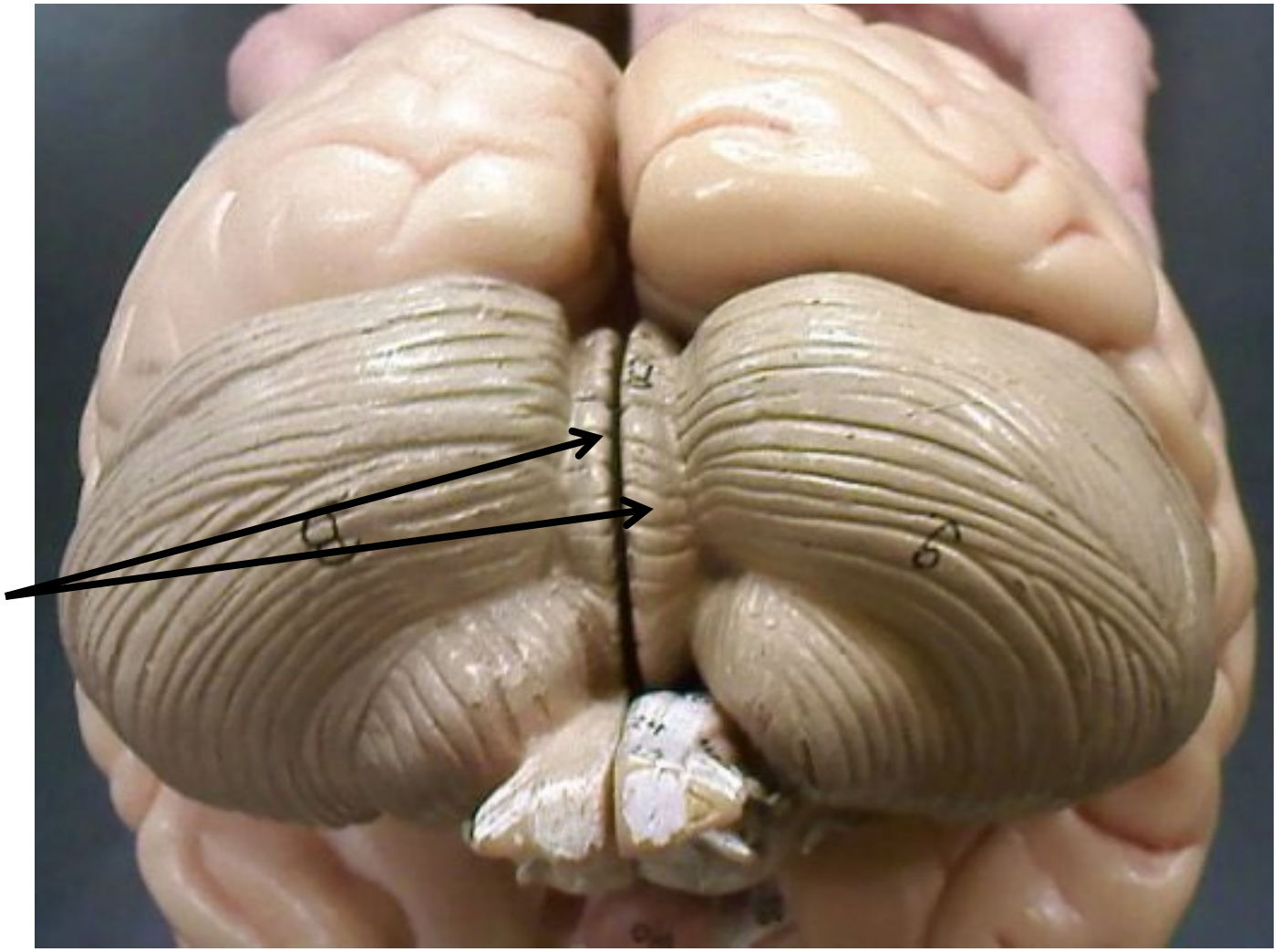
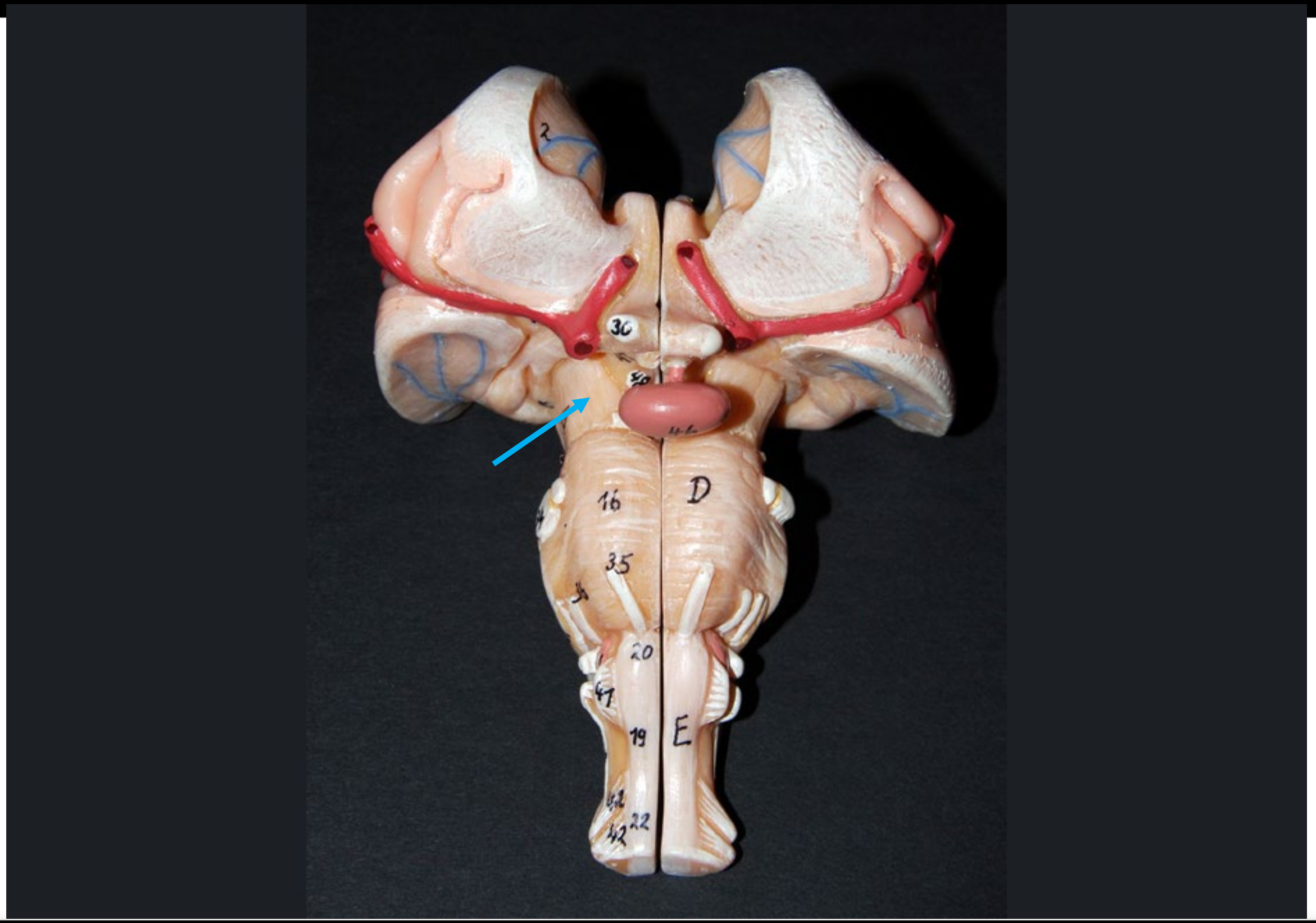

Intermediate mass of thalamus




Vermis of
cerebellum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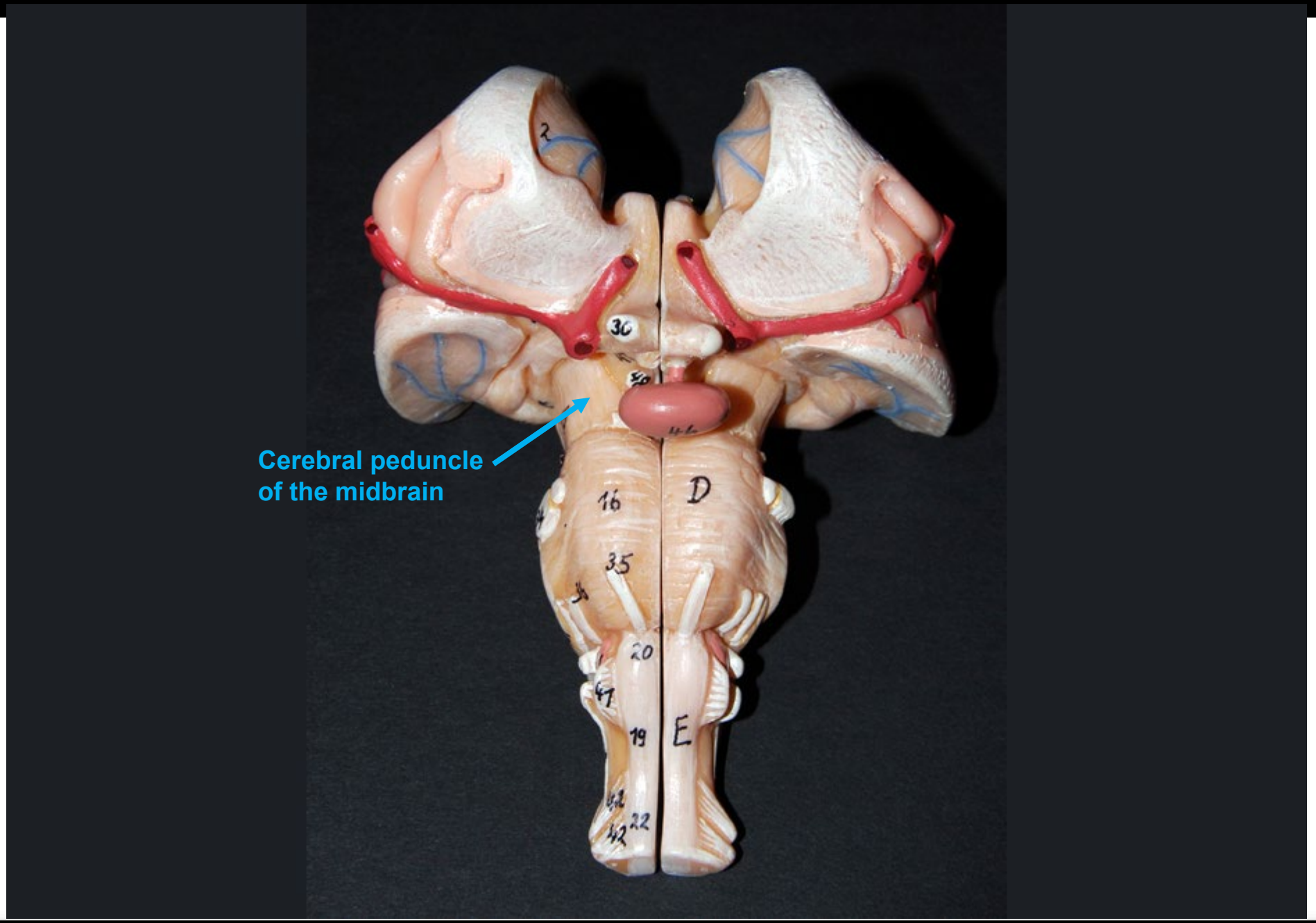
Cerebral peduncle
of the midbrain
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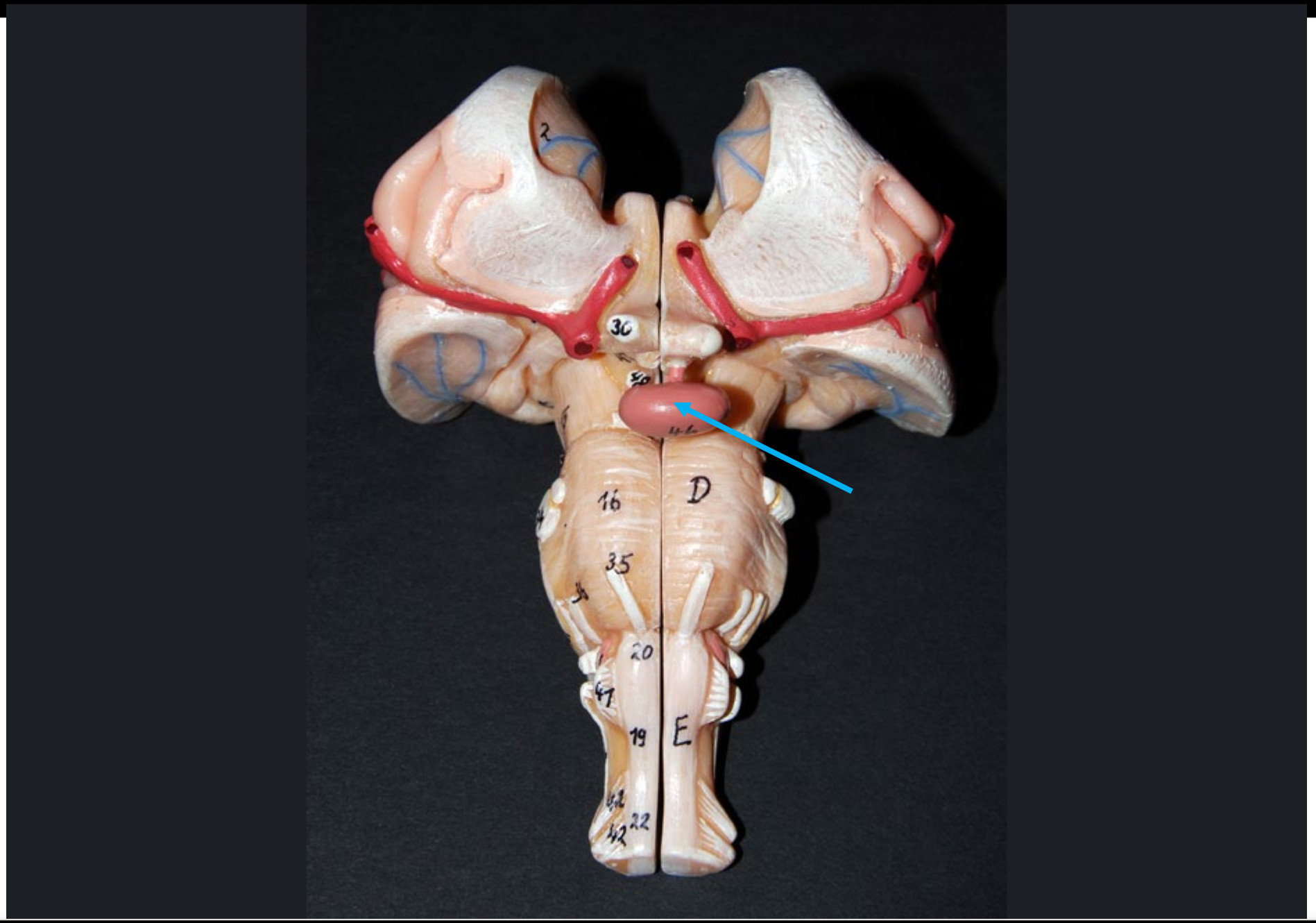
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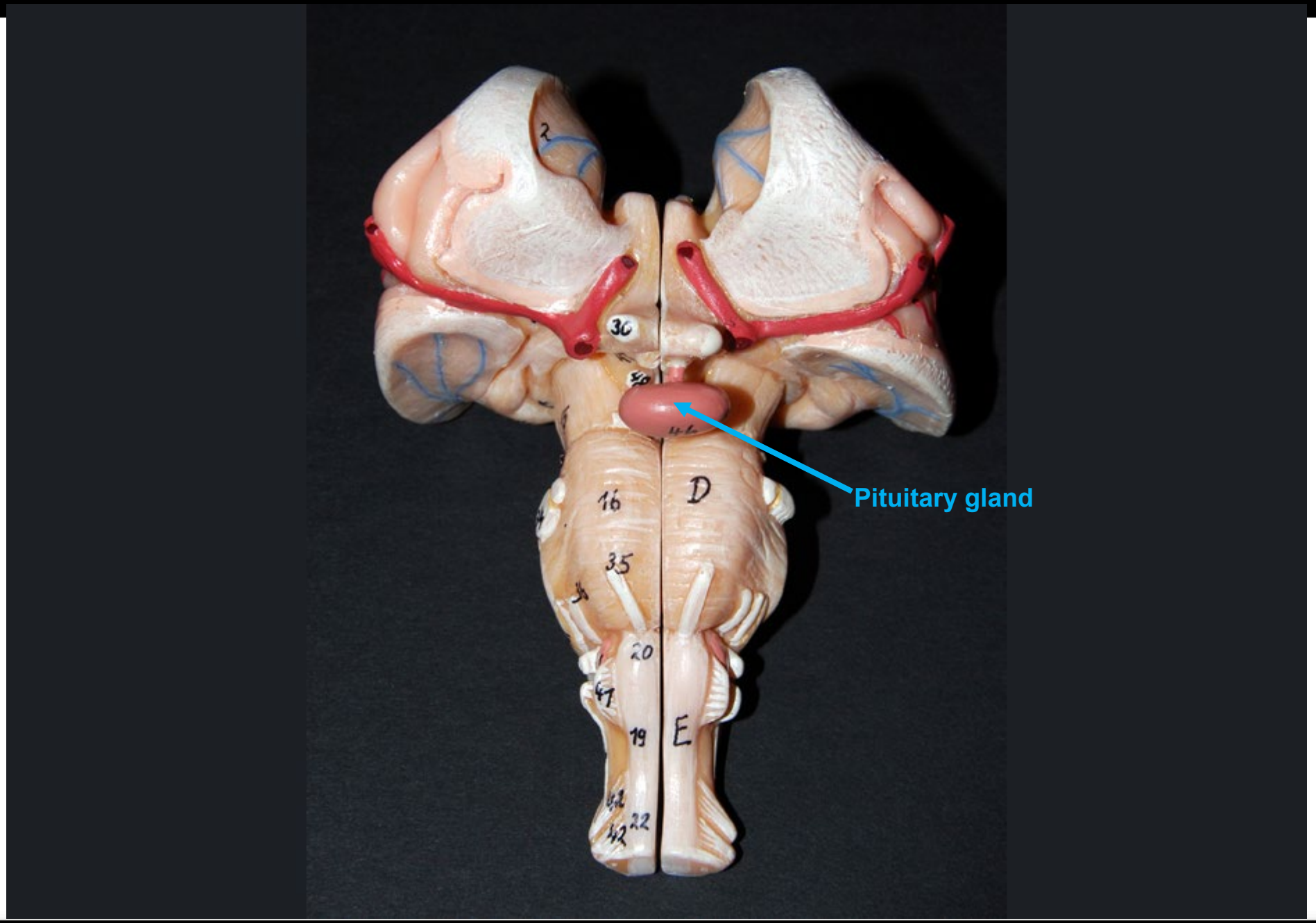
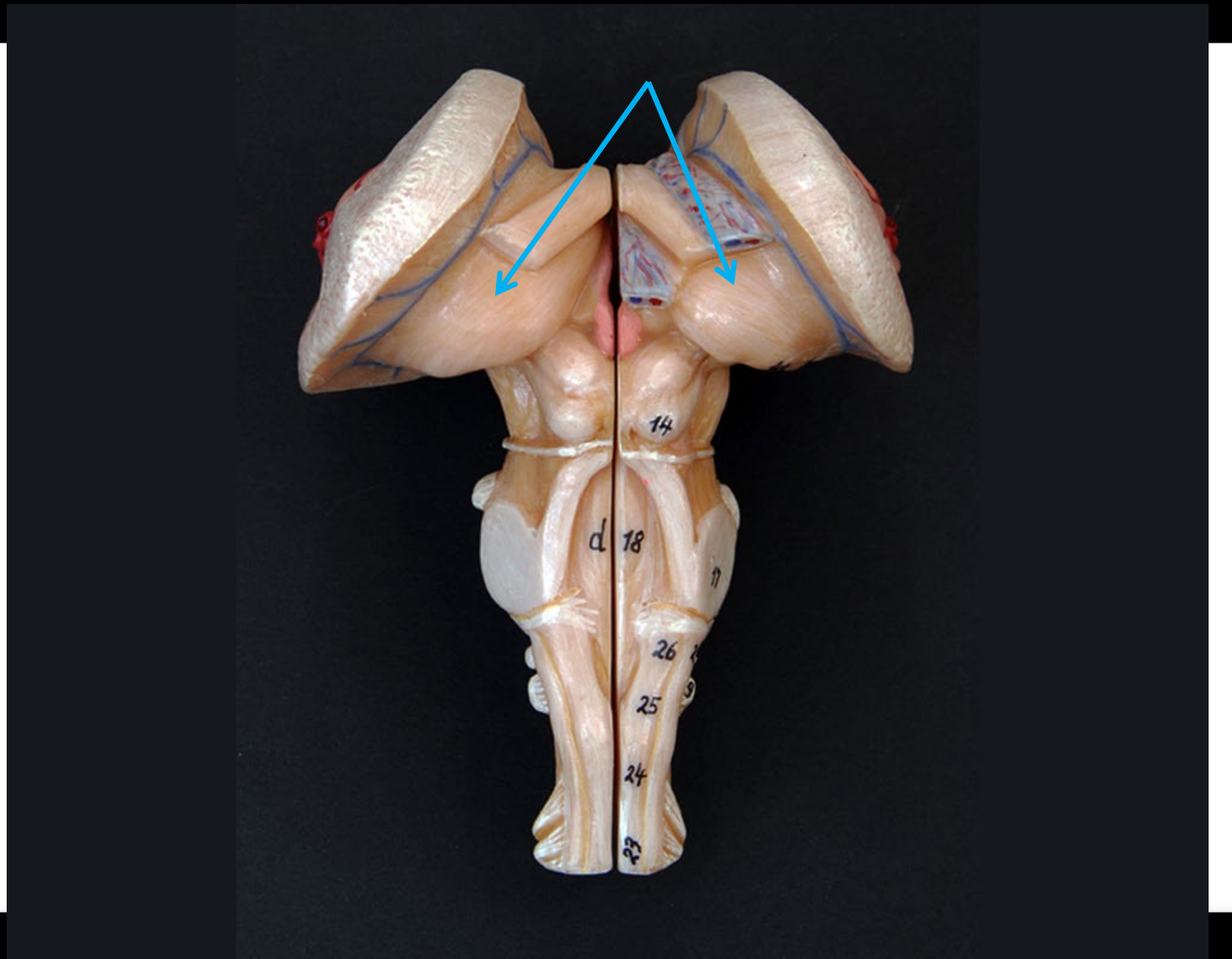

Pituitary gland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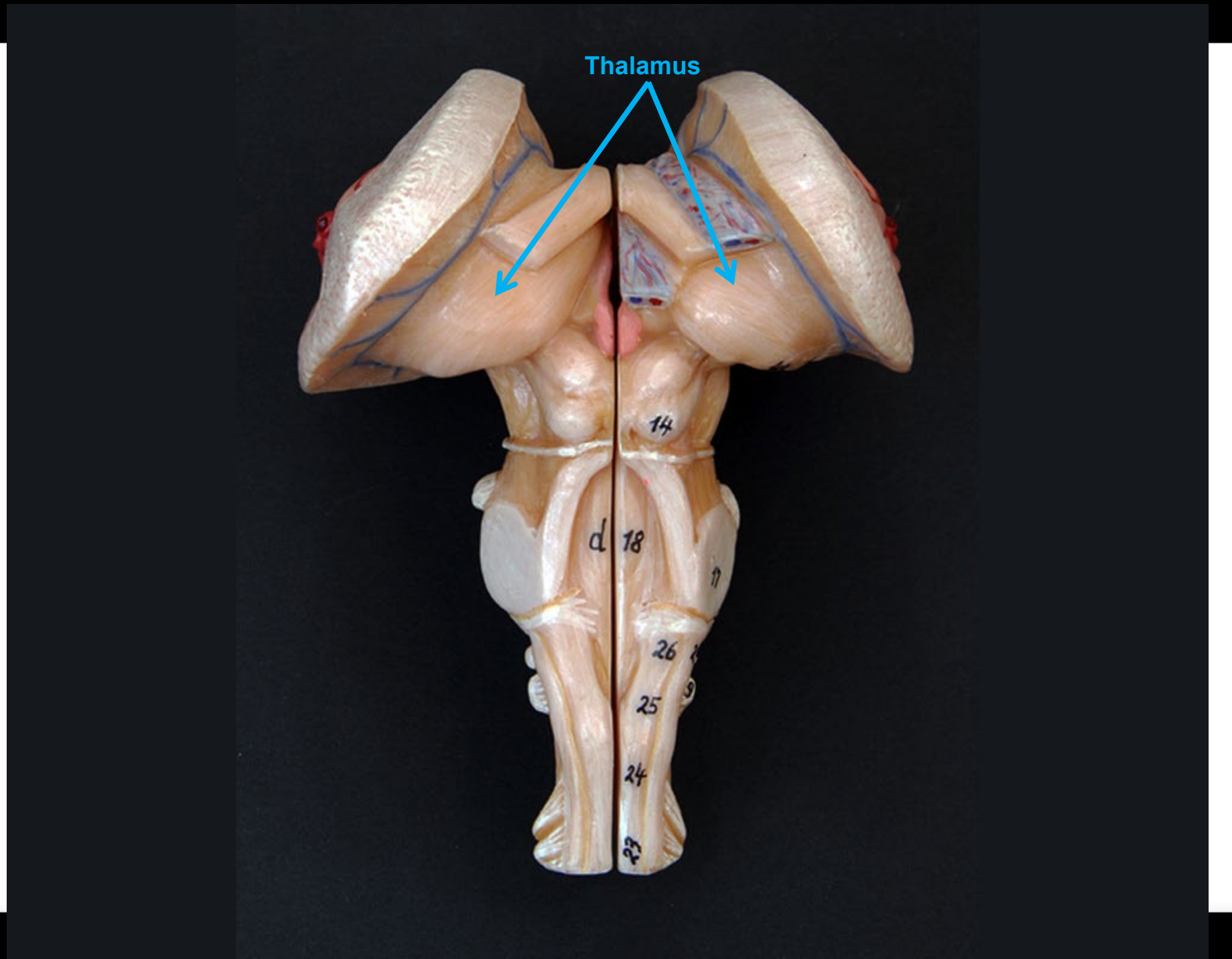
Thalamus
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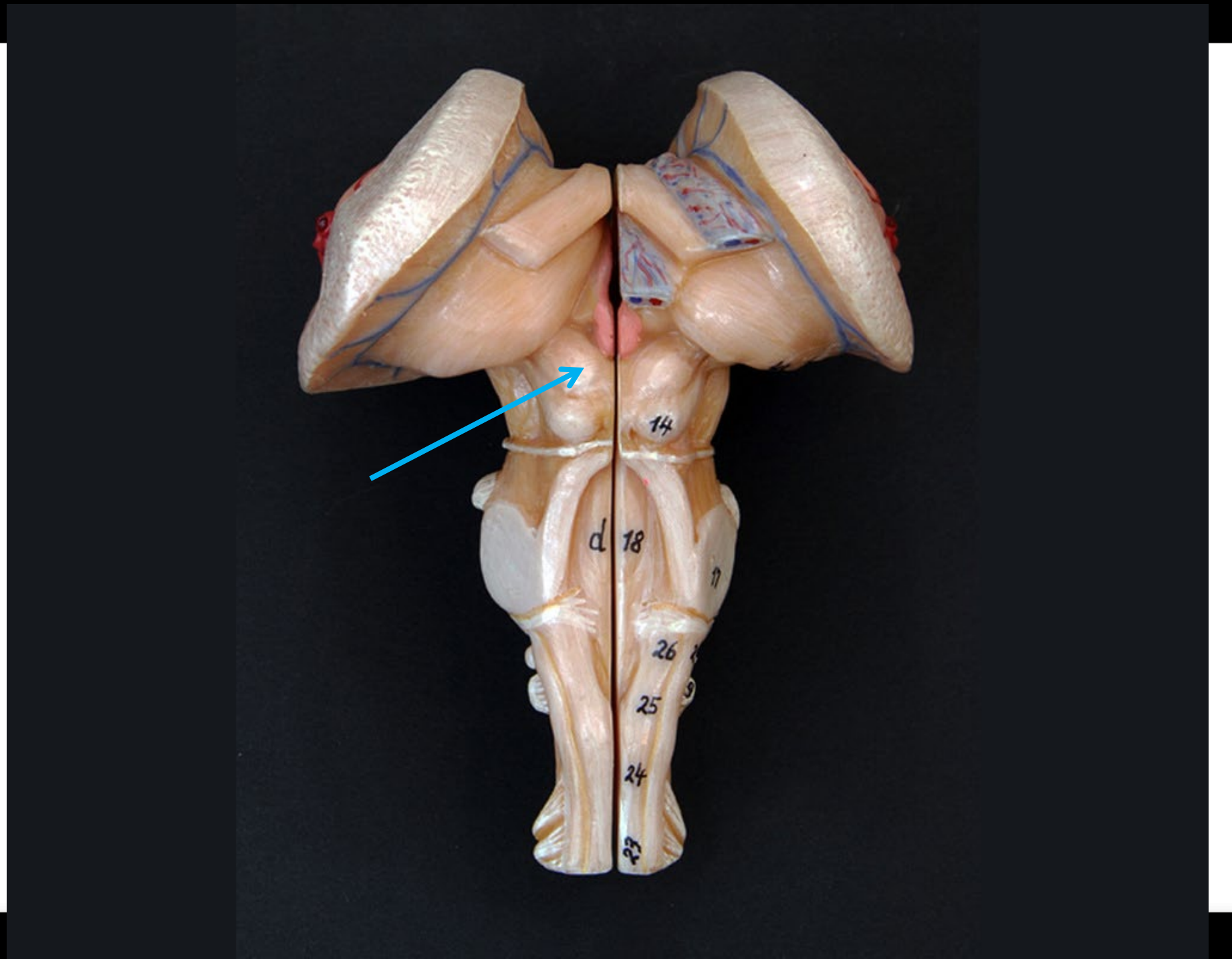
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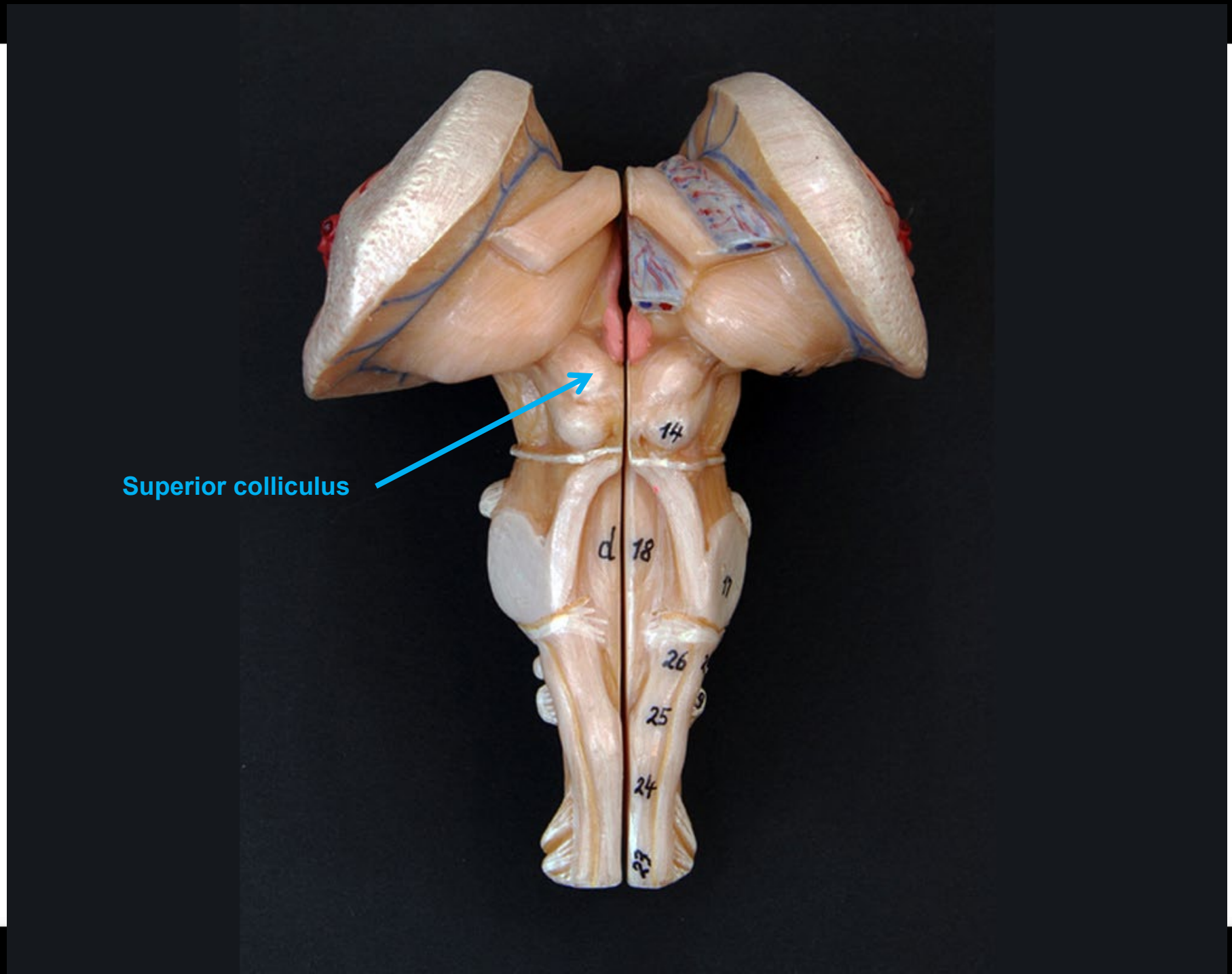
Superior colliculus
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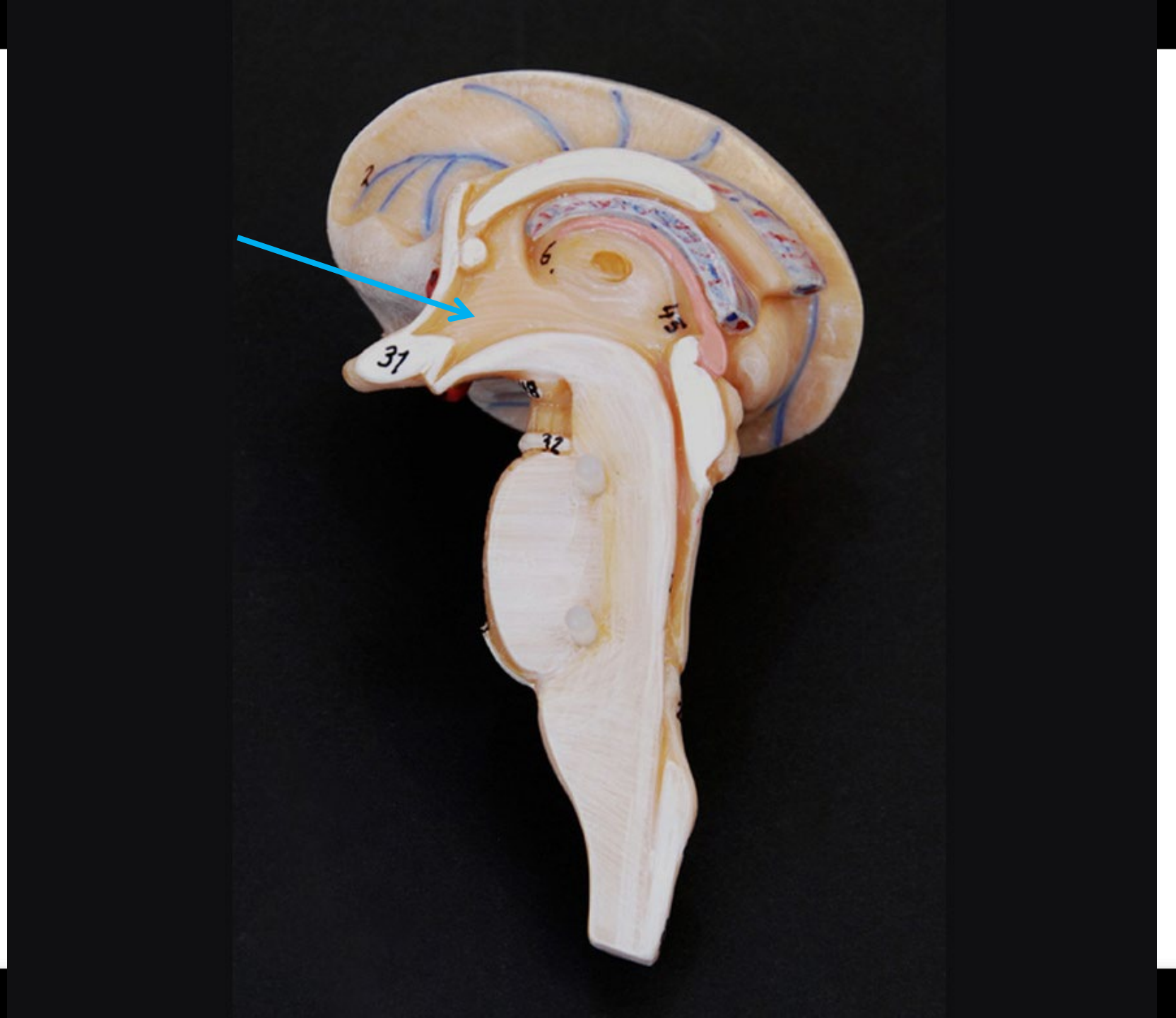
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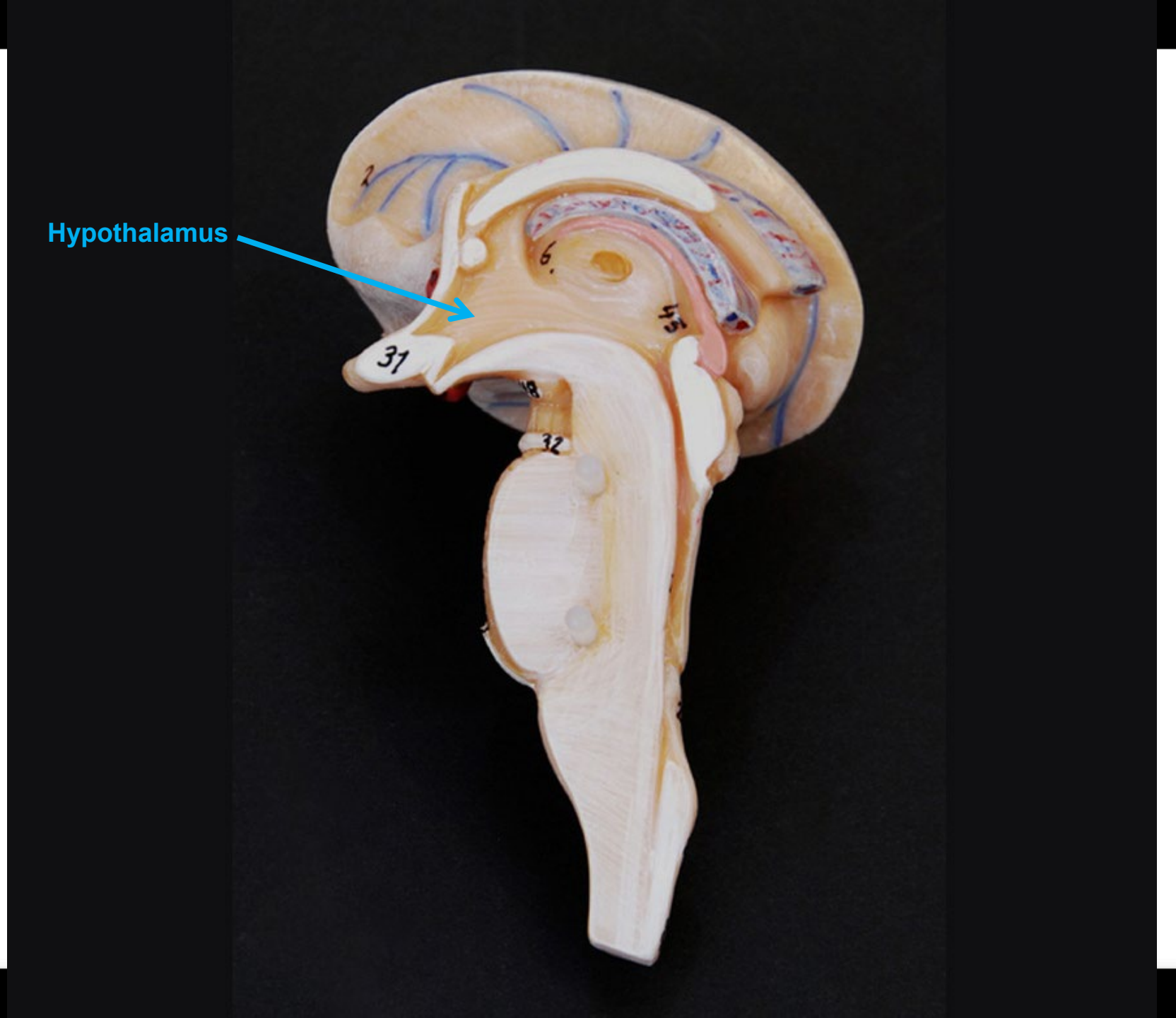
Hypothalamus
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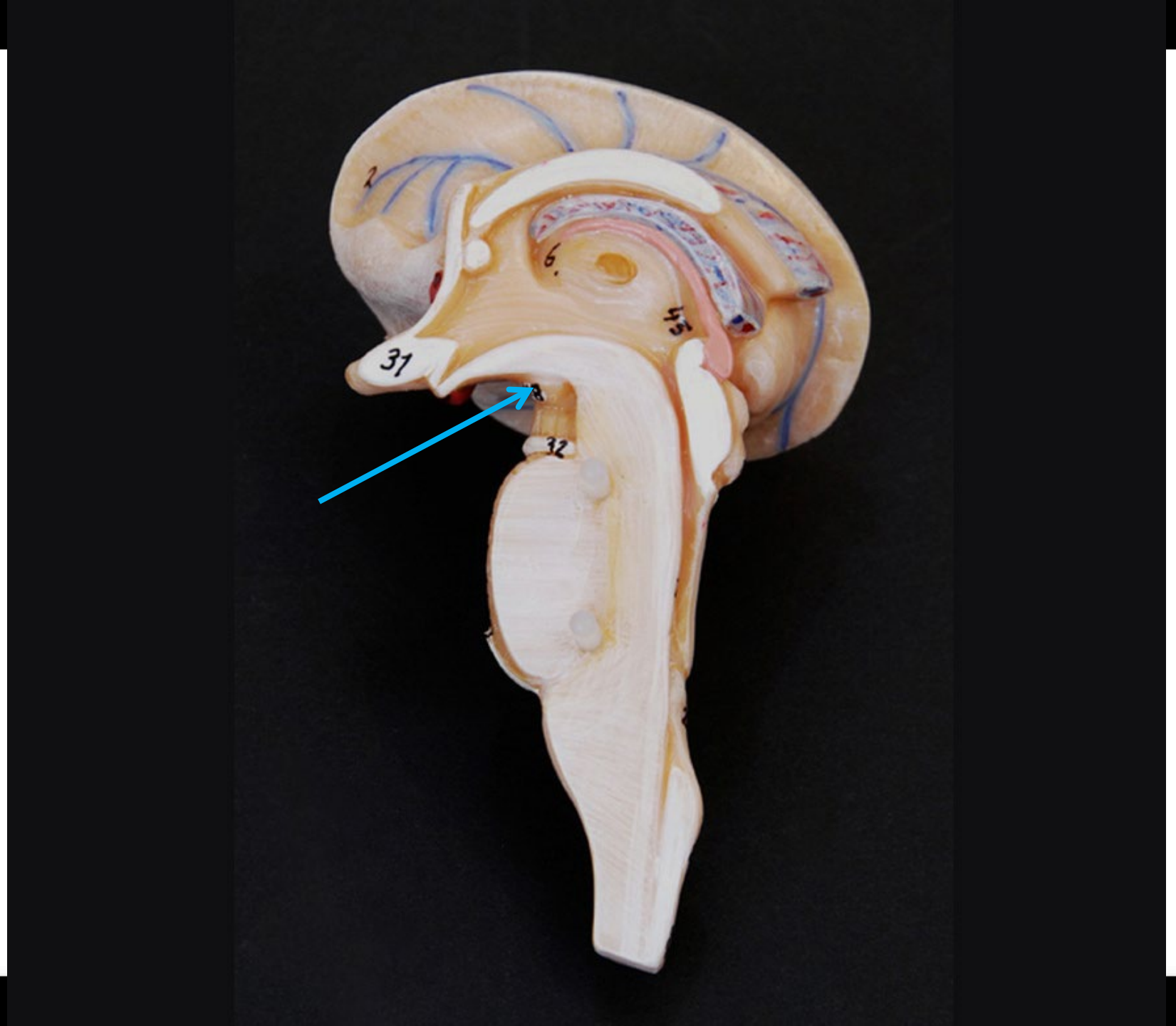
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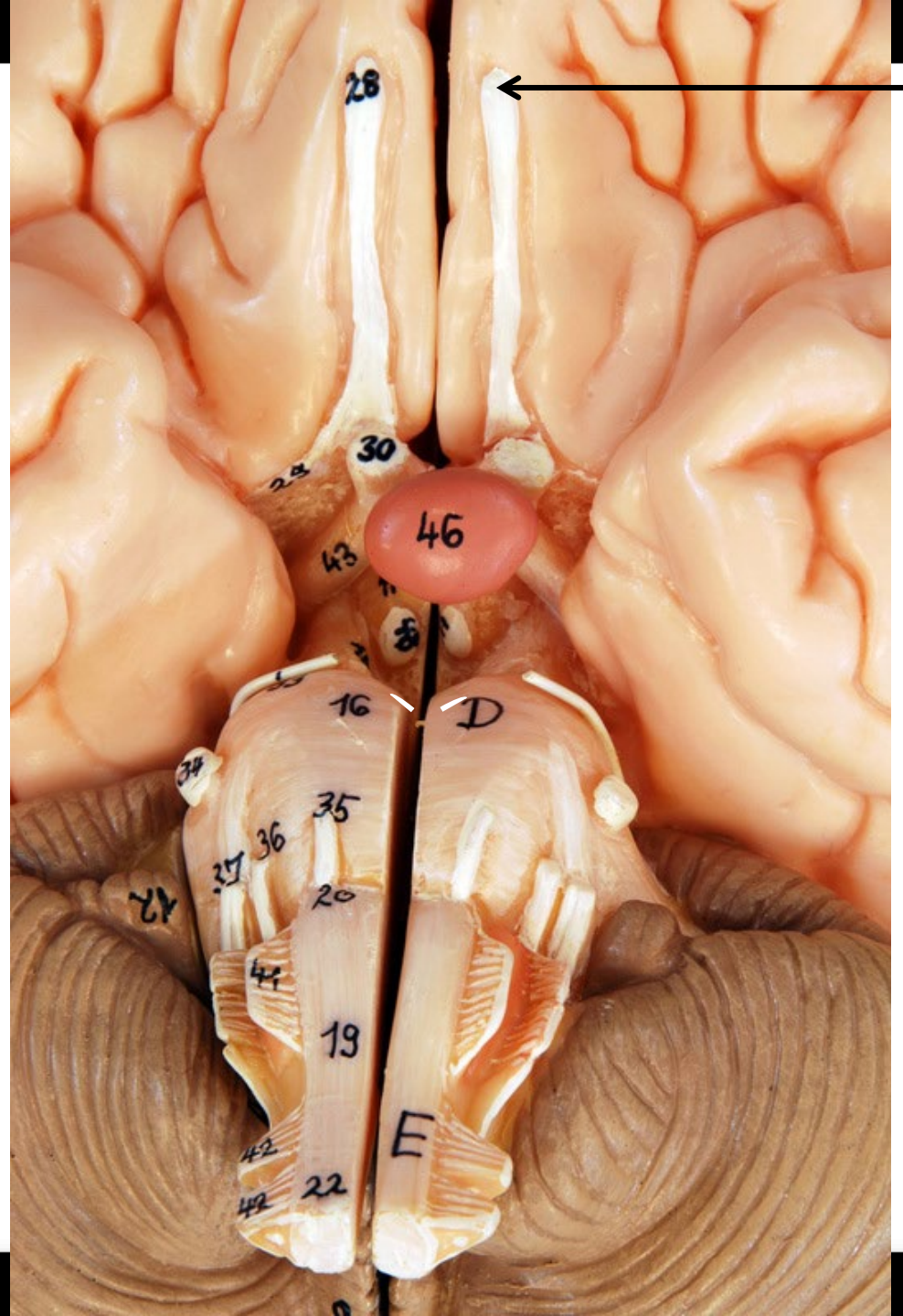
Mamillary body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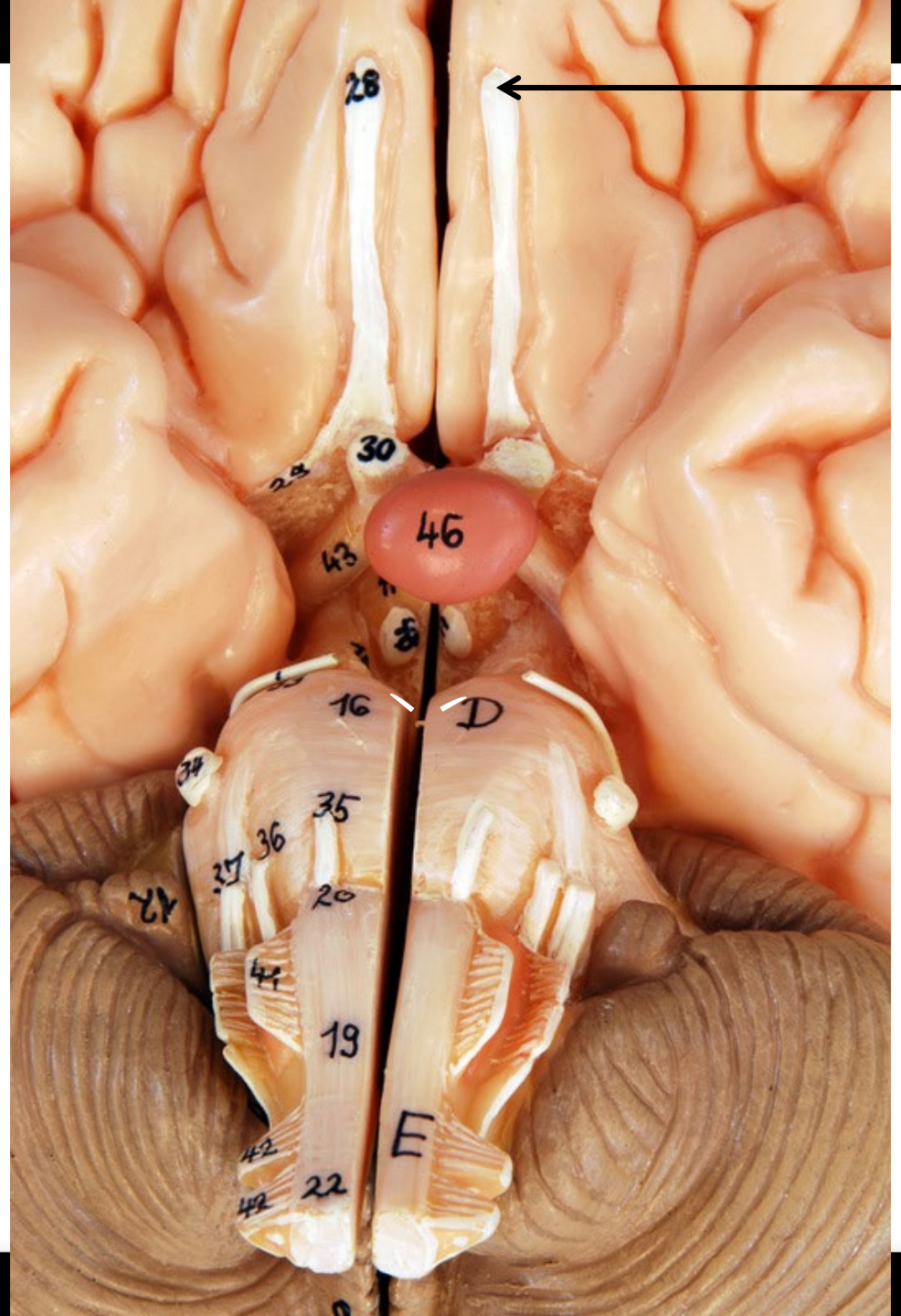
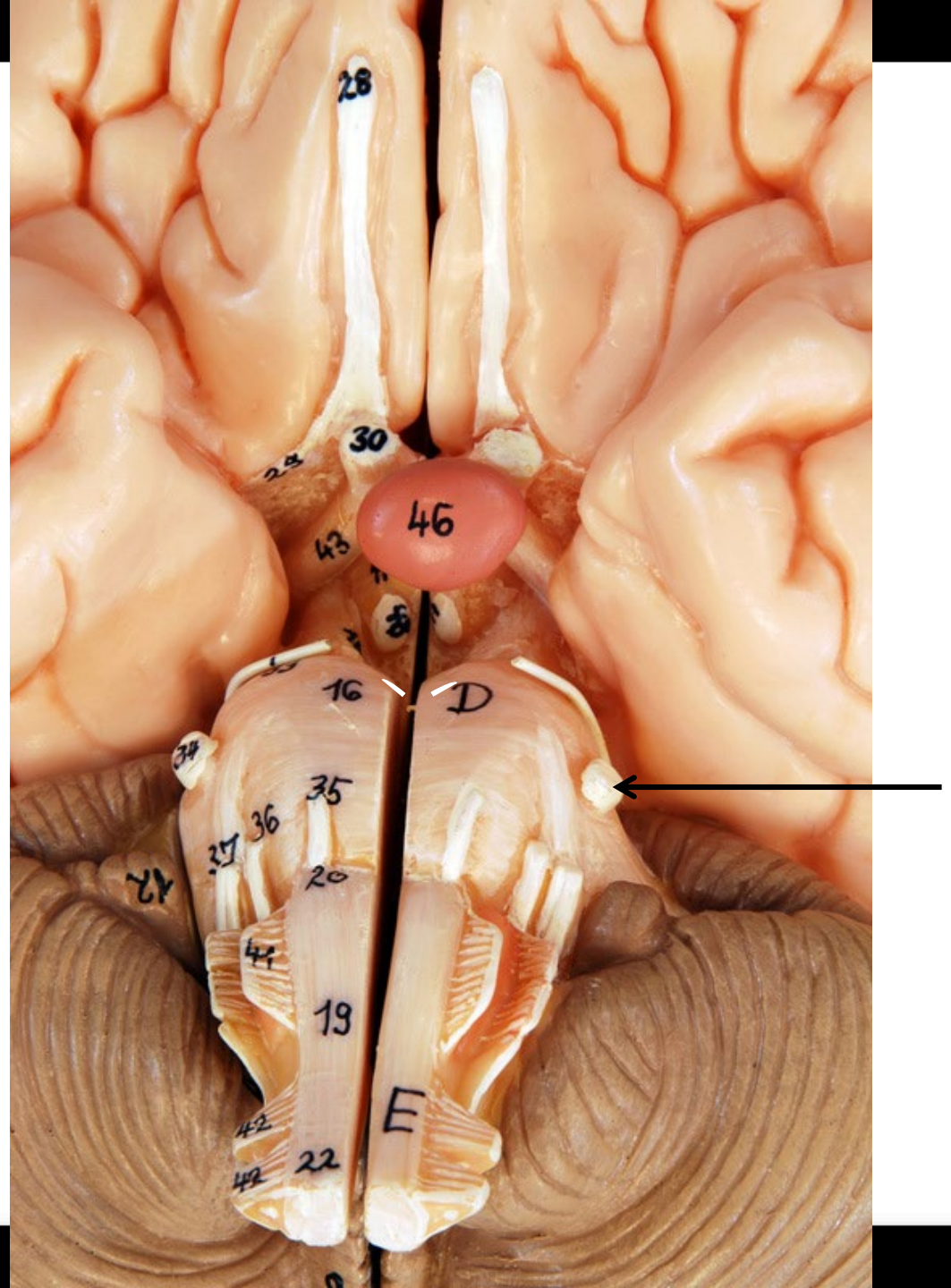


Olfactory bulb (I)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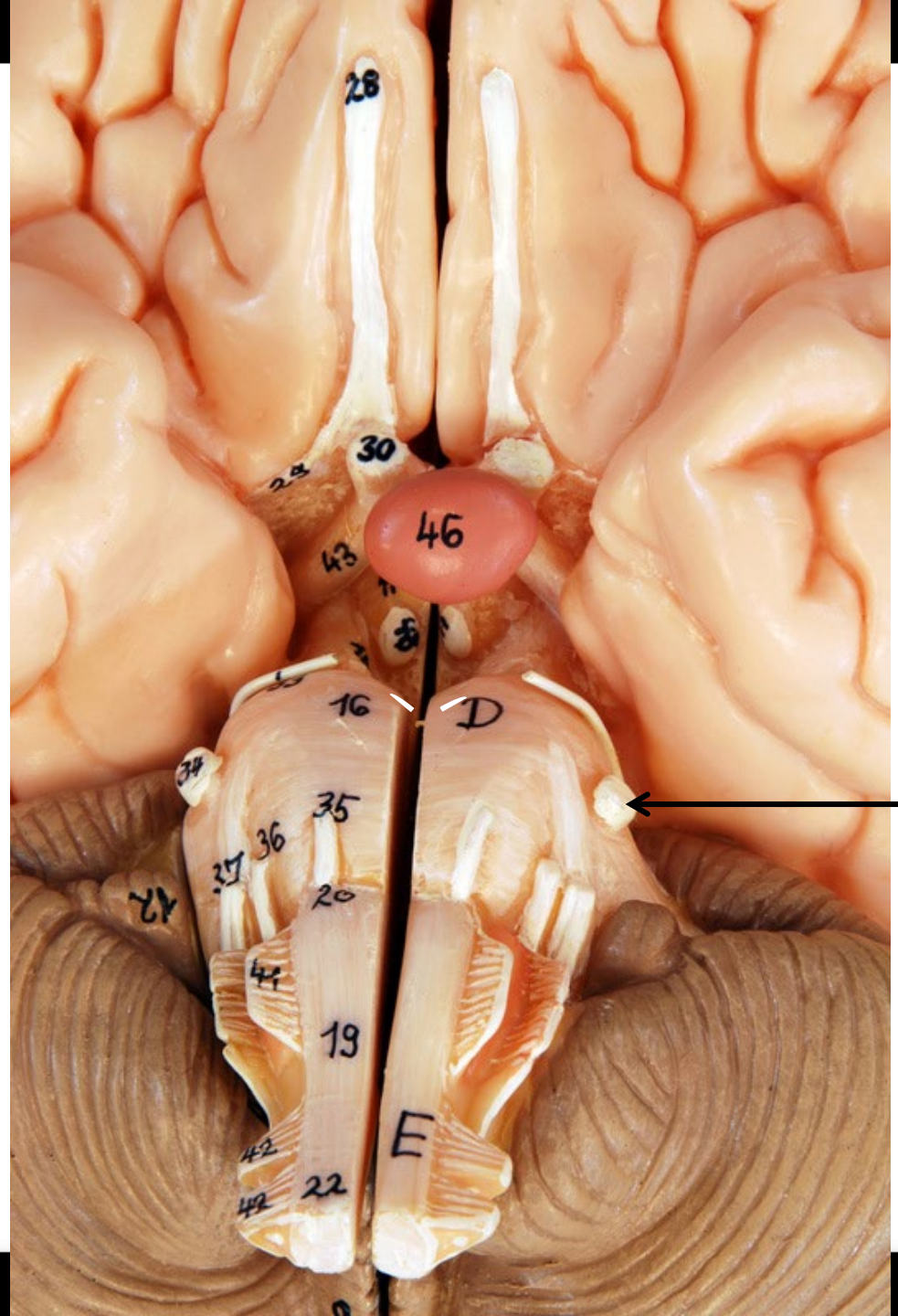
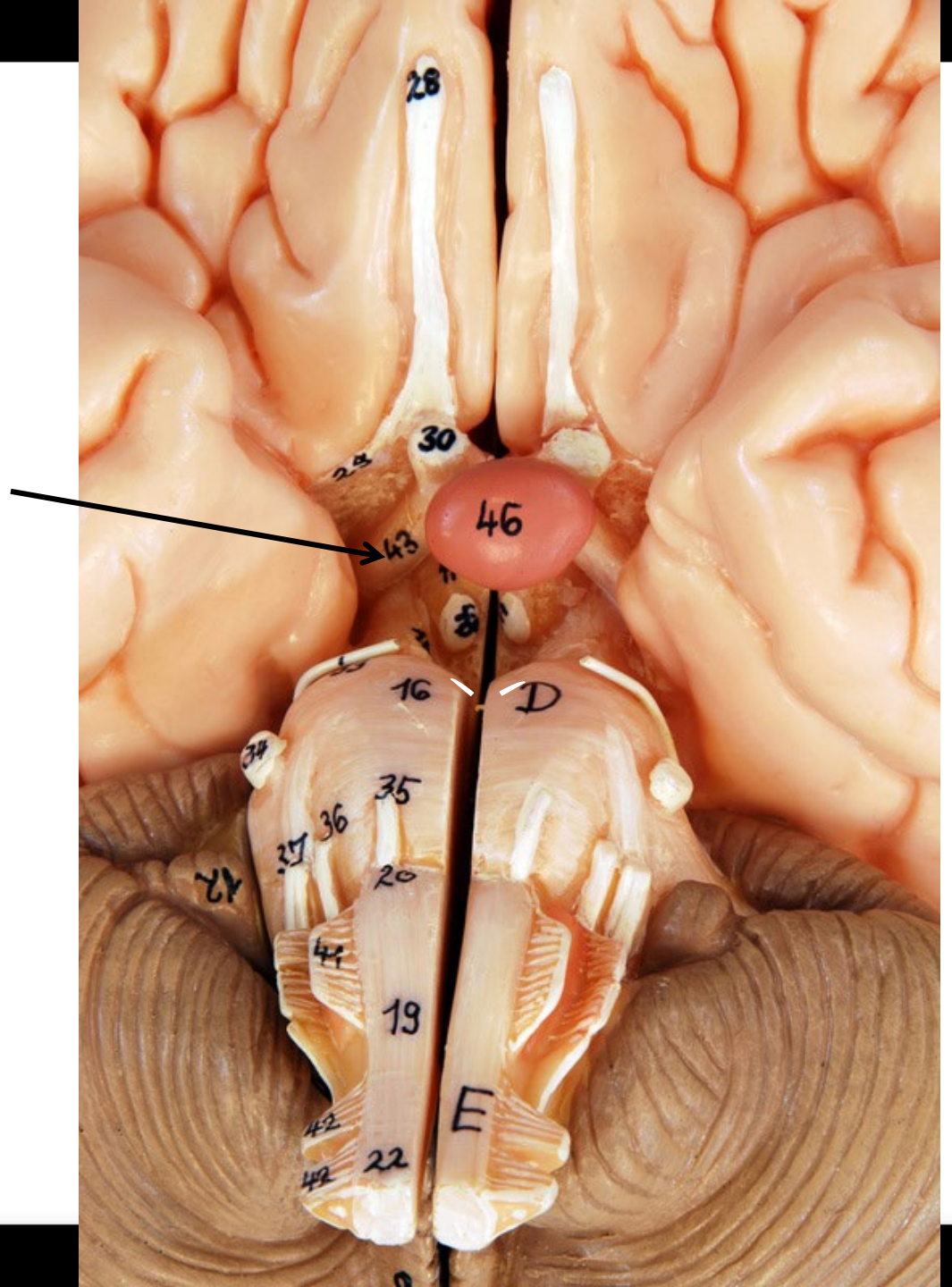


Trigeminal nerve (V)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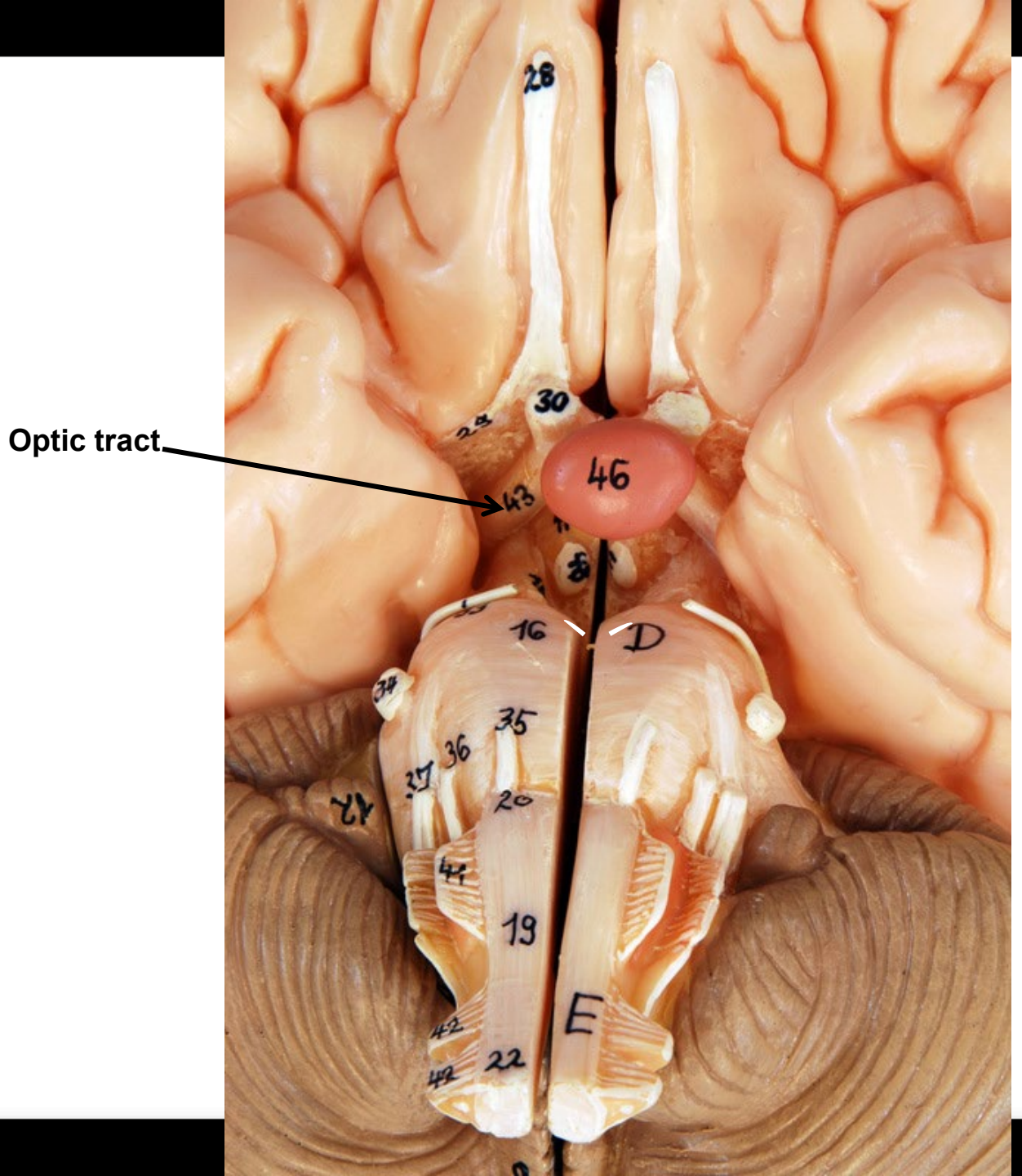
Optic tract
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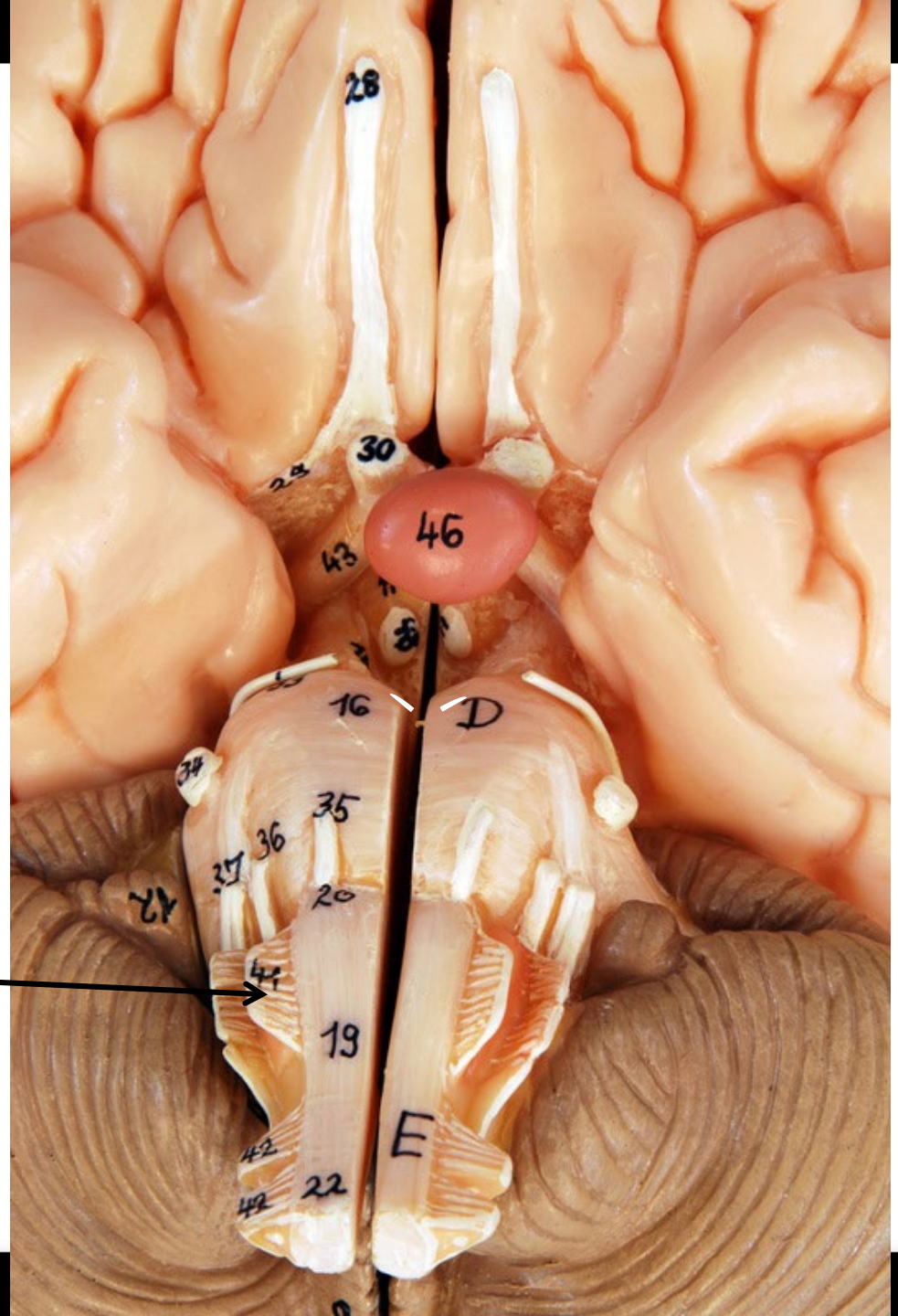
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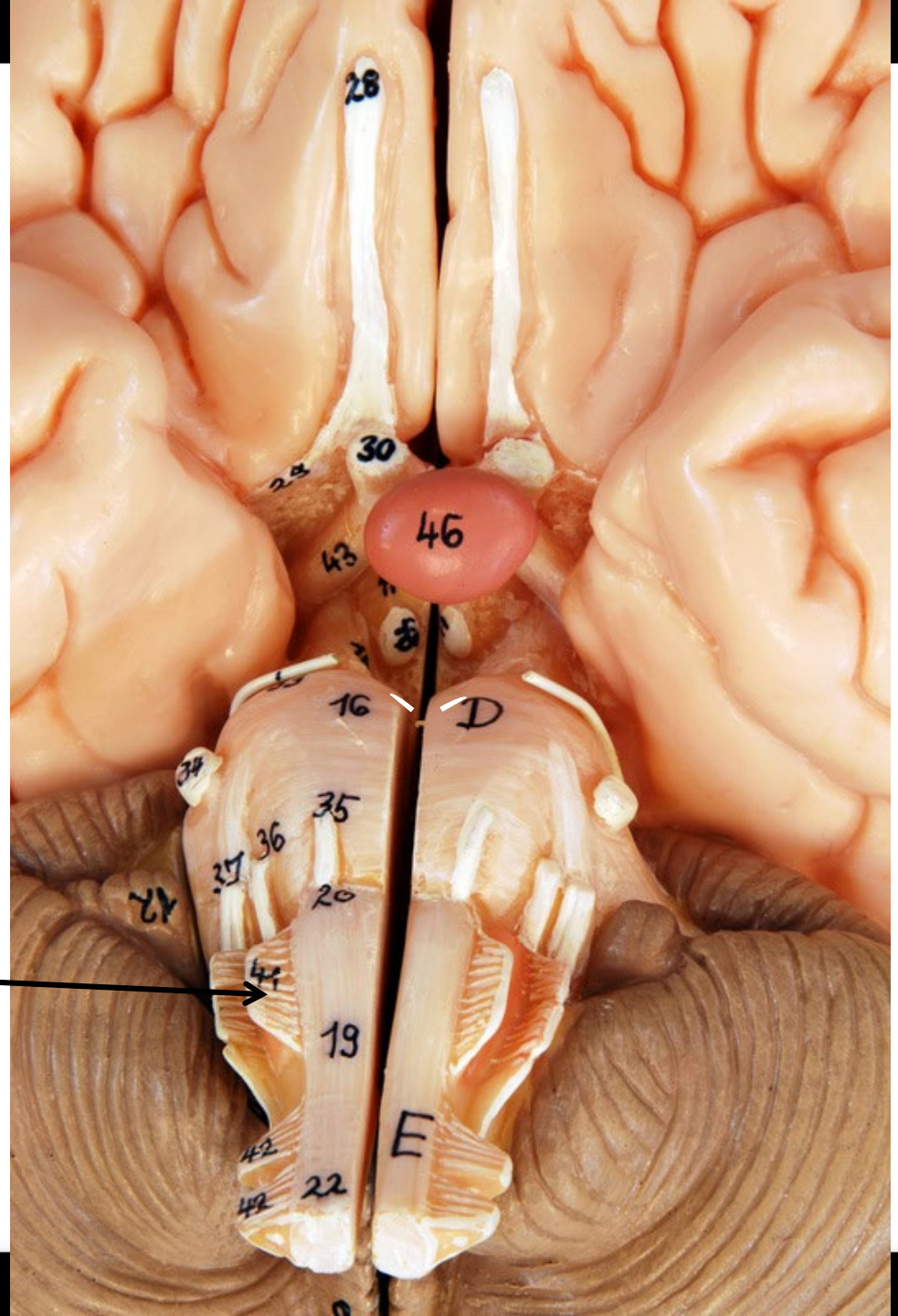
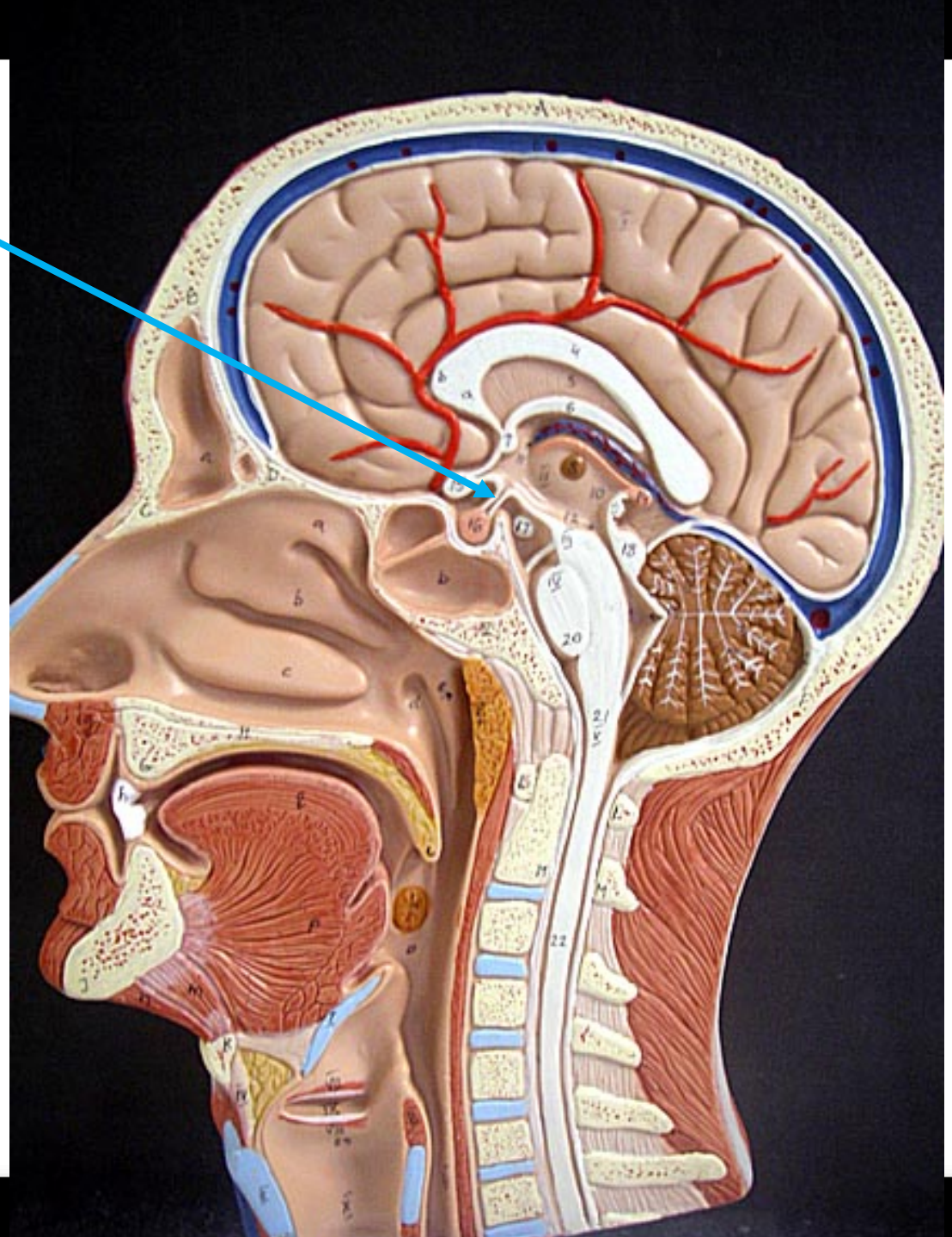
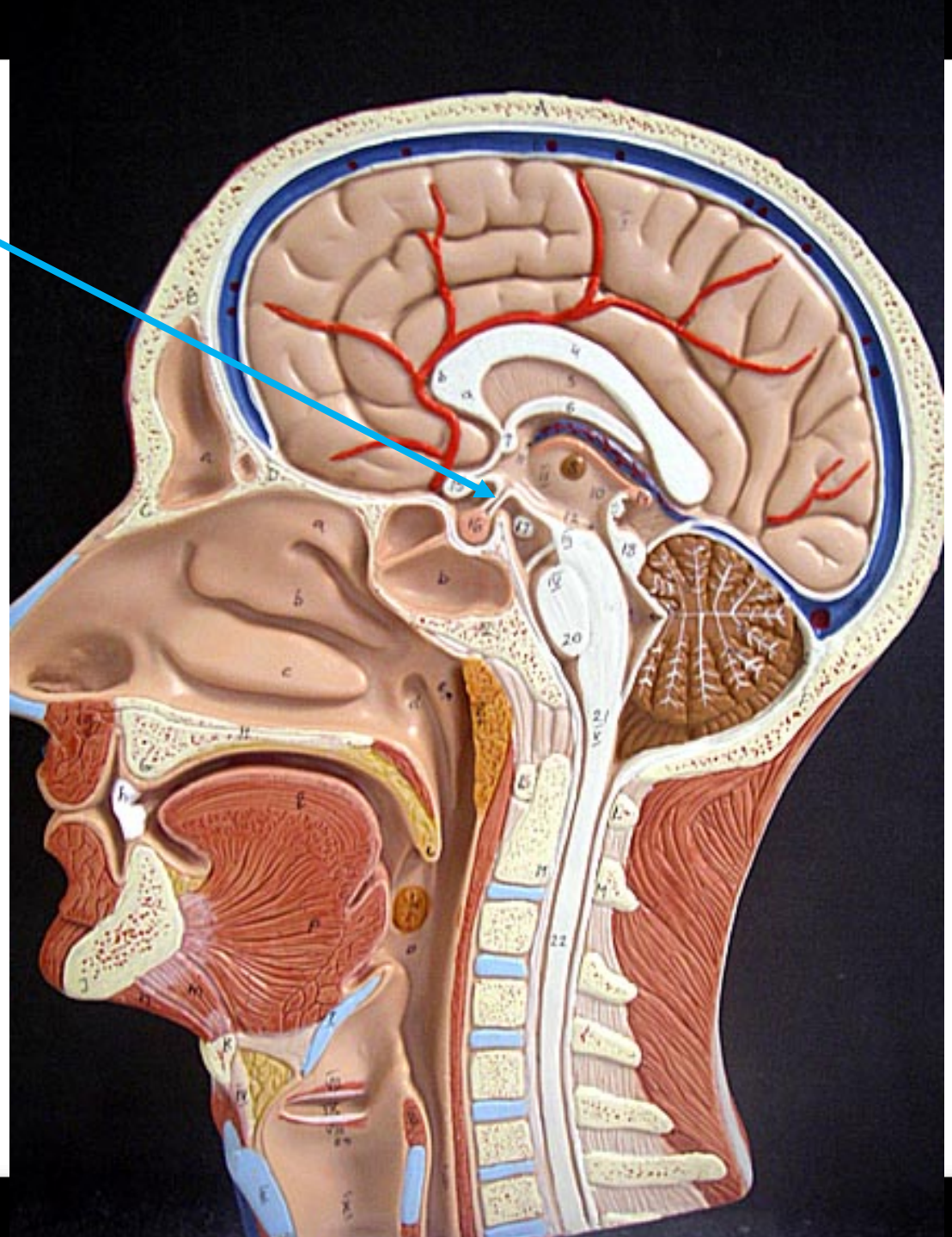
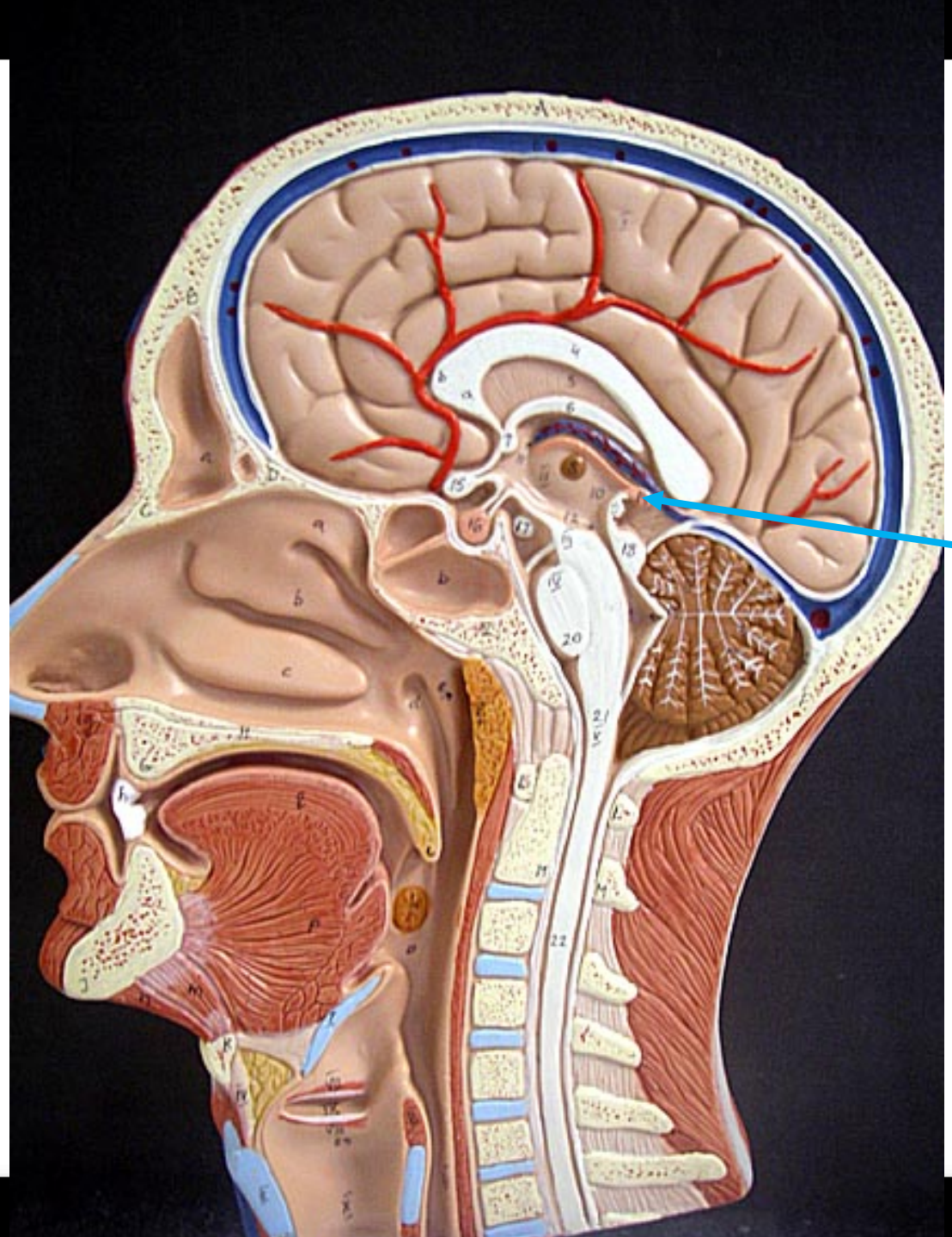
Hypoglossal nerve
(XII)

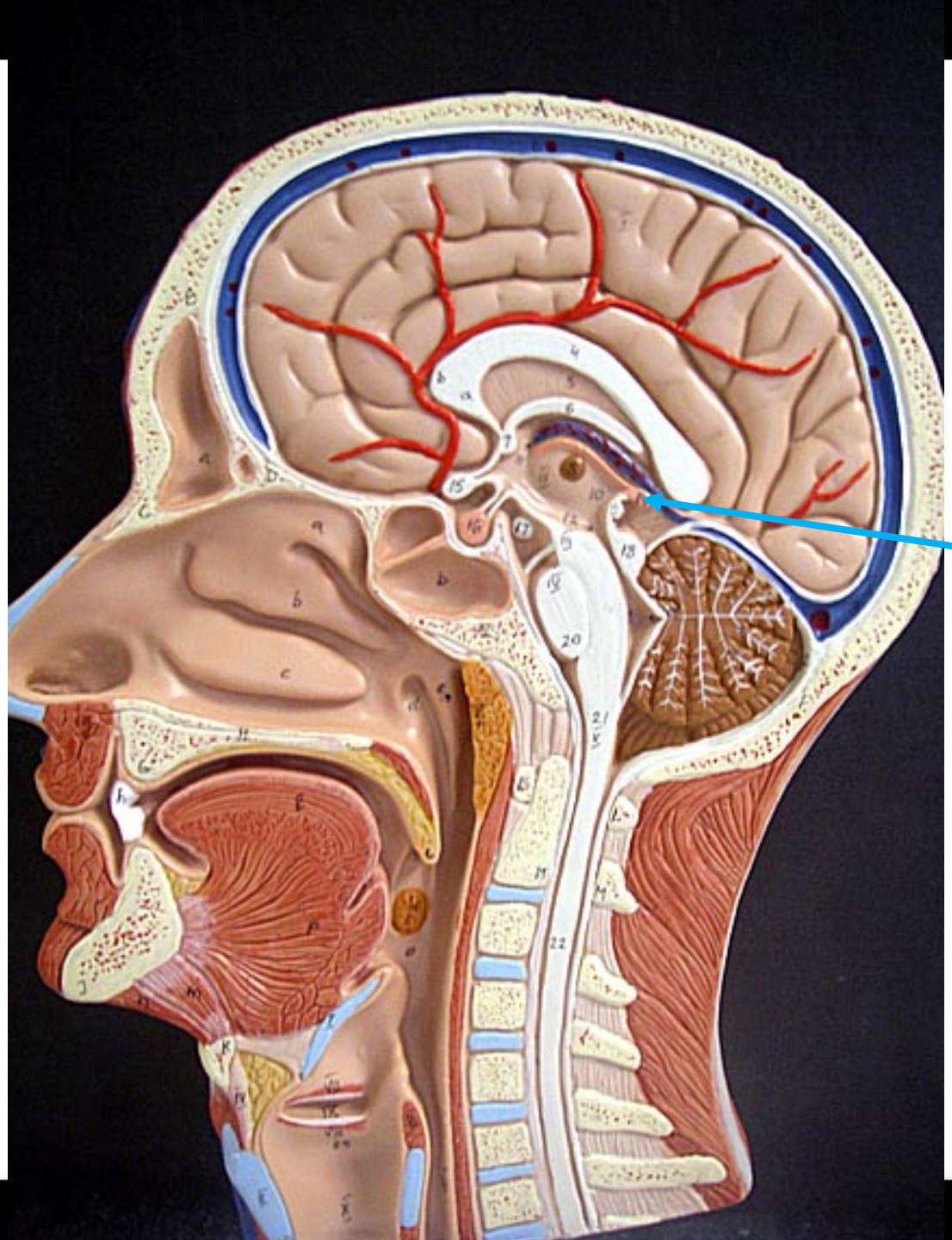


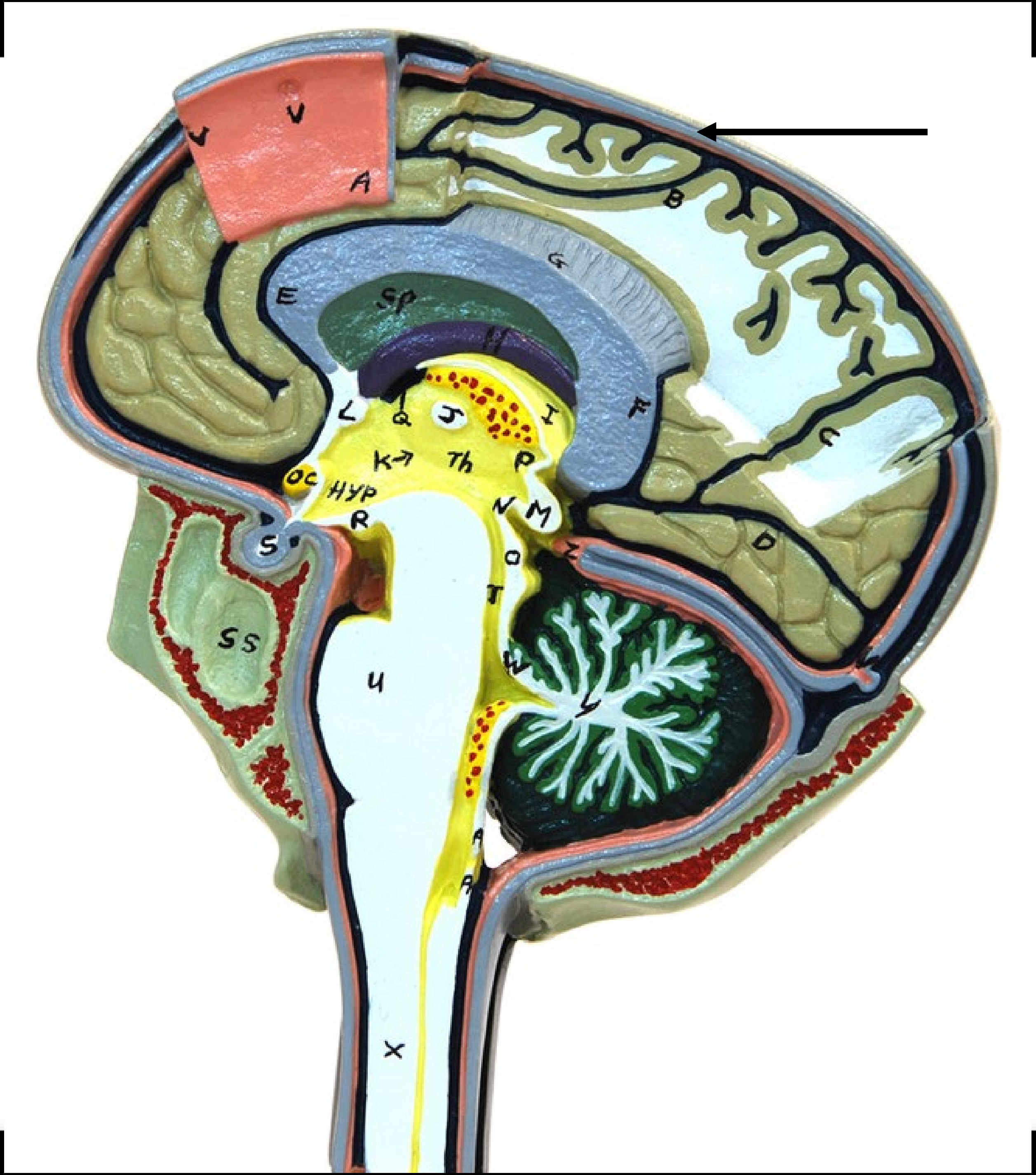


Infundibulum






Pineal gland



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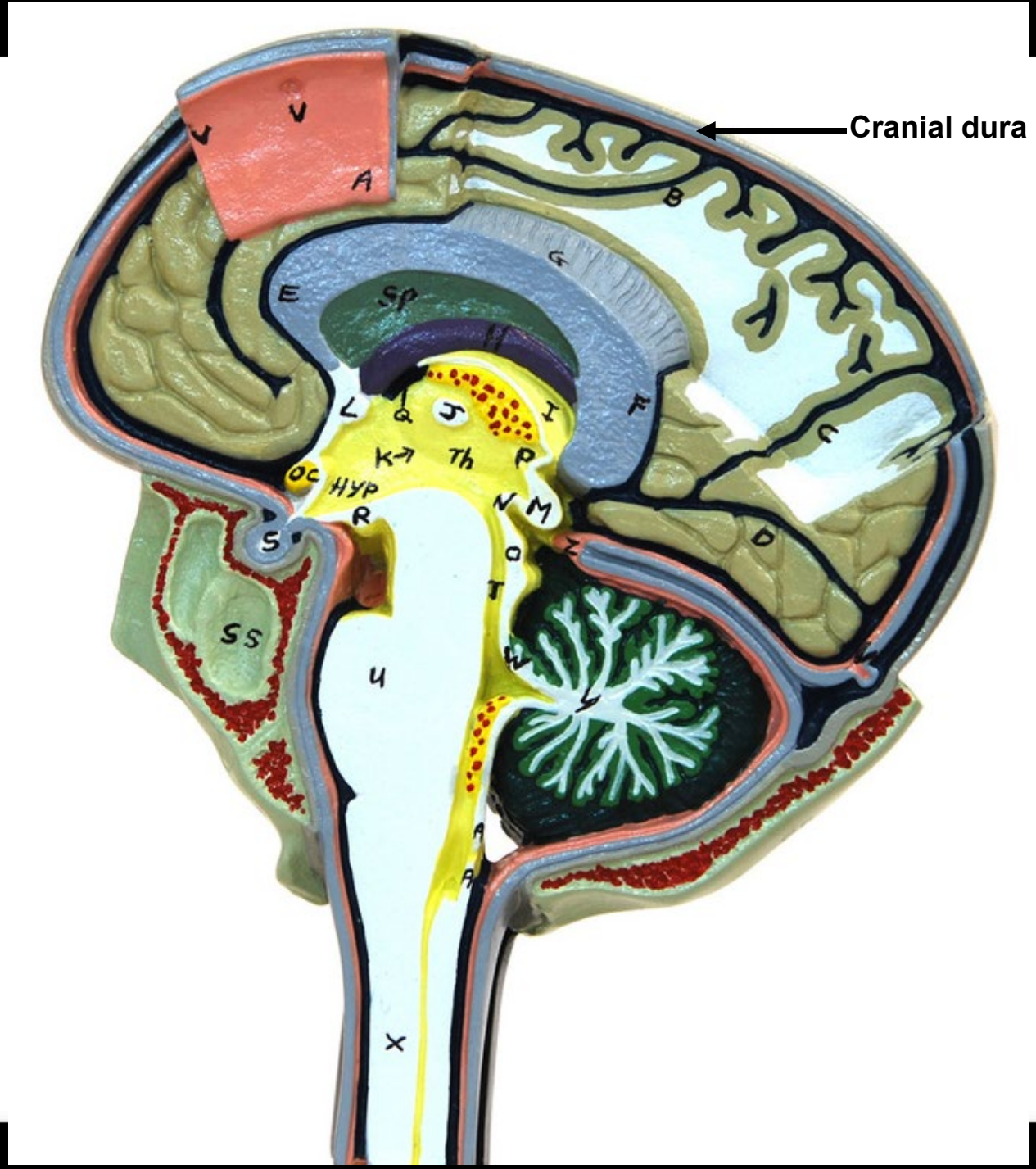
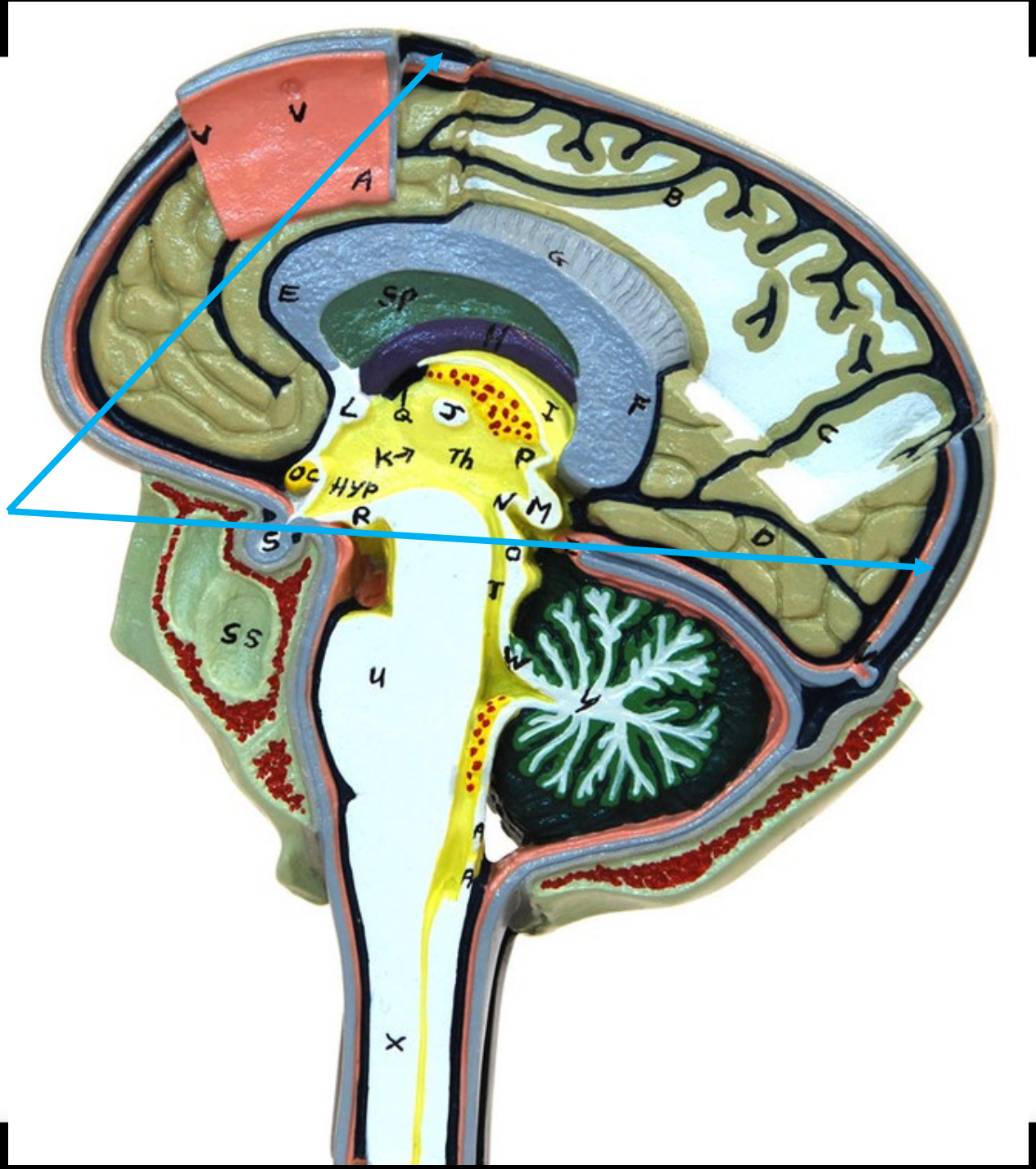

Cranial dura mater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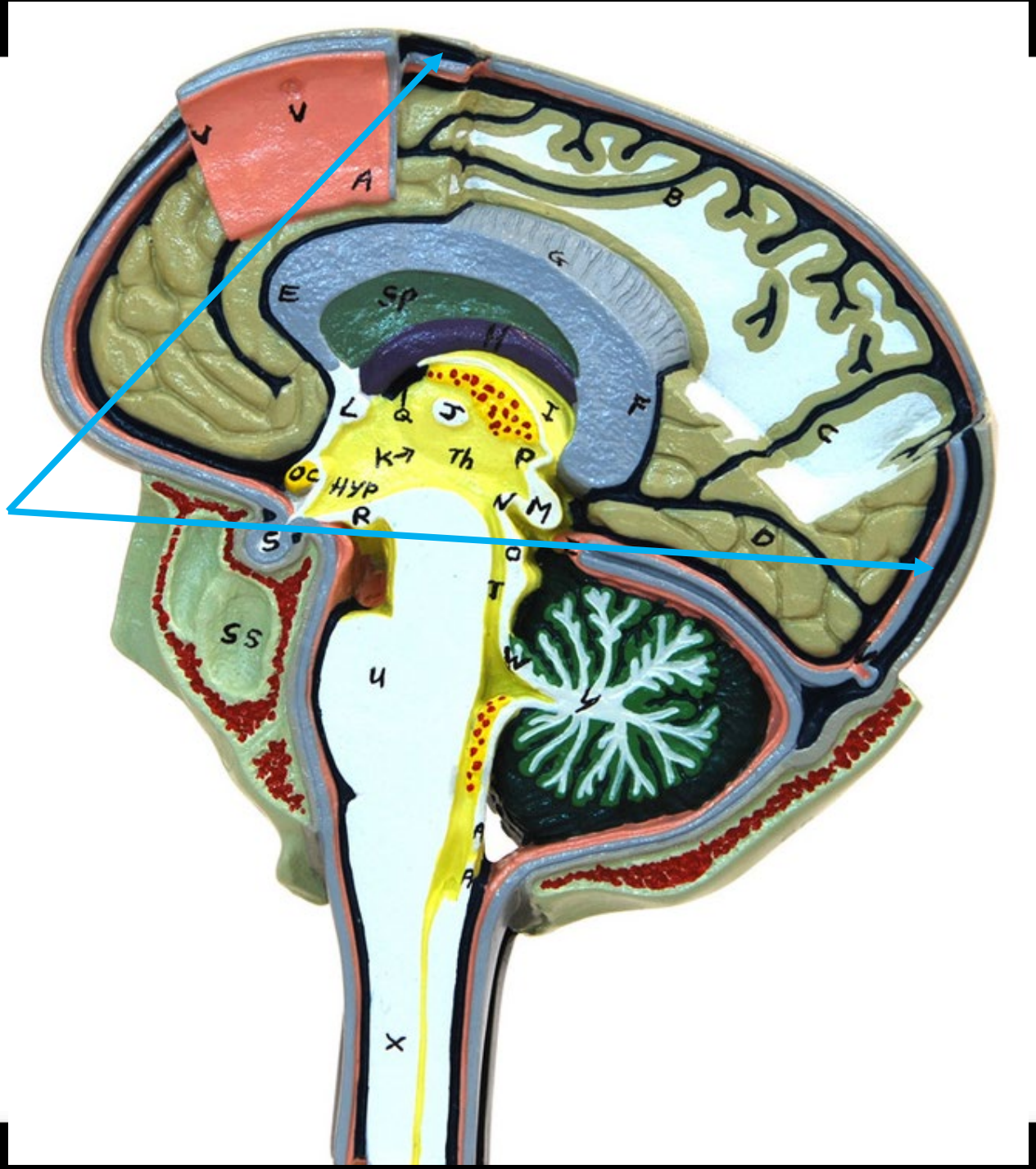
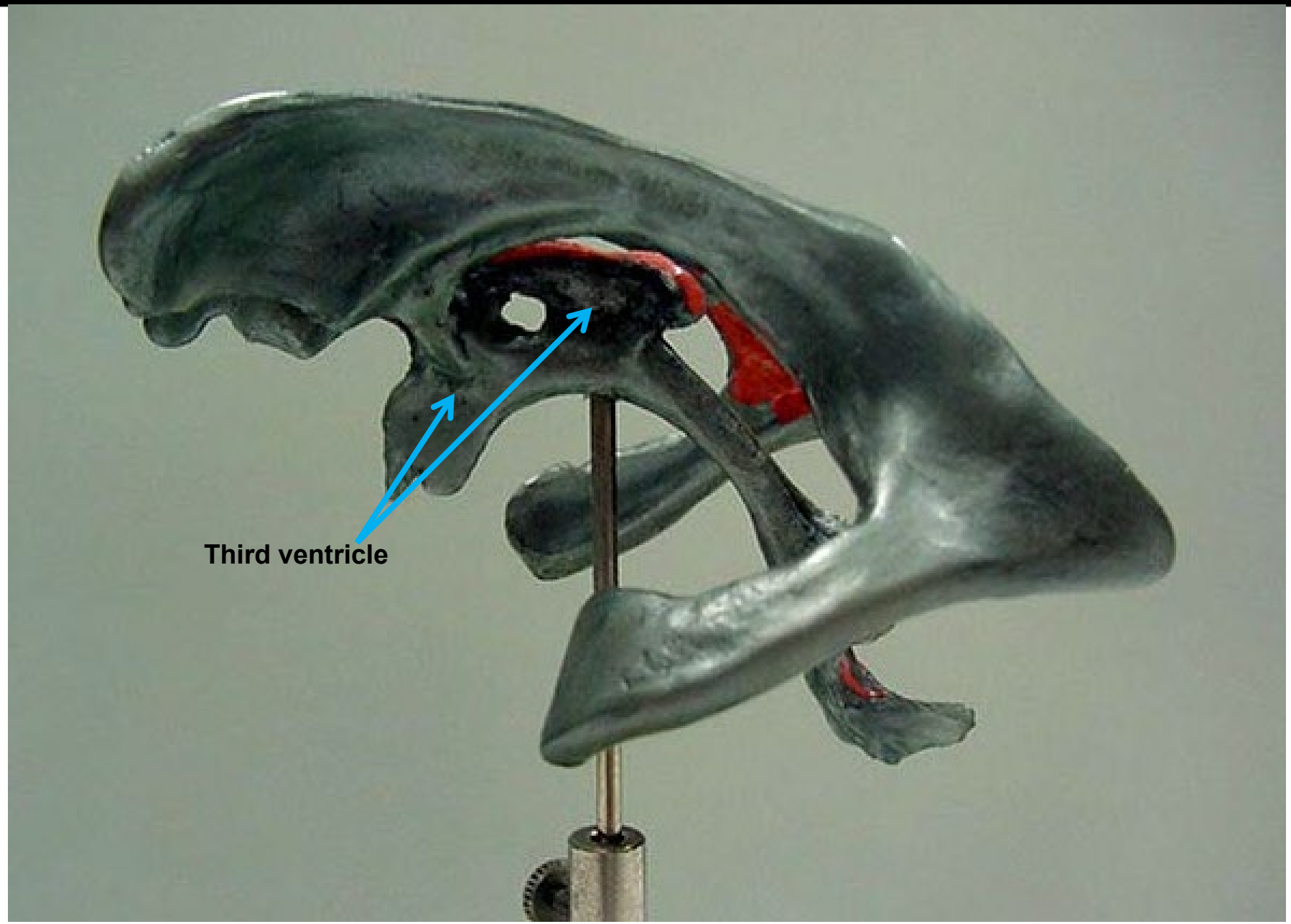
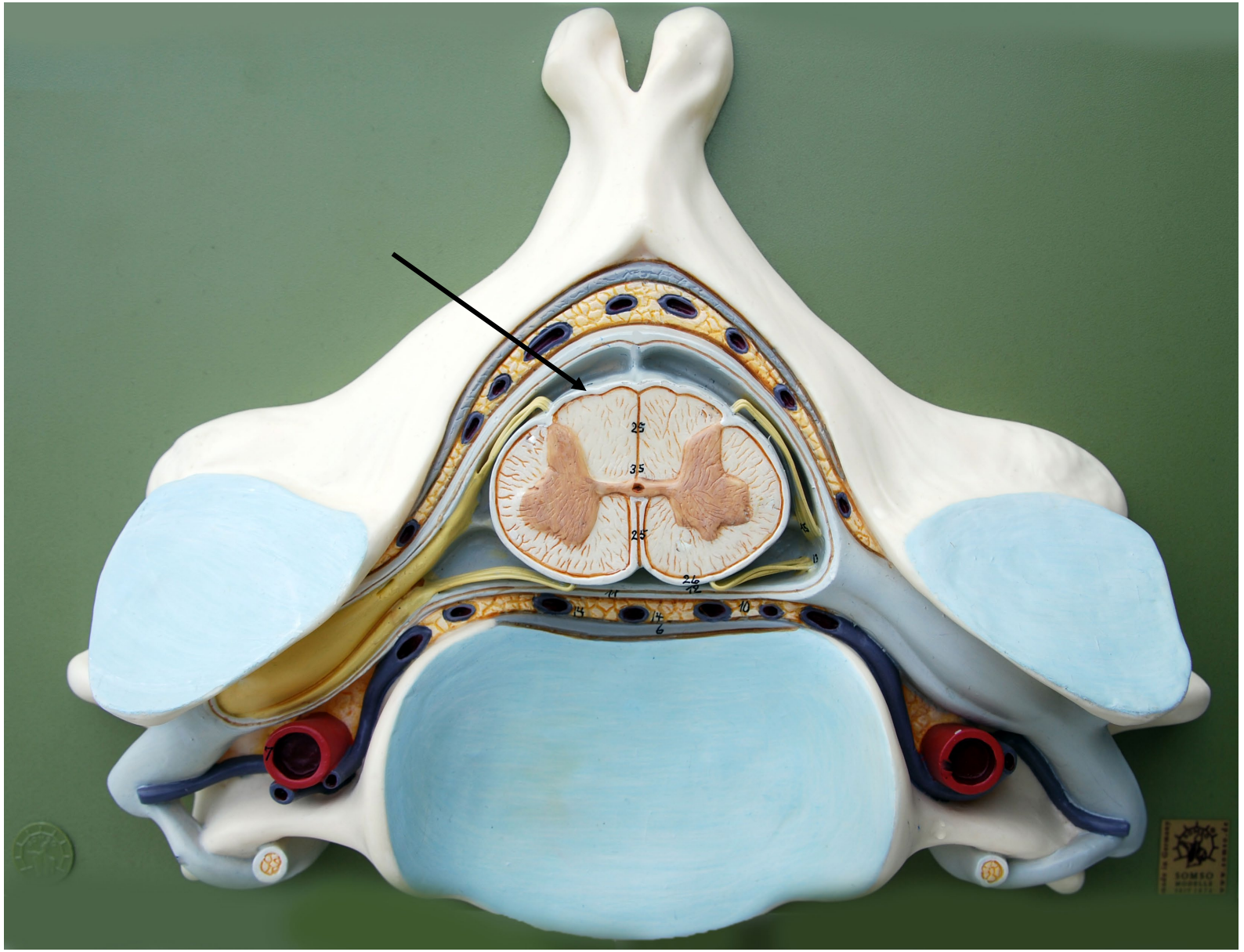
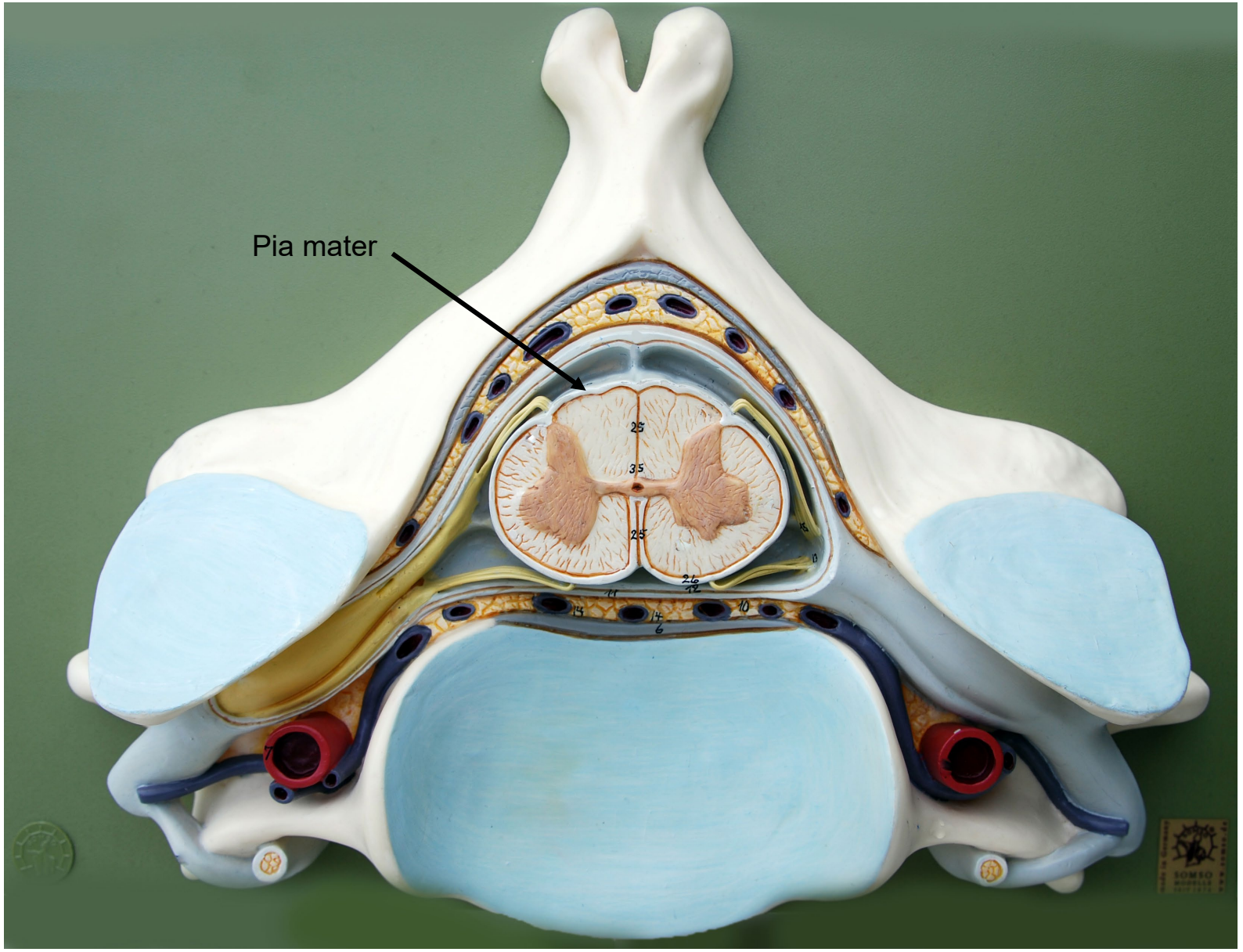
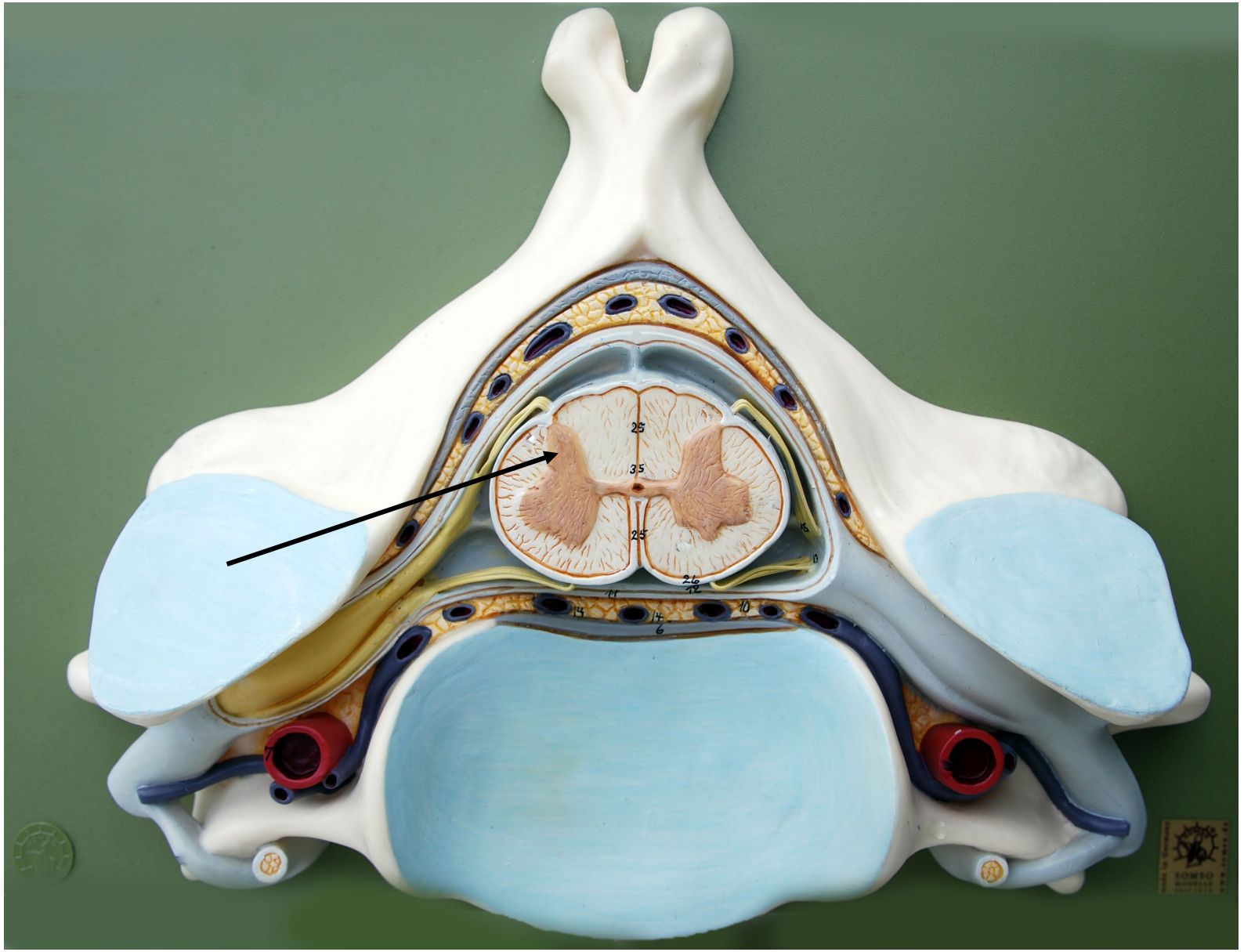
Superior sagittal sinus

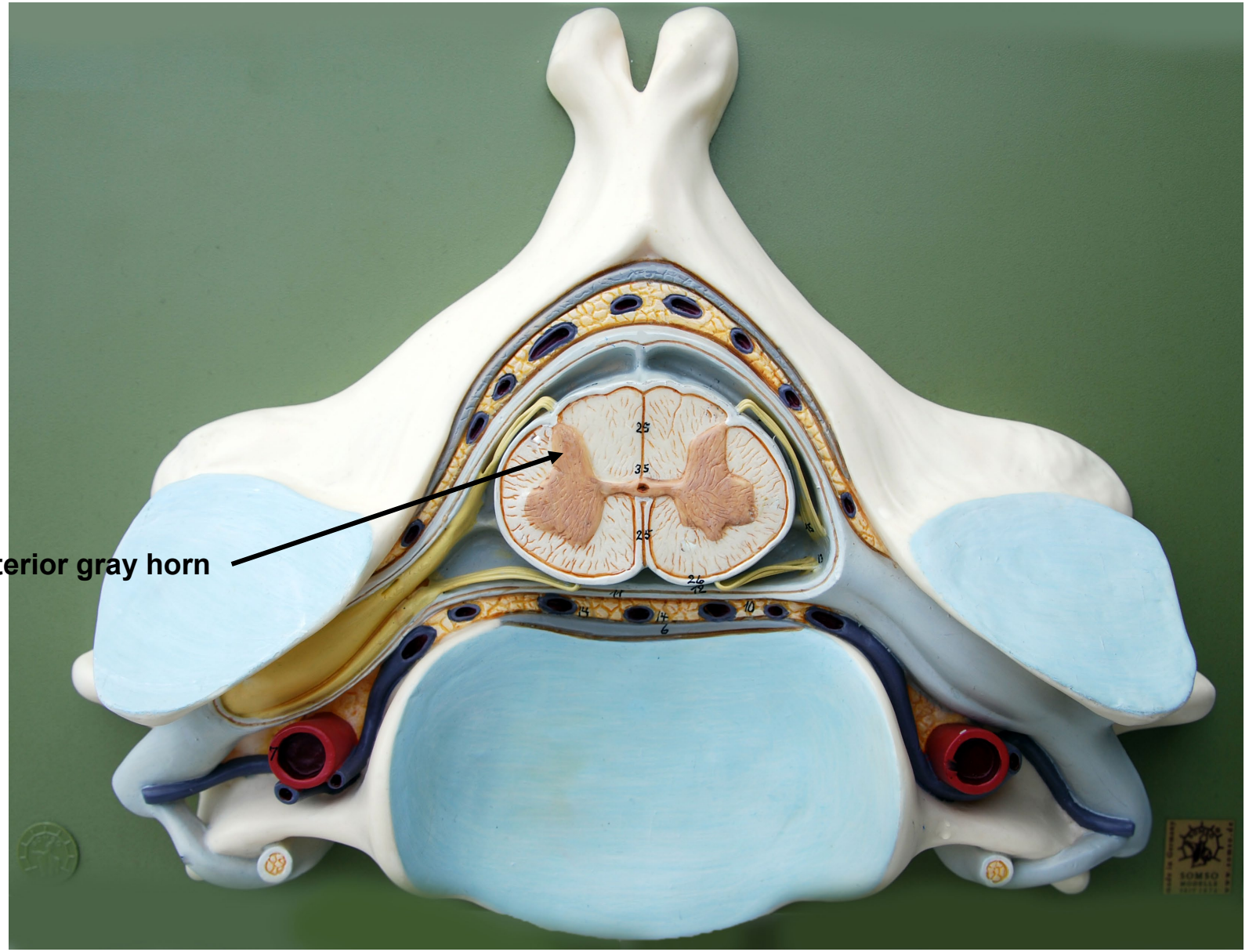


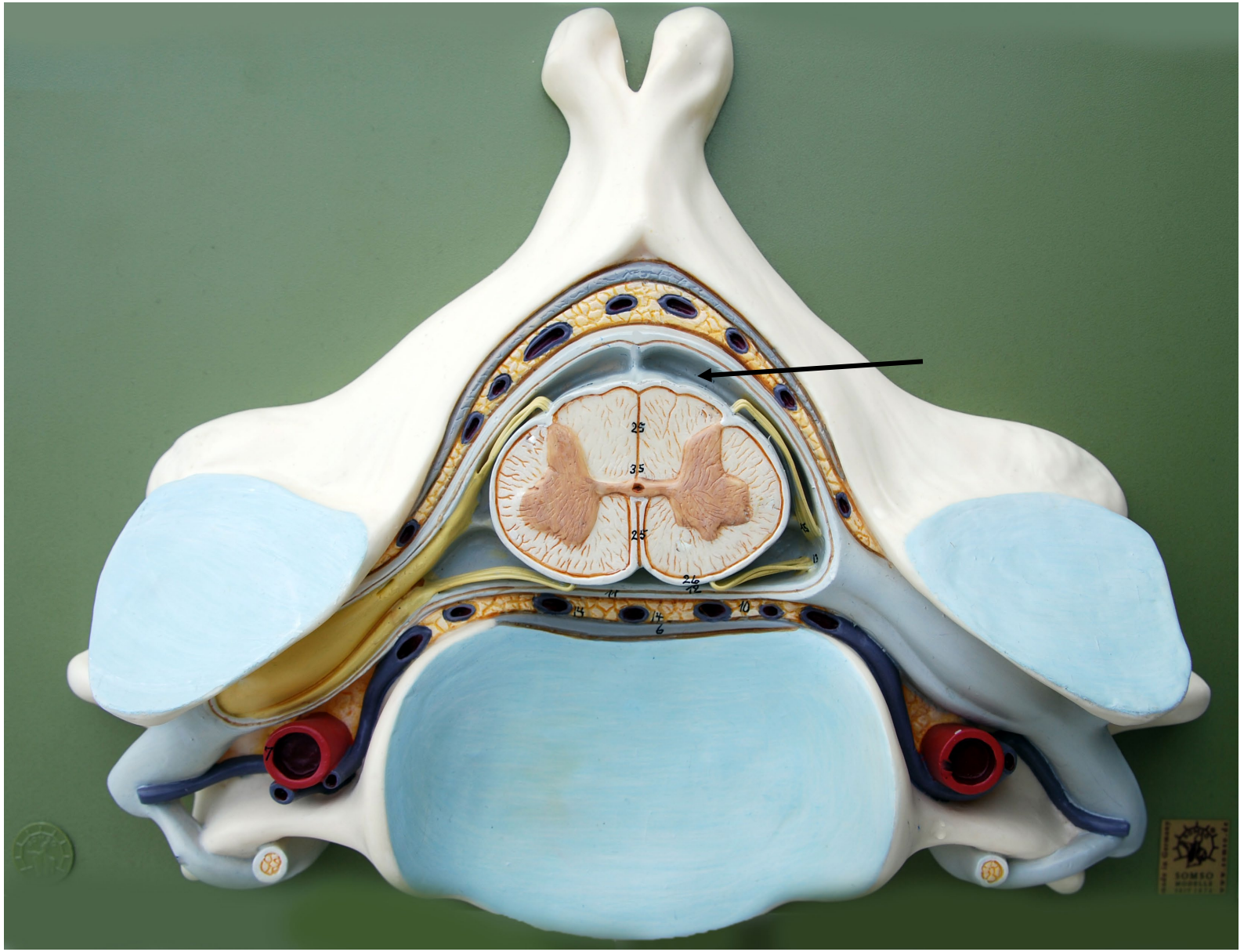

Third ventricle

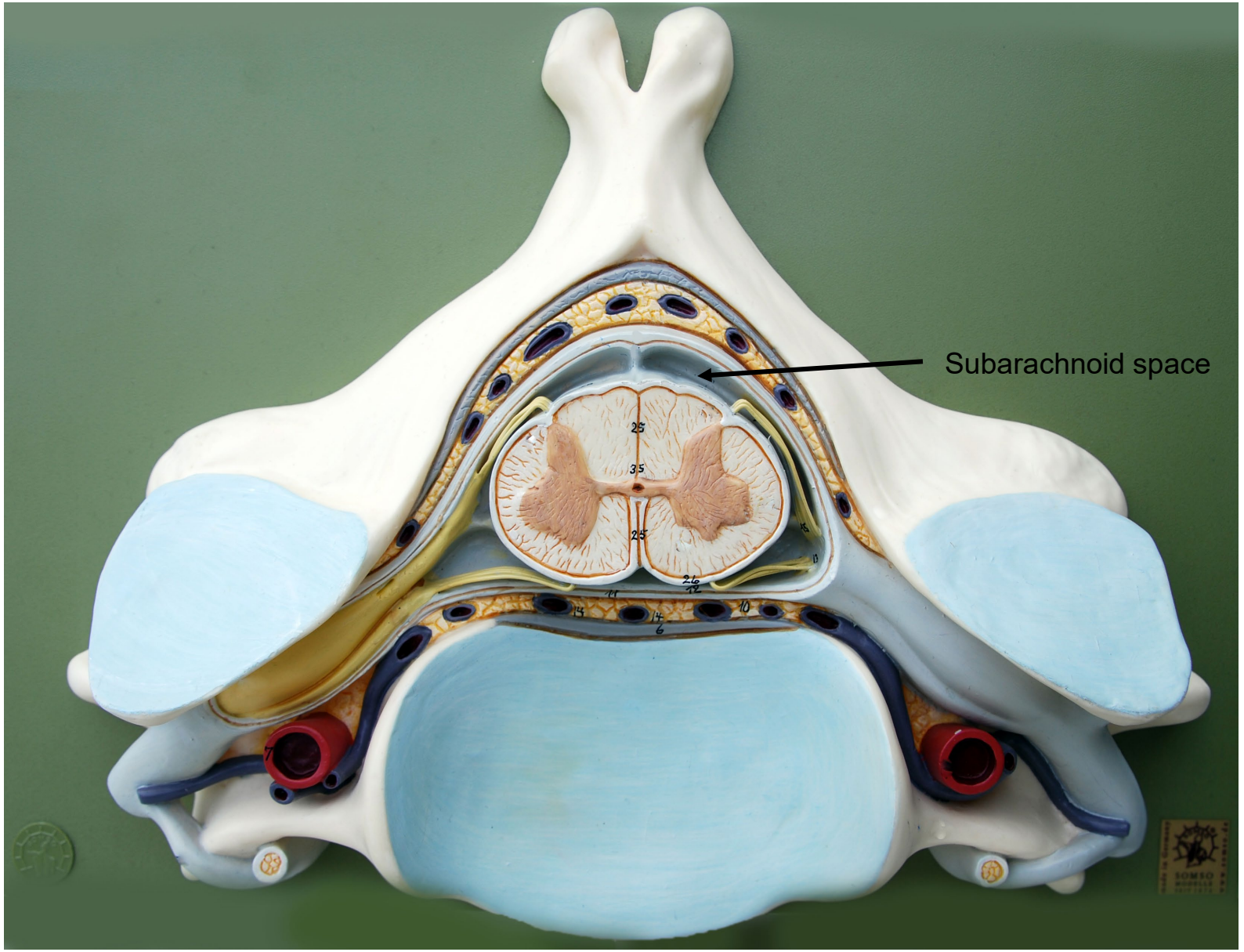


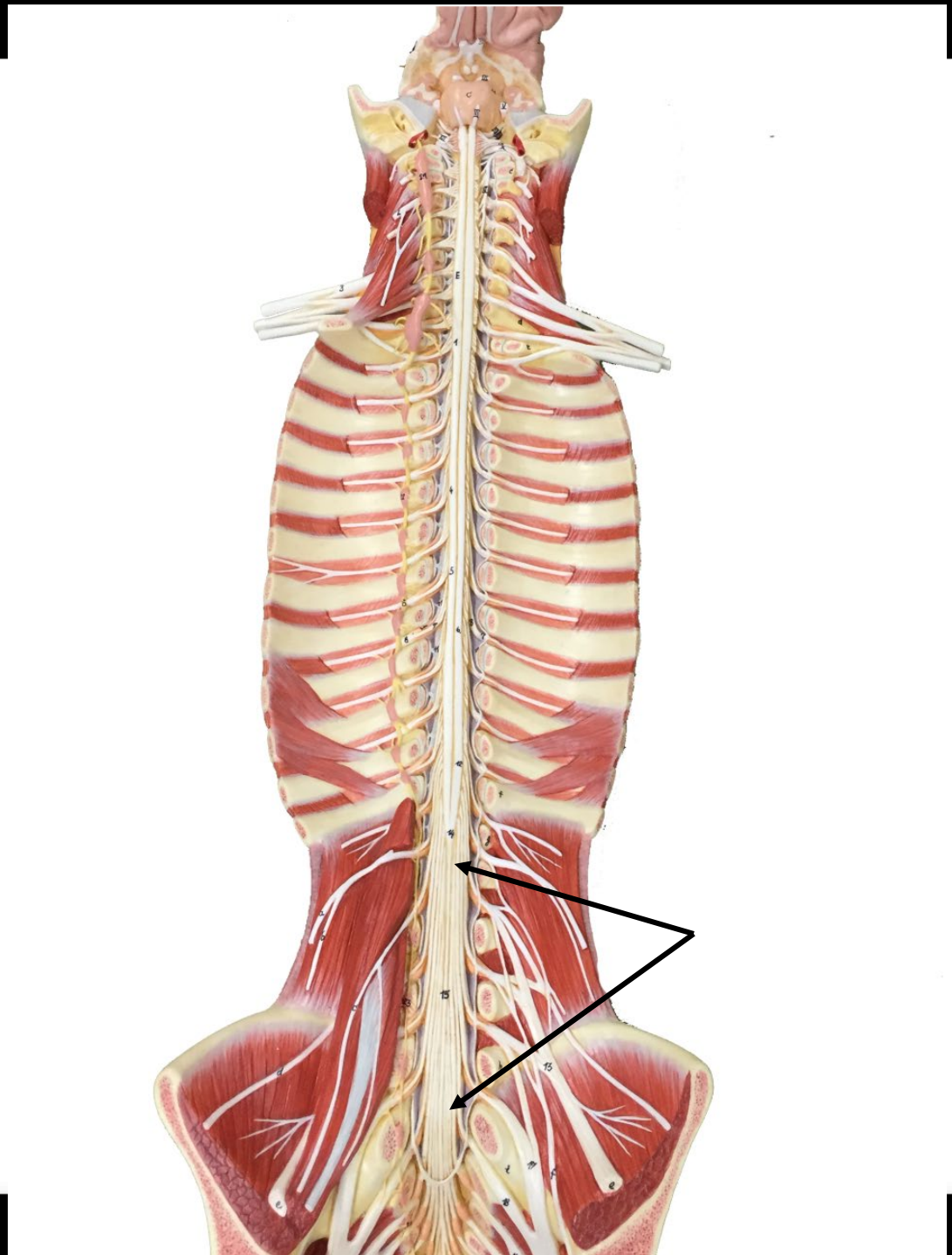

Pia mater

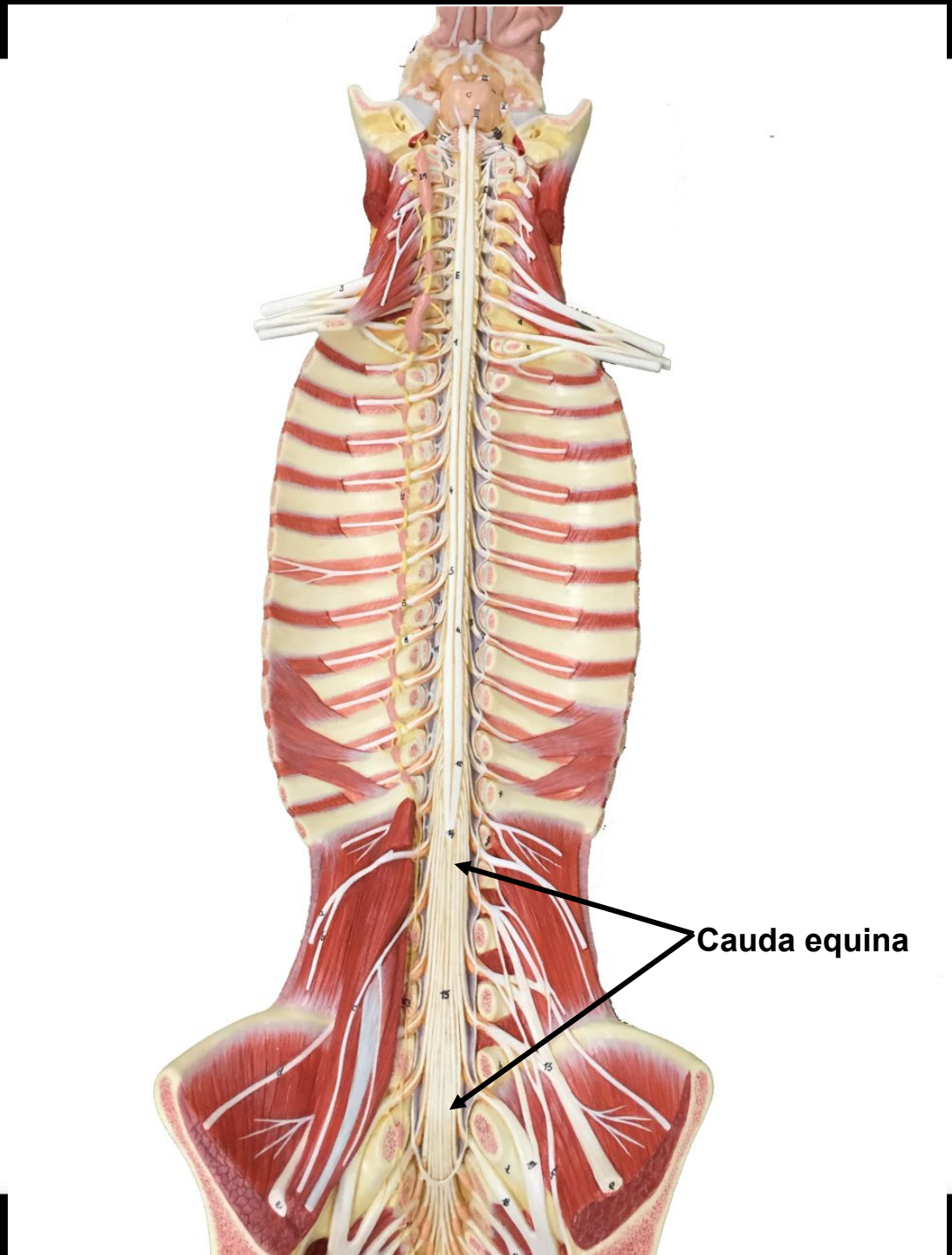


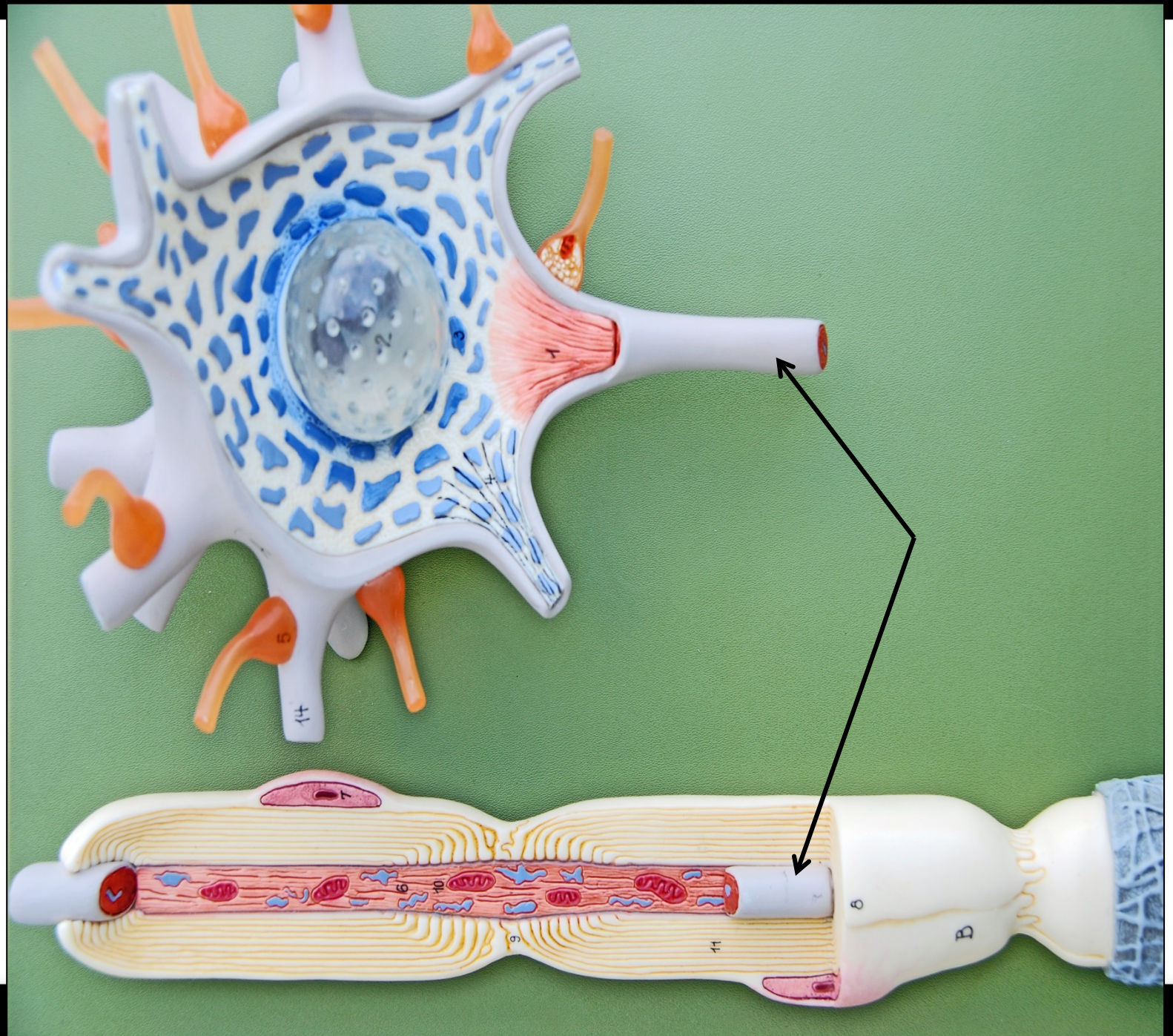

Posterior gray horn




Subarachnoid space




Cauda equina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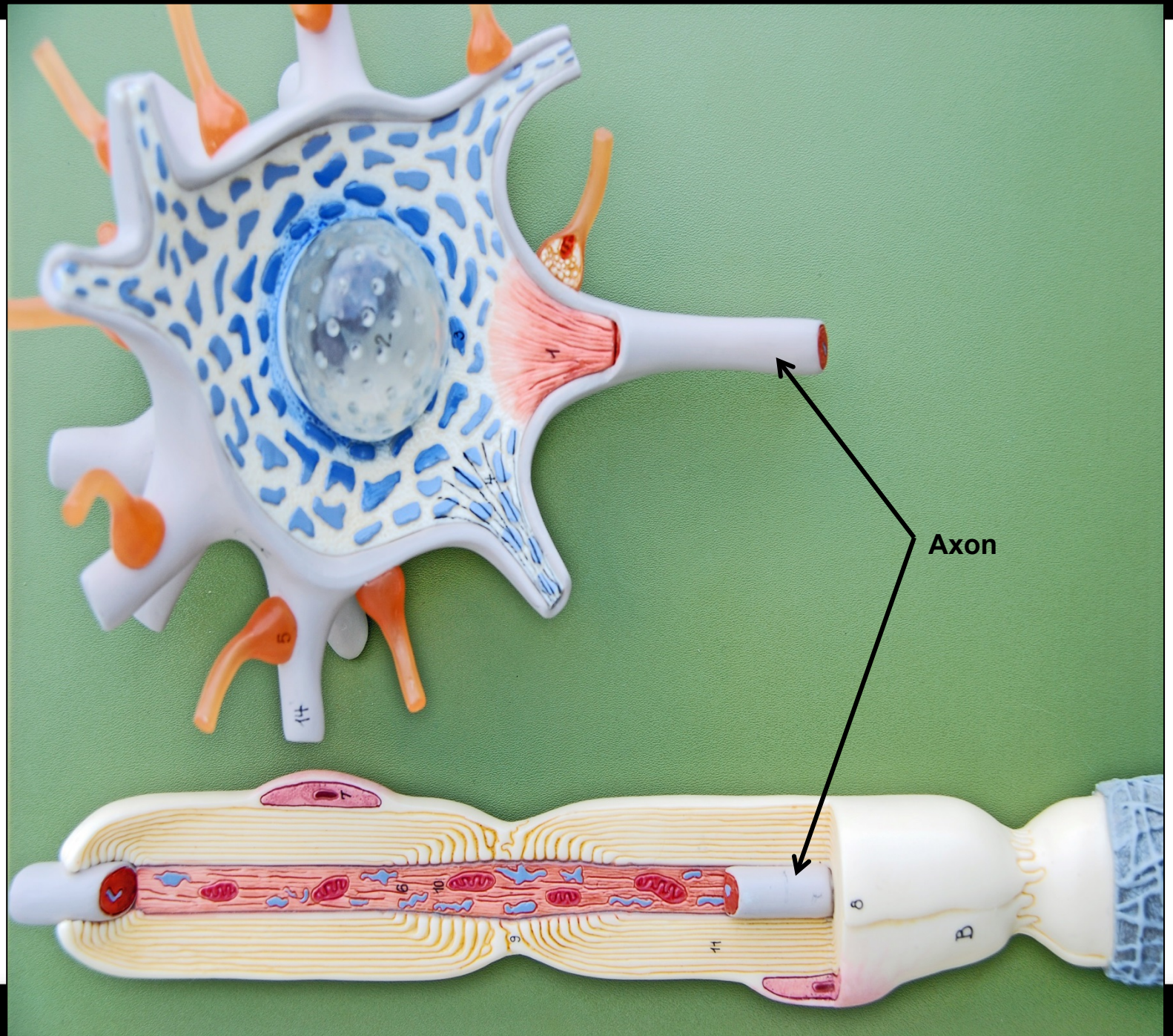
Axon


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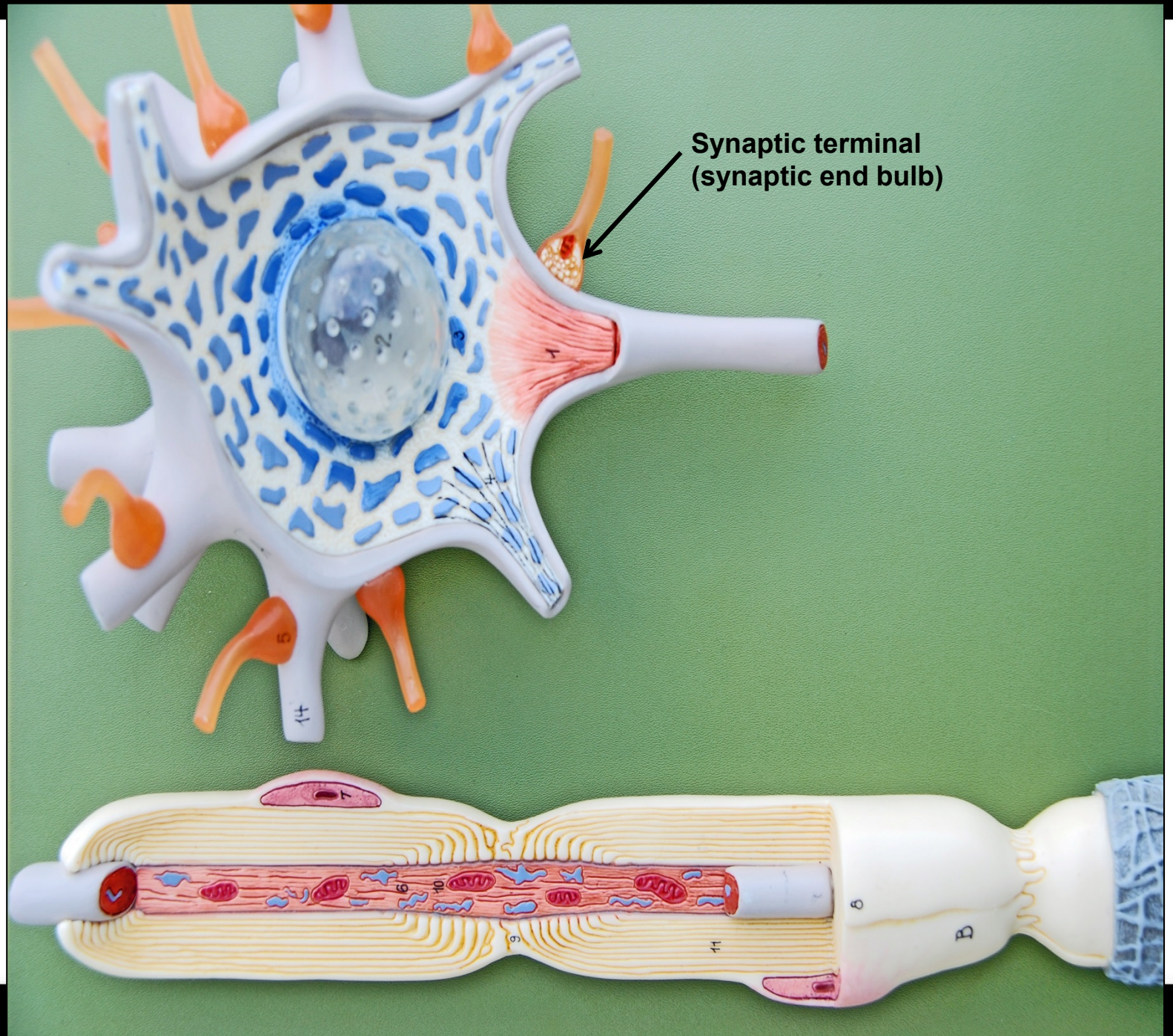
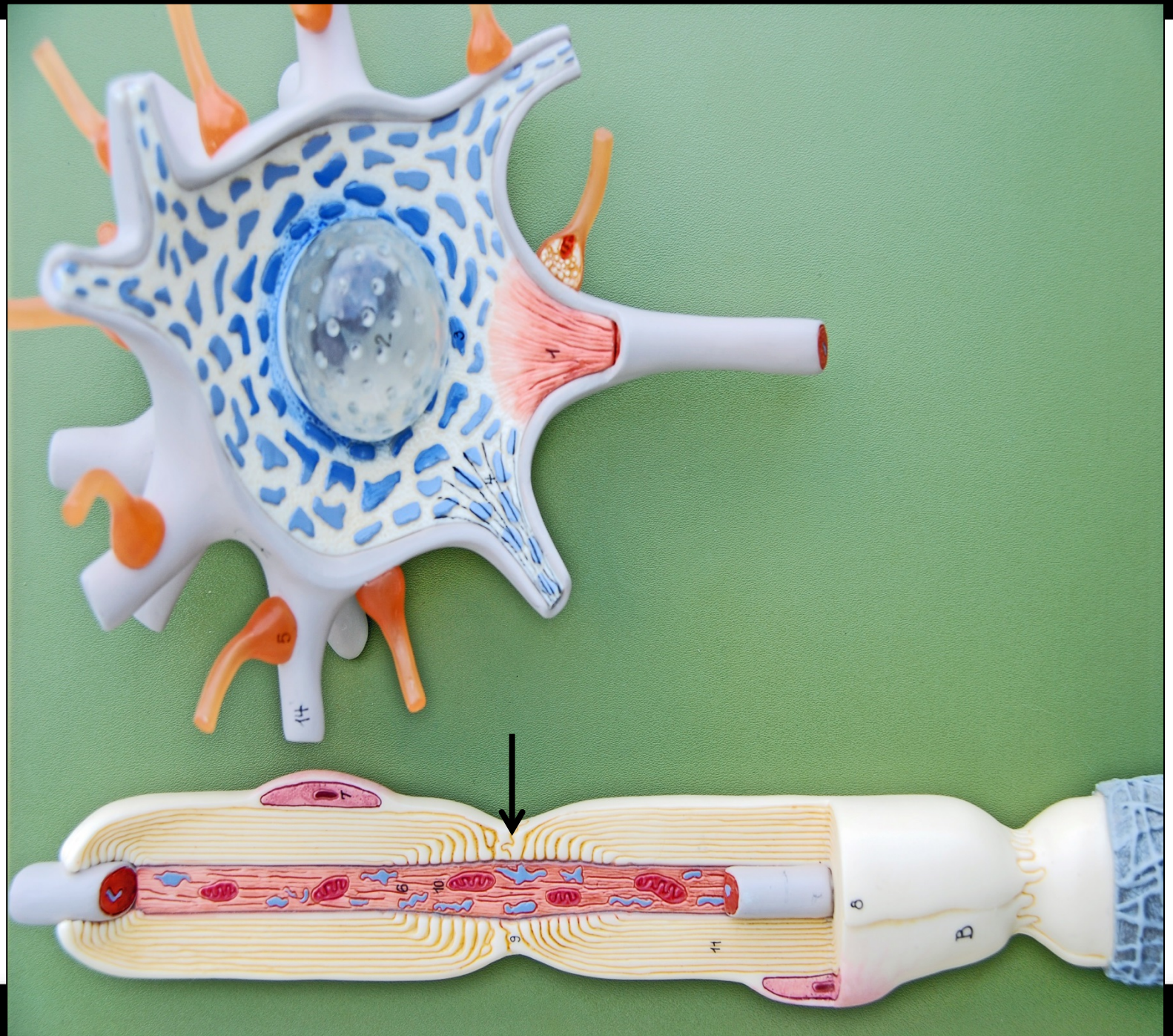

Synaptic terminal
(synaptic end bulb)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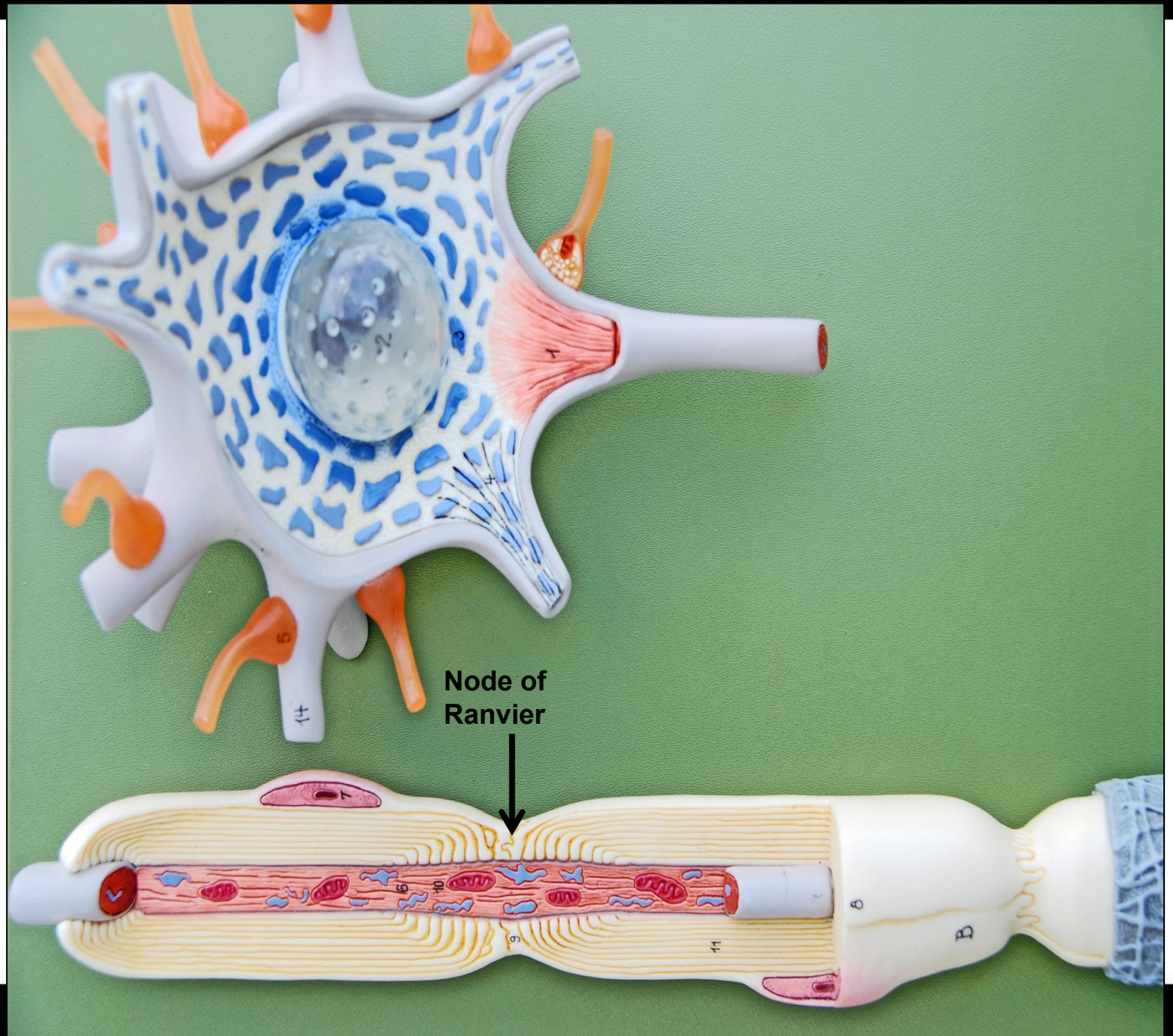
Node of
Ranvier

https://ccac.libwizard.com/f/brain