# Learning Objectives

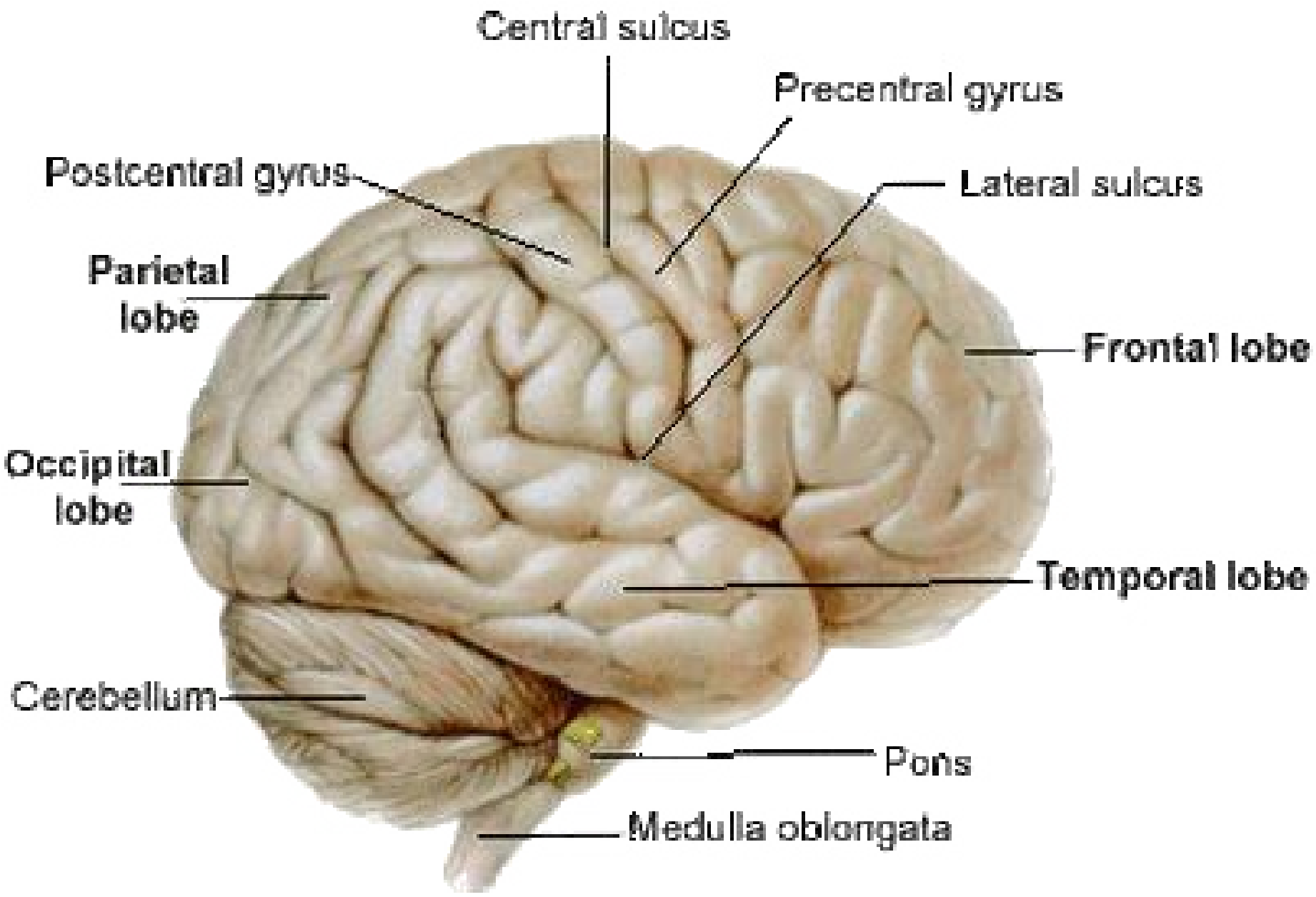
A Different lobes and surfaces of Cerebral hemisphere

B. Blood supply of different regions of cerebral hemisphere

C Important sulci and gyri

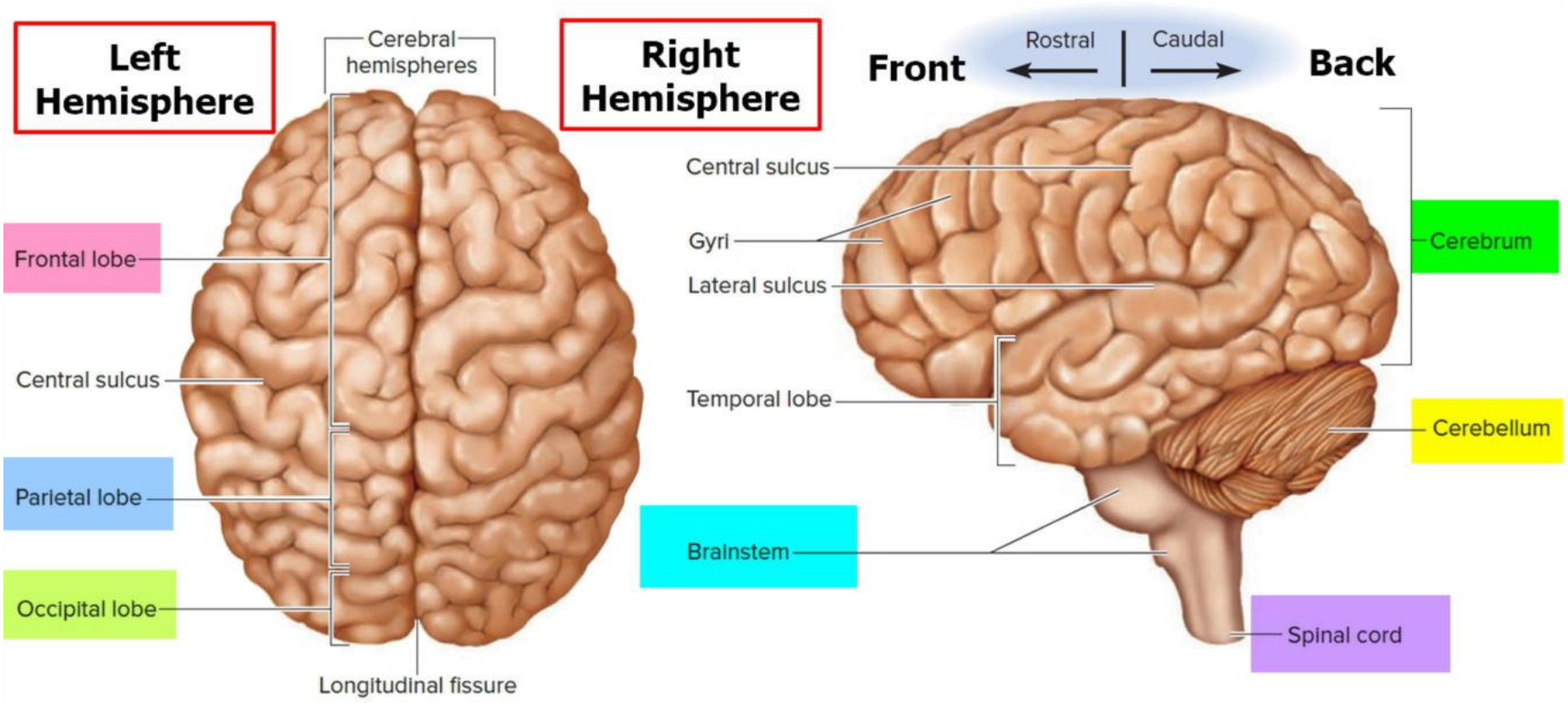
D Different functional areas located in cerebral hemisphere

E. Lesions and its effects



# Cerebrum

- Largest part of the brain
- Heavily convoluted bilobed structure



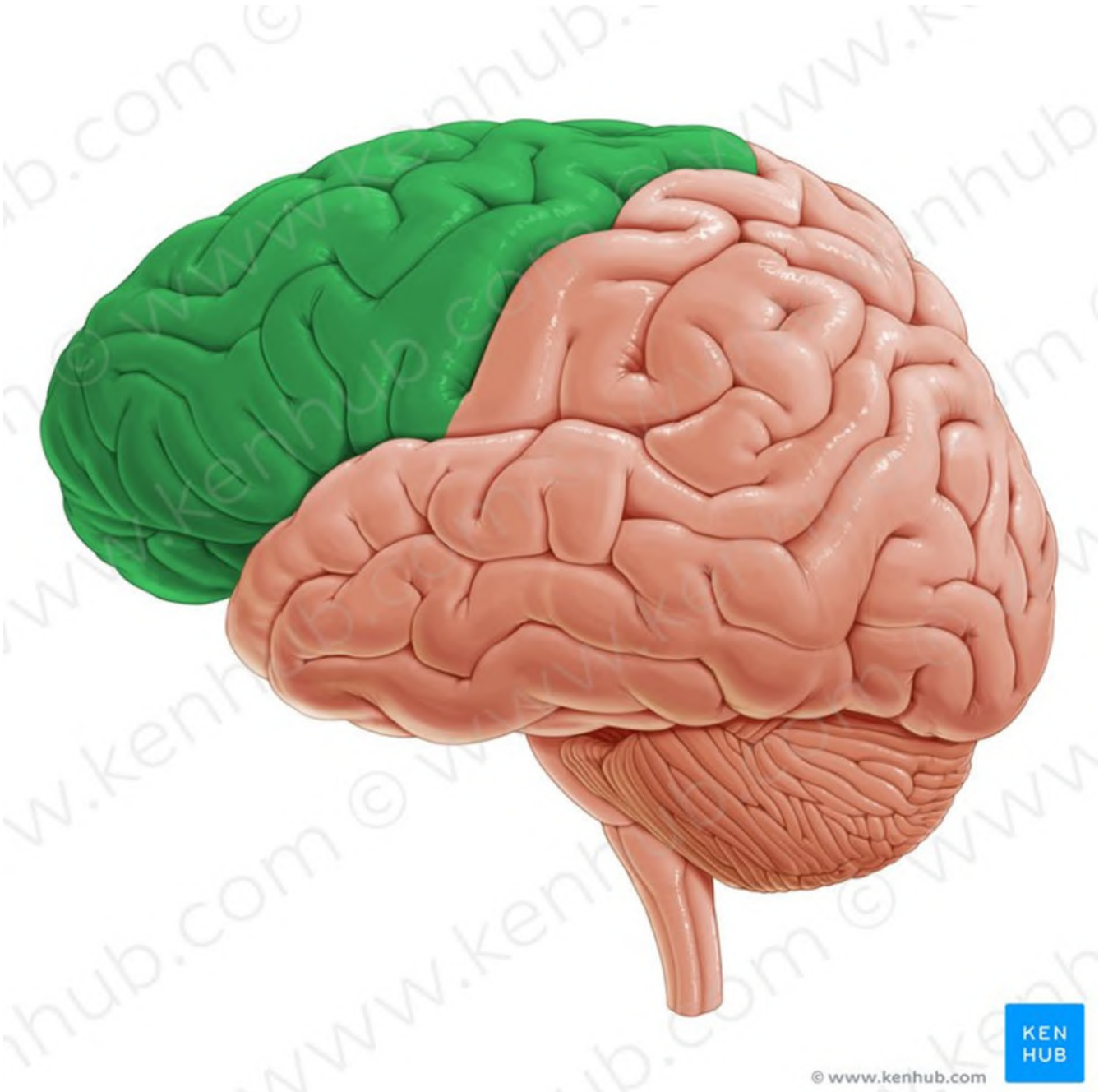
# Cerebral hemispheres

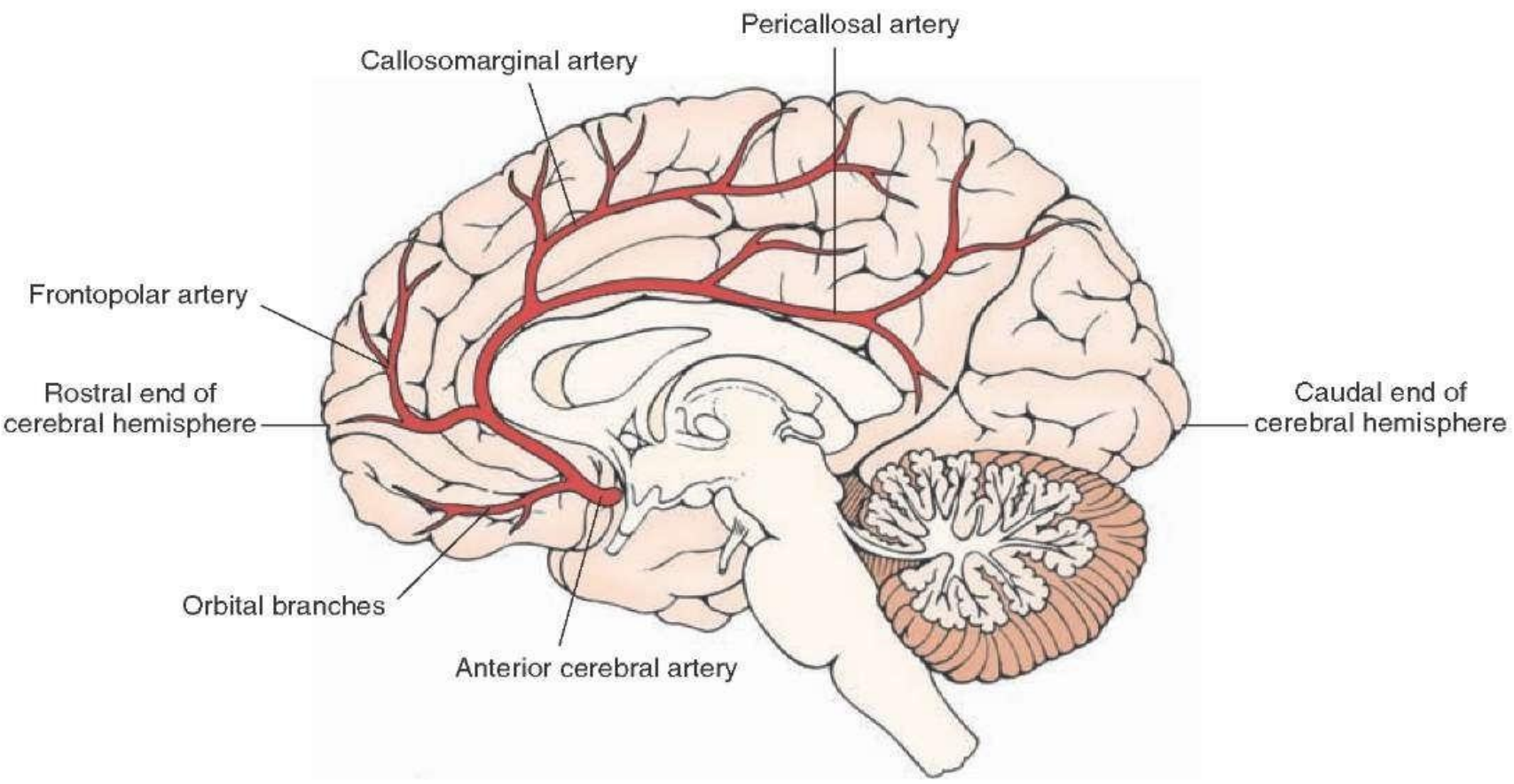
- General Appearance:
  - Separated by a deep midline sagittal fissure – **longitudinal cerebral fissure**
  - In the depth of the fissure, the **corpus callosum** connects the hemispheres across the midline
  - Gyri – the **folds** of the surface of hemispheres
  - Sulci – the **fissures** separate the gyri

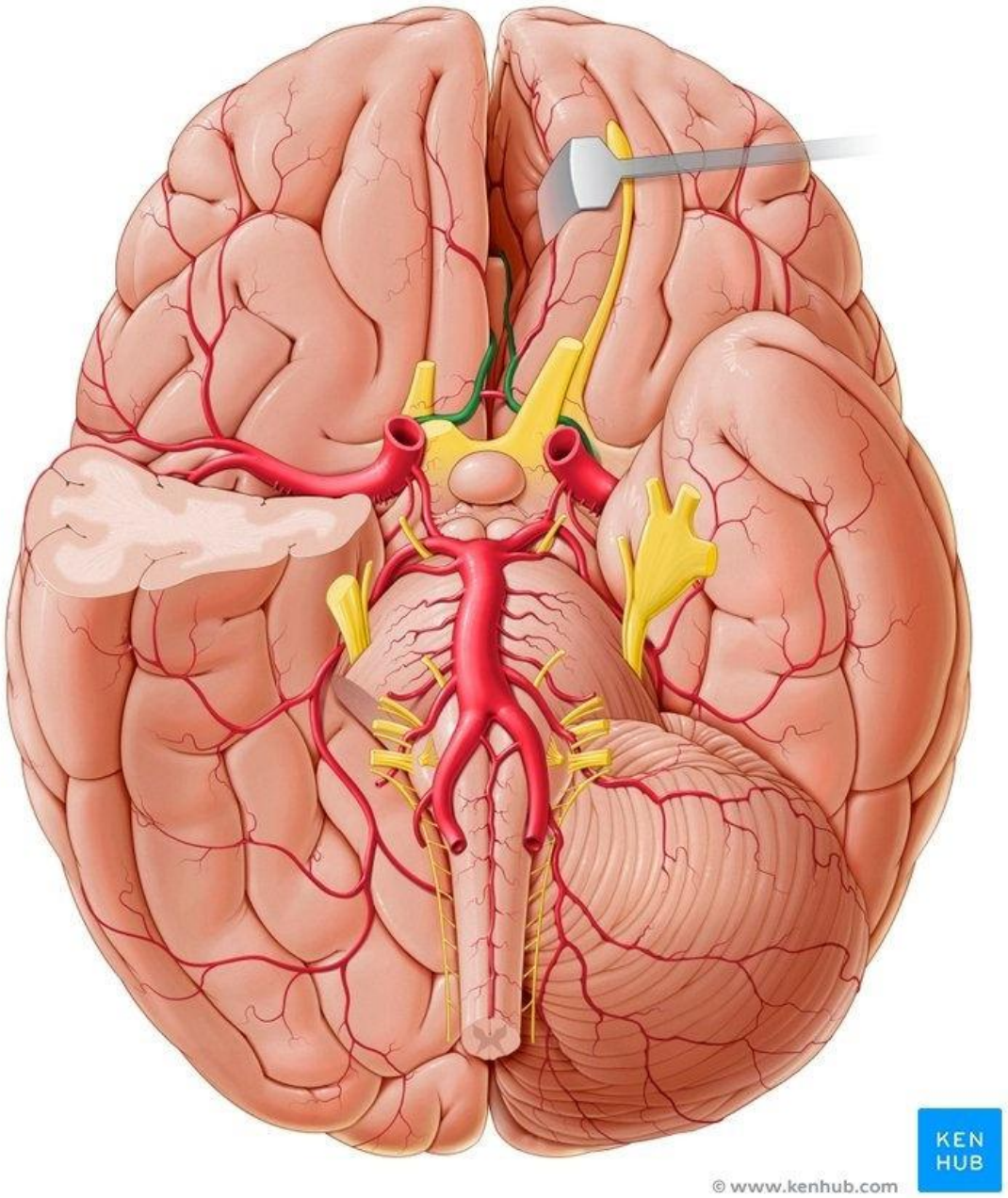


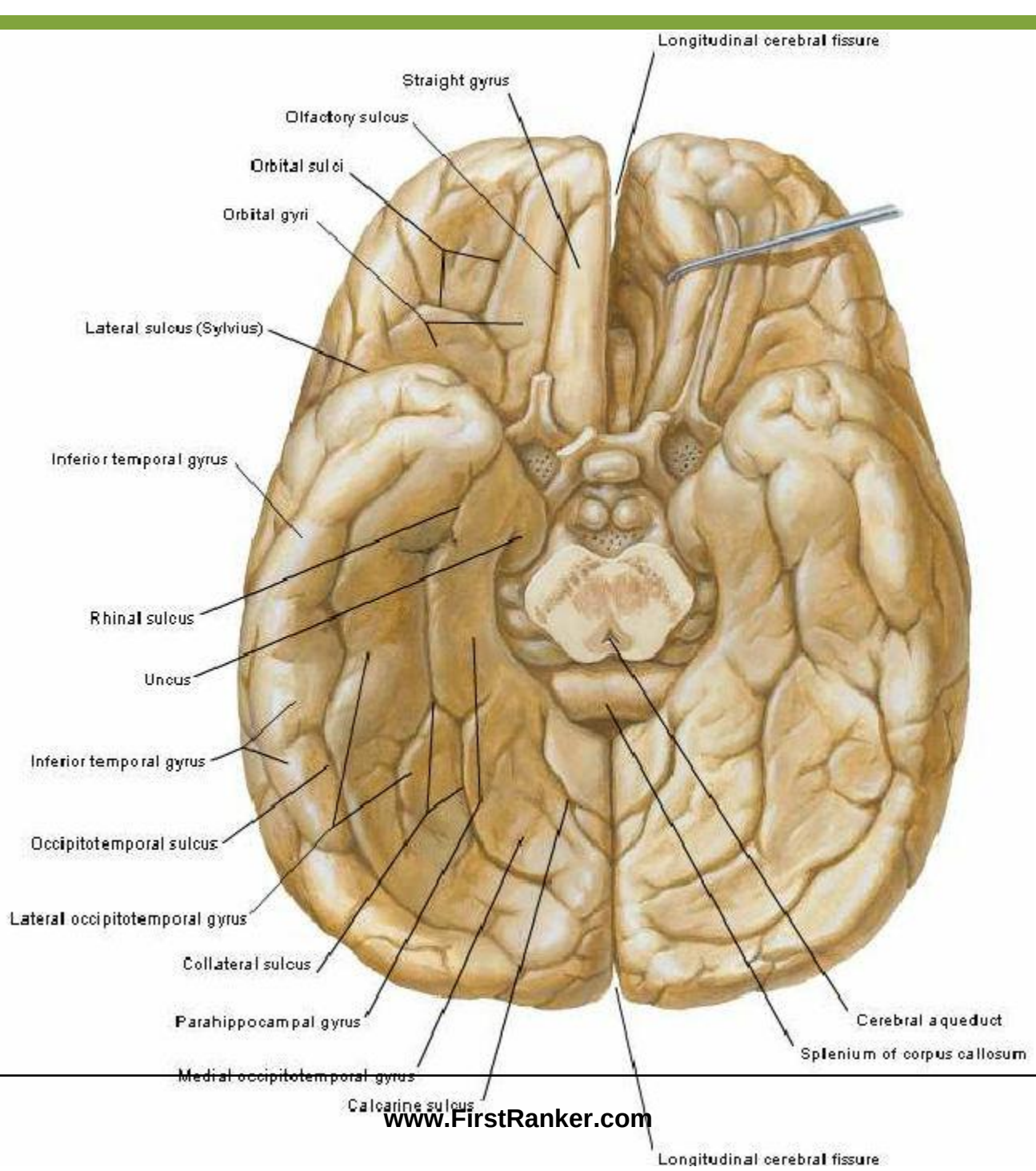
# Surfaces of Cerebral Hemisphere

- **Three surfaces:**
  - Superolateral surface
  - Inferior surface
  - Medial surface





# Borders

1 Superomedial border

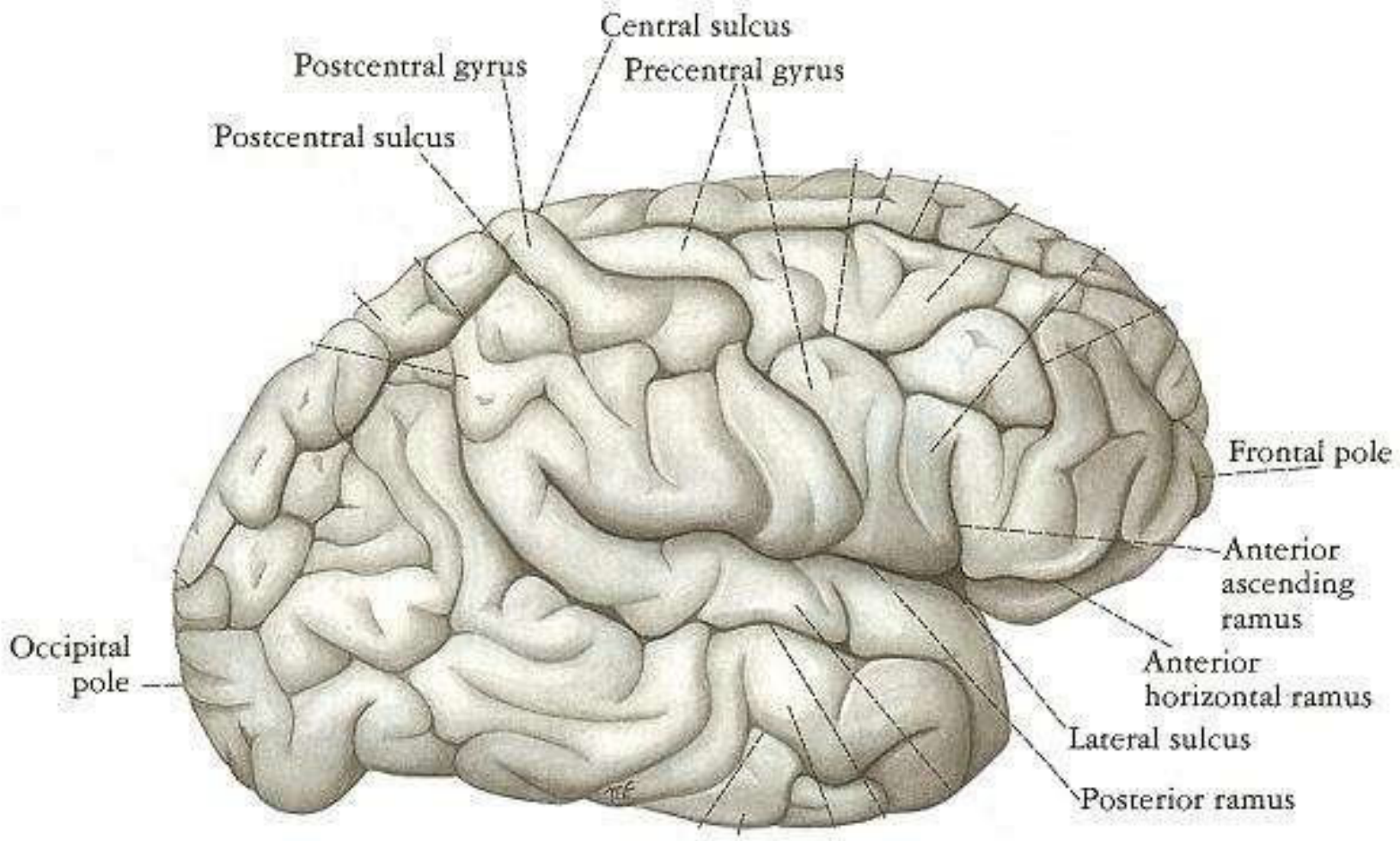
2 Superciliary border and inferolateral border (Shows preoccipital notch)

3. Medial orbital border, hippocampal border or inferomedial border and medial occipital border



# Lobes of Cerebral Hemispheres

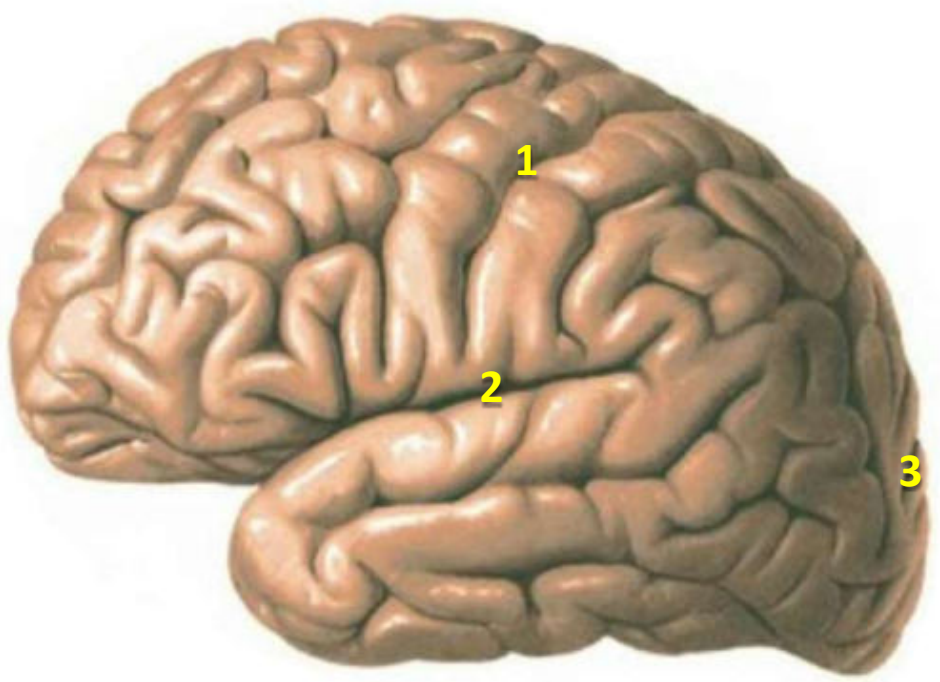
- Cerebral hemispheres are divided into lobes by the **central, parieto-occipital, lateral** and **calcarine sulci**
- Lobes are named according to the cranial bones under which they lie
- Lobes are:
  - Frontal
  - Parietal
  - Temporal
  - Occipital

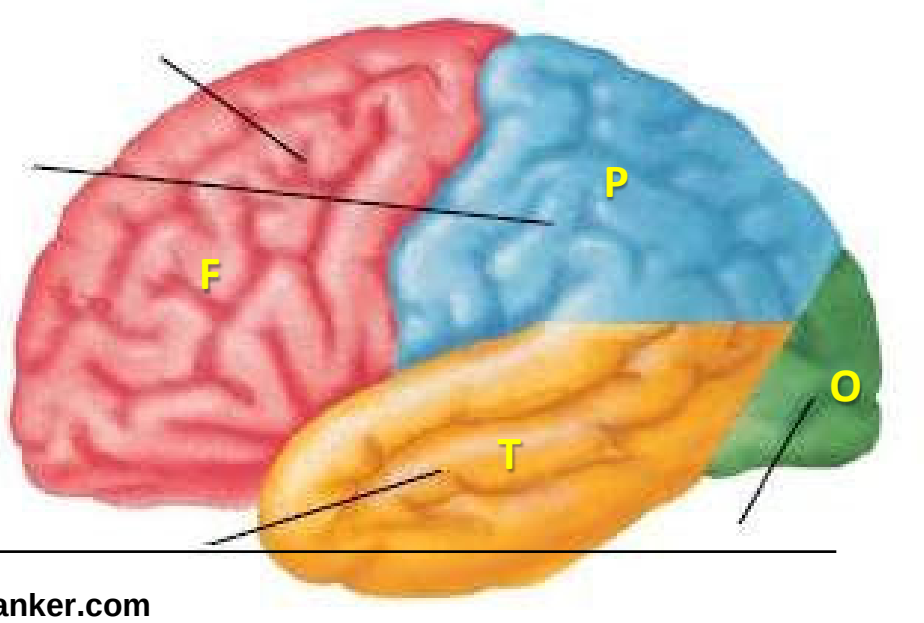



# Cerebral hemisphere

- the essential features can be summarized by stating that:-

1. **the frontal lobe** lies in front of the **central sulcus (1)** and above the **lateral sulcus (2)** .
2. **the parietal lobe** is behind the **central sulcus** and above the lateral sulcus.
3. **the temporal lobe** is below the **lateral sulcus**
4. **the occipital lobe** lies below and behind the **parieto-occipital sulcus (3)** .

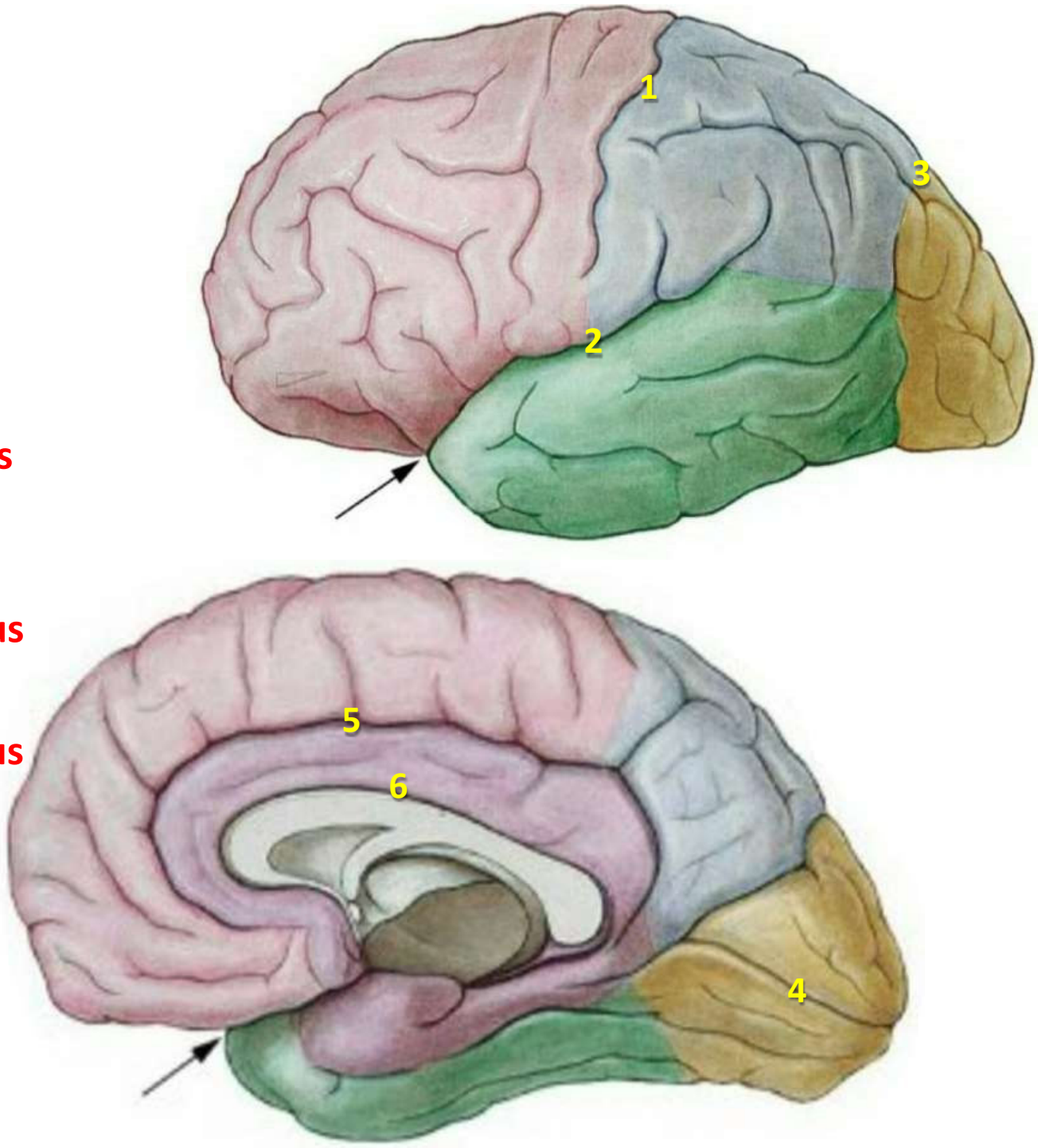


# Main sulci

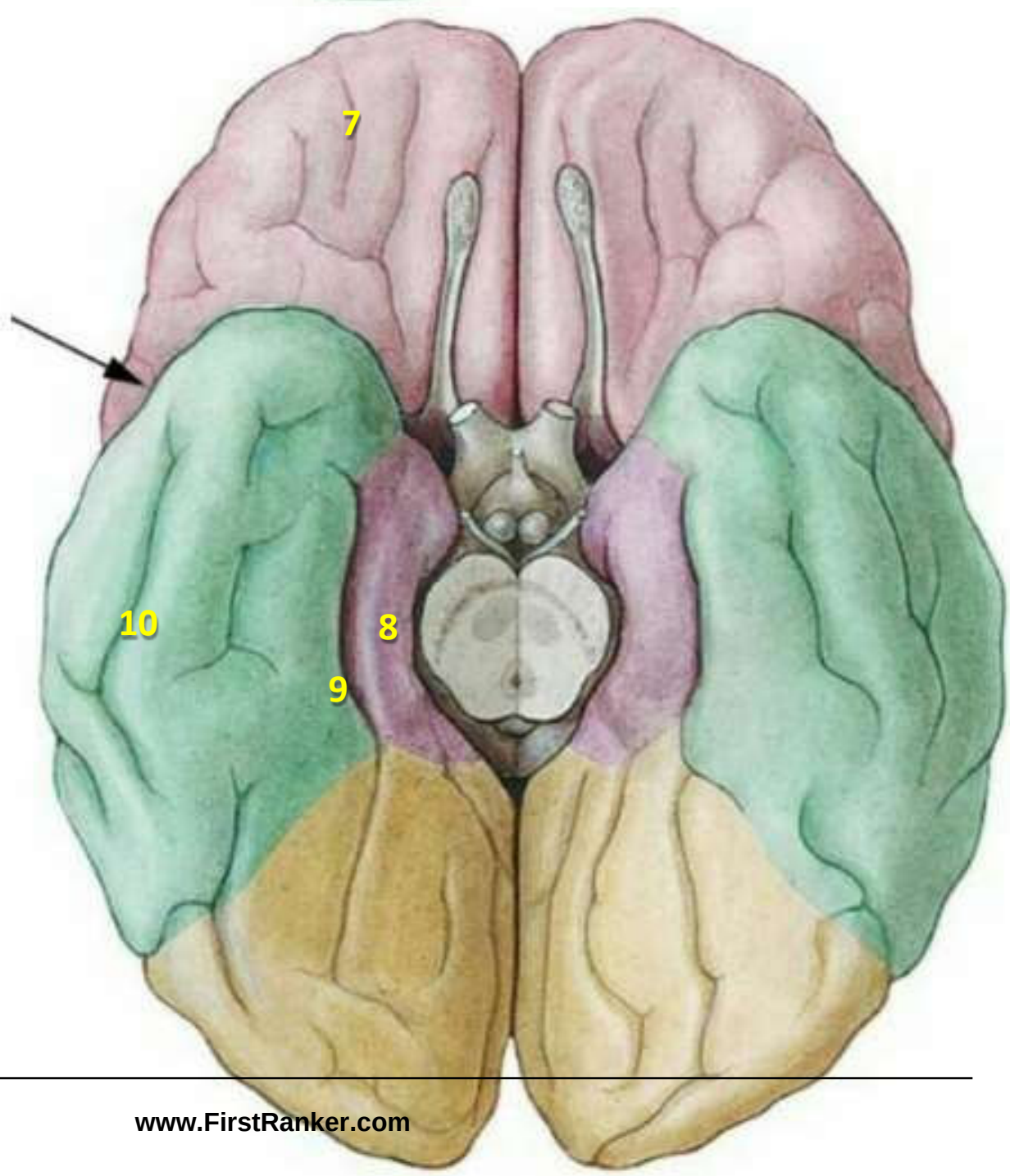
1. Central sulcus
2. Lateral sulcus
3. Parito-occipital sulcus
4. Calcarine sulcus
5. Cingulate sulcus
6. Callsosal sulcus ( Sulcus of corpus callosum )
7. Orbital sulcus
8. Parahippocampal sulcus
9. Collateral sulcus
10. Occipiti-temporal sulcus

- First (6) can be seen in sagittal sections
- Last 4 seen only in axial sections

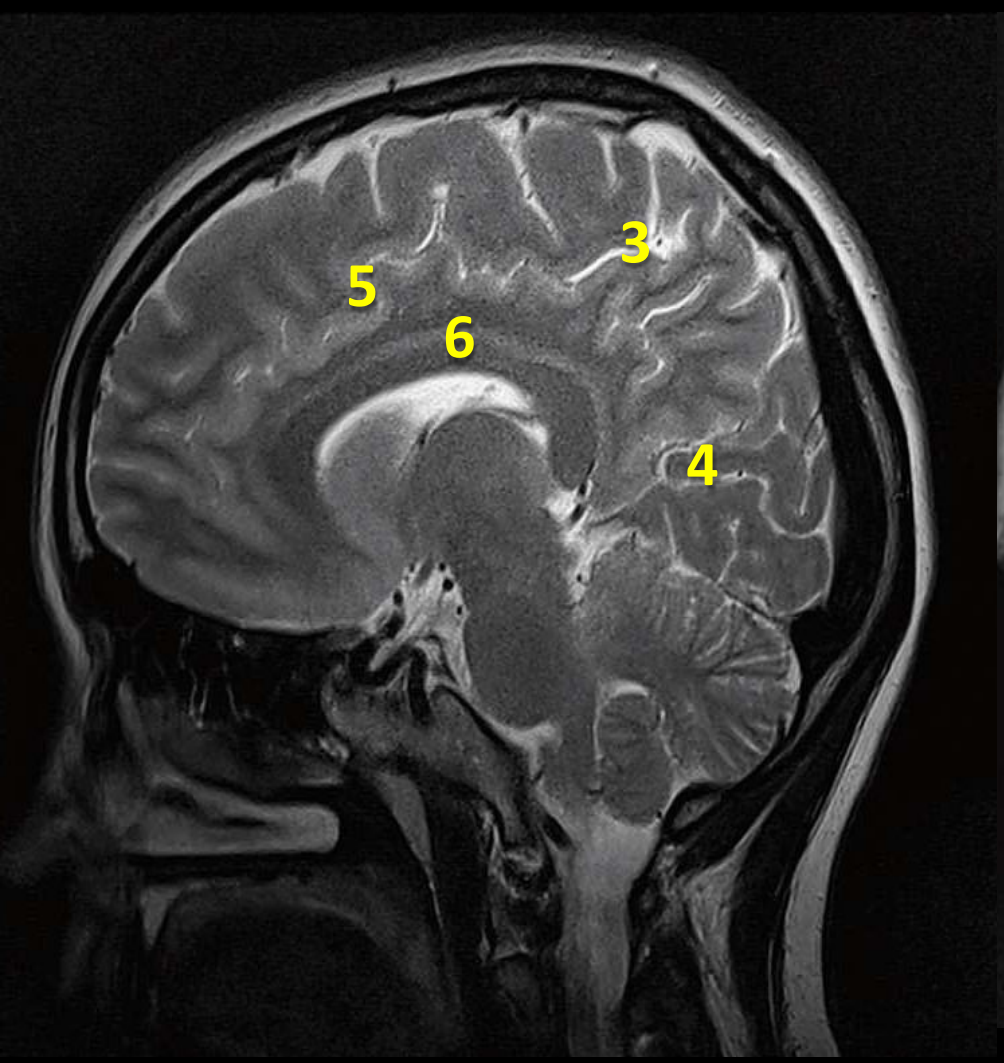



# Main sulci

1. Central sulcus
2. Lateral sulcus
3. Parito-occipital sulcus
4. Calcarine sulcus
5. Cingulate sulcus
6. Callsosal sulcus ( Sulcus of corpus callosum )
7. Orbital sulcus
8. Parahippocampal sulcus
9. Collateral sulcus
10. Occipiti-temporal sulcus

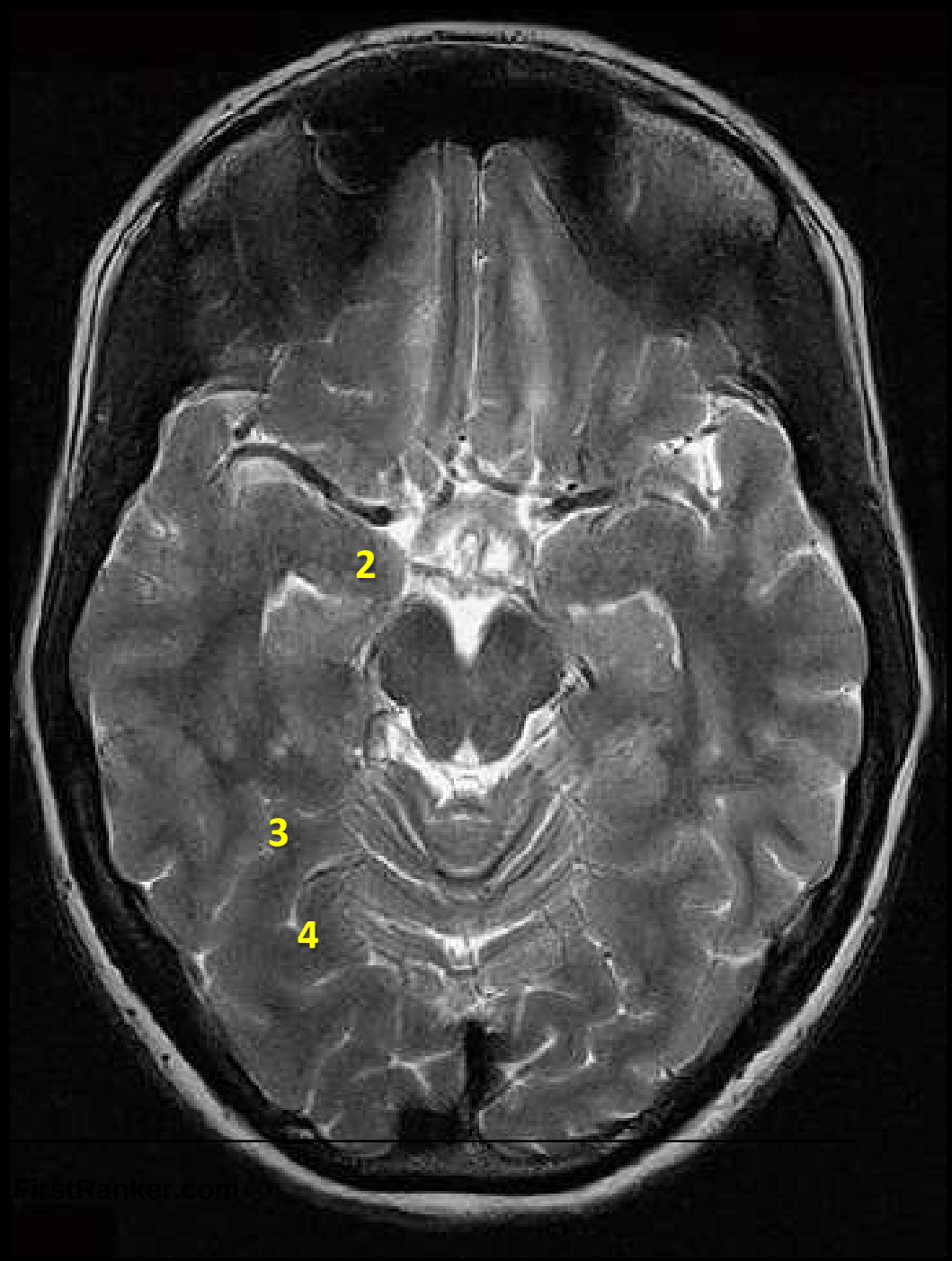


1. Central sulcus 2. Lateral sulcus 3. Parito-occipital sulcus
4. Calcarine sulcus 5. Cingulate sulcus
6. Callsosal sulcus ( Sulcus of corpus callosum )



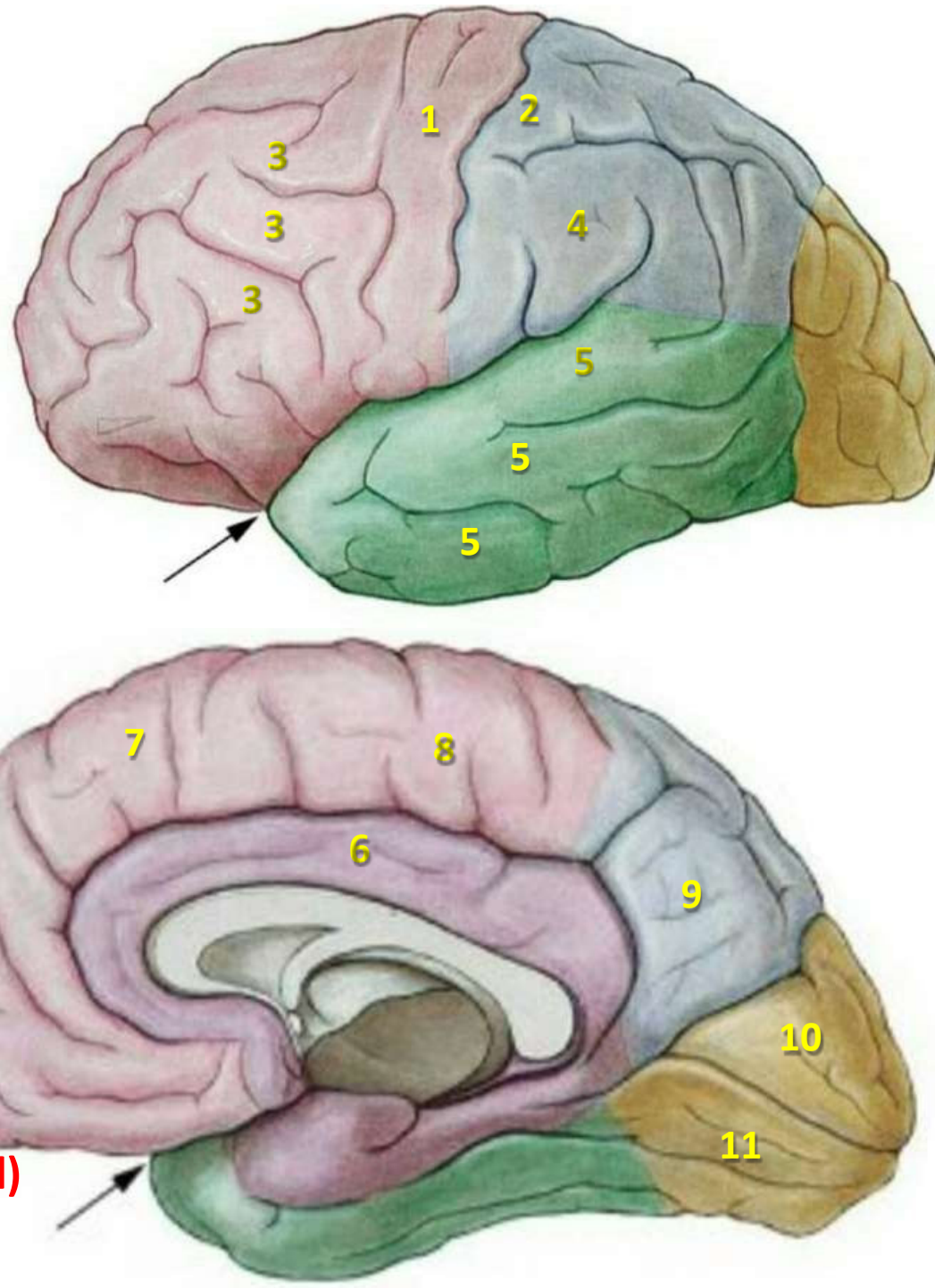


2. Parahippocampal sulcus
3. Collateral sulcus
4. Occipiti-temporal sulcus



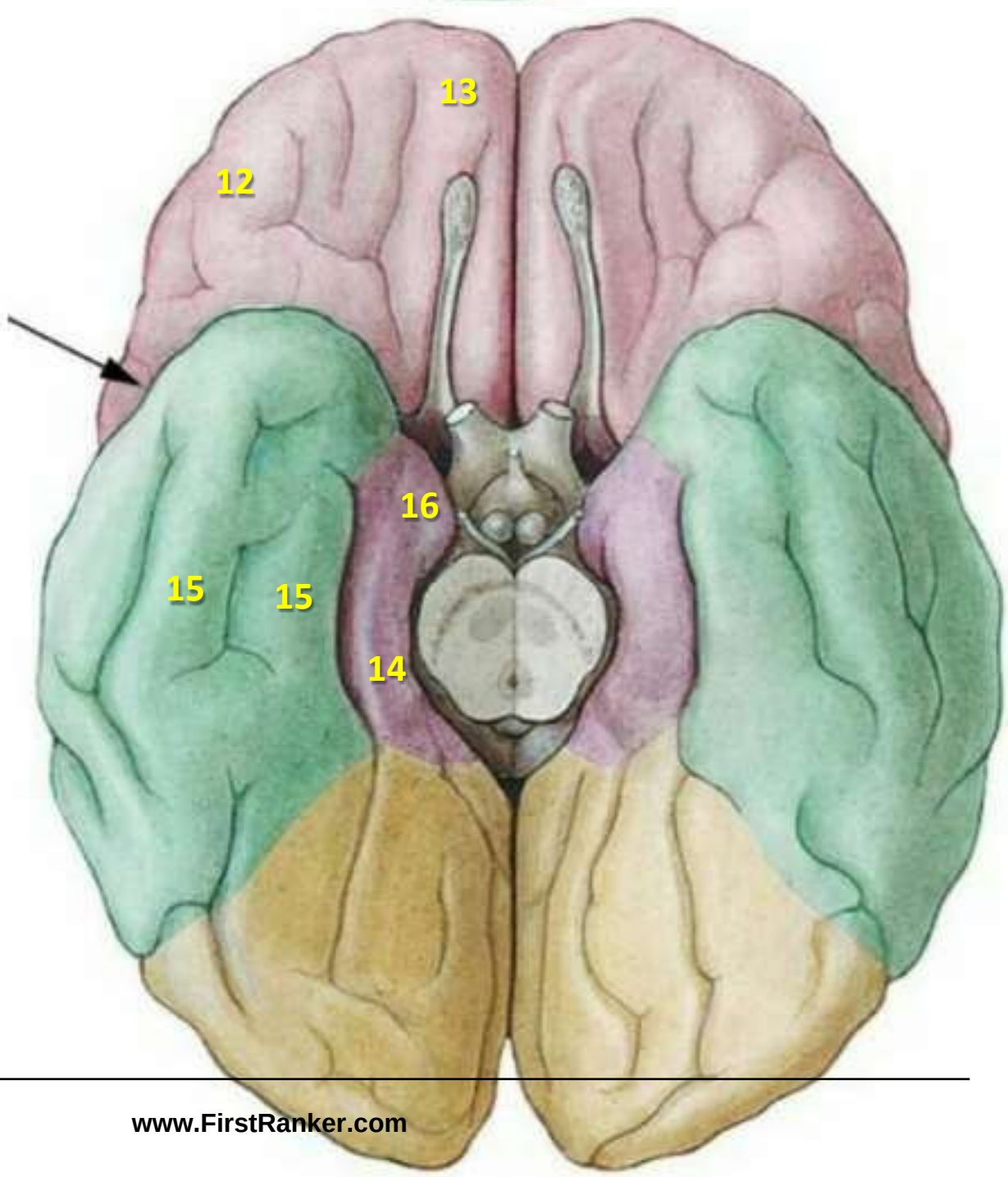
# Main gyri

1. Precentral
2. Postcentral
3. Frontal (superior, middle & inferio
4. Parietal (superior & inferior) 5-
5. Temporal (superior, middle inferior)
6. Callosal
7. Medial frontal
8. Paracentral lobule
9. Precuneus
10. Cuneus
11. Lingual gyrus
12. Orbital gyri
13. Gyrus rectus
14. Parahippocampal
15. Occipitotemporal (medial & lateral)
16. Uncus




# Main gyri

1. Precentral
2. Postcentral
3. Frontal (superior, midd
4. Parietal (superior & inf
5. Temporal (superior, inferior)
6. Callosal
7. Medial frontal
8. Paracentral lobule
9. Precuneus
10. Cuneus
11. Lingual gyrus
12. Orbital gyri
13. Gyrus rectus
14. Parahippocampal
15. Occipitotemporal (med
16. Uncus




1. Rectus gyrus
2. Uncus ( parahippocampus gyrus )
3. Hippocampal gyrus



# Main sulci

- **Central sulcus**
  - Indents the superior medial border of the hemisphere, 1 cm behind the mid-point
  - It runs downward, forward and toward the lateral sulcus across the lateral aspect of the hemisphere
  - The central sulcus is the only sulcus that indents the superior medial border

# Main sulci (Cont'd)

- **Lateral sulcus**

- Deep cleft on the inferior and lateral surfaces of the cerebral hemisphere
- It consists of a short stem and three rami - Anterior horizontal , anterior ascending and posterior



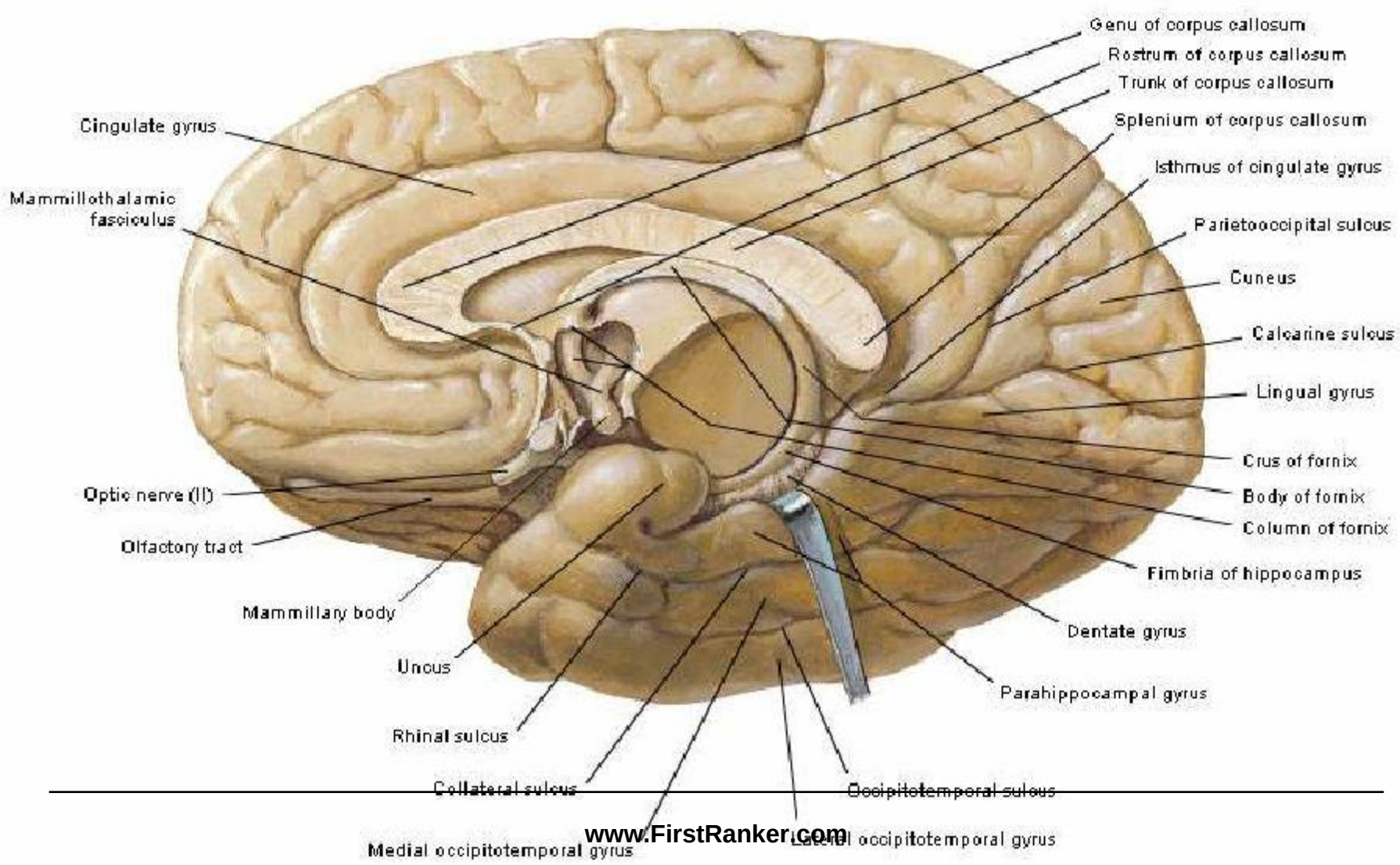
# Main sulci (Cont'd)

- **Parieto-occipital sulcus:**

- Begins on the superior medial border of the hemisphere, about 5 cm anterior to the occipital pole
- It passes downward and anteriorly on the medial surface to meet the calcarine sulcus

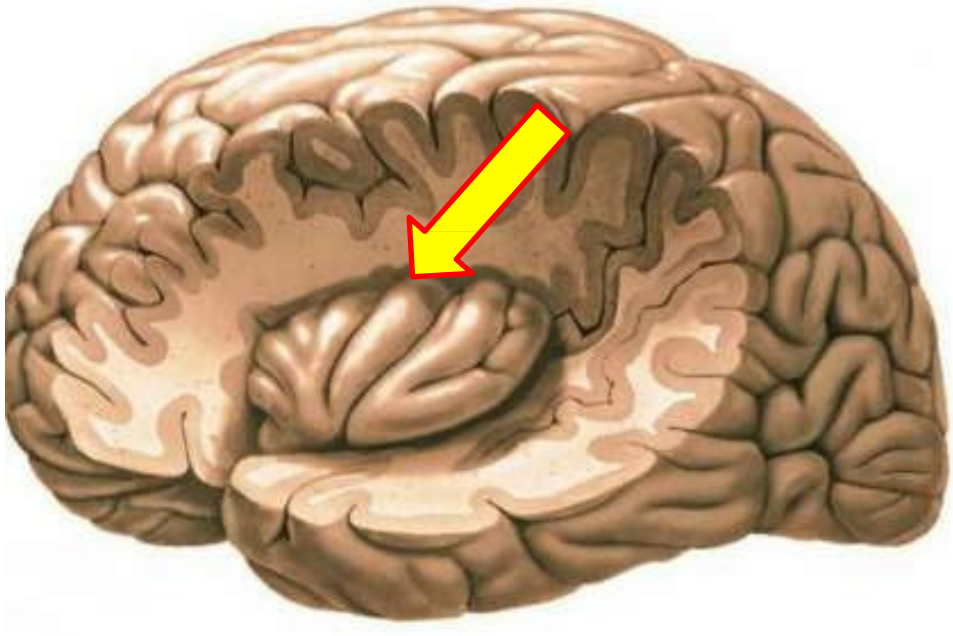
# Main sulci (Cont'd)

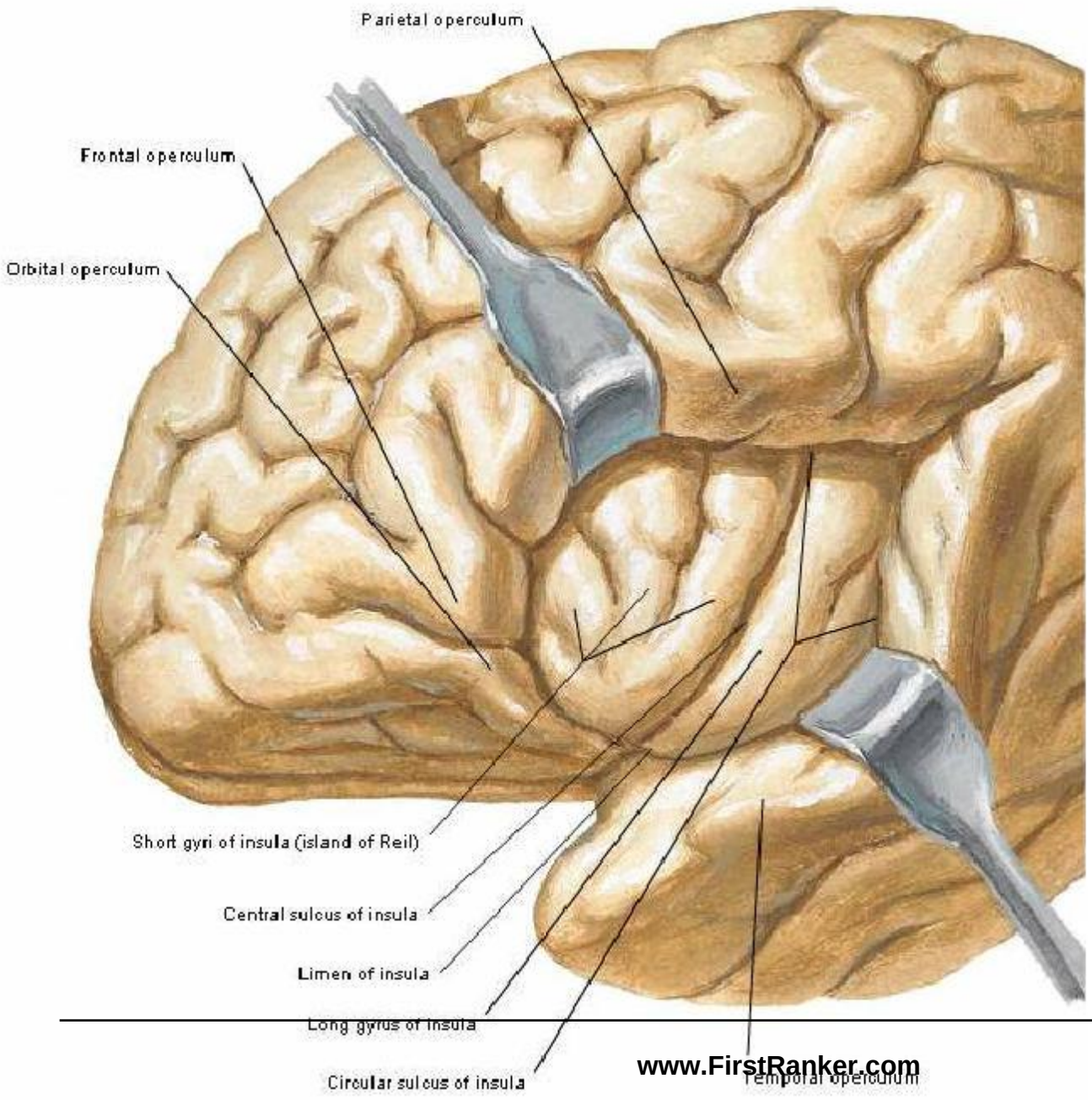
Calcarine Sulcus- Medial surface



# Insula/Island Of Reil

- portion of the cerebral cortex folded deep within the lateral sulcus.
- Play a role in consciousness and emotions
- The cortical area overlying the insula toward the lateral surface of the brain is the operculum (meaning lid).
- The opercula are formed from parts of the enclosing frontal, temporal, and parietal lobes.
- Insulaa is surrounded by circular sulcus ( arrow !! )





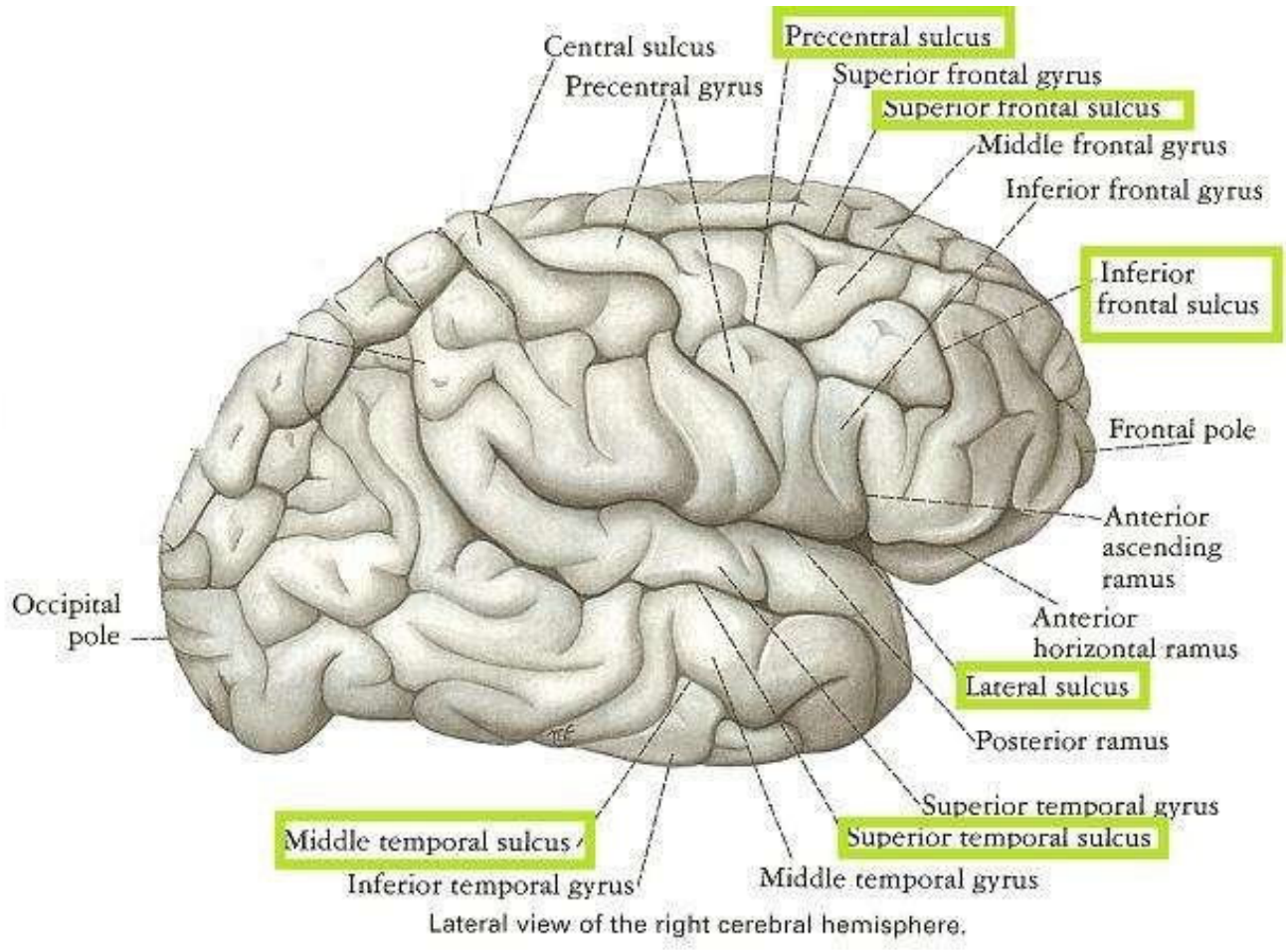

Superior surface of temporal operculum presents anterior and posterior transverse temporal gyri

# Other Sulci and Gyri



## Superolateral surface

- **Frontal lobe** – anterior to central sulcus and superior to lateral sulcus
- Superolateral surface of frontal lobe is divided by **three sulci** into **four gyri**
  - Precentral sulcus and gyrus
  - Superior and inferior frontal sulci
  - Superior, middle and inferior frontal gyri
  - Anterior and ascending rami of lateral sulcus divide inferior frontal gyrus into
  - PARS ORBITALIS, PARS TRIANGULARIS PARS OPERCULARIS

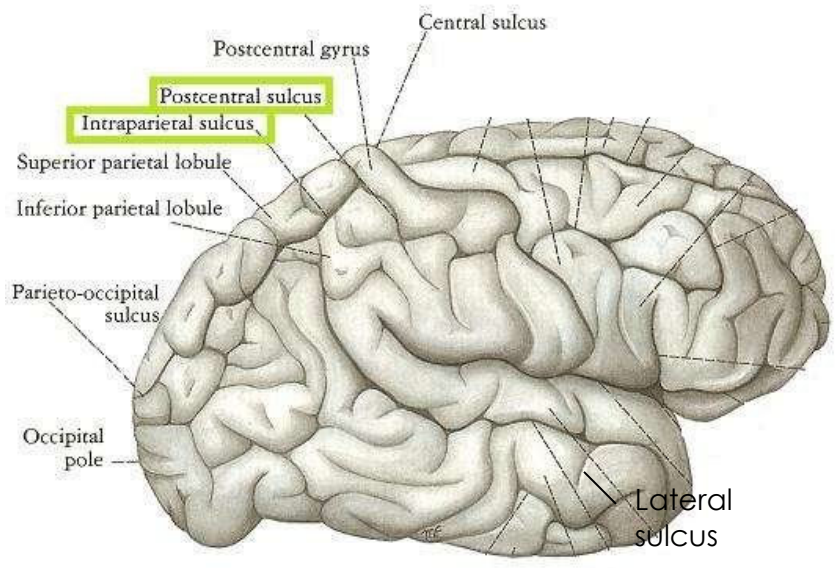


Lateral view of the right cerebral hemisphere.



# Superolateral surface

- **Parietal lobe** – POST CENTRAL SULCUS AND GYRUS
  - INTRAPARIETAL SULCUS AND SUPERIOR AND INFERIOR PARIETAL LOBULE



Lateral view of the right cerebral hemisphere.

# Superolateral surface

- PARIETAL LOBE-Few sulci extend into inferior parietal lobule and divided into
- SUPRAMARGINAL GYRUS AROUND LATERAL SULCUS
- ANGULAR GYRUS AROUND SUPERIOR TEMPORAL SULCUS
- ARCUS TEMPORO-OCCIPITALIS AROUND INFERIOR TEMPORAL SULCUS



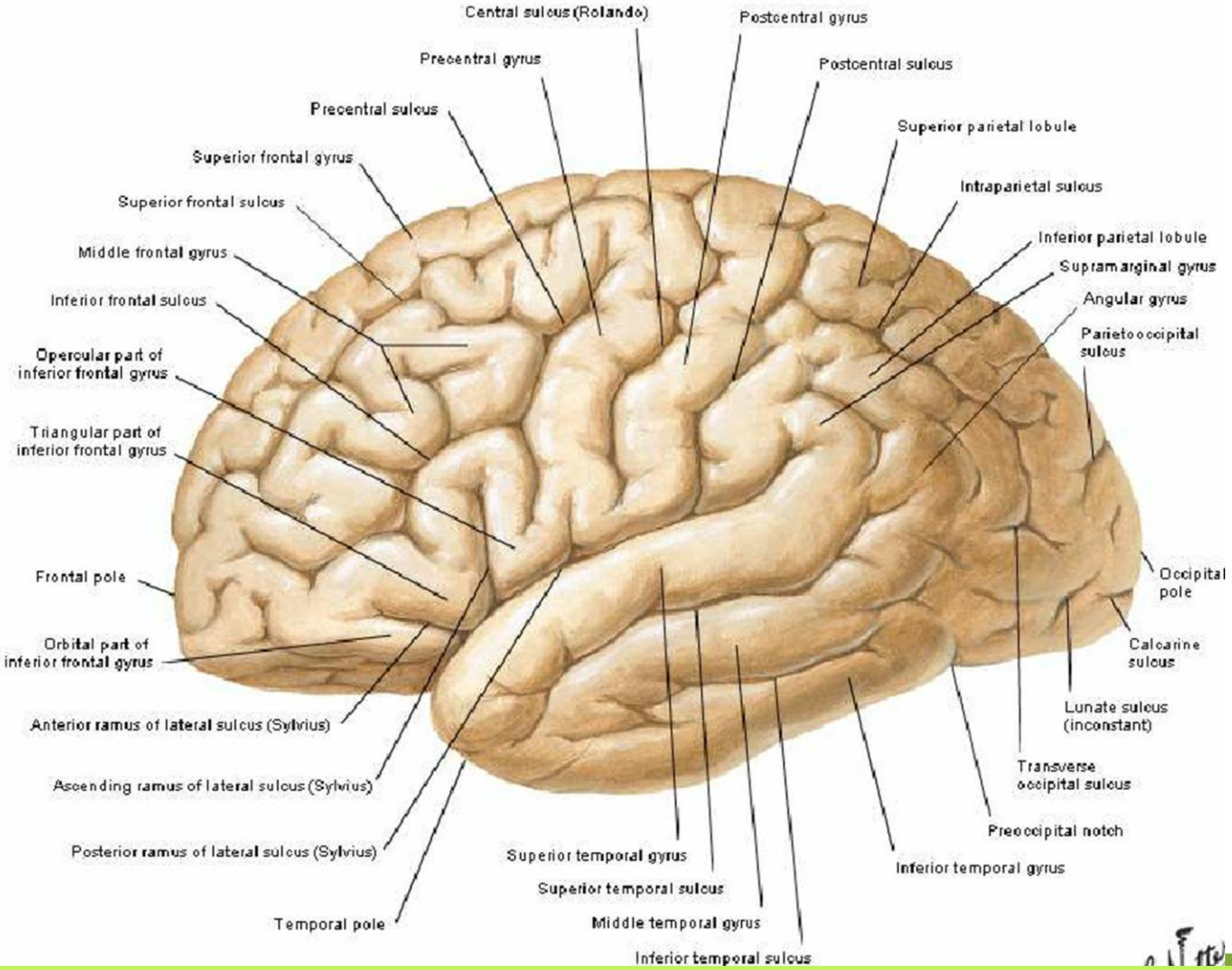
# Superolateral surface

- **Temporal lobe** – inferior to lateral sulcus
- Two sulci – SUPERIOR AND INFERIOR SULCUS

Three gyri- SUPERIOR, MIDDLE AND INFERIOR TEMPORAL GYRI

Superior surface of temporal operculum (Superior temporal gyrus)presents anterior and posterior transverse temporal gyri. Anterior gyrus forming primary auditory area, also called

HESCHL'S GYRUS



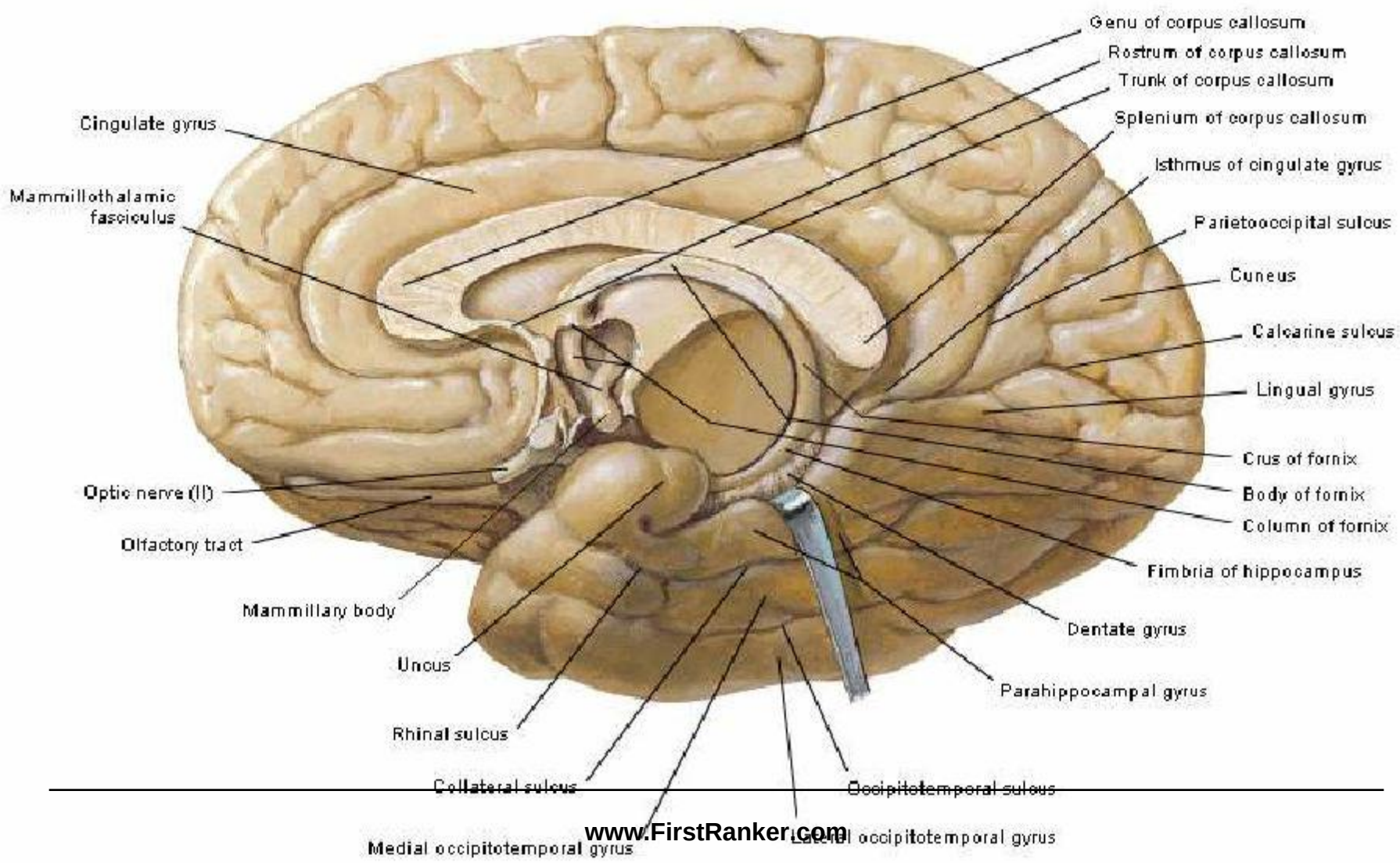

# Superolateral surface

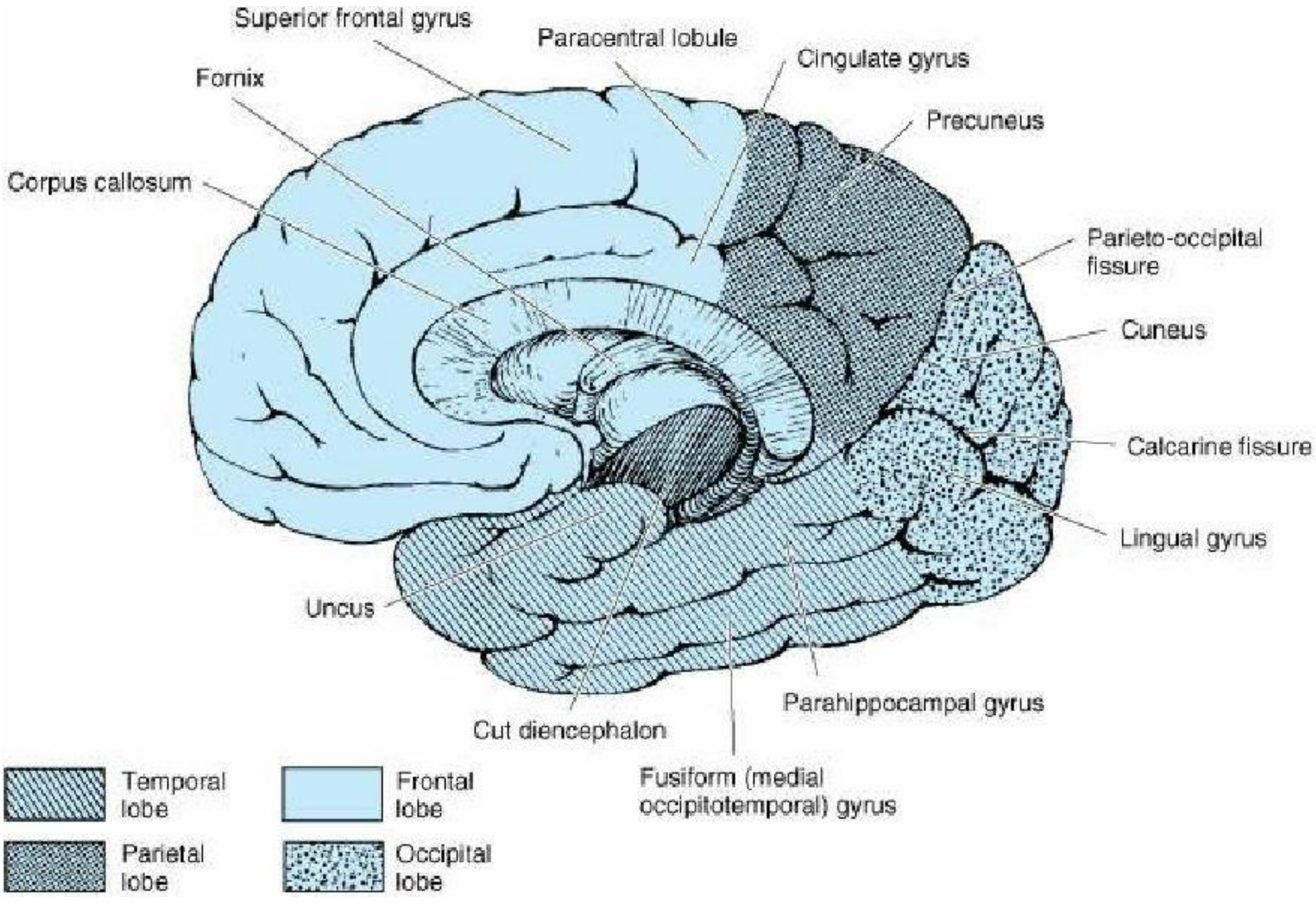
- **Occipital lobe** – small area behind the parieto-occipital sulcus
- LATERAL OCCIPITAL SULCUS
- LUNATE SULCUS
- TRANSVERSE OCCIPITAL SULCUS

# MEDIAL SURFACE

CINGULATE SULCUS AND CINGULATE GYRUS
CALLOSAL SULCUS
PARACENTRAL LOBULE(CORTICAL CENTRE OF MICTURATION AND DEFECATION) AND MEDIAL FRONTAL GYRUS

CALCARINE SULCUS AND PARIETO-OCCIPITAL SULCUS
SUPRASPLENIAL SULCUS IN PRECUNEUS






# INFERIOR SURFACE

ORBITAL SURFACE- OLFACTORY SULCUS, GYRUS RECTUS

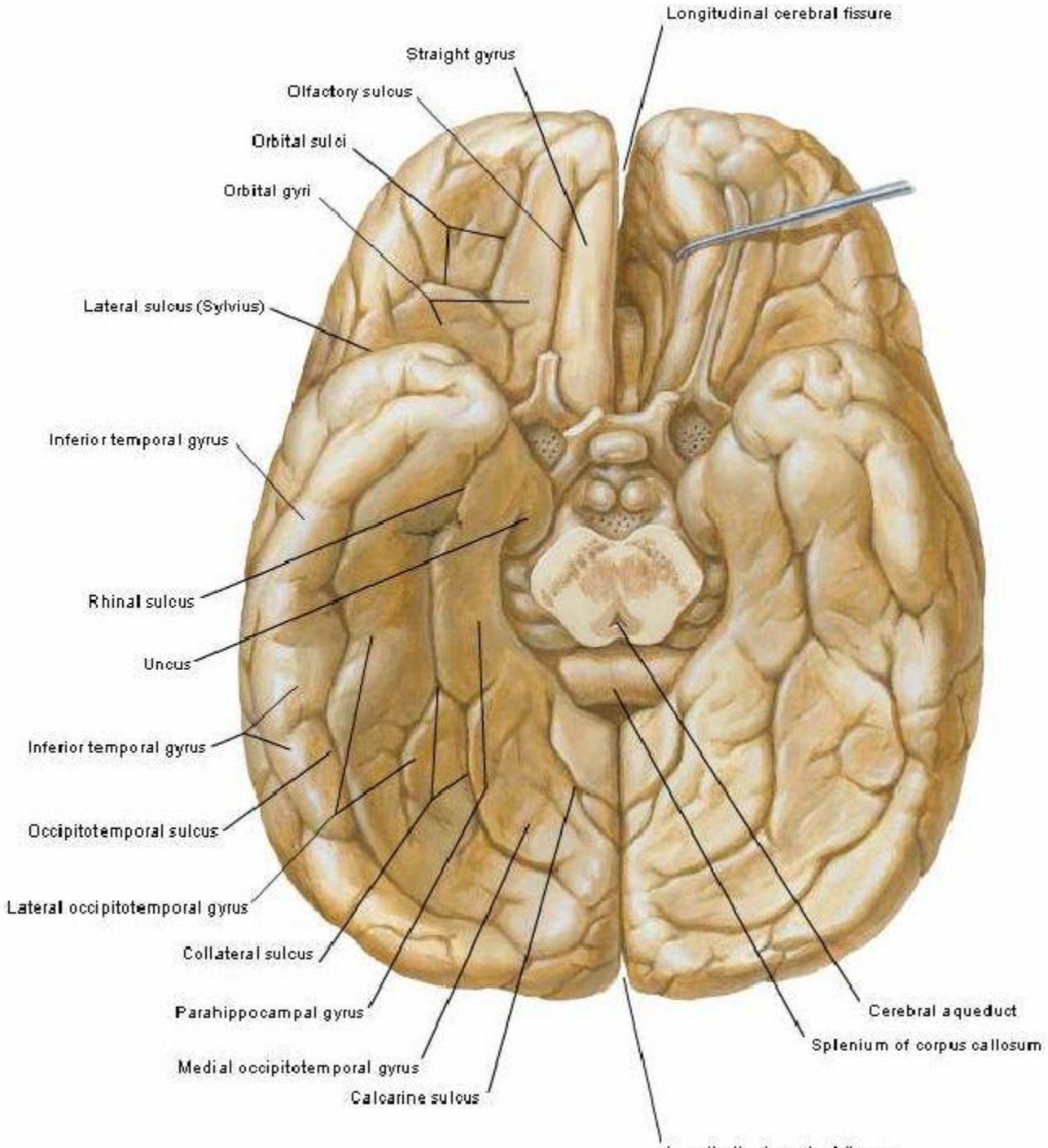
ORBITAL SULCUS AND ORBITAL GYRI

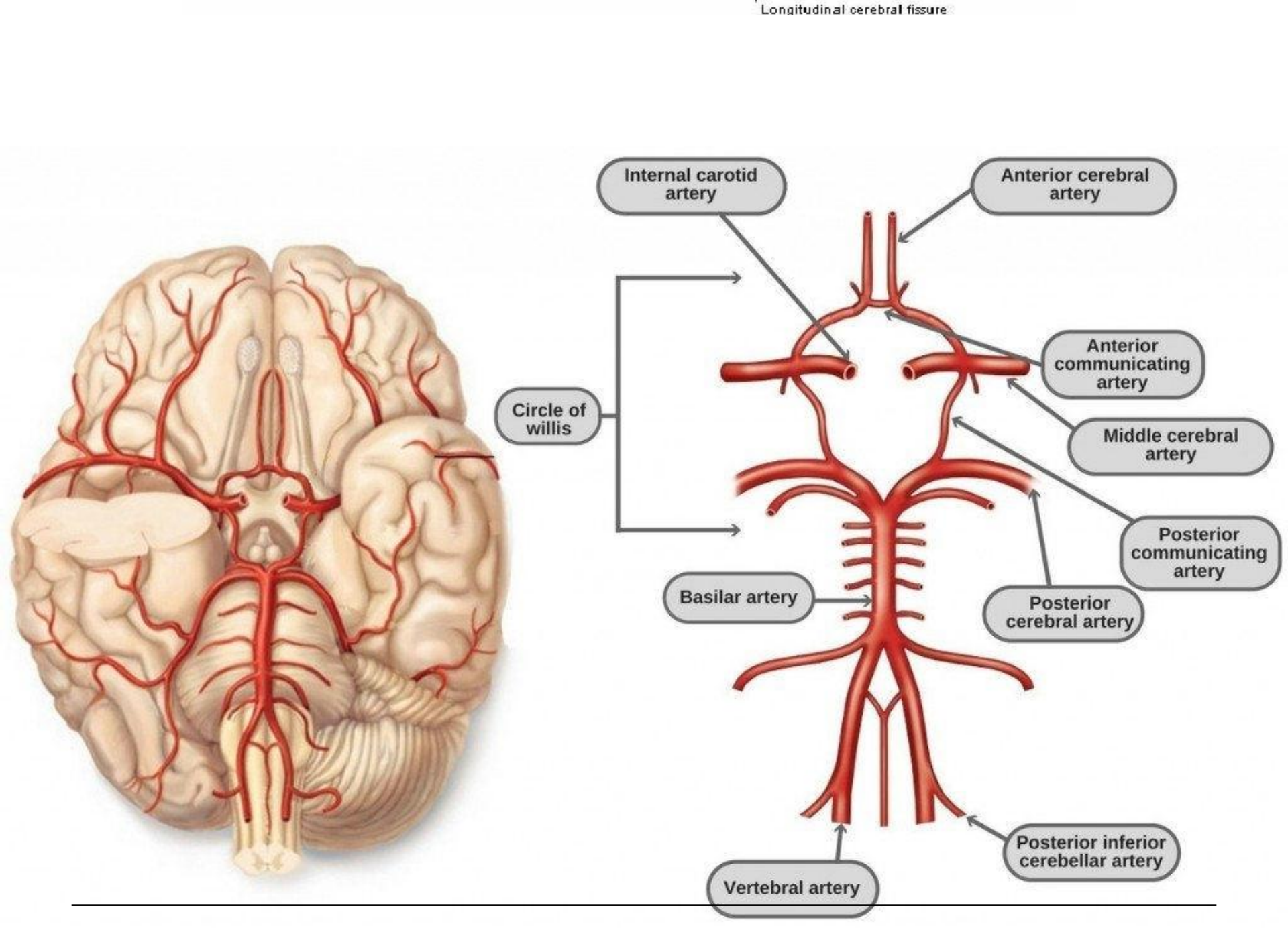
TENTORIAL SURFACE- MEDIAL COLLATERAL SULCUS AND LATERAL OCCIPITO-TEMPORAL SULCUS

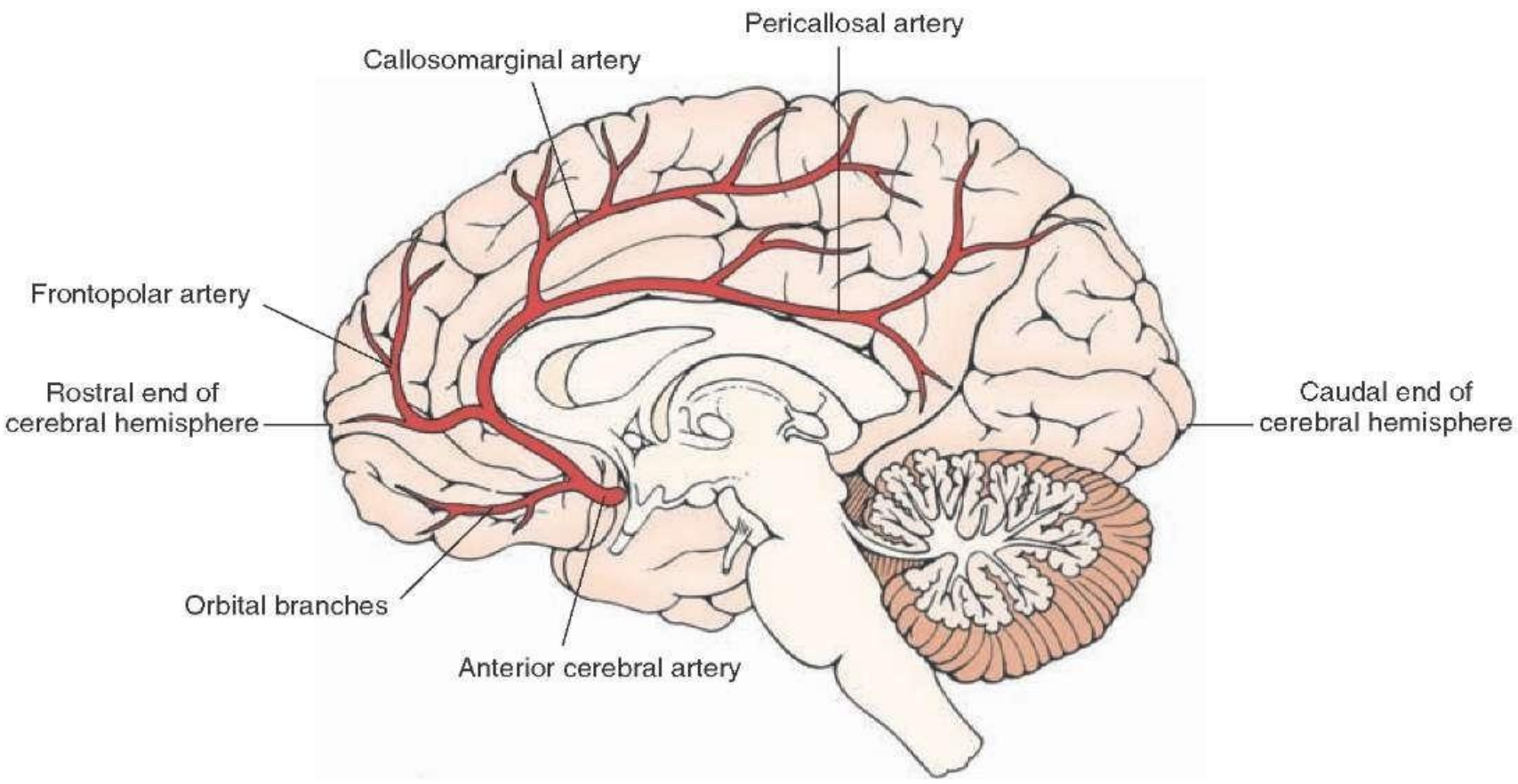
LINGUAL GYRUS – BETWEEN COLLATERAL SULCUS AND CALCARINE SULCUS

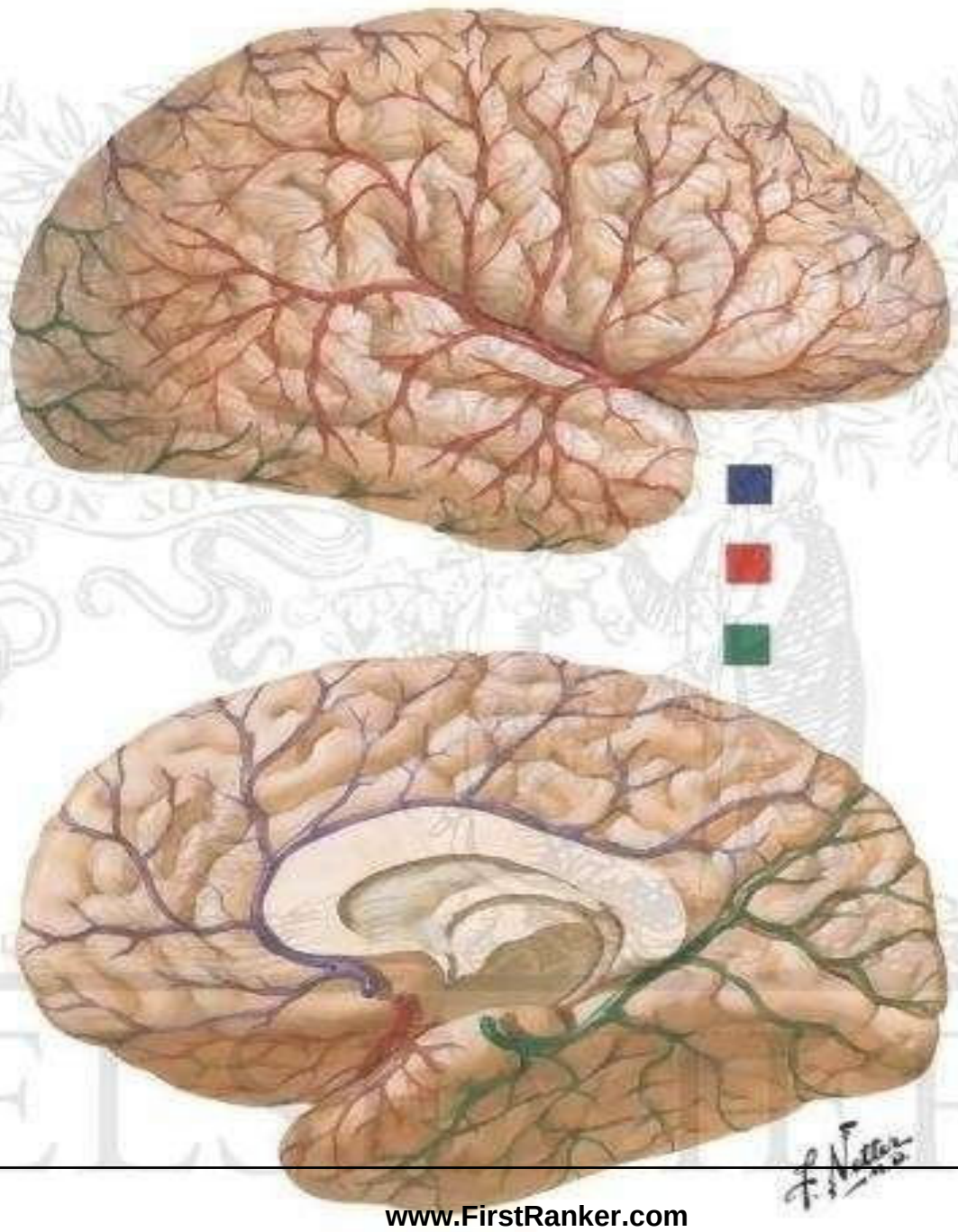
LINGUAL GYRUS ANTERIORLY CONTINUE WITH PARAHIPPOCAMPAL GYRUS WHOSE ANTERIOR END HOOK LIKE LIMITED BY RHINAL SULCUS- UNCUS

MEDIAL AND LATERAL OCCIPITO- TEMPORAL GYRUS





# BLOOD SUPPLY- SUPEROLATERAL SURFACE

MIDDLE CEREBRAL ARTERY EXCEPT

STRIP ALONG SUPEROMEDIAL BORDER FROM FRONTAL POLE TO PARIETO OCCIPITAL SULCUS BY ACA

OCCIPITAL LOBE AND INFERIOF TEMPORAL GYRUS EXCLUDING TEMPORAL POLE BY PCA

# BLOOD SUPPLY- INFERIOR SURFACE

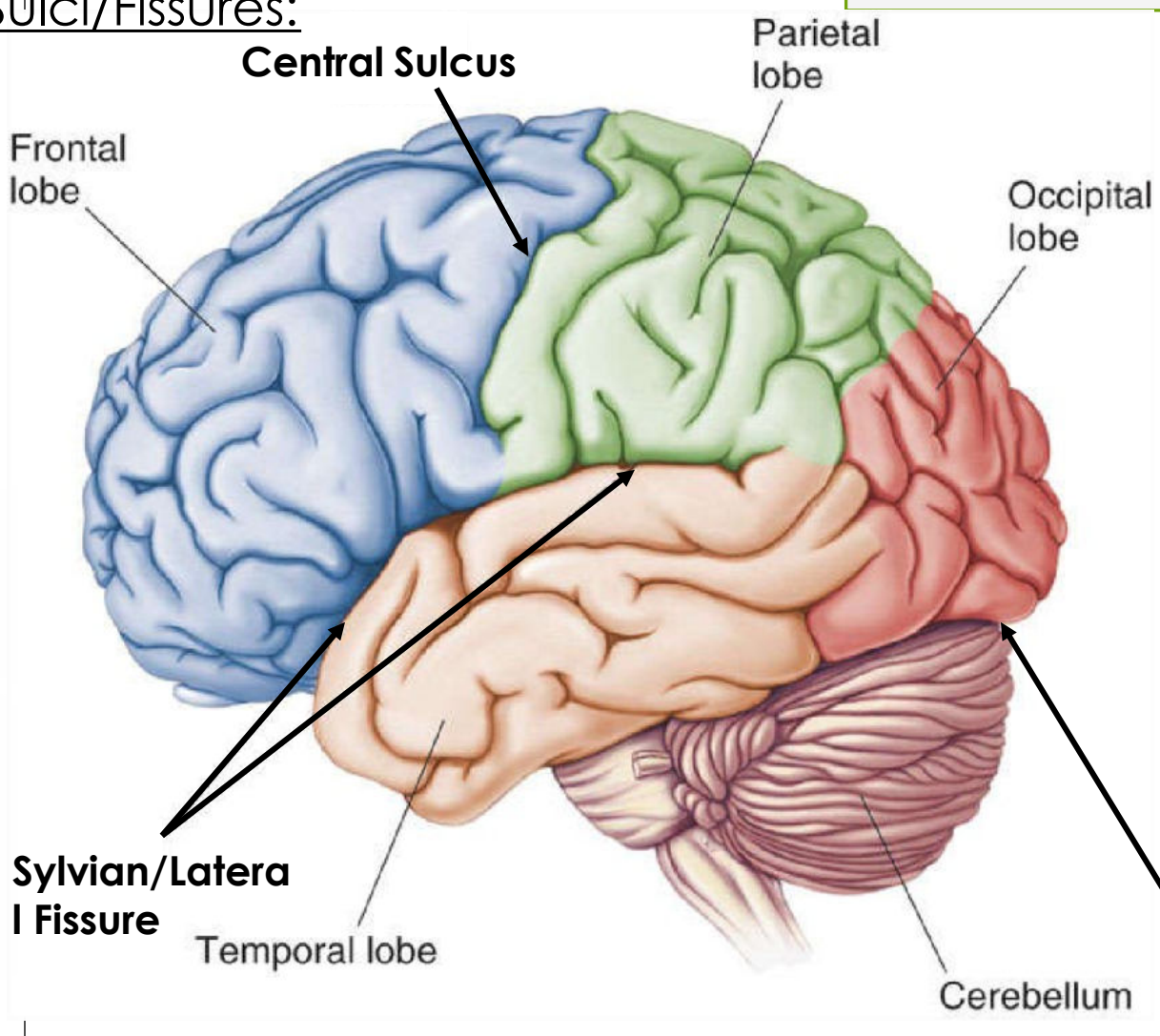
ACA- MEDIAL PART OF ORBITAL SURFACE

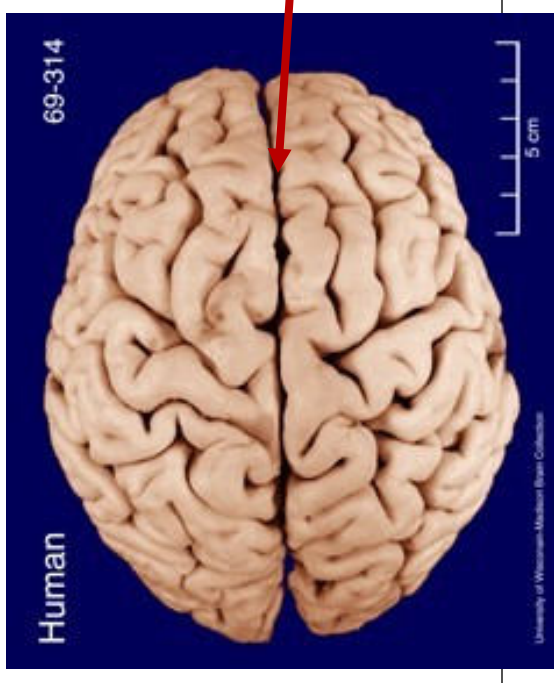
MCA-LATERAL PART OF ORBITAL SURFACE AND TEMPORAL POLE

PCA- TENTORIAL SURFACE

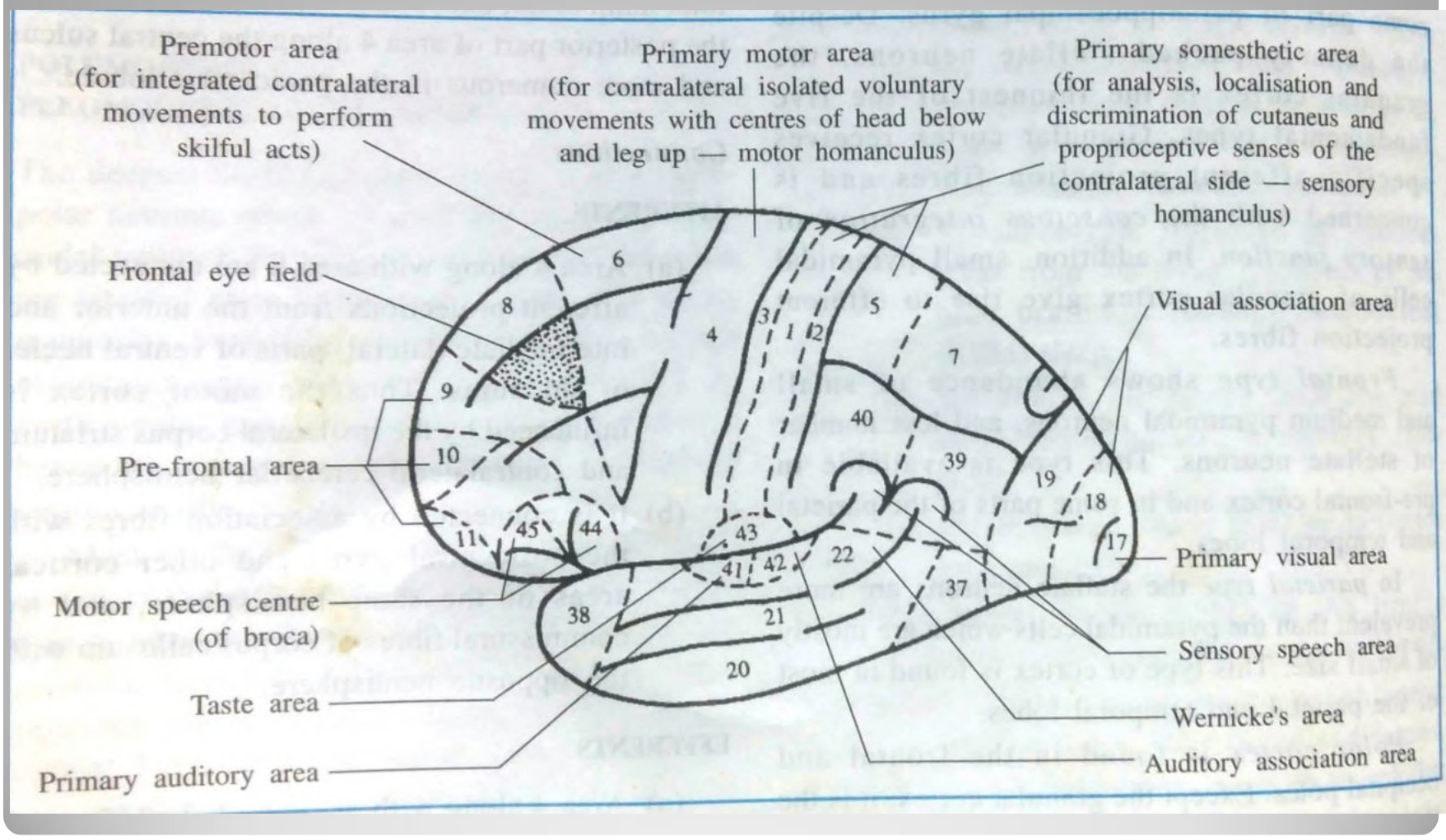
# BROADMANS AREAS AND FUNCTIONAL AREAS OF CEREBRAL HEMISPHERE

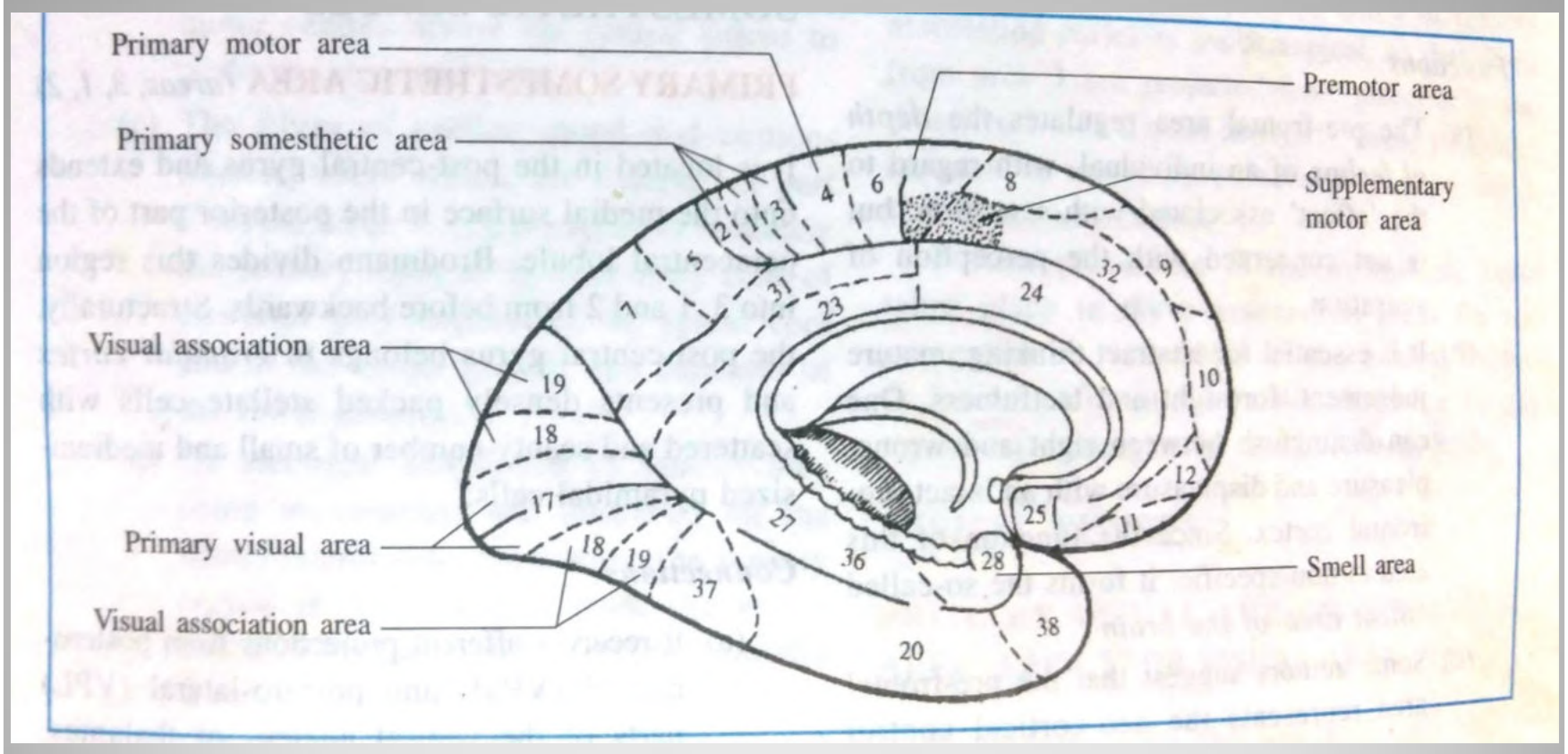
Specific Sulci/Fissures:



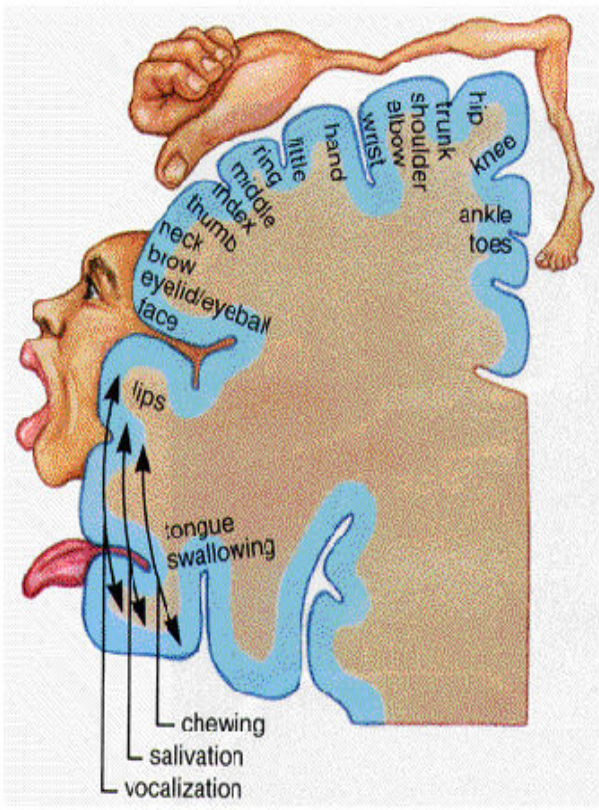

http://www.bioon.com/book/biology/whole/image/d/d... http://www.dalbsoutss.eq.edu.au/Sheepbrains_Me/human_bra...



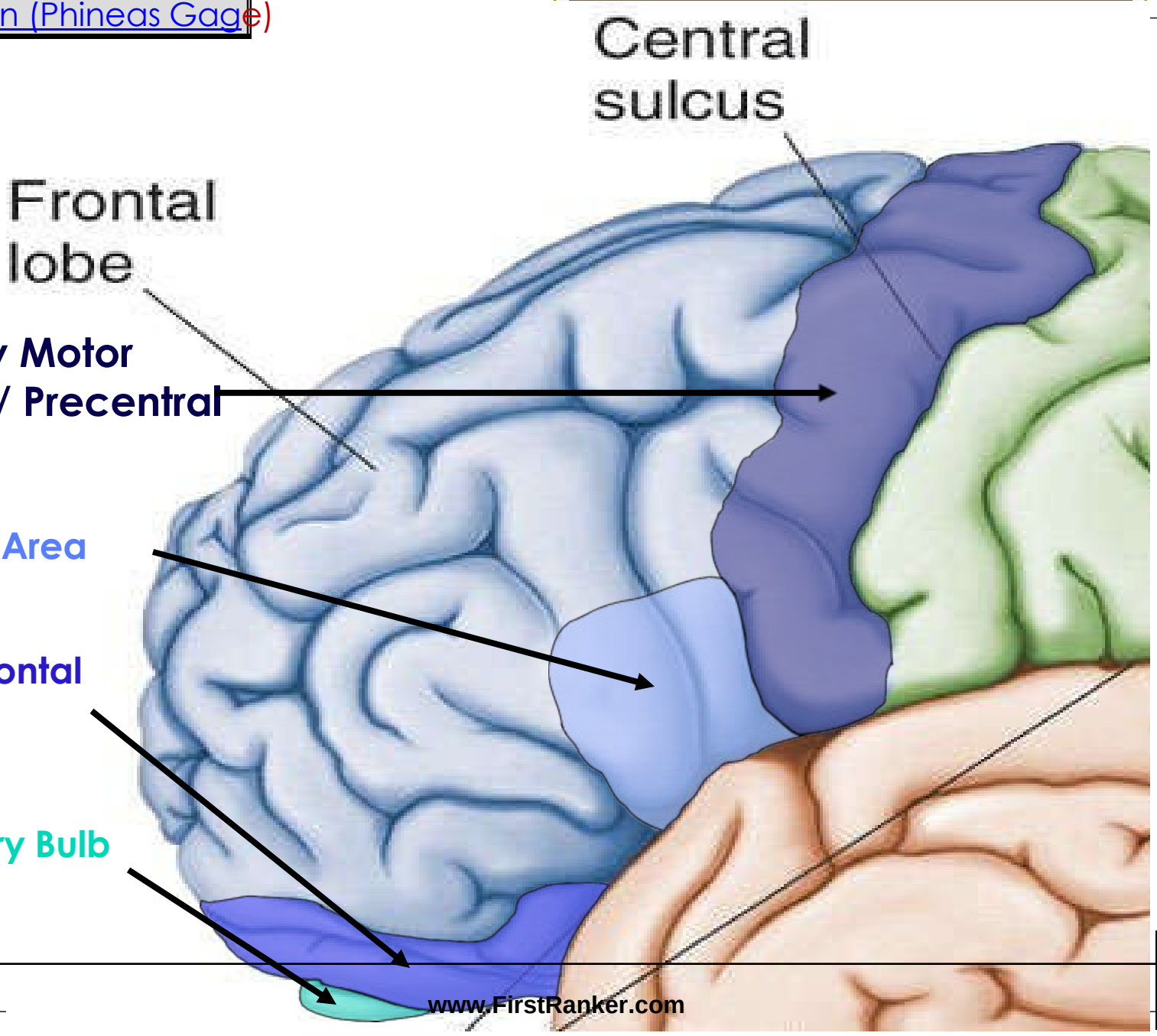



# Frontal Lobe - Cortical Regions

- **Primary Motor Cortex /Brodmann,s area 4**
- **Precentral Gyrus** – it cntrols all voluntary movements of the contralateral side of the body
- Site where movements of the various parts of the body are initiated
- Recieves sensory input from cerebellum and thalamus
- The body is represented upside down along the precentral gyrus




Investigation (Phineas Gage)






Regions

Modified from:

- **secondary motor area/6,8,44 and 45**
- **Precentral gyrus,sup,middle,inf frontal gyri**
- It programs the activity of the PMA
- Stronger stimulation is required to produce the same degree of movement

- **Broca's Area** –44,45
- Inf.frontal gyrus
- Brings about the formation of words.
- Located on ***Left*** Frontal Lobe
- **Broca's Aphasia** – Results in the ability to comprehend speech, but the decreased motor ability (or inability) to speak and form words

**Frontal eye field 8,**

Middle frontal gyrus

Voluntary eye movements towards opposite side and the accomodation pathway

also controls eyelid movements

**Prefrontal cortex9,10,11,12**

Concerned with the makeup of the individual·s personality

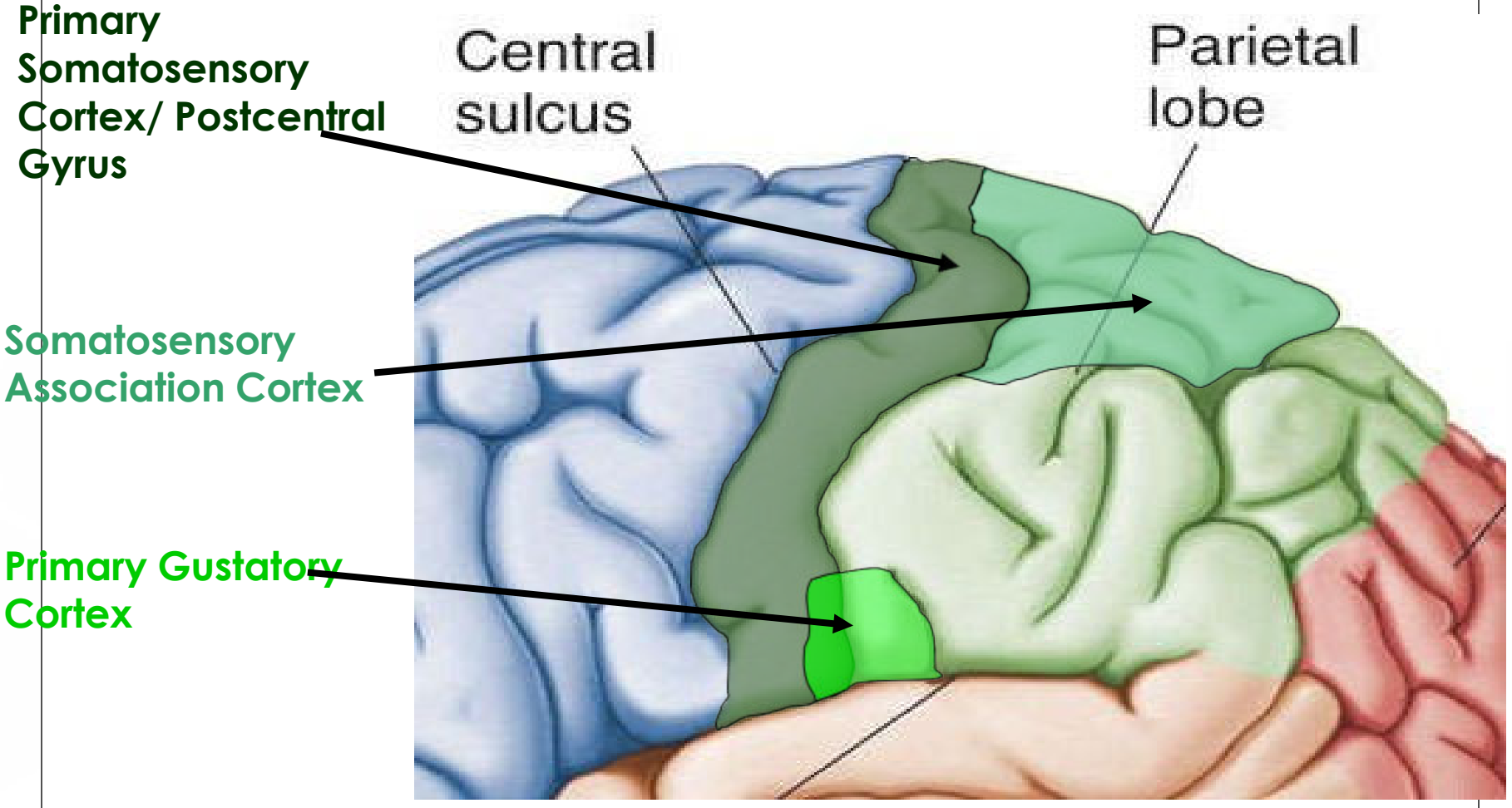
**Head rotation area**

## Parietal Lobe - Cortical Regions

- **Primary sensorymotor Cortex 1,2,3(Postcentral Gyrus)** – Site involved with processing of tactile and proprioceptive information.

- **Somatosensory Association Cortex -5,7 sup parietal** assists with the integration and interpretation of sensations.

- **Primary Gustatory Cortex** 43
- Inferior part of the post central gyrus– Primary site involved with the interpretation of the sensation of Taste.



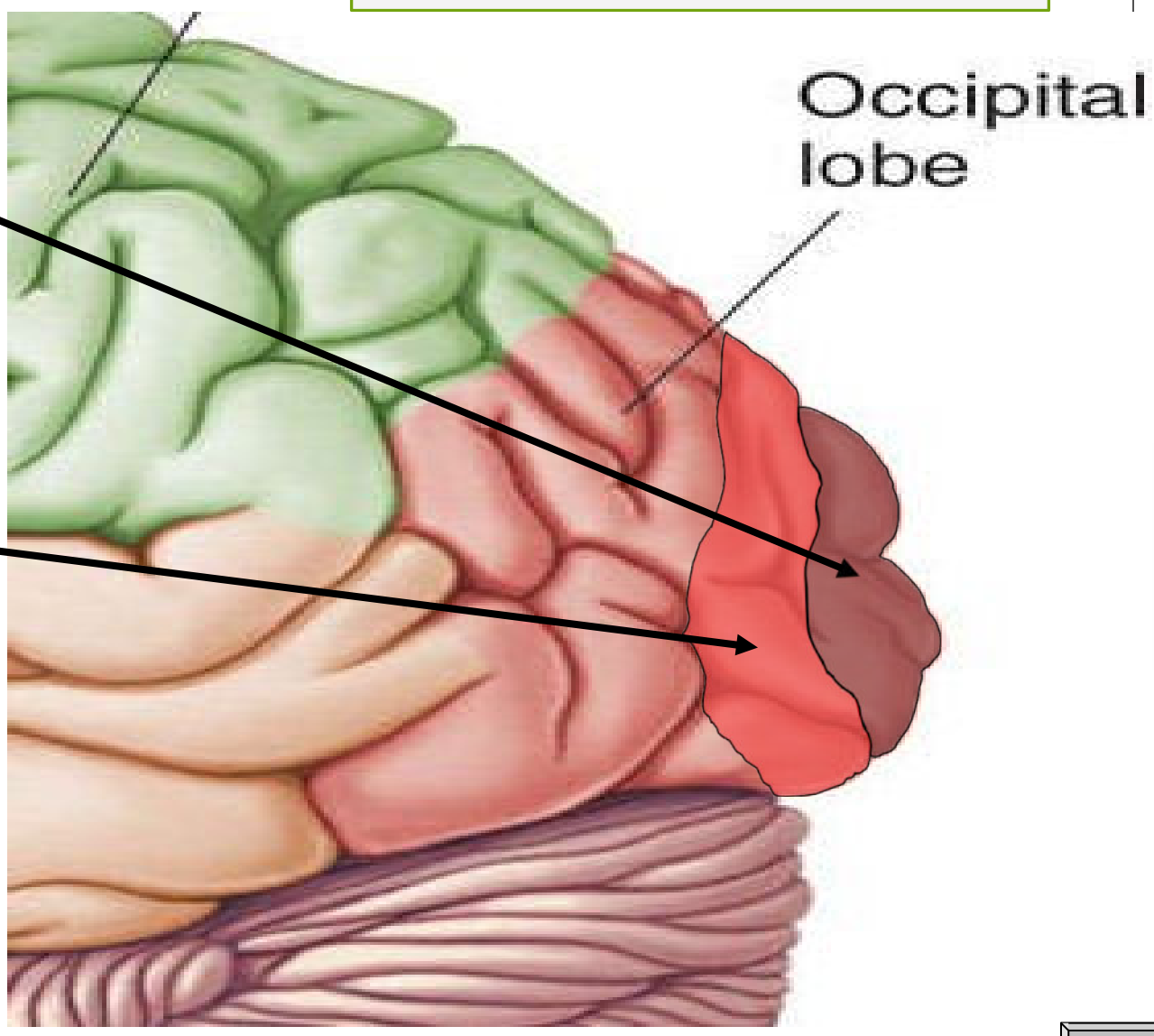

Modified from:
http://www.bioon.com/book/biology/whole/image/1/1-8.tif.jpg

Regions

# Occipital Lobe – Cortical Regions

- **Primary Visual Cortex** – This is the primary area of the brain responsible for Vision

- **Visual Association Area** – Interprets information acquired through the primary visual cortex.




Modified from:
http://www.bioon.com/book/biology/whole/image/1/1-8.tif.jpg

Regions

# Temporal Lobe – Cortical Regions

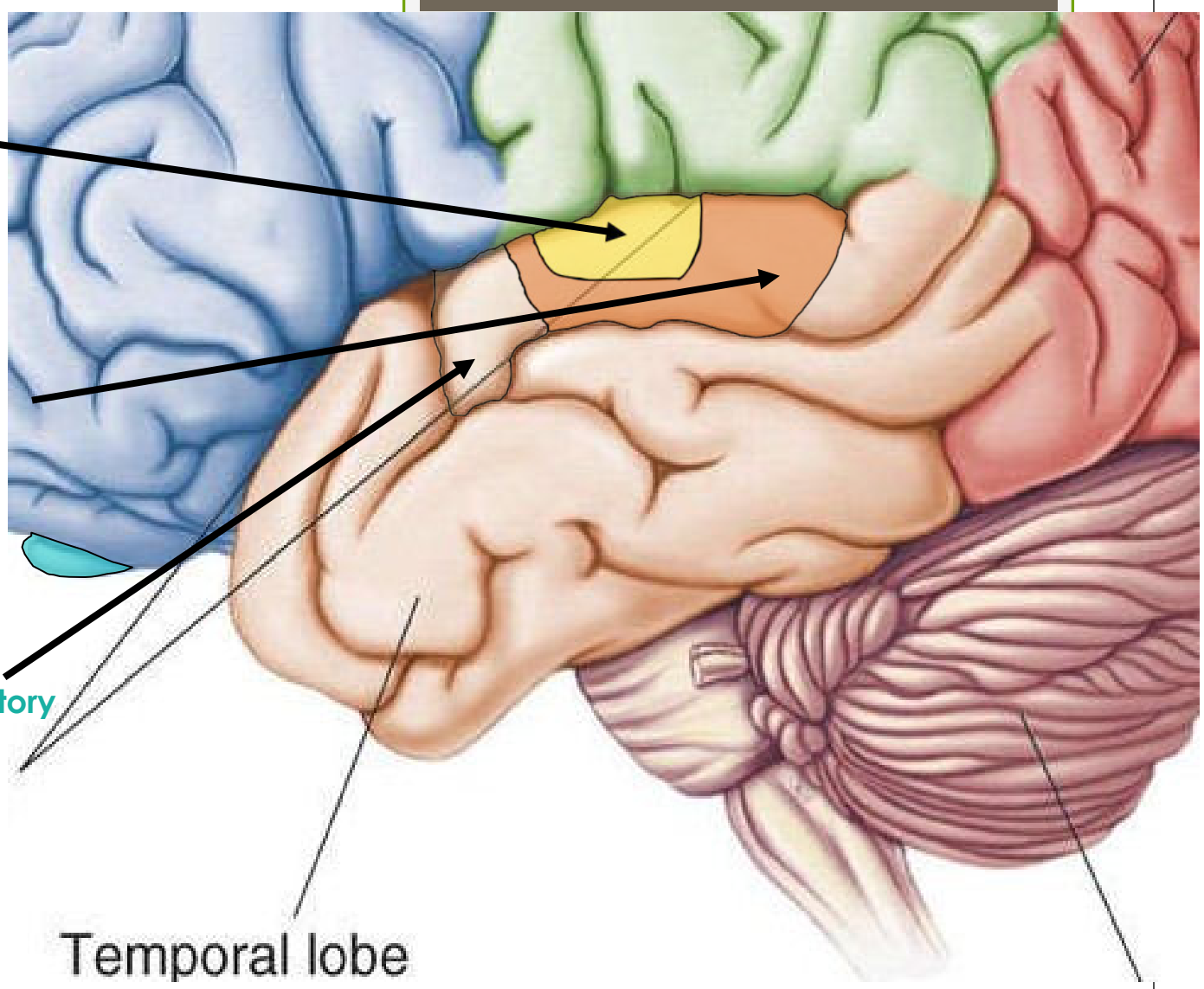
- **Primary Auditory Cortex** –41,42 mostly hidden in the lateral sulcus
- Responsible for hearing
- Its anterior part recieves low freq sounds
- Post part –high freq sounds
- **Sec. Auditory Cortex 22**
- Interpretation of sounds

# Temporal Lobe – Cortical Regions

- **Primary Olfactory Cortex** – sense of smell
(Not visible on the superficial cortex)

- **Wernicke's Area** superior and middle temporal gyri
- Understanding of speech

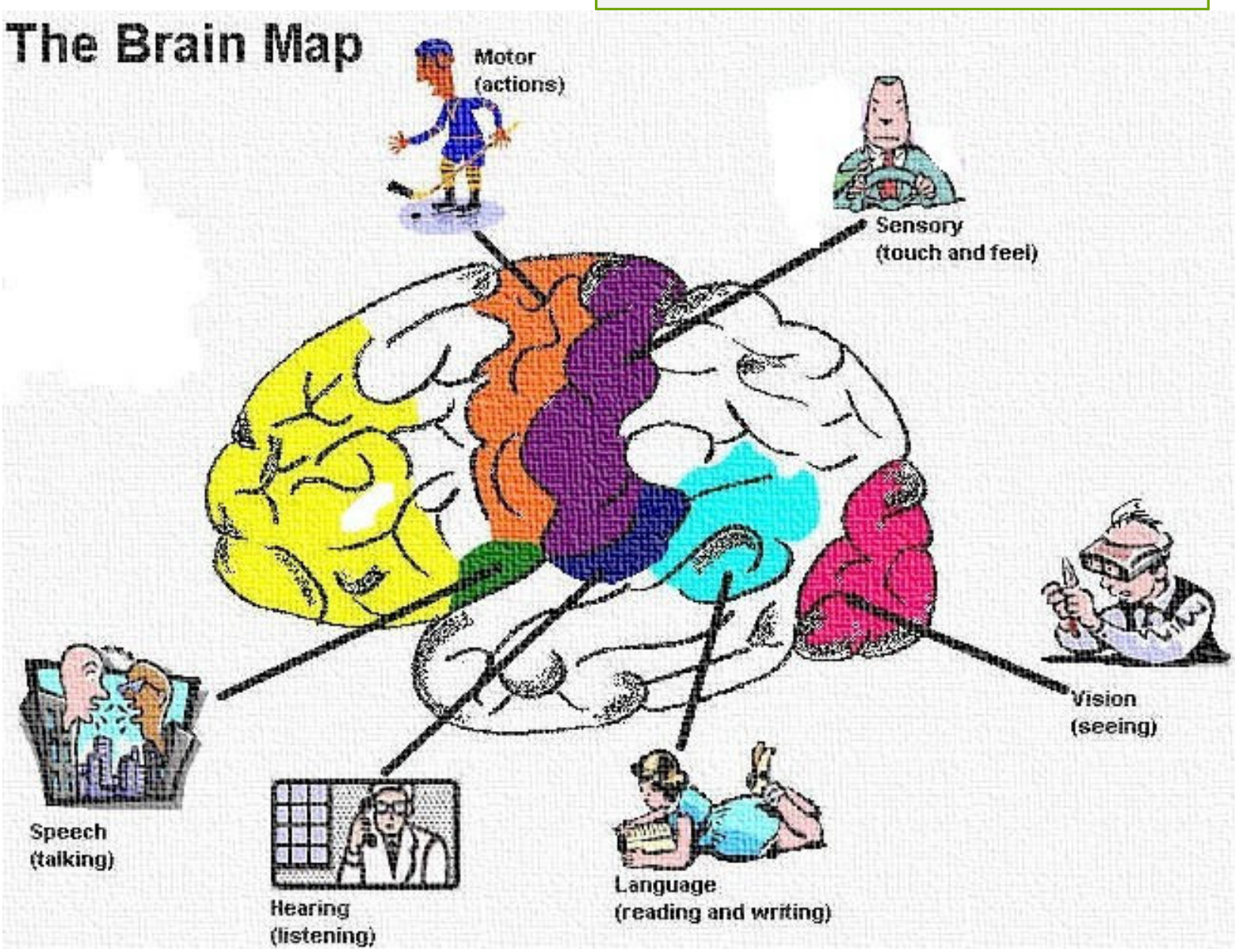
- **Wernicke's Aphasia** – Words and sentences are not clearly understood, and sentence formation may be inhibited.




Modified from:
http://www.bloom.com/book/biology/whole/image/1/1-8.tif.jpg



Regions




# dominant hemisphere

- 95-left
- Broca
- 90% right handed

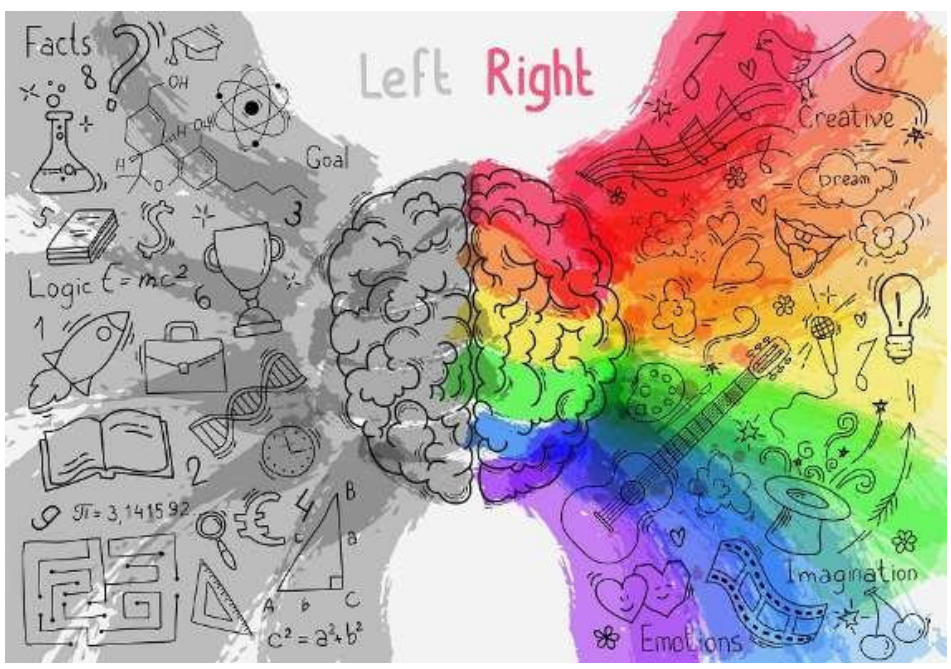
# BLOOD SUPPLY

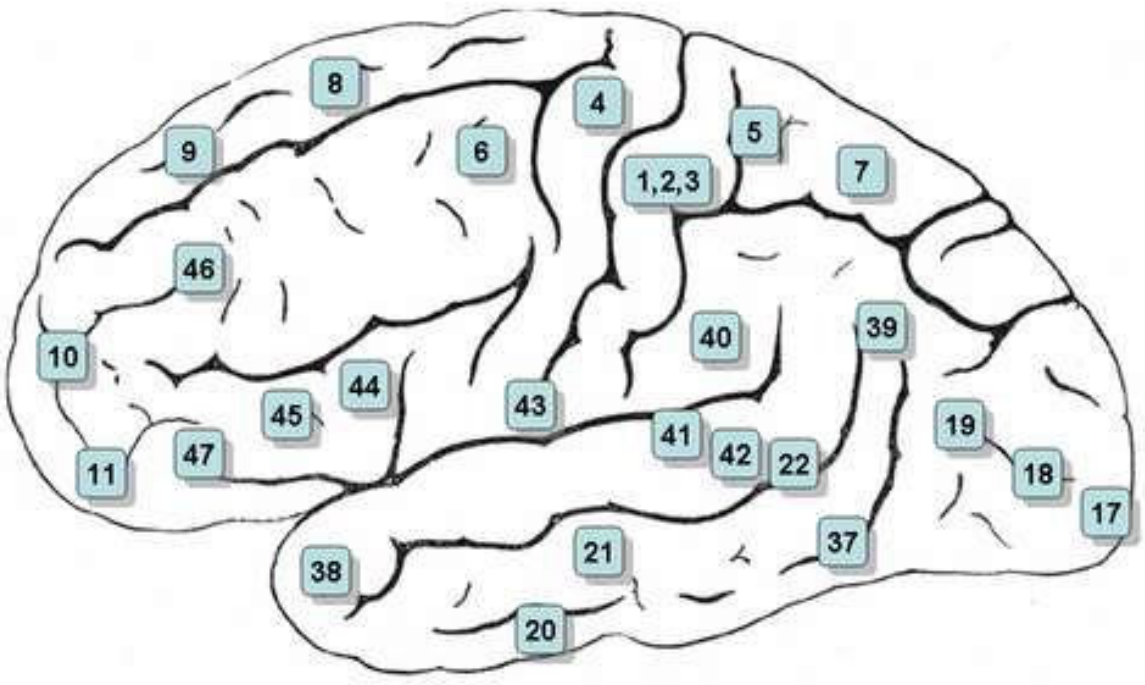
- Anterior and middle cerebral artery (internal carotid artery)
- Posterior cerebral artery (basilar artery)

# Physiological information about brain

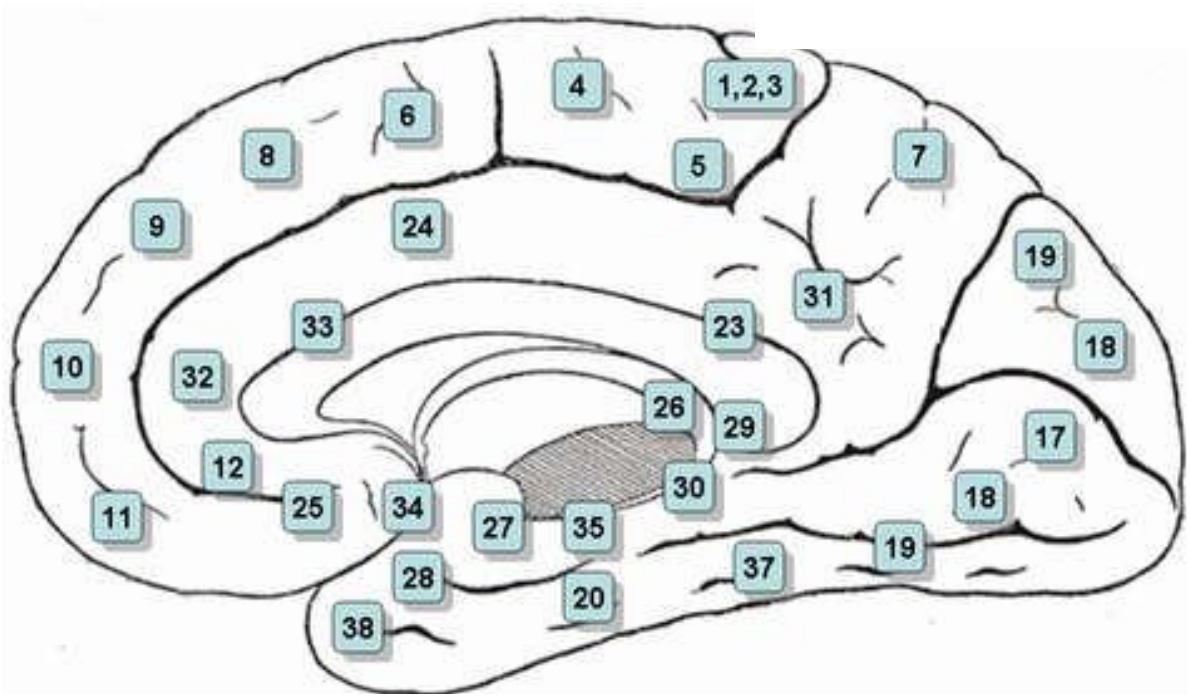
- **Left hemisphere is dominant in 90% of the right handed and 64% of the left handed**
- **Righ hemisphere is dominant in 10% of righ handed and 20% of left handed**
- **In the remaining 16% of left handed both hemispheres are dominant ..**
- **Speech areas in brain usually in the dominant hemisphere !! ( OF CLINICAL IMPORTANT )**

**Which hemisphere is dominant ?!**



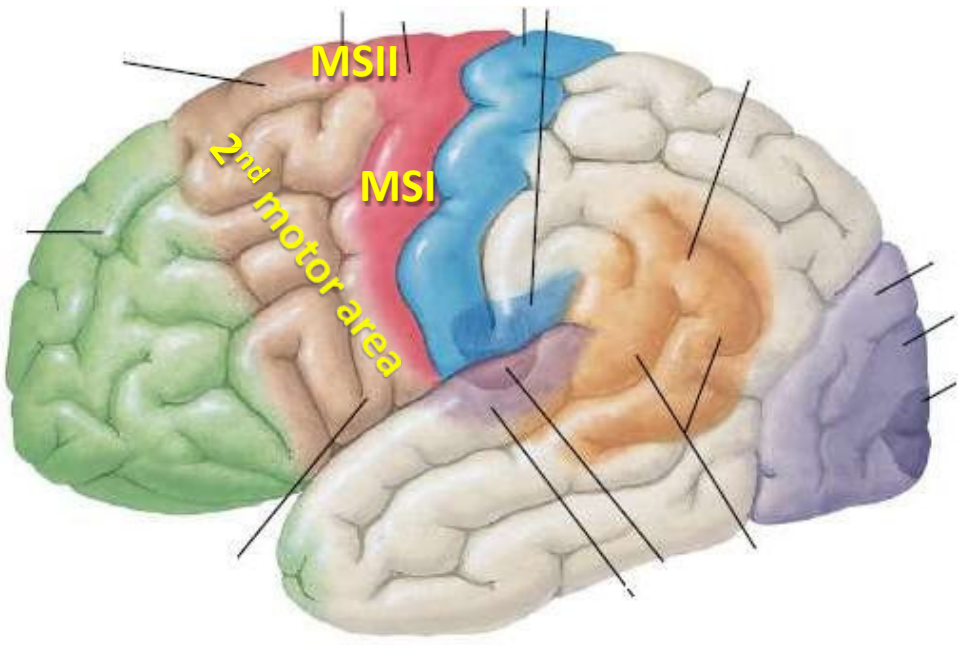



# Brodmann areas



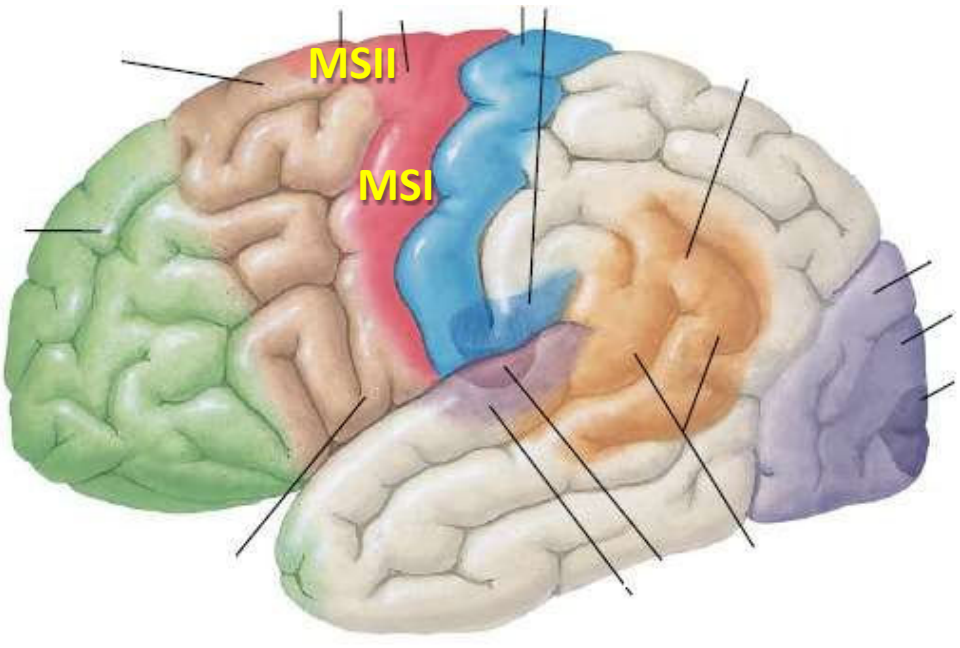

# Motor areas of cortex

- **1- primary motor area :-**
  - MSI area ( precentral gyrus )
  - MSII area ( Anterior part of paracentral lobule )
- **2- secondary motor area**
  - Posterior parts of frontal gyri extending medially



# Primary motor area

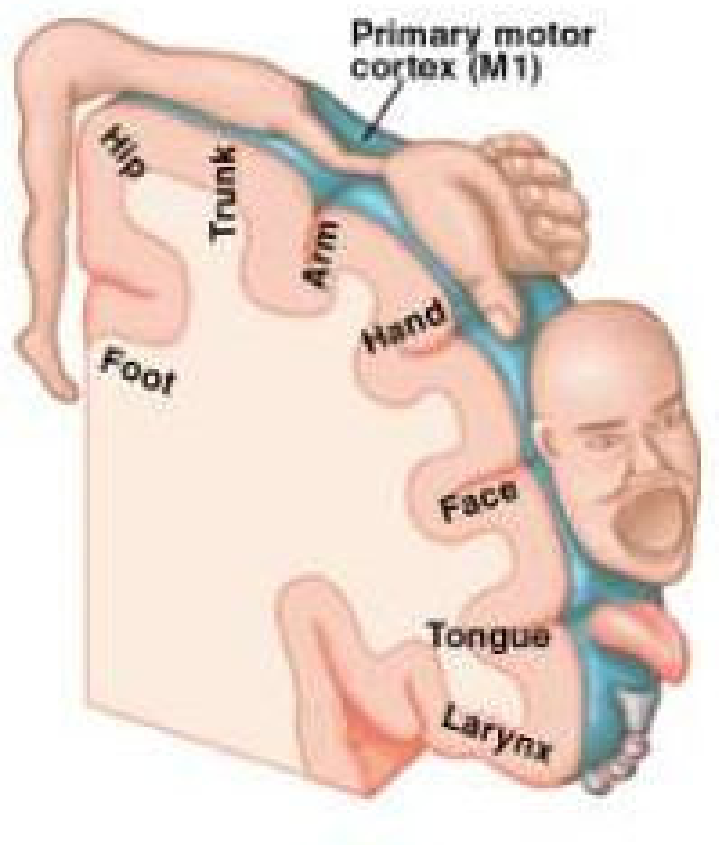
- **Broadmann area 4**
- **The area Msl is where movements of the various parts of the body are initiated,**
- **Afferent :- receives its main inputs from the cerebellum and thalamus.**
- **Efferent :- the corticonuclear and corticospinal (pyramidal) tracts.**




- **MSII area receives many fibres from the basal nuclei and is concerned with postural mechanisms, but this area is not yet clearly understood.**

# Motor homunculus

- **the body is represented upside down along this cortex, although the face itself is represented the right way up.**
- **The face lies lowest, then the hand (a very large area), then arm, trunk and leg.**
- **The leg and perineum areas overlap the superior border and extend down on the medial surface of the hemisphere**



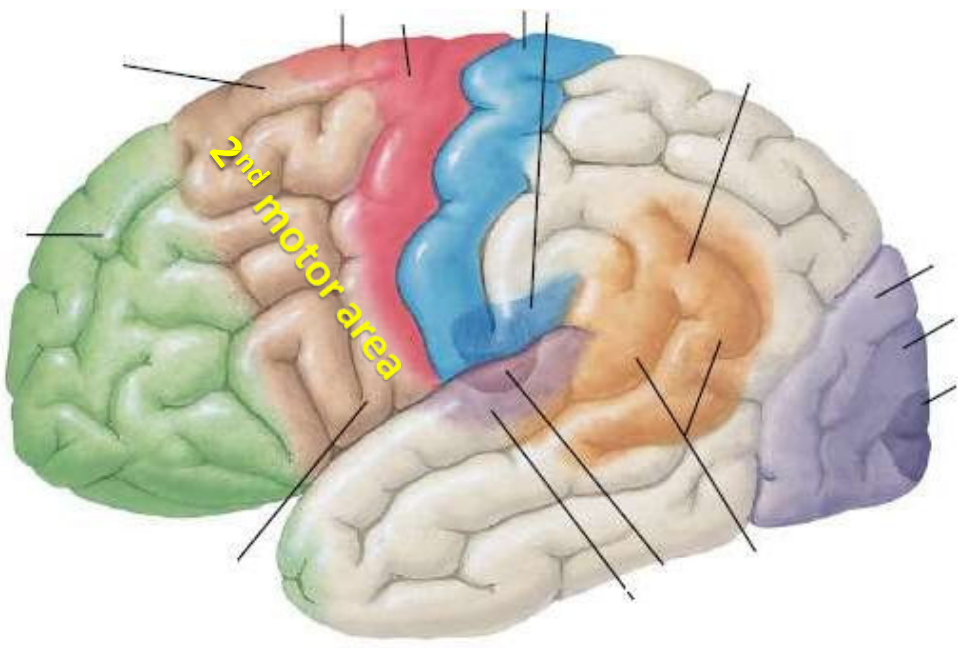

- **Blood supply :-**
- **1- middle cerebral artery**
- **2- anterior cerebral a. ( leg area )**

# Primary motor area

- Lesions to this area produce contralateral paralysis !!
- Organs that supplied bilaterally are the less affected …
- CNs are supplied bilaterally ?!!

# Secondary motor area

- Or supplementary motor area
- Broadmann are 6
- Location :- Posterior parts of frontal gyri extending medially
- The function of the secondary motor area:
- 1- To store programs of motor activity resulted from past experience
- 2- Controls sequence of movements
- 3- Controls spatial & postural orientation movements.
- 4- Controls bimanual movements.
- Blood supply: Middle & anterior cerebral arteries



# secondary motor area

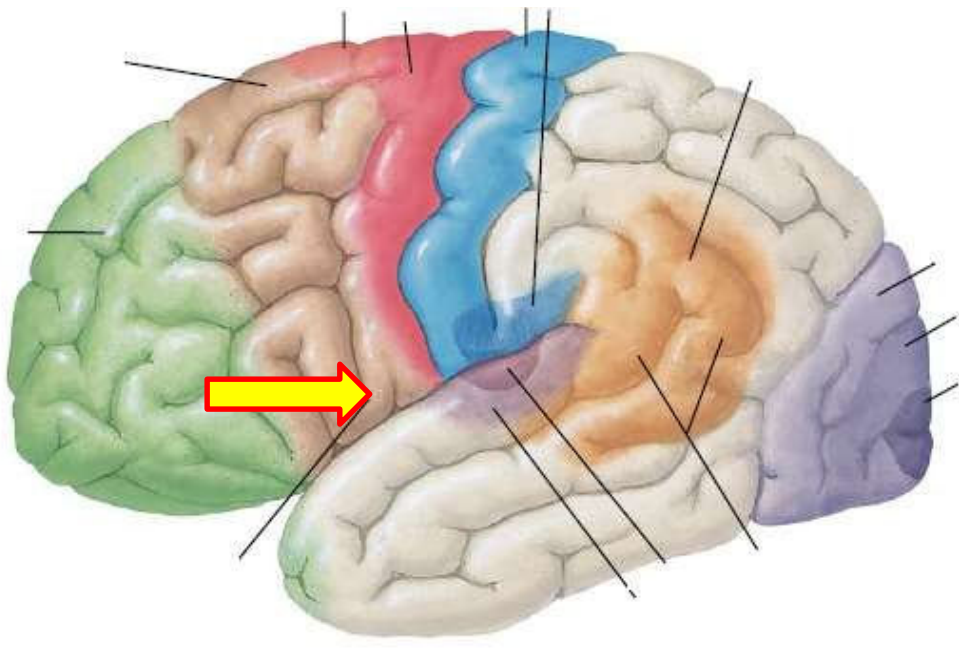
- **Lesions :-**

- **Apraxia (inability to execute learned purposeful movements despite having the desire and the physical capacity to perform them).**

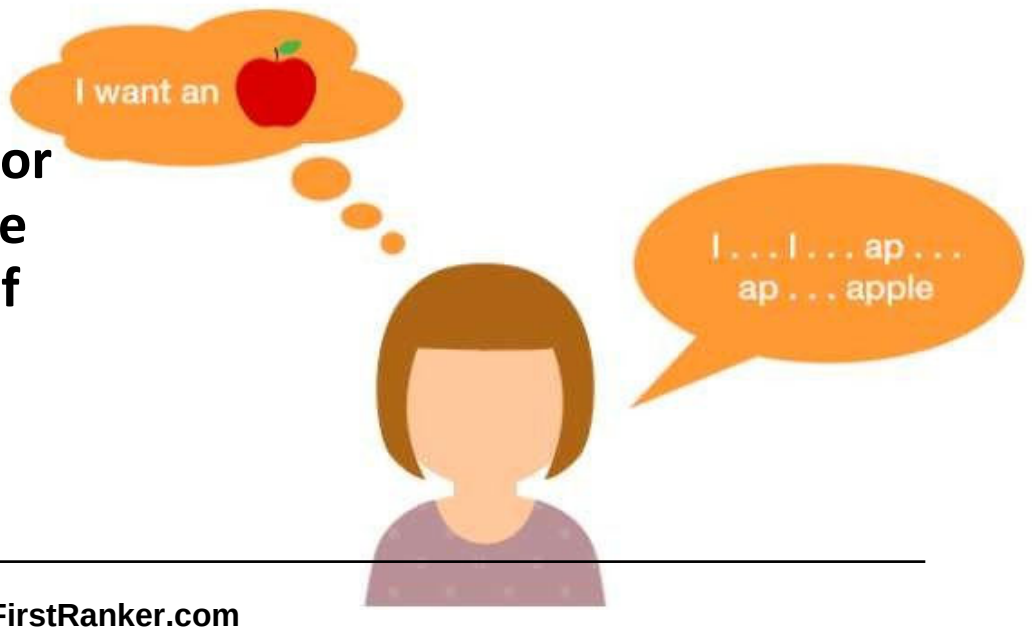
- **There is no or little loss of strength**

# Boca's area

- **The motor (anterior) speech area (of Broca, areas 44 and 45) is usually situated in the inferior frontal gyrus on the left side (in right-handed and in most left-handed people), below and in front of the face area and centred on the pars triangularis between the anterior and ascending rami of the lateral fissure.**



- **Damage to it produces motor aphasia — difficulty in finding the right words, but not paralysis of laryngeal musculature.**

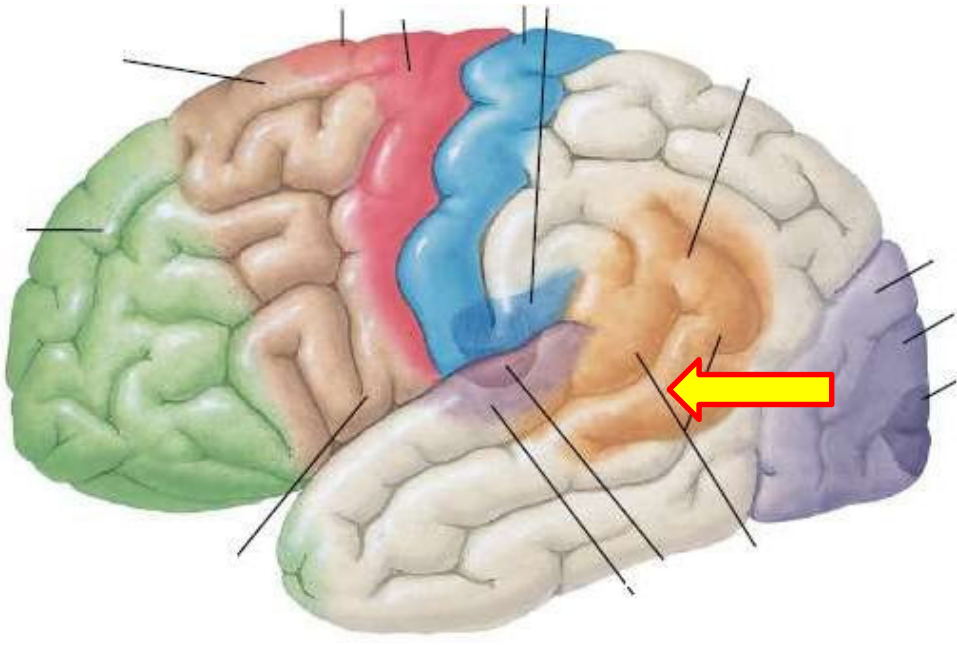



- **Blood supply :-**
- **Middle cerebral a.**

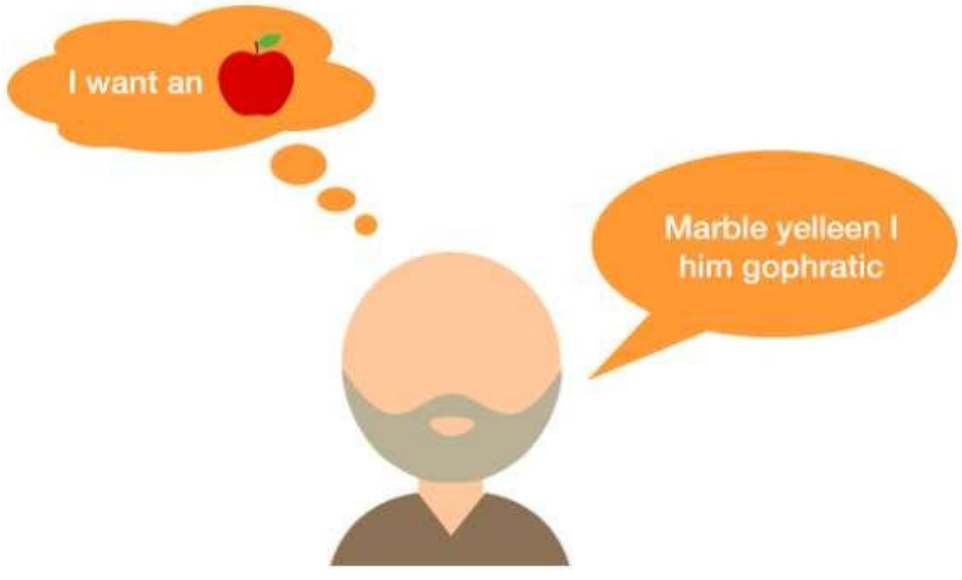
# Wernicke's area

- The posterior speech area (of Wernicke) is in the posterior parts of the superior and middle temporal gyri and extends into the lower part of the parietal lobe.

- It is connected to the Broca's, visual & auditory cortex



- Function:
- To understand the written and spoken language
- Its integrity is necessary for the understanding of speech.



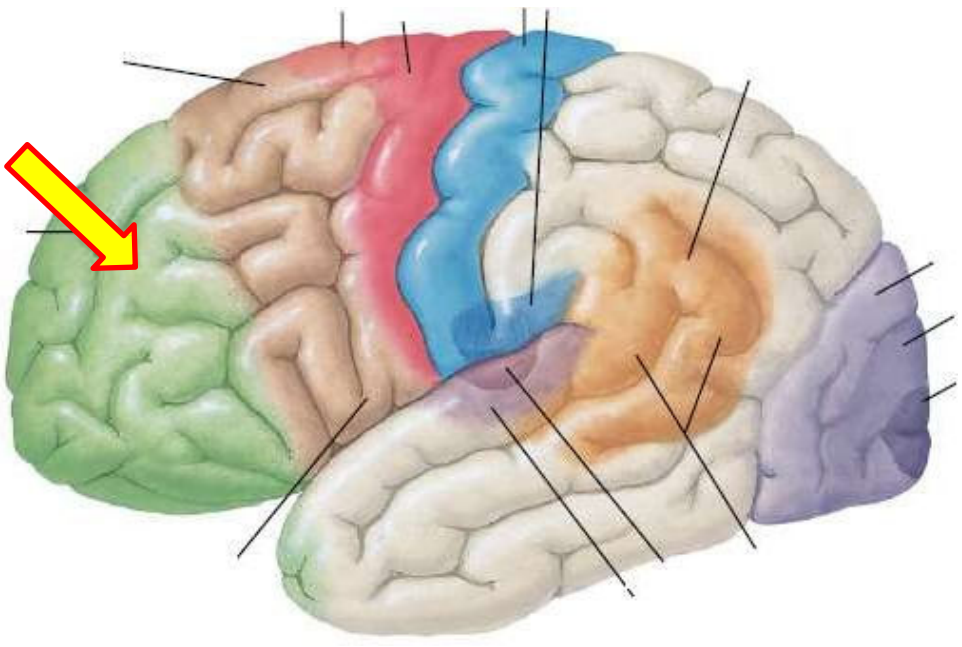

- Lesion … Receptive dysphasia; the patient responds by intact, but irrelevant speech!

- Blood supply:
- Middle cerebral artery

# Prefrontal cortex

- The prefrontal cortex is an extensive area that lies anterior to the precentral
- The prefrontal area is concerned with

1. the makeup of the individual's personality.
2. regulator of the person's depth of feeling.
3. It also exerts its influence in determining the initiative and judgment of an individual.



# Prefrontal cortex

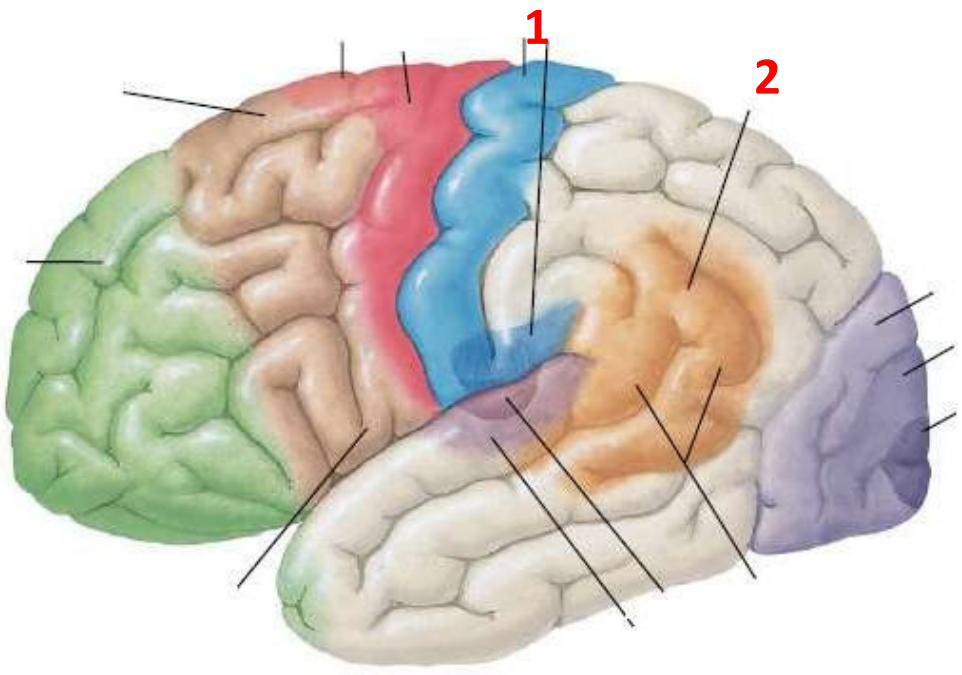
- **Lesions :-**
- It is now generally agreed that destruction of the prefrontal
- region does **not produce any marked loss of intelligence**
- Tumour or traumatic destruction of the prefrontal cortex result in the person's **losing initiative and judgment.**
- **Emotional changes** that occur include a tendency to euphoria.
- The patient no longer conforms to the accepted mode of social behavior and becomes **careless of dress and appearance.**
- **Bipolar disorders**
- **Schizophrenia**

# Sensory areas

- **1- Primary somatosensory area**
- The postcentral gyrus
- Posterior part of lobule paracentral

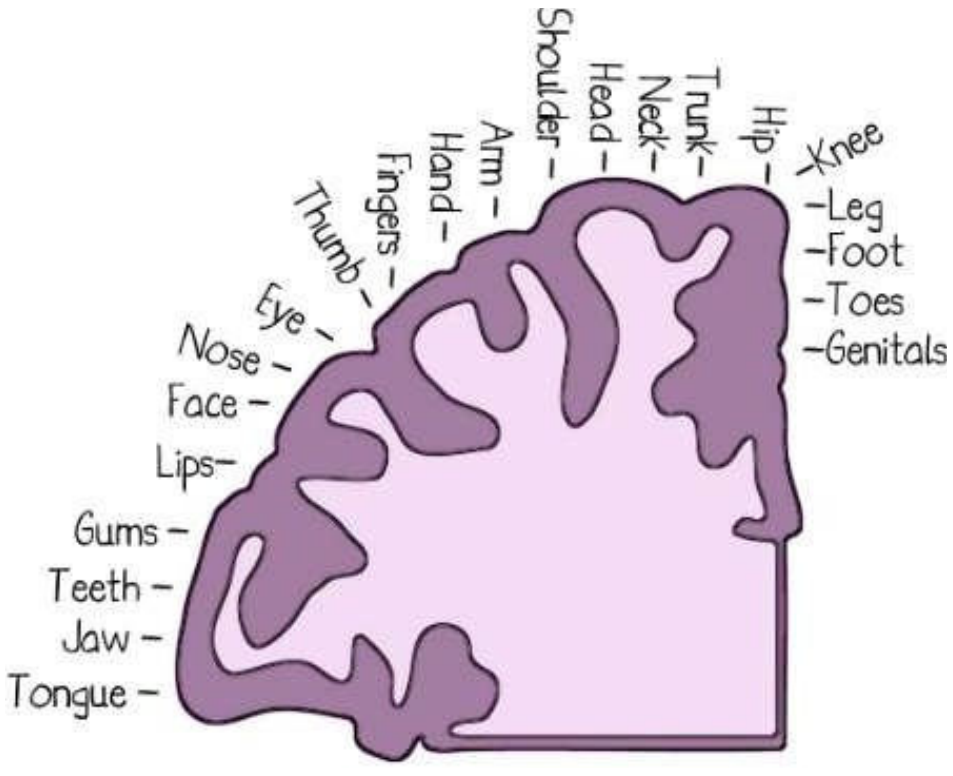
- Recieves primary from thalamus
- Sensations from the oral region, pharynx, larynx & perineum are received bilaterally

- **2- Secondary ( or association ) somatosensory area.**
- Occupies the superior parietal lobule



# Primary sensory area

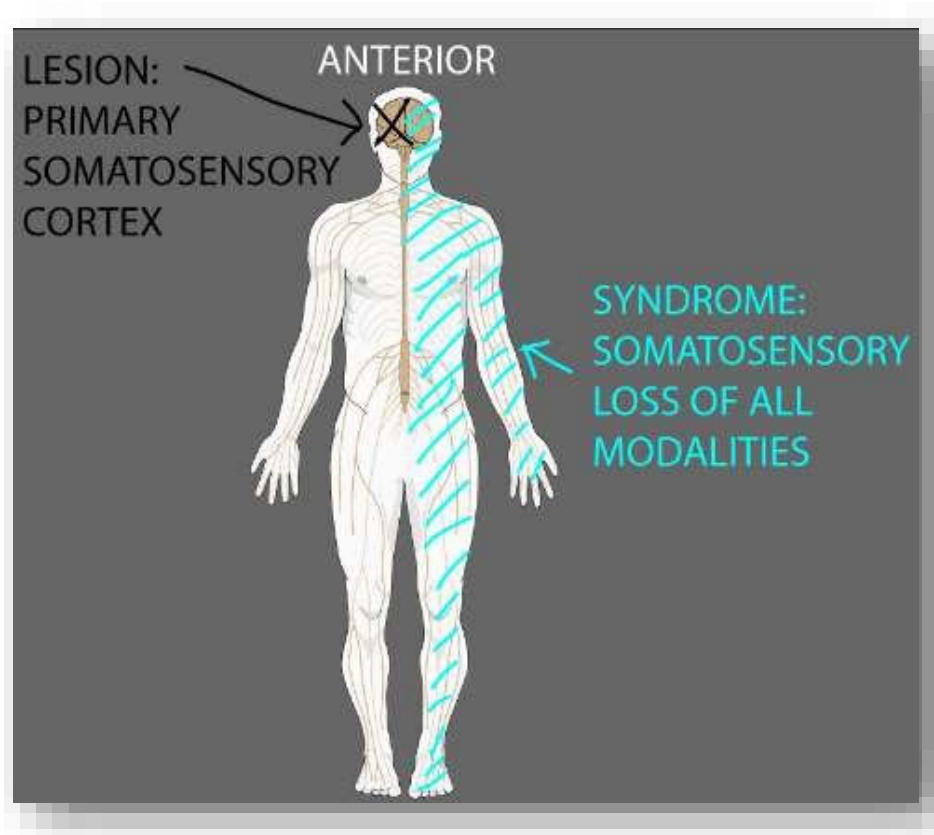
- **Sensory homunculus:**
- The amount of the cortex for a particular part of the bod is related to its functional importance & number of receptors ( not to its size)




- **Blood supply:**
- Middle cerebral artery
- Anterior cerebral artery (leg area)

# Primary sensory area

- **Lesions :-**
- Lesions of the primary somesthetic area of the cortex result in contralateral sensory disturbances, which are most severe in the distal parts of the limbs. Crude painful, tactile,and thermal stimuli often return,but this is believed to be due to the function of the thalamus.
- The patient remains unable to judge
- degrees of warmth, unable to localize tactile stimuli accurately, and unable to judge weights of objects.
- Loss of muscle tone may also be a symptom of lesions of the sensory cortex.



# Secondary somatosensory area

- **Function:**

- **Receive different sensory modalities & relate them to past experience. e.g; object recognition without vision.**

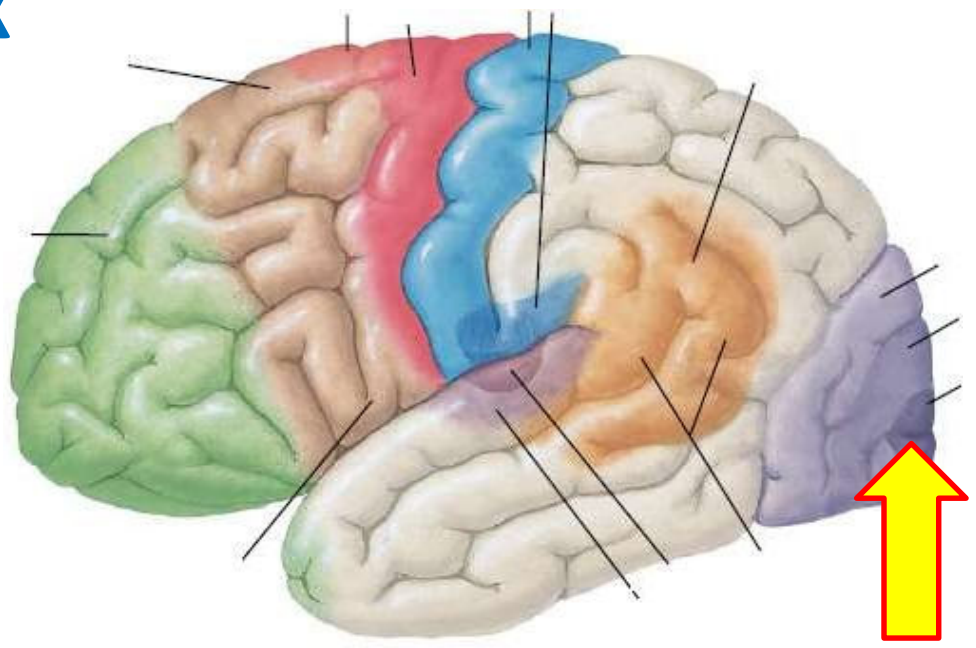
- **Lesions = asterognosis !!**
- **Inable to identify things without see them …**

# Primary visual cortex

- **Broadmann area 17**

- **Functions:**

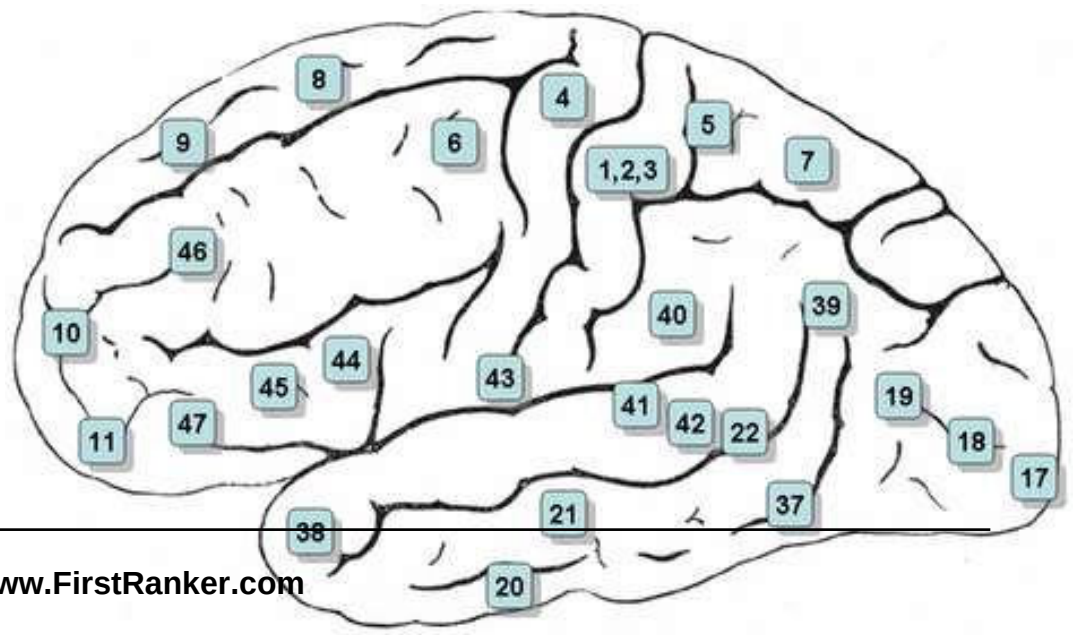
- **Receives fibers from the opposite field of vision**
- **It also excludes & modulates unwanted images!**



- **Blood supply:**

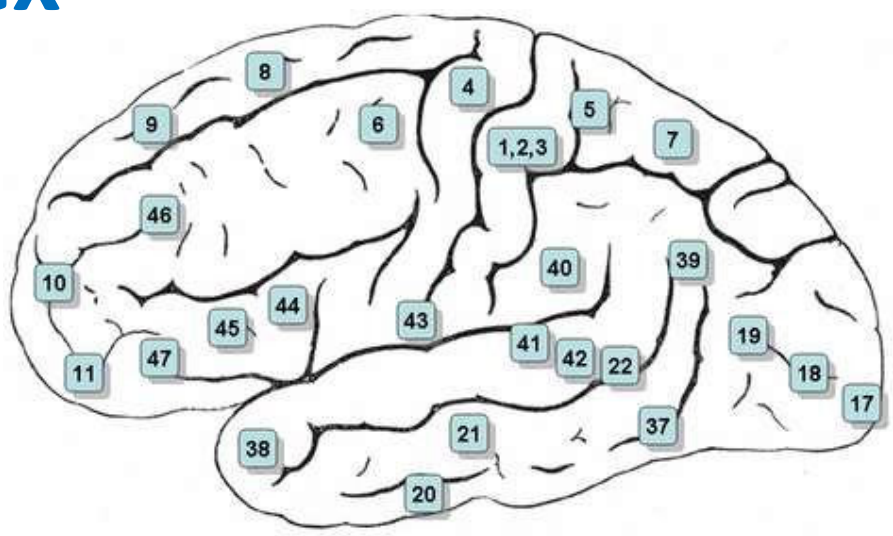
- **Posterior cerebral artery**

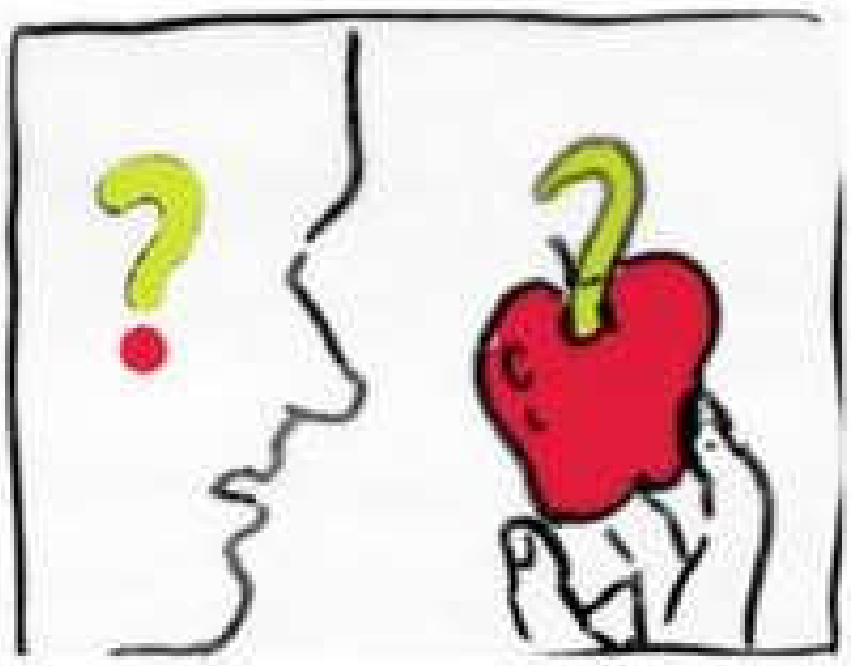
- **Lesions :-**
- **Crossed homonymous hemian**



# Secondary visual cortex

- **Brodmann area 18,19**
- **Surrounded by the primary visual cortex …**
- **Functions to relate the visual information to past experiences**
- **Lesions produce … Visual agnosia; loss of ability to recognize objects seen in the opposite field of vision**



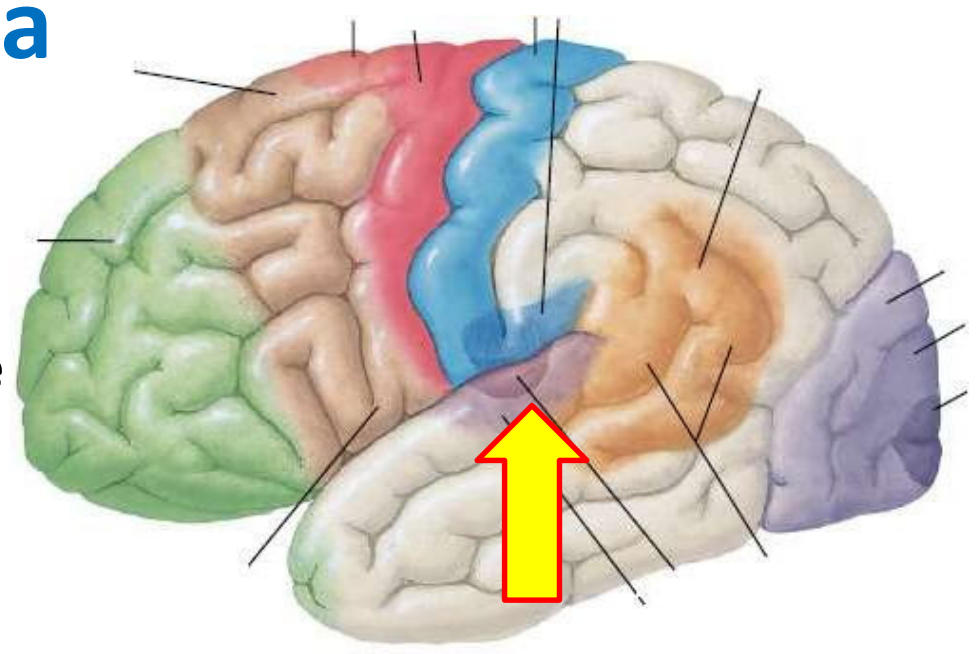



# WHY don't we see everything upside-down?

- **-Brain makes images 'easier' to see by:**
- **1- Combining the two images of the two eyes (in corpus callosum).**
- **2- Make images right-side-up (in the visual cortex).**
- **It does this because your brain is so USED to see things upside-down that it eventually adjusts to it (it's easier to flip the image than to try using hands and legs with an upside-down world)**
- **For the first days, babies see everything upside-down!**

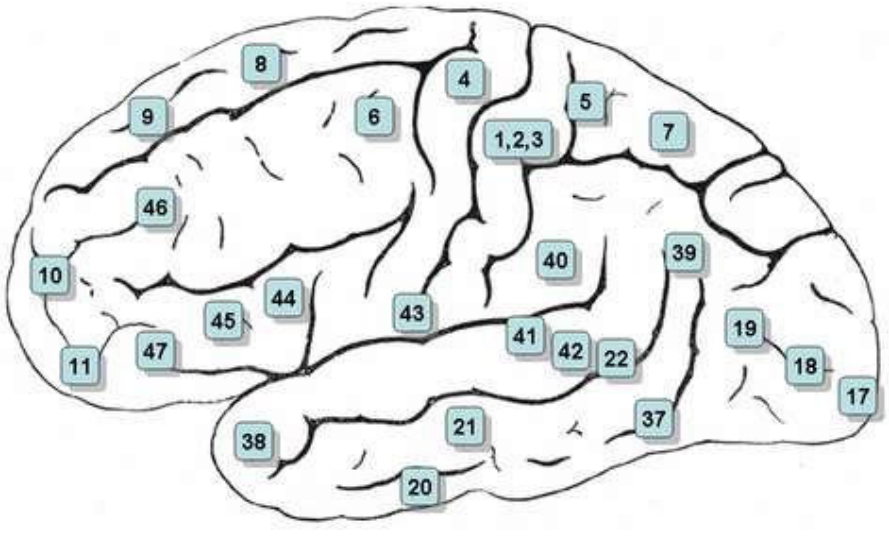
# Primary auditory area

- **Broadmann area 41,42**



- **In the inferior wall of lateral sulcus**
- **Afferent: Principally from the medial geniculate body**

- **Blood supply:**
- **Middle cerebral artery**

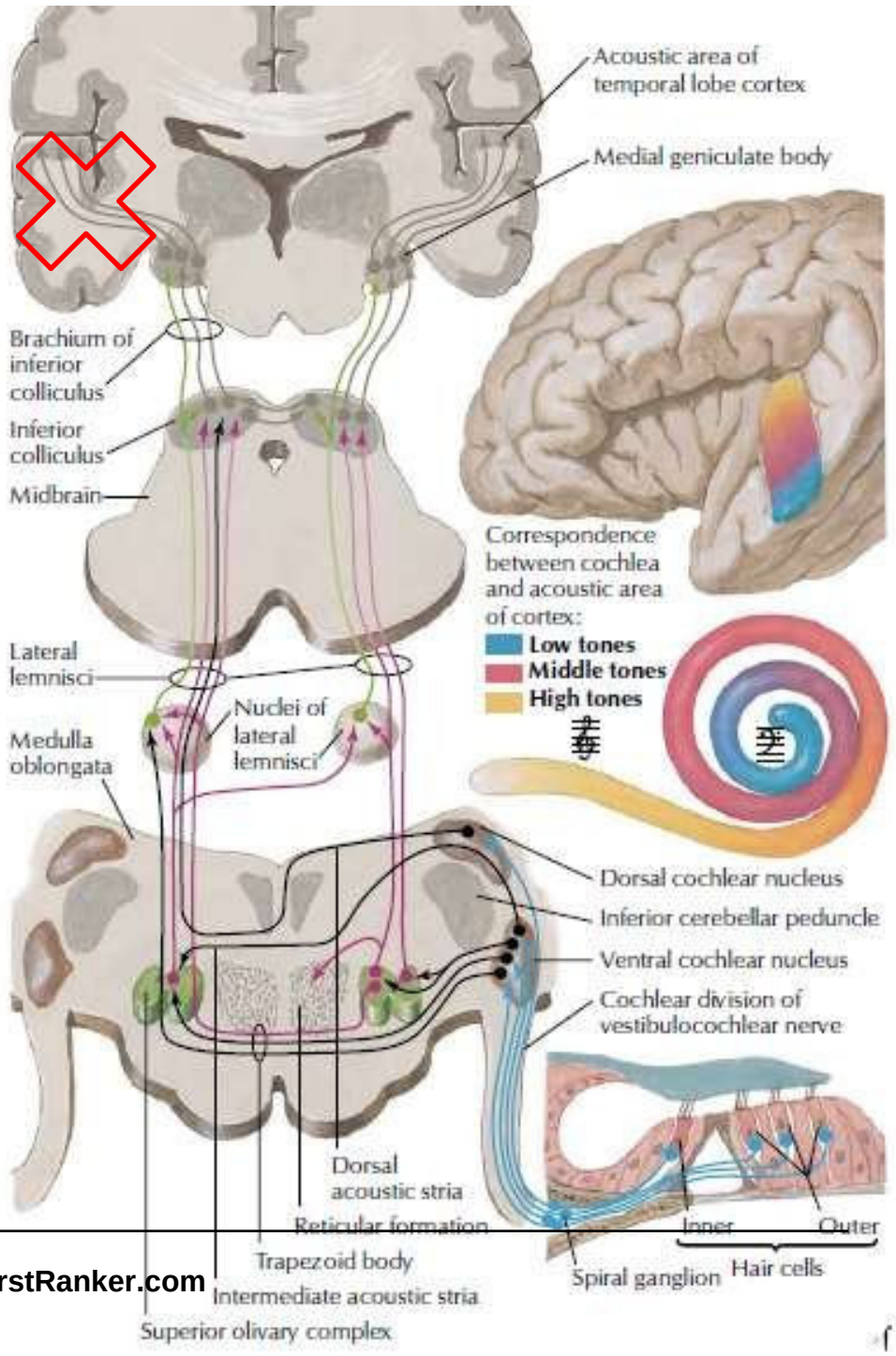



- **Lesions produce … Partial deafness in both ears with inability to locate sound.**
- **The greater loss being in the opposite ear**
- **(cochlear nuclei send 2nd order to the olivary nucleus & nuclei of trapezoid body bilaterally)**

# Auditory pathway

- **Explaning why greter loss of inability to hear on the opposite site !!!**

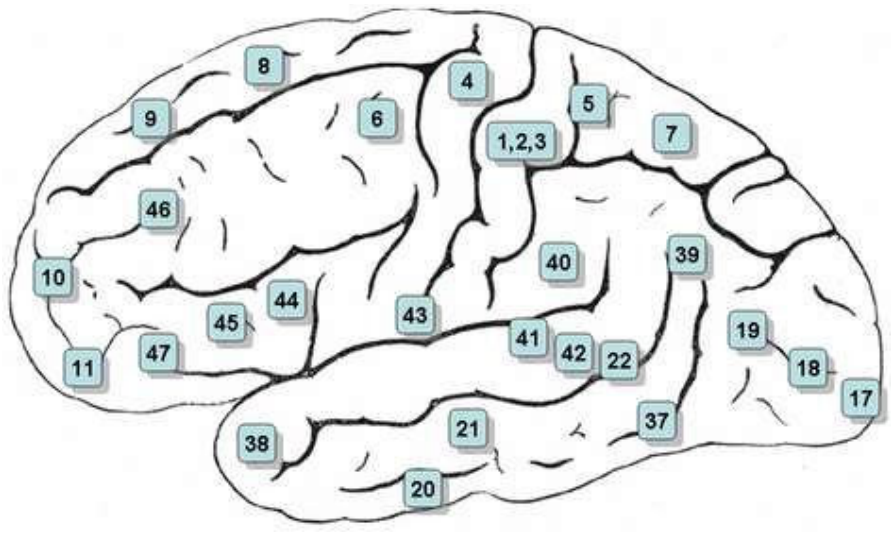
- **Cochlear n. send fibers more to the other side than the same side …**



# Secondary auditory area

- **Broadmann area 22**
- **Lies posterior to the primary auditory area**
- **Function:**

**- To interpret sounds and associate the auditory input with other sensory information.**




- **Blood supply:**
- **Middle cerebral artery**

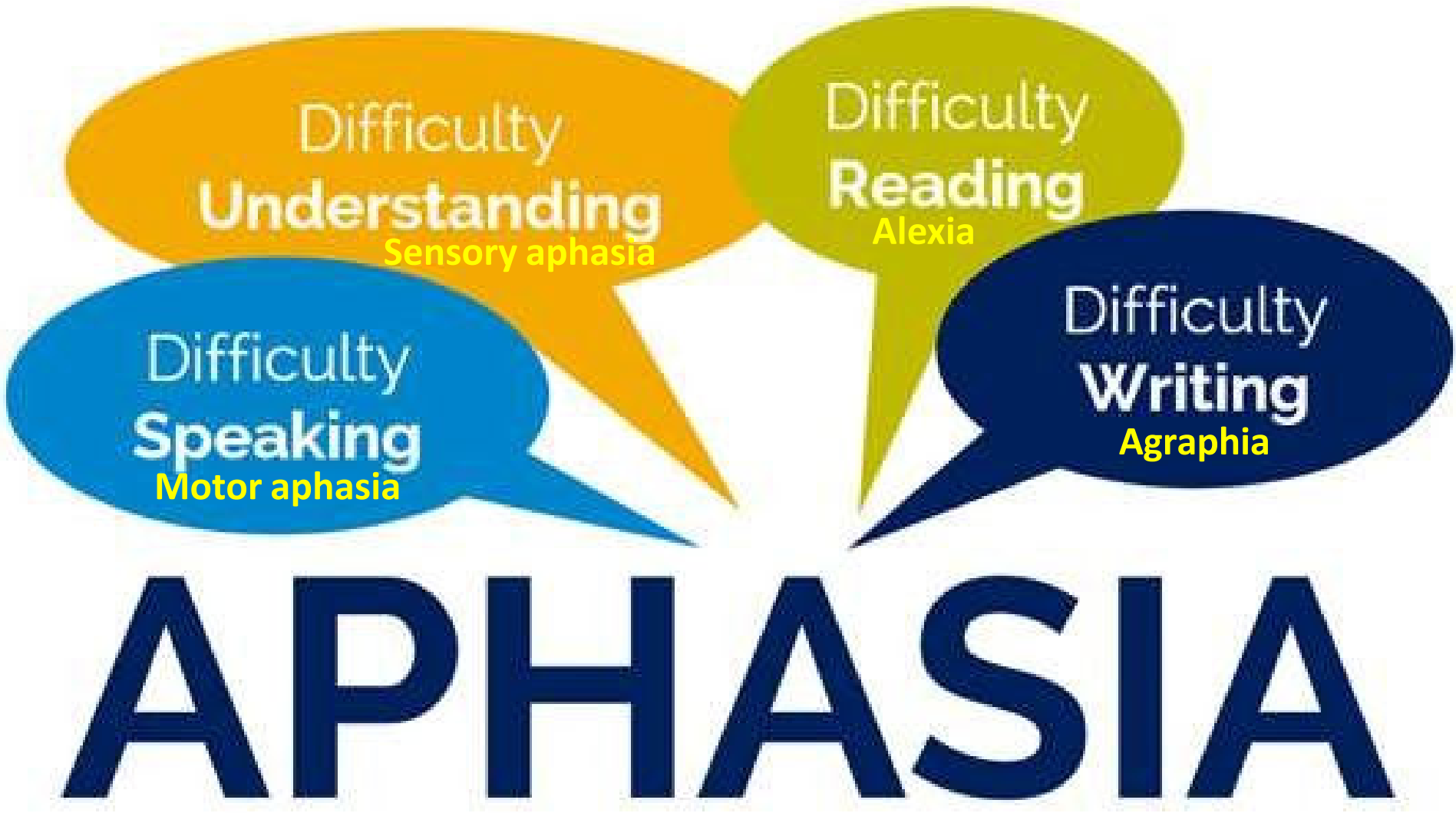
- **Lesions : auditory agnosia !!**

# The dominant angular gyrus

- **This part is often considered a part of the Wernicke area**

- **Lesion here results in inability to read (alexia) or write (agraphia).**

# Aphasia




## Language Disability Caused by Brain Injury

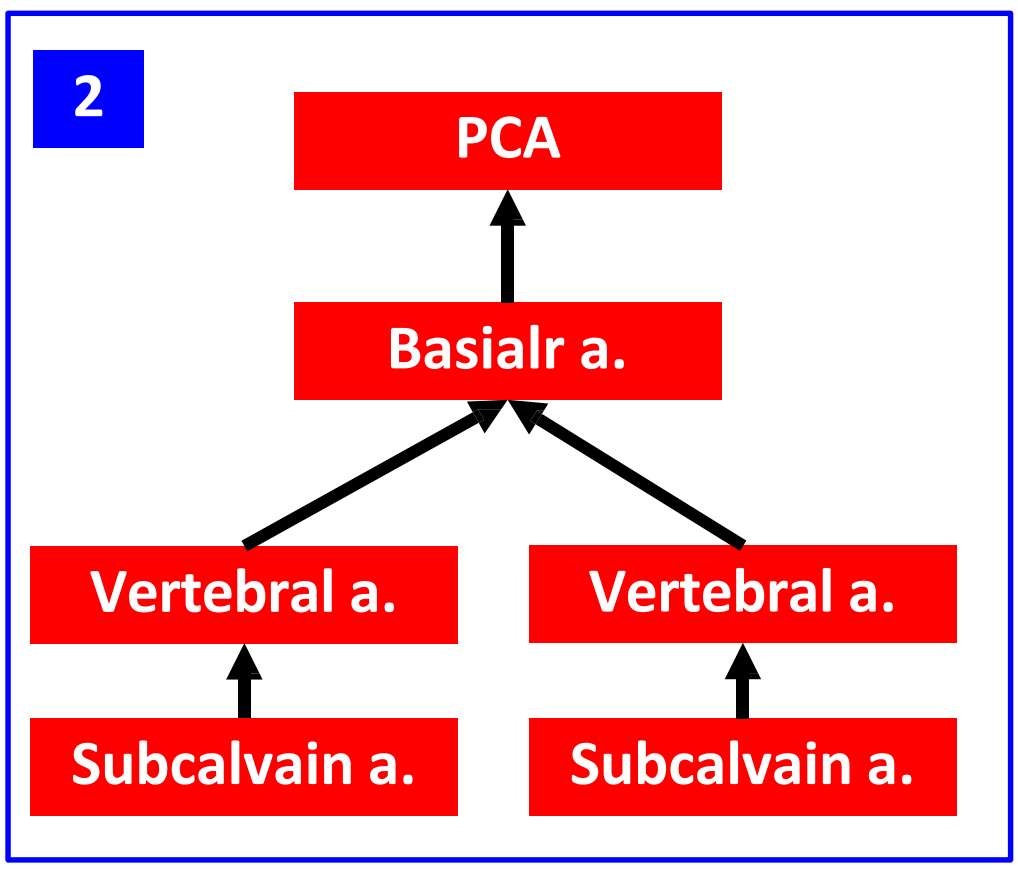
A lesion resulting in a nonfluent expressive aphasia would most likely be found in the
(A) temporal lobe
(B) parietal lobe
(C) frontal lobe
(D) occipital lobe

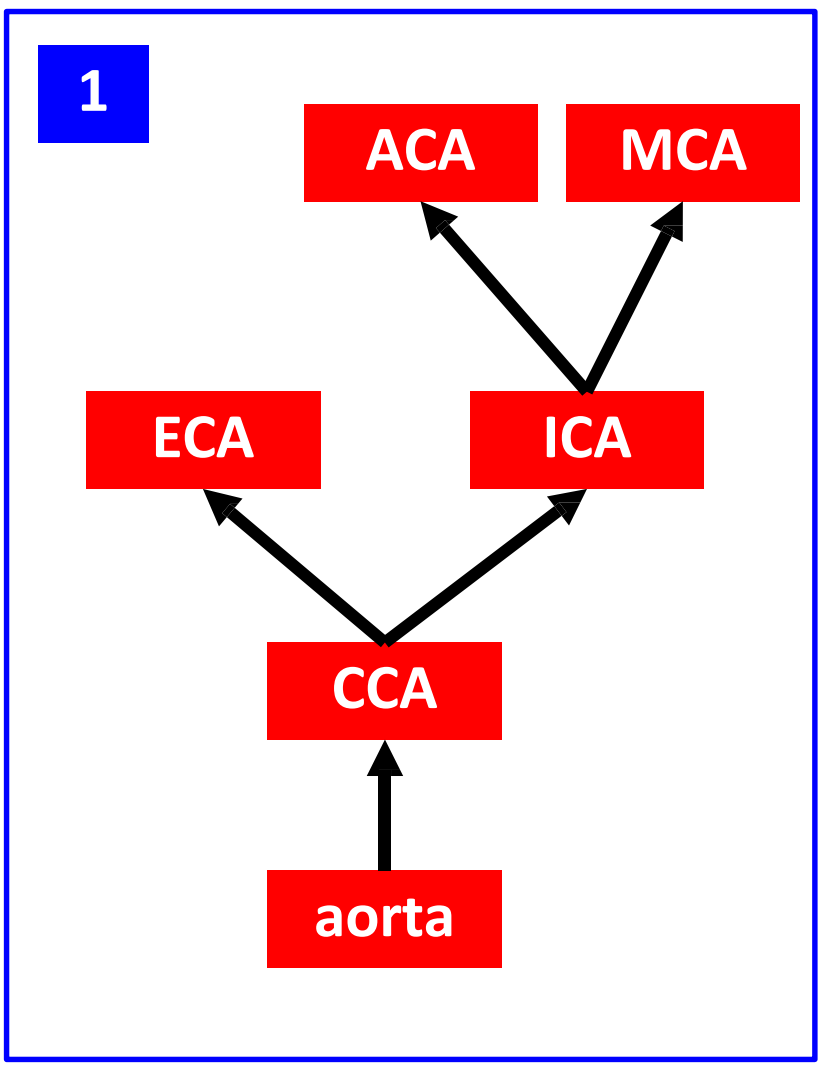
Alexia without agraphia and aphasia would most likely result from occlusion of the
(A) left anterior cerebral artery
(B) right anterior cerebral artery
(C) left middle cerebral artery
(D) left posterior cerebral artery
(E) right posterior cerebral artery

A patient is asked to bisect a horizontal line through the middle, to draw the face of a clock, and to copy a cross. The patient bisected the horizontal line to the left of the midline, placed all of the numerals of the clock on the right side, and did not complete the cross on the left side. The most likely lesion site for this deficit is the
(A) left frontal lobe
(B) right parietal lobe
(C) left parietal lobe
(D) right temporal lobe
(E) left occipital lobe

# Arterial supply to Brain

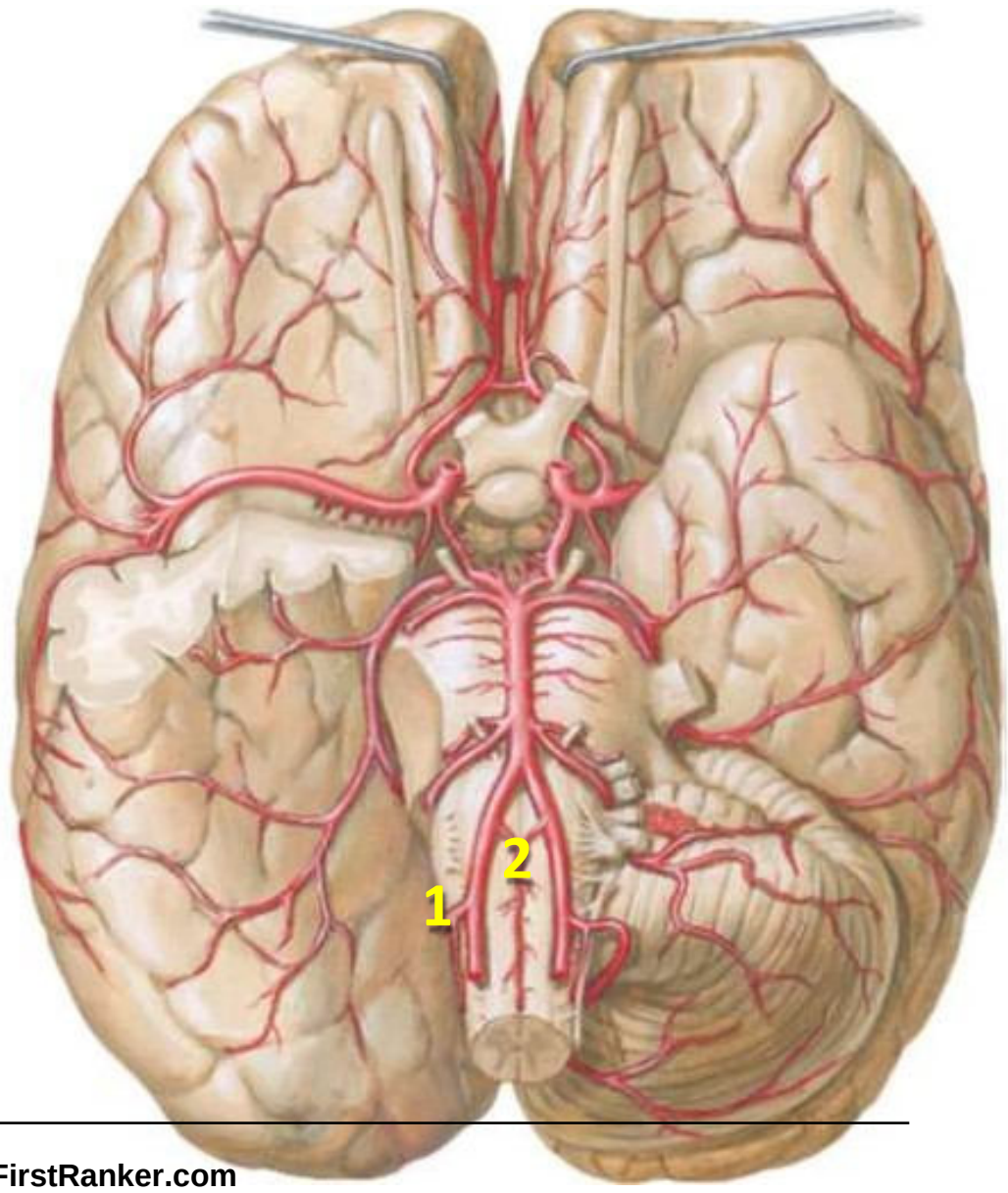
- Tissue of the brain ( paranchyme ) all is supplied by two sources …
- 1- branches of internal carotid artery
- 2- branched of basilar artery



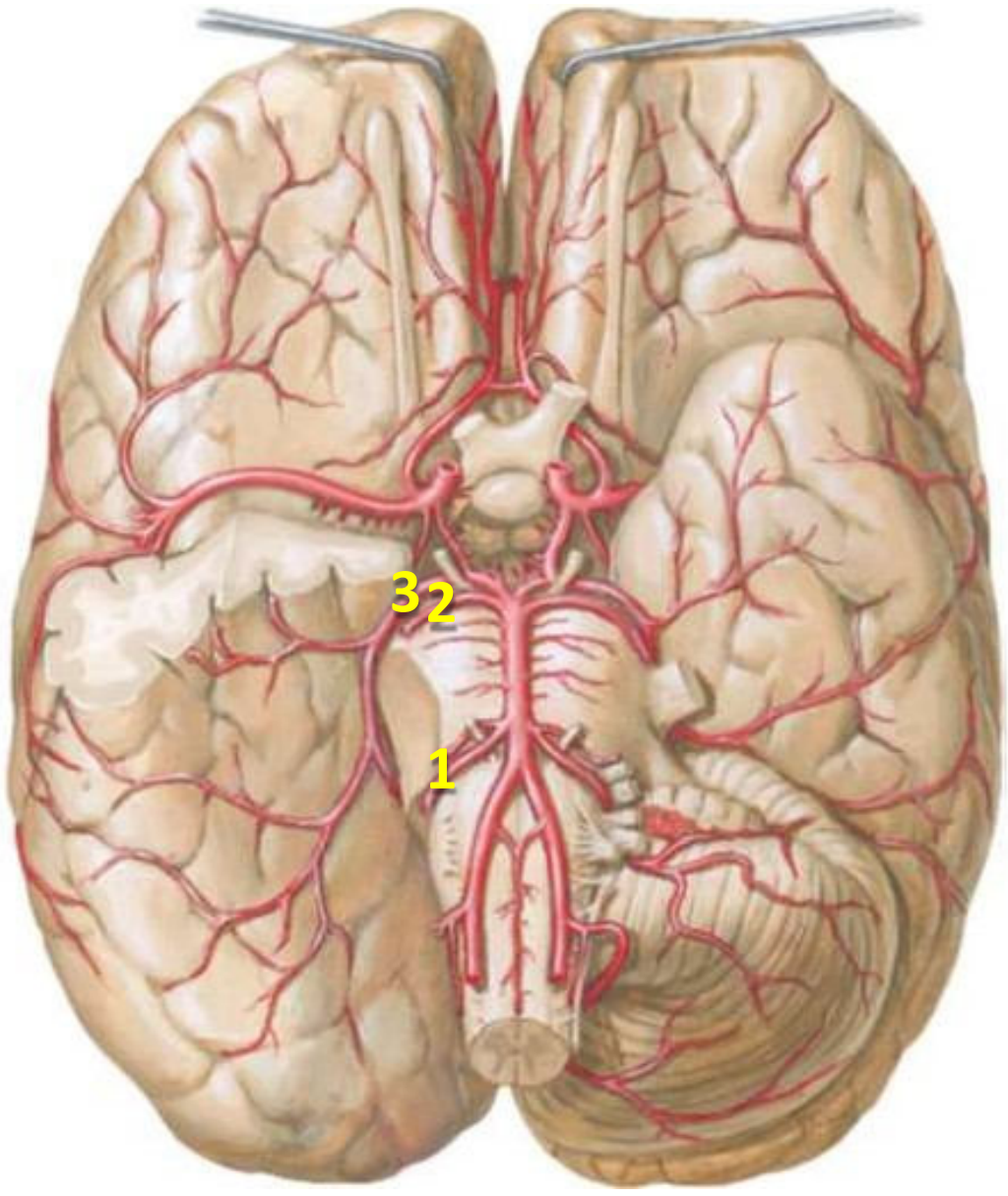

# Branches of the vertebral a.

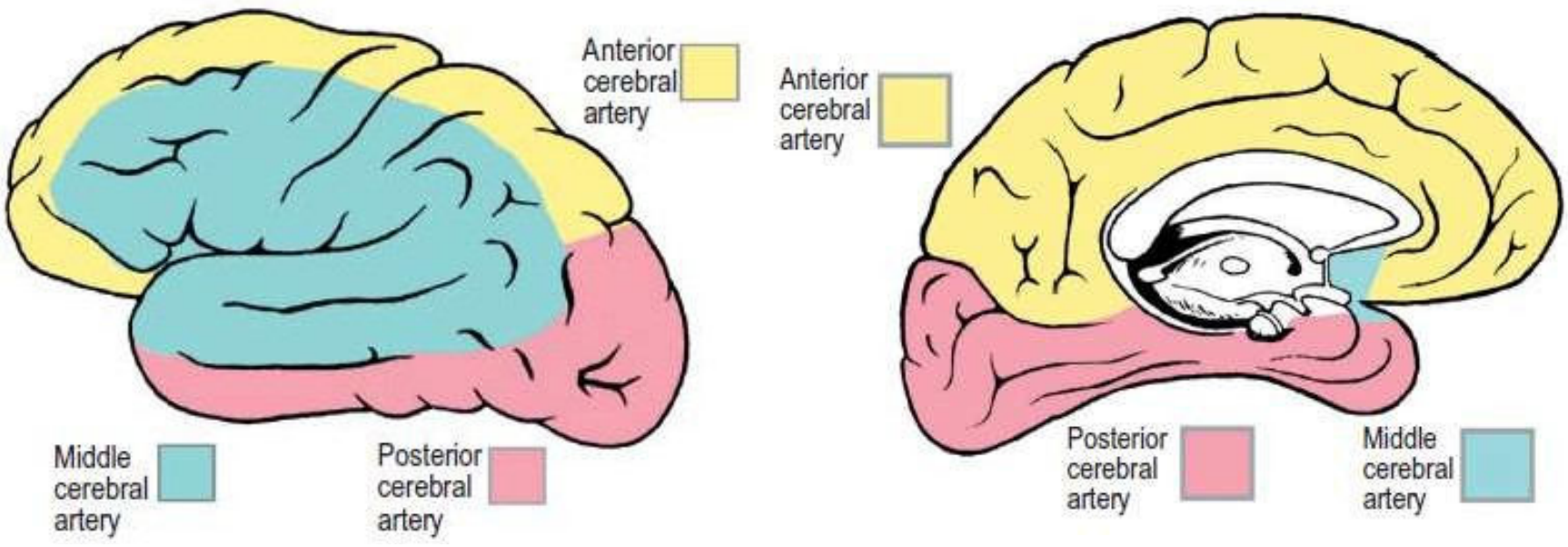
1. Posterior inferior cerebellar a.
2. Anterior spinal a.



# Branches of the basilar a.

1. Anterior inferior cerebellar a.
2. Superior cerebellar a.
3. Posterior cerebral a.



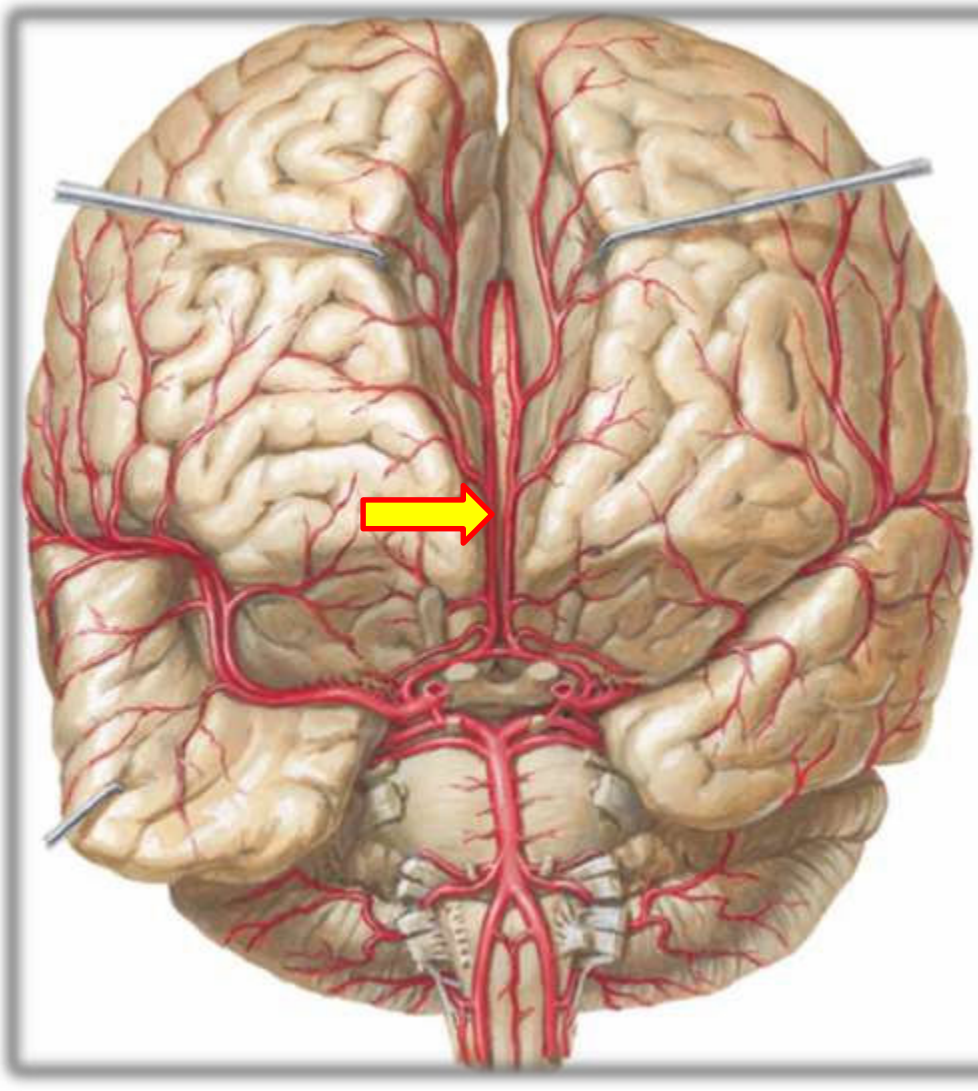




# Blood supply to Brain

# Anterior cerebral artery

- leaves the internal carotid artery and passes forwards above the optic nerve

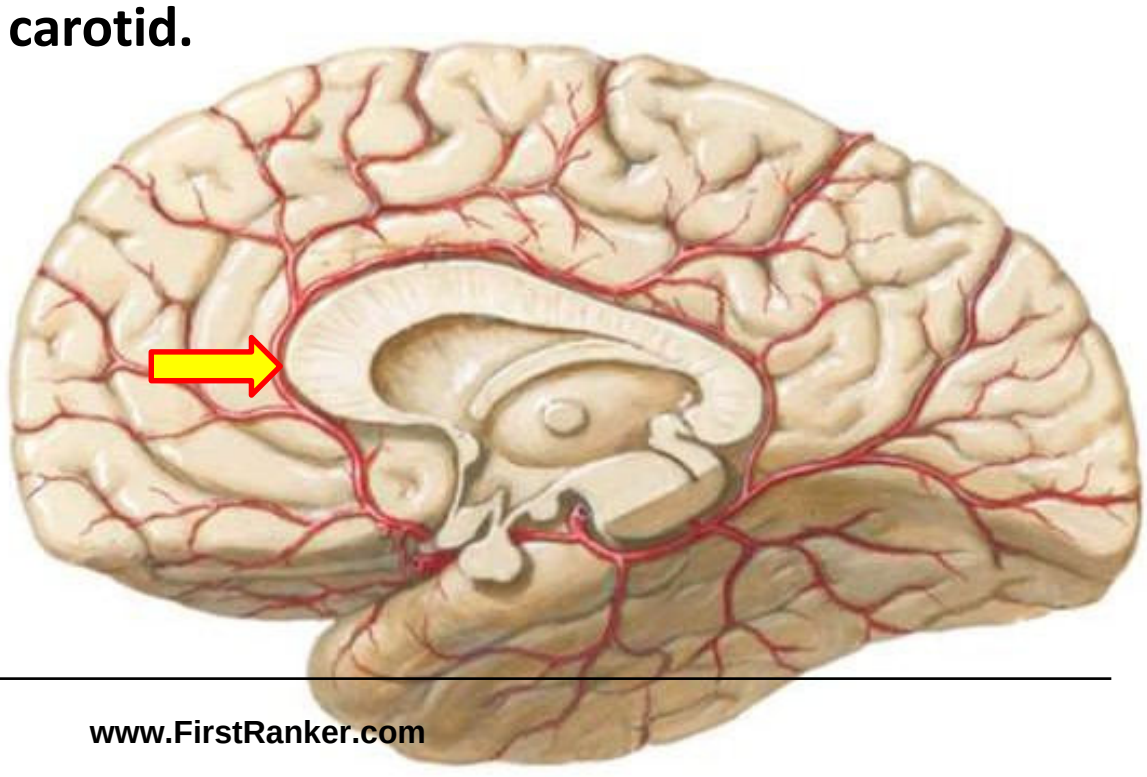
- It is connected to its fellow of the opposite side by the anterior communicating artery. It is distributed to the orbital surface of the frontal lobe and to the whole of the medial surface of the hemisphere above the corpus callosum as far back as the parieto-occipital sulcus



# Anterior cerebral artery

- The motor and sensory areas for the opposite leg, foot and perineum, including the micturition and defecation centres, lie in its territory.

- Because of the anastomosis via the anterior communicating artery, it is usually possible for one anterior cerebral to be supplied with blood from the contralateral internal carotid.

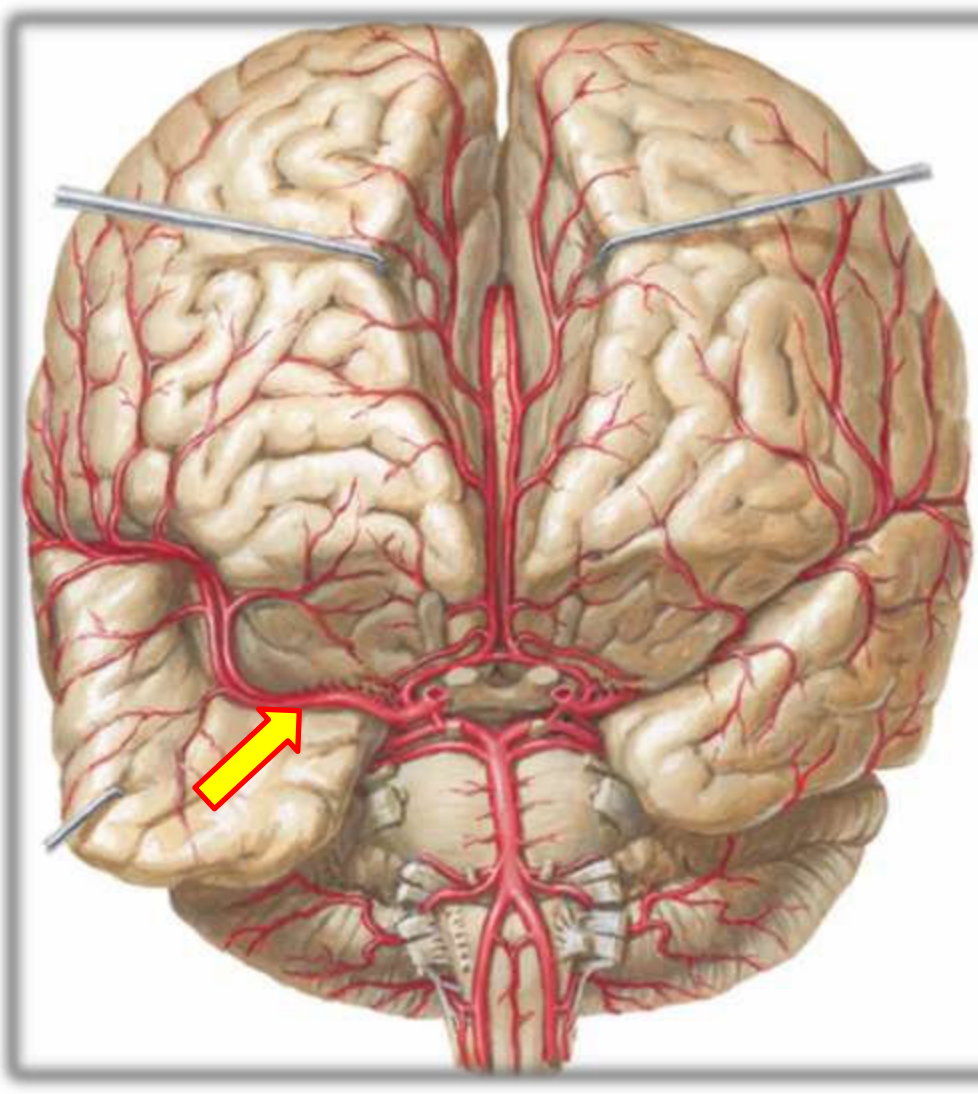


# Anterior cerebral a. syndrome

1. **Hemiparesis or hemiplegia contralaterally, involving primarily the lower limbs and pelvic floor musculature**
2. **Sensory deficits contralaterally, involving primarily the leg and perineum**
3. **Apraxia (due to branches to the supplementary motor area and corpus callosum)**
4. **Disconnection syndrome (due to callosal branches)**
5. **Anosmia (due to branches of the olfactory bulb and olfactory tract)**
6. **Urinary incontinence**
7. **Grasp reflex and or sucking reflex contralaterally (if circle of Willis compromised)**

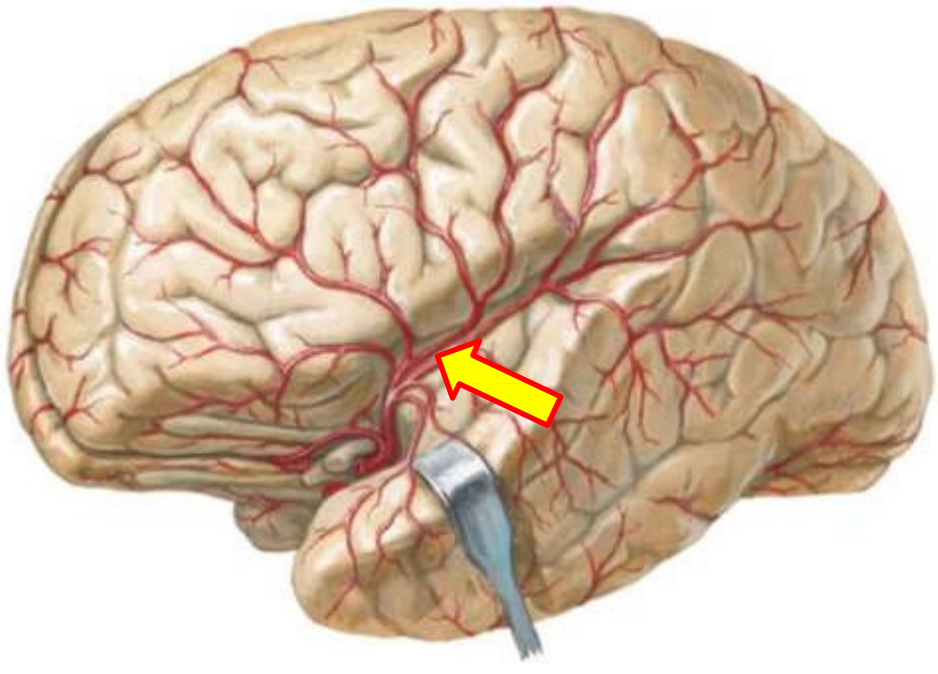
# Middle cerebral artery

- **The middle cerebral artery is the largest and most direct branch of the internal carotid and therefore most subject to embolism.**
- **It passes deep into the lateral sulcus to supply the cortex of the insula and overlying opercula.**
- **It reaches the lateral surface of the hemisphere**



# Middle cerebral artery

- by continuing in the lateral sulcus, from which its branches emerge and ramify over an area that falls short of the borders of the lateral surface by one gyrus or its equivalent breadth.
-
- In its area of cortical distribution lie the motor and sensory areas for the opposite half of the body, excluding leg, foot and perineum (which are in anterior cerebral territory), and the auditory and speech areas.



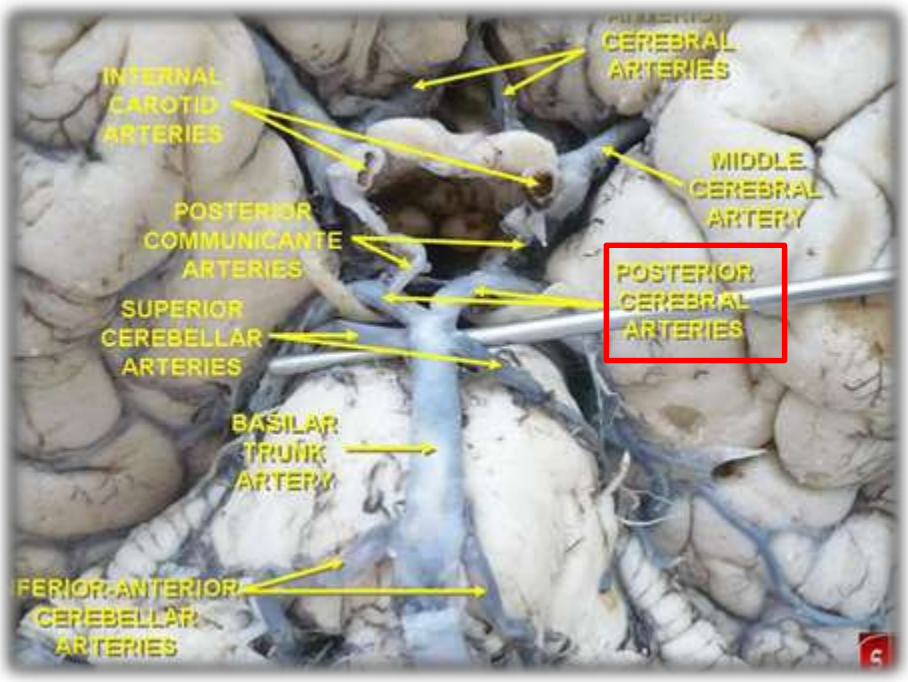
# Middle cerebral a. syndrome

1. **Hemiparesis or hemiplegia** of the lower half of the contralateral face
2. **Hemiparesis or hemiplegia** of the contralateral upper and lower extremities
3. **Sensory loss** of the contralateral face, arm and leg
4. **Ataxia** of contralateral extremities
5. **Speech impairments/aphasia:** Broca's area, Wernicke's or Global aphasia as a result of a dominant hemisphere lesion (usually the left brain)
6. **Perceptual deficits:** hemispatial neglect, anosognosia, apraxia, and spatial disorganization as a result of a non-dominant hemisphere lesion (usually the right brain)
7. **Visual disorders:** déviation conjuguée, a gaze preference towards the side of the lesion; contralateral homonymous hemianopsia

**Note: *faciobrachial deficits greater than that of the lower limb**

# Posterior cerebral artery

- The posterior cerebral artery curls back around the cerebral peduncle supplying it and the optic tract, and passes back above the tentorium to supply the inferomedial surface of the temporal and occipital lobes
- Its territory meets that of the anterior cerebral artery at the parieto-occipital sulcus. Its branches extend around the borders of the brain to supply the inferior temporal gyrus and a corresponding strip of cortex on the lateral surface of the occipital lobe. .




# Posterior cerebral artery

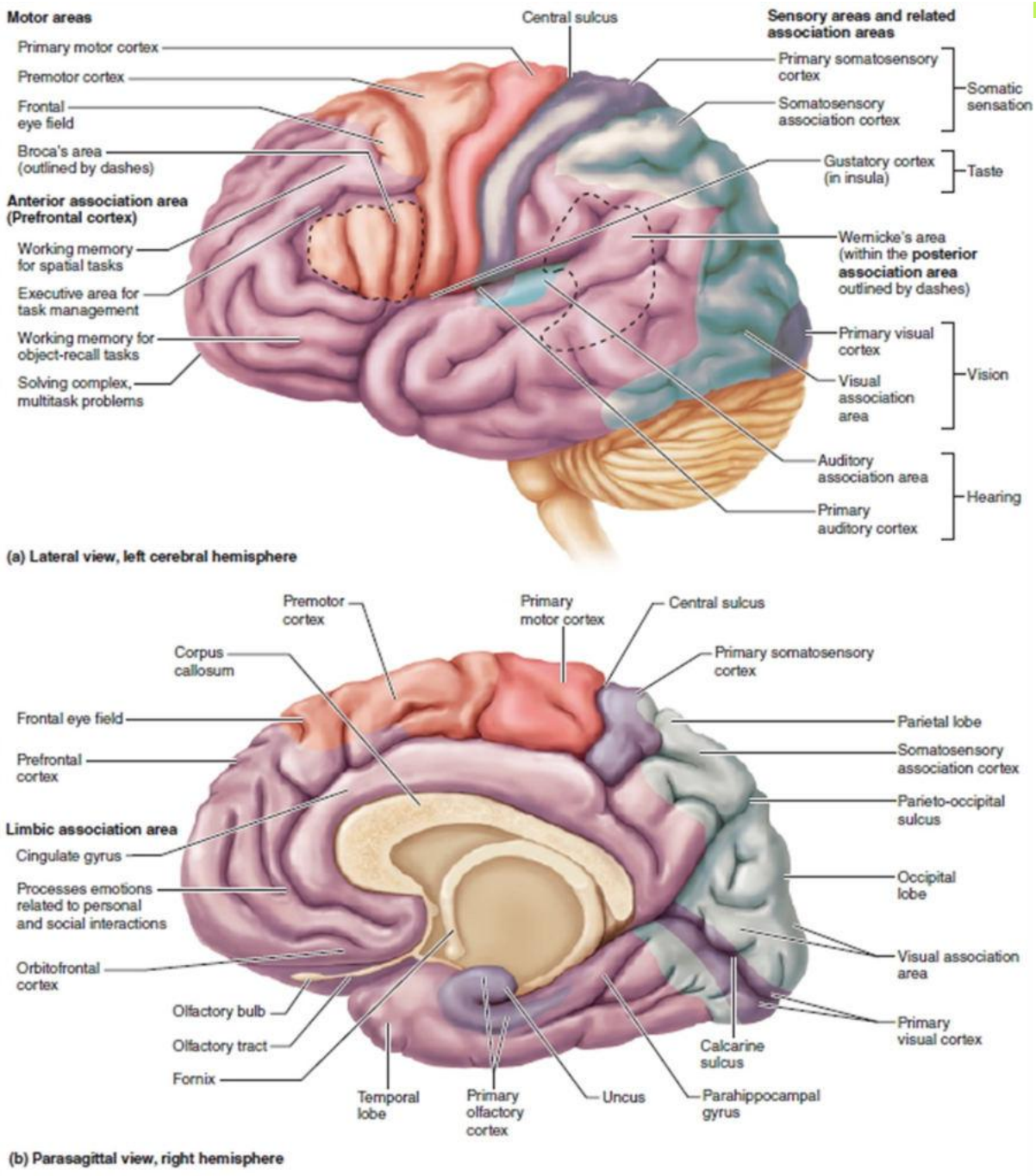
- The visual area for the opposite field of vision lies wholly within its territory, but the middle cerebral branches can sometimes extend sufficiently far back on the occipital lobe to supply the macular part of the visual area .
- Thus the macular field of vision may be spared when the rest of the visual area is destroyed by a posterior cerebral thrombosis.

# Posterior cerebral a. syndrome

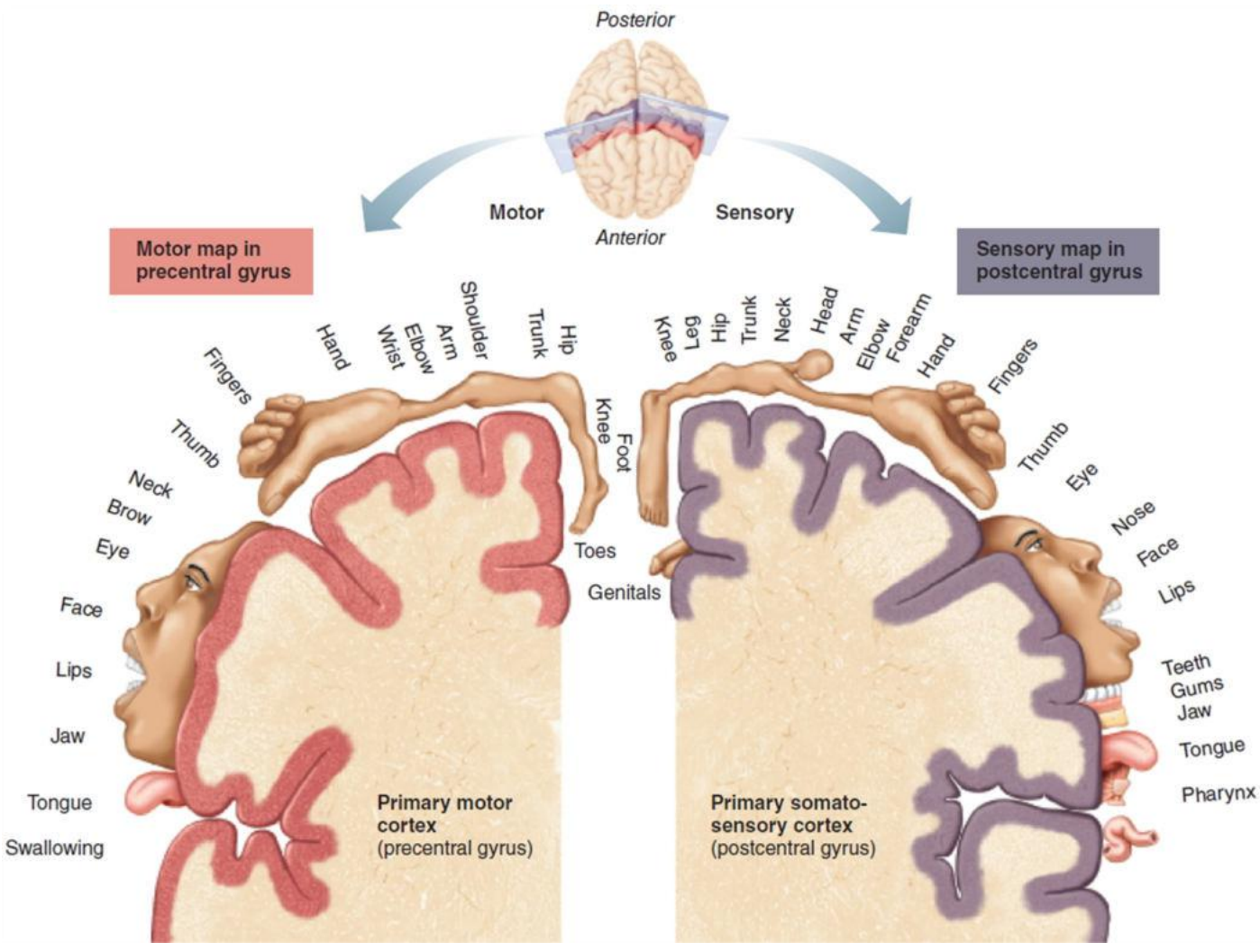
1. **Visual disorder : Contralateral homonymous hemianopsia & cortical blindness with bilateral involvement of the occipital lobe branches**
2. **visual agnosia**
3. **dyslexia, Anomic aphasia, color naming and discrimination problems**
4. **memory defect**
5. **involuntary movements: chorea, intention tremor, hemiballismus**
6. **contralateral hemiplegia**
7. **Weber's syndrome: occulomotor nerve palsy**
8. **Bálint's syndrome: loss of voluntary eye movements optic ataxia, asimultagnosia (inability to understand visual objects).**

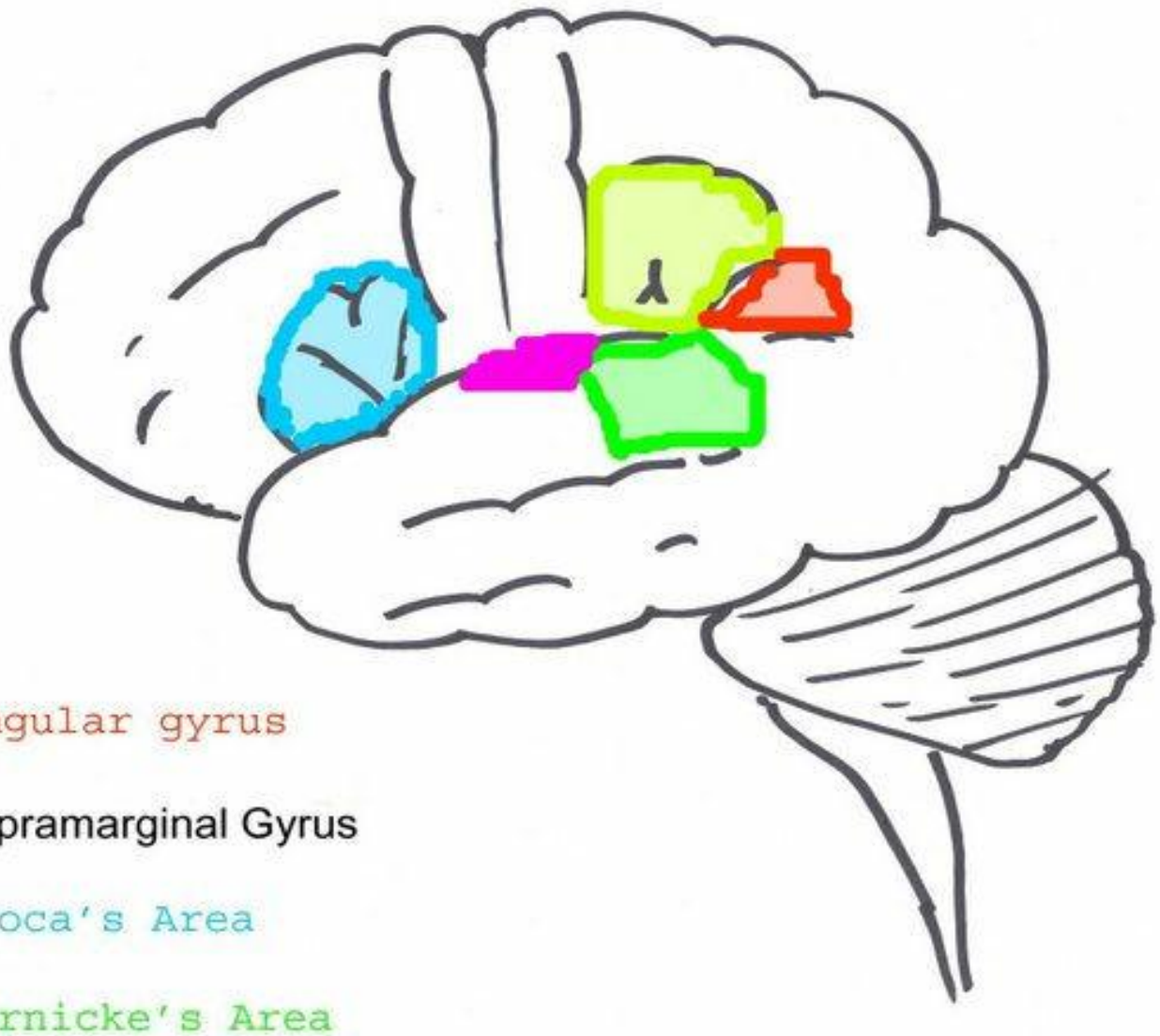
# Circle of willis

- 1, Internal carotid artery.
- 2, Posterior cerebral artery.
- 3, Anterior cerebral artery.
- 4, Anterior cerebral artery.
- 5, Middle cerebral artery.
- 6, Basilar artery.
- 7, Vertebral artery.
- 8, anterior communicating artery .









Angular gyrus

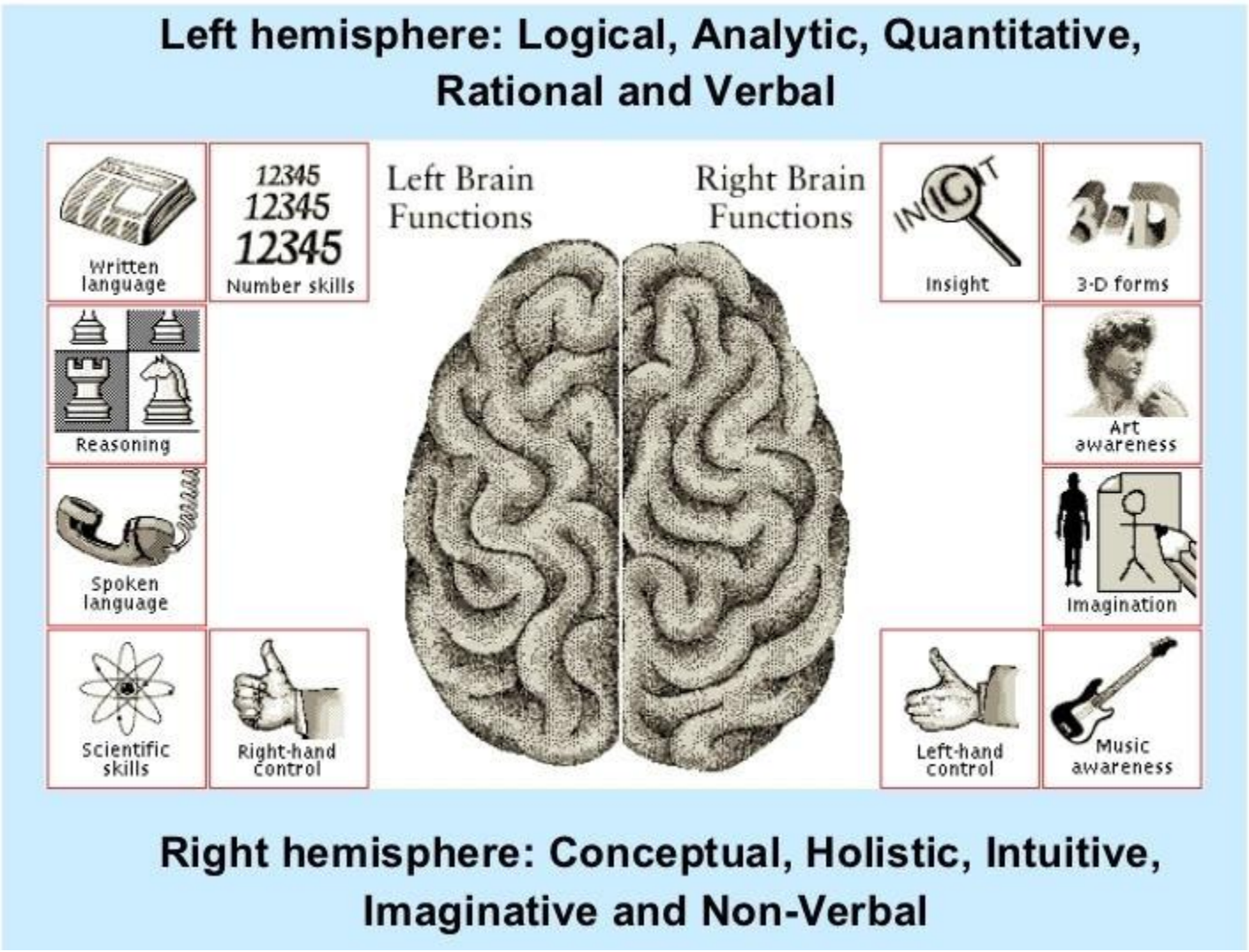
Supramarginal Gyrus

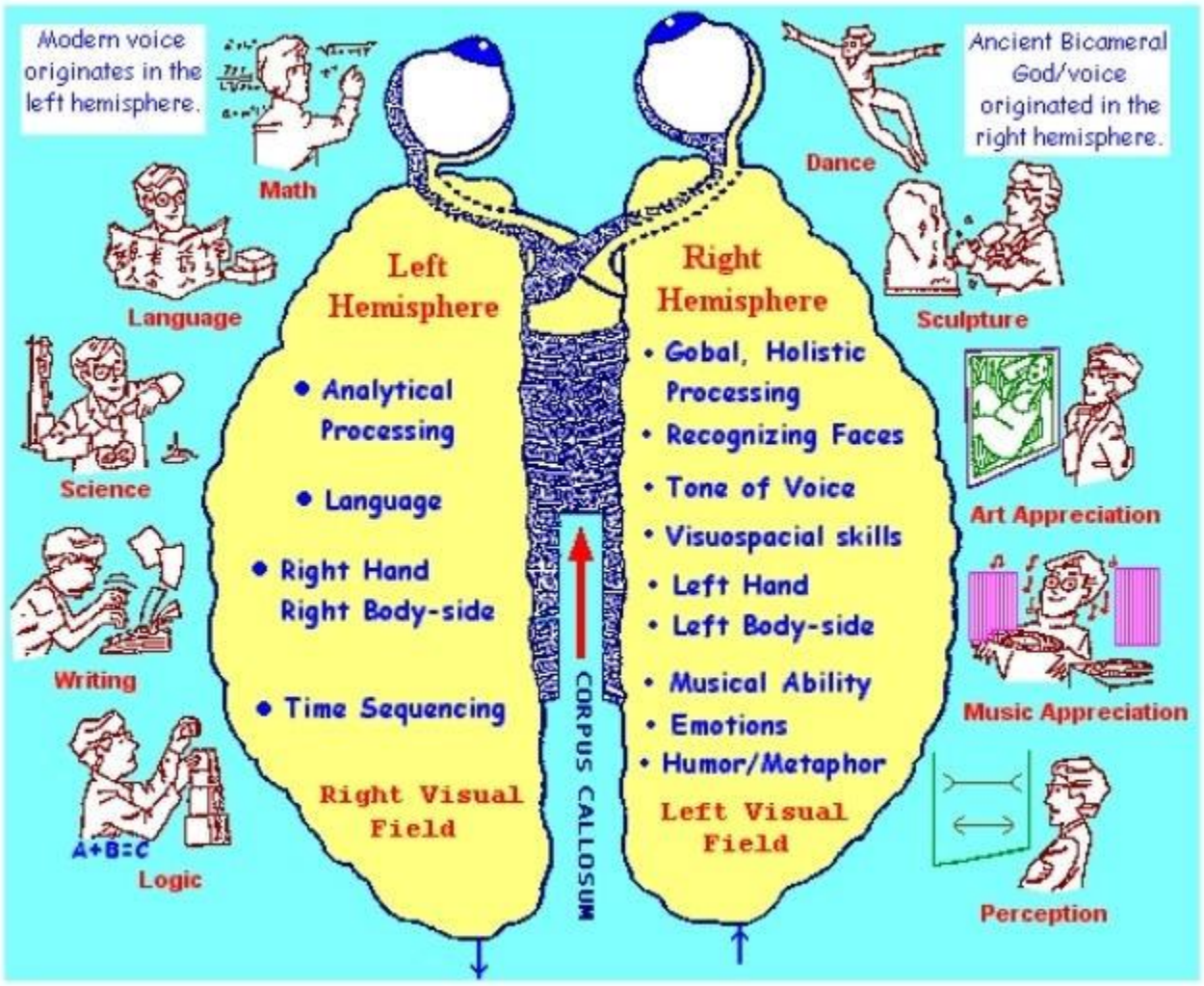
Broca's Area

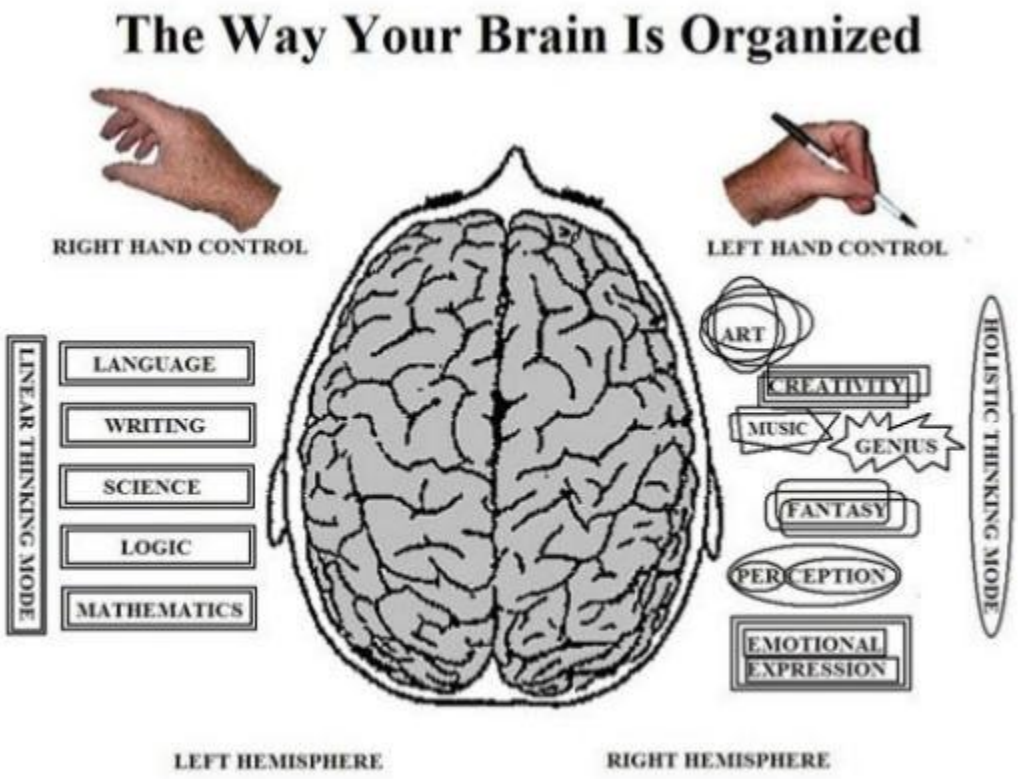
Wernicke's Area

Primary Auditory Cortex

Co.R.O.





Look at the chart and say the COLOUR

not the word

YELLOW BLUE ORANGE
BLACK RED GREEN
PURPLE YELLOW RED
ORANGE GREEN BLACK
BLUE RED PURPLE
GREEN BLUE ORANGE

Left - Right Conflict

Your right brain tries to say the colour but your left brain insists on reading the word.