MED437
KING SAUD UNIVERSITY

ANATOMY
Team 437

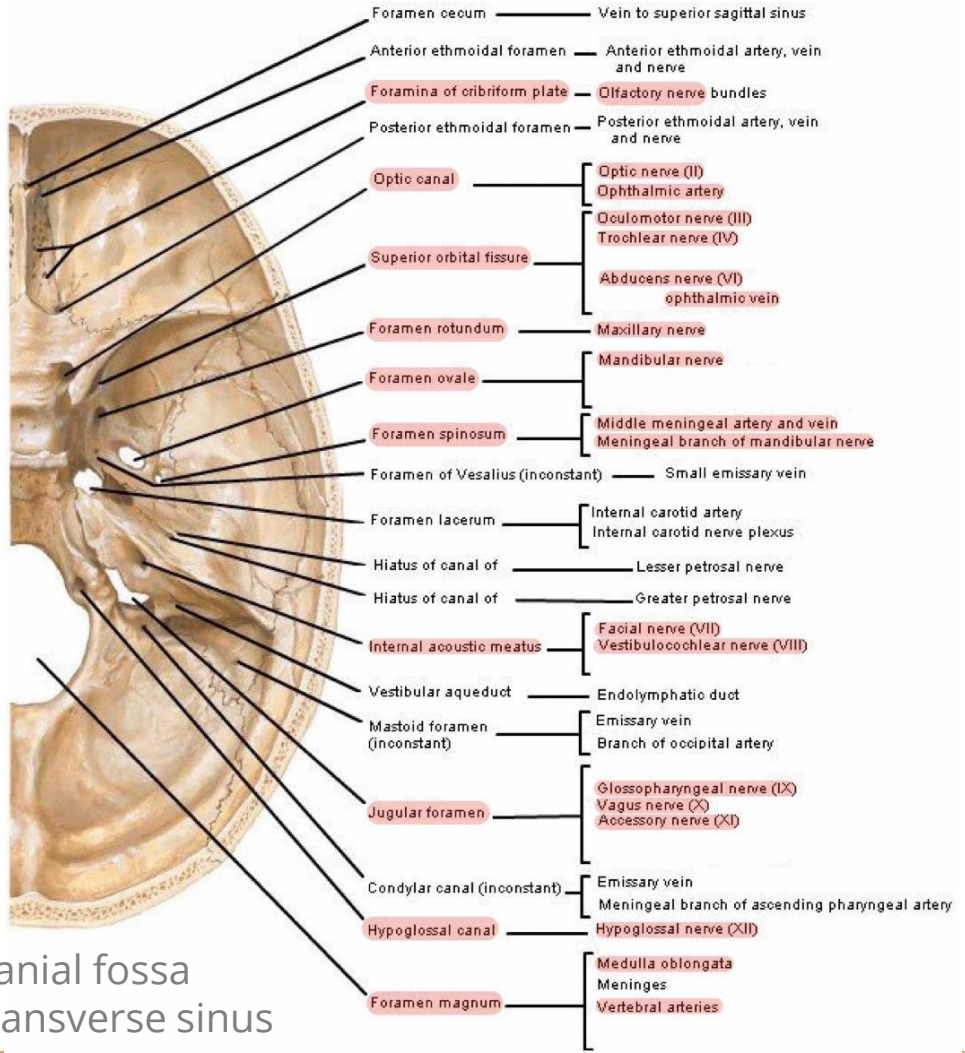
OSPE

Neuropsychiatry Block

{وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ}

Skull

- Identify the **foramen** labelled.
- Mention the **structure/s passing** through the foramen labelled **(especially nerves)**.



*Any part in posterior cranial fossa other than foramina is transverse sinus

Upper & Lower Limb

- Identify the **nerve** labelled.
- You should know the **root value**, the **motor supply**, and the **name of lesion** for each nerve.

Brachial Plexus (supply UPPER limb)		
Site:	In the **posterior triangle** of the **neck**	
Formation by:	**Ventral rami** of the **C5, C6, C7, C8 & T1 spinal nerves**	
Stages:	1- Roots: in the **posterior triangle** of the **neck** 2- Trunks: in the **posterior triangle** of the **neck (Upper C5-C6, Meddle C7 & Lower C8-T1)** 3- Divisions: **behind** the **clavicle "cervico axillary trunk" (Anterior & Posterior)** 4- Cords: in the **axilla (Medial, Lateral & Posterior)** 5- Branches: in the **axilla**	
Main branches:	From **Roots**: 1- C5: Nerve to rhomboids (dorsal scapular nerve) 2- C5,6 &7: Long thoracic nerve (supplies serratus anterior) **Lesion=Winging scapula** From Trunks (**Upper** "superior" **trunk**): C5 & 6: Nerve to subclavius C5 & 6: Suprascapular nerve (supplies supraspinatus & infraspinatus) From Cords (**Lateral** cord): **2LM** Lateral pectoral nerve Lateral root of median nerve Musculocutaneous nerve	From Cords (**Posterior cord**): **ULTRA** Upper subscapular nerve Lower subscapular nerve Thoracodorsal nerve. Radial nerve **(continuation)** Axillary nerve **(branch)** From Cords (**Medial cord**): **4MU** Medial pectoral nerve Medial root of median nerve Medial cutaneous nerve of arm Medial cutaneous nerve of forearm Ulnar nerve
Lesion	**- Lesion of upper trunk C5-C6 (Erb-Duchenne Palsy or waiter's tip position):** displacement of the head to the opposite side, depression of the shoulder, arm hangs by the side & rotated medially forearm is extended & pronated **- Lesions of Lower trunk C8-T1 (Klumpke Palsy) ,**the **first thoracic nerve** is usually torn The hand has a **clawed** appearance due to **ulnar nerve injury** Hand of Benediction or Pope's Blessings **(APE hand)** will result from **median nerve injury**	

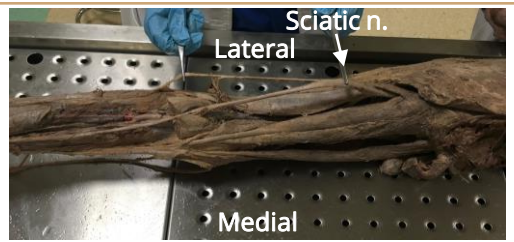
Nerves of the UPPER limbs					
Name	Median nerve[1]	Ulnar nerve[2]	Musculocutaneous nerve[3]	Radial nerve	Axillary nerve
Root value	C5-T1	C8, T1* *Dr. Abu Almakarem said C7-T1	C5-C7	C5-T1	C5,C6
Cords	Medial & lateral cord	Medial cord	Lateral cord	Posterior cord	Posterior
Muscles supplied	Flexor carpi radialis Palmaris longus Pronator teres	Flexor carpi ulnaris Palmar interossei Adductor Pollicis	Coracobrachialis Biceps brachii Brachialis	Triceps Supinator Extensor digitorum	Deltoid Teres minor Triceps (long head)
Lesions	APE hand	Claw hand	Weakness of elbow flexion & foramen supination	Wrist drop	Weak abduction of the shoulder
Picture					

1- **Median nerve:** arises from lateral and medial cords of the brachial plexus **(Y shape)** then continues in both arm & forearm in the middle side **(very obvious)**
2- **Ulnar nerve: long medial** nerve in both arm "may disappears ¾ end of arm" & forearm **(directly connected to the little finger)**
3- **Musculocutaneous nerve:** superficial short lateral nerve

Upper limb

	Lumbar Plexus (supply LOWER limb)	Sacral Plexus (supply LOWER limb & pelvic)
Site:	In the **substance** of **psoas major muscle**	In **front** of **piriformis muscle** (In pelvic)
Formation by:	**Ventral rami** of the **L1, L2, L3 & most of L4 spinal nerves**	**Ventral rami** of the **Part of the L4 & whole L5 (lumbosacral trunk) + S1, S2, S3 & most of the S4 spinal nerves**
Main branches:	1- CIliohypogastric & ilioinguinal nerves (L1): to anterior abdominal wall (sensory branches) 2- **Obturator nerve (L2 – L4)**: to **medial** compartment (supply Adductor longus & Adductor brevis muscles) 3- **Femoral nerve (L2 – L4)**: to **anterior** compartment of thigh	1- **Pelvic splanchnic nerve**: preganglionic **parasympathetic** to pelvic viscera & hindgut 2- **Pudendal nerve**: to perineum 3- **Sciatic nerve (L4, L5, S1, S2, & S3)** : to lower limb *The largest nerve of the body, Divides into: 1: **Tibial** "medial" **nerve** divides into 2 terminal branches: **Medial & lateral plantar nerves** 2: **Common peroneal** "lateral" (fibular) **nerve** divides into: (1) **Superficial peroneal** or **musculocutaneous nerve** of leg descends into **lateral** compartment of leg (motor & sensory) supply: Peroneus longus & Peroneus brevis muscles (2) **Deep peroneal** or **anterior tibial nerve** descends into **anterior** compartment of leg, supply: Extensors hallucis & Extensors digitorum longus muscles
Lesion	(next slide)	**- Lesion of Superficial peroneal: loss** of foot **eversion** **- Lesion of Deep peroneal: loss** of ankle **dorsiflexion** - **Lesion of common peroneal nerve: loss** both of foot **eversion and loss** of ankle **dorsiflexion (talipes equinovarus)**

Nerves of the LOWER limbs

	Anterior part	Posterior part		
		Sciatic nerve	Branches of sciatic nerve	
Name	Femoral nerve[1]	Sciatic nerve[2]	Tibial "medial" nerve[3] (Continuation)	Common peroneal "lateral" nerve[4] (Branch)
Root value	L2 – L4	L4-S3	L4-S3	L4-S2
Muscles supplied	Quadriceps femoris Sartorius muscle Pectineus muscle iliacus muscle	Peroneus brevis Peroneus longus Gastrocnemius Soleus	Gastrocnemius Plantaris Soleus	Peroneus brevis Peroneus longus Extensors hallucis
Lesions	**Motor effect:** **Wasting** of quadriceps femoris, **Loss extension** of knee & **Weak flexion** of hip **Sensory effect:** **loss** of **sensation** of skin over areas supplied **antero-medial aspect** of thigh & **medial** side of leg & foot	**Motor effect:** **weak flexion** of knee, **weak extension** of hip, **affect** all **movements** of leg & foot **(paralysis) & Foot drop** **Sensory effect:** **loss** of **sensation** of skin of leg and foot (**EXCEPT** areas supplied by saphenous branch of femoral nerve)		
Picture				

1- **Femoral nerve**: ONLY nerve from **anterior** part of LL
2- **Sciatic nerve: largest** nerve in the **posterior** part of LL body, Divides into **tibial "medial" nerve[3] (Continuation) & common peroneal "lateral" nerve[4] (branch)**

Pelvis  Lower limb 

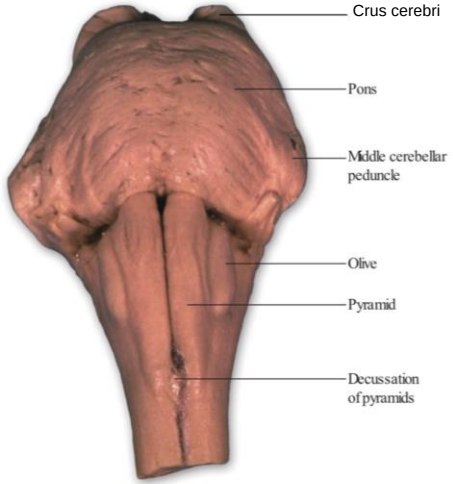
Brain Stem

- Identify the **parts** of the **brain stem** and the **cerebellum**.
- You should know important **afferents** and **efferents** of each part.

*Whole brain or brain stem specimen (**complete** or **sagittal** section) - with or without cerebellum

External Structures of Brainstem

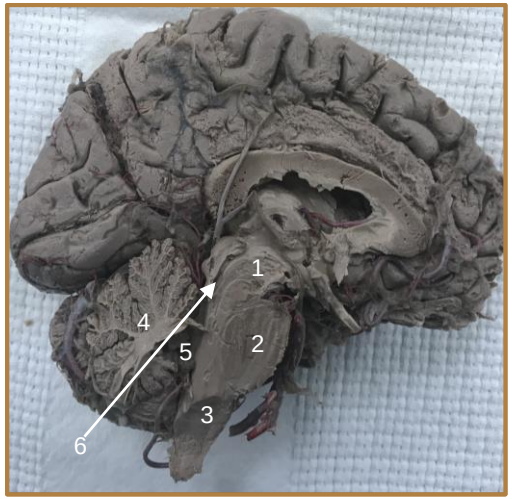
*Identify the structures:
1- crus cerebri of **mid brain**
2- **Pons**
3- Olive[1] of **medulla**
4- Pyramid[2] of **medulla**
5- (Decussation of pyramid) in **medulla**
6- **Cerebellum**
7- **basilar groove (sulcus) for basilar artery[3] in pons**

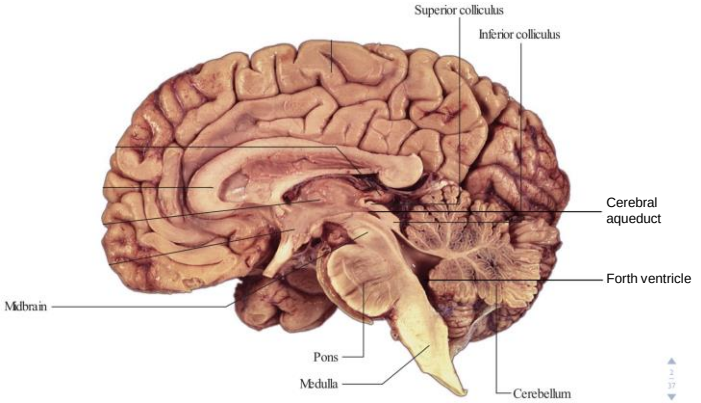


*You **MUST** mention the **specific part** with name of the **structure**
especially when the question "identify the **elevation"** (usually **Olive** or **Pyramid** of the medulla)
1-**Pyramid** produce by **corticospinal tract** |2- **Olive** produce by **inferior olivary nucleus**
3- **May the pons contain basilar artery & they will ask about it (its ONLY ARTERY CAN COME)**

External Structures of Brainstem

*Identify the structures:
1- Mid brain
2- Pons
3- Medulla
4- Cerebellum
5- 4th ventricle
6- Cerebral aqueduct





Nerves Emerging From Brain Stem

***Mid brain:**

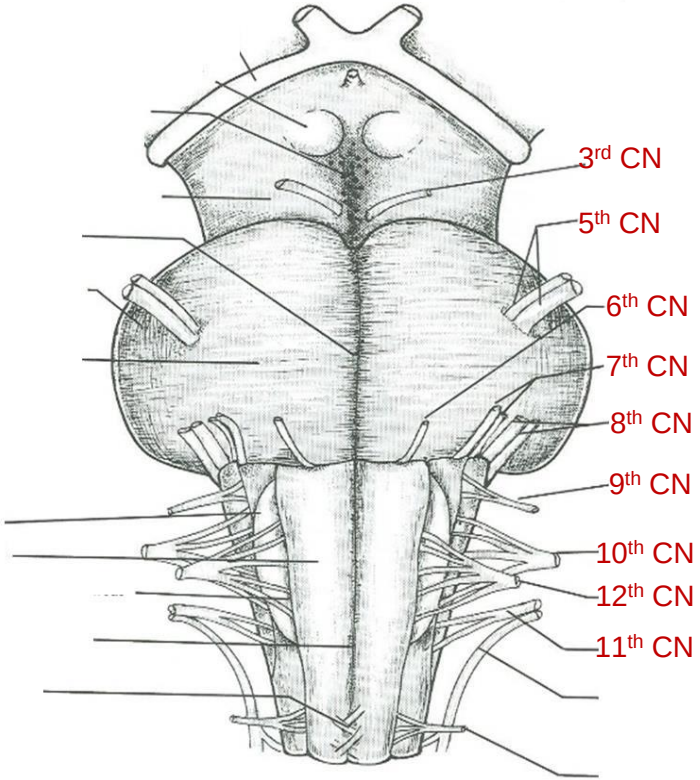
- 3rd CN (Oculomotor nerve)
- 4th CN (Trochlear nerve) it's not in the picture because it emerge from the dorsal surface of the mid brain.

***Pons:**

- 5th CN (Trigeminal nerve)
- 6th CN (Abducent nerve)
- 7th CN (Facial nerve)
- 8th CN (Vestibulocochlear nerve)

***Medulla oblongata:**

- 9th CN (Glossopharyngeal nerve)
- 10th CN (Vagus nerve)
- 11th CN (Accessory nerve)
- 12th CN (Hypoglossal nerve)

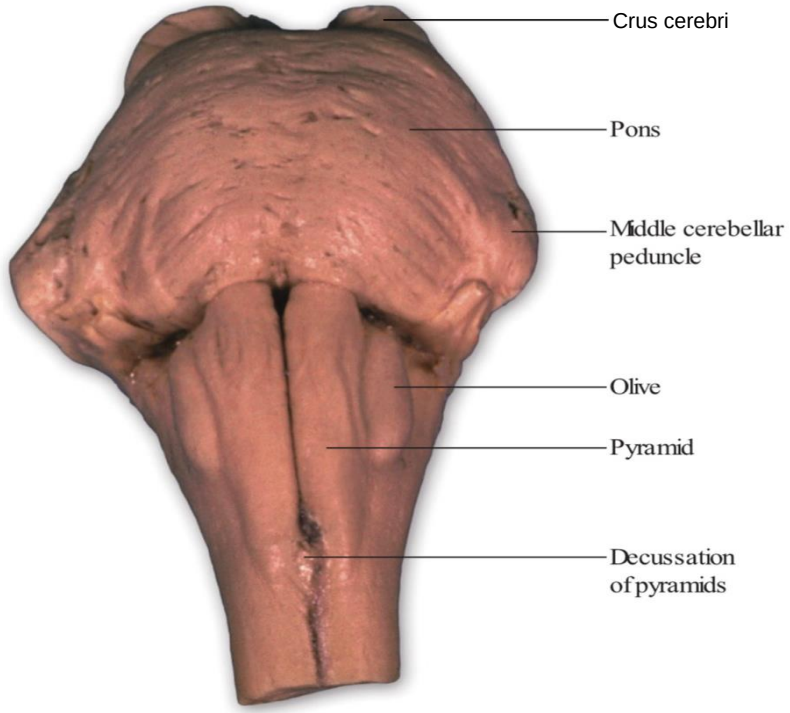


Important **Afferents** & **Efferents**

***Mid brain:**
- Afferent: Corticorubral tract
- Efferent: Rubrospinal tract

***Pons:**
- Afferent: Corticopontine fibers
- Efferent: Pontocerebellar fibers

***Medulla oblongata:**
- Afferent: Spinoolivary tract
- Efferent: Olivospinal tract

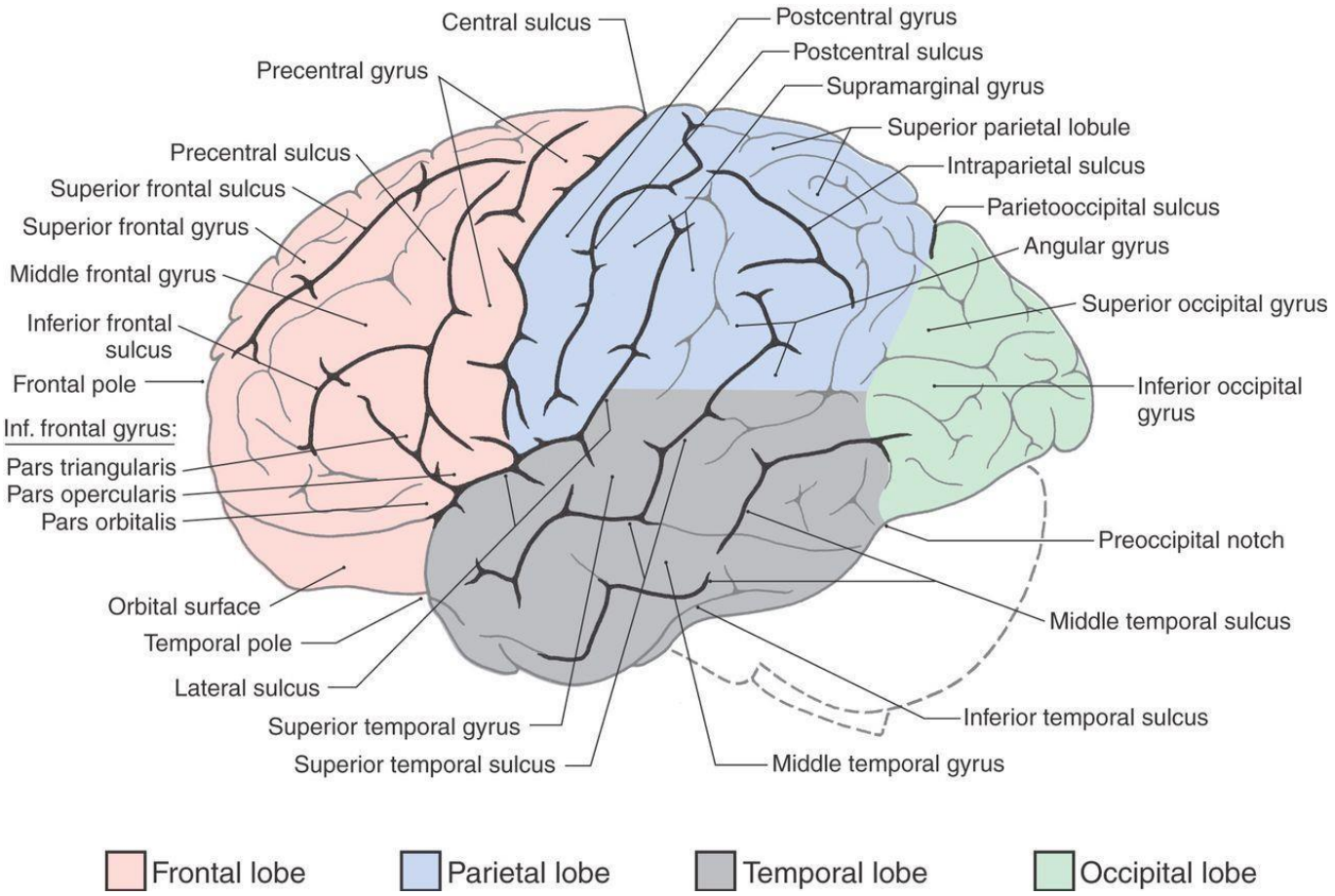


Cerebral Hemisphere

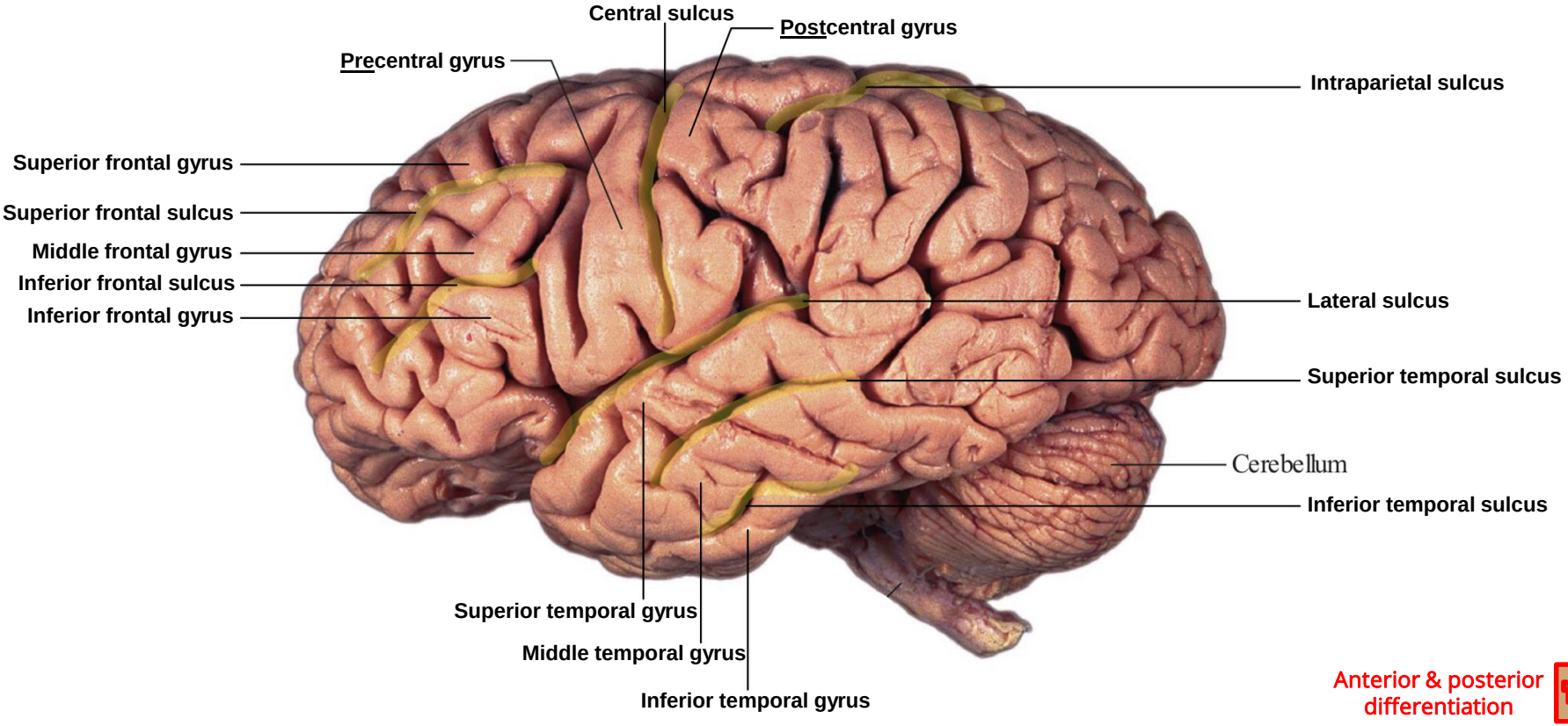
*Whole brain or cerebral hemisphere specimen (**complete** or **sagittal** section) and/or **plastinated** section of brain (**horizontal** or **coronal**):

- Identify the **structure** labelled.
- You should know the **name** of **sulci** and **gyri**, the **functions** and **effects of lesion** in **important areas**, the **arterial supply** of cerebral hemispheres.

*JUST for illustration

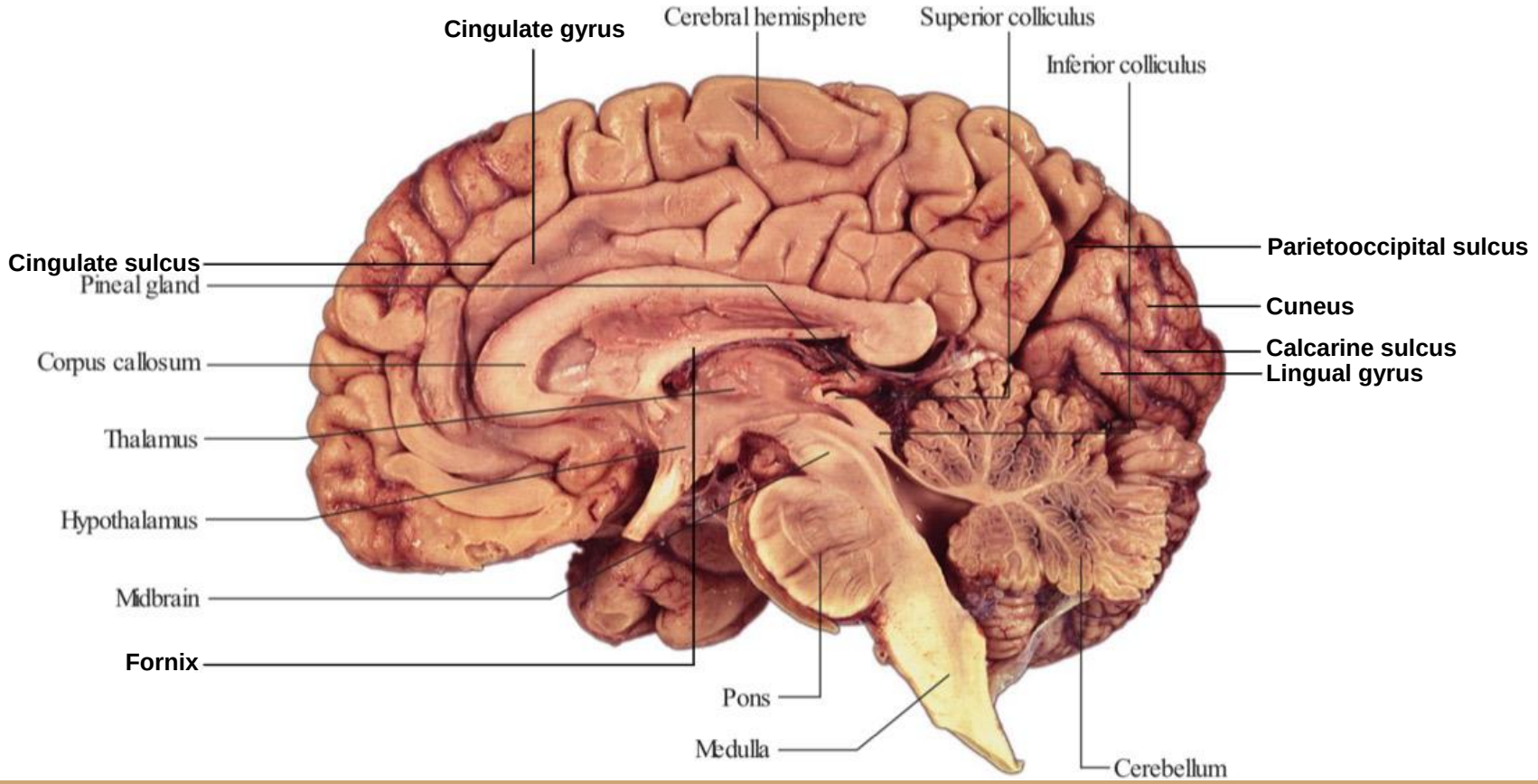


Superolateral Surface

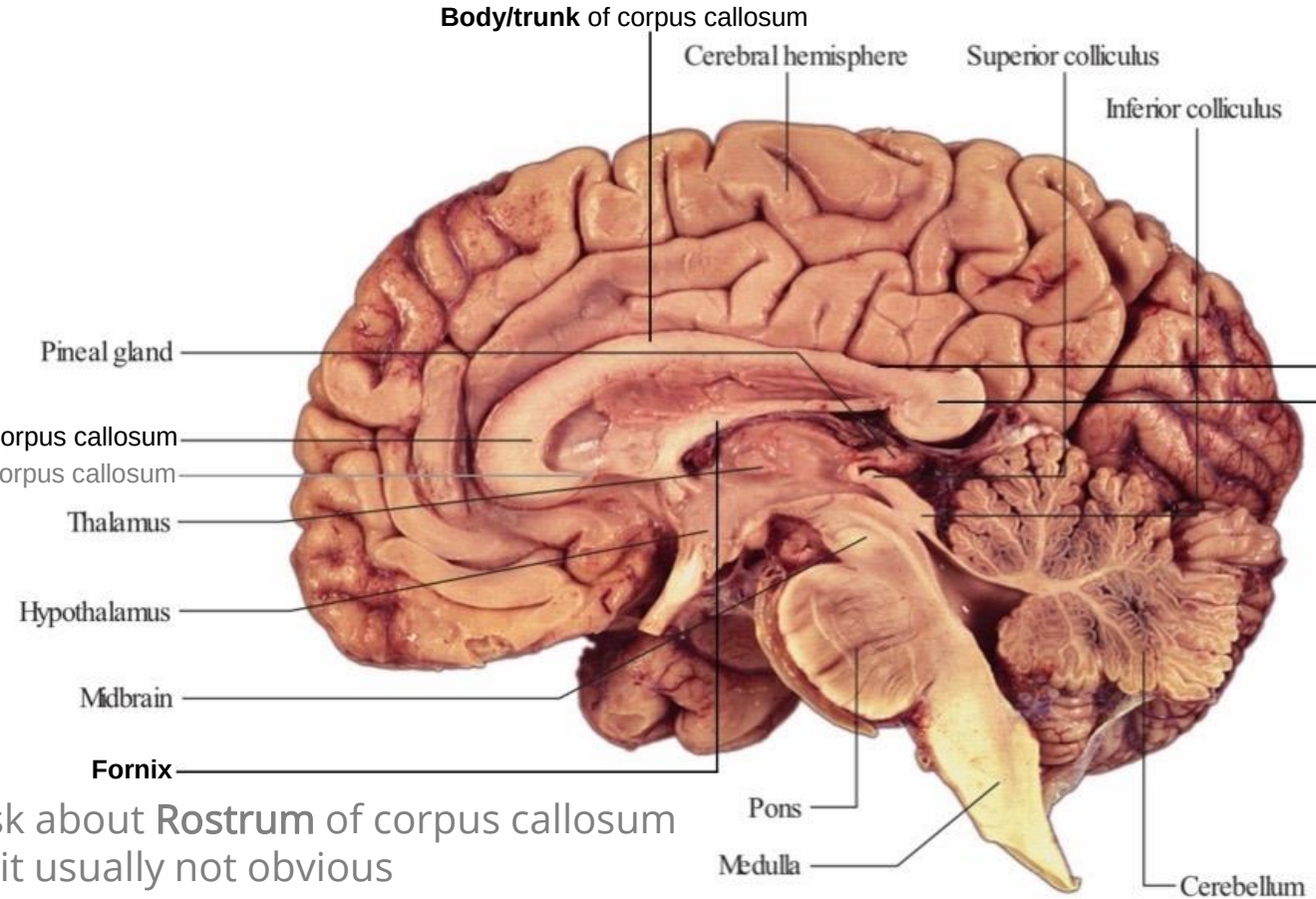


Anterior & posterior differentiation

Medial Surface



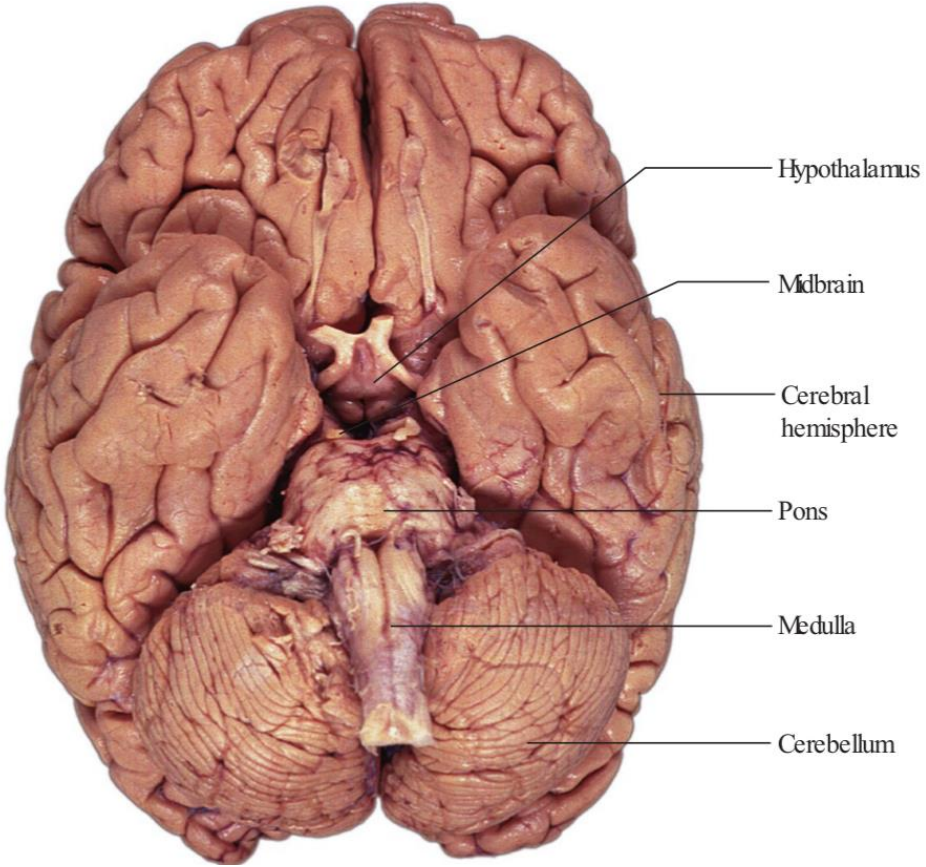
Corpus Callosum



*Can't ask about **Rostrum** of corpus callosum because it usually not obvious

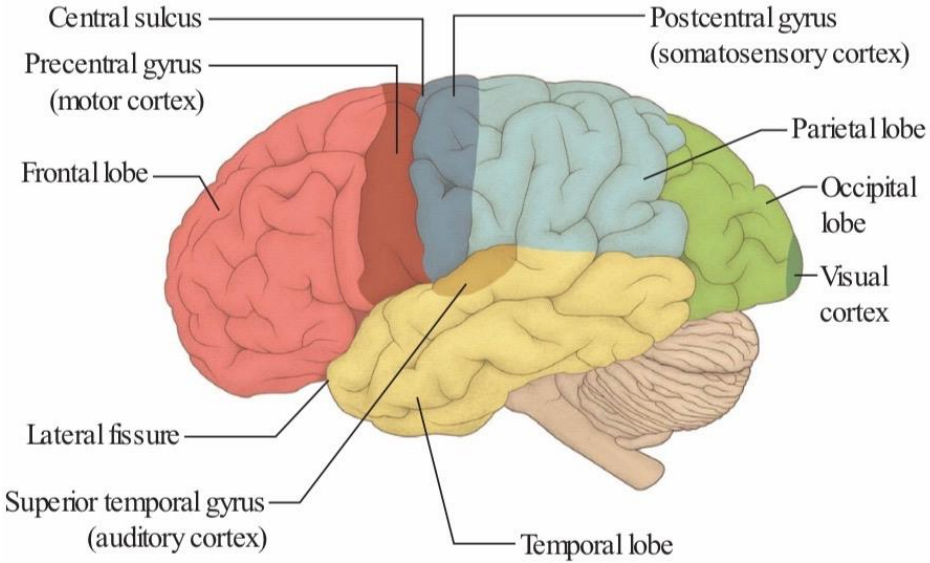
Corpus callosum

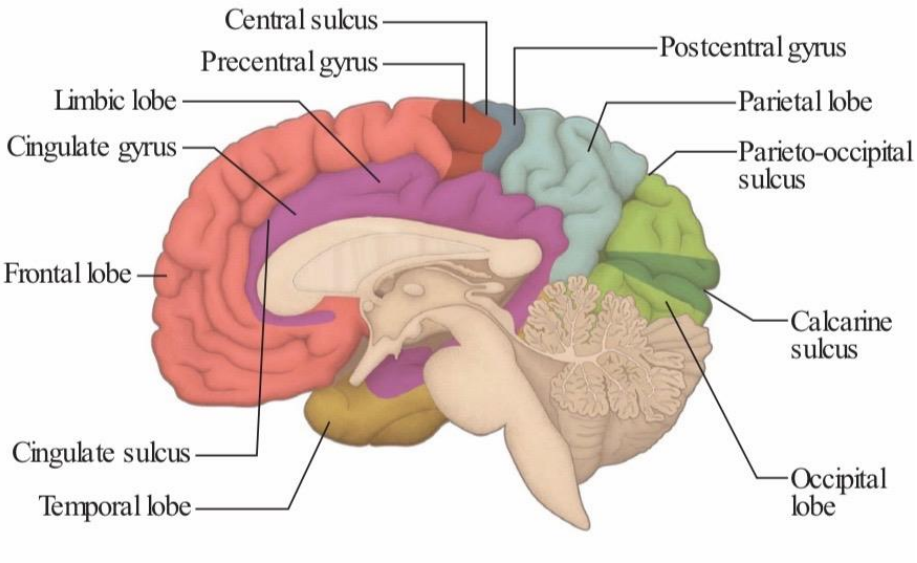
Inferior Surface



*JUST for illustration

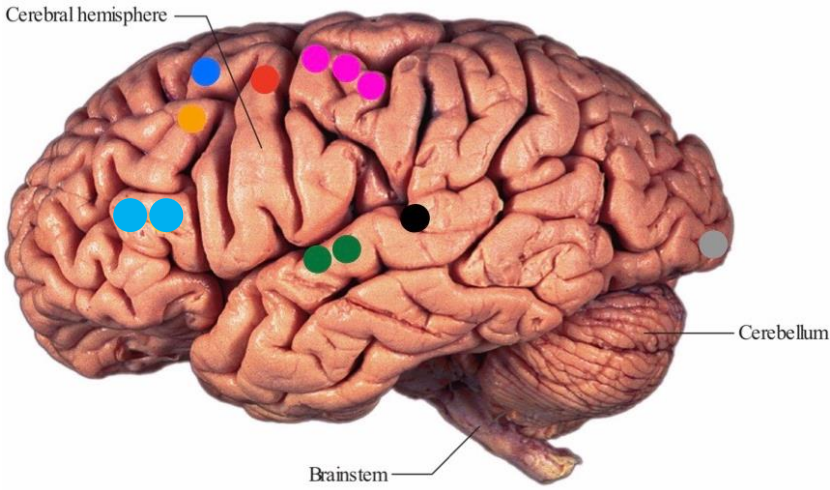
Functional Areas





Functional Areas

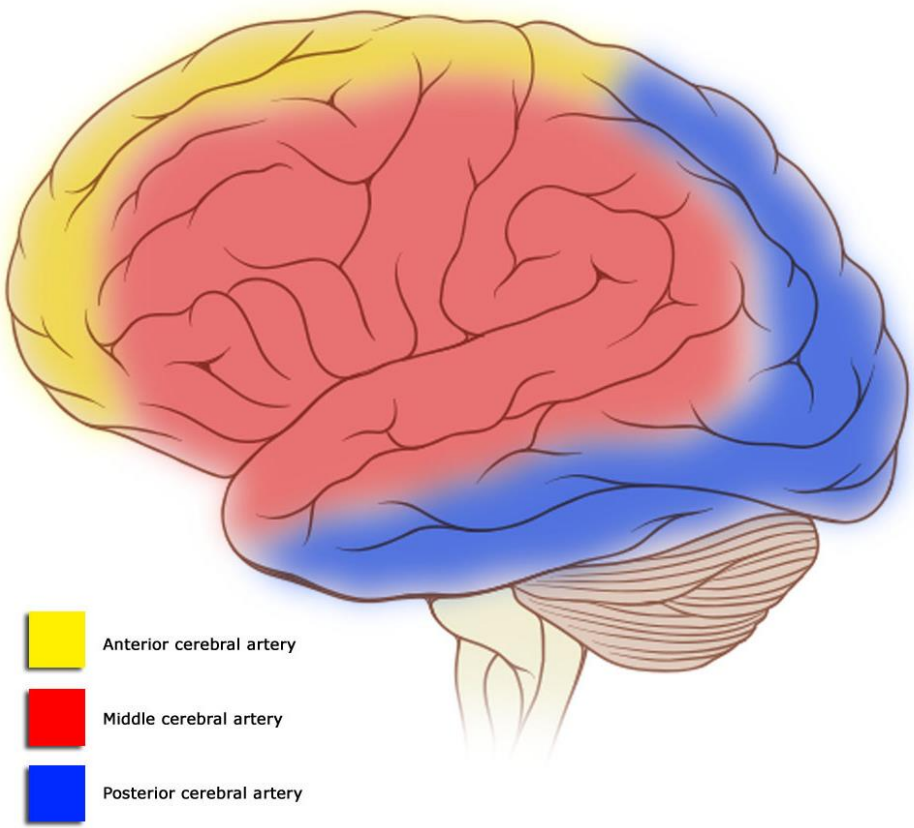
Frontal lobe
Primary motor cortex (area 4): In precentral gyrus Lesion: **Contralateral** affect voluntary movement of all body except LL & perineum
Premotor cortex (area 6): Anterior to the precentral gyrus
Frontal eye field (area 8): In front of premotor cortex (area) Lesion: **Visual field cut** (damage to **optic radiation**)
Broca's (motor speech) (area 44 & 45): In inferior frontal gyrus Lesion: **Motor Aphasia** (Speech production deficits)
Parietal lobe
Primary somatosensory cortex (area 3,1,2): In postcentral gyrus Lesion: **Contralateral sensory loss** of all body except LL & perineum
Occipital lobe
Primary visual cortex (area 17): In gyri surround the calcarine sulcus Lesion: **homonymous hemianopia**
Temporal lobe
Primary auditory cortex (area 41, 42) Lesion: **Decreasing of hearing** (NOT loss) In the superior surface of the superior temporal gyrus
Wernicke's (area 39,40): end of lateral sulcus Lesion: **Sensory Aphasia** (comprehension deficits)

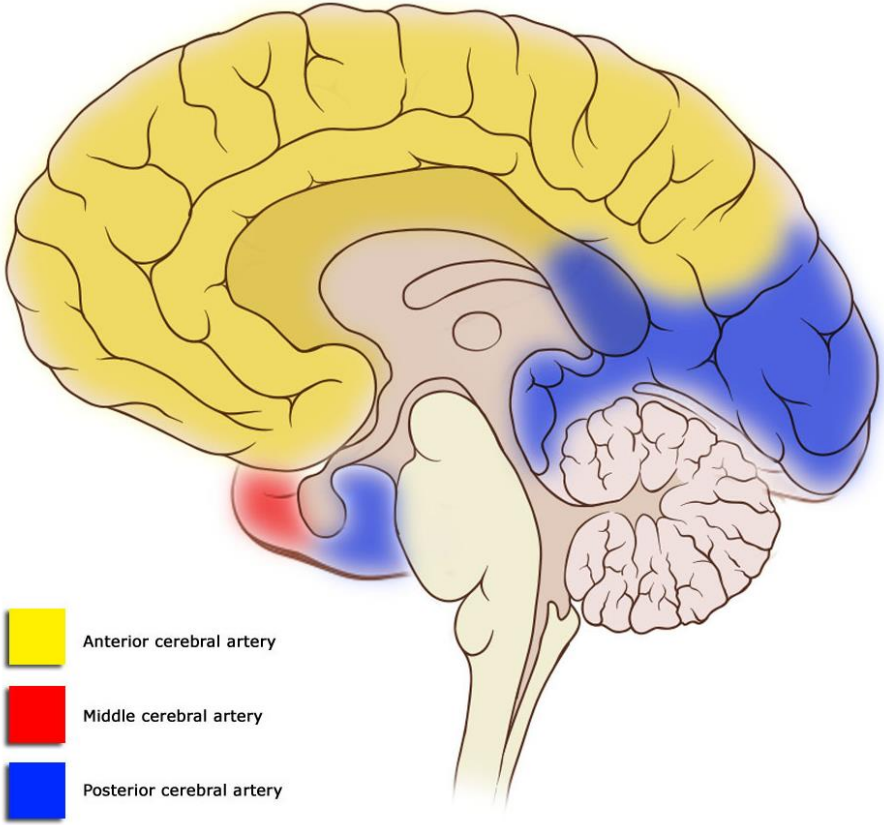


*All functional areas supplied by the **middle cerebral artery** EXPECT primary visual cortex which supply by the **posterior cerebral artery**

*JUST for illustration

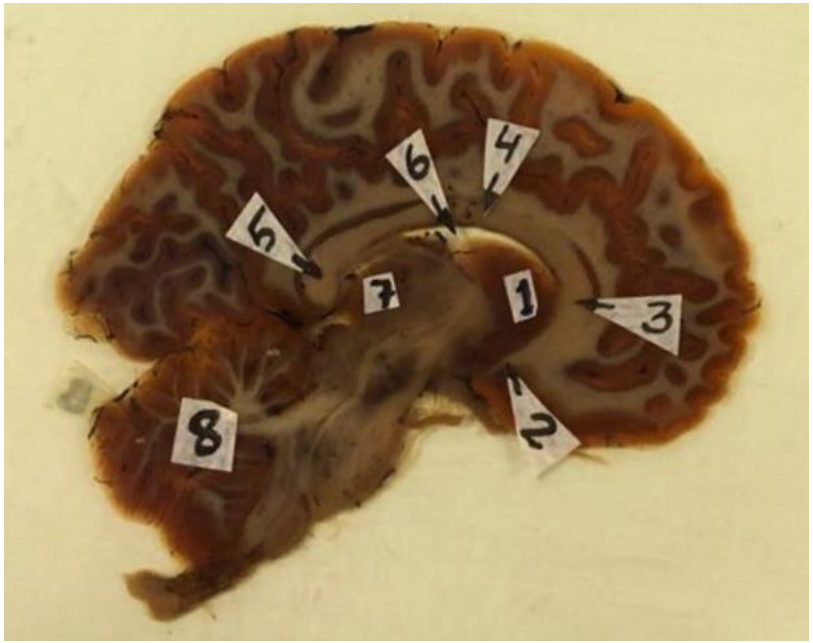
Arterial Supply





Sagittal Section of Brain

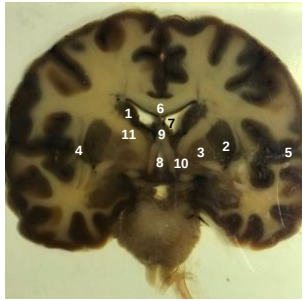
*Identify the structures:
1- Caudate nucleus
2- Rostrum of corpus callosum
3- Genu of corpus callosum
4- Body of corpus callosum
5- Splenium of corpus callosum
6- Lateral ventricle
7- Thalamus
8- Cerebellum

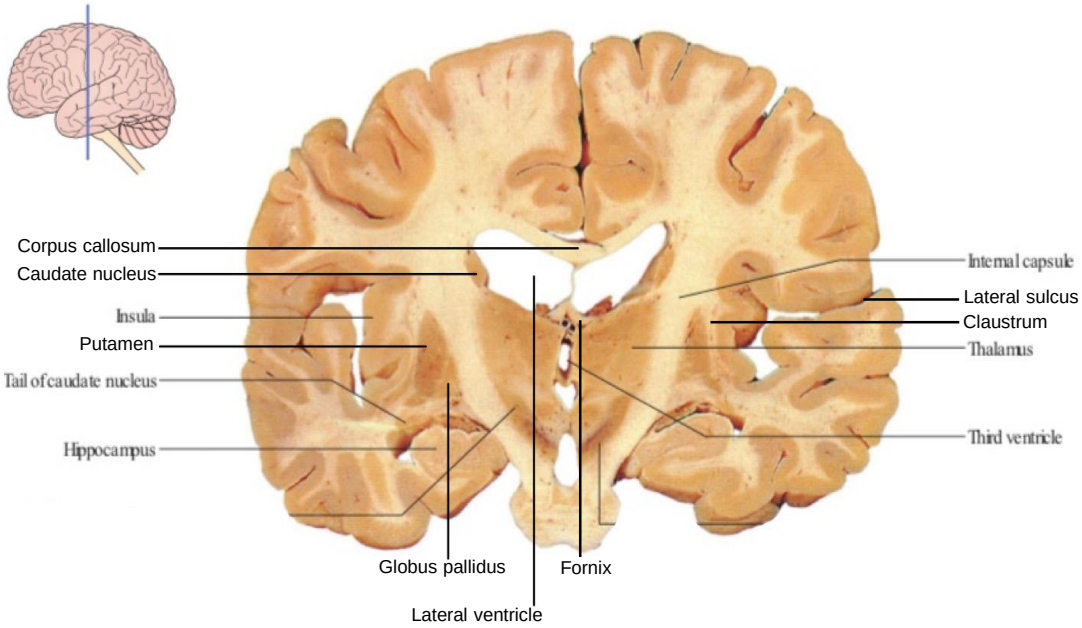


Coronal Section of Brain

*Identify the structures:

1- Caudate nucleus
2- Putamen
3- Globus pallidus
4- Claustrum
5- Lateral fissure (sulcus)
6- Corpus callosum
7- Lateral ventricle
8- 3rd ventricle
9- Fornix
10- Thalamus
11- Internal capsule





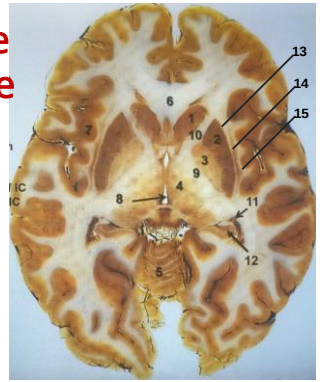
*Caudate nucleus lies around lateral ventricle | *Thalamus lies around 3rd ventricle

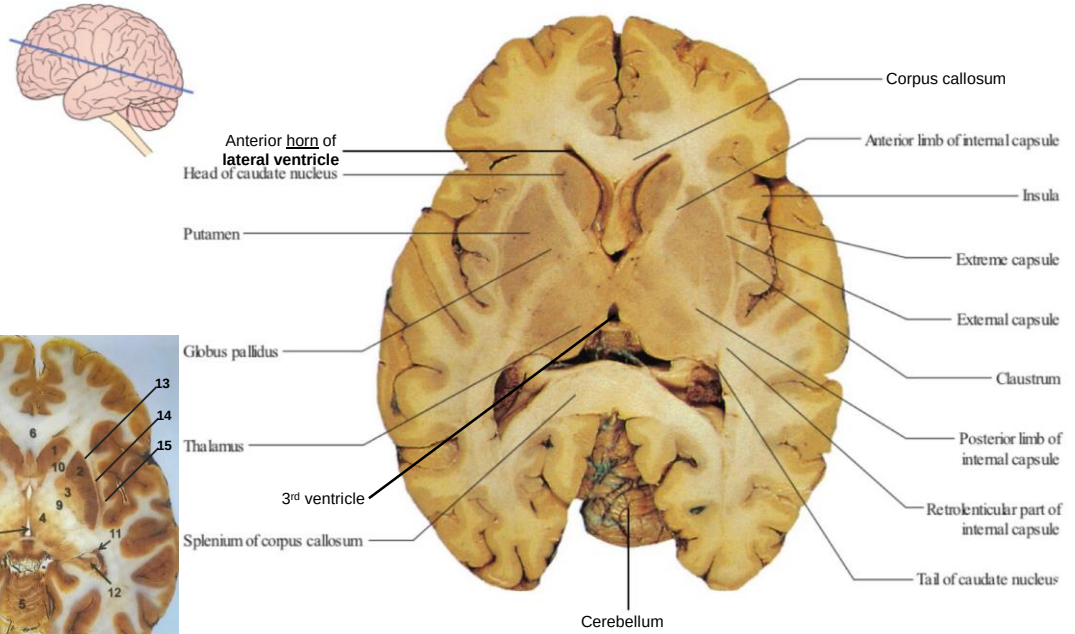
*In coronal section if the Putamen & Globus pallidus not clear, you have to write lentiform nucleus

Horizontal Section of Brain

*Identify the structures:

1- Head of caudate nucleus
2- Putamen
3- Globus pallidus
4- Thalamus
5- Cerebellum
6- Corpus callosum
7- Insula
8- 3rd ventricle
9- Posterior limb of internal capsule
10- Anterior limb of internal capsule
11- Tail of caudate nucleus
12- Hippocampus
13- External capsule
14- Claustrum
15- Extreme capsule





GOOD LUCK 

Rawan Alharbi & Faisal Alsaif

Twitter.com/Anatomy437
Anatomyteam.437@gmail.com