

Human Cerebrum- Regions of Thoughts, Perception & Actions

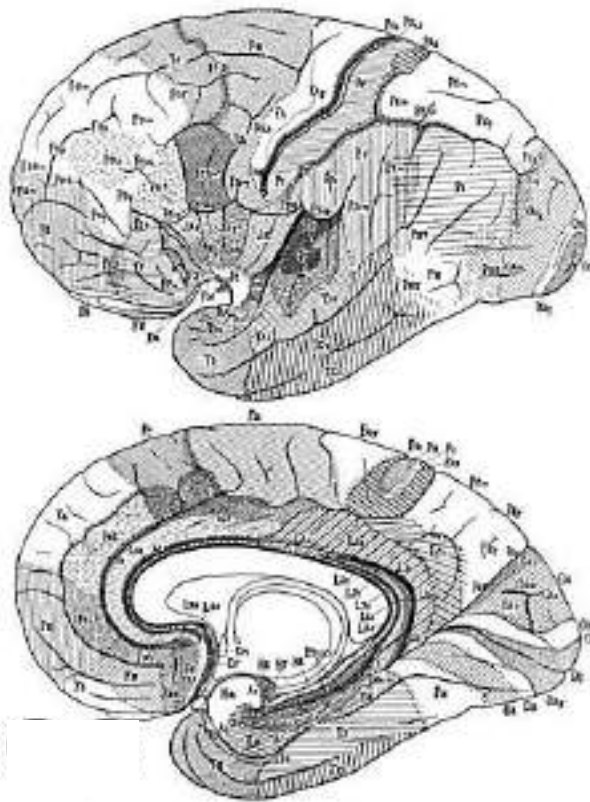
Presented by
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Department of Anatomy
Green Life Medical College



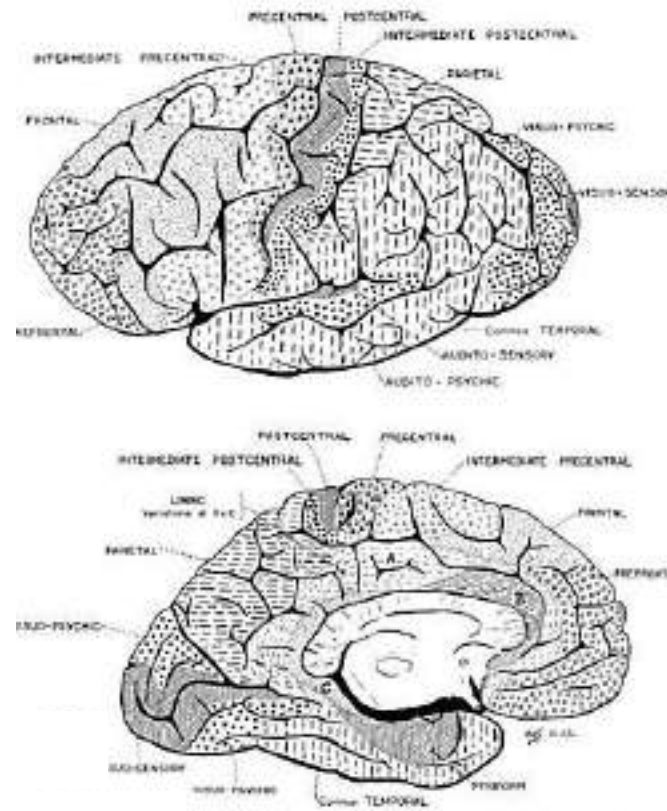
Cerebrum

- The cerebrum is the largest part of brain
- Situated in the cranial fossa
- It represents the highest degree of evolutionary development of the human brain

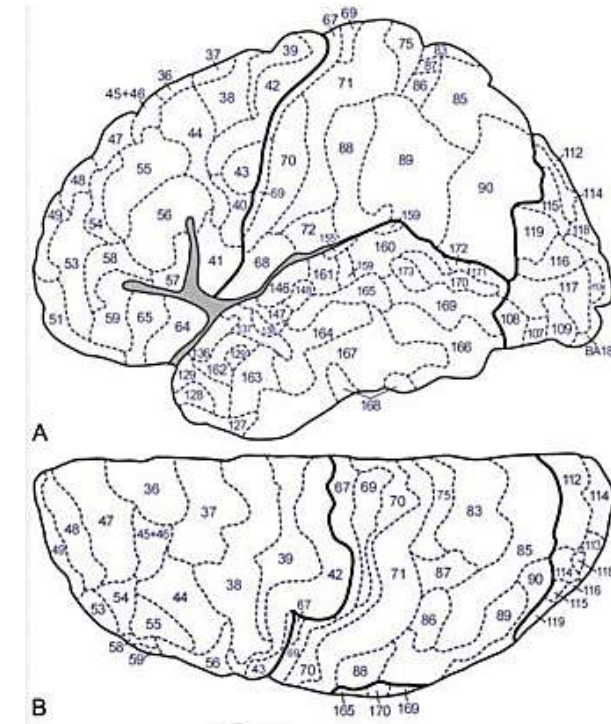
Functional areas of cerebrum



Campbell



Von Economo



Oskar Vogt

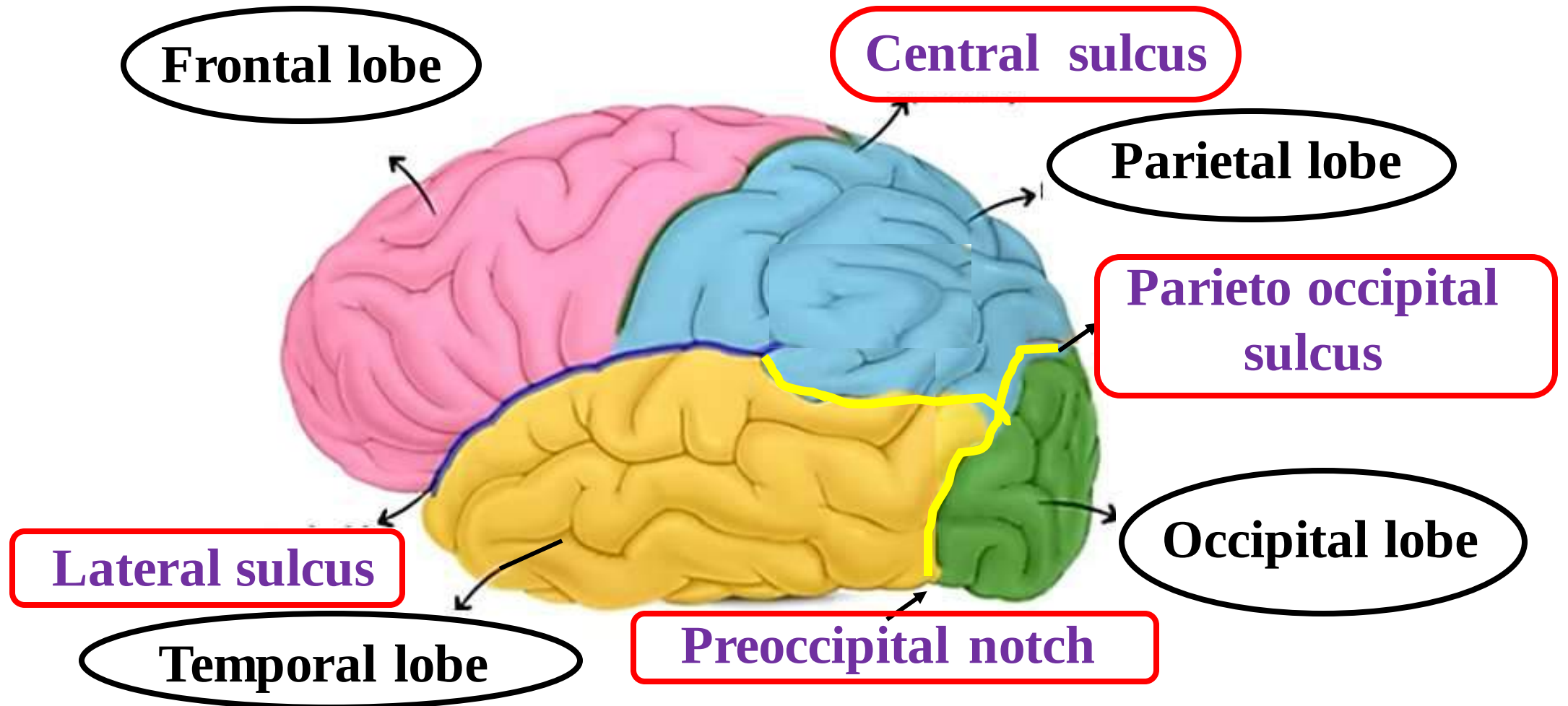
Korbinian Brodmann(1868 -1918)



K Brodmann

(1909)

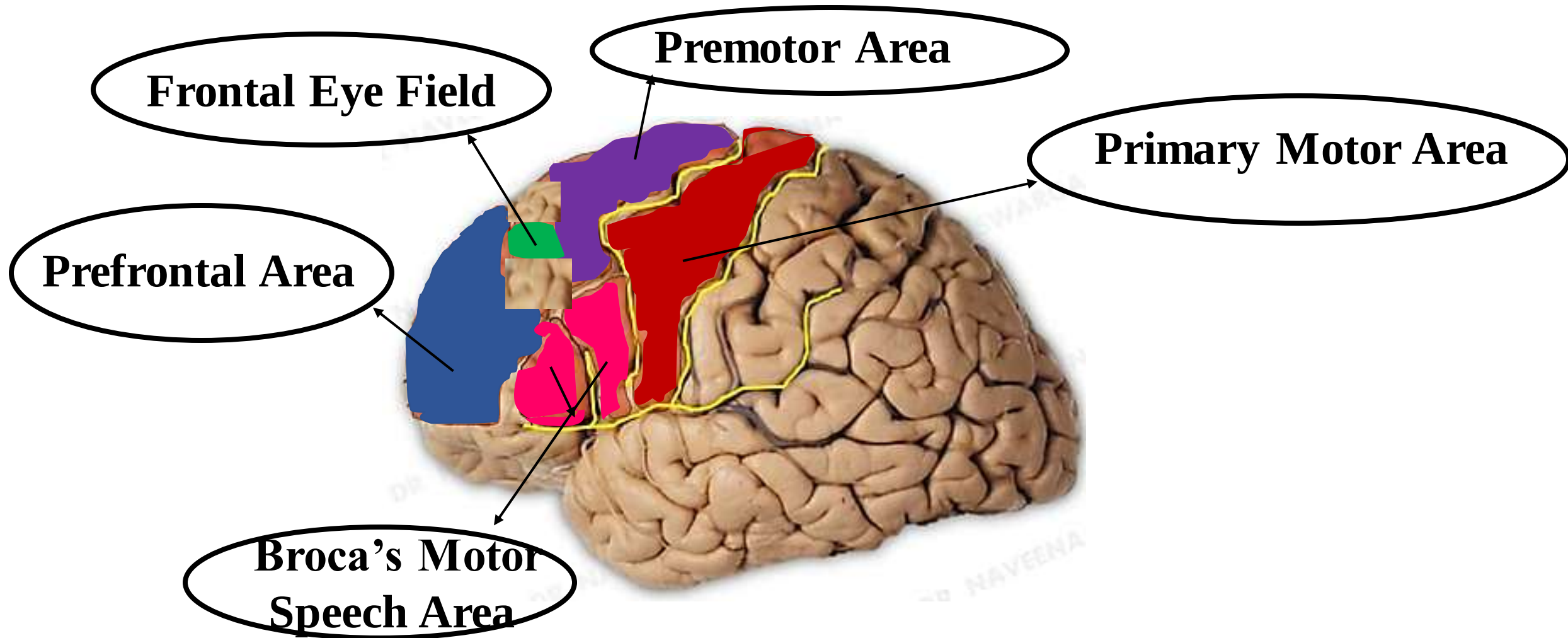
Lobes



Functional areas

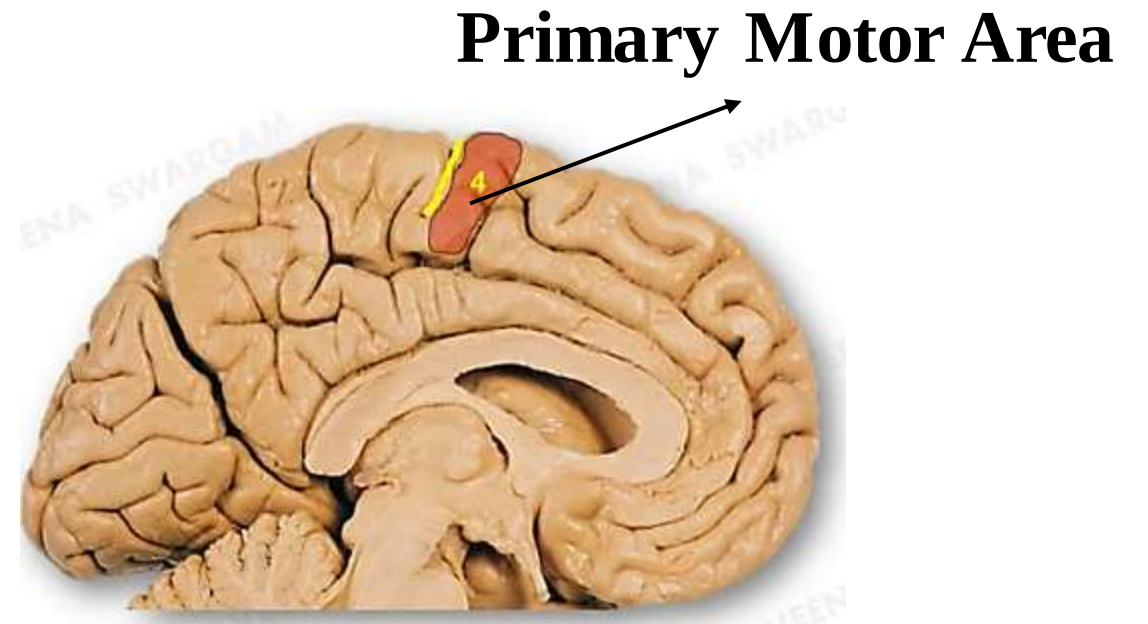
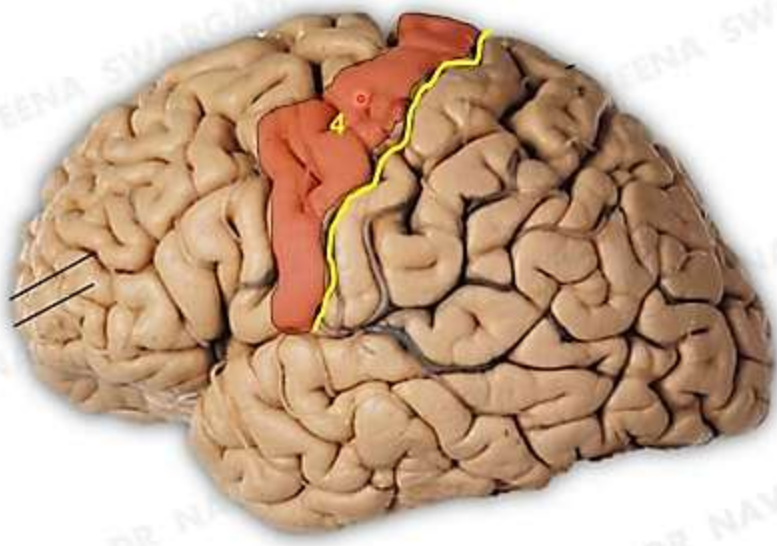
- Motor area
- Sensory area
- Association area

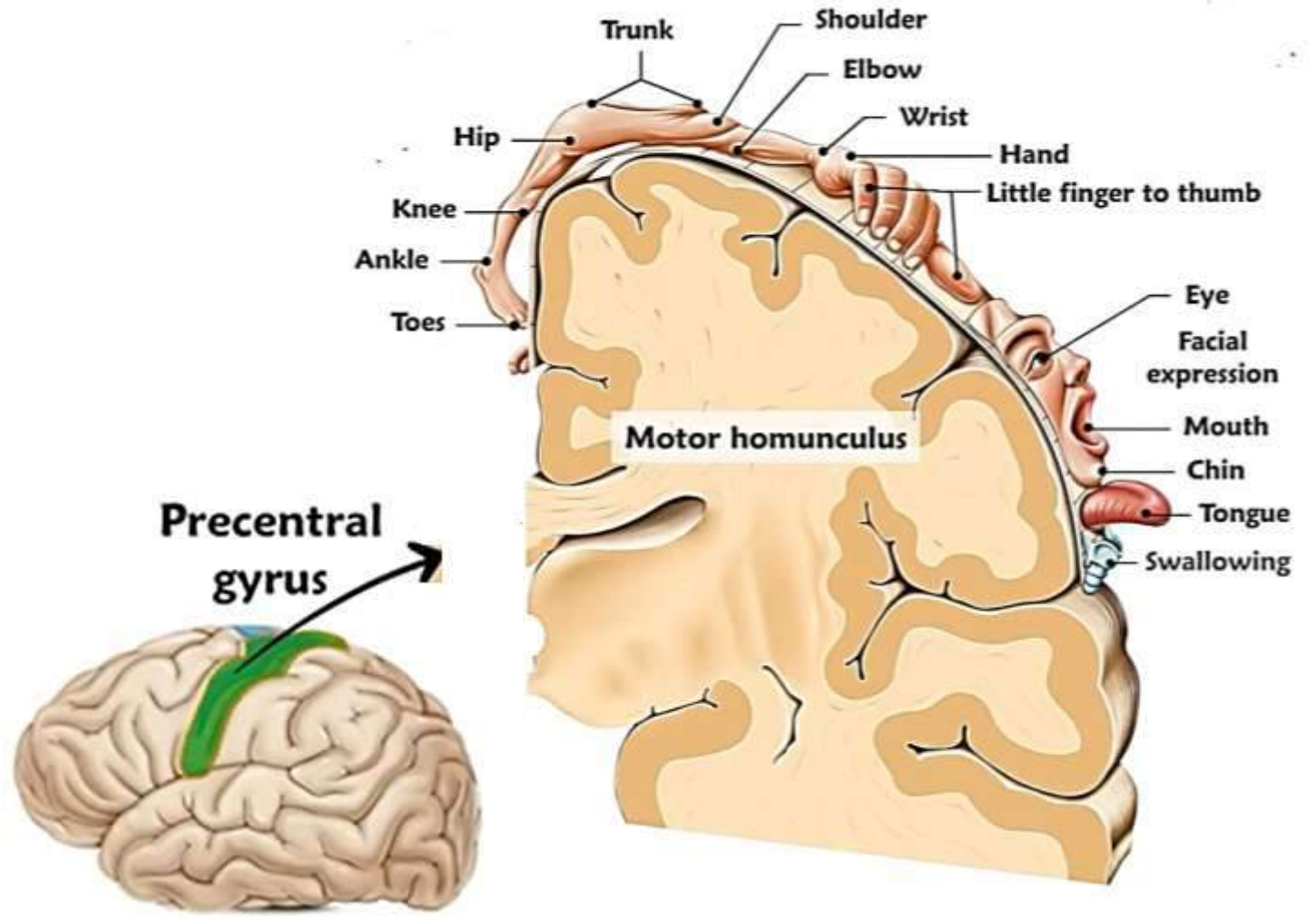
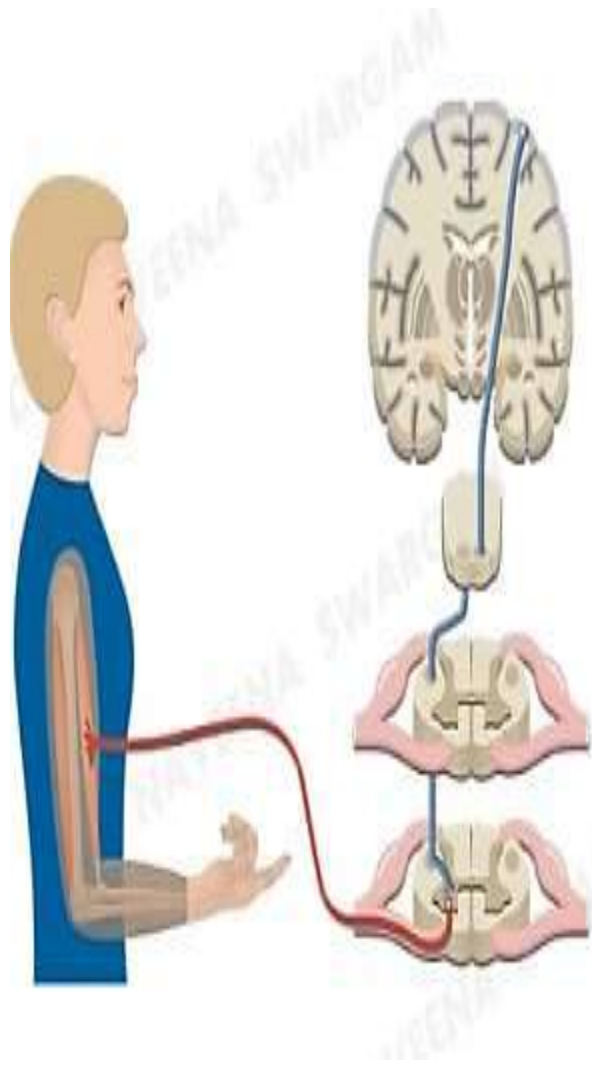
Functional areas of frontal lobe



Primary Motor Area (Area 4)

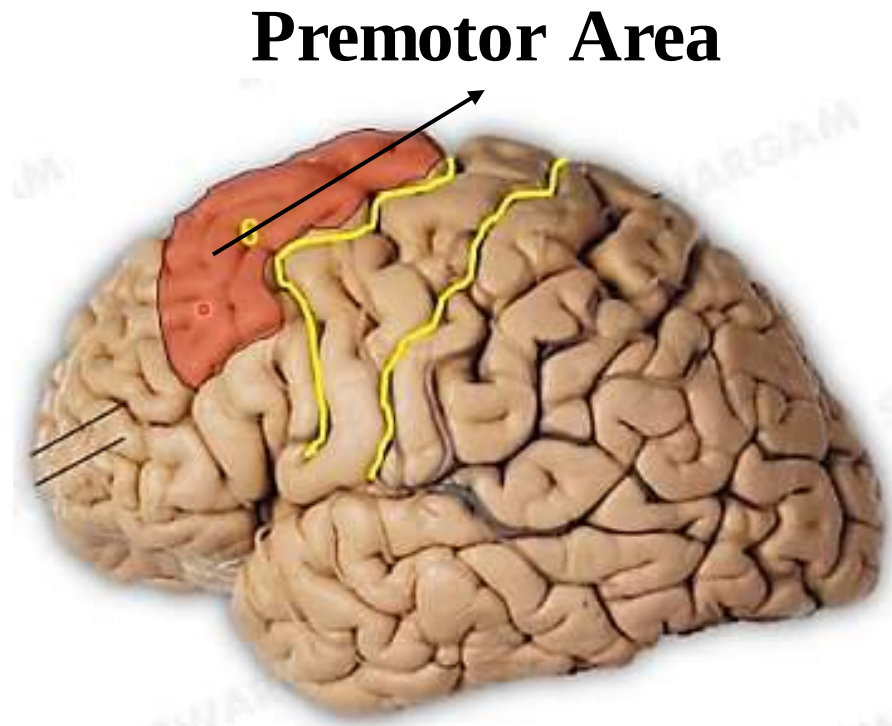
- Precentral gyrus
- Anterior part of paracentral lobule

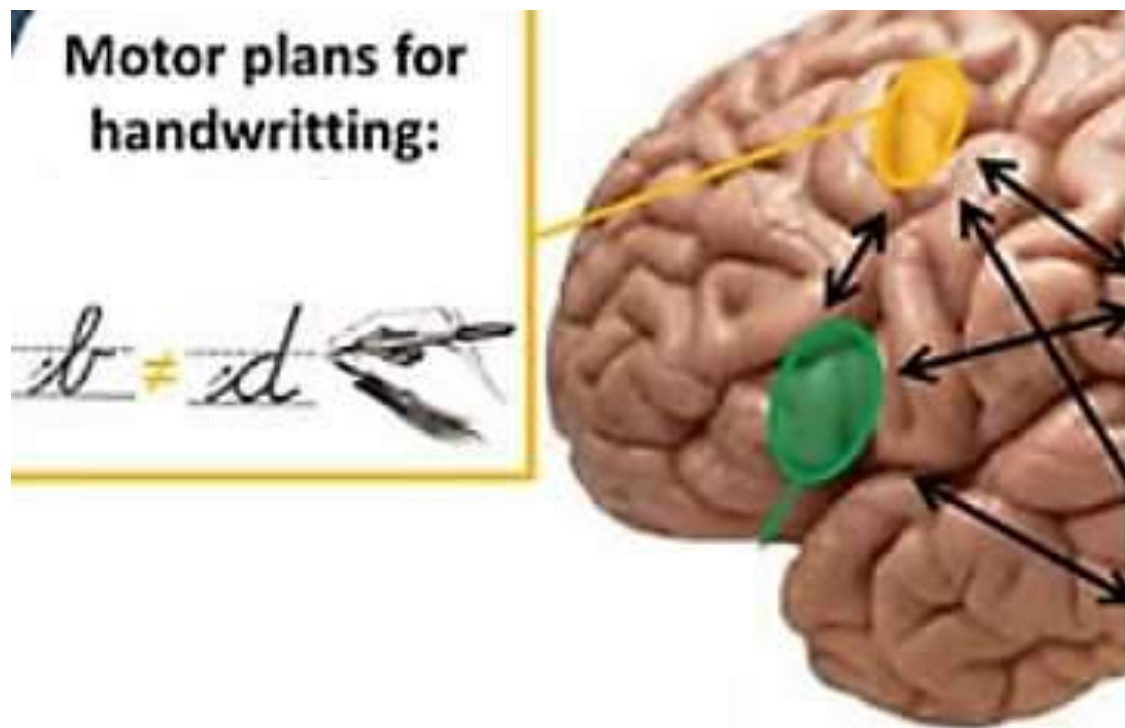




Premotor Area (Area 6)

- Posterior part of superior, middle and inferior frontal gyri

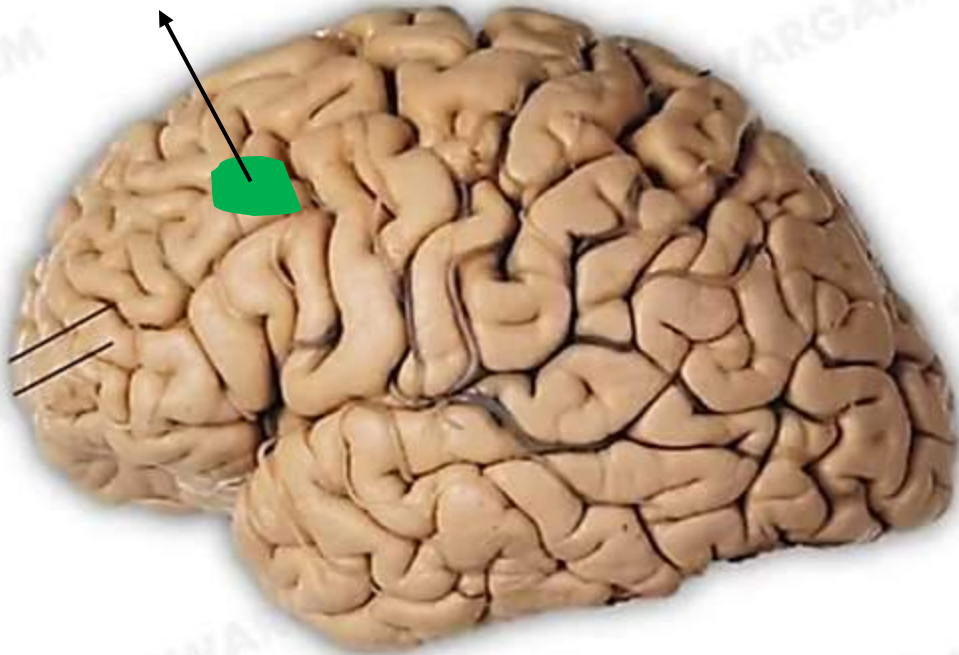




Frontal Eye Field (Area 8)

- Posterior part of middle frontal gyrus

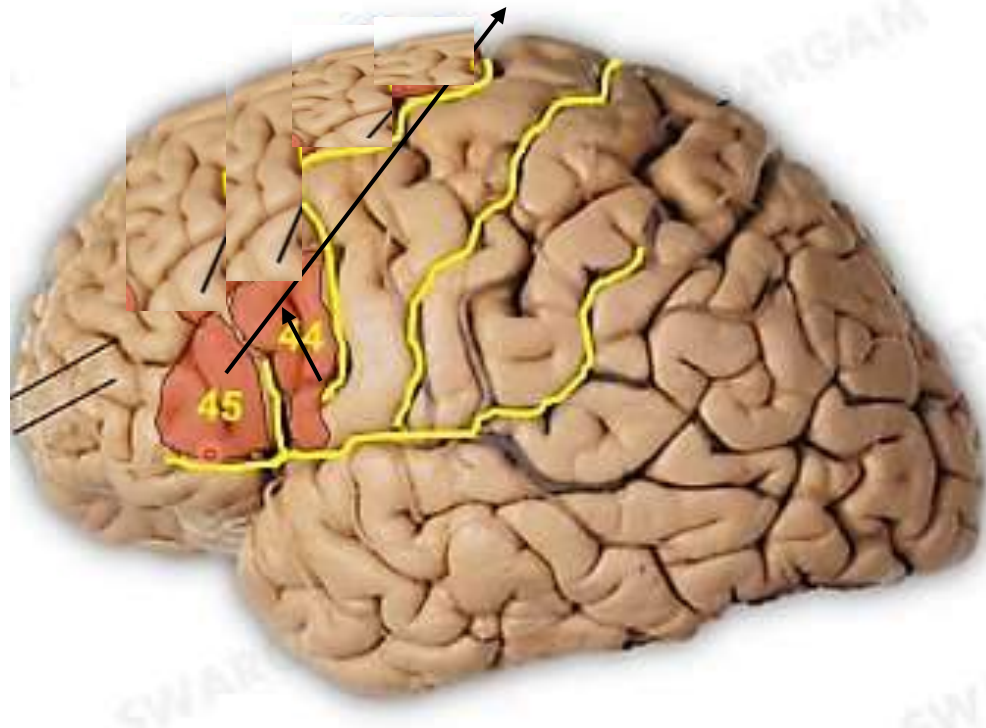
Frontal Eye Field



Broca's Motor Speech Area (Areas 45 & 44)

- Pars triangularis, Pars opercularis

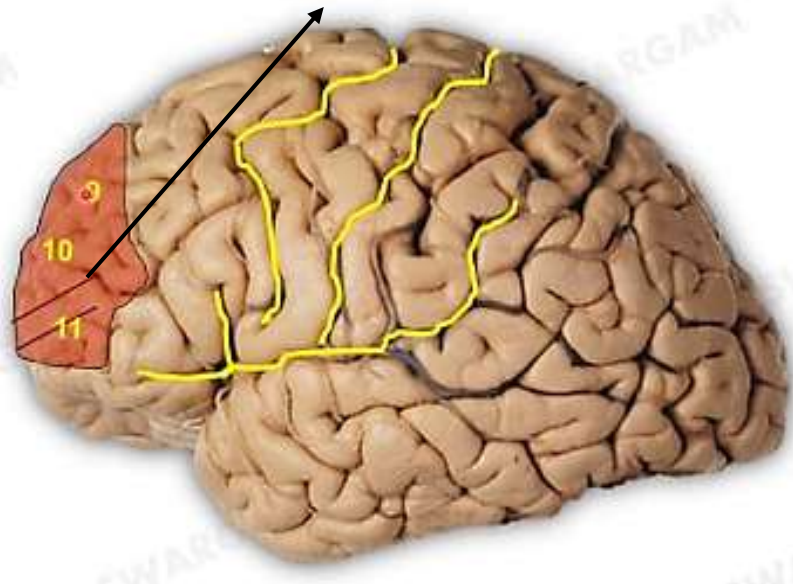
Broca's Motor Speech Area

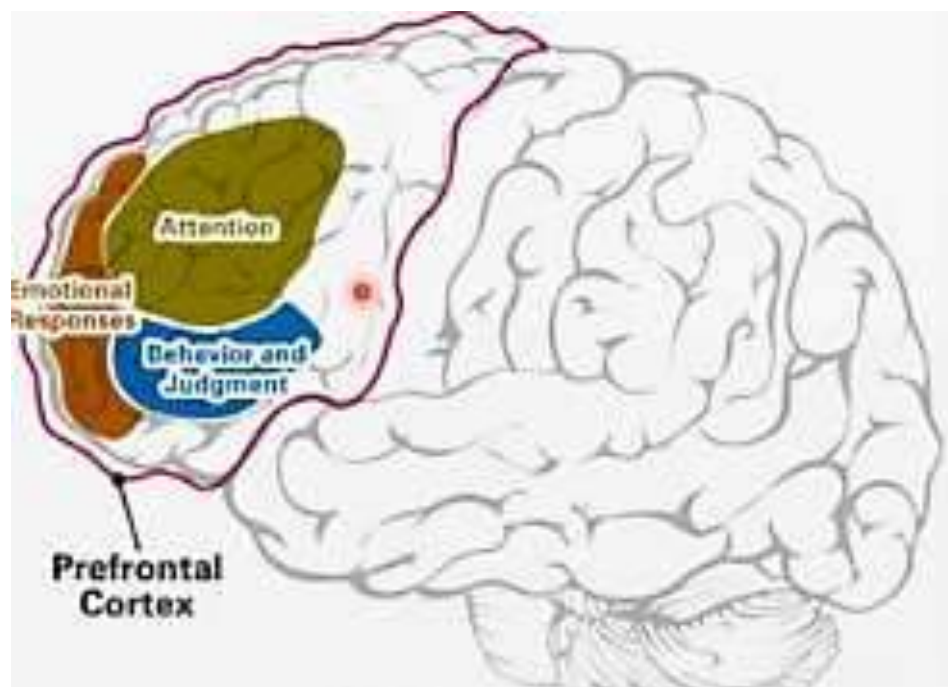


Prefrontal Area (Area 9,10,11,12)

- Anterior part of superior, middle and inferior frontal gyri

Prefrontal Area



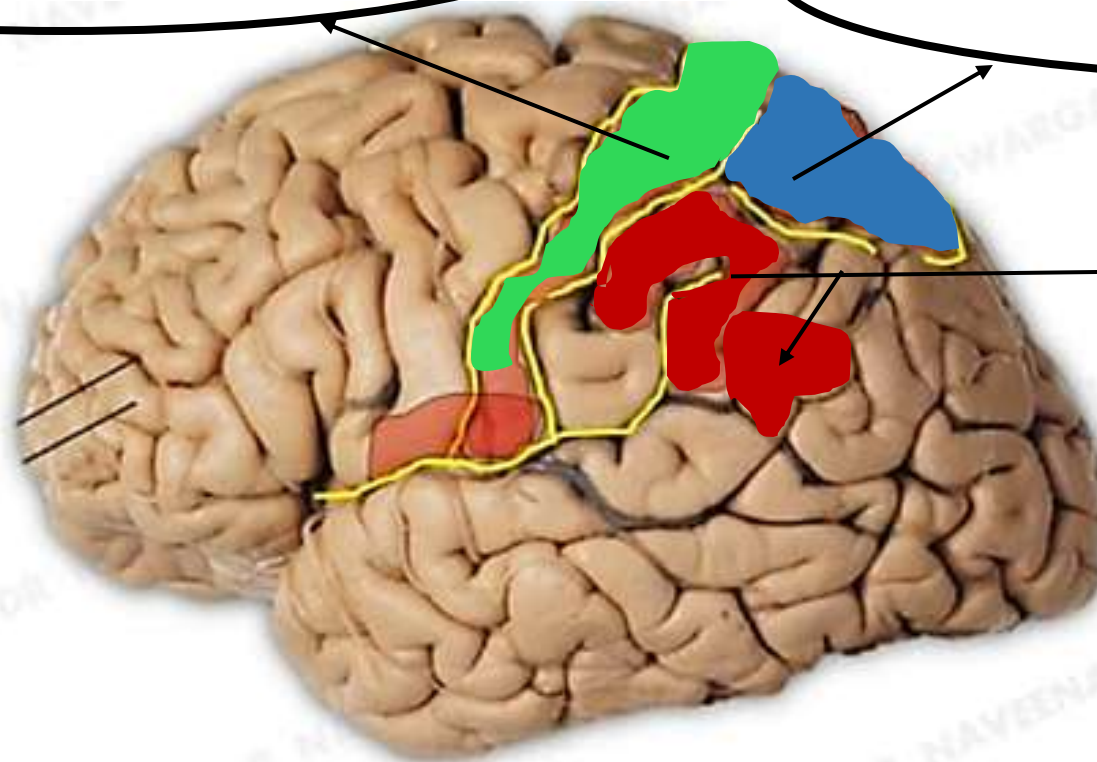


Functional area of parietal lobe

Primary Somesthetic Area

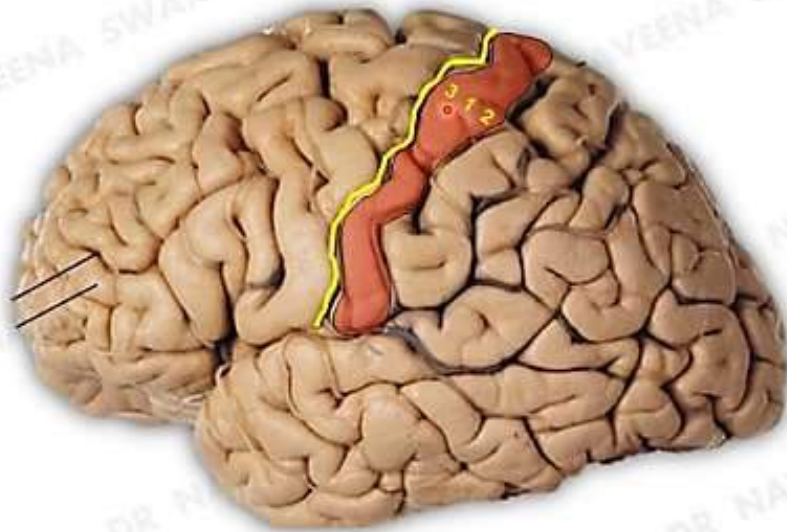
Somesthetic Association Area

Wernicke's Area

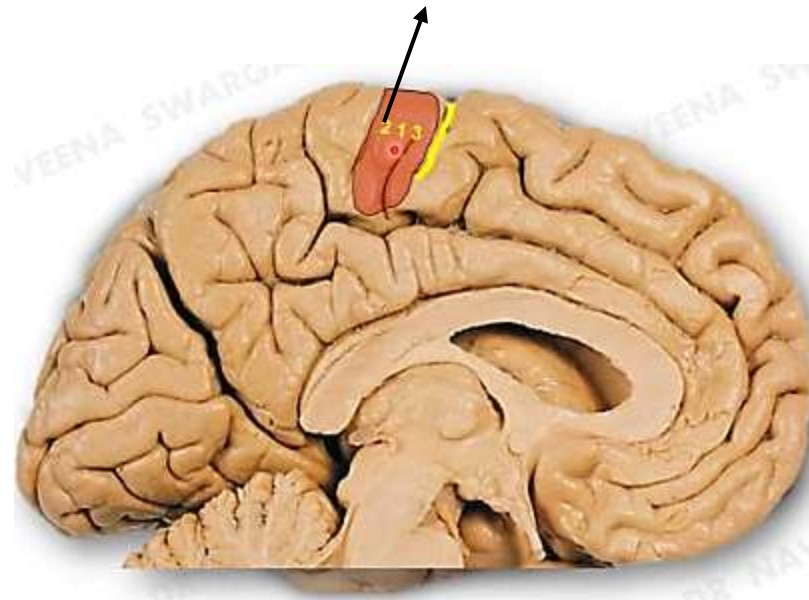


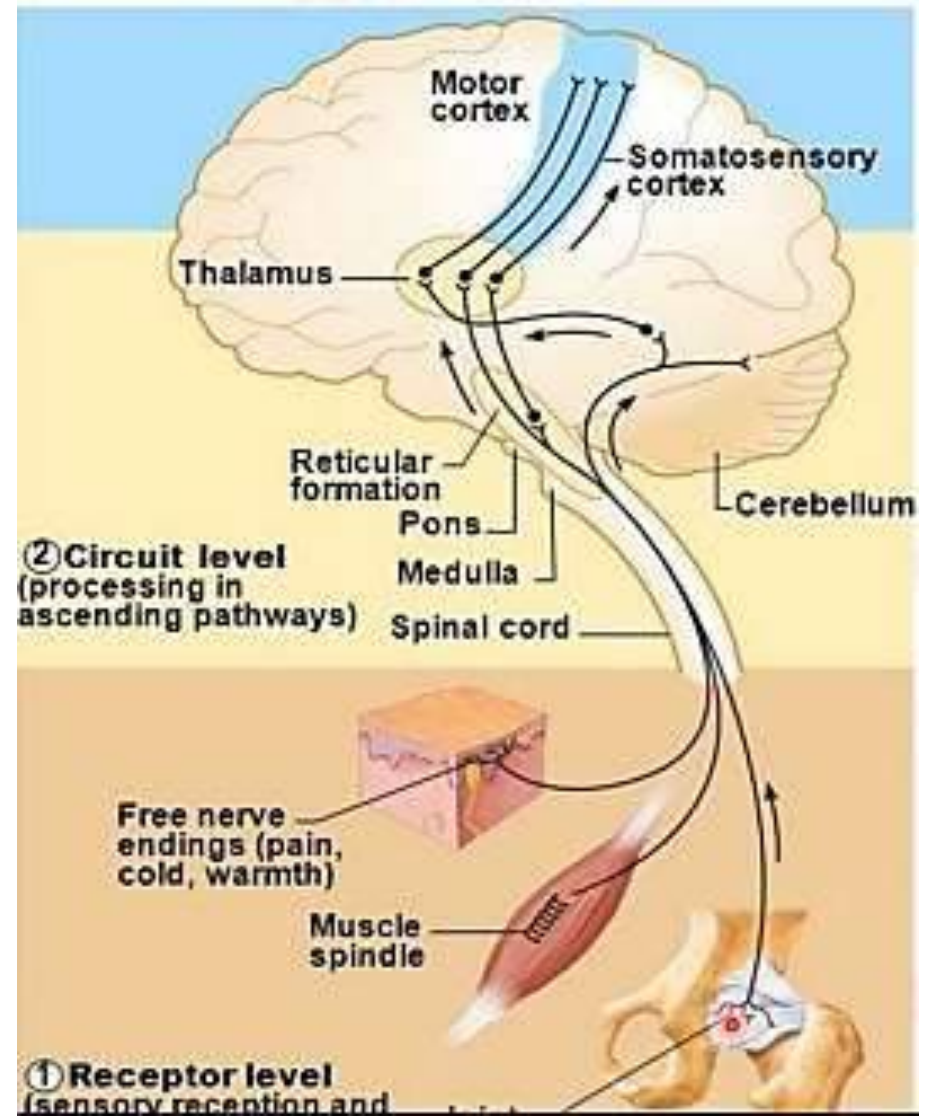
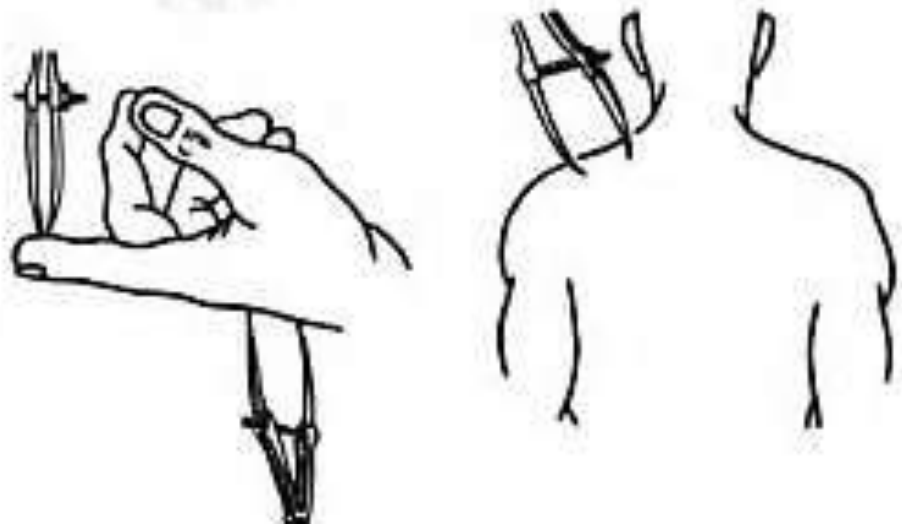
Primary Somesthetic Area (Areas 3,1,2)

- Postcentral gyrus, posterior part of Paracentral lobule

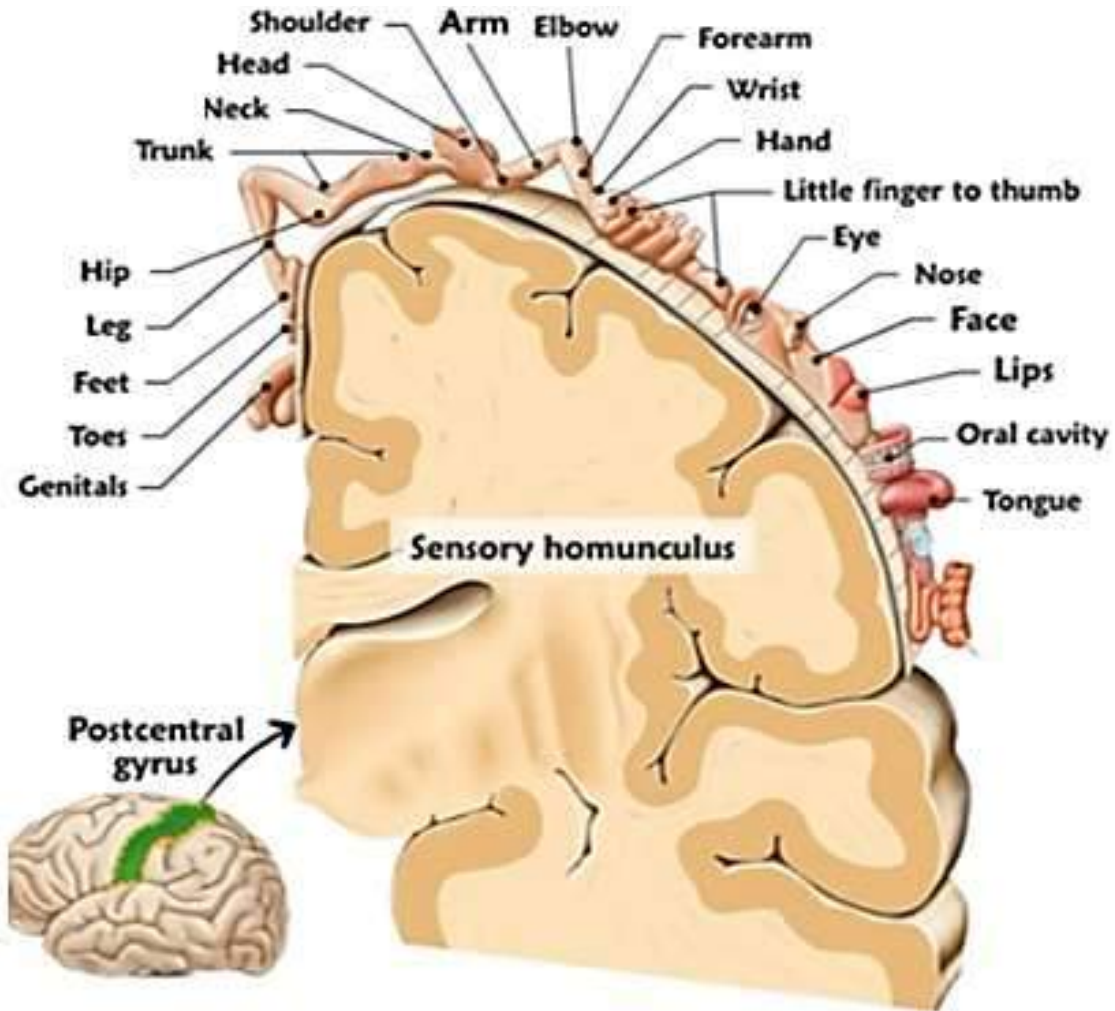


Primary Somesthetic Area





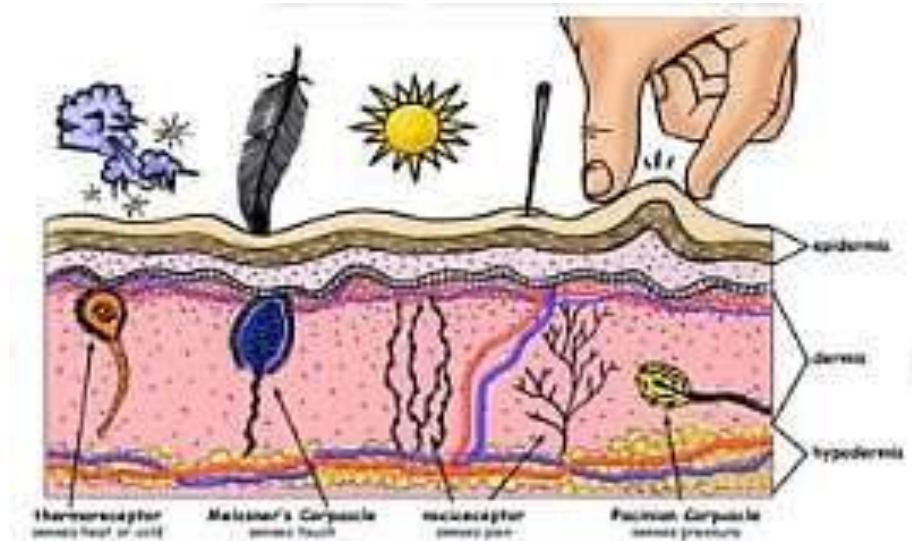
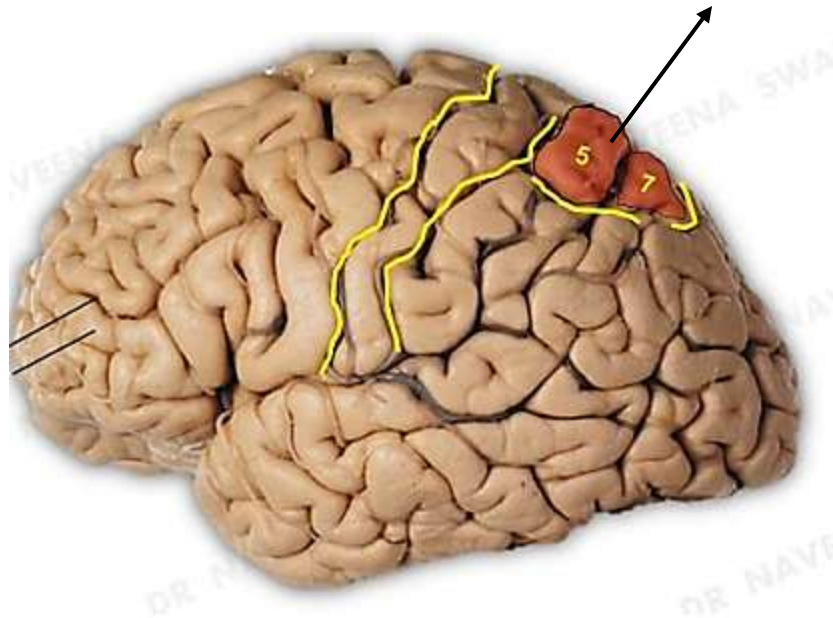
Sensory homunculus



Somesthetic Association Area (Area 5,7)

- Behind postcentral gyrus of superior parietal lobule

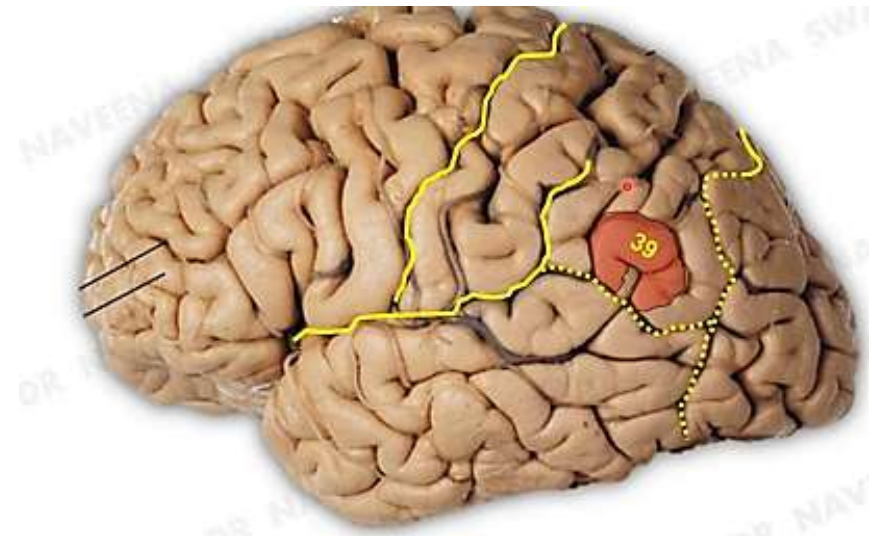
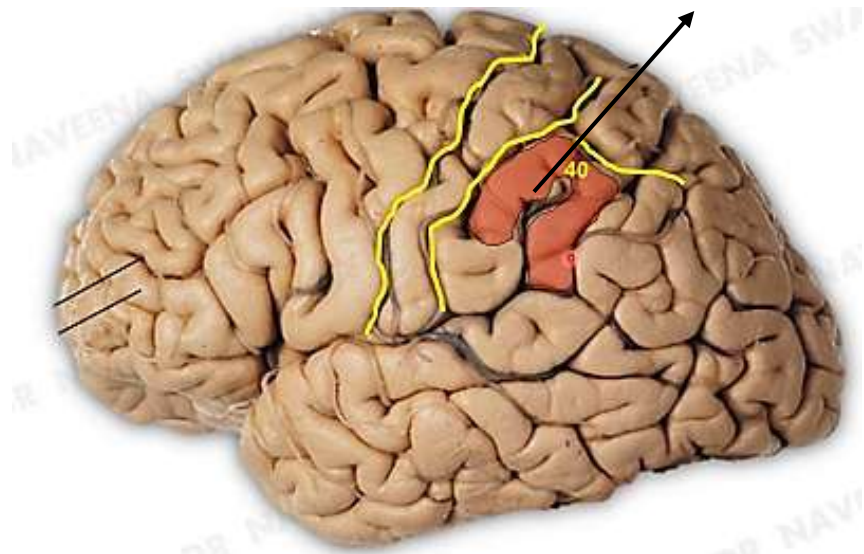
Somesthetic Association Area

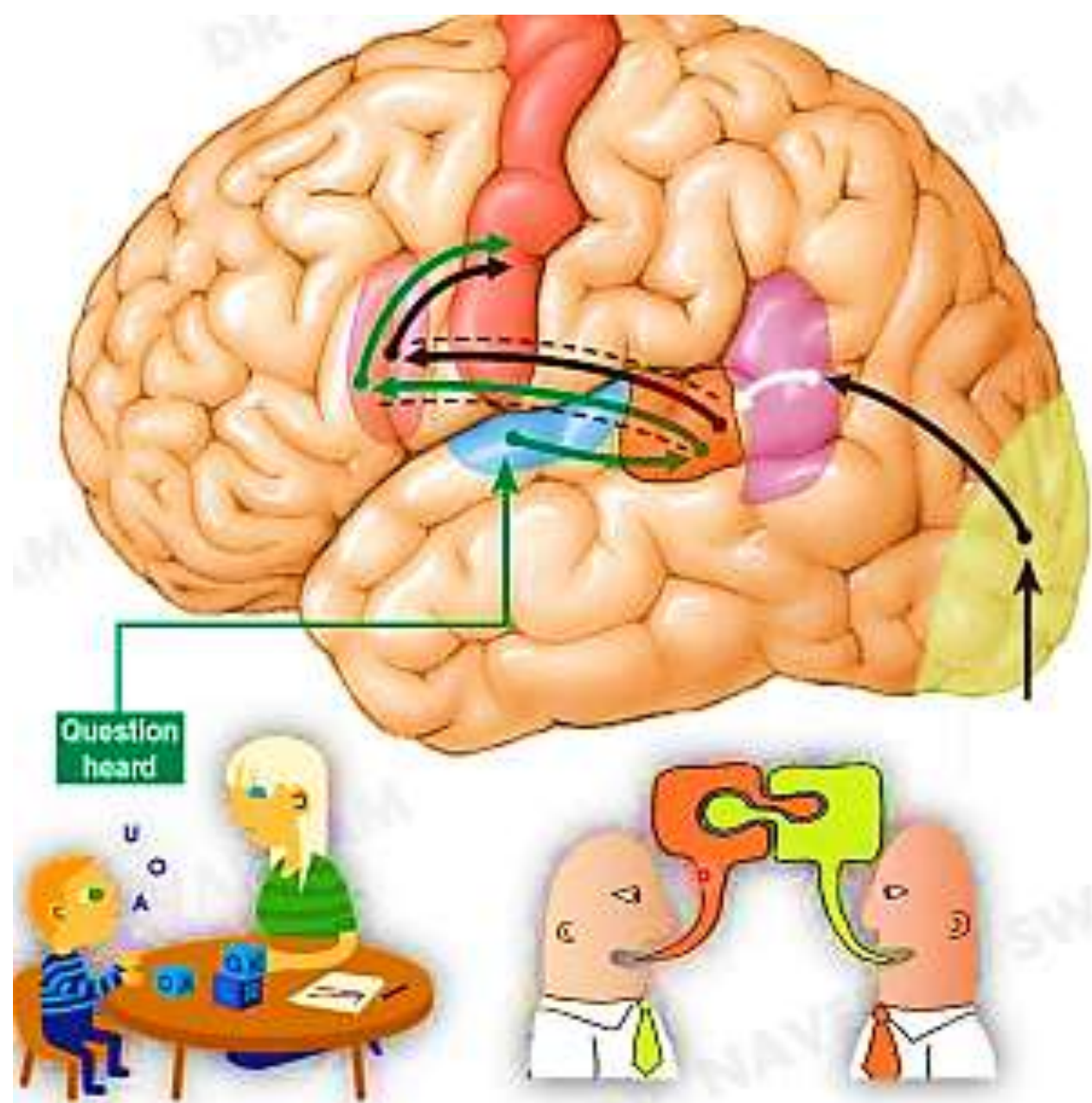


Wernicke's Sensory Speech Area (Areas 40 & 39)

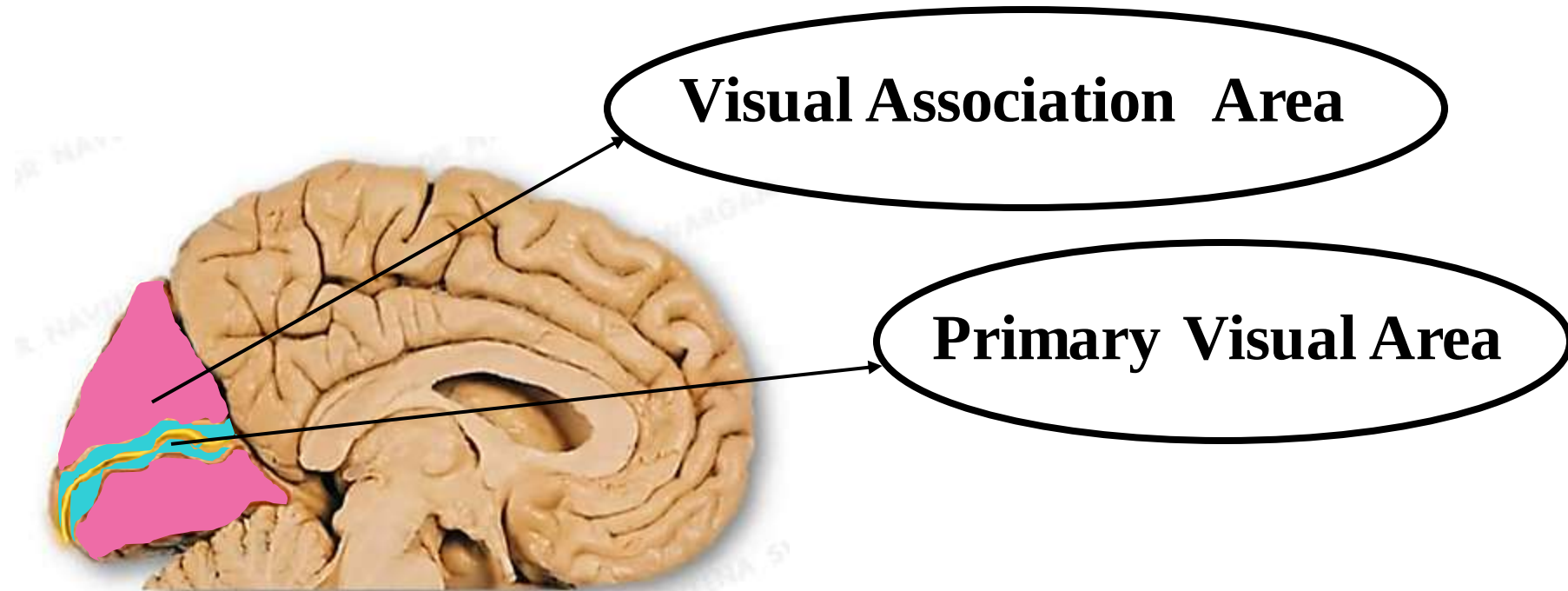
- Supramarginal and Angular gyri

Wernicke's Sensory Speech Area





Functional area of occipital lobe



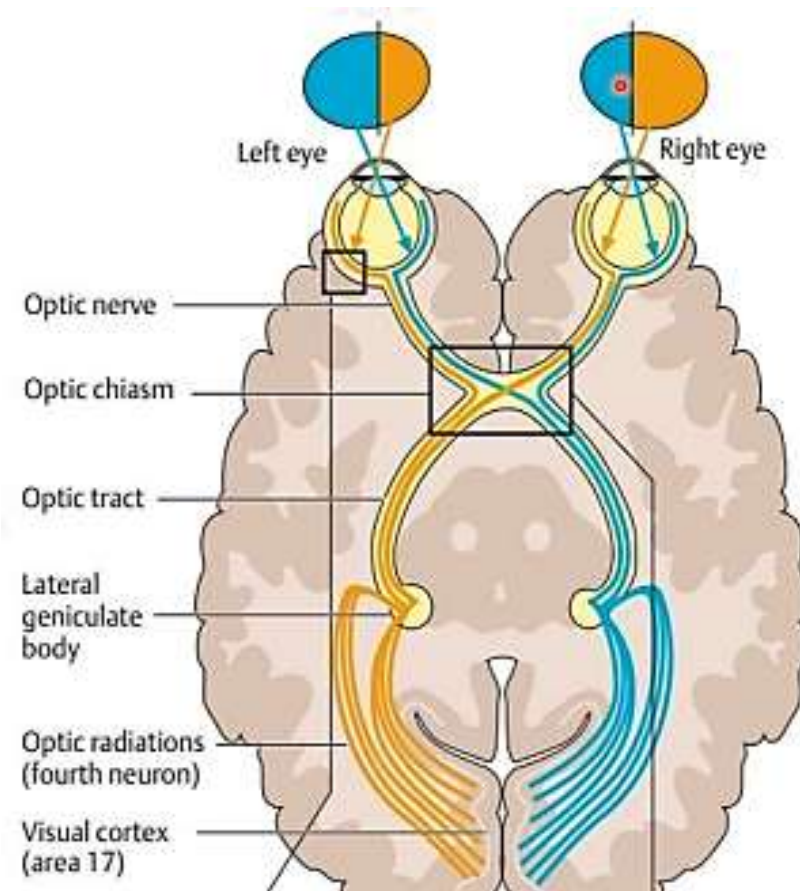
Primary Visual Area (**Area 17**)

- Around the calcarine sulcus

Primary Visual Area



Calcarine sulcus



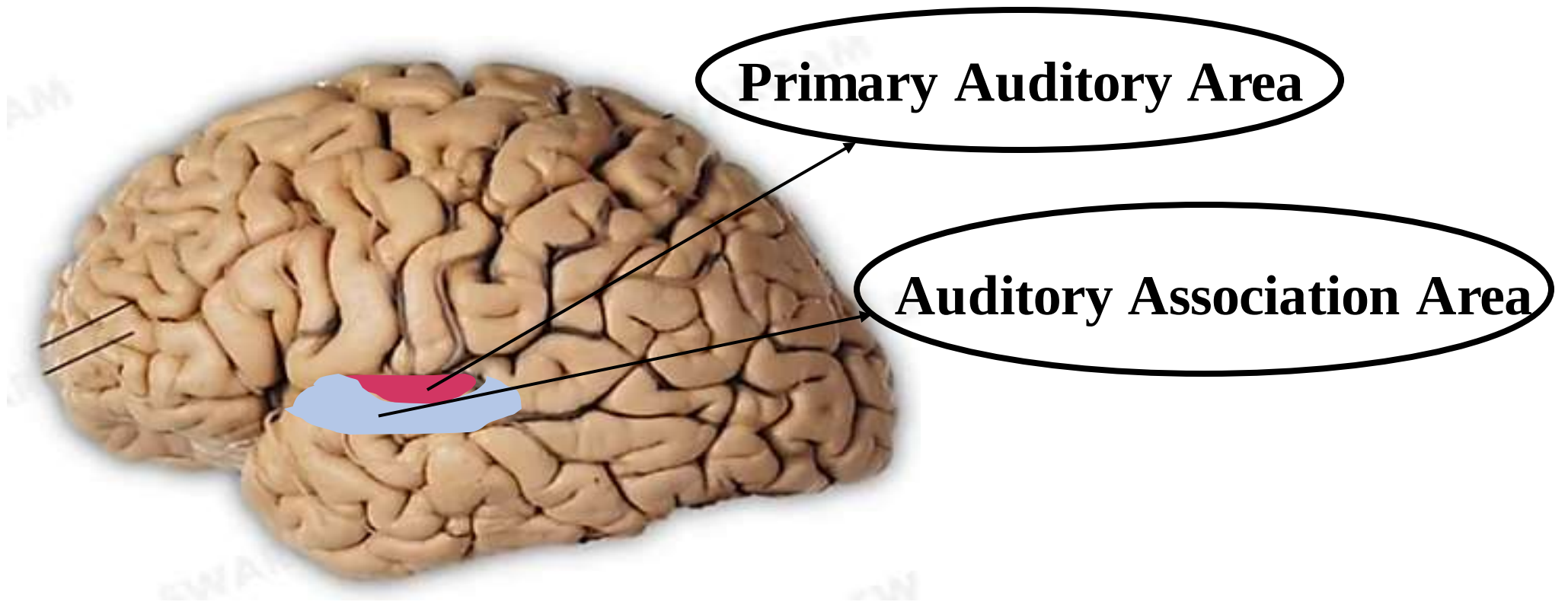
Visual Association Area (**Areas 18,19**)

- Around the primary visual area

Visual Association Area

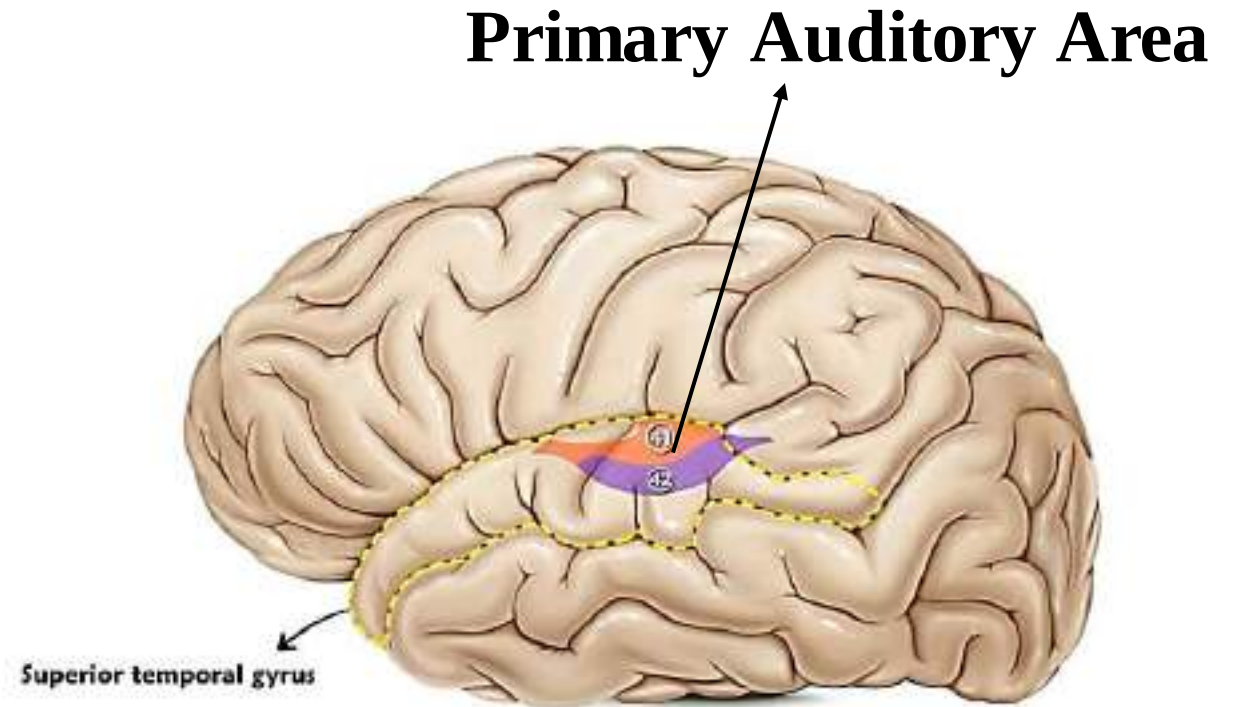
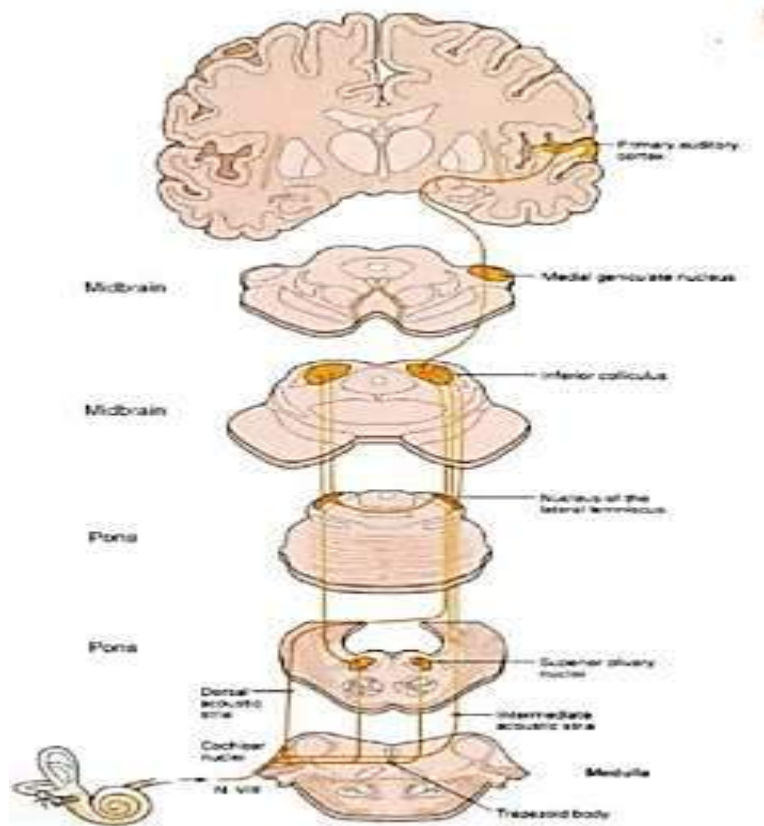


Functional areas of temporal lobe



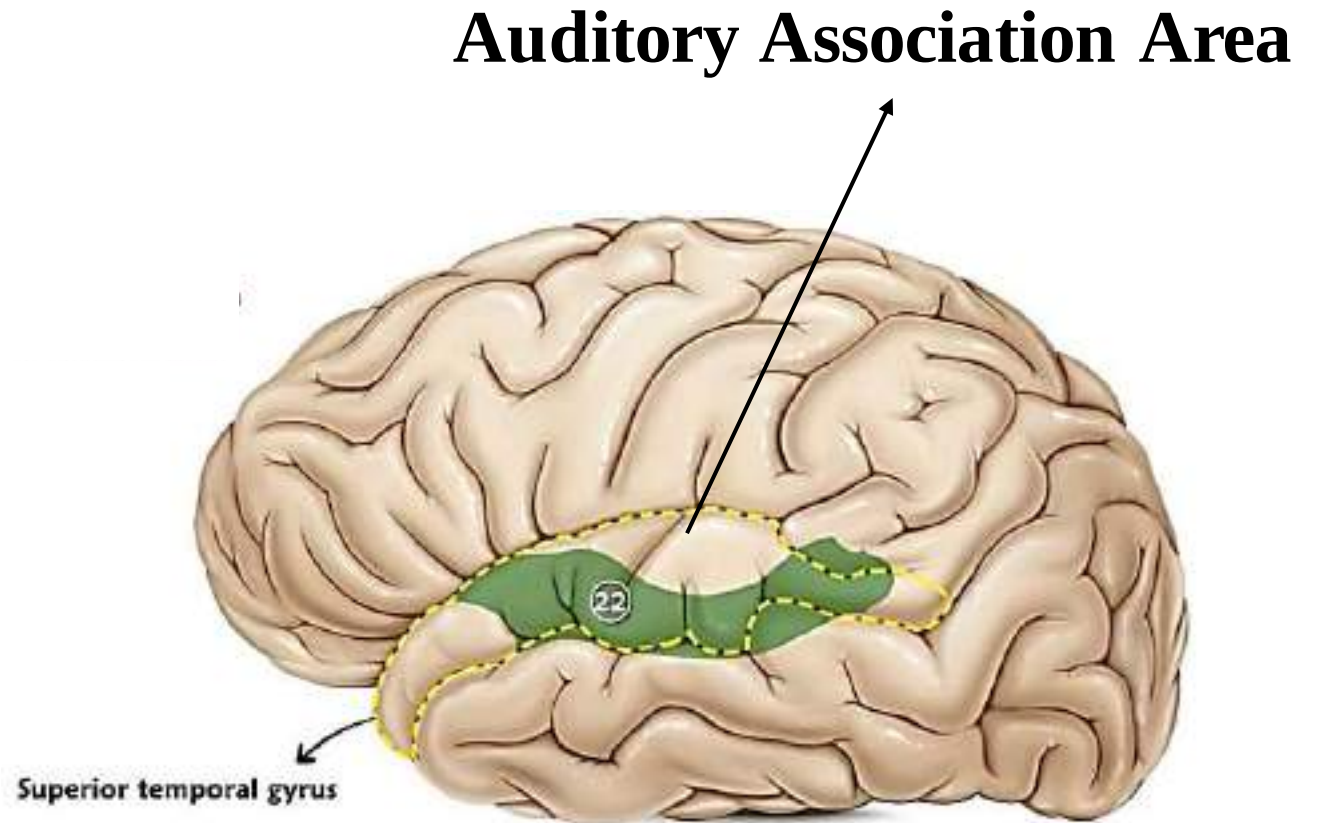
Primary Auditory Area (Areas 41,42)

- Upper part of superior temporal gyrus



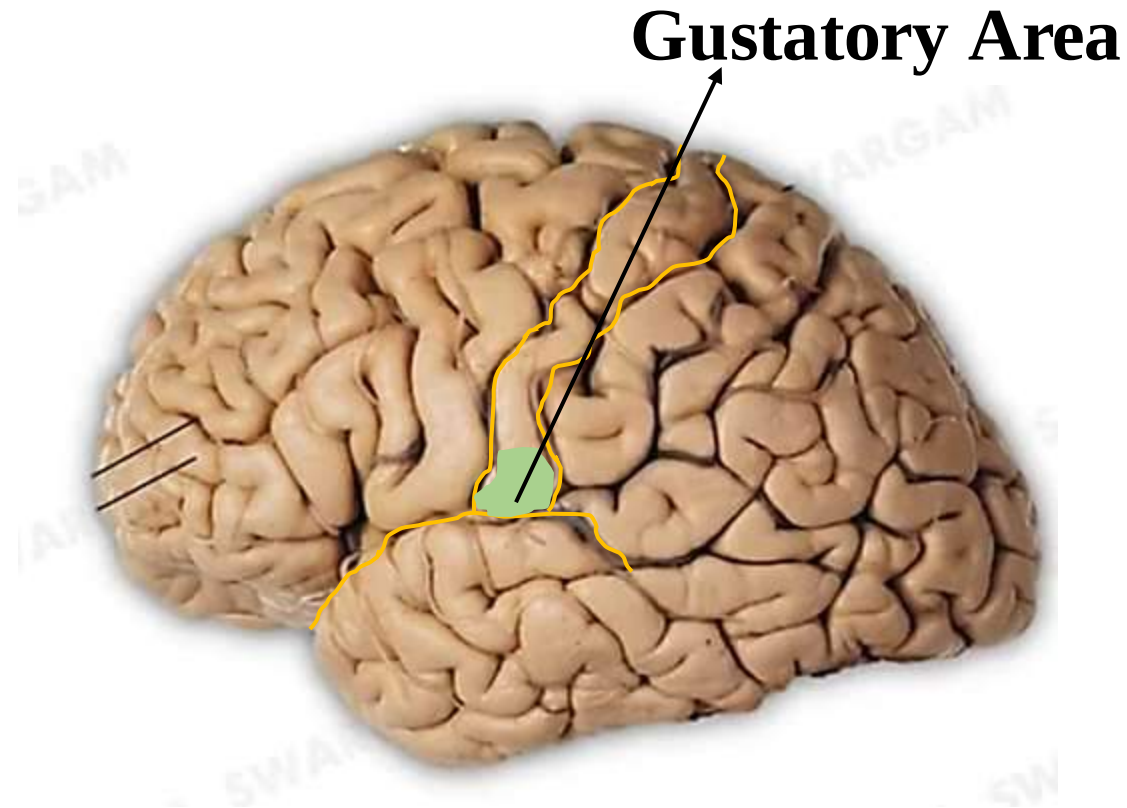
Auditory Association Area (**Area 22**)

- Behind primary auditory area

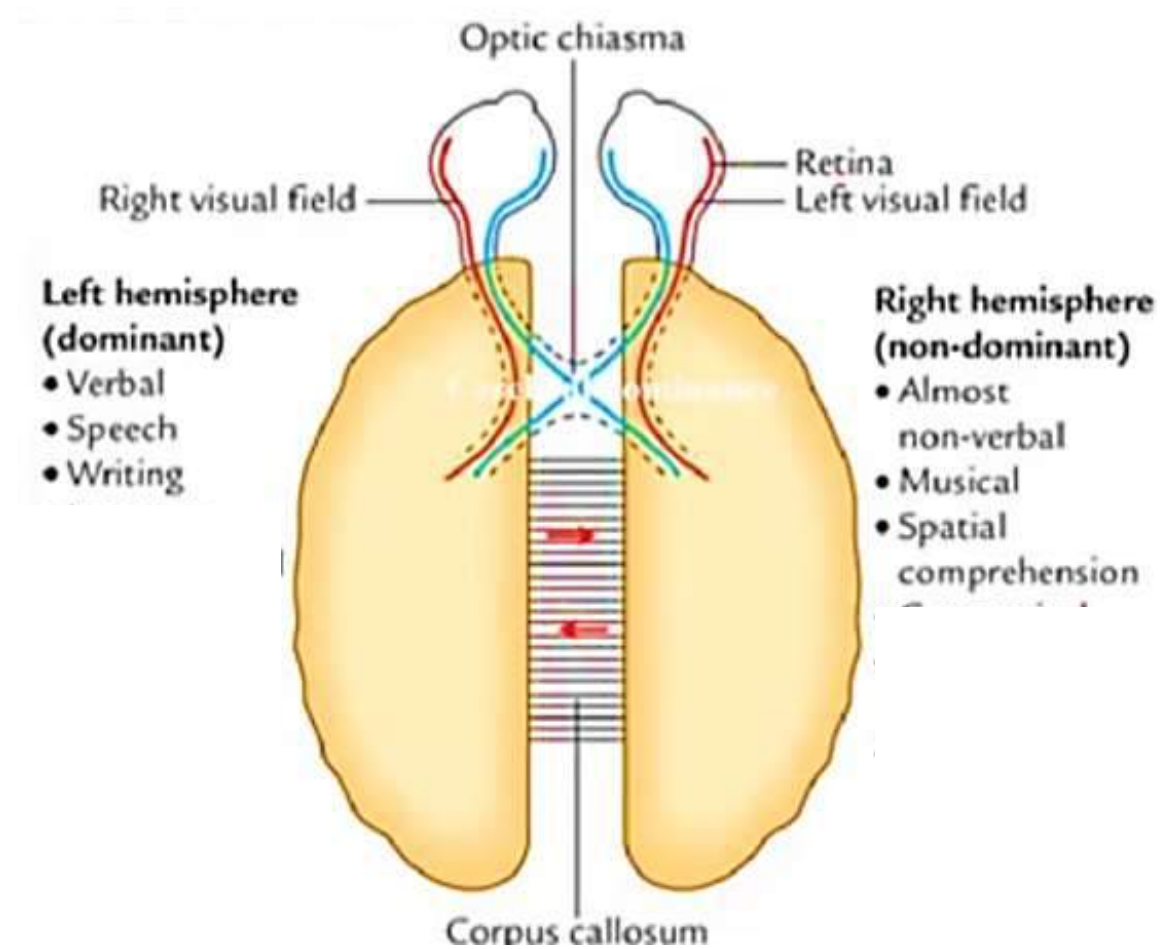


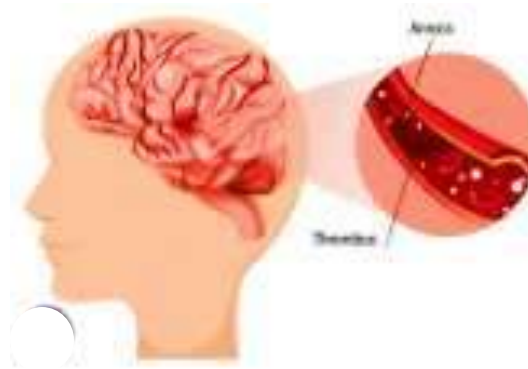
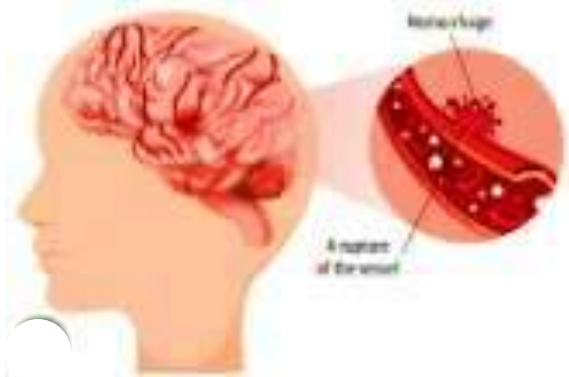
Gustatory Area (**Area 43**)

- Lower end of postcentral gyrus

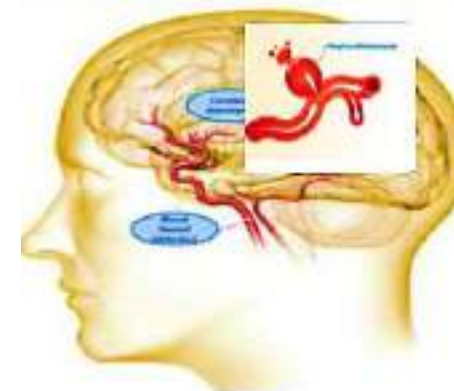
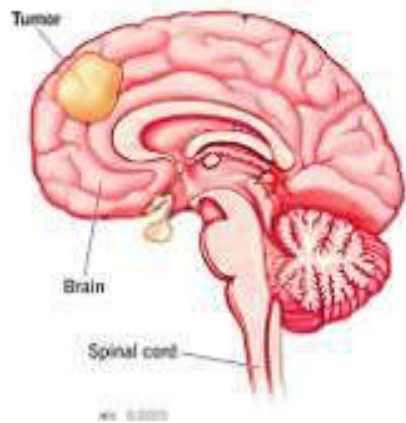


Cerebral Dominance





Cerebral Dysfunctions



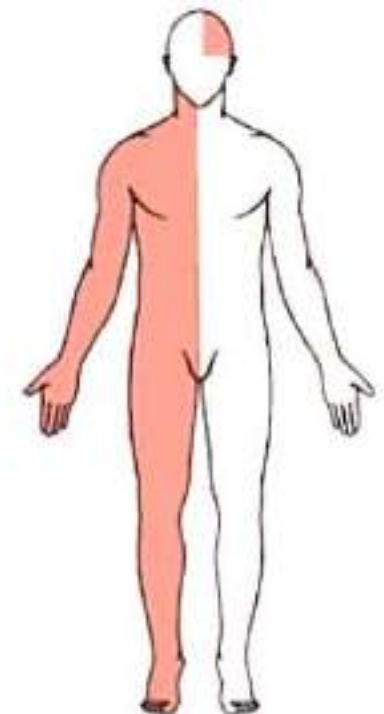
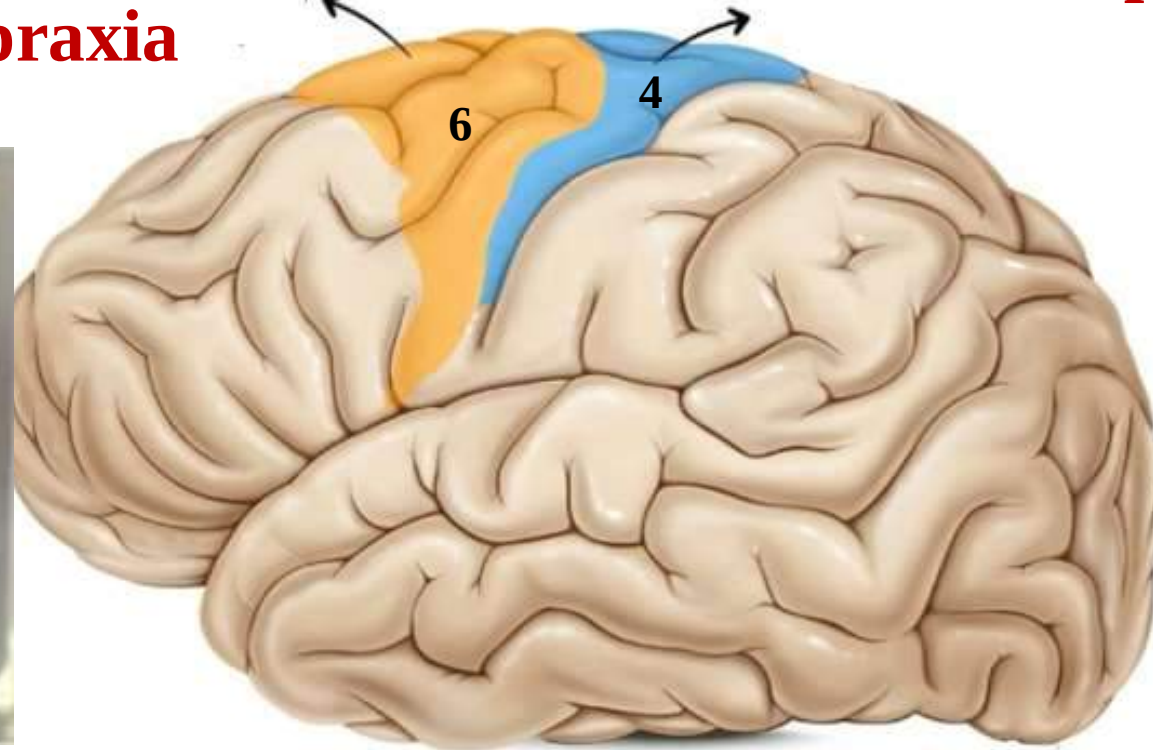
Cerebral Dysfunctions

Premotor Area lesions

Apraxia

Primary Motor Area lesions

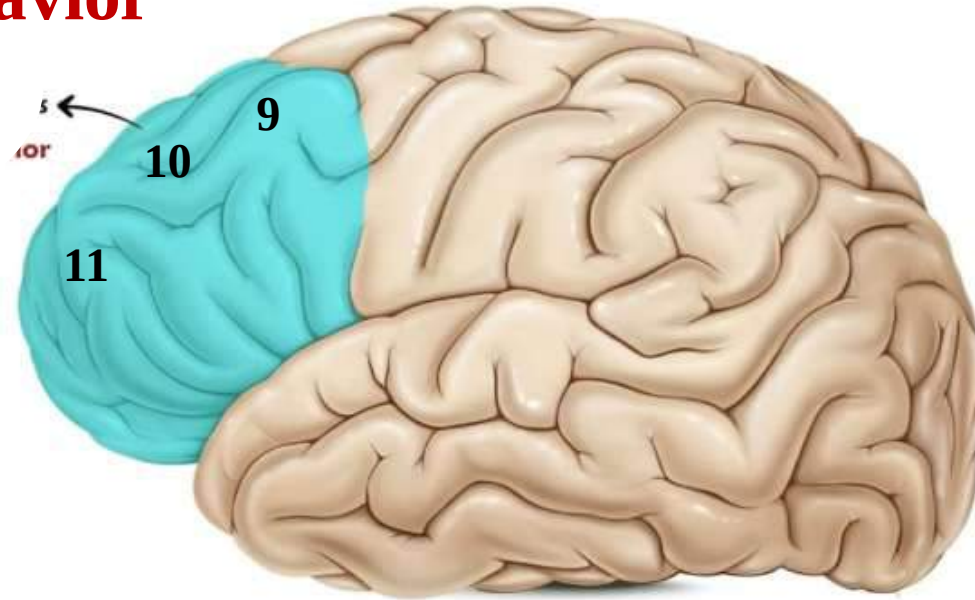
contralateral spastic paralysis



Cerebral Dysfunctions

Prefrontal Area lesions

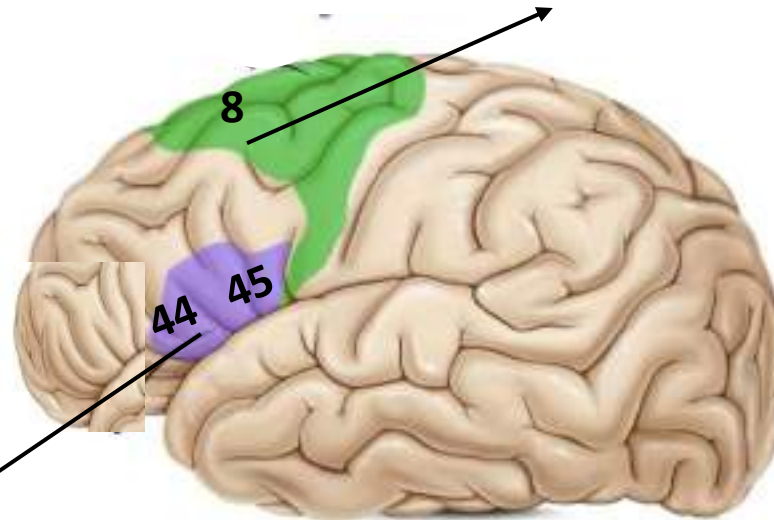
-Loss of social behavior



Cerebral Dysfunctions

Frontal Eye Field lesions

-Eyes to deviate to side of lesion



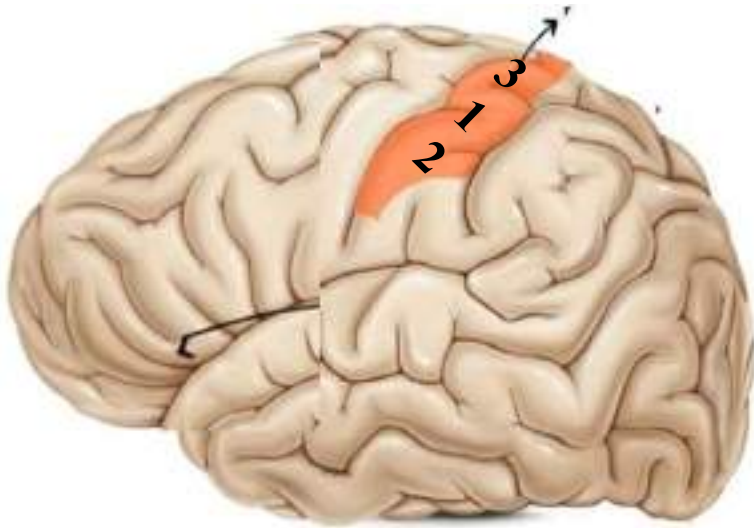
Broca's Motor Speech area lesions

-Motor aphasia

Cerebral Dysfunctions

Primary Somesthetic Area lesions

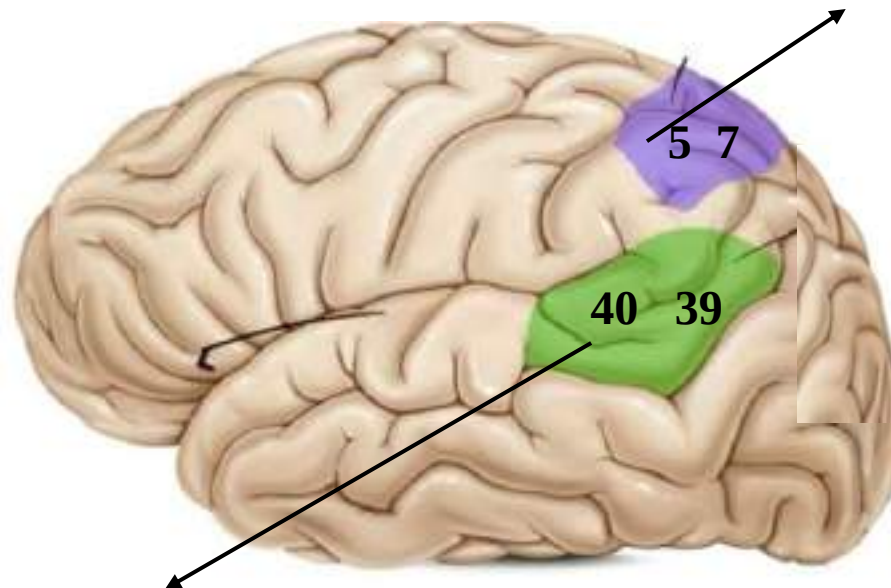
**-Contralateral loss of exteroceptive
& proprioceptive senses**



Cerebral Dysfunctions

Sensory Association Area lesions

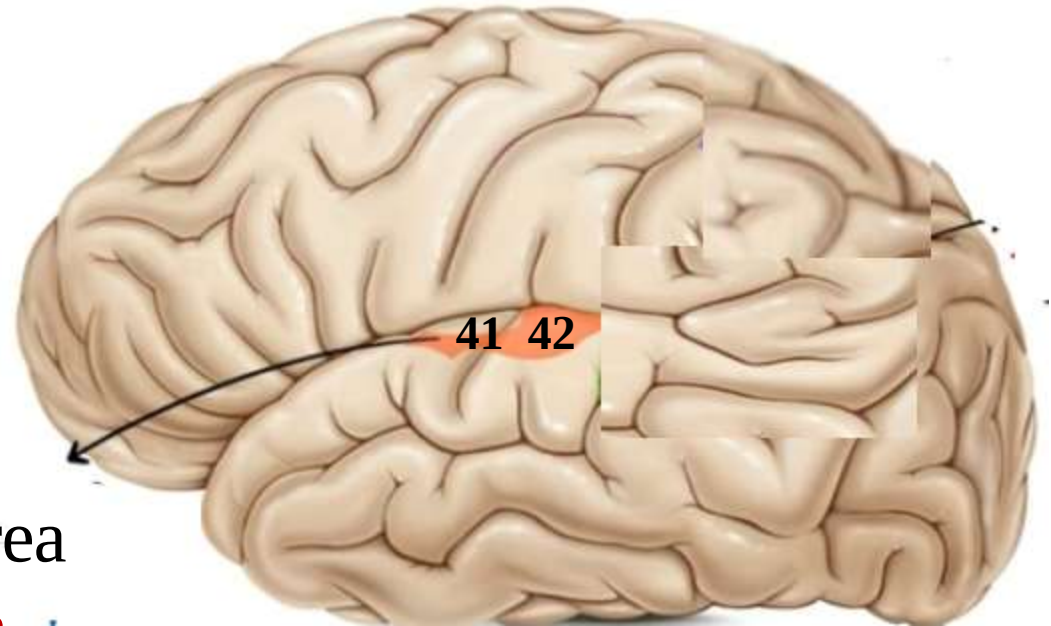
-Astereognosis



Wernick's Area lesions

Receptive aphasia

Cerebral Dysfunctions



Primary Auditory Area

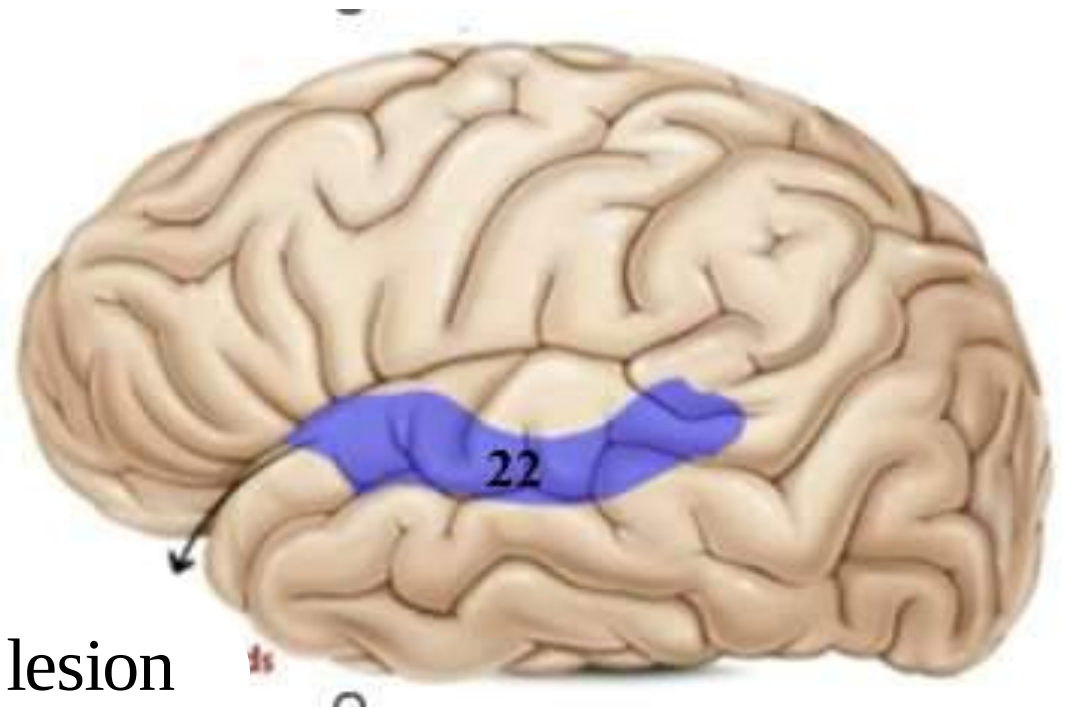
-Unilateral lesion

Slight loss of hearing

- Bilateral lesion

Complete loss of hearing

Cerebral Dysfunctions



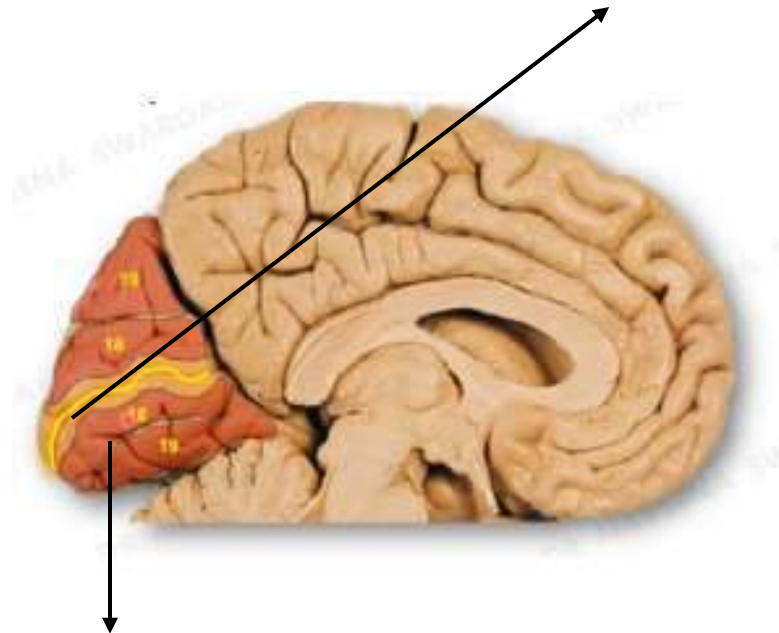
Auditory Association Area lesion

-Auditory agnosia

Cerebral Dysfunctions

Primary visual area lesion

-Homonymous hemianopia



Left side
homonymous hemianopia



Normal visual field

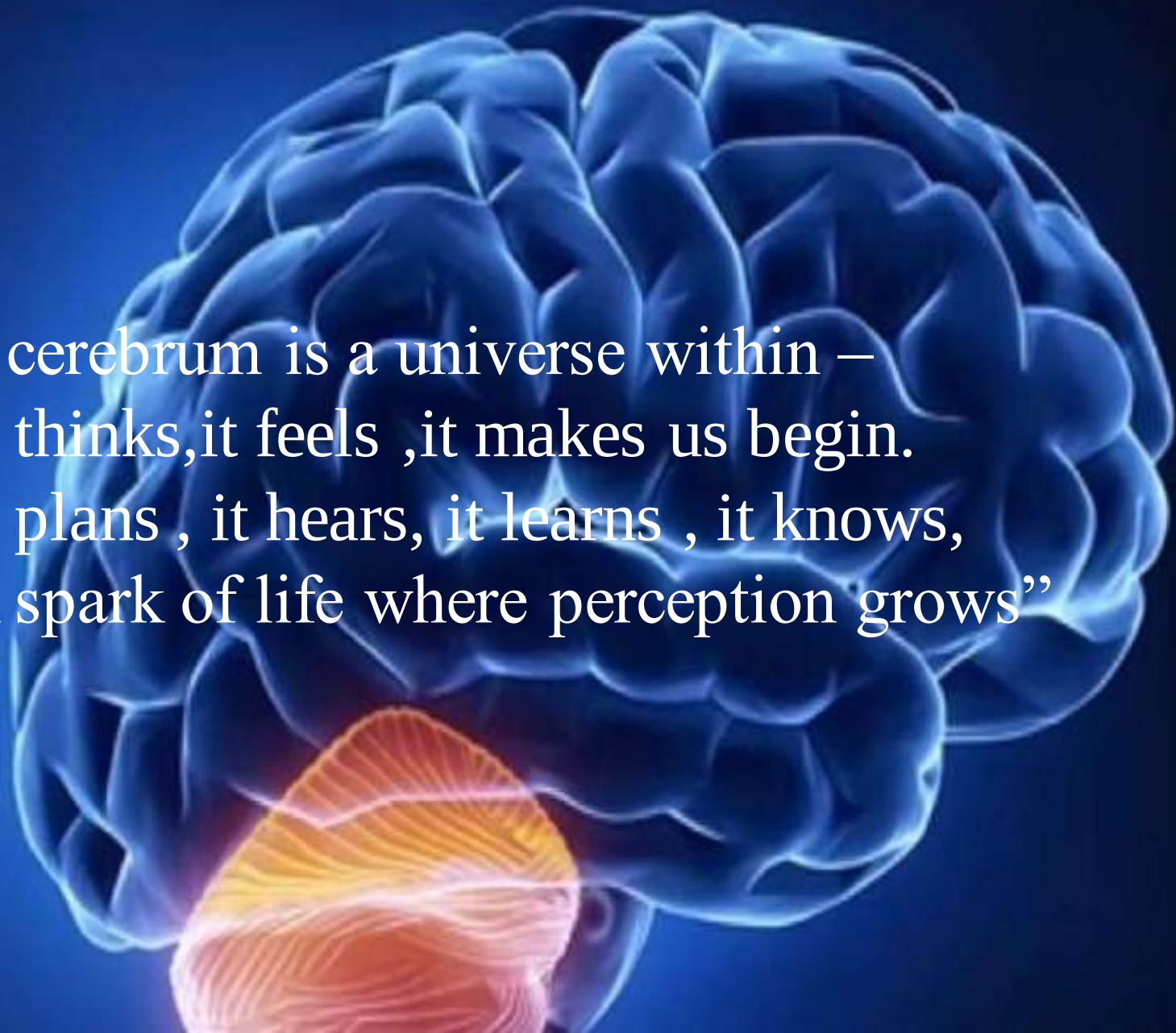


Visual Association area lesion

-Visual agnosia

References

- Burt, A.M., Textbook of Neuroanatomy.1st edition.1992.pp.156-163.
- Garey, L, J., Brodmann's Localisation in the Cerebral Cortex,2006.Pp.254-260.
- Snell, R.S., Clinical Neuroanatomy.8th edition.2021.pp.285-298.
- Datta, A.K., Essentials of Human Neuroanatomy.4th ed.2023.Pp.57-63.
- Vishram, S., Clinical & Surgical Anatomy .2nd edition.2012.pp.406-409.

A glowing blue brain with a glowing orange and yellow cerebellum at the bottom. The brain is set against a dark blue background. The text is overlaid on the left side of the brain.

“The cerebrum is a universe within –
It thinks, it feels , it makes us begin.
It plans , it hears, it learns , it knows,
A spark of life where perception grows”

